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SEPARATE COLLECTION OF BIODEGRADABLE WASTE

Anna HAŁADYJ[1]

The Separate Collection of Biodegradable Waste: The Case of Poland[2]

Abstract

This article presents the principles of collecting biodegradable kitchen waste, including its storage and processing conditions. In Poland, bio-waste is classified as a selectively collected municipal waste fraction, which includes selectively collected bio-waste from hotels, restaurants and cafes (the HORECA sector). The legislator also classifies green waste generated on individual properties, as well as in cemeteries, parks etc., as bio-waste.

In Poland, bio-waste can be composted at source (but only in single-family housing), and is collected according to the rules set out in municipal resolutions, which define the frequency and method of collection (bags/containers) with considerable variation. Municipal resolutions also introduce the possibility of fee reduction for composting at source, as an economic incentive, and penalties as a sanctioning mechanism. The article also presents examples of good practices in this area, including pilot projects. The main challenge for Poland is awareness-raising due to the still insufficient public knowledge on waste segregation, including the separation of bio-waste fractions and their further proper processing in mechanical biological treatment installations and composting 'at source'.

Keywords: Biodegradable Waste, Communal Waste, Environmental Law, Fees And Penalties For Mixed Waste Collection, Composting At Source

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2 | *The research and preparation of this study was supported by the Central European Academy.*

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1. Introduction

1.1. The legal framework of the municipal waste management system

According to Barczak,[3] municipal waste management requires a highly complex waste management system, including an efficient collection system, an effective sorting system and proper tracking of waste streams, the active involvement of citizens and businesses, infrastructure tailored to the specific composition of the waste, and a comprehensive financing system. Under the Polish legal system, municipal waste, including bio-waste, is mainly regulated by two acts. In its general scope (definitions, permitting and transport rules, liability etc.), it is subject to the Waste Act of 14 December 2012.[4] In specific matters, municipal waste is regulated by the Act of 13 September 1996 on Maintaining Cleanliness and Order in Municipalities.[5] The latter defines the obligations of municipalities in the field of municipal waste management as their tasks,[6] including, among other things, stipulating that detailed rules for municipal waste collection, the frequency of such collection, fee rates, and exemption rules are determined by resolutions of the municipal council (for each municipality separately). This means that – considering the most general regulation – the manner of municipal waste management, including the bio-waste fraction, may vary on a local basis (there are more than 2,500 municipalities in Poland); hence, the text contains some generalizations on this issue.

According to the joint definition (Art. 3(1)(1) of the Waste Act), whenever the law refers to bio-waste, it means biodegradable waste from gardens and parks, food and kitchen waste from households, catering, including restaurants, canteens and mass catering establishments, offices, wholesalers and retail units, as well as similar waste from establishments producing or marketing food. This definition corresponds to the wording in Art. 3(4) of the Waste Framework Directive (bio-waste means biodegradable garden and park waste, food and kitchen waste from households, offices, restaurants, wholesalers, canteens, mass catering and retail establishments, and comparable waste from food processing plants). At the same time, bio-waste is a fraction of municipal waste, which justifies its further legal regulation in the content of the Act on Maintaining Cleanliness, although it also indicates that the definition of municipal waste is not autonomous.[7]

Bio-waste has additionally been classified as a group of biodegradable waste,[8] by which is meant waste that undergoes aerobic or anaerobic decomposition with

3 | Barczak 2023, 266.
4 | Journal of Laws consolidated text 2023, item 1587, as amended.
5 | Journal of Laws consolidated text 2024, item 399.
6 | Korzeniowski 2014, 442.
7 | Barczak and Ogonowska 2018, 9.
8 | Danecka and Radecki 2023, 89.

the participation of microorganisms (Art. 3(1)(10) of the Act on Maintaining Cleanliness). At the same time, according to the wording of Art. 1b para. 1 of the Act on Maintaining Cleanliness, the provisions on the handling of municipal waste constituted of parts of plants from the care of green areas or cemeteries, as well as from marketplaces, apply to the handling of bio-waste constituting municipal waste what Górski critically analyses in detail.[9] Górski[10] also stresses that it is problematic to separate in municipal waste bio-waste from other waste generators, which due to their nature or composition are similar to the waste generated by households. The classification of this waste as municipal waste allows it to be included in the municipal waste management systems. The main guideline should be a direct connection to the satisfaction of the living (subsistence) needs of individuals, which means waste that is identical in composition, nature, as well as quantity, to household waste. According to Górski, the mere inclusion in this definition of waste from food production or marketing facilities cannot result in its automatic inclusion in the category of municipal waste as waste similar to household waste; this does not seem to have been the legislator's goal. Rather, the goal was to emphasise the nature of such waste and, thus, to link it to a specific treatment characteristic of biodegradable waste. This is due to the fact that the definition of "bio-waste" was transferred to the Waste Act from the Waste Framework Directive. The latter justifies the introduction of the concept of bio-waste in the preamble by the need to ensure a special way of managing it, which is also reflected by introducing certain obligations. However, the directive is not about treating all bio-waste as municipal waste. Therefore, there is no basis for including waste classified under codes from the 02 groups or code 16 03 80 (out-of-date or unusable food products) among the waste collected in municipal waste management systems. However, this does not change the fact that these categories of waste will be subject to management in the manner required just for bio-waste.

Due to the statistical data used in the study, which do not make such a distinction, I consider the total group of bio-waste, that is, from households and other sources, if in condition and composition they are similar to household waste.

1.2. Obligation to segregate municipal waste into fractions

The above-quoted definition of bio-waste was introduced into the national legal order by an amendment to the Waste Act of 17 November 2021.[11] Prior to that date, the definition did not include waste from restaurants, office cafeterias, and wholesalers, which also affected the data collected on waste reporting on the amount of municipal waste generated, including bio-waste. Nonetheless, as of July

9 | See more Górski 2024, 67–88.
10 | Górski 2021, 31.
11 | Act of 17 November 2021 on amendments to the Law on Waste and certain other laws, Journal of Laws 2021, item 2151.

2017,[12] regulations were already in effect in Poland, requiring waste to be segregated into five fractions, including "biodegradable waste, with a special emphasis on bio-waste".

Currently, regardless of the local differences in the details of the waste collection and management system,[13] a system of municipal waste segregation into five fractions is in force, including a fraction: bio-waste on the basis of the Decree of the Minister of Climate and Environment of 10 May 2021 on the method of selective collection of selected waste fractions.[14]

In accordance with the will of the legislator, as set forth in Art. 6r(2d) of the Act on Maintaining Cleanliness, in return for the fee for municipal waste management, the municipality ensures that property owners dispose of all types of municipal waste,[15] some of which must be collected directly from the property, some of which must be accepted at selective waste collection points (SWCP, called PSZOK), and some in other ways. However, in the municipal resolution, the law allows (Art. 6r. para. 3a of the Act on Maintaining Cleanliness) a limitation of the implementation of this obligation to, among other things, "waste constituting parts of plants from the care of green areas, gardens, parks and cemeteries, constituting municipal waste". The restriction also applies to the amount of bio-waste from non-residential properties where food service activities are conducted (including restaurants, canteens and mass catering establishments, wholesalers, retail units, as well as similar waste from establishments producing or marketing food). In the resolution, the municipality specifies the types of activities carried out on non-residential properties affected by the restriction.[16]

Municipal councils also have influence over determining how bio-waste that constitutes municipal waste will be collected (frequency of collection), determining how it is to be collected on the property (containers or bags), and introducing a system of incentives for composting from bio-waste on the property (exemption from part of the fee for waste collection and management).

In general, communal waste must be collected in four containers of different colours: glass packaging (green), paper including cardboard (blue), biodegradable waste (bio-waste) (brown), and metals together with plastic (yellow). Mixed waste (fifth one) is collected in black containers. According to the guidelines set by the Ministry of the Environment, the bio-waste fraction can include tree and shrub branches; leaves, flowers, and cut grass; sawdust and tree bark; fruits, vegetables etc. The following cannot go into it: animal bones, meat and animal carcasses, edible oil, treated wood, particleboard and medium-density fibreboard, medicines,

12 | Ordinance of the Minister of 29 December 2016 on the detailed method of selective collection of selected waste fractions, Journal of Laws 2019, item 2028.
13 | Voluntary separation of the ash fraction is also possible.
14 | Journal of Laws 2021, item 906.
15 | Budziarek 2021, 284.
16 | Modrzejewski 2022, 73.

animal excrement, coal ash[17] other municipal waste (including hazardous waste). Local information is more precise (and up-to-date, the range of segregation of bio fraction indicated above from the website of the Ministry of Climate and Environment was published in 2020!) and indicates, for example, that the bio-waste fraction can also include: vegetable and fruit waste, food scraps, coffee and tea grounds, eggshells[18]. Significantly, such waste can be disposed of in plastic bags and will be separated at the waste sorting facility.

1.3. Principles of selective collection in the household

There are fundamental differences between the collection of municipal waste from multi-apartment buildings and single-family houses regarding the method and frequency of collection.

In multi-family developments, the predominant organisation of the municipal waste collection site is the trash shed, which contains containers marked with five colours, allowing the division into fractions of waste from the household. They can be aboveground or underground, take the shape of a bucket or a bell, with the rare modernity of a mesh garbage can (for film and metal waste). The regulations specify minimum requirements for the distance of the garbage shed from the boundaries of the plot and buildings, as well as the need for containers to have a lockable lid if the waste is not stored under a roof.

For single-family houses, waste can be collected in bins or buckets and bags. The cost of acquiring bins can be on the side of the waste producer (the municipality/company offers them for sale). In this case, the containers are owned by the household. Containers can also be substituted by the municipality/enterprise and leased to the property owner. In some municipalities, for the collection of waste of the yellow fraction (metal and plastics), glass, paper are packed the in bags provided by the waste collector. Similarly, bio-waste might be collected in bags or bins/containers. This means that bio-waste processing facilities must be prepared to open the bags.

Waste is collected at different frequencies, depending on the type of property. It is permissible to vary the frequency of waste collection, especially depending on the amount of waste generated and the types of waste, except that, in the period from April to October, the frequency of collection of non-segregated (mixed) municipal waste and bio-waste constituting municipal waste may not be less than once a week for multi-family buildings and not less than once every two weeks for single-family residential buildings, excluding rural municipalities and the rural part of urban–rural municipalities, where the frequency of collection of non-segregated (mixed) municipal waste and bio-waste constituting municipal waste

17 | Ministry of Climate and Environment 2020.
18 | Lublin 2019.

may be less frequent. The frequency of municipal waste collection from property owners determined by the municipal council is subject to the opinion of the state district sanitary inspector to avoid health risks.[19] However, for non-residential properties (e.g. offices, school offices), the municipal council may introduce the possibility of indicating in the declaration the frequency of municipal waste collection of particular fractions. Still, from April to October the frequency of collection of non-segregated (mixed) municipal waste and bio-waste constituting municipal waste may not be less frequent than once every 2 weeks.

1.4. The structure of waste management in Poland

In 2018, the first year in which data were collected at the municipal level on the volume of municipal waste by fraction, including bio-waste, the largest share of municipal waste was waste with code 20 03 01 – non-segregated (mixed) municipal waste, which accounted for 66.5% of collected municipal waste. In addition, 13.3% was represented by subgroup 15 01 – packaging waste, 7.8% by subgroup 20 01 – municipal waste segregated and selectively collected, 7.1% by subgroup 20 02 – waste from gardens and parks (including cemeteries), and 5.3% by 20 03 – other municipal waste (with excluding code 20 03 01). The above mentioned 7.1% of bio-waste (codes 20 01 08, 20 02 01) amounted to a total of 1,022.4 thousand tonnes.[20]

By contrast, in 2023, 122.8 million tonnes of waste were generated in Poland, 11% of which was municipal waste (13.4 million tonnes). Of this amount, as much as 37% of biodegradable waste was collected through separate collection in 2023.[21]

The assumptions regarding the amount of bio-waste for the coming years are set forth in Resolution No. 96 of the Council of Ministers of 12 June 2023 on the National Waste Management Plan 2028.[22] The national strategy is supplemented by regional strategies, for individual (16) provinces. According to Barczak,[23] the so-called Provincial Waste Management Plans are key documents that define the waste management strategy for Poland's individual provinces. A provincial plan deals with waste generated in the area for which it is prepared, as well as waste imported into the area, including municipal waste, biodegradable waste, packaging waste, and hazardous waste also covering waste prevention measures. According to Art. 37 of the Waste Law, these plans are updated at least every six years. Under the current state of the law, some provinces have already adopted updates until 2028 and beyond. When it comes to municipal waste, the regional and national plans are prepared based on the Guidelines for

19 | Budziarek 2021, 285.
20 | Resolution No. 96 of the Council of Ministers of 12 June 2023 on the National Waste Management Plan 2028 Monitor Polski of 2023, item 702.
21 | CSO 2024, 148.
22 | Monitor Polski of 2023, item 702.
23 | Barczak 2023, 270.

the Preparation of National and Provincial Waste Management Plans for Municipal Waste[24] by the Minister of Climate.

The findings of the Waste Management Plan 2028 show that the projected weights of food bio-waste generated during 2020–2040 will be 1,963 thousand tonnes in 2025, 2,013.3 thousand tonnes in 2030, and 1,752.2 thousand tonnes in 2040. As for greenfield bio-waste, its projected amount in 2025 will be 2,316.6, 2,375.9 thousand tonnes in 2030, and 2,363.1 in 2040, which is rather constant.

2. Dealing with bio-waste 'at source'

According to the waste hierarchy, which includes bio-waste, primary importance is given to waste prevention,[25] is primarily aimed at the need to take preventive measures.[26] The principle of waste prevention is the starting point in the waste hierarchy, and means that waste should be handled in such a way as to prevent its generation in the first place, although the literature recognises that the establishment of a ban on the most hazardous substances has exhausted the requirement for waste prevention.[27] According to Wierzbowski and Rakoczy this postulate is practically impossible to fulfil.[28] However, from the perspective of the household, making consumer choices in a fundamental way can be an expression of waste prevention.[29]

Only when the production of waste could not be prevented the next principles of the waste hierarchy come into play. These general principles apply not only to industrial waste but also to municipal waste. The subjective scope of the hierarchy applies to natural persons, legal entities, as well as organisational units without legal personality, including, in particular, entities engaged in economic activity; in the case of municipal waste, these will be the entities that receive this waste.[30]

According to the National Waste Prevention Programme, the production of municipal waste (i.e. also bio-waste) can be prevented through, among other things:

1. educating and influencing residents' consumer decisions to a) reduce unnecessary purchases and b) choose products that are durable and lower in harmful substances;
2. education and promotion of waste prevention in institutions through a) dissemination of green procurement and b) implementation of environmental management systems (e.g., EMAS, Responsible Care);

24 | Ministry of Climate and Environment 2023a.
25 | Zębek 2018, 96.
26 | Górski 2002, 147.
27 | Żurowski 2019, 156.
28 | National Waste Prevention Programme, Warsaw 2014, 6.
29 | Wierzbowski and Rakoczy 2015, 282.
30 | Barczak 2015, 30.

3. promotion and institutional and procedural support for reuse (including support for repair-based services, rentals, used equipment exchanges etc.); and
4. impact on product and packaging manufacturers (implementation of new technologies and eco-design at all stages of the life cycle).

As already mentioned, in Poland, 122.8 million tonnes of waste were generated in 2023, of which 11% was municipal waste (13.4 million tonnes). Of this amount, 6.4 million tonnes were destined for recovery (46% of municipal waste), of which 2.1 million tonnes (16%) were sent for recycling, 2.7 million tonnes (20%) were sent for thermal conversion with energy recovery, and 1.6 million tonnes (12%) were sent for biological processing (composting or fermentation). A total of almost 4.2 million tonnes were diverted to disposal processes, of which 4.1 million tonnes (30% of municipal waste) were destined for landfilling, and the remaining 0.1 million tonnes (1%[31]for disposal by thermal transformation without energy recovery.[32]

These data indicate that the separate collection system is part of achieving EU's goals for reducing the amount of waste going to landfills, according to recital 35 of the WFD. At the same time, municipalities have been required by EU legislation to achieve high levels of recovery and recycling. According to Badach et al.,[33] such high thresholds will be virtually impossible to achieve without undertaking radical changes in local waste management systems, including significantly reducing the possibility of disposing of bio-waste within the mixed waste, undertaking educational campaigns, or tightening controls on residents' waste disposal. An opportunity to improve the achievement of the required recycling levels is also seen in increasing organic recycling by processing bio-waste in home composters, which will be discussed in section 2.2.

2.1. Environmental education

To realise waste hierarchy, that is, preventing waste at the source, it is necessary to raise environmental awareness. According to a study from 2020 only half of the respondents answered 'yes' and as less than 15% of the respondents were completely unfamiliar with the question "Does the household generate municipal waste?" According to the same study, only 3% of the households respected the principles of selective municipal waste collection in rural areas, while in cities the figure was 6%.[34] However, according to a study commissioned by the Minister of Climate and Environment in 2024, regularly segregated waste was declared by

31 |
32 | CSO 2024, 156.
33 | Badach et al. 2024a, 39.
34 | Rajczakowska and Andrzejczyk 2020, 77.

88% of those surveyed.[35] The reasons why Poles do not segregate waste, as defined in the above-mentioned survey, are: "there are no bins in the neighbourhood" (41%) and "there is no place at home to segregate waste" (38%). At the same time, as many as 62% evaluate positively the current system of selective waste management.[36] This is why the Roadmap for Transformation to a Circular Economy (adopted in 2019), as well as the Responsible Development Strategy (accepted in 2017) identified education as one of the key elements of achieving a circular economy in Poland.[37]

Nowadays, for the implementation of environmental education responsibilities, both the Minister of Climate and Environment (at the central level) and municipalities (at the local level) organise awareness-raising campaigns.[38] These take the form of advertising spots, poster campaigns at bus stops and other public places,[39] or logos and information campaigns on waste prevention (e.g. "we segregate textiles"[40] or "recycling and waste reduction"[41]). NGOs and private initiatives, such as municipal waste management facilities,[42] are also involved in such campaigns.

An important obligation of municipalities is to make information available on the authority's website and for the entities collecting municipal waste from property owners in a given municipality. The residents of a municipality are to have access to information on where and how mixed waste, bio-waste, or municipal waste sorting residues are managed. The primary task of the municipalities is to carry out informational activities on the proper management of municipal waste and, above all, to promote selective collection of municipal waste.[43] Remote applications and available online tools are helpful in the proper segregation of waste. Due to the specific nature of municipal waste generation (local level), apps are most often local in nature, such as the app "Where to throw away? Segregation" available on Google Play, which contains almost 1,000 different types of waste. It comes primarily from open data from the City of Warsaw, but users can also submit their concerns and solutions.[44] Another useful app is the waste collection app "My Garbage" for Android and iOS, for the city of Grudziadz; it provides information about the arrival of municipal vehicles to collect municipal waste and helps users learn about waste sorting. It also includes a waste dictionary and descriptions to identify different types of garbage, as well as contact details of the contractor and the office overseeing garbage collection, which makes it possible to report

35 | Which, at the same time, represents a decrease of 8 percentage points compared to the 2022 survey.
36 | Badanie 2024.
37 | Zębek 2024, 342–343.
38 | Ministry of Climate and Environment, 2025a.
39 | Rydygier and Bril 2020, 88.
40 | Ministry of Climate and Environment 2025b.
41 | Ministry of Climate and Environment 2025c.
42 | EZGDK 2024.
43 | Hanczar and Pisiewicz 2015, 205.
44 | App2025.

irregularities.[45] According to Rajczakowska and Andrzejczyk, urban households use logistic and ecologist solutions more often than rural ones.[46]

The "Sorteusz" ("the sorter") smartphone app is a tool available nationwide that allows users to scan the barcodes of product packaging and determines which container to put it in. However, the app, as a rule, is directed toward packaging waste, so it will not apply to bio-waste.

The creators of the National Waste Prevention Programme assumed a decade ago that the promotion of personal composting in the form of education and motivation of residents should achieve a potential effect of preventing bio-waste of 10 to 30 kg per capita per year.[47] The Programme has not been subjected to ex-post evaluation, so it is difficult to assess to what extent these assumptions have been met. Therefore, it is worth looking at other possible tools for reducing the amount of generated bio-waste and managing it at the source.

2.2. Financial support for composting bio-waste at source

Despite the fact that composting at source is not a mechanism per se to prevent the production of bio-waste but only regulates the issue and its management 'at the source', through municipal resolutions defining the principles of payment for waste collection and management, municipalities may introduce an exemption from part of the municipal waste management fee for residents who compost bio-waste on their property. This applies to single-family developments only. The fee relief, as stipulated in Art. 6k(4a) of the Act on Maintaining Cleanliness, is to be "proportional to the reduction in the cost of household waste management". The rates are set individually by each municipal council and the amount of the relief is determined by local conditions, such as, for example, the amount and structure of the costs of operating the municipal waste management system in the municipality, the number and location of properties with single-family residential buildings, the number of owners composting bio-waste, or the share of the bio-waste fraction in the structure of the collected waste.[48]

If the resolution providing for the relief is passed, the household must indicate in the so-called garbage declaration information having a backyard composter and composting bio-waste constituting municipal waste in it. Anyone who, contrary to the information submitted, does not have a backyard composter or does not compost bio-waste constituting municipal waste in it is subject to a fine.

Therefore, the effect of the relief cannot be the absence of a fee, as the reduction is only partial; at the same time, the relief should not be too low, as it will not have the intended economic effect.

45 | Aplikacja odpadowa 2019.
46 | Rajczakowska and Andrzejczyk 2020, 76.
47 | National Waste Prevention Programme 2014, 30.
48 | Gawrońska 2021, 56.

According to research conducted by the Murator service, in 2024, in Wroclaw, residents could expect a discount for municipal waste collection of PLN 10 per month if they had a composter. In Gdynia, in 2024, the discount was also PLN 10 per month (an increase of PLN 4 from the previous discount). However, in Ustka, for example, in 2024, the discount for garbage collection for composter owners was PLN 1.20 per month, while in Pasłęk it was PLN 5.[49] These discounts are not significant and it is difficult to assess whether they really have a mobilising effect on single-family homeowners towards composting.

2.3. Increased fee for lack of segregation

Another mechanism that favours the segregation of municipal waste (including bio-waste) is represented by increased fees for lack of segregation. According to Art. 6ka of Act on Maintaining Cleanliness, in the case of failure by the property owner to comply with the obligation of separate collection of municipal waste, the entity collecting municipal waste shall accept it as non-segregated (mixed) municipal waste and notify both the mayor and the property owner. This entity, after appropriate notification to the generator of waste,[50] initiates proceedings to determine the amount of the fee for municipal waste management and determines, by means of a decision, the amount of the fee for municipal waste management for the month/year in which the obligation of separate collection of municipal waste was not fulfilled. The fee must not be lower than twice the amount and not higher than four times the rate set by the municipal council. For example, in the capital (Warsaw), in 2020, a fixed monthly amount for the collection of segregated waste from a single-family house was PLN 94 and PLN 65 from an apartment in a block of flats or a tenement house. In the event of unsorted waste, the fees doubled.[51] Bril and Rydygier also emphasise that: "Similarly, in multi-flat real estate, e.g. in apartment blocks and tenement houses, the lowest rate was paid by one-person households. The rate for one person to collect segregated garbage is PLN 10, two people – PLN 19, three – PLN 28, and four and more – PLN 37. In the event of unsorted waste, 20% added the amount indicated. Currently, changes in rates are the most severe for those living on their own premises. Their fees will increase by up to 600%", which does not seem fair. In particular, it is problematic to penalise households in multi-family buildings with an increased fee for failing to selectively collect, with no way to personally verify which households have not actually segregated. Then, the undermined fee approaches collective responsibility, unacceptable in a democratic state under the rule of law, which requires a reason for the level of informational instruments as those that can produce the effect of behavioural

49 | Muratordom 2024.
50 | Szalkiewicz 2024, 28.
51 | Bril and Rydygier 2020, 61.

change in the absence of the need to use the authoritative forms of influence on the addressees of legal obligations. Therefore, each situation should be evaluated on a case-by-case basis, considering the surrounding circumstances, including the scale of violations and the type of property on which the violations occurred.[52]

3. Management of bio-waste in Poland

The Environment Protection Institute Report shows that the methods of biological processing of municipal waste in 2022 included processing in digestion facilities, composting facilities and mechanical-biological processing facilities, as well as, although to a very small extent, in biological drying facilities.[53]

The statistics for 2023 show that, of the municipal waste collected in 2023, 6.4 million tonnes were destined for recovery (46% of municipal waste generated), of which 2.1 million tonnes (16%) were sent for recycling, 2.7 million tonnes (20%) were sent for thermal conversion with energy recovery, and 1.6 million tonnes (12%) were sent for biological processing (composting or fermentation).[54] It should be assumed that the latter values refer partly to mixed kitchen waste and partly to bio-waste, which is 'biodegradable' due to its morphology.

Digestion is understood as recovery (R) or disposal (D) processes conducted under anaerobic conditions, with the participation of microorganisms, as a result of which the physical, chemical or biological properties of the waste are changed.[55] However, composting represents recovery (R) or disposal (D) processes carried out under aerobic conditions, with the participation of microorganisms, as a result of which the physical, chemical, or biological properties of the waste are changed.

The process of mechanical and biological processing of mixed municipal waste is carried out in mechanical-biological treatment (MBT, or MBP in Polish) facilities and combines two stages: mechanical and biological, which function as one integrated technological system. Bio-waste can also be processed through a mechanical process. The biological part of the MBP processes not only waste from the mechanical stage, but also other types of waste, including selectively collected waste accepted for management in the biological part of the MBP. According to the data, in 2022, the biological part of the MBP processed 2,669.9 thousand tonnes of municipal waste; however, the data do not isolate the bio-waste stream.

Considering the breakdown between composting and digestion processes, 1,121.0 thousand tonnes of municipal waste were composted at domestic composting facilities (170 facilities in 2022). The amount of waste with code

52 | Nagórek 2022, 40.
53 | Biologiczne przetwarzanie odpadów komunalnych w Polsce 2022, 10.
54 | CSO 2024, 156.
55 | Biologiczne przetwarzanie odpadów komunalnych w Polsce 2022, 8–10.

20 01 08 – biodegradable kitchen waste and 20 02 01 biodegradable waste was 129.2 thousand and 977.1 thousand tonnes, respectively, where municipal waste had a 98% share.

Digestion can proceed as a stand-alone process or be part of the MBP process; hence, the data acquired for analysis are not reliable and comprehensive. The acquired data for 2022 show that 157 thousands of tonnes of waste with code 20 01 08 – biodegradable kitchen waste and 9 thousands of tonnes of waste with code 20 02 01 – biodegradable waste were processed in digestion facilities.

Moreover, 98.2 thousand tonnes of municipal waste were processed in biological drying facilities in 2022, of which waste with code 20 01 08 – biodegradable kitchen waste accounted for 21%, and waste with code 20 03 01 – non-segregated (mixed) municipal waste accounted for 20.7%. The facilities also treated 0.05 thousands of tonnes of waste from group 02 – other than municipal waste in 2022.

The data for 2022 also include bio-waste generated outside of households, primarily on farms (formerly referred to as 'green waste'). Such bio-waste can be used, for example, energetically in biogas plants[56] to produce biogas, but as it is not a fraction segregated from households, a discussion of related trends is beyond the scope of this article.

4. Identified risks of bio-waste management in Poland

The primary risk identified by the national legislator and regulated by law is the prohibition on off-site collection of bio-waste that constitutes municipal waste under Art. 23(2)(6) of the Waste Act. Collecting waste in violation of the prohibitions is an administrative tort under Art. 194(1)(3) of the Waste Act, punishable by an administrative fine ranging from PLN 1,000 to PLN 1,000,000.[57] The prohibition is relative in nature.[58] Exceptions include allowing the collection of bio-waste that constitutes municipal waste collected at a transfer station operated by:

1. the entity collecting municipal waste from property owners;
2. the operator of a municipal installation;
3. the operator of a bio-waste treatment facility;
4. the operator of a selective collection point for municipal waste.

This is a closed list of entities excluded from the ban on collecting bio-waste that constitutes municipal waste off-site. This means that, in other cases, bio-waste must go directly to the treatment process, which raises risks related to transportation and their pre-process storage. In the area of transport-related risks, the

56 | Golaszewski 2011, 69.
57 | For details on torts in waste law, see Danecka and Radecki 2024, 210–222.
58 | Danecka and Radecki 2022, 231–232.

literature highlights the high logistics costs of transporting municipal waste due to the distances between generation and treatment sites,[59] which, due to the above ban, are unavoidable and may be subject to only slight optimization.

However, bio-waste storage (both accepted for processing and stored at the transfer station) is regulated at the national level by the Regulation of the Minister of Climate of 11 September 2020 on detailed requirements for waste storage[60] and the EC conclusions on BAT for waste treatment,[61] which is directly applicable. Leaving aside the EU regulation, which is identical for all member states and addresses to entities that are required to obtain an integrated permit, it is worth presenting the basic assumptions of the national system. They apply to entities operating installations below the capacity threshold required for obtaining an integrated permit, and the resulting prohibitions mainly concern the prevention of odour nuisance.

The purpose of § 12 of this regulation is, among other things, to prevent the odour nuisance experienced on neighbouring properties, the source of which is biodegradable waste.[62] According to this regulation, bio-waste shall be stored only in premises, including storage halls, equipped at least with: ventilation systems and ventilation devices that limit, in particular, the penetration of dust into the air, as well as possible odour nuisances, and high-speed gates. It is permissible to store bio-waste outside the premises in sealed containers, containers or tanks – in case the storage time does not exceed 7 days.

Another category of risk, deeply analysed by the doctrine, not directly related to bio-waste management, but to reporting to EU institutions, concerns the calculation of recycling levels from individual composters. As emphasised in the literature,[63] in accordance with the obligation set forth in the Act on Maintaining Cleanliness, the mayor is obliged to prepare an annual report on the implementation of tasks in the field of municipal waste management by 31 March. According to the new method of calculating the achieved level of preparation for reuse and recycling from 2021, the aforementioned level is calculated as the ratio of the mass of municipal waste prepared for reuse and recycled to the mass of municipal waste generated. Therefore, all fractions of waste, including bio-waste composted "at the source" can be included in the calculation of the level achieved. This means that higher levels of preparation for reuse and recycling of municipal waste can be demonstrated. However, to count bio-waste composted at the source among the required levels, specific prerequisites must be met, as indicated in the regulation on

59 | Bril and Rydygier 2020, 60.
60 | OJ. 2020, item 1742.
61 | Commission Implementing Decision (EU) 2018/1147 of 10 August 2018 establishing the best available techniques (BAT) conclusions for waste treatment under Directive 2010/75/EU of the European Parliament and of the Council (notified under document number C (2018) 5070).
62 | Haładyj 2022, online.
63 | Badach et al. 2024a, 31.

how to calculate levels of preparation for reuse and recycling of municipal waste.[64] To consider bio-waste as recycled waste, one of the following three methods for determining the weight of waste composted by residents in home composters must be adopted: direct measurement, indirect measurement, or a combined method.[65] In the case of direct measurement, which is the recommended method of calculation, it would be necessary to calculate the mass of bio-waste that has been placed in the composter, that is, by residents who compost bio-waste in home composters, which obviously raises controversy about the reliability of the measurements carried out and, thus, the risk of their questioning by EU institutions. At the same time, empirical studies indicate that considering composting at the source, a proper sampling methodology[66] is possible and can significantly facilitate the achievement of recovery and recycling levels by the municipality.[67]

5. Summary

In conclusion, although the general trend in the collection of bio-waste and its treatment pros is positive, den Boer and Szewczyk emphasise that the problem is represented by the underdeveloped legal conditions relating especially to the management of bio-waste and the possibility of using the final treatment products (composts, digestates).[68] Another barrier, in their opinion, is often the lack of demand for the product produced, that is, non-compliant compost classified under code ex 19 05 03 for certified plant support or even compost. Additionally, the procedure for obtaining a decision from the Minister of Agriculture and Rural Development takes up to two years and entails substantial costs.

The level of education of the public is also questionable, as the data cited in the study indicate that environmental awareness in the area of separating fractions of municipal waste, including bio-waste, is low, and the main instruments of change in this area are, unfortunately, mainly of a punitive nature.[69] There is no doubt that the educational function of the legal liability[70] may result from the need to pay an increased fee, but it is difficult to assess how much the risk of collective responsibility (for all households in a block of flats) promotes and/or demobilises waste segregation. One of the most recent surveys of Poles' environmental awareness conducted by the Zymetria agency on behalf of RLG in February–March 2024 showed that only 40% of respondents separate all waste into five

64 | Regulation of the Minister of Climate and Environment of 3 August 2021 on how to calculate levels of preparation for reuse and recycling of municipal waste (Journal of Laws, item 1530).
65 | Ministry of Climate and Environment 2023b.
66 | Badach et al. 2024b, 65.
67 | Płonka et al. 2025, 201.
68 | den Boer and Szewczyk 2019, online.
69 | On the relationship between Polish waste law and criminal law, see Wielec 2024, 307–328.
70 | Danecka and Radecki 2024, 106.

fractions, while 14% do not separate at all or do so in a highly selective manner.[71] Therefore, to achieve the municipal waste management goals, including bio-waste management, the key to success is awareness raising. As such, we need to focus on information-based policy instruments, not penalties in the future. Weiss and Tschirhart found information-based policy instruments to be substantive tools for eliciting desired policy outcomes.[72] However, research confirms that environmental awareness is not the sole driver of environmentally friendly behaviours. Both a desire to care for the environment and economic consideration play similarly significant roles in influencing respondents' actions.[73] However, by supplying a target audience with information, policymakers seek to influence their thinking, knowledge, or beliefs toward a particular behaviour, and thereby increase the attainment of desired policy goals.[74] In other words, information about segregation rules might be seen as a policy tool necessary to achieve goals of the waste management hierarchy, including both prevention of bio-waste and its selective generation and collection. An interesting solution, but for the time being of a purely pilot nature, are the so-called smart trash shelters. These are devices that open to barcodes read from bags, including data on the resident and type of waste. Stickers with barcodes are given to residents in their mailboxes; the barcode opens only a specific sorter; on this basis, it is possible to directly determine who threw mixed waste into the container, without giving it to sorting.[75] The effects of such pilot solutions seems to be interesting, but require further research.

71 | Electro3000 2025.
72 | Weiss and Tschirhart 1994, 92.
73 | Podkowińska 2025, 69.
74 | Weiss 2002, 251.
75 | Portal Samorządowy 2025.

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Analysis of a Separate Biodegradable Waste Collection System and Best Practices in the Czech Republic[3]

Abstract

This article describes the Czech Republic's system of separate collection of biodegradable municipal waste. Given the limited scope of the article, we focus on bio-waste, according to Article 3(4) of Directive 2008/98/EC of the European Parliament and the Council of 19 November 2008 on waste and repealing certain Directives as they constitute the vast majority of biodegradable municipal waste, while the remaining portion of biodegradable municipal waste (particularly textiles made from natural fibres) is subject to an entirely different method of processing. In the first section, we analyse the legal framework for separate collection of biowaste in the Czech Republic and the establishment of the system. The next sections describe the relevant strategies and plans. We then focus on the treatment of separately collected bio-waste in the Czech Republic. We also examine the various measures aimed at motivating citizens (financial instruments, awareness-raising, information campaigns). Subsequently, we focus on the problematic aspects of the legal regulation. Analysing the literature dealing with this issue in the Czech Republic, we present the health risks and other problems that are frequently encountered in practice and the measures to mitigate or avoid them.

Keywords: Waste, Czech Republic, Separate Collection, Biodegradable Municipal Waste, Waste Management Plans, Czech Waste Act, PAYT

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1. Introduction

This article describes the Czech Republic's system of separate collection of biodegradable municipal waste. Due to the limited scope of the article, we focus on bio-waste according to Article 3(4) of the Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives (hereinafter the 'Waste Framework Directive') as they constitute the vast majority of biodegradable municipal waste, while the remaining portion of biodegradable municipal waste (particularly textiles made from natural fibres) is subject to an entirely different processing method.

In the first few sections, we analyse the legal regulation of separate collection of biowaste in the Czech Republic and the operation of the system for separate collection of bio-waste. The next sections describe the relevant strategies and plans. Next, we analyse the treatment of separately collected bio-waste is ensured in the Czech Republic. We pay also study the various measures that motivate citizens (financial instruments, awareness-raising, information campaigns). Subsequently, we focus on the problematic aspects or gaps in the legal regulation. Based on our analysis of the literature dealing with this issue in the Czech Republic, we present the health risks and other problems that are most frequently encountered in practice and the various measures that are implemented to mitigate or avoid them.

2. A legal framework for the separate collection of bio-waste

2.1. International law

Currently, the Czech Republic is not a party to any binding international treaties that directly affect the system of separate biowaste collection.

The most important international treaty regulating waste management is the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, adopted in 1989. This convention addresses biowaste only marginally, and only in cases where the biowaste possesses hazardous properties, applying exclusively to the transportation of such waste.

Several legally non-binding agreements address the domain of separate collection of biowaste or prevention of its generation, including recommendations from various international organisations.

For example, the United Nations Transforming our world: the 2030 Agenda for Sustainable Development, Resolution A/RES/70/1, in addition to requiring sustainable use of resources and prevention of waste leakage into the environment, sets Target 12.3, which aims to halve food waste by 2030.

In 2015, the United Nations Environment Programme (UNEP) issued the Global Waste Management Outlook, which highlights the benefits of separate biowaste collection and composting.

2.2. European law

The regulation of a separate biodegradable waste collection system and subsequent handling of such waste in the Czech Republic, as in other European Union (EU) member states, is based on the obligations established by European legislation.[4]

2.2.1. Waste Framework Directive

The term bio-waste is defined in Article 3(4) of the Waste Framework Directive as: "biodegradable garden and park waste, food and kitchen waste from households, offices, restaurants, wholesale, canteens, caterers and retail premises and comparable waste from food processing plants".

A different term is used in the Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste (hereinafter the 'Landfill Directive'), which uses the term biodegradable waste, defined as: "any waste that is capable of undergoing anaerobic or aerobic decomposition, such as food and garden waste, and paper and paperboard".

This term is broader and includes all materials that are subject to biological decomposition. Thus, it encompasses all bio-waste, as defined in the Waste Framework Directive. As a result, the obligations relating to biodegradable waste under the Landfill Directive apply to all bio-waste.

The Waste Framework Directive defines the term separate collection of waste in Article 3(11) as: "the collection where a waste stream is kept separately by type and nature so as to facilitate a specific treatment".

The key provision requiring the establishment of a separate collection system for bio-waste in the EU law is Article 22 of the Waste Framework Directive. According to this Article, member states shall ensure that by 31 December 2023, bio-waste is either recycled at the source (composted) or collected separately and is not mixed with other types of waste.

Theoretically, the obligation to collect bio-waste separately arose from the general provision in Article 10(1) and (2) of the Waste Framework Directive. According to this provision: "Member States shall take the necessary measures to ensure that waste undergoes preparing for re-use, recycling or other recovery operations and where necessary to facilitate or improve preparing for re-use, recycling and

4 | For an overview, see e.g. Thieffry 2021, 231–251.

other recovery operations, waste shall be subject to separate collection and shall not be mixed with other waste or other materials with different properties".

Bio-waste collection is a separate system and is essential to enable subsequent recycling. Contamination with other waste renders the resulting compost or digestate unusable. Nevertheless, Article 22, with its specific deadline for the latest possible implementation of separate bio-waste collection, should be considered a special legal provision. Thus, Member States fulfilled their obligation by introducing a separate bio-waste collection system from 1 January 2024.

2.2.2. Landfill Directive

For implementing a separate bio-waste collection system in the Czech Republic, a key obligation was the mandate to reduce the amount of biodegradable municipal waste in landfills, as set out in Article 5(1) and (2) of the Landfill Directive.

According to these provisions, member states were required to reduce the amount of biodegradable waste sent to landfill versus its total production in 1995. States that landfilled more than 80% of their municipal waste during 1995 were allowed to extend the deadlines for fulfilling this obligation.

Thus, for the Czech Republic, this provision implied the obligation to ensure that by 2010, only an amount of biodegradable municipal waste equivalent to 75% of the 1995 levels could be landfilled; however, this amount had to be reduced to 50% by 2013 and to 35% by 2020.

2.3. Development of legislation in the Czech Republic

Since the 1990s, waste producers (legal entities and self-employed individuals whose activities generated waste, and municipalities in the case of waste handed over by private individuals) were required to classify waste according to its type and category, and to separately collect waste belonging to different types.[5] In the case of bio-waste, it includes waste types 20 01 08 biodegradable kitchen and canteen waste, 20 01 25 edible oil and fat, and 20 02 01 biodegradable waste.[6]

Typically, this obligation was fulfilled by producers when they produced bio-waste as part of their main activity (e.g., restaurants, park maintenance). Very

5 | This obligation originally arose from Section 5(1)(e) of Act No. 125/1997 Coll., on Waste, as in force on June 10, 1997, and was subsequently provided for in Section 16(1)(e) of Act No. 185/2001 Coll., on Waste, as in force on June 14, 2001. Currently, a similar obligation is imposed on everyone under Section 13(1)(c) of Act No. 541/2020 Coll., on Waste.

6 | According to Decree No. 8/2021 Coll. on the Catalogue of Waste and Assessment of Waste Properties (Waste Catalogue) that implements Commission Decision 2000/532/EC of 3 May 2000 replacing Decision 94/3/EC establishing a list of wastes pursuant to Article 1(a) of Council Directive 75/442/EEC on waste and Council Decision 94/904/EC establishing a list of hazardous waste pursuant to Article 1(4) of Council Directive 91/689/EEC on hazardous waste. Since 1 January 2025, Decree No. 8/2021 Coll. specifies a sub-type: 20 01 08 01 biodegradable kitchen and canteen waste of plant origin.

often, in the case of waste generated by ordinary individuals—whether employees of waste producers, customers, or residents of municipalities—this waste ended up (and still partially ends up) in mixed municipal waste or bulky municipal waste. It is quite common to burn garden waste at the place of origin.

A major amendment was observed in 2014 with Act No. 229/2014 Coll., which amended Act No. 185/2001 Coll., on Waste. This amendment introduced an obligation for municipalities to provide disposal sites for biodegradable waste. The implementing regulation, Decree No. 321/2014 Coll., on the scope and method of ensuring a separate collection of components of municipal waste, specified in Section 2(1) that it would be sufficient for municipalities to provide sites at least for plant-based bio-waste during the period from April 1 to October 31.

The Czech Republic introduced this obligation in 2014 because it failed to meet the target for reducing the amount of biodegradable waste landfilled in 2013, as mandated under Article 5(1) and (2) of the Landfill Directive.[7] The main reason for this failure was the large amount of biodegradable waste in mixed municipal waste, and the large quantity of mixed municipal waste being landfilled.

A further tightening of the obligation to provide sites for the separate collection of biodegradable waste arose in 2018, when the amendment Decree No. 210/2018 Coll. introduced a requirement to provide sites for the disposal of plant-based biodegradable waste throughout the year. In addition, it introduced an obligation to provide a site for separate collection of edible oils and fats.[8]

2.4. Current legal regulation of separate collection of bio-waste in the Czech Republic

2.4.1. Obligation to implement a separate bio-waste collection method

The obligation to ensure a separate bio-waste collection system has been established separately for municipalities, legal entities, and self-employed natural persons who are waste producers.

The basic obligation for municipalities to ensure sites for separate collection of bio-waste was incorporated into Act No. 541/2020 Coll., on waste (hereinafter the 'Waste Act') and its implementing decree from the previous legislation.

2.4.1.1. Obligations of municipalities

Section 59(2) of the Waste Act requires that municipalities designate sites for the separate collection of municipal waste, specifically hazardous waste,

7 | Ministry of the Environment 2014, 2.

8 | On the circular economy and the relationship between waste management and human rights, see also: Vomacka 2024, 283–306 and Kannowski-Ngaiza 2022, 55–93.

paper, plastics, glass, metals, bio-waste, edible oils and fats, and for textiles from 1 January 2025.[9] According to Section 34 of Decree No. 273/2021 Coll., on Details of Waste Management (hereinafter the 'Decree on Details of Waste Management'), it is sufficient if the municipality ensures sites at least for bio-waste of plant origin.

The Decree, alternatively, allows municipalities to fulfil the obligation to designate sites for bio-waste of plant origin by introducing a community composting system within their territory for depositing all plant residues produced within the municipality. However, this does not refer to community composting as the term is commonly understood. It refers to a specifically designed system for collecting plant residues, including kitchen plant waste, followed by transporting to one or more centralised composting facilities operated within the municipality. The requirements for such a system are defined in Sections 65 and 66 of the Waste Act.

2.4.1.2. Obligations of legal entities and self-employed natural persons

Legal entities and self-employed natural persons who allow waste to be deposited at their business premises must, under Section 62(1) of the Waste Act, ensure sites for the separate collection of paper, plastics, glass, metals, and bio-waste. The Ministry of the Environment has issued a methodological guideline regarding Section 62(1).[10] Regarding bio-waste, the guideline distinguishes between two situations:

In cases where bio-waste is generated as part of the business operation (e.g., a restaurant or fast-food establishment), the operator must ensure separate collection of bio-waste, including the animal fraction (if food contains animal products).

Conversely, if waste bins are intended only for waste produced by employees or customers and not the operation itself, it is sufficient for the legal entity or self-employed person to ensure separate collection of bio-waste that is of plant origin.

2.4.2. Requirements for the method and scope of separate collection of bio-waste

The Decree on Details of Waste Management defines the basic methods that municipalities can adopt to ensure separate bio-waste collection.

(1) Municipalities can designate separate collection of municipal waste components through:

a) collection yards,
b) waste management facilities,
c) large-capacity containers,
d) collection bins,

9 | See also Jakl et al. 2025 commentary on Section 59(2).
10 | Waste Management Department of the Ministry of the Environment 2021.

e) a bagged collection system, or
f) a combination of methods listed from a) to e).

When selecting any of these methods, the municipality must also meet the general requirements for waste collection containers under Section 5 of the Decree on Details of Waste Management.

Methodological guidelines from the Ministry of Environment[11] endorses an order to ensure the highest possible material purity, no waste should be placed in containers for separate collection of bio-waste in bags, including bags labelled as 'compostable' or 'biodegradable'. Interestingly, a study prepared for the Ministry of the Environment recommends using biodegradable bags for kitchen waste, particularly during the winter months, when the air may facilitate emptying collection containers.[12]

Czech legal regulations do not include any additional requirements on how the separate collection of bio-waste must be implemented. There are no binding rules regarding the number of collection sites relative to the number of inhabitants or walking distance. In principle, a municipality may formally fulfil its obligation by establishing a single site with sufficient capacity to accommodate the bio-waste generated across its territory. The Waste Act and its implementing regulations leave the choice of system design entirely to each municipality.

2.4.3. A legal framework for establishing an effective system for separate collection of bio-waste

As outlined above, the fact that municipalities implement an effective system for separate collection of recyclable waste, including bio-waste, is not directly guaranteed by the legal requirements governing the system design. The effectiveness of separate bio-waste collection is driven by other instruments and obligations, the most important being landfill fees and binding targets for the separate collection of recyclable municipal waste.

2.4.3.1. Landfill fees and landfill ban

Landfill fee is regulated under Section 103 and Annex No. 9 of the Waste Act. Increased fee applies to the landfilling of waste which recyclable or biodegradable or exceeds a calorific value of 6.5 MJ/kg of dry matter (this also includes mixed municipal waste and bulky waste). This fee is expected to increase until 2030.[13] In parallel, a ban on landfilling any recyclable waste, waste with a calorific value

11 | Waste Management Department of the Ministry of the Environment 2022, 2.
12 | Maxová 2023a, 81.
13 | In 2025, the amount is CZK 1,500 per tonne, and it is expected to gradually increase to CZK 1,800 per tonne by 2029.

exceeding 6.5 MJ/kg of dry matter, or waste that does not meet the required level of biological stability is will also be forced.

Under Section 157 and Annex No. 12 of the Waste Act, municipalities are allowed to landfill a limited quantity of such waste per capita at a reduced fee.[14] However, this quantity is expected to gradually decrease by 2030, thereby motivating municipalities to reduce the total volume of residual mixed municipal waste.[15]

2.4.3.2. Binding targets for separate collection of recyclable municipal waste

The second instrument designed to ensure that municipalities implement a separate collection system for bio-waste is the binding target for the separation of recyclable components of municipal waste, as specified in Section 59(3) of the Waste Act.

From 2025 onward, municipalities must ensure that the separately collected recyclable waste constitutes at least 60% of the total municipal waste generated within the municipality (from 2025), 65% from 2030, and 70% from 2035.

The explanatory memorandum to the draft Waste Act makes it clear that these targets are intended to strengthen the process of separate collection of bio-waste, including waste containing animal content.[16] Without implementing an effective system of separate bio-waste collection, municipalities will not be able to meet these targets.

2.4.4. Legal provisions affecting the implementation of separate collection of bio-waste

2.4.4.1. On-site composting

Article 22 of the Waste Framework Directive requires that Member States ensure the separate collection of bio-waste, or that such waste is recycled at the place of origin. In this context, recycling at the place of origin refers to composting. Articles 11a (4) and 11a (9) stipulate that bio-waste composted on-site may be counted towards meeting the recycling targets for municipal waste, as set out in Article 11(2)(c), (d), and (e) of the Directive. The specific method of target calculation is defined in Annex II of Commission Implementing Decision (EU) 2019/1004.

14 | The rate is CZK 500 per ton, and this rate will not change until the end of 2029.

15 | This year, the figure is 0.16 tonnes per inhabitant of the municipality; in 2026, it is projected at 0.15 tonnes, in 2027 0.14 tonnes, in 2028 0.13 tonnes, and in 2029 0.12 tonnes.

16 | Ministry of the Environment 2019, 157. "Without appropriate sorting of biowaste, it will not be possible to achieve the targets. The amount of sorted biowaste should increase, which is confirmed by the data from 2015–2017. With increasing targets, it will also be necessary to sort biowaste containing animal components, which is particularly suitable for processing in biogas plants. This should further contribute to meeting the targets in the field of renewable energy sources."

The Czech Waste Act does not consider composting of biological material at the place of origin as waste management. According to Section 12(3) of the Waste Act, it is considered waste prevention. Currently, the Czech Republic does not include bio-waste composted on-site in its national recycling targets, nor does it allow municipalities to include such composting in their targets for separate collection of recyclable municipal waste.

However, a change in this approach may occur in the upcoming years, as suggested in the explanatory memorandum to Section 59 of the Waste Act: "The Ministry will also consider whether to allow municipalities that support home composting to count such composted biological material towards their recycling targets. The rationale is to prevent municipalities from encouraging citizens to submit all biological material to the municipal separate collection system, as this would simplify the municipality's compliance with recycling targets. Home composting, within the framework of waste prevention, is a more appropriate method of waste handling. Any such inclusion must be in accordance with the EU decision on recycling target calculations".[17]

2.4.4.2. Burning of plant waste at the site of origin

In the Czech Republic, the practice of burning plant waste from gardens, agriculture, and forestry at the site of origin persisted until March 1, 2025. This practice significantly impacted the amount of bio-waste that residents handed over to the municipal separate collection system. However, such handling of bio-waste did not comply with the requirements of Article 22 of the Waste Framework Directive.

Although this practice did not comply with the Waste Act, it was allowed under Section 16(4) and (5) of Act No. 201/2012 Coll., on Air Protection, which permitted it for dry plant material regardless of whether it conforms with the definition of waste.[18] The conflict between these legal provisions was resolved by a parliamentary amendment that clarified in Section 16(5) of the Air Protection Act that this provision does not apply to waste management.[19]

From 1 March 2025 onward, the general ban on waste management outside designated facilities, as stated in Section 13(1)(b) of the Waste Act, prohibits burning of plant waste in gardens. Exceptions to this ban include burning for the purpose of controlling harmful organisms under Section 38 of the Forest Act, or under extraordinary phytosanitary measures pursuant to Section 67 of the Act on Plant Health Protection.

The ban does not apply to purposeful burning of wood for activities such as cooking, provided such material does not meet the definition of waste.

17 | Ibid.,182.
18 | See also Bejčková 2018 commentary on Section 16(4)
19 | Act No. 42/2025 Coll., amending Act No. 201/2012 Coll., on air protection, which came into force on 1 March 2025. See also the Ministry of the Environment 2025.

3. Separate collection of bio-waste in czech municipalities

As mentioned earlier, legislation does not set out detailed conditions for implementing separate collection of bio-waste. A municipality formally fulfils its obligation if it provides at least one collection site, for example, at a collection yard, with sufficient capacity.

Currently, comprehensive data are not available on how separate bio-waste collection systems are established across Czech municipalities.[20]

According to a study commissioned by the Czech Ministry of the Environment for establishing support under the subsidy programme, most municipalities provide separate collection only for plant-based bio-waste. Pilot projects are underway in a few cities to separately collect kitchen bio-waste containing animal-derived components.[21]

The collection systems are organised in two main ways:

- Drop-off system – using larger containers placed at collection sites or yards.
- Door-to-door collection – using smaller bins near households, regularly emptied by collection vehicles.

The methodological guideline of the Ministry of the Environment's Waste Department outlines the options for establishing separate bio-waste collection systems – both in terms of technical requirements and combinations of plant- and animal-based waste.[22]

This guideline specifies that even if a municipality collects only plant-based waste or fulfils its obligations through community composting, it must also collect plant-based kitchen waste, and not just garden waste.

If a municipality decides to collect animal-based waste as well, it can configure the system in several ways. The specific setup always depends on the final processing facility or facilities that are competent to manage the waste, especially the capacity to process waste containing animal components.[23]

Possible configurations include:

1. Combined collection of all plant and animal waste
2. Separate collection of plant and animal waste
3. Separate garden waste collection and combined collection of plant- and animal-based kitchen waste.

20 | In this regard, the situation should change next year, when municipalities will be obliged to submit reports on the municipal system according to the expanded sheet 5 of Annex No. 13 to Decree No. 273/2021 Coll., on the details of waste management. Sheet 5 also includes detailed information on the operation of a separate bio-waste collection system.
21 | Maxová et al. 2023a, 62.
22 | Waste Management Department of the Ministry of the Environment 2022, 1–2.
23 | See part 5.2 of this article.

In practice, a wide range of combinations of the above-mentioned methods of organising separate collection may occur – and indeed do occur. This includes variations in the types of waste that are collected separately, and the system or method of collection, that is, whether through a drop-off system or a door-to-door system.[24]

4. Strategies and plans

The system of separate collection of biowaste has been fundamental in waste management plans since the beginning. The development of waste management plans was preceded by provisional documents developed in the 1990s: the Waste Management Programme (1995) and the Waste Management Concept (1999). These strategies did not address the management of biodegradable waste.

It was not until the 2001 Waste Act that waste management plans were required at the national and regional level. The current Waste Act has replaced this system. Waste management planning is to be conducted in ten-year cycles. Each plan contains an analytical part (describing waste generation and waste management in the Czech Republic) and a binding part (setting waste management objectives and methods to achieve these objectives). However, there have always been delays in the preparation and adoption of plans for the following period. Therefore, we describe biodegradable waste management in the plan for the period from 2003 to 2014 (which was extended by one year), the plan is still operational for the period from 2015 to 2024 (which will also be extended by at least a few months), and the draft of the new plan for the period from 2025 to 2035.

As regional waste management plans are based on the national plan and must not contradict it, they are not discussed further in this article. From 2021 onward, municipalities were no longer obliged to prepare waste management plans. Nevertheless, large cities adopted their own strategies with a broader focus: for instance, Prague Climate Plan 2030 recognises that bio-waste, which constitutes about 40% of household waste, is still only minimally utilised, although Prague has facilitated the collection of plant-based bio-waste and is expanding the capacity of its composting facilities.

The first Waste management plan was prepared on schedule and approved in 2003. Its binding part was issued as Government Decree No. 197/2003 Coll. The analytical part, including an assessment of the state of waste management, was published in the Bulletin of the Ministry of the Environment in October 2003. Although the binding part was amended in 2009, the changes were minor and did not affect bio-waste management even indirectly. On page 12, the plan briefly states that the introduction of a system of separation and subsequent recovery of biodegradable

24 | The issue of the optimal configuration of this combination is examined in detail in the second phase of the aforementioned study commissioned by the Ministry of the Environment. Maxová et al. 2023b.

waste is one way of reducing the waste going to landfill, as required by the Landfill Directive. On page 29, the plan indicates that only a few highly developed countries and regions had introduced separate collection systems for biodegradable waste. However, the plan rightly considered that one of the main problems of waste management in the Czech Republic was insufficient collection of separated waste in the commercial and civil sectors (in the case of municipal waste, it specifically mentioned bio-waste along with hazardous waste and plastic waste). The objectives were also consistent with this analysis. The main goal was to create conditions for separate collection of different types of biodegradable waste from households, businesses, industry, and public authorities. In addition, the Czech Republic's Biodegradable Waste Implementation Programme is yet to be developed to comprehensively address the management of biodegradable waste, with a particular focus on reducing the amount of biodegradable waste going to landfills. During the plan period, separate collection of bio-waste in municipalities was voluntary for residents. On the other hand, businesses and legal entities were obliged to collect it separately. The mid-term evaluation confirmed that the most challenging area of municipal waste management would be the development of technologies for separate collection of recyclable components, including bio-waste.

The next waste management plan was estimated to cover the period from 2015 to 2024; however, it is still in force. This plan was adopted prior to mandating separate collection of bio-waste in municipalities. Accordingly, the plan includes the requirement to implement a mandatory system for the separate collection and management of biodegradable waste, at least for plant-based waste in municipalities. This objective was to be achieved through the development of a collection system for bio-waste, with continuous monitoring of separate collection practices. The plan also outlined a strategy of progressively increasing landfill fees for municipal waste so that the amount makes the landfill of recyclable and recoverable waste streams (including those with a biodegradable component) disadvantageous. While the plan originally aimed to ban the landfilling of mixed municipal, recyclable, and recoverable waste by 2024, this was later deferred to 2030 under the Waste Act.

The draft of the new Waste Management Plan (2025–2035) was adopted this year (2025) with the target to increase the separation of bio-waste, including kitchen waste (this measure was mentioned in the previous waste management plan and in its revision in 2022). Therefore, an economically sustainable, accessible, and convenient separate collection of kitchen bio-waste will be introduced for all residents across all municipalities (Measure 3.5.2). An effective system will be achieved by further expanding and improving existing instruments: mainstreaming charging based on the PAYT principle, intensive education and awareness-raising to promote separate collection of bio-waste, rigorous monitoring of the presence of recyclable components in citizens' mixed municipal waste, and support for infrastructure development, including the provision of sufficient bio-waste collection containers and appropriate collection equipment. Therefore, the highest investment in waste

management between 2025 and 2035 (up to 90%) in the development of the collection network for separately collected recyclable waste is expected to derive from the operation of intensive door-to-door systems for paper, plastics, and bio-waste.

It should be noted that waste management plans develop more general strategies. The Biomass Action Plan foresees that 44% energy will be produced from by-products and biodegradable waste. Nevertheless, it does not specify the specific share (importance) of bio-waste. The substitution of purpose-grown biomass in energy production by the biodegradable fraction of municipal waste is also called for in the State Environmental Policy adopted in January 2021. This key strategic document for environmental protection contains several specific targets that promote separate collection of biodegradable waste: target 2.1.3 (increased use of renewable energy sources), target 2.2.2 (maximum waste prevention), and target 2.2.3 (compliance with the waste management hierarchy). It also identifies the existing limitation of insufficient separation of bio-waste, identifying inconsistent sorting as the main reason for bio-waste being disposed of in landfills or incinerators. The Czech Republic's Regional Development Strategy for 2019 has concluded that, particularly in rural areas, there is a lack of sufficient technical infrastructure to meet waste management targets and to enable municipalities to process the separately collected bio-waste.

National circular economy strategic framework (Circular Czechia 2040) mentions that consumers can contribute to the sustainability of the bioeconomy by separating bio-waste from other waste streams.[25] One of the measures of this strategy (No. 14) in waste management (area No. 5) aims to strengthen and expand the collection of biological waste (both plant and animal origin) across the Czech Republic. The introduction of intelligent waste management systems in municipalities (e.g. PAYT incentive principle, door-to-door system) is recommended in the Strategic Framework Czech Republic 2030 (Measure 19.7.i).

5. Legal framework for proper treatment of separately collected bio-waste

If separate collection of bio-waste is successfully implemented, it is also necessary to ensure appropriate subsequent treatment.

5.1. European law

The most appropriate method of handling separately collected bio-waste is derived from the fundamental requirement of the waste hierarchy, as defined in Article 4 of the Waste Framework Directive. The obligation to prioritise recycling

25 | Circular Czechia 2040, 65.

of bio-waste is attributable to the general duty endorsed in Article 10(1) of the same directive.

In the case of separate collection of municipal waste, two key provisions are particularly relevant. First, Article 10(4) of the Waste Framework Directive states that: "Member States shall take measures to ensure that municipal waste and municipal bio-waste that has been separately collected for preparing for re-use and recycling is not incinerated, with the exception of waste resulting from subsequent treatment operations of the separately collected waste for which incineration delivers the best environmental outcome in accordance with the waste hierarchy".

The second provision is Article 5(3)(f) of the Landfill Directive, which imposes a similar restriction for the landfilling of separately collected municipal waste.

Article 22(2) of the Waste Framework Directive explicitly imposes obligations on Member States, specifically regarding bio-waste:

Member States shall take measures in accordance with Articles 4 and 13, to:

a) encourage recycling, including composting and digestion of bio-waste in a way that fulfils a high level of environment protection and results in output which meets relevant high-quality standards;
b) encourage home composting; and
c) promote the use of materials produced from bio-waste

The directive regards home composting, industrial composting, and anaerobic digestion as equivalent methods under the waste hierarchy. If the condition under Article 11a (4) is met, both composting and anaerobic digestion qualify as recycling. Thus, the choice of a specific processing method is left to the discretion of each Member State.

5.2. Legal framework in the Czech Republic

Section 35(3) and Section 36(5) of the Czech Waste Act are the fundamental legal provisions ensuring that separately collected bio-waste is genuinely recycled. These sections implement Article 10(4) of the Waste Framework Directive and Article 5(3) of the Landfill Directive, respectively. According to these provisions, separately collected recyclable waste that can be processed at a higher level of the waste hierarchy may neither be landfilled nor used for energy recovery.

An exception is for the output from mechanical sorting, for which energy recovery or disposal is the only possible management method that is consistent with the waste hierarchy framework. The Decree on the Details of Waste Management states in Table 7.1 of Annex 7 that the maximum share of such output from sorting

of separately collected bio-waste that may be subject to energy recovery is 10%.[26] In the case of landfilling, Table 7.2 of the same annex allows for up to 10% of separately collected municipal bio-waste to be landfilled, decreasing to 5% by 2030.

Thus, up to 20% of waste may currently be subject to energy recovery or disposal after pre-treatment, prior to composting or anaerobic digestion. Disposal typically concerns heavily contaminated material, while energy recovery is used for large wood fractions.

The remaining share of separately collected bio-waste should be processed via recycling, either composting or anaerobic digestion with subsequent utilisation of the resulting digestate.

Sections 69 and 64 of the Waste Act and Sections 44–53 and Annexes 25–30 of the Waste Management Decree regulate the conditions for processing bio-waste in composting facilities and anaerobic digestion plants. These provisions define detailed requirements for facility equipment and for compost and digestate quality, ensuring high output quality and subsequent usability. According to Article 6(4) of the Waste Framework Directive, compost and digestate that meet these criteria are no longer considered waste.

In Section 54, the Decree specifies that the same conditions apply to community composting facilities as to conventional composting plants.

If separately collected bio-waste contains an animal component, it is considered an animal by-product according to Regulation (EC) No 1069/2009 of the European Parliament and the Council of 21 October 2009 establishing health rules for animal by-products and derived products not intended for human consumption, repealing Regulation (EC) No 1774/2002. Any facility that manages such waste must, in addition to a permit under the Waste Act, also have a permit under Act No. 166/1999 Coll., on veterinary care, and fulfil all obligations for animal by-products.

From the perspective of the waste management hierarchy, composting and treatment in a biogas plant are on the same level. The choice of a specific treatment method is, therefore, determined by practical considerations, such as the availability of appropriate facilities. It can also be stated that each treatment method is more suitable for a specific composition of bio-waste. The study prepared for the Ministry of the Environment defines the following types of separately collected bio-waste and assigns appropriate treatment methods to them.[27]

- Garden plant bio-waste – composting.
- Household bio-waste containing both plant- and animal-based materials, excluding plant residues from gardens – anaerobic digestion in a biogas plant equipped with a sanitation unit for animal by-products.

26 | As stated above, the use in biogas plants is not considered energy recovery, but as recycling, provided that the resulting digestate is used materially as a fertiliser.
27 | Maxová et al. 2023a, 95.

- Plant-based bio-waste containing the plant-based fraction of both 'household bio-waste' and 'garden bio-waste' – composting.
- Animal-based bio-waste – anaerobic digestion in a biogas plant with a sanitation unit for animal by-products.
- All bio-waste – both 'household bio-waste' and 'garden bio-waste'. The appropriate treatment technology is an enclosed composting facility with controlled air circulation and temperature regulation, maintaining temperatures above 70 °C. However, due to the legislative requirement to shred all the material containing animal by-products, this treatment method is currently economically impracticable.

6. Measures to encourage citizens to separate biodegradable municipal waste

The Czech Republic does not have a uniform, nationwide strategy to motivate residents in municipalities to sort their biodegradable waste. Instead, each municipality uses its own combination of instruments. They can create a system that works best for their own situation, considering people's behaviour, nature of the settlement area, and dedicated facilities where the waste can be processed.

International organisations recommend the broad application of a fee based on the amount of waste generated (PAYT schemes).[28] When a municipality uses this system, residents are motivated to sort their waste because they do not pay for the collection of sorted waste components. In fact, the charge is only for collecting mixed municipal waste, which should not contain other recyclable components. Previously, some authors have warned that this type of fee charging would encourage citizens to engage in illegal waste management: incineration or black dumping.[29] However, these fears did not materialise, and these reservations are currently unknown. The PAYT schemes used in the Czech municipalities probably motivate people to increase waste separation and not dispose of the waste in questionable ways.[30] The Czech Act No. 565/1990 Coll., on Local Fees allows for the collection of payments from residents based on the weight (in kilograms) or volume (in litres) of mixed municipal waste generated. Technically it is quite difficult to weigh and measure the waste generated (although this is being done in many municipalities), and it is more common to pay according to the capacity of the containers ordered and collected.[31]

28 | OECD Environment Policy Paper no. 27: Towards a National Strategic Framework for the Circular Economy in the Czech Republic 2021, 58.
29 | Slavík et al. 2015, 60.
30 | Struk 2017, 161.
31 | For more information, see e.g. Těžký, Hasil Edelmanová & Jantoš, 116–167.

Unfortunately, there are no data on the number of municipalities that apply the PAYT fee described above. However, as they are certainly still a minority: it is estimated that the PAYT system covers about 20 % of the population,[32] and 10–15 % of municipalities. Of the regional cities with a total population of around 2 million, only the metropolitan city of Prague uses this fee (in fact, it has always used this system and is the largest city in the Czech Republic; therefore, the size of the municipality per se is not a reason for not using the PAYT system. Most residents, therefore, pay a fee per the rate structure fixed by the municipality where they are registered as residents. The fee amount does not depend on the amount of waste generated by the resident (taxpayer). It is, therefore, a per capita payment that does not directly motivate anyone to sort waste. Although the sorting rate impacts a municipality's waste management costs that the fee is expected to cover, this indirect outcome is not considered as a motivating factor.

However, even in a flat-rate system, the municipality can give an advantage to citizens who sort biodegradable waste or compost plant-based bio-waste. For such citizens, it is possible to reduce the fee: for example, based on the amount of recyclable waste sorted. However, these discounts are more often applied to plastic, paper, or glass waste.

The most common form of economic support for residents is the provision of composters on favourable long-term conditions. Various subsidy programmes have supported the purchase of composters by municipalities or NGOs, most often the Operational Programme for the Environment. Municipalities usually lend composters to residents free of charge, on the agreement that they will become owners of these bins after five years or more.

In fact, municipalities themselves are increasingly financially motivated to collect biodegradable waste separately. In the past, this was based on financial support to improve the collection system (purchase of containers, collection equipment, pilot projects) and the processing capacity for sorted biodegradable waste (establishment of composting or biogas plants). This strategy will continue, because The National Recovery Plan supports establishing infrastructure for separate collection of bio-waste (Component 2.7.1.1). Later, negative incentives were introduced. Since 2021, the landfilling fee for recyclable waste, which includes biodegradable waste, has been increased annually. Therefore, it is more profitable for municipalities and residents to sort as much waste as possible and landfill only non-recyclable mixed municipal waste. The importance of an increased landfilling fee is considered essential in the Czech Republic for over a long time.[33]

Consistent with the Czech theory, we do not consider penalties for illegal behaviour as an economic instrument, even though they have negative financial

32 | Early warning assessment related to the 2025 targets for municipal waste and packaging waste 2022,27.
33 | Závodská, et al. 2014, 143.

consequences for municipalities.[34] As shown below, the last time a municipality was fined for a non-functioning separate collection system was in 2019.

Sufficient information and continuous education of citizens is a necessary condition for a well-functioning separate bio-waste collection system. This fact was already recognised and confirmed in the first pilot projects at the beginning of the 21st century (e.g. excursions to waste management facilities in Vysoké Mýto in 2006, where separated waste is managed proved successful).[35] However, some studies, such as Slavík & Rybová & Dolejš, have shown that the additional information campaign could not replace the absence of social norms in the long-term.[36]

Communication with citizens should be thorough, non-violent, and concrete. In small municipalities, the behaviour of mayors, who are important opinion leaders, is crucial.[37] Residents must be informed in advance about the introduction of bio-waste separation.[38] Communication must be intensive at the time of introducing the new sorting system. However, communication with residents must be ongoing,[39] and all available communication channels must be used. Research conducted in more than 500 municipalities in Southern Moravia indicates that people are more likely to collect bio-waste separately if they are involved in the process of designing the system in their village or city.[40] A good example are the results of the bachelor's thesis,[41] wherein the author conducted a repeated questionnaire survey in the municipality of Rašovice. In this municipality, besides the traditional methods of communication (discussion with citizens, municipal newsletter, leaflets), the video of a popular youtuber (influencer) was most effective.[42] These conclusions from Czech municipalities corresponds with the aspects highlighted in European guidelines.[43]

At a time when municipalities had to introduce a separate collection system for bio-waste, it was criticised that there was no unified communication strategy for the management of organic materials in the Czech Republic.[44] This led to different results in different municipalities. Unfortunately, the situation has not changed much since then. Municipalities share their experiences, but each municipality can inform its residents in different ways. Even the labelling of collection bins is not standardised, although brown bins are commonly used for bio-waste. Therefore, the proposal of Waste Management Plan 2025–2035 is

34 | Jančářová et al. 2016, 585.
35 | Tupec 2006, 17.
36 | Slavík, Rybová & Dolejš 2019, 44.
37 | Pich 2020, 14.
38 | Tvrdíková 2021, 30.
39 | Šestáková 2023, 11.
40 | Struk, Hřebíček & Horsák 2016, 9.
41 | Novák 2024, 15.
42 | Ibid.
43 | E.g. Brambilla, et al. 2024, 32.
44 | Hodek 2014, 17.

to impose a duty to create a unified Communication Strategy in municipalities. However, targeting information campaigns is not an easy task when residents who do not recycle represent a heterogeneous segment of the population and, moreover, people who are willing to recycle require different information than people who do not recycle.

For all municipalities, the only obligation is to inform residents, at least once a year, about the methods and extent of separate collection of municipal waste, recovery and disposal of municipal waste, and the options available to prevent and minimise the generation of municipal waste. Municipalities must also publish annually the results of municipal waste management, including the costs of operating the municipal system [see Section 60(4) of the Waste Act]. Aiming to ensure that all municipalities comply with this obligation in a similar manner, the Ministry of the Environment issued a detailed methodology in 2023.

Awareness-raising activities by NGOs are important and are supported by public funds (mostly by the State Environmental Fund). For example, the #Live-Komposty campaign was launched in 2019 to promote waste sorting (e. g. through videos made by Czech celebrities). The authorised company EKO-KOM, which provides packaging take-back for retailers, has been supporting municipalities for over long time: in addition to promoting waste sorting through commercials and special websites, it creates a large number of information materials for municipalities (in Czech and foreign languages).

7. Problematic aspects of the legal framework

7.1. Absence of mandatory separate collection of animal-based bio-waste

The definition of bio-waste in the Waste Framework Directive includes bio-waste of animal origin. It is thus unclear if by allowing municipalities to organise separate collection only for plant-based bio-waste, the Czech Republic fully complies with the obligation defined in Article 22 of the directive.

In autumn 2024, the Ministry of the Environment attempted to introduce a change. A proposed amendment to the Waste Management Decree included a change to Section 34, which would require municipalities to separately collect animal-based bio-waste starting January 1, 2026.[45] However, this requirement was removed from the final version of Decree No. 18/2025 Coll., published in the Collection of Laws. The main reasons were objections from municipal associations citing the short implementation timeline and lack of sufficient biogas plants capable of processing such waste.[46]

45 | Ministry of the Environment 2024a, 1.
46 | Svaz měst a obcí České republiky 2024, 3–4.

In its response to the objections, the Ministry stated it would present a compromise amendment in early 2025, postponing the obligation to January 1, 2028, and with an exemption for municipalities with fewer than 2,000 residents.[47]

As of this article's date of completion, no new proposal has been submitted by the Ministry of the Environment.

7.2. Lack of binding requirements for collection network coverage

As previously mentioned, municipalities can fulfil their obligation to ensure places for separate collection of bio-waste by providing just one collection site. Even though this rarely happens in practice, the actual density of the collection network often does not allow for convenient waste separation by residents. While other instruments support denser collection systems, a specific binding requirement (e.g. a walking-distance criterion) could significantly improve public access to bio-waste collection sites. As mentioned above, the Czech Republic relies primarily on binding targets for the separate collection of biowaste. Considering the large amount of bio-waste of plant origin, this will certainly lead to a more consistent waste collection system. These targets may not be effective for introducing a consistent system for collecting bio-waste of animal origin, unless they are adjusted and the defined targets are set individually for each type of waste.

7.3. A limited possibility of control over compliance with obligations

The Waste Act allows for imposing penalties for incorrect sorting of recyclable waste. However, it is not possible to control whether recyclable waste is correctly sorted and whether it is not disposed of as mixed municipal waste. Owing to the nature of mixed waste, it is difficult to prove if the waste was contaminated before being placed in a mixed municipal waste container. Furthermore, in apartment buildings, where mixed waste containers are shared, it is almost impossible to identify the person responsible for incorrect sorting.

8. Best practices in managing health and other risks

Health risks have been rarely mentioned in the literature. The odour of waste in bins and containers has been discussed more frequently, nevertheless it represents the minority of mentioned problems. The biggest issue is the low quality of the separated biodegradable waste, as this does not allow to use waste as a resource in composting plants.

47 | Ministry of the Environment 2024b, 31.

Recommendations and practical experience confirm that the separate collection of biodegradable waste is affected by its instability and degradability, which is mainly influenced by its composition (the animal component is more problematic) and the temperature of the environment where the collection containers are placed. However, this aspect is rarely discussed in detail. An exception is an article written in 2009 by staff of the National Institute of Public Health, wherein authors describe the reasons for the increased concentration of microorganisms and fungi in biodegradable waste. They also showed that workers who handle the bins (especially waste collectors) are at a higher risk. These risks can best be countered by regular washing and disinfection of the containers.[48] Another common recommendation is to use special containers that allow for ventilation, which reduces the moisture content of the waste and reduces odours and the growth of microorganisms.[49] A necessary organisational measure is to increase the frequency of container transport (especially during the warm season) which, however, could increase the price of collection by tens of per cent.[50] Municipalities, therefore, usually collect bio-waste containers at longer (usually double) intervals in winter. As the decomposition of waste is affected by temperature, it is recommended that kitchen waste be stored in cool rooms or refrigerators[51] and collection bins be placed in areas that are shaded throughout the day (out of direct sunlight).[52]

Residents often cite odour as the reason for not sorting biodegradable waste.[53] Professional studies also suggest that odour and insects, and the reluctance to take waste out of the home daily to outdoor bins, are barriers to better sorting.[54] However, these concerns are not shared by the professional community and do not arise in practice. Otherwise, it is difficult to explain why this aspect is mentioned occasionally.[55]

This becomes even more clear when we consider that difficulties in collecting bio-waste containers during the winter were mentioned much more frequently. In fact, when the outside temperature is very low and the humidity of the bio-waste in the container is high, it may not be possible to empty all the waste because it will freeze in the container,[56] and the containers are also more likely to be damaged.[57] However, these findings have been challenged by the contrary experience.[58]

48 | Zimová & Matějů 2009, 17.
49 | Zemánek, et al. 2010, 35.
50 | Hejč, Hřebíček & Piliar 2005, 13.
51 | Königová 2017, 27.
52 | Vološinová & Kořínek 2023, 18.
53 | Editorial Staff 2023, 11. Identically Makevision. 2018.
54 | Vološinová, Kořínek & Čejka, 2019, 32. Zemánek et al. 2010, 36.
55 | Lochovská 2023, 14.
56 | Hudec 2024.
57 | Chalupová 2019.
58 | Baráková & Hlavenka 2018, 21.

By far the most frequent problem, mentioned in most existing literature in both a positive and a negative sense, is the quality of sorted waste. This is the result of both in-depth pilot projects in towns with more than 10,000 inhabitants (e.g. Bílina in 2005[59] or Kroměříž in 2009[60]) and large regional towns with around 100,000 inhabitants (Pardubice in 2023[61] or Ústí nad Labem, where separate collection of bio-waste had to be stopped in 2021 for this reason[62]), as well as the daily observations of those responsible. An exception is the experience of some towns in the Zlín region, where no major problems have been reported about the cleanliness of the collected material.[63] According to the literature analysed, the problem affects apartment blocks, where there is greater anonymity and conditions for sorting the waste are more difficult than in single-family houses with gardens. Therefore, the literature discusses various measures to improve the quality of sorting in housing estates. The focus is on awareness raising and clear labelling of bins. Other types of measures include restricting access to bins (including locking them),[64] using a door-to-door system with transparent bags,[65] or checking bins before collection (non-compliant bins are not emptied and are marked).[66]

All these problems should be resolved by educating citizens and through effective enforcement of the obligations placed on them. We analysed the importance and form of awareness-raising measures elsewhere, and describe the reasons for the low enforcement rate. Systemic failure, or the lack of control activities by competent authorities is indicated as the main reason by the composting plant operators, as their whose operations are hampered by the poor quality of the sorted bio-waste.[67] However, the low number of inspections by the Czech Environmental Inspectorate is also criticised by waste producers in publications describing waste management.[68] Municipalities are responsible for ensuring that residents comply with their obligations. Activities of municipalities have not yet been systematically examined. However, we believe that Czech municipalities do not penalise their residents for illegal waste sorting, even though they have the power to do so.[69] In fact, there is no mention of punishing illegal behaviour in any of the pilot projects or

59 | Hora, Soukalová & Iljučoková 2005, 16.
60 | Stejskal 2010, 211.
61 | Míča 2022, 7.
62 | Ústí nad Labem 2021.
63 | Marková 2010, 16.
64 | Tomášková 2024a, 17.
65 | Tomášková 2024b, 35.
66 | Gregor 2022, 4.
67 | Žilík 2023, 5.
68 | Königová 2017, 51.
69 | Residents are required to dispose of biodegradable waste at locations designated by the municipality: most often by a binding municipal ordinance (Section 61 of the Waste Act). The municipal authority is then entitled, pursuant to Section 147 of the Waste Act, to check if residents are complying with this obligation. Failure to comply is an offense under Section 117(1)(t) of the Waste Act, and a fine of up to CZK 50,000 may be imposed.

in the experiences shared by individual municipal managers. Instead, the importance of continuous public education and information is always emphasised.

We, therefore, shifted our attention towards the Czech Environmental Inspectorate's monitoring of municipalities. In its annual reports, the Inspectorate explicitly mentions the results of the inspections focused on the compliance of the municipality with the obligation to ensure separate collection of biodegradable waste since 2016 (i.e. one year after the obligation was introduced). The results must be evaluated based on the knowledge that the number of inspections is relatively low: between 2016 and 2023 only about one tenth of the country's municipalities were inspected (namely 706 out of more than 6,200, some of them apparently repeatedly). Only in five cases, municipalities seemed to have breached their obligation to collect biodegradable waste separately. The last instance of this lapse was in 2019. Therefore, it can be assumed that currently most municipalities in the Czech Republic have a functionally adequate municipal waste management system. Only isolated partial irregularities were found: burning of branches, grass, and waste from cemetery greenery (2020, 2021 and 2022), which was not implemented per the law.

9. Science and literature

There are two journals in the Czech Republic that publish articles on different waste management topics. Both magazines have been published monthly (with a double issue in summer) for more than twenty years. However, they are not scientific journals. The target audience is municipal and corporate waste management personnel, as reflected in the nature and scope of the articles. These are one- or two-page articles (longer texts are exceptional) of a popular, informative, and educational nature. Some of the articles are promotional: for example, the advantages of kitchen waste collection by a private company were described thrice during the past five years (2020, 2022, 2025), including an interview with the company's director. Conversely, several articles report on the results of expert studies or qualification papers, thus increasing their reach.

We analysed journal volumes published between January 2005 and March 2025. We considered articles on with the specifics of biodegradable waste collection as relevant. However, only 2–3 such articles were published per year. Therefore, we also included articles dealing with the sorting of all types of waste and the actual processing of bio-waste (composting, biogas plants) in a more detailed analysis. Each issue of the journal comprises an average of 18 to 20 different articles, so the proportion of texts dealing with biodegradable waste management is around 5%. Considering the importance of this topic and the share of this waste in total production, this is a slight underestimation of the attention given to it. It should be noted that publication activities are not evenly distributed throughout the

year. In fact, both journals publish special thematic issues dedicated to bio-waste management.

There are several popularisation articles, some of which are financially supported by the Ministry of the Environment: for example, an eleven-part series of articles entitled 'Municipalities and bio-waste', which has been supplemented by podcasts. Several NGOs also support the proper management of bio-waste through their awareness-raising activities: the Czech Biomass Association (Biom) is dedicated to the treatment of bio-waste; the Kokoza Association promotes composting by urban residents.

On the other hand, the number of expert articles analysing the relevant legislation is limited.[70] Studies dealing with the effectiveness of different methods of separate waste collection and the suitability of different measures applied in practice are more frequent (e. g. evaluate the consequences of increasing and decreasing walking distance to bio-waste bins in the pilot project in Ústí and Labem).[71]

10. Conclusions

The Czech Republic's legislation on the management of biodegradable waste implements European directives, particularly the Waste Framework Directive and the Landfill Directive. The legislation is also the result of over twenty years of development, during which time the obligation to collect biodegradable waste separately has gradually been extended (in terms of scope, types of waste, and months of the year when it must be conducted). The relevant authorities have always recognised the importance of this issue for Czech waste management, devoting considerable attention to it in strategic documents. In the Czech Republic, municipalities are exclusively responsible for ensuring that biodegradable waste is sorted to the required extent. Conversely, the state provides municipalities with substantial financial and methodological support for creating the necessary infrastructure (collection yards, composting plants, bins), and awareness-raising campaigns. An analysis showed that effective communication with municipal residents and other entities that generate biodegradable waste is crucial for achieving the set targets. Although economic instruments (municipal waste management fees) are used across all municipalities, the impact is low due to the relatively low level and, above all, the lack of individualisation (only a minority of municipalities use PAYT schemes). We see the greatest scope for improvement in this area; however, this does not require any changes to the legislation. We consider the legislation to be adequate, but consistent application in practice is necessary.

70 | Current publications and case laws have focused on other aspects of waste legislation: for example, the imposition of corrective measures (see Petrmichl), reuse of mining waste (see Vícha), or the landfill fee (see Constitutional Court ruling, case number Pl. ÚS 21/21 of March 19, 2025).
71 | Slavík, Dolejš & Rybová 2021, 177–186.

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Karmen LUTMAN[1]

Biodegradable Waste Management in Slovenia: Preserving Good Practices, Adapting to New Realities[2]

Abstract

Following the revision of the Waste Framework Directive in 2023, the obligation for the separate collection of bio-waste was formally introduced in the EU. This revision mandates that all Member States, including Slovenia, establish systems for the separate collection of biodegradable waste. Within a broader comparative framework, this study outlines the key characteristics of biodegradable waste collection and treatment in Slovenia. Particular attention is devoted to the effectiveness of separate collection, treatment methods, composting, public information and communication strategies, and potential health concerns associated with the collection and processing of biodegradable waste.
Keywords: Bio-Waste, Biodegradable Waste, Municipal Waste, Waste Collection, Waste Treatment, Composting, Waste Framework Directive, Recycling

1. Introduction

Like many countries, Slovenia has not been immune to the global increase in waste production. It generates, on average, over 8 million tonnes of waste annually, of which over one million tonnes constitute municipal waste, with biodegradable waste accounting for slightly less than 25%.[3] In general, EU legislation requires reducing the amount of biodegradable waste sent to landfills and prohibits mixing it with other types of waste.

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2 | *The research and preparation of this study was supported by the Central European Academy.*
3 | https://www.stat.si/StatWeb/news/Index/12798 (13. 5. 2025).

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The separate collection of bio-waste became mandatory in EU Member States on 1 January 2024, following the Waste Framework Directive.[4] It is well known that such collection reduces greenhouse gas emissions and facilitates the conversion of these materials into high-quality compost or biogas. In Slovenia, most households have access to separate bio-waste collection, especially in urban areas. However, as with all waste categories, the most effective approach remains the prevention of its generation.

As one of the EU leaders in municipal waste recycling (including bio-waste),[5] Slovenia appears relatively well equipped with the expertise and methodological frameworks necessary for more sustainable waste management in the future. Nevertheless, there is room for improvement. In this context, this paper analyses the legal framework governing biodegradable waste in Slovenia, with particular emphasis on its separate collection and treatment. The objective is to evaluate the transposition and implementation of relevant EU directives into the Slovenian legal system while also examining best practices in this field.

2. Legal framework on biodegradable waste in Slovenia

Slovenia transposed the Waste Framework Directive (and its subsequent revision) into its legal system through the Environmental Protection Act (*Zakon o varstvu okolja* – ZVO-2). This act serves as the country's principal environmental legislation, establishing a comprehensive framework for environmental protection with a significant focus on regulating waste management.[6] Together with its implementing legislation (i.e. national regulations and decrees), it provides the legal framework for managing biodegradable waste, aligning with EU directives and promoting sustainable practices.

The secondary legislation relevant to biodegradable waste management in Slovenia includes:

- Decree on the Management of Biodegradable Kitchen Waste and Green Garden Waste,[7]

4 | Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain directives, OJ L 312, 22. 11. 2008.

5 | Slovenia's municipal waste preparing for reuse and recycling rate has significantly increased over the past years. In 2022, it was 63%, significantly above the (estimated) EU-27 average of 49% in the same year. Municipal waste incineration started in 2015 and was at the level of 13% of generated municipal waste in 2022. During the last 10 years, the landfill rate significantly decreased to 8% in 2022. For more see: https://www.eea.europa.eu/en/topics/in-depth/waste-and-recycling/municipal-and-packaging-waste-management-country-profiles-2025/si-municipal-waste-factsheet.pdf/@@download/file (13. 5. 2025).

6 | For more see: Juhart 2024, 8–34.

7 | Official Gazette of the Republic of Slovenia No. 39/10 (with further amendments, last amendment in 2022).

- Decree on the Treatment of Biodegradable Waste and the Use of Compost or Digestate,[8]
- Decree on Waste,[9]
- Decree on the Mandatory Municipal Public Utility Service for the Collection of Municipal Waste.[10]

The Decree on the Treatment of Biodegradable Waste and the Use of Compost or Digestate sets conditions for treating biodegradable waste and for the use and marketing of compost or digestate. The Decree on the Management of Biodegradable Kitchen Waste and Green Garden Waste sets provisions for the compulsory treatment of household kitchen waste and green garden waste, including collection and processing requirements. The last two listed decrees are broader, applying not only to biodegradable waste but to waste management in general. Thus, the Decree on Waste establishes requirements for preventing or reducing the adverse impacts of waste generation and management, including provisions related to biodegradable waste. The Decree on the Mandatory Municipal Public Utility Service for the Collection of Municipal Waste defines the organisation, scope, and standards of municipal waste collection services.

3. Waste management in Slovenia: general overview

3.1. Statistics

Statistics show that the total amount of waste in Slovenia is increasing year by year. The Statistical Office of the Republic of Slovenia reported that in the first quarter of 2024,[11] the amount of collected municipal waste increased by nearly 5% compared to the first quarter of 2023. It amounted to 249,000 tonnes, of which 29%, or 72,000 tonnes, was mixed municipal waste—an increase of 16%.

In total, 71% of municipal waste was separately collected. Among this, the largest share—one quarter—was paper and cardboard, followed by biodegradable waste at 23% and mixed and composite packaging at 16%. Wood and wooden packaging accounted for just over one-tenth of all separately collected municipal waste.

8 | Official Gazette of the Republic of Slovenia No. 99/2013 (with further amendments, last amendment in 2022).
9 | Official Gazette of the Republic of Slovenia No. 77/22 (with further amendments, last amendment in 2025).
10 | Official Gazette of the Republic of Slovenia No. 33/17 (with further amendments, last amendment in 2022).
11 | Available at: https://www.stat.si/StatWeb/news/Index/12798 (8. 5. 2025).

3.2. Waste collection

Waste collection services may only be performed by providers who have obtained a final decision from the Ministry of the Environment, Climate, and Energy ('Ministry of the Environment') confirming entry into the register of waste collectors. The essential conditions for registration as a waste collector are: (i) registration in the business register for the activity of waste collection; (ii) ownership of the facility and land where the activity is to be carried out; and (iii) ownership of the means and equipment necessary for collection. The collection of municipal waste is carried out as a mandatory public utility service.[12]

The national government or a local community ensures the provision of public utility services in the following forms:[13]

- Municipal internal service ('in-house service unit'): used when, due to the small scale or nature of the service, it would be uneconomical or irrational to establish a public company or grant a concession;
- Public economic institution: used when one or more public utility services, by nature, cannot be profit-making activities or when profit is not their objective;
- Public company: used when one or more large-scale public utility services are performed, or when the monopolistic nature of a public utility service requires it and the activity can be carried out for profit;
- Concession: granted on the basis of public tenders after a selection process; the concession holder may also be a foreign entity.

3.3. Waste transportation

Waste transport services may be provided only upon obtaining an official permit and registration in the waste transporters' register maintained by the Ministry of the Environment. The essential conditions for registration are: (i) registration in the business register for waste collection and transport activities or road freight transport activities; and (ii) possession of the means and equipment necessary for transporting waste.[14] A permit is granted, and the provider is entered into the register, once these criteria are met.

3.4. Waste treatment

The performance of waste treatment activities requires an environmental permit. The essential conditions for obtaining it are:[15] (i) registration in the business

12 | Art. 35 ZVO-2. For more see, e.g. Viler-Kovačič 2011; Mužina 2013.
13 | See: Public Utilities Act (*Zakon o gospodarskih javnih službah, ZGJS*), Official Gazette of the Republic of Slovenia No. 32/93 (with further amendments, last amendment in 2011).
14 | Art. 25(4) ZVO-2.
15 | Art. 25 ZVO-2.

register for waste treatment services; (ii) operation of a waste treatment facility or plans to construct one, if required for the treatment process; (iii) ownership of the facility, the building housing the facility, the land on which it is located, the equipment for the acceptance of waste (if the applicant collects the waste directly from holders), and other movable property necessary for performing waste treatment activities, or proof of future ownership if the facility is yet to be constructed. Exceptions apply if the applicant is also a provider of a public service treating specific types of municipal waste, or if applying for an environmental permit for a mobile facility in accordance with the regulation governing waste treatment in mobile facilities (valid for less than two years); (iv) adequate measures must ensure compliance with environmental, technical, and other requirements governing emissions of substances and energy into the environment, handling specific types of waste, or specific treatment procedures; and (v) the planned treatment must not pose a risk to human health or cause harmful effects on the environment.

Treatment of certain types of municipal waste is carried out as a mandatory public utility service.[16]

3.5. Disposal of waste and sanitation services

An environmental permit is also required for waste disposal services. Conditions are similar to those for waste treatment, with specific differences depending on the disposal method (e.g. incineration, landfilling) and the type of waste (e.g. asbestos). Incineration of certain municipal waste is carried out as a mandatory public utility service. Sanitation services are also mandatory municipal public utility services essential for environmental protection.

4. Collection of biodegradable waste

4.1. Bio-waste as a legal category

In line with the classification established by the Waste Framework Directive, bio-waste falls under the broader category of municipal waste (Art. 3(7.4.) ZVO-2). The definition of bio-waste (Art. 3(4) of the Waste Framework Directive) was, without any changes to the original phrasing, transposed into Slovenian law by the Decree on Waste. Accordingly, bio-waste is considered as "biodegradable garden and park waste, food and kitchen waste from households, offices, restaurants, wholesale, canteens, caterers and retail premises and comparable waste from food processing plants" (Art. 3(1) of the Decree on Waste).

16 | For more on waste collection and related legal issues see: Sekirnik 2024; Juhart 2023; Dajčman 2021.

4.2. Composting and collecting of bio-waste

The management of biological waste is regulated by the Decree on the Management of Biodegradable Kitchen Waste and Green Garden Waste, which requires households to separate biodegradable kitchen and garden waste from other municipal waste. Mixing food waste with other waste (e.g. mixed municipal or biological waste) is prohibited, as is cutting, crushing, grinding, or diluting it with the intention of discharging it into the public sewage system, cesspools, sealed cesspits, or directly into water bodies.

Households must compost kitchen and garden waste in a home composter (Art. 5 of the Decree). Those who do not compost must hand over this waste to the public waste management service provider in a designated container, subject to a fee. The household waste producer must store kitchen and green garden waste separately until composting or delivery to the public service provider, in such a way that it does not mix with other waste and remains suitable for composting or treatment under the regulation on biodegradable waste. Mixing household kitchen and garden waste with other municipal waste is explicitly prohibited (Art. 4 of the Decree).

Bio-waste may only be placed in the bio-waste container using biodegradable or paper bags, or newspaper, and not plastic bags. Furthermore, the waste must not be in liquid form.

Systematic collection of kitchen and garden waste in Slovenia is carried out with designated brown containers. Municipal public utility services are responsible for informing citizens about eligible materials.[17] These include all types of vegetable and fruit waste, eggshells, coffee grounds and filters, spoiled food, food leftovers, paper tissues and towels, paper bags, branches, grass clippings, leaves, flowers, weeds, and bedding from small herbivorous animals.

Conversely, certain items are not permitted in bio-waste containers, including cigarette butts, bones, diapers and sanitary pads, cat litter, chewing gum, cork (to be disposed of as residual waste), textiles, leather, rubber (to be delivered to a designated collection centre), pharmaceuticals, chemicals, fats or used cooking oil (classified as hazardous waste), and animal carcasses.

4.3. Separate collection in condominium and single-family zones

The frequency of bio-waste collection falls within the competence of local communities, that is, public utility providers for the specific area. Minimal state-level standards are laid down in the Decree on the Mandatory Municipal Public Utility Service for the Collection of Municipal Waste. According to Article 10, bio-waste

17 | See, e.g. https://www.vokasnaga.si/locevanje-odpadkov/biolosko-razgradljivi-odpadki (8. 5. 2025).

is collected door-to-door from original waste producers. Containers are emptied at least once per week from April to September and at least once every 14 days from October to March.[18] In areas where residents predominantly practice home composting, collection may be reduced to once every three weeks during October to March.[19] Although the Decree does not specifically distinguish between condominium zones and single-family zones, at the municipal level bio-waste is generally collected more frequently in condominium zones than in single-family zones.

According to Article 20(2), service providers must clean and maintain transport vehicles and waste collection containers to prevent risks to human health and harmful environmental impacts. Cleaning frequency varies by municipality: in some, containers are cleaned once a year, while in others they are cleaned monthly during summer.

4.4. Strategies

To achieve the EU's sustainable waste management objectives, the Slovenian Ministry of the Environment prepares, in accordance with ZVO-2, an operational environmental protection programme in the field of waste management, typically every four years, and publishes it on its official website.[20] The current Waste Management Programme and Waste Prevention Programme of the Republic of Slovenia (hereinafter, 'the Programme') was adopted in 2022.[21] It aims to implement waste prevention measures, ensure compliance with prescribed waste management practices, and achieve waste management objectives for the period up to 2035. In light of new environmental requirements, it represents a revision of the programme adopted in 2016.

According to the Programme, Slovenia had already achieved the goal set out in Article 5(2)(a) of the Landfill Directive[22] (a reduction of biodegradable municipal waste going to landfills to 75 percent) before 2006. In 2010, it also met the subsequent target—to below 50 percent of the total (by weight) of biodegradable municipal waste generated in 1995—by reaching 48 percent (set out in Article 5(2)(b) of the Landfill Directive). The final target under Article 5(2)(c), a reduction to 35 percent compared with the 1995 baseline, was achieved in 2011.

The Programme further outlines a comprehensive strategic plan for the collection and management of bio-waste through 2035, in alignment with EU directives and national sustainability goals. Its main objectives are: (i) mandatory separate collection of biodegradable kitchen and garden waste, as prescribed by

18 | Article 10(4) of the Decree.
19 | Article 10(5) of the Decree.
20 | Available at: https://www.gov.si/teme/ravnanje-z-odpadki/ (9. 5. 2025).
21 | Available at: https://www.gov.si/assets/ministrstva/MOP/Operativni-programi/op_odpadki_2022.pdf (9. 5. 2025).
22 | Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste, OJ L 182, 16. 7. 1999.

the Decree on the Management of Biodegradable Kitchen Waste and Green Garden Waste, emphasising the importance of proper waste collection; (ii) infrastructure and service provision, education (enhancing infrastructure and raising public awareness about proper waste collection practices); (iii) treatment and processing (measures under the Decree on the Treatment of Biodegradable Waste and the Use of Compost or Digestate); and (iv) monitoring and evaluation (mechanisms for regular monitoring and evaluation of bio-waste management to ensure compliance with set targets and identify areas for improvement). The Programme also refers to best practices in the aerobic treatment of bio-waste (composting).[23]

4.5. Promoting responsible waste management

Slovenia has implemented a range of measures to encourage responsible management of biodegradable waste. Public authorities promote this through financial instruments, awareness-raising, and information campaigns.

4.5.1. Financial instruments

Many Slovenian municipalities employ pay-as-you-throw (PAYT) schemes, under which residents are charged based on the amount of residual (non-recyclable) waste they produce. This incentivises composting and the separation of biodegradable waste. Some municipalities also provide financial support or discounts for purchasing home composters, especially in rural areas where garden waste is more prevalent. Slovenia additionally uses EU cohesion funds to invest in improved waste infrastructure, including bio-waste collection and composting facilities. Municipalities that perform well in waste separation and reduction may also receive performance-based funding or support for further development.

4.5.2. Awareness-raising campaigns

Slovenia is part of the Zero Waste Europe network and, building on it, developed the 'Zero Waste Slovenia' movement.[24] Since 2014, 'Ecologists Without Borders'[25] ('*Ekologi brez meja*') has served as the national organisation for the Zero Waste Slovenia programme, reviewing municipal waste management plans and proposing their admission to the European Zero Waste network.[26] The organisation promotes the Zero Waste concept at the national level and provides a platform for collaboration

23 | The Programme, 187.
24 | For more see, e.g. Vovk 2014.
25 | https://ebm.si/zw/o/zero-waste-slovenija/ (12. 5. 2025).
26 | The first such municipalities in Slovenia were Vrhnika, Borovnica, and Log-Dragomer. In early July, the City Council of the Municipality of Ljubljana (MOL) also approved a waste management strategy and an action plan for the period 2014–2035 (Vovk 2014).

with businesses and policymakers. The Zero Waste network also includes tourism service providers such as event organisers, accommodation providers, and restaurants.[27] Ljubljana was the first capital in Europe to declare the zero waste goal and, in 2014, separately collected 61% of its municipal waste. The city has committed to halving residual waste and increasing separate collection to 78% by 2025.

Municipal campaigns complement national efforts, with local authorities conducting regular public education on proper waste sorting, particularly for biodegradable waste. Environmental education is also integrated into school curricula, with lessons and activities on composting and bio-waste. Several mobile apps and websites (e.g. Odpadki.info) further guide residents on waste separation rules, including for bio-waste.

Slovenia also has 'compost masters'—trained individuals who promote and support home composting and bio-waste management at the community level. This concept is part of Slovenia's broader environmental education and community engagement strategy. Compost masters are usually volunteers or municipal employees who receive specialised training in composting methods, soil health, and bio-waste treatment. Training is often provided by environmental NGOs (such as Ecologists Without Borders), public waste management companies, or municipal environmental departments. These individuals act as local ambassadors, helping residents compost effectively at home or in community gardens. They are particularly active in municipalities participating in Zero Waste community programmes or EU-funded pilot projects. Training typically covers topics such as proper sorting of bio-waste, composting methods (hot, cold, and worm composting), and troubleshooting issues (odour, pests, moisture balance).

4.5.3. Information campaigns

Local authorities in Slovenia implement a range of initiatives to promote the responsible handling of biodegradable waste. Public consultations and workshops are regularly held to engage communities in discussions about sustainable waste practices and the planning of supporting infrastructure. To facilitate proper sorting, bio-waste bins and collection points are clearly labelled with visual instructions, reducing contamination and confusion. Media campaigns across television, radio, social media, and local newspapers raise public awareness about the importance of sorting biodegradable waste, highlighting environmental benefits such as compost production and biogas generation. Posters in public spaces further promote proper collection by providing clear and accessible instructions on how to separate biodegradable and other types of waste.[28]

27 | For more see: https://ebm.si/zw/o/ (12. 5. 2025).
28 | See, e.g. https://www.vokasnaga.si/sites/www.jhl.si/files/dokumenti/plakat_za_cetrtne_skupnosti_1.6.2021_0.pdf (9. 5. 2025).

5. Recycling and treating biodegradable waste

5.1. General overview

According to the Waste Management Programme and Waste Prevention Programme of the Republic of Slovenia currently in force (Programme of 2022), Slovenia employs four primary treatment methods for bio-waste: (i) aerobic processing (composting), (ii) anaerobic digestion (biogas production), (iii) mechanical-biological treatment (MBT), and (iv) thermal treatment, with landfilling as a last resort.[29]

Aerobic treatment (composting) focuses on minimising environmental emissions, particularly odour, through controlled processes. Composting facilities must comply with hygienisation protocols, especially when processing kitchen waste containing animal by-products. Depending on the method, compost may be restricted to domestic use or approved for the EU market. As explained in the Programme, the regulatory framework for limiting odour emissions is still under development.

Anaerobic digestion (fermentation) enables both material stabilisation and energy recovery through biogas. Plants must be gas-tight to prevent methane leakage, and specific hygienisation standards apply depending on whether mesophilic or thermophilic processes are used. Hygiene compliance is particularly required for materials derived from animal by-products and may involve pre- or post-treatment heating or composting.

MBT helps meet landfill restrictions, particularly for waste with high organic content. Integration of anaerobic processes in MBT is encouraged for energy recovery, as aerobic MBT does not utilise the energy potential of organic waste effectively.

Thermal treatment (incineration and co-incineration) is regulated to ensure high energy efficiency and strict air pollution control. EU-aligned standards set emission thresholds and fuel quality testing protocols, promoting waste-to-energy recovery under specific efficiency criteria. Facilities must also comply with Best Available Techniques (BAT) outlined in BREF documents.

Landfilling remains the least preferred option. Slovenia enforces strict pretreatment requirements to ensure deposited waste is inert and non-leachable. National targets under the Landfill Directive aim to reduce landfilling of municipal waste to ≤10% of the total generated by 2035. Statistics show that the amount of biodegradable waste landfilled decreased rapidly until 2013, after which the reduction stalled.[30] In 2016–2017, disposal decreased significantly again due to the expansion

29 | The Programme, 188–192.
30 | https://kazalci.arso.gov.si/sl/content/kolicina-odlozenih-biorazgradljivih-odpadkov-2 (12. 5. 2025).

of MBT infrastructure. From 2018 to 2020, it was almost zero. During 2016–2020, the amount remained well below the 2020 target. The main measures contributing to this reduction were waste separation and MBT of mixed municipal waste.

5.2. Promoted treatment methods

At the household level, composting is most strongly encouraged.[31] Among modern treatment methods, priority is given to anaerobic treatment. However, many biogas plant investments in Slovenia have sparked public opposition due to concerns about environmental impacts, odour, and food self-sufficiency. These plants process not only dedicated crops but also manure from livestock farming.[32] A greater challenge than large biogas plants, usually planned outside settlements and industrial areas, are small biogas plants established as supplementary farm activities, which often generate conflicts in local communities. Currently, only a smaller share of biodegradable municipal waste is processed in biogas plants, while more is processed in composting facilities.

5.3. Health issues

The main challenges in bio-waste management are improper separation at the household level and suboptimal processing, marked by insufficient use of advanced treatment technologies. Hygiene-related issues in waste collection often arise when waste is deposited in locations not designated for that purpose. Media reports frequently cite rodent (rat) infestations in such cases.[33] Problems also occur when waste is improperly sorted due to overfilled containers, leading to waste discarded on the ground, which again attracts rodents. Media coverage has also raised public concerns about the negative impact of toxic substances released during waste incineration.[34]

To encourage responsible waste collection, video surveillance at collection sites was proposed some time ago. The Information Commissioner of the Republic of Slovenia issued a non-binding opinion[35] on whether installing video surveillance systems in front of multi-unit residential buildings and at ecological collection points is permissible. The Commissioner explained that surveillance in public spaces is lawful only if demonstrably necessary for protecting persons

31 | Article 5(1) of the Decree on the Management of Biodegradable Kitchen Waste and Green Garden Waste.

32 | For more see: https://deloindom.delo.si/energija-in-okolje/odpadki/biolosko-razgradljivi-odpadki-razpad-na-odlagaliscih-zelo-segreva-ozracje (12. 5. 2025).

33 | See, e.g. https://www.dnevnik.si/novice/lokalno/podgane-so-prisle-zaradi-nepravilno-odlozenih-odpadkov-2704236/ (13. 5. 2025).

34 | See, e.g. https://www.24ur.com/novice/slovenija/izpusti-sezigalnic-ogrozajo-zdravje-ljudi-a-politika-ponuja-se-vec-kapacitet-za-sezig-odpadkov.html (13. 5. 2025).

35 | Opinion No. 0712-1/2014/3489 of 14 November 2014. See also: Vovk 2011.

or property and if it adheres to proportionality. This requires prior assessment of the property's value, as well as an evaluation of the likelihood based on previous incidents of damage or theft. On this basis, the legitimate objectives for reviewing footage would be safeguarding public safety and property. Surveillance may not, however, be employed primarily to detect or prove minor offences related to improper disposal. Therefore, the operator may access and review recordings only in cases involving actual damage, theft, or exceptional incidents where the footage may serve as supplementary evidence in offence or criminal proceedings.

6. Biodegradable waste management in case law and legal literature

Publicly accessible case law indicates that legal disputes concerning bio-waste primarily relate to the following issues: (i) proper waste collection,[36] (ii) obtaining environmental permits for the operation of bio-waste treatment facilities,[37] (iii) appropriate handling of waste once collected,[38] (iv) illegal disposal of municipal waste,[39] (v) unlawful dumping of waste on agricultural land,[40] and (vi) illegal disposal of bio-waste.[41]

However, legal literature on bio-waste or biodegradable waste is very scarce. The majority of scholarly works address the issue of waste in general, often in the context of implementing EU secondary legislation into the Slovenian legal system. More specific articles focus on waste packaging and plastics[42], food waste,[43] extended producer responsibility,[44] property law aspects of waste,[45] and the provision of public utility services for waste collection and management.[46]

36 | Judgment of the Administrative Court of the Republic of Slovenia, No. I U 438/2020-19 of 26 October 2022; Decision of the Administrative Court of the Republic of Slovenia, No. IV U 1/2020-34 of 18 December 2023.
37 | Judgements of the Administrative Court of the Republic of Slovenia, No. IV U 193/2010 of 4 October 2011, No. IV U 227/2011 of 3 July 2012; No. II U 380/2011 of 7 December 2011; No. I U 1745/2011 of 8 December 2011.
38 | Judgements of the Administrative Court of the Republic of Slovenia, No. I U 1646/2011 of 1 December 2011; No. I U 1905/2010 of 9 June 2011.
39 | Judgement of the Administrative Court of the Republic of Slovenia, No. I U 304/2016-10 of 11 April 2017.
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41 | Judgement of the Administrative Court of the Republic of Slovenia, No. I U 1203/2019-8 of 29 October 2021.
42 | Strle 2023; Kreft 2022; Dajčman 2021.
43 | Igličar 2023.
44 | Tanko 2023.
45 | Juhart 2023.
46 | Sekirnik 2024.

7. Concluding remarks

This analysis shows that Slovenia has implemented the relevant EU legislation in the field of bio-waste management. Statistics indicate that the use of modern methods of bio-waste treatment is improving. At the household level, composting is most strongly encouraged. Among modern treatment methods, priority is given to anaerobic treatment. To some extent, problems still arise from improper collection and separation of waste, which is why public awareness and information campaigns remain of great importance.

Although the Waste Framework Directive introduced the obligation of separate collection of bio-waste, this practice has already been established in Slovenia. In rural areas, there is a long-standing tradition of composting, while separate waste collection at the systemic level has been in place for more than a decade. Nevertheless, further efforts will be required to reduce overall waste generation. Campaigns aimed at reducing food waste are already relatively present, yet there remains significant potential for further progress in this area. Of particular importance is raising public awareness that responsible behaviour can meaningfully contribute to a more sustainable future.

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Matúš MICHALOVIČ[1]

Bridging the Gap Between Policy and Practice: Bio-Waste Management in Slovakia[2]

Abstract

Using a comprehensive analysis of the legal and practical dimensions of bio-waste management in Slovakia, this article highlights the relevant EU directives and national strategic documents and evaluates their transposition into the Slovak legal order. The article focuses on the implementation of separate bio-waste collection systems to reveal discrepancies in municipal performance, public engagement, and infrastructure availability. The study highlights key governance challenges, including legal vagueness, fragmented responsibilities, and insufficient oversight, while also presenting successful local practices to demonstrate the potential for improvement. Based on data from national authorities, academic research, and case studies, the article identifies critical barriers and offers recommendations for strengthening policy coherence, citizen participation, and the overall effectiveness of Slovakia's bio-waste management in line with circular-economy objectives.
Keywords: Bio-Waste, Slovakia, Waste Management, Separate Collection, Environmental Policy, Composting, Municipal Waste

1. Introduction

Bio-waste management is a critical component of sustainable waste governance in the European Union (EU), particularly in the context of transitioning toward a circular economy, which emphasises the continual use of resources to minimise waste and promote sustainability. However, in the case of bio-waste, this circularity

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is often narrowly limited to the use of biogas and compost or digestate as fertiliser. Bio-waste, which primarily consists of biodegradable kitchen and garden waste, represents a substantial fraction of municipal solid waste, and its potential to be transformed from an environmental liability into a valuable resource[3] recognised. In 2013, Slovakia generated approximately 2,560,970 tonnes of municipal waste, of which about 461,960 tonnes were separately collected biodegradable municipal waste, constituting approximately 18% of the total municipal waste. The fact that biodegradable waste (including garden, kitchen, and food bio-waste) during the years 2020–2023 constituted approximately one-third of the total weight of mixed municipal waste in Slovakia[4] is both remarkable and problematic.

In line with this shift, the EU legal framework, including Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives, as amended (hereinafter referred to as "Waste Framework Directive") and the new circular-economy action plan under the title For a Cleaner and More Competitive Europe (hereinafter referred to as "CEAP2") have introduced progressively stricter obligations for the separate collection, treatment, and quality assurance of bio-waste. As Vodička observes, "the rate of secondary material usage has not escalated as expected and packaging waste volumes continue to rise, indicating that the economy retains a predominantly linear character despite these measures"[5]

Slovakia, as an EU Member State, has transposed relevant directives into its national legal framework, most notably through Act No. 79/2015 Coll. on Waste and on Amendments of Certain Laws, as amended (hereinafter referred to as "Act on Waste"). However, despite these formal transpositions, the practical implementation remains significantly deficient. As Dufala stated, "the system of municipal waste management in the Slovak Republic is obviously flawed, in as much as municipal waste management lacks long-term management in accordance with the waste hierarchy".[6]

Empirical evidence suggests that while legal obligations exist on paper, their translation into functional, environmentally meaningful systems is inconsistent and, in many cases, merely symbolic. A large portion of bio-waste continues to reach mixed municipal waste streams and is, therefore, mainly landfilled without adequate treatment, undermining both national recycling targets and broader EU sustainability objectives.

This study provides a comprehensive, multidisciplinary analysis of the legal and institutional framework governing bio-waste management in Slovakia, critically evaluating gaps between the normative design and practical outcomes. Drawing on national legislation, EU directives, strategic policy documents, and empirical data from APVV-funded research, municipal reports, and technical analyses,

3 | Ministry 2024, 178–181.
4 | Institute for Environmental Policy 2023, 13.
5 | Vodička 2024, 264.
6 | Dufala 2020, 30.

the study identifies key regulatory ambiguities, enforcement weaknesses, and systemic obstacles. Simultaneously, it highlights local innovations, including door-to-door collection, community composting, and the Pay-As-You-Throw schemes (hereinafter referred to as "PAYT scheme").

The central argument of the paper is that effective bio-waste governance in Slovakia will require a transition from fragmented legal obligations of conduct to enforceable obligations of result[7] supported by quality assurance mechanisms, institutional accountability, and citizen-centred policies. Through this lens, the article offers concrete recommendations for legal reform, strategic planning, and programmatic investments for the 2025–2030 period, aligned with the current EU law and the anticipated revision of the Waste Framework Directive.

2. Legal and policy framework governing bio-waste in Slovakia

This chapter provides an overview of the legal framework regulating bio-waste management, beginning with key legislative instruments and strategic policies at the EU level, followed by their transposition into Slovak national law. Understanding these regulations is essential, as they form the basis for all subsequent analysis of Slovakia's implementation practices, compliance challenges, and overall effectiveness of bio-waste management policies.

Before analysing the legal and policy framework governing bio-waste in detail, the use of terminology in both EU and Slovak legislation should be clarified. The legal framework distinguishes between 'biodegradable waste', 'bio-waste', and 'biodegradable municipal waste', each of which has a specific legal definition and scope of application.

At the EU level, bio-waste is defined in the Waste Framework Directive as follows: "biodegradable garden and park waste, food and kitchen waste from households, offices, restaurants, wholesale, canteens, caterers and retail premises and comparable waste from food processing plants."[8] This definition clearly extends the scope of bio-waste management beyond private households, encompassing commercial, institutional and food-processing actors. However, this study focuses primarily on household-level bio-waste management, as it represents the most regulated and visibly implemented component of the system under national legislation. Moreover, most of the available data, pilot projects and policy interventions in Slovakia to date, have been aimed at the residential sector, making it the most analytically accessible starting point for evaluating bio-waste governance.

In contrast, the Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste (hereinafter referred to as "Landfill Directive"), established the term

7 | See Moravcová 2023.
8 | Article 3 para. 4 of the Waste Framework Directive.

biodegradable waste and defined it as "any waste that is capable of undergoing anaerobic or aerobic decomposition, such as food and garden waste, and paper and paperboard"[9]. Moreover, the EU legislation does not provide a legal definition of the third most important term in this area. However, we can find the definition of biodegradable municipal waste in non-binding documents, which describe it as "biodegradable waste from households, as well as other biodegradable waste, is similar to biodegradable waste from households"[10].

These distinctions are mirrored in the Slovak legal framework. The Act on Waste defined the terms,[11] and biodegradable was[12], almost identically as the EU directive did, which became the main legal basis for implementing separate collection systems. The Act on Waste also defined biodegradable municipal waste as "all types of biodegradable waste that can be classified into group 20 Municipal waste".[13]

2.1. EU legal framework on bio-waste

Several key policy documents and directives aimed at minimising environmental impacts, promoting resource efficiency, and enhancing circular-economy practices primarily govern the management and handling of bio-waste within the EU. The most critical legislative acts are the Waste Framework Directive, the Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste (hereinafter referred to as "Landfill Directive"), and strategic policy initiatives like the CEAP2, [14]European Green Deal. The key aspects and specific obligations of these legislative acts and policies, particularly concerning bio-waste management, are analysed in greater detail in the following sections

2.1.1. Waste Framework Directive

Fundamental concepts and principles concerning waste management, including definitions of key terms such as 'waste', 'bio-waste', and 'recycling', are established by the cornerstone of bio-waste legislation in the EU, the Waste Framework Directive.[15]A crucial development was the 2018 amendment of the directive, which introduced significant improvements related to the management of bio-waste.

9 | Article 2 letter (m) of Landfill Directive.
10 | European Environmental Agency 2002.
11 | Provision of § 2 para. 7 of the Act on Waste.
12 | Provision of § 2 para. 6 of the Act on Waste.
13 | Provision of § 2 para. 8 of the Act on Waste.
14 | Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and The Committee of the Regions – the European Green Deal (COM/2019/640 final).
15 | Directive (EU) 2018/851 of the European Parliament and of the Council of 30 May 2018 amending Directive 2008/98/EC on waste.

Among the most relevant amendments, Article 22 explicitly mandates Member States to separately collect or recycle biowaste[16] 2023. According to the article, Member States should implement measures encouraging the recycling of bio-waste, including composting and digestion processes, to achieve high-quality outputs that meet environmental protection standards, support home composting practices, and promote the use of materials derived from bio-waste.[17]

Additionally, starting from 2027, compost produced from mixed municipal waste will not be eligible to contribute towards municipal waste[18]recycling targets. The amending directive emphasises recycling bio-waste and urges Member States to implement measures to facilitate the production of high-quality compost and digestate, thus fostering a circular economy. This aligns with findings presented in 'Bio-waste Management in the European Union: Policies and Practices', highlighting separate collection as waste as a resource in a circular way.[19]

2.1.2. Landfill Directive

Complementing the Waste Framework Directive, the Landfill Directive also significantly influences bio-waste management strategies across the EU and in Member States. The directive sets stringent conditions for reducing landfill waste volumes and specifically targets the diversion of biodegradable municipal waste from landfills to reduce environmental impacts, such as methane emissions and groundwater pollution. This directive mandates Member States to progressively reduce the amount of biodegradable municipal waste deposited in landfills, using 1995 levels as a benchmark. The requirement, established by Article 6(a) of the Landfill Directive, that only waste which has undergone treatment may be landfilled will be discussed in greater detail in the subsequent sections of this study, as this represents a significantly problematic aspect in Slovakia. Furthermore, Directive (EU) 2018/850 amending the Landfill Directive introduces a strict ban on landfilling separately collected bio-waste starting from 2030.

2.1.3. EU circular economy policies

Policy frameworks, notably the CEAP2, strongly influences the strategic direction of bio-waste management in the EU. Introduced by the European Commission in March 2020, CEAP2 prioritises waste prevention, resource efficiency, and the closing of the material loop. Given its potential for recovery and reuse as compost or bioenergy, bio-waste occupies a central position in achieving these circular-economy objectives. Generally, CEAP 2 complements the binding targets established

16 | Article 22 para. 1 of the Waste Framework Directive.
17 | Article 22 para. 1 of the Waste Framework Directive.
18 | Article 11a para. 4 of the Waste Framework Directive.
19 | European Environmental Agency 2020, 17.

by the Waste Framework Directive concerning bio-waste recycling and separate collection in its objective. A more comprehensive review of the circular economy approach, including bio-waste management, can be found in Towards a Circular Economy: Business Rationale for an Accelerated Transition'[20].

2.1.4. European Green Deal and bio-waste management

Building upon, *inter alia*, circular-economy initiatives, 'The European Green Deal', launched by the European Commission in December 2019, strengthens the EU's long-term commitment to sustainability by setting the ambitious goal of achieving climate neutrality by 2050. Within this broader environmental vision, the proper management of bio-waste emerges as significant for reducing greenhouse gas emissions and mitigating environmental pollution. The European Green Deal specifically promotes transforming waste streams into valuable resources, underlining the importance of bio-waste recycling for achieving the climate and sustainability targets of the EU.

Overall, the combination of binding legislative frameworks and ambitious policy targets at the EU level creates a robust structure for significantly enhancing bio-waste-management practices across all Member States, including Slovakia, which collectively aim to facilitate a sustainable transition towards a circular economy, maximising environmental benefits and minimising waste-related impacts.

2.2. National strategic documents

The strategic direction for bio-waste management in Slovakia is guided primarily by three key national documents: the Waste Management Program of the Slovak Republic 2021–2025 (POH SR 2021–2025), the Waste Prevention Program of the Slovak Republic 2019–2025 (PPVO SR 2019–2025), and the Strategy of the Environmental Policy of the Slovak Republic until 2030 with title "Greener Slovakia". These documents collectively define objectives, measures, and tools necessary to align Slovakia's waste policies with EU circular-economy goals, particularly that of reducing, separately collecting, and sustainably treating bio-waste.

2.2.1. Waste management program of the Slovak Republic for 2021–2025

In this strategic document, bio-waste is identified as a priority waste stream, and its potential for energy recovery is emphasised. The key objectives outlined include increasing the efficiency of separate bio-waste collection systems, ensuring compliance with EU recycling targets, reducing dependency on landfill

20 | Ellen MacArthur Foundation 2015.

disposal, and enhancing bio-waste recycling and recovery through composting and anaerobic digestion. Concrete targets for bio-waste management, including the reduction of biodegradable municipal waste in mixed municipal waste to 25% by the year 2025, have been set in the document. The effectiveness of these measures is monitored using indicators such as the proportion of separately collected bio-waste, recycling rates, and the number of operational composting and anaerobic digestion facilities. However, in September 2024, the Ministry of Environment of the Slovak Republic (hereinafter referred to as "Ministry"), supported by the Slovak Environmental Agency, published the Interim Evaluation of the Achievement of the Objectives of the Waste Prevention Programme of the Slovak Republic for the Years 2019–2025, in which three indicators were identified. The conclusions of the evaluations are briefly presented below:

- Amount of biodegradable municipal waste: The amount of separately collected biodegradable municipal waste increased by nearly 178% over the monitored period (2016–2023) from 166.343 tonnes to 461.960 tonnes.
- Number of municipalities supporting home composting: 1.837[21]
- Number of municipalities supporting community composting: 648.
- Share of biodegradable waste in mixed municipal waste: However, the author disagrees with the announcement of the Ministry in the document that this indicator cannot be precisely evaluated, as the methodology for mixed waste analysis aimed at determining the composition of municipal waste was only approved and published in July 2020, and the Ministry currently does not have the necessary data at its disposal.[22]

As highlighted by Valenćiková and Marišová, Slovakia's failure to meet its bio-waste targets is often linked to the fragmented implementation of proposals in strategic documents and insufficient coordination between municipalities and national authorities, which impedes consistent performance across regions.[23]

2.2.2. Waste prevention program of the Slovak Republic 2019–2025

This strategic document in the area of waste management also complements the above approach by prioritising measures aimed at reducing bio-waste generation at the source.

Home composting, responsible consumption, and food waste prevention are identified in the document as major ways to reduce the volume of biodegradable municipal waste in line with the waste hierarchy described in the Waste Framework Directive. Key objectives include limiting total bio-waste generation and

21 | Out of the total number of municipalities (2.887) in Slovakia. *Author's note.*
22 | Ministry and Slovak Environmental Agency 2024,
23 | Valenćiková and Marišová 2023.

its share as part of the municipal waste, thus easing environmental pressures. Crucially, it also emphasises that such measures will require cross-sectoral partnership and that the guiding principles behind waste prevention must be reflected in wider economic and consumer-policy agendas, since solid waste management and sustainable environmental futures are intrinsically linked.

2.2.3. Envirostrategy 2030

The Slovak Republic's long-term strategic environmental policy, Envirostrategy 2030, *inter alia*, frames bio-waste within a broader vision of achieving a circular economy and minimising landfilling. Among its headline objectives is a commitment to reducing municipal waste landfilling to 10% by 2035, which would be impossible to achieve without large-scale diversion of bio-waste from the mixed waste stream. The strategy directly highlights the insufficient rate of bio-waste separation as a key obstacle to improving municipal waste recycling. It sets as a target the full implementation of the separate collection of biodegradable waste, including kitchen waste, across the country. It also demands smart waste-management systems, public involvement tools, and investment in local infrastructure, particularly composting and biogas facilities.

Moreover, the latest analysis provided by the Institute for Environmental Policy emphasises that meeting bio-waste-related targets will bring practical and economic challenges for Slovakia, namely the capacity of its bio-waste treatment infrastructure. This analysis highlights large regional disparities in the provision of treatment facilities, indicating a necessity for strategic investments in infrastructure and improvements in bio-waste-management capabilities at municipal levels. This correlates well with the strategic aims of the Waste Prevention Program of the Slovak Republic 2019–2025 and the Waste Management Program of the Slovak Republic for 2021–2025 highlighting the necessity of implementing complex and regionally balanced approaches for achieving qualitative and quantitative shifts in the bio-waste management system towards greater efficiency and sustainability.

In conclusion, Slovakia's strategic approach to bio-waste management is robustly articulated in these national-policy documents, clearly aligning with broader EU policy frameworks. However, for the implementation of these strategies, consistent political will, sufficient financial resources, and coordination across multiple governance levels are required to address persistent gaps in infrastructure and public participation. These aspects will be further explored in the subsequent sections of this study.

2.3. Transposition and national legislation in Slovakia

Slovakia, as an EU member state, is required to transpose and implement all relevant EU waste management legislation into its national legal system. The cornerstone of the Slovak legal framework in this area is the Act on Waste, which transposes key provisions of the Waste Framework Directive and almost every other piece of EU waste legislation. This legislation establishes fundamental definitions, legal principles, and detailed obligations concerning waste management, including bio-waste. The Act on Waste obligated municipalities in Slovakia to introduce separate collection systems for biodegradable waste, including both kitchen and garden waste, since 1 January 2021. This is not merely about placing bins on the street—it reflects a more fundamental principle: sorting waste at its source to enable meaningful recovery and recycling. As laid out in the Act on Waste, the definition of bio-waste at the national level is very much aligned with legislation set out at the EU level, providing a clear basis in terms of legislation that has been the bedrock of a rollout of separate nationwide collection systems.

To support the practical implementation of these obligations, the Slovak government has adopted several pieces of secondary legislation, notably the Decree of the Ministry of Environment of the Slovak Republic No. 371/2015 Coll. which Implements Some Provisions of the Act on Waste, as amended (hereinafter referred to as "Ministerial Decree 371/2015"), which specifies the classification and catalogue of wastes, including bio-waste, as well as details on management practices. Additionally, Decree of the Ministry of Environment of the Slovak Republic No. 382/2018 Coll. on the Landfilling of Waste and the Storage of Waste Mercury, as amended, provides technical requirements and standards for waste treatment facilities; ensures that waste management operations, including composting and anaerobic digestion; complies with established environmental-protection criteria.

Institutionally, responsibility for bio-waste management at the national level is vested primarily in the Ministry. Conversely, the Slovak Environmental Inspectorate holds primary responsibility for compliance monitoring and the enforcement of environmental regulations. At the local level, municipalities bear significant responsibilities, particularly regarding the practical implementation of separate bio-waste collection systems, public education, and compliance with regulatory requirements.

Despite the clearly defined legislative and institutional responsibilities, Slovakia still faces significant challenges in effectively enforcing bio-waste collection regulations. This study will critically assess and discuss in detail specific practical issues, enforcement shortcomings, and related legal disputes in detail in subsequent sections.

3. Implementation in practice

The 2019 amendment to the Act on Waste[24] obligated municipalities to ensure the collection of biodegradable kitchen waste from households and significantly influenced separate bio-waste collection in Slovakia. This obligation entered into force on 1 January 2021, and the transition period of this amendment ended in July 2021. Starting in January 2023, even Bratislava and Košice—the two largest cities in Slovakia—lost their exemptions and were required to fully implement the separate collection of biodegradable kitchen waste. Currently, only specific areas within a municipality where it can be conclusively demonstrated that 100% of households home composting of their bio-waste are legally exempted from this obligation.[25]

Despite the uniform legal obligation, the actual rollout has revealed a fragmented and uneven pattern of implementation across the country. A key instrument shaping implementation at the municipal level is the principle of subsidiarity—municipalities are legally obligated to organise the collection systems but are granted a degree of discretion in how they fulfil these duties. As of 2022, only approximately 37,000 tonnes of kitchen bio-waste were separately collected, averaging just 14 kg per capita, which accounted for only 23% of the estimated total potential kitchen bio-waste present in mixed municipal waste.[26]

The disparities are even more pronounced when housing types and collection models are disaggregated. In municipalities where basic systems were deployed, typically involving shared containers for multiple households, the average recovery rate was significantly lower. Conversely, more sophisticated collection models, such as door-to-door schemes with individual household distribution of small bins and compostable bags, consistently yielded higher separation efficiency. According to a detailed waste-composition analysis, municipalities with a predominance of family houses using door-to-door collection systems or home composting achieved significantly higher bio-waste separation rates —up to 40% of the estimated potential—than[27], which remained below 20%. Case studies from Slovak municipalities confirm these trends: for example, in and Nitra, the combination of tailored public education and the provision of user-friendly collection equipment (like kitchen caddies and biodegradable bags) has led to substantial increases in bio-waste recovery[28].

24 | Act No. 460/2019 Coll. Amending and Supplementing Act No. 79/2015 Coll. on Waste and on Amending and Supplementing Certain Acts, as Amended, and Amending and Supplementing Certain Other Acts.
25 | Article 81 para. 21 of the Act on Waste.
26 | Institute for Environmental Policy 2023, 22.
27 | Zväz odpadového hospodárstva 2024.
28 | Fehér 2024.

A significant implementation gap persists in urban environments with a high share of apartment housing. For example, in Bratislava, where over 90% of the population lives in apartment buildings, the operational and logistical challenges are amplified, including limited space for bin placement and low levels of household participation. Analysis conducted by the municipal waste company OLO estimates that around 17% of mixed municipal waste in Bratislava is composed of kitchen bio-waste[29].

In conclusion, while Slovakia has taken substantial legislative steps toward implementing separate bio-waste collection, the actual practice remains inconsistent and hindered by logistical, infrastructural, and behavioural challenges. This study will analyse these practical obstacles in greater detail in the next section, drawing on both quantitative data and case studies from selected regions.

4. Public engagement and financial instruments

Effective bio-waste management depends not only on legislation but also on active public participation and adequate financial support provided through initiatives such as subsidies for composting infrastructure and community-education programs that have proven effective in increasing public awareness and participation. This section examines how public education and economic incentives influence the success of separate collection systems in Slovakia. Despite existing legal obligations, limited outreach and underused financial tools hinder performance and public involvement.

4.1. Public education and awareness campaigns

The transformation of Slovakia's bio-waste management system hinges not only on legislation and infrastructure but fundamentally on public awareness and behavioural change. Legal obligations cannot replace informed engagement; therefore, public education must be recognised as a cornerstone of effective waste policy.

Although the Act on Waste had already mandated the separate collection of biodegradable municipal waste, many municipalities failed to prepare in advance, assuming further legislative delays. Consequently, large segments of the population were left uninformed (or poorly informed at best) about upcoming changes, which critically undermined early-implementation efforts.[30] It is difficult to determine who is responsible for this undesirable state. On the one hand, the Ministry explicitly obligated municipalities to conduct information campaigns

29 | Institute for Environmental Policy 2020, 20.
30 | Valenćiková 2022, 204.

by publishing relevant content on municipal websites and distributing informational materials[31]. On the other hand, from the authors' perspective, the Ministry could have supported municipalities more actively—particularly in preparing the content and visual materials for such campaigns. Eventually, this support materialised in 2022, when the Ministry issued a manual for municipalities on ensuring the separate collection of biodegradable waste. This guidance, *inter alia*, stresses the importance of using multiple outreach tools—printed materials, local media, community events, and house-to-house education. It also emphasises families.[32]

Successful local examples cannot be overlooked, such as the municipality of Horná Ves[33] or Partizánske[34], which showed that raising awareness and general decentralised outreach through municipal websites and broader community campaigns can help awareness and, overall, significantly decrease municipal waste volume. These actions were geared to encourage zero-waste living using positive reinforcement and immediate feedback.

Education is recognised as an important policy tool for achieving these objectives at the national level in the Programme of Waste Prevention 2019–2025 and in the Waste Management Programme of the Slovak Republic 2021–2025. However, mechanisms and budgets for municipalities to determine strategic priorities and frequently conduct tangible campaigns do not exist. A key limitation lies in the institutional fragmentation of responsibility. In practice, public education activities are often left to the discretion of organisations with the responsibility of producers, who only spend around 1.3% of their budget for raising awareness among citizens.[35] Slovakia currently lacks any mandatory minimum threshold for communication spending by these entities, which could be very useful in increasing the amount of sorted bio-waste, which will be essential if Slovakia wants to achieve the goals set by EU legislation. To ensure success, campaigns must be designed not only as information tools but also as engagement strategies. This means investing in two-way communication, cultural relevance, and transparency about what happens to the waste once it is separated. Only with trust and inclusion can citizens be transformed from passive participants into active agents in the circular economy.

4.2. Financial instruments and economic incentives

Not only legislative obligation but also a well-balanced mix of economic incentives and financial instruments are required to encourage the public to meaningfully participate in bio-waste separation and treatment in Slovakia. Despite the

31 | See Provision of § 14 para. 14 of the Ministerial Decree 371/2015.
32 | See Moňok and Masničáková 2021, 32.
33 | Horná 2022.
34 | Kazda 2023.
35 | Institute of Environmental Policy 2023, 31.

existence of several funding mechanisms and policy tools, their implementation remains fragmented, inconsistently applied, and underfunded.

At the national level, municipalities may access the Environmental Fund and utilise calls under the Operational Programme Quality of Environment. These sources have been used primarily for the procurement of home composters, the establishment of brown-bin collection systems, and the construction of composting infrastructure. The Environmental Fund has also supported pilot projects aimed at decentralised composting or educational campaigns. Yet, these efforts lack continuity and scale and are not governed by a long-term national funding strategy. Moreover, local authorities are not systematically encouraged—either legally or financially—to invest in high-quality awareness campaigns or reward households for active participation. As Máčaj argues, the way municipalities regulate residual waste collection can become a decisive tool for influencing citizen behaviour and reducing overall waste generation.[36]

A key systemic gap lies in the limited use of economic incentives at the household level. Slovakia currently lacks widespread implementation of pay-as-you-throw (PAYT) schemes, in which citizens are financially rewarded for reducing mixed waste and increasing separated collection. Although PAYT scheme is recommended by the EU as a best practice for driving behavioural change, its rollout in Slovakia has been minimal, with only a few municipalities experimenting with such models. In 2023, only 10.6% of municipalities had implemented a quantity-based municipal waste collection system, and just 5.6% had applied a combined approach.[37]

The Ministry, in cooperation with civil society partners, has developed manuals and model practices to support local authorities, including providing guidance on informing the public and organising [38]events. However, these tools are voluntary and not systematically linked to financial support schemes. For example, municipalities are not incentivised to appoint local trainers or 'compost masters' to lead community workshops and demonstrate abroad.[39]

To close these gaps, experts have proposed integrating public engagement requirements directly into legal and financial frameworks. This includes:

- setting minimum thresholds for producer responsibility organisations' spending on education,
- linking municipal subsidies to performance indicators (e.g. diversion rates),
- earmarking funds for PAYT scheme implementation and local composting initiatives.[40]

36 | Máčaj 2021, 38.
37 | Ministry 2024, 180.
38 | See Moňok, Masničáková and Záhorský 2016.
39 | See e.g. Interreg Europe 2023.
40 | Proposals were developed within the academic project APVV-20-0076 titled Waste and Buildings – Modeling Efficiency of Alternative Opportunities for Public Authorities Cooperation, of which the author of the study was a member.

In sum, Slovakia possesses the legal architecture and selected financial instruments to support household bio-waste engagement, but these tools remain underutilised. Without targeted investment in programs and incentives addressing citizens, legal obligations alone are unlikely to produce the behavioural change needed to achieve circularity in the bio-waste sector.

5. Bio-waste treatment methods and associated health and environmental risks

The effectiveness of bio-waste management is closely linked to the quality and safety of its treatment. This section outlines main treatment methods used in Slovakia and examines their associated environmental and health-related risks. It also highlights key challenges such as inadequate infrastructure, quality-control gaps, and the limited role of anaerobic digestion in the current system.

5.1. Overview of treatment options in Slovakia

Based on the country's geographic, demographic, and institutional diversity, the treatment of bio-waste in Slovakia is characterised by a dual approach: heavy reliance on decentralised home composting in rural and suburban areas and supporting municipal-level collection and centralised treatment systems, including both composting and, to a much lesser extent, anaerobic digestion.

Home composting remains the most common method for addressing bio-waste in family housing zones. The state has supported this method by financing the distribution of domestic composters, primarily through the Slovak Environmental Fund and EU-supported calls under the Operational Programme Quality of Environment. However, this decentralised model has limitations in terms of quality control, environmental monitoring, and data transparency. Municipalities often rely on self-reporting or blanket assumptions about composting behaviour, because the sorted amount of kitchen bio-waste will not be included in the municipal-waste register, which will only result in a decrease in mixed municipal waste (which, however, can be caused by a number of other factors).

Municipal centralised bio-waste collection systems, in particular brown-bin schemes, have expanded since the introduction of mandatory separate collection obligations in 2021. These systems are generally more prevalent in urbanised and densely populated municipalities, where home composting is less feasible. Brown-bin collection enables better control over material quality, facilitates treatment at industrial composting plants, generates additional operational costs; however, public cooperation is required for source separation. A detailed analysis of municipal waste management in 212 Slovak municipalities revealed that the average cost of handling one tonne of kitchen bio-waste amounts to 405 EUR, whereas the

average cost of managing garden-derived biodegradable waste in 256 municipalities was just 50 EUR per tonne.[41]

Centralised treatment infrastructure for biodegradable kitchen and catering waste in Slovakia remains relatively limited in terms of coverage, though available facilities offer substantial nominal capacity. As of 2023, 73 authorised facilities were in operation nationwide, consisting of 54 composting plants and 19 biogas stations. The combined processing capacity of the composting facilities reached 503,544.3 tonnes, while the biogas stations had an additional[42]capacity. Anaerobic digestion, while identified as an effective treatment method for its dual benefits (waste reduction and energy recovery), remains underdeveloped. Barriers include high investment costs, regulatory complexity, and public opposition to the perceived industrialisation of waste treatment in peri-urban zones.

In conclusion, while Slovakia's treatment landscape offers multiple options, it remains fragmented and inconsistent. The system relies predominantly on decentralised solutions, while investment and oversight of centralised technologies—especially anaerobic digestion—lags behind. A more integrated strategy that balances household responsibility with municipal capacity will be necessary to achieve environmental and policy targets under the Waste Framework Directive.

5.2. Environmental and health-related risks of bio-waste treatment

The treatment of bio-waste in Slovakia entails a complex mix of environmental and health-related risks, depending on the technology used, the level of operational oversight, and the consistency of source separation. Despite existing legislative obligations, the reality of implementation reveals several weak points in terms of both environmental protection and public health.

5.2.1. Environmental risks

The widespread treatment method in Slovakia remains home composting, especially in rural areas. Although the distribution of home composters has been widely supported through national programmes, their actual use and effectiveness in households remain largely undocumented. Municipalities often lack mechanisms to verify [43]correct usage or the environmental outcomes of home composting. This creates uncertainty regarding the real contribution of such decentralised systems to waste diversion and environmental protection. The author has observed that a certain municipality was distributing home composters to residents and in

41 | Zväz odpadového hospodárstva 2024.
42 | Zväz odpadového hospodárstva 2023.
43 | Fehér 2024.

the same month, people from that municipality were selling these composters on internet portals, which is problematic.

At municipal composting facilities, problems may arise when installations are operated with outdated technology or without proper site protection. Further, citizen complaints related to odours and technical inadequacies are commonly associated with such facilities, especially in warm months. Here, the need for strict environmental guarantees and registration of facilities must be emphasized to avoid uncontrolled impacts on air, water, and soil quality.

Furthermore, Slovakia landfills significant amounts of biodegradable waste, particularly in municipalities lacking full brown-bin infrastructure. This leads to avoidable methane emissions, undermining climate goals under the Waste Framework Directive.

5.2.2. Health-related risks

Health-related risks of bio-waste treatment are most acute in improperly maintained open composting systems. Poor composting conditions cause the spread of pathogenic microorganisms, especially when kitchen waste is mixed with animal by-products or contaminated inputs. According to expert guidance, compost must reach specific temperatures and retention times to eliminate health threats that many backyard or poorly managed municipal sites do not reliably reduce.

Additional health concerns relate to the attraction of rodents and insects, without proper storage of kitchen waste or adequate collection frequency. Finally, the fact that home composting is never submitted to any hygiene requirements (unlike industrial composting plants) creates the following issue for health protection. While industrial plants require adherence to technical standards, backyard composting is largely self-regulated, creating a challenge for the safe handling of household food waste, particularly in densely populated environments.

But if Slovakia is serious about its environmental and climate objectives and about safe bio-waste management, the country needs improved technical supervision, enforcement of composting standards, and a wider turn toward emission-abating technologies, like anaerobic digestion. A holistic approach to mitigating these risks is critical for protecting both ecosystems and public health.

5.3. Quality control and monitoring gaps

Persistent gaps in quality control and performance monitoring significantly constrain the effectiveness of Slovakia's bio-waste management system. These weaknesses are evident at multiple levels of the system—from decentralised household composting to municipal collection and centralised treatment.

Though home composting is one of the most commonly promoted solutions, no standardised mechanism for verifying composting practices or assessing

outcomes exists. Municipalities that distribute composters often rely solely on the assumption that households will use them properly and have no actual means to verify how bio-waste is composted in the household. This limited oversight is partially explained by the fact that municipalities are responsible for supervising compliance with bio-waste obligations among individual residents, as national authorities (mainly the Slovak Environmental Inspectorate) do not maintain such controls over natural persons. This absence of oversight makes it impossible to assess compliance with basic environmental or hygienic criteria, such as the maturity of the compost, the exclusion of inappropriate materials, or the maintenance of aerobic conditions. Without performance data, the real contribution of home composting to separate collection targets remains uncertain.

At the municipal level, brown-bin collection schemes and communal composting plants are, in most cases, subject to basic reporting obligations. However, aspects related to quality, such as the cleanliness of collected material, contamination rates, and output quality are not systematically monitored or publicly reported. While composting facilities must fulfil general environmental protection requirements, the environmental performance of many small and local facilities is not regularly evaluated. Moreover, neither a national registry nor a centralised database on composting installations exists to evaluate the operational status, input-output data, and environmental impacts. The absence of standard metrics and third-party audits limits the state's capacity to assess the impact of its waste-diversion efforts.

The Slovak Environmental Inspectorate also carries out controls in the waste-management sector, but it focuses mainly on formal compliance rather than the actual environmental results of biological treatment processes. Also, according to publicly available annual inspection plans, bio-waste composting receives little targeted attention in the structure of environmental inspections.

In practice, this means that failures in treatment quality may go undetected, especially in rural or peri-urban areas with limited technical capacity and political attention. Without clear rules for output quality, testing frequencies, or sanctions for non-compliance, the system lacks basic safeguards necessary to ensure a circular and safe material loop.

6. Bio-waste management in practice: gaps, barriers, and exemplary responses

Despite a solid legal framework, Slovakia's bio-waste system faces persistent barriers at the implementation level. This section explores structural, legal, and operational gaps that hinder progress and contrasts them with good practice examples from selected municipalities. The section also identifies where the system fails—and succeeds—to deliver effective, sustainable bio-waste management.

6.1. Fragmentation of responsibilities between national and local authorities

The bio-waste governance framework in Slovakia is institutionally fragmented, with responsibilities divided across several administrative levels and actors. At the national level, the Ministry formulates the legal and strategic direction and policy papers such as the Waste Management Programme or Waste Prevention Plan or legislation. Conversely, the operational responsibility virtually rests with municipalities, which must establish collection schemes, maintain infrastructure, and implement public communication.

This division of labour and responsibilities leads to systemic coordination gaps. Municipalities frequently lack the technical capacity, human resources, or financial means to implement and monitor complex systems like the separate collection of all types of bio-waste. However, national authorities often provide only general guidance or late-stage technical support without consistent capacity-building or enforcement oversight. This institutional disconnection has been repeatedly identified as a key factor undermining uniformity and effectiveness in municipal waste services, including those related to bio-waste. As a result of the APVV-funded project, a study had already been conducted to evaluate the efficiency of waste governance in Slovak municipalities and concluded that "the independence of local waste policies within and between districts can result in significant disparities in effectiveness" – a conclusion that was supported by quantitative indicators showing large inter-regional differences in recycling, landfilling, and bio-waste recovery rates.

In short, Slovakia's multi-level governance framework in the area of bio-waste is defined more by legal decentralisation than by cooperative governance. A clearer division of responsibilities, accompanied by capacity-building, minimum quality standards, and performance-based financing, is essential for overcoming fragmentation and aligning national ambitions with local realities.

6.2. Gaps in legal framework and performance-based oversight

Though Slovakia has transposed key EU waste legislation into its national legal framework, it faces significant structural and legal challenges in governing municipal bio-waste. These gaps are most visible in the vagueness of legal obligations, the fragmentation of enforcement responsibilities, and the absence of strategic, performance-based monitoring tools.

The Slovak Act on Waste and implementing Ministerial Decree 371/2015 establish formal requirements for municipalities to ensure that biodegradable municipal waste is collected separately. However, in the author's view, these provisions lack measurable performance criteria related to contamination levels, collection effectiveness, or treatment outcomes. Legal obligations are primarily procedural,

as they require the provision of containers or a collection schedule without addressing whether the collected material is actually suitable for high-quality composting or whether it is ultimately processed in such a way as to meet circular-economy objectives. Furthermore, neither national legislation gives acceptable limits for contaminants nor classes for municipal waste-derived compost. The Waste Management Programme for the years 2021–2025 defines no performance indicators for benchmarking or systemic evaluation. This form of normative vagueness enables municipalities and processors to nominally comply with their legal obligations, even when this compliance fails to yield environmentally meaningful outcomes. At the national level, no centralised mechanism exists to evaluate the quality and effectiveness of municipal bio-waste systems. The Ministry does not collect data on contamination rates, compost quality, or the final use of treated bio-waste. Municipal reports focus mainly on the collected quantities and have hardly any information on the functional outcomes of collection and treatment.

Institutionally, enforcement responsibilities are divided among municipalities, district offices, the Slovak Environmental Inspectorate, and the Ministry. However, these roles are distributed without effective coordination. The district environmental departments often lack technical staff, while municipalities are not provided with centralised methodological guidance or feedback on the quality of their collection and treatment systems. In many cases, oversight is limited to administrative formality, and no authority is tasked with assessing whether the collected bio-waste is suitable for composting or if the final compost meets hygienic and agronomic standards.

The Slovak Environmental Inspectorate, as confirmed by the Supreme Audit Office of the Slovak Republic,[44] is under-resourced and lacks the personnel, analytical capacity, and strategic-planning tools to perform risk-based inspections in the bio-waste sector. The abolition of annual inspection-planning documents and the absence of an internal analytical unit have led to a reactive enforcement culture with a focus on low-risk citizen complaints. Systemic risks, such as persistent contamination in certain municipalities, can go undetected and unaddressed. This leads to the conclusion that the Slovak Environmental Inspectorate, which oversight and enforcement, emphasises formal compliance with permit obligations over functional outcomes or the quality of performance of composting facilities. The institutional model, characterised by widely dispersed accountability and weak performance incentives, creates a governance vacuum that neither supports local initiatives nor ensures national policy coherence. These structural deficiencies were further confirmed in a 2024 performance audit by the Supreme Audit Office, which emphasised the Slovak Environmental Inspectorate's growing burden of both permitting facilities.[45]

44 | Najvyšší kontrolný úrad 2025.
45 | Ibid.

Studies using technical-efficiency models confirm that Slovak municipalities vary significantly in their bio-waste management. For instance, Fandel and Marišová used a DEA Assurance Region model to show that even among municipalities with similar population sizes and budgets, performance differs dramatically because of operational inefficiencies and strategic neglect.[46] Yet no system exists to identify and support the replication of good practices. Overall, the Slovak system currently facilitates widespread formal compliance with minimal guarantees of environmental effectiveness. Without clearer legal definitions, better mandatory coordination of oversight, and the establishment of national performance monitoring, bio-waste governance in Slovakia risks remaining bureaucratically active but strategically problematic.

6.3. Practical implementation problems observed in municipalities

While Slovakia has formulated the legal and strategic framework for bio-waste management, municipalities are mainly responsible for its daily implementation. At municipalities, policy meets reality and the system either functions or fails. Based on field data, audit findings, and academic studies, several recurring implementation problems have been identified, including inconsistencies in collection practices, infrastructural limitations, and issues related to the quality of the collected material. These challenges, though often underestimated, directly affect the environmental performance of the whole bio-waste chain. These challenges are listed in the following section.

6.3.1. Variability and inflexibility in collection practices and service frequency

The primary challenge in bio-waste management across Slovak municipalities is variability in collection practices and service frequency. For example, some municipalities offer weekly collection services all year round, while others only organise collections for some seasons of the year, like spring or autumn. This variability is mostly influenced by local conditions, population concentration, and financial capabilities, resulting in a distinct waste management system in different regions. Variability, which might appear to be deleterious at first, is central to the whole system. Simple one-size-fits-all solutions in bio-waste collection do not work effectively.

The introduction of rigid regulations[47], such as the mandatory use of perforated bins, has added complexity to an already inconsistent system. These regulations were implemented without prior consultation with municipalities, which led to

46 | Fandel and Marišová 2024.

47 | This happened by adopting The Decree of the Ministry of Environment of the Slovak Republic No. 259/2023 Coll., which amends and supplements the Decree of the Ministry of Environment of the Slovak Republic No. 371/2015 Coll., implementing certain provisions of the Act on Waste, as amended.

unintended consequences. Municipalities that could not purchase the required bins faced increased costs owing to the need for more frequent collections. Mayors and municipal leaders criticised this approach, pointing out that it failed to consider the unique circumstances of each municipality. According to the Union of Slovak Cities constraints.[48]

6.3.2. Infrastructural deficiencies and operational bottlenecks

The Slovak bio-waste management system faces persistent structural barriers, mainly because of inadequate end-treatment infrastructure and uneven access of municipalities to it. Consequently, local governments often encounter operational difficulties that compromise the overall effectiveness of separate bio-waste collection systems. A critical issue is the limited availability of final treatment facilities for collected bio-waste, particularly in regions without composting plants or biogas stations in relative proximity to the origin of the waste. As explicitly stated in an expert analysis, Since final facilities for the collected bio-waste are lacking, municipalities are forced to transport the collected bio-waste over long distances, which increases the cost of the entire system."[49]

Another serious issue is the fact that a rather large portion of municipal waste still ends up in landfills —in 2023, it was still 38.[50] A problematic aspect in the Slovak context is the absence of concrete data on the proportion of bio-waste that ends up in landfills together with mixed municipal waste. The situation is further aggravated by persistent implementation delays and the lack of effective institutional response, particularly in the fulfilment of legal obligations and the development of essential infrastructure. For example, the obligation to pre-treat municipal waste prior to landfilling by stipulating that only the output of mixed waste treatment may be accepted at landfills was originally scheduled to be enforced on 1 January 2021. However, this obligation has since been repeatedly postponed—first to January 2023, then to 2024, next postponement was to 2025. Currently it is set to take effect only in January 2027. On the one hand, the author acknowledges the need to avoid imposing obligations that would, within a relatively short timeframe, place municipalities in difficult and potentially unmanageable situations. On the other hand, a six-year postponement of this obligation is, in his view, excessively long. Interestingly, the most recent extension of the deadline was adopted through an amendment to the Act on Waste passed by the National Council[51], which reportedly surprised even the Association of Towns and Communities of Slovakia, which had previously been assured that no further postponements would occur. These delays, rooted in infrastructural gaps, generate long-term uncertainty and weaken local-level implementation. For

48 | Únia miest Slovenska 2023.
49 | Šimková, Bednárová, Prčík 2024, 16.
50 | Ministry 2024, 169.
51 | Čachová 2024; Potočár 2024.

example, a decree supporting the development of municipal composting and biogas infrastructure, which was planned under the Waste Management Programme of the Slovak Republic for 2021–2025, was to be adopted by the Ministry by the end of 2022. However, this legislative act had not yet been adopted.[52]

The overall picture is further complicated by the absence of a fully functional national waste data system. Although the Integrated Waste Management Information System (ISOH) has been under preparation since 2017, its launch remains uncertain. Without a reliable, centralised digital registry of treatment capacities and material flows, strategic planning remains limited and fragmented.

6.3.3. Quality issues and contamination

The efficiency, cost, and environmental outcome of bio-waste treatment is strongly influenced by the quality of the separation of such waste. This remains a major concern in Slovakia, even though collection rates across municipalities are rising. Improper sorting, inadequate equipment, and a lack of public awareness often result in contaminated or poorly managed waste streams, which reduce the effectiveness of downstream processes, such as composting and anaerobic digestion.

Separation of bio-waste has been reported to be highly contaminated in places without specific collection equipment for separate collection of bio-waste and where compostable bags are not used. According to the official guidance issued by the Ministry, contamination with non-biodegradable components, such as plastics, remains a serious issue. The quality of the collected material is significantly influenced by the design of the collection system. The more direct the collection (0 meters walking distance), and the smaller the containers used, the cleaner the.[53]

Poor quality is also associated with improper handling and unsuitable containers, especially during the warmer months. In systems that fail to ensure sufficient ventilation or use inappropriate collection frequencies, the material often becomes acidic and mouldy, which not only complicates treatment but also increases health risks. A study cited by the Ministry found that "low pH and mold formation significantly prolong the composting and sanitisation processes, increasing treatment costs[54]" Furthermore, contamination compromises marketability and the agronomic value of the resulting compost or digestate. As noted in expert materials, only high-quality input can produce compost suitable for agricultural use. Therefore, source separation, container hygiene, and continuous education of residents should be emphasised in local collection schemes.

In conclusion, the contamination and quality issues in collected bio-waste constitute a significant operational barrier. While they may not always be as visible

52 | Šimková, Bednárová, Prčík 2024, 16.
53 | See Moňok, Masničáková and Záhorský 2016.
54 | Ibid.

as infrastructural shortcomings, their impact is equally critical. Addressing them requires a combination of technical measures (such as container design and optimised frequency) and soft interventions (including awareness-raising, feedback systems, and incentives for proper sorting).

6.4. Examples of good practice from slovak municipalities

This section explores effective strategies for managing bio-waste collection and treatment at the municipal level. It highlights innovative approaches implemented in Slovak municipalities, focusing on specific examples such as Partizánske, Bratislava, and Halič. These municipalities have successfully integrated bio-waste management systems that contributed to a more sustainable approach to waste separation and recycling.

6.4.1. Partizánske

The author chose to use the city of Partizánske with a population of 20,397 residents, which serves as an excellent example of how bio-waste collection and treatment can be effectively managed at the municipal level. In the following, three main aspects will be described—home composting for single-family houses, door-to-door kitchen waste collection for apartment buildings, and robust community engagement and education. These efforts have not only helped reduce waste but contributed to a more sustainable approach to managing bio-waste within the region.

The Home Composting Development Programme, which started in 2014, is one of the most effective bio-waste management initiatives in Partizánske. Based on a pilot project in one of the districts, the initiative was designed to encourage residents in single-family houses to compost at home and manage their bio-waste. The city offered free composters and educational materials to ensure that the community was provided with necessary tools and information. The results have been remarkable: between 2016–2023, in single-family houses, adopted home composting, resulting in a 36% reduction of mixed waste (118 kg per capita).[55]

Another significant approach was chosen for residents living in apartment buildings to participate in the so-called 'door-to-door collection' for kitchen waste. In apartment buildings with elevators, residents place the compostable bags with baskets in front of their apartment doors on collection days, which the municipal staff picked up. In buildings without elevators, the staff collects the bags from baskets only on the ground floor, where residents drop off the baskets from their apartments. After being emptied, the baskets are returned to the residents. In 2023, approximately 18 kg of kitchen bio-waste was collected capita.[56]

55 | Moňok and Beznáková 2024.
56 | Kazda 2023.

The spirit of success of Community Engagement and Education Partizánske in bio-waste treatment is underpinned by a strong emphasis on community involvement and education. Holding public lectures, door-to-door campaigns, and promoting the importance of bio-waste separation and composting through brochures and media articles, the city trains citizens towards greener living.

6.4.2. Bratislava

As noted earlier, the capital of Slovakia—Bratislava—initiated a kitchen-waste collection system in line with the EU legislative requirements a little later than other cities. In 2021, the kitchen and garden waste represented approximately 45% of the total residual waste in the city. The pilot project for separate kitchen waste collection began in 2021 in the smallest district of Bratislava – Lamač, which served as the testing ground before a city-wide rollout. Residents of Lamač were provided with compostable bags and vented kitchen baskets for collecting kitchen waste, which was then placed into designated 120- and 240-litre brown bins provided for the entire building.

For the successful implementation of the system, effective communication with residents and ensuring their involvement was crucial. As part of the project preparation, a readiness survey was conducted to assess citizens' willingness to adapt to the new waste-sorting behaviour. Approximately 38% of respondents expressed a strong interest in using the brown bins, with 31% of households already practicing home composting.[57]

This system will become citywide following the successful implementation the pilot project in Lamač. Bratislava has gradually implemented a kitchen bio-waste collection system throughout all districts. In 2022, the system was adopted in all 17 urban districts and in more than 140,000 households. Unlike full-scale operations, a phased rollout enables processes to be optimised and potential issues to be addressed before the system is fully deployed. Based on the pilot project results in Lamač, the levels of contamination in waste (non-compostable materials in bio-waste) were very low and amounted to only 0.57% in apartment buildings and 0.25% in single-sector housing.[58]

6.4.3. Halič

One of the systems that directly increases the rate of municipal waste separation, thereby likely increasing the amount of the separately-collected bio-waste, is the quantity-based collection system, commonly referred to as Pay-As-You-Throw (hereinafter referred to as "PAYT"). This model offers several alternative

57 | Jourdan and Favoino 2024.
58 | Ibid.

configurations, which, however, are beyond the scope of this study. As an example of best practices, it is pertinent to highlight an exclusive case of a municipality where such a PAYT scheme was introduced, resulting in unexpected outcomes.

The municipality of Halič, a small town with a population of only 1,675 inhabitants implemented this system in 2020. The municipal-waste recycling rate before the implementation of PAYT was only 41.94% in [59][60]. In contrast, by 2024, the municipality achieved a recycling rate of 66.06%, marking a significant increase. Notably, while the introduction of the PAYT scheme in Halič likely significantly contributed to the improvement, other factors such as the overall increase in public awareness about recycling may also play an important role.

7. Conclusion and future outlook

Despite the formal transposition of the EU waste acquis into Slovak law, the country's bio-waste management system remains fundamentally misaligned with the practical objectives of the circular economy[61]. Despite legal obligations, their implementation is often symbolic rather than substantively effective. The increasing gap between formal compliance and functional outcomes has been evident not only in low separation rates and high contamination but also in the absence of measurable quality indicators, coordinated enforcement, and community-level ownership. Slovakia's bio-waste policy is not underperforming owing to the lack of legislation but because of an insufficiently integrated system of legal, institutional, and behavioural mechanisms capable of delivering meaningful environmental results.

To rectify this, a shift from obligations of conduct to obligations of result is imperative. As detailed in Section 6.2, legal obligations under § 81 of the Act on Waste are framed procedurally and lack substantive performance benchmarks. Based on this observation, the current wording should be revised to include enforceable separation targets and maximum contamination thresholds. These benchmarks must be adapted to municipal capacities, for example, by introducing a tiered system where municipalities over 5000 inhabitants are legally required to achieve minimum separation rates (e.g. 55% by the end of 2028) and contamination levels below 3%. This approach reflects the principle of proportionality while moving towards substantive compliance with EU targets, especially the next benchmark for preparing for re-use and the recycling of municipal waste—65% by 2035[62]. Strategically, in its next waste management programme, the Slovak

59 | Halič 2020.
60 | Halič 2025.
61 | For more about Slovakia's approach to circular economy, see: Michalovič 2024.
62 | Article 11 para. 2 letter (e) of the Waste Framework Directive

Republic must integrate these reforms into binding performance indicators, not only for collection rates but also for quality metrics and final treatment outputs.

The codification of standards for compost and digestate quality is also important. As proposed in an [63]Kompostverordnung. This includes hygiene requirements (e.g. minimum temperature and retention time), contamination limits (particularly plastic content), nutrient value ranges, and heavy metal thresholds. Regular testing and transparent reporting must be made mandatory, particularly for facilities processing kitchen waste.

Legal reforms must be complemented by a reconfiguration of governance structures. Section 6.2 documents the lack of targeted and risk-based inspections. The Slovak Environmental Inspectorate currently lacks the analytical capacity and strategic mandate to monitor performance-based indicators in bio-waste treatment. A dedicated bio-waste unit within it should be established, with competencies for facility inspection, contamination audits, and enforcement. This should be supported by the creation of a centralised national register of composting and anaerobic digestion facilities and its integration into the ISOH system, tracking-treatment capacities, contamination rates, and output flows.

From an operational perspective, Slovakia must reconsider its reliance on passive collection models. As shown in Section 6.3, municipalities implementing door-to-door systems (e.g. Partizánske) achieve demonstrably better results in both quantity and quality of separated bio-waste. The adoption of door-to-door collection systems should be standardised, particularly in municipalities with mixed housing and a population over 1,000. Financial support for rollout could be made available through the Environmental Fund. The applicability and cost-efficiency of this model depend significantly on local conditions, such as population density, existing waste infrastructure, and administrative capacity. The lack of a universally applicable solution suitable for all municipalities should also be acknowledged. Therefore, for standardisation, a strong element of subsidiarity and flexibility should be incorporated into locally adapted implementation strategies.

Additionally, the mandatory introduction of PAYT schemes should be considered for all municipalities with more than 5000 inhabitants by 2028. It was calculated that the PAYT scheme is among the most effective economic tools for reducing waste generation and improving separation rates. Slovak data suggest that municipalities using quantity-based fees reduce mixed municipal waste per capita by approximately 22%.[64] Yet, as noted in Section 4.2 and supported by quantitative data, fewer than 11% of municipalities had implemented any form of quantity-based collection[65]. Through legislative changes, minimum thresholds for

63 | BGBl. II Nr. 292/2001 – Kompostverordnung.
64 | Institute for Environmental Policy 2019.
65 | Ministry 2024.

variable fees should be introduced, while technical guidance and financial support should be provided to facilitate local implementation.

A particularly underdeveloped component in Slovakia's bio-waste policy is community composting. Section 6.4 points to the absence of regulatory mechanisms supporting neighbourhood-scale initiatives. Legal recognition of 'community composting sites' as a specific category of low-threshold facilities (e.g. <20 t/year) would enable citizen-driven solutions in schools, urban neighbourhoods, and housing cooperatives. Simplified permitting, combined with methodological support and targeted grants, could unlock local circular loops with minimal regulatory burden. A recent study concluded that "community-based compost programs are a promising strategy to improve household-level awareness, knowledge, and confidence in reducing food waste and bolster a circular food system in a target area.[66]

Notably, while this study has focused primarily on household-level bio-waste, where legal obligations were clearly defined and implementation is more visible, bio-waste, as defined under EU law, also includes waste generated by restaurants, offices, food processing plants, and similar sources. The lack of complex data makes it difficult to assess the relative contributions of these sectors. Nonetheless, integrating household and non-household streams in shared treatment systems could improve cost-efficiency, raise output quality, and strengthen the viability of composting and anaerobic digestion infrastructure.

Finally, Slovakia must prepare for anticipated EU-level reforms. The expected revision of the Waste Framework Directive may introduce mandatory compost-quality standards, food-waste-prevention targets, and broader integration with EU climate and biodiversity frameworks. Rather than waiting to react, Slovakia should proactively align its legal and institutional architecture with these expected developments. An inter-ministerial coordination body could be tasked with legislative adaptation and the preparation of joint applications for funding under Horizon Europe, LIFE+, or the Cohesion Fund.

In conclusion, the transformation of Slovakia's bio-waste management system will not be achieved through fragmented amendments or short-term pilot projects, but a systemic recalibration of legal design, governance accountability, economic signals, and citizen engagement is required for it. The current bio-waste management system in Slovakia remains locked in a reactive and fragmented mode of operation, as legal compliance is often equated to formalistic fulfilment rather than substantive environmental progress. The key findings of this study point to the urgent need to redesign regulatory content and institutional arrangements not only through *ad-hoc* adjustments but through structural reform.

A robust bio-waste strategy for the 2025–2030 period must be grounded in enforceable quality standards (e.g. national thresholds for compost contamination),

66 | Campbell et al. 2025, 2.

performance-based oversight (e.g. audits of municipal separation rates and treatment outcomes), and targeted investment in local capacity (e.g. PAYT, community composting hubs, ISOH analytics). Municipalities must no longer be treated as passive implementers but empowered as central actors provided with tools, data, and legal clarity. The recommendations put forward in this article—ranging from legislative amendments to governance realignment and citizen engagement are not aspirational add-ons. They are a functional precondition for achieving the EU's 65% recycling target by 2035 and for reversing Slovakia's historical over-reliance on landfill disposal. Without this shift, Slovakia risks remaining trapped in a cycle of symbolic reforms, rising infringement exposure, and unfulfilled climate and circularity goals. Political will, administrative leadership, and a legal framework that transforms compliance into performance are all required now.

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Lana OFAK[1] – Valentina GRUBEŠIĆ ČRNELČ[2]

From Landfills to Composting: Challenges of Transforming Biodegradable Waste Management in Croatia[3]

Abstract

As the youngest member of the European Union, Croatia has made considerable efforts to align its biodegradable-waste-management practices with EU legislation. This paper examines the development of Croatia's legal and strategic framework from early national initiatives to the Waste Management Plan of 2023–2028. Despite legislative advancements, Croatia struggles with the implementation of waste management. Key issues include delays in adopting regulations and waste-management plans and insufficient infrastructure for composting and anaerobic digestion. The paper also explores successful practices, including public-awareness campaigns and financial incentives, which have contributed to improvements in separate bio-waste collection. Additionally, the paper addresses risks such as seasonal peaks in waste generation in tourist regions, public resistance to new facilities, and the accumulation of unsold compost. Recent policy measures, including the introduction of a landfill fee in 2025 and the anticipated Ordinance on HR fertilising products, are evaluated for their potential to improve outcomes. By analysing Croatia's progress and setbacks, the paper contributes to the broader discourse on sustainable waste management in EU Member States and offers practical insights for policymakers and researchers to enhance biodegradable-waste-management systems in line with circular-economy principles.

Keywords: Municipal Waste, Biodegradable Waste, Bio-Waste, Composting, Croatian Waste Management Act

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1. Introduction

According to the latest data, approximately 22.5% of municipal waste generated in the European Union (EU) was landfilled in 2023.[4] However, the rates of landfilling municipal waste differ significantly across EU countries.[5] Despite being considered more eco-friendly than non-biodegradable waste, biodegradable waste can still pose environmental risks if not properly managed. The primary environmental concern associated with biodegradable waste is the release of methane gas during its decomposition in landfills. Redirecting biodegradable waste to higher-level waste treatment options, such as composting and anaerobic digestion, in accordance with Directive 2008/98/EC on waste (hereinafter: Waste Framework Directive), and properly stabilising the waste before disposal, are key strategies to reduce methane emissions from waste.[6]

In 2018, the revision of the Waste Framework Directive mandated the separate collection of bio-waste by 2024. Further, Directive 1999/31/EC on the landfill of waste[7] (hereinafter: Landfill Directive) was amended with the new goal of a maximum of 10% landfilling of municipal waste by 2035. These changes lead to the anticipation of a further decrease in methane emissions from landfills.

Reducing the amount of biodegradable waste being sent to landfills and its use to create climate-neutral, circular biobased materials and chemicals is crucial in preventing the release of methane gas. This also enables the development of alternatives to fossil fuels, helping to reduce dependence on non-renewable resources.[8] For this purpose, EU Member States should strengthen the enforcement of current legal obligations, such as meeting landfill-diversion targets for biodegradable waste and properly treating biodegradable waste before disposal to mitigate its negative impact.[9]

As the youngest EU member state, Croatia has attempted to align its waste-management legislation and practices with EU law. This paper explores these practices and is organised into different sections. The paper begins with an overview of Croatian academic and legal scholarship on biodegradable waste, highlighting the limited but evolving body of literature in this field (Section 2). The paper proceeds to explore the legislative and strategic framework governing biodegradable-waste management in Croatia, including its compliance with EU goals (Section 3). Additionally, the paper will examine success stories and case studies that demonstrate effective biodegradable-waste-management practices

4 | Eurostat 2025.
5 | European Environment Agency 2025.
6 | European Commission 2020.
7 | Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste, OJ L 182, 16.7.1999.
8 | European Commission 2020.
9 | Ibid.

in Croatia, including public awareness initiatives and financial incentives. Furthermore, it will identify and discuss risks associated with biodegradable waste management and the measures taken to mitigate these risks (Section 3). By achieving these objectives, the article aims to advance the discussion on sustainable waste management in EU Member States and offer valuable insights for policymakers and researchers.

2. Overview of Croatian academic and legal scholarship on biodegradable waste

The interdisciplinary nature of biodegradable-waste management is reflected in the review of relevant literature. Despite the growing interest in this topic, there is limited academic research on the legal dimension of waste management. However, the predominant research comes from the fields of agronomy, chemistry, and biotechnology, and authors analyse the current management of biodegradable waste in Croatia and elaborate on the concept of a circular economy. Some of them emphasise composting as the most effective management method. A summary of the relevant literature is presented in the following paragraphs.

Some authors have identified sustainability achieved through the separate collection of waste as a key element of biodegradable-waste management.[10] Inadequate management leads to an increase in communal waste, greenhouse gas emissions and landfill growth.[11] According to Voća et al., to avoid potential harm to the environment and human health, waste management should be guided by hierarchical principles, beginning with waste prevention and reduction at the source and followed by the separate collection of bio-waste streams at the top of the priority order.[12] Disposal of biodegradable waste should be the last option, as it is connected with several risks and harms. Namely, disposed waste can pollute groundwater owing to the contaminated drainage. The air and atmosphere are at risk owing to odours and gases, such as methane and carbon dioxide created by chemical processes within the landfill. Waste attracts various animals as a source of food, increasing the likelihood of disease and infection transmission.[13] Another reason to use disposal as a last option is the possibility of using it for thermal and material production.

Some authors express the potential of biodegradable waste in biogas production and heat treatment. Through anaerobic digestion, waste with high organic content is converted into biogas, a form of renewable energy, which can be utilised

10 | Kantar et al. 2024, 74.
11 | List & Djedović 2024, 123.
12 | Voća et al. 2014, 28.
13 | Fuk 2020, 306.

to generate heat and electricity.[14] It is also regarded as one of the most energy-efficient and environmentally sustainable technologies.[15] According to the National Report on Communal Waste for 2024, the number of biogas plants in Croatia has increased. In 2024, 25 biogas plants took 361,167 tonnes of waste, with 51,046 tonnes being treated through anaerobic digestion. Most of this waste was biodegradable, originating from kitchens, parks, and markets.[16]

Recent studies, such as those by Hadelan et al. (2024), consider composting as the best option for managing biodegradable waste, as it is a natural and spontaneous process in which microorganisms recycle organic matter into a nutrient-rich material.[17] Compost produced is used as a fertiliser, improving the soil structure, retaining moisture, and providing essential nutrients to plants, whose roots protect the soil from erosion.[18] Composting produces mainly carbon dioxide, a far less potent greenhouse gas, unlike methane produced in landfills. Consequently, compost has a significantly lower climate impact. Besides the natural method, composting can also be done under controlled conditions in composting facilities, where the composting time is shortened from a few months to a few weeks, eliminating odours and minimising gas production. According to a National Report, there were 18 active composting facilities in Croatia last year.[19]

Significantly, biodegradable-waste management in the context of circular economy includes reuse, recycling, sharing and similar strategies, focusing on the long-term use of a resource. It aims to establish a zero-waste economy, aligning economic activities with environmental sustainability.[20] Thus, natural systems can regenerate themselves, minimising landfill creation, as waste becomes a valuable input resource for new production (biogas, biomass, compost, etc.) in the case of biodegradable waste.[21]

Despite the growing interest in this topic, a small number of studies have critically analysed the role of national, regional, and local governance in bio-waste regulations. The EU's waste policy aims to support the circular economy by maximising the recovery of high-quality materials from waste streams. Consequently, through several legal instruments, it addresses the treatment of bio-waste. However, Croatia has not yet met the EU's waste requirements.[22] One of the reasons, according to Boromisa, Golubovac and Vetma, is weak governance structures and insufficient political commitment to implementing effective waste-management

14 | Kantar et al. 2024, 74.
15 | Petravić-Tominac et al. 2020, 2.
16 | Ministry of Environmental Protection and Green Transition 2025, 48.
17 | Hadelan et al. 2024, 125.
18 | Vidović & Runko Luttenberger 2019, 42.
19 | Ministry of Environmental Protection and Green Transition 2025, 47.
20 | Andabaka, Beg & Gelo 2018, 115.
21 | Miketić-Curman 2020, 370.
22 | For example, Waste Framework Directive and Landfill Directive.

systems.[23] Local self-government units (cities and municipalities) are responsible for ensuring the implementation of national waste management measures within their jurisdiction, and, as some of them lack the institutional and financial capacity, cooperation between these units is often required.

A key requirement for the effective recovery and treatment of biodegradable waste also lies in the obligation of citizens to collect biodegradable waste separately.[24] Without this initial step, the quality of collected bio-waste is compromised, reducing its potential for material recovery, composting, or energy production. Therefore, citizens should be educated about the potential of biodegradable waste and the importance of its proper separation.

Croatian legal scholarship has historically devoted limited attention to waste management, with few comprehensive studies addressing its regulatory, institutional, or practical dimensions. Notably, in 2018, the Croatian Academy of Sciences and Arts organised a roundtable discussion titled 'Legal Regulation of Waste Management', which resulted in the publication of a volume containing several legal analyses on the subject.[25] Additionally, in 2020, another roundtable was held on 'Services of General Interest in EU Law and Policy and Their Impact on the Republic of Croatia', where some contributions addressed waste management within the broader context of public services.[26] Despite these efforts, comprehensive legal analyses of biodegradable waste remain scarce in Croatian academic literature. This paper aims to help fill that gap by contributing to the underdeveloped body of legal scholarship on this increasingly relevant environmental and regulatory issue.

Finally, a few key terminological considerations and concepts should be highlighted at the outset. The Croatian Waste Management Act[27] (WMA) distinctively defines biodegradable waste and bio-waste under the Waste Framework Directive and the Landfill Directive. It defines biodegradable waste correspondingly with the Landfill Directive as any waste or a part of waste subject to anaerobic or aerobic decomposition, such as garden waste, food waste, paper, and cardboard.[28] While paper and cardboard are commonly considered recyclable materials, they also qualify as biodegradable waste since they can naturally decompose. Conversely, bio-waste is defined in the WMA as in the Waste Framework Directive as biodegradable garden and park waste; food and kitchen waste from households, restaurants, caterers, and retail premises; and comparable waste from food processing facilities.[29]

23 | Boromisa, Golubovac & Vetma 2022, 2.
24 | Hadelan et al. 2024, 125.
25 | Ofak 2018, 39–74; Sarvan 2018, 97–144; Staničić 2018, 75–95; Turudić 2018, 157–170.
26 | Koprić 2021, 39–56; Škarica 2021, 73–101.
27 | Waste Management Act, Official Gazette (hereinafter: OG) no. 84/21 and 142/23.
28 | WMA, art. 4, para. 1, point 5.
29 | Ibid., point 3.

3. Legislation and achievement of targets in biodegradable waste management in Croatia

3.1. Pre-EU waste management legislation and achievements of biodegradable waste targets

Before joining the EU, Croatia's then-valid Waste Act[30] did not contain any provisions related to biodegradable waste. There was no specified limit on the maximum amount of biodegradable municipal waste that could be deposited in landfills each year. The activity of municipal-waste disposal was considered a communal service regulated by the Communal Services Act. As Škarica explains, the initial legal framework governing municipal-waste management was characterised by "ambiguous wording of the relevant provisions, the absence of adequate monitoring and evaluation mechanisms, and deficiencies in the oversight and sanctioning of unlawful practices".[31] Škarica also observed that the entire system was "highly decentralized, organizationally fragmented, and ineffective in achieving its proclaimed objectives."[32]

In October 2005, the Croatian Parliament passed the Waste Management Strategy,[33] with the aim of establishing a framework for sustainable waste management. The strategy included limited references to biodegradable waste within its proposed action measures. Specifically, it outlined the following action measures:

- The construction of composting facilities for biodegradable waste, complementing existing efforts in waste avoidance and separate collection and
- The promotion of biomass and biogas utilisation.[34]

Furthermore, waste management plans in municipalities and cities had the obligation to implement strategies for reducing the amount of biodegradable organic waste sent for disposal to achieve the goal of minimising overall waste quantities.[35]

After the Republic of Croatia gained independence in 1990, municipal-waste composition was not systematically monitored. The findings were limited to the results of individual tests conducted in a few areas. Thus, the baseline year for tracking progress towards reducing the proportion of biodegradable waste in municipal waste was 1997, when it was estimated that 1,015,000 tonnes of

30 | Waste Act, OG no. 178/04, 111/06, 60/08 and 87/09.
31 | Škarica 2021, 80.
32 | Ibid.
33 | Waste Management Strategy, OG no. 130/05.
34 | Waste Management Strategy, point 4.2.1.
35 | Ibid., point 4.5.

municipal waste were generated in the Republic of Croatia. Of that amount, 756,175 tonnes were estimated to be biodegradable waste.[36]

Based on the Waste Management Strategy, the Government of the Republic of Croatia adopted the Waste Management Plan for the Period 2007–2015 (hereinafter: WMP 2007–2015). According to this original Plan, decrease in the percentage of biodegradable waste in municipal waste was expected to be achieved through separate collection, composting, and processing at waste-management centres.[37] The construction of waste-management centres for the treatment of municipal waste was prioritised. However, the establishment of an effective waste-management system in Croatia has been hindered by the overly complex and fragmented territorial structure.[38] Two types of centres have been envisaged as part of the waste-management system: county centres and regional centres (i.e., a single centre shared by several counties).[39] The final decision depended on the concept selected by individual counties responsible for choosing locations for waste-management centres. Though activities for constructing waste-management centres were initiated in 2005, not a single centre had been built and made operational by 2015.[40]

3.2. Legislative developments and implementation of biodegradable waste targets after EU accession (2013–2021)

The Sustainable Waste Management Act (SWMA) was adopted in 2013 to harmonise Croatian legislation with the EU *acquis* in the field of waste management.[41] Under the SWMA, municipal waste was excluded from the scope of the Communal Services Act. Škarica noted an increased regulatory role of the national government and highlighted the following features of the new legal framework:

- The activities of local communities are prescribed by law as mandatory obligations, the non-fulfilment of which constitutes a misdemeanour.
- The tasks and powers of local governments are subject to sub-legislative regulation through governmental decrees and implementing regulations issued by the competent minister.

36 | Waste Management Plan for the Period 2007–2015, OG no. 85/07, point 4.3.2.
37 | WMP 2007–2015, point 5.2.2.
38 | A total of 555 units of local self-government have been established in Croatia (428 municipalities and 127 cities). Croatia has 20 counties (units of regional self-government). The City of Zagreb, as the capital of Croatia, has a special position as both a city and a county.
39 | WMP 2007–2015, point 5.6.
40 | The Waste Management Centre Marišćina started receiving waste for processing in February 2017, and Waste Management Centre Kaštijun has been in operation since March 2018.
41 | Sustainable Waste Management Act, OG no. 94/13, 73/17, 14/19, 98/19. The SWMA was in force from 23 July 2013 until 31 July 2021.

- For waste management plans adopted by local units, prior approval must be obtained from the administrative body of the regional self-government unit (i.e., the county).[42]

Furthermore, Croatia assumed certain limitations on waste disposal when it joined the EU in 2013. However, the EU granted it two derogations in the waste-management sector. The first derogation was related to the requirement to bring landfills for waste into compliance with the EU *acquis* by 1 January 2019. The second derogation, concerning the amount of biodegradable municipal waste sent to landfills, was granted until 1 January 2021.[43]

Under the SWMA, the maximum allowable mass of biodegradable municipal waste that may be deposited annually in all landfills was prescribed in relation to the mass of biodegradable municipal waste generated in 1997 as follows:

1. 75% or 567,131 tonnes by 31 December 2013
2. 50% or 378,088 tonnes by 31 December 2016
3. 35% or 264,661 tonnes by 31 December 2020.[44]

Operators have reported a total of 870,434 tonnes of biodegradable municipal waste in 2013.[45] Thus, the prescribed objective of reducing the landfilling of biodegradable municipal waste to 567,131 tonnes by 31 December 2013 was not met, as it was 53.48% above the required amount. In 2016, the amount of the disposed biodegradable municipal waste was 831,977 tonnes,[46] which exceeded the prescribed target of 378,088 tonnes by 120.05%. In 2020, the amount of disposed biodegradable municipal waste exceeded the prescribed goal by 331,352 tonnes, with a total of 596,013 tonnes being disposed of, compared to the goal of 264,661 tonnes.[47] It exceeded the required amount by 125.2%.

As the primary planning documents, the SWMA no longer prescribed the adoption of the Waste Management Strategy. Instead, its main content, including the evaluation of the current waste management situation, fundamental goals for managing waste, and guidelines for waste recovery and disposal in line with environmental and economic principles, was incorporated into the obligation for the Government of the Republic of Croatia to adopt the Waste Management Plan of the Republic of Croatia.

The deadline for adopting the Waste Management Plan expired on 31 December 2014. With a two-year delay, the Waste Management Plan of the Republic of Croatia

42 | Škarica 2021, 82.
43 | European Commission 2011, 22.
44 | SWMA, art. 24, para. 1.
45 | Environmental Protection Agency 2015, 36.
46 | Croatian Agency for the Environment and Nature 2017, 17.
47 | Ministry of Economy and Sustainable Development 2021, 18.

for the period 2017–2022 was adopted in 2017 (hereinafter: WMP 2017–2022).[48] It was amended once at the end of 2021.[49] The SWMA required each local self-government unit to adopt a waste-management plan, subject to the prior approval of the county's administrative body responsible for environmental protection. The City of Zagreb was obliged to obtain prior approval for the proposal of the waste-management plan from the Ministry responsible for environmental protection.[50] Each local self-government unit was also expected to adopt a decision on the manner of providing the public service of mixed municipal-waste collection and biodegradable municipal waste collection,[51] and decide on those who will collect mixed municipal waste and biodegradable waste.[52]

According to the WMP 2017–2022, separate bio-waste collection was implemented in only 34% of local self-government units.[53] This primarily involved bio-waste from gardens and public parks. The amount of bio-waste separately collected from households remained negligible. The most common method of managing this type of waste was still landfilling. Although the SWMA mandated local self-government units to collect bio-waste separately, the effects of this measure at the national level were minimal. Furthermore, considering the national target related to reducing biodegradable-waste disposal, the existing bio-waste treatment capacities at the household, local, and national levels were inadequate.[54]

In the total amount of the generated bio-waste, bio-waste from municipal waste constituted a significant share of around 87%. In 2021, only 25% of the bio-waste generated from municipal waste was collected separately.[55] The problem lies in the small number of local self-government units that collect bio-waste separately, the slow establishment of a bio-waste processing system, and insufficient investment in infrastructure for collecting and processing bio-waste separately.

As reasons for the failure to implement the SWMA, Škarica noted that the municipal waste-management system relies on the existing structure of local self-government, which includes 556 local units (429 municipalities, 126 cities, and the City of Zagreb).[56] This effectively means the creation of 556 potentially different waste-management regimes, as each local unit adopts its waste-management plan and decide on the conditions and methods of service provision.[57]

48 | WMP 2017–2022, OG no. 3/17.
49 | Amendment to the WMP 2017–2022, OG no. 1/22.
50 | SWMA, art. 21.
51 | SWMA, art. 30.
52 | Ibid., art. 31.
53 | WMP 2017–2022, point 3.4.1.
54 | Ibid.
55 | Ministry of Economy and Sustainable Development 2022, 21.
56 | Škarica 2021, 97.
57 | Ibid. For an examination of the complex relationships among stakeholders in the Republic of Croatia's waste management system, see Staničić 2018, 75–95.

Škarica further states that "such fragmentation of the system leads to the dissipation and inefficient use of resources for strategic planning, infrastructure development, and the procurement of necessary equipment for the provision of public services."[58] As a solution, Škarica proposed stronger territorial integration in the form of establishing areas comprising multiple local units, within which the regime for providing municipal waste-management services would be integrated.[59]

Škarica also pointed to the underutilization of oversight mechanisms and sanctions provided for in the SWMA.[60] The capacity of central government bodies to monitor and supervise such a large number of local self-government units is questionable. Owing to the lack of sanctions, many units have failed to fulfil their legally prescribed obligations for years. However, Škarica also posed doubts as to whether sanctioning local units for failing to meet their obligations would ensure the quality of municipal waste management services or whether such penalties would only further weaken local capacities.[61]

3.3. Newest waste management legislation from 2021 and the Waste Management Plan 2023–2028

Under the WMA, which is currently in force, the maximum allowed mass of biodegradable municipal waste that may be landfilled in a calendar year is 264,661 tonnes.[62] According to the latest available data, out of the 1,170,636 tonnes of biodegradable municipal waste produced in 2024, 502,752 tonnes were sent for disposal.[63] The desired target was once again missed, with the actual amount being 89.96% higher than the goal. Between 2020 and 2024, the number of composting facilities, the number of biogas plants processing municipal waste, and the amount of waste treated at these facilities increased, but all these remained below the level needed to make a substantial contribution toward achieving targets.[64]

The phased opening of waste-management centres helps reduce the amount of biodegradable municipal waste being disposed of, although the targets have not yet been fully met. Currently, of the 11 planned centres in Croatia, four waste centres have been built and are in operation (Marišćina, Kaštijun, Bikarac and Biljane Donje), four centres are under construction (Babina Gora, Lećevica, Lučino Razdolje and Piškornica), while the remaining three are in the project-documentation phase (Orlovnjak, Šagulje and Zagreb).[65]

58 | Škarica 2021, 97.
59 | Ibid.
60 | Ibid., 95.
61 | Ibid., 96.
62 | WMA, art. 55, para. 1.
63 | Ministry of Environmental Protection and Green Transition 2025, 25.
64 | Ibid., 28.
65 | Environmental Protection and Energy Efficiency Fund (no date).

Under the WMA,[66] the public municipal-waste-collection service, which includes the collection of bio-waste, remains under local self-government units. The executive bodies of a local self-government unit and the City of Zagreb are responsible for ensuring the provision of a quality, regular, and economically efficient public municipal-waste collection service within its territory. These bodies need to fulfil these responsibilities while avoiding high expenses, in accordance with the principles of sustainable development and environmental protection. Thus, the executive body must ensure public access to its operations. This includes guaranteeing the separate collection of mixed municipal waste from households and other sources, household bio-waste, recyclable municipal waste, hazardous municipal waste, and bulky household waste.[67] The public service provision area encompasses the territory of a local self-government unit and the City of Zagreb.[68] Further, the executive body should ensure that bio-waste is collected separately by providing one or more recycling yards or a mobile unit within its territory.[69] Several local self-government units may, by mutual agreement, jointly ensure the implementation of the obligation.[70]

Representative bodies of local self-government units must adopt decisions on the method of providing public services by 31 January 2022 and publish these details in their respective official gazettes and on their websites. The manner of public-service provision, including the criteria for calculating the amount of mixed municipal waste, the standard sizes and essential characteristics of waste collection containers, and the minimum frequency of waste collection by area must also be decided. The billing periods throughout the calendar year, the designated public-service provision area, and the mandatory minimum public-service fee must be defined and how these amounts were determined must be explained. Furthermore, the decision on regulating procedures for submitting and handling citizens' complaints related to the waste collection system, conditions for the individual use of public service, and the use of shared containers, must be adopted. The acceptable proof of service execution for personal users, the method for determining the share of service users in cases of shared container use by household users and other types of users where no agreement exists, provisions on contractual penalties, and the general terms and conditions for service users

66 | The newest WMA has not been amended to date. However, one of its provisions was subjected to constitutional review. The Croatian Constitutional Court, in its decision U-I-2934/2022 of 14 October 2023 (OG no. 142/23), repealed art. 72, para. 4 of the WMA. This provision had allowed imposing on all users of a shared waste container collectively for improper waste separation or disposal if an individual offender could not be identified. The Constitutional Court found such collective punishment as unconstitutional.

67 | WMA, art. 64, para. 4. If a local self-government unit or the City of Zagreb has not ensured the fulfilment of this obligation, it is liable for a misdemeanour.

68 | WMA, art. 64, para. 5.

69 | WMA, art. 84, para. 1. A violation of this obligation entails misdemeanour liability.

70 | WMA, art. 84, para. 5.

must be specified.[71] Additionally, provisions regarding the use of areas managed by local self-government units for bio-waste composting by service users must be determined.[72]

Under the criteria of WMA, amount of waste shall be calculated as the mass of handed-over mixed municipal waste during the billing period, expressed in kilograms or the volume of the mixed municipal waste container, expressed in litres, and the frequency of their emptying during the billing period.[73] Local self-government units are no longer obliged to adopt waste-management plans. The waste-management-planning documents include the Waste Management Plan of the Republic of Croatia, the waste management plans of the regional self-government units, and the waste management plan of the City of Zagreb (hereinafter: regional WMPs).[74] The newest Waste Management Plan of the Republic of Croatia for the period 2023–2028 (hereinafter: WMP 2023–2028) was adopted in June 2023.[75]

The regional WMPs must include information on the types and quantities of waste, on separately collected waste, landfilled municipal and biodegradable waste, the achievement of targets, and measures for the collection of mixed municipal waste and biodegradable municipal waste.[76] Most counties and the City of Zagreb did not adopt and publish the regional WMPs for the period 2023–2028 on time, which was a legal obligation by 1 January 2024. Draft plans of some counties for 2024–2029 are available, though they are in the adoption phase.[77]

The provisions of the WMA related to bio-waste can be divided into obligations that apply to waste producers, waste holders, and service users, as well as those that apply to service providers. To improve bio-waste management and reduce the share of bio-waste in the generated mixed municipal waste, the WMA prescribes a ban on mixing separately collected bio-waste with other types of waste.[78] There are general obligations regarding the separate collection of waste.[79] Within this general obligation, it is stipulated that the producer of bio-waste must either hand over the bio-waste separately from other types of waste to an authorized person or recycle it at the place of origin.[80] Violation of these obligations entails misdemeanour liability.

Bio-waste is collected separately as part of the public municipal waste collection service.[81] The user of the public service should either separately hand over the

71 | WMA, art. 66, para. 1.
72 | Ibid., para. 2. point 4.
73 | WMA, art. 67.
74 | WMA, art. 108.
75 | OG no. 84/23.
76 | WMA, Annex VI.
77 | Unfortunately, there is no centralised website where information can be accessed in one place. Momentarily, websites and official gazettes of all regional self-government units should be searched.
78 | WMA, art. 18, para. 4.
79 | WMA, art. 22.
80 | Ibid., para. 3.
81 | WMA, art. 69, para. 1., point 5. If the service providers fail to collect the content of a container from the service user, including separately collected biowaste, they are liable for a misdemeanour.

bio-waste or compost it at the place where it is generated.[82] The criteria for reducing the price of the public service should incentivize users to separate bio-waste from mixed municipal waste and, where applicable, to compost it.[83]

The WMA allows the legal person or sole trader to treat their waste without obtaining a waste-management permit, provided that they are original producers of the waste and treat bio-waste generated through their activity using biological treatment at the place of its generation. Further, the resulting product must not be placed in the market but used at the site where the waste was generated, and a report on this must be submitted to the Ministry competent for environmental protection by March 31 of the current year for the previous year.[84] The original producer of the waste, who is a natural person, may also treat their bio-waste without a permit, provided the treatment is done through biological aerobic processing (home composting).[85]

Intending to encourage waste prevention, the WMA permits the activation of economic instruments by the Ministry competent for the environment and the Environmental Protection and Energy Efficiency Fund, under the regulation governing state aid for waste management activities, which include:

- Recycling, including composting and anaerobic digestion of bio-waste, in a manner that ensures a high level of environmental protection and the product of such treatment meets high-quality standards
- Home composting and recycling of bio-waste and
- Promoting the use of materials made from bio-waste.[86]

Despite a noticeable increase in separately collected bio-waste during the implementation of the WMP 2017–2022 as a result of investments in the procurement and development of infrastructure for separate municipal waste collection and during the implementation of educational activities on the importance of separate collection of bio-waste, these efforts need to be continued in the upcoming planning period of 2023–2028. Further investment in bio-waste treatment capacities is also necessary.[87]

Among 18 active composting facilities in 2024, 15 were involved in treating municipal waste.[88] The year 2024 also marked a significant increase in the number of biogas plants processing municipal waste, reaching a total of 25 facilities.[89] Consequently, the volume of waste treated through anaerobic digestion noticeably

82 | WMA, art. 70, para. 4, point 8. If the service user has neither handed over the biowaste separately nor composted it at the place of its generation, they are liable for a misdemeanour.
83 | WMA, art. 73.
84 | WMA, art. 29, para. 2, point 2.
85 | Ibid., point 1.
86 | WMA, art. 99, para. 1, points 3–5.
87 | Amendment to the WMP 2017–2022, point 5.3.
88 | Ministry of Environmental Protection and Green Transition 2025, 47.
89 | Ibid., 48–49.

increased. However, since some counties do not have sufficient capacity or existing facilities are not sufficiently equipped for the use of separately collected bio-waste that is generated and will be generated during the planning period of 2023–2028, significant investments in infrastructure are required.[90] The planning of the system must be based on the 'proximity principle' to reduce environmental load and associated risks.[91] Coastal counties generally have limited capacities for composting and do not have biogas plants. Continental counties have moderate-to-limited capacities for composting, but only some have biogas plants. However, these capacities are not sufficient for future needs. To enable bio-waste processing, a composting plant should be built, especially in parts with a significant seasonal increase in municipal waste (coastal and island municipalities). This is particularly relevant to the establishment of composting facilities on islands and in areas that do not have these facilities.[92] Krk Island in Croatia is considered a model example of sustainable waste management on islands. In 2024, it became the first Zero Waste Island in Croatia and the second in the world.[93]

According to data for 2024, the largest amounts of municipal biodegradable waste were disposed of in Split-Dalmatia County (21.0%) and the City of Zagreb (15.7%).[94] This is largely attributed to high population density and significant tourism pressure, both of which contribute to increased waste generation, including biodegradable waste. Both regions also face challenges related to incomplete infrastructure and limited processing capacity for such waste. The operation of the Čret composting facility in Zagreb was suspended by the State Inspectorate in May 2024 because the permitted amount of the received waste exceeded.[95] Consequently, the costs of municipal services in Zagreb have increased as a result of the closure of the Čret facility and the implementation of a temporary solution involving cooperation with private companies.[96] In 2025, the City of Zagreb has initiated a project for a new Waste Management Centre in Resnik, which will include a facility for the biological treatment of separately collected bio-waste. As of summer 2025, the project is undergoing public consultation as part of the environmental-impact-assessment process.[97] The closure of the existing Jakuševec landfill and the trial operation of the new Waste Management Centre are planned for late 2028.

To conclude, in the context of improving bio-waste management in the Republic of Croatia, several strategic measures have been outlined in the WMP 2023–2028. One of the primary measures focuses on enhancing the system for the separate collection of municipal waste, alongside the development and

90 | WMP 2023–2028, point 8.2.2.
91 | Ibid.
92 | WMP 2023–2028, point 3.
93 | Zero Waste Europe 2024.
94 | Ministry of Environment and Green Transition 2025, 46.
95 | Croatian Radiotelevision 2024.
96 | Zagreb Holding Ltd. 2025, 10.
97 | City of Zagreb 2025.

modernisation of infrastructure, particularly those dedicated to the biological treatment of separately collected bio-waste.[98] These investments are designed to support a circular-economy approach and promote increased resource efficiency. Another significant measure is the emphasis on raising public awareness, disseminating information, and providing education on waste and product management. Targeted communication campaigns are planned to highlight the significance and benefits of separate bio-waste collection and the use of compost, thereby fostering behavioural change and public participation in sustainable waste-management practices.[99]

To further encourage the application of the waste-management hierarchy, the Croatian Government has officially introduced a fee for waste disposal by decree, effective as of 1 January 2025.[100] This economic instrument is expected to stimulate local self-government units to intensify their efforts in waste separation and recovery, focusing on increasing the quantities of the separately collected and processed bio-waste. The fee for waste disposal (landfill fee) should have already been introduced in Croatia, according to the previously valid SWMA. However, its application was delayed for years owing to the failure to pass a by-law that would determine the method of calculation and the amount of the fee, though the law provides for this.

Finally, the WMP 2023–2028 also includes measures to prevent bio-waste. A first key measure is strengthening policy frameworks for avoiding food waste. This initiative is being implemented through the Food Waste Prevention and Reduction Plan for the period 2023–2028, which builds upon strategic efforts to increase food donations, reduce food waste, and enhance food security for vulnerable population groups.[101] Another critical measure is promoting household composting systems.[102] It aims to encourage households to compost bio-waste using their composters, thereby producing free organic fertilisers and reducing the need to purchase commercial fertilisers. Since the feasibility of household composting depends on the availability of space for using the produced compost, this measure primarily targets rural areas and suburban zones with a high number of single-family homes with gardens. The third measure focuses on improving bio-waste data monitoring systems.[103] Its goal is to enhance the existing system

98 | WMP 2023–2028, point 12.1, measure 1.
99 | Ibid., measure 2.
100 | Decree on the Unit Fee for Waste Disposal, OG no. 137/24. The Decree stipulates a gradual increase in the landfill fee, starting at €30 per tonne in 2025 and rising to €50 per tonne by 2029 and beyond. The liable entity for payment is the legal person managing the landfill, and the fee has to be paid to the Environmental Protection and Energy Efficiency Fund. Exceptions to the unit fee apply in the following cases, where the fee is set at €0.00 per tonne: waste disposed of at a landfill that is part of an integrated waste-management centre and asbestos-containing waste disposed of in designated cells (cassettes) within landfills.
101 | WMP 2023–2028, point 15.6, measure 2.
102 | Ibid., measure 4.
103 | Ibid., measure 3.

for measuring the quantities of bio-waste generated at the national level and to establish a mechanism for tracking the amount of bio-waste prevented through household composting.[104]

4. Success stories and case studies in biodegradable-waste management in Croatia

4.1. Public awareness initiatives and financial instruments

The separate collection of biodegradable waste in Croatia was introduced through several phases. Under the SWMA, local self-government units must ensure the collection of biodegradable municipal waste within their jurisdiction, as this service was considered of general public interest. Based on the SWMA, the Government adopted the Decree on Municipal Waste Management with a three-year delay.[105] This regulation required local self-government units to adopt decisions on the methods for collecting mixed and biodegradable waste.[106] In the following years, the practical 'door-to-door' separation and collection of waste was initiated, including the distribution of brown coloured waste bins for bio-waste to households.[107] Some cities provided home composters to those who declared that they would rather manage their bio-waste through home composting. For the purpose of this article, decisions on the provision of public municipal waste collection services were analysed in more than half of the cities in Croatia. These decisions also include initiatives for the separate collection of biodegradable waste.[108] It may be reasonable to assume that the remaining cities also employ similar initiatives. The following sections will discuss the best practices in public-awareness initiatives identified through the analysis.

To introduce the system of separate waste collection to citizens and raise awareness about the importance of separation and recycling, numerous campaigns and educational public forums were organised. Few cities introduced

104 | The Waste Management Ordinance (OG no. 106/22 and 138/24) prescribes the obligation to monitor the quantities of bio-waste avoided through household composting (art. 36, para. 8).
105 | Decree on Municipal Waste Management, OG no. 50/17, 84/19, 14/20 and 31/21.
106 | Decree on Municipal Waste Management, art. 4.
107 | There are brown waste bins for biowaste, yellow bins for plastic, blue bins for paper, and green bins for mixed waste.
108 | Analysed cities were: Bakar, Beli Manastir, Belišće, Benkovac, Biograd na Moru, Bjelovar, Buje, Buzet, Cres, Crikvenica, Čabar, Čakovec, Čazma, Daruvar, Delnice, Donja Stubica, Donji Miholjac, Drniš, Dubrovnik, Duga Resa, Dugo Selo, Đakovo, Đurđevac, Garešnica, Glina, Gospić, Grubišno Polje, Hrvatska Kostajnica, Hvar, Ilok, Imotski, Ivanec, Ivanić-Grad, Jastrebarsko, Karlovac, Kastav, Kaštela, Klanjec, Knin, Komiža, Korpivnica, Korčula, Kraljevica, Krapina, Križevci, Krk, Kutina, Kutjevo, Labin, Lepoglava, Lipik, Ludbreg, Makarska, Mali Lošinj, Metković, Mursko Središće, Našice, Nin, Nova Gradiška, Novalja, Novigrad, Novi Marof, Novi Vinodolski, Novska, Obrovac, Ogulin, Omiš, Opatija, Opuzen, Orahovica, Oroslavlje, Osijek, and Zagreb.

separate initiatives specifically for composting and biodegradable waste. However, educational guidelines and projects on biodegradable waste were mainly part of a broader framework, the general education on waste separation and recycling. Campaigns would usually have a rhymed slogan such as "Odgovoran budi, odvajat se potrudi" ("Be responsible, sort —it is possible"),[109] and would include some of the following components:

- Public lecture on sustainable waste management—usually held to inform and educate citizens about sustainable waste management
- Educational flyers and brochures—in physical and digital form, often distributed with the invoice for waste services, containing instructions, among others, on the disposal of biodegradable waste and composting
- Education conducted in kindergartens, primary schools and high schools, which included theatrical performances, mascots, picture books, quizzes, and games
- Informative articles—published on the official websites of cities and companies responsible for waste collection
- Television spots and
- Online platforms and phone applications.

Besides these measures, citizens are also encouraged to separate waste and compost it through financial incentives. Namely, according to principle "pay as you throw," the public-service fee for waste collection is fixed as the price of the mandatory minimum public service and the price of the service corresponding to the quantity of mixed municipal waste delivered (the latter consist of the price for emptying a specific volume of a mixed municipal-waste container, number of times the bin/container was emptied per month, and the share of the user in the use of the container).[110] In other words, the service fees are higher as the amount of mixed waste increases. Therefore, to lower the costs, citizens should separate their waste and minimise mixed municipal waste. The fee paid by citizens covers only the collection, processing, and disposal of mixed municipal waste. The collection and disposal of all other types of waste, such as biodegradable waste, are provided free of charge.

Cities have decided to adopt additional financial measures to encourage the separation of biodegradable waste. The negative one represents the monetary penalty. Citizens should deliver bio-waste (using brown bins) separately or compost it. In the event of a violation, a penalty is imposed. The maximum penalty represents the annual fee for the mandatory public service. Interestingly, 'contractual penalty' was once a part of the public-service fee for waste collection. However,

109 | This slogan is part of a campaign in the city of Hvar and aims to minimise waste production and educate citizens about waste as a valuable resource.
110 | Decision on the Method of Providing the Public Service of Municipal Waste Collection in the Area of the City of Koprivnica, Gazette of the City of Koprivnica no. 1/22.

the Constitutional Court of the Republic of Croatia ruled that such practice did not follow the provisions of the then applicable SWMA.[111] Information on imposed penalties is not systematically published or publicly accessible and is available only through occasional media reports. This suggests a lack of transparency and may also indicate shortcomings in the enforcement of waste-separation obligations. Nonetheless, as previously noted, the absence of adequately developed waste management infrastructure raises important concerns about the effectiveness and fairness of punitive measures.

Positive measures represent the criteria for reducing the monthly invoice. Using smaller volume bins for mixed municipal waste implies a greater volume of separately collected bio-waste and recyclable municipal waste.[112] Other criteria include having a house composting system or using composting facilities. Home composters were freely distributed to interested citizens, and instructions were provided to them on how they can build a compost site themselves. In some decisions, exact guidelines regarding the placement of compost sites were prescribed: "home composting of bio-waste must be done at a distance of at least 2 meters from the cadastral plot border, unless the user has a consent of the neighbouring landowner to compost at a shorter distance".[113] In 2024, 18 composting facilities were made available to citizens. Additionally, the Croatian Composting Plants Association was founded with the aim of promoting composting as the best environmentally friendly method for managing biodegradable waste, educating citizens and legal entities, and supporting the development of local composting facilities and initiatives.[114]

4.2. Best practices for biodegradable waste management

In recent years, Croatia has made significant progress in managing biodegradable waste. By examining case studies and the adopted strategies, we aim to uncover key factors behind this progress. Among the leading examples in positive waste management is the city of Osijek, which is the fourth city in the country in terms of waste separation (57,97%).[115] Interestingly, Osijek was the first city to implement

111 | The Croatian Constitutional Court, in its Decision U-II-2492/2017 et al. of 23 March 2021 (OG no. 31/21), inter alia, repealed the parts of the Decree on Municipal Waste Management (OG no. 50/17 and 84/19) that referred to the pricing of the contractual penalty. The Constitutional Court held that, although the Decree prescribed the obligation of public service users to act in accordance with the law, and their responsibility for handling waste and containers, it nonetheless follows that the manner in which the contractual penalty was prescribed as part of the public service fee structure, was not in accordance with the powers granted to the Croatian Government under the SWMA (point 28.2. of the Decision).

112 | Bin volumes are: 80, 120, 240 and 360 litres.

113 | Decision on the Method of Providing the Public Service of Municipal Waste Collection in the Area of the City of Slatina, Gazette of the City of Slatina, no. 7/23.

114 | Croatian Composting Plants Association, https://ccpa.hr/.

115 | Ministry of Environment and Green Transition 2025, 62.

the separate collection of biodegradable waste in multi-residential buildings, using specially designed containers called 'Organko'. These small containers, with a 16-litre volume, were designed for the pre-composting process directly within the home. When they are filled, waste can be placed in brown bins outside the building. Once a week, workers collect it and transport it to a composting facility.[116] In 2021, an agreement was signed to transport daily bio-waste generated at the main marketplace directly to the composting facility. Compost thus produced was distributed to the public, especially local family farms. To celebrate their success, last year, Osijek hosted the first Eco City Waste Fest, where citizens were educated about waste management in an entertaining manner.

Another positive example is the city of Daruvar, whose citizens play a key role in promoting sustainable waste management. During food preparation, organic waste is placed into specially made brown bins of 10-litre capacity, marked with the slogan, "Let's separate bio-waste for more beautiful Daruvar". Additionally, they use certified biodegradable and compostable bags that are compatible with bins.[117] Collected bio-waste is then transferred to the compost facility, and the produced compost is used in public parks and gardens. According to a study, over the three years since the introduction of separate bio-waste collection, there was a 42.57% reduction in the amount of waste sent to landfills.[118] Reducing pressure from landfills and minimising greenhouse gas emissions is a key objective of sustainable waste management.

Prelog city is one of the most successful Croatian examples in terms of waste separation, achieving a rate of over 60%, primarily because of the high level of public awareness and cooperation with the municipal utility company PRE-KOM ltd. As a part of the 'door-to-door' system, the separate collection of biodegradable waste began in 2015.[119] In the same year, a composting facility called 'Prelog' was also opened, from which citizens received an annual coupon for two bags of compost as a reward for their efforts in separating bio-waste.[120] In their monitoring system, the company uses yellow and red cards as a warning for the improperly sorted waste to educate and alert citizens, rather than imposing penalties on them. Eventually, in cases of repeated or intentional violations, a fine is issued.[121] Educating citizens to separate waste and recycle it is another remarkable point. Various mechanisms are used for educational purposes, including promotional materials, public forums, lectures and quizzes targeting kindergartens and schools, as well as web pages, social media platforms, and mobile applications.[122] Despite having

116 | Unikom 2018.
117 | List & Djedović 2024, 125.
118 | Ibid.
119 | Zero Waste Cities 2020.
120 | Ibid.
121 | Ibid.
122 | Ibid.

achieved significant success, the city expands its activities in alignment with the 'zero waste' strategy. Some of the goals set for 2025 are: to separate up to 75% of recyclable waste, which will be processed and reused through sustainable methods such as recycling, composting, anaerobic digestion and others, and to encourage composting and the use of the final product for agricultural purposes.[123]

A key success of the city of Koprivnica in waste management lies in the modern composting facility 'Herešin' which ensures proper treatment of collected biodegradable waste from the city's green areas and households.[124] Its first-class compost called 'Domko' is produced in 6-to-8 weeks, which is relatively shorter than the usual 6-month period. Altogether, there are six cycles of composting in a year, with 1,500 tonnes of processed bio-waste per cycle.[125] Before the final compost is distributed, a sample is sent to the laboratory for quality control. Additionally, a third-class compost is also produced and used to enhance soil quality.

Household bio-waste, along with other organic materials such as tree branches or animal manure, can be used as a biomass suitable for the production of biogas that can be used for heating and electrical needs, and as a byproduct, produces a valuable digestate.[126] In Croatia, the Slavonia and Baranja regions have the highest number of biogas plants linked to a strong agricultural base and the availability of organic-waste materials.[127] One notable example is the biogas plant 'Hrastin', which was constructed within six months in 2018, producing both electricity and thermal energy. The generated electricity is used in the Croatian power grid, increasing the share of renewable energy. Various forms of biodegradable waste, including agricultural crop waste, animal manure, and organic waste are utilised in the plant. Besides its energy output, the plant also plays a socio-economic role in the local community, providing new employment opportunities and addressing the need for waste materials from local farms and households.[128] The latter is aligned with the principles of the circular economy.

In recent years, Croatia has implemented a specific waste prevention measure to reduce food-waste generation. Approximately 286,379 tonnes of food waste were generated in 2020, with 40% being avoidable.[129] The measure includes a national policy framework[130] and a series of campaigns under the slogan "Food is not waste", aiming to transform public perception of food, reduce food waste at all levels—from households to institutions, and achieve a 30% reduction in food waste by the end of 2028. It also aims to encourage food donations and redistributions

123 | GKP PRE-KOM D.O.O. 2022.
124 | Hadelan et al. 2024, 132.
125 | Ibid, 133.
126 | Ošlaj & Muršec 2010, 110.
127 | Ministry of Economy and Sustainable Development 2023, 8.
128 | Osijek-Baranja County 2018.
129 | European Environment Agency 2024, 15.
130 | Food Waste Prevention and Reduction Plan of the Republic of Croatia for the period 2023 to 2028, OG no. 156/22.

and prevent food-waste generation using composting sites or biogas treatment. Food disposal should be the last resort.[131] For this purpose, animated films and picture books for children were created, professional conferences were held, and an online platform was established to serve as a space for the exchange of knowledge and best practices.[132] Additionally, a food-donation system was established, including an online platform e-donations, governed by the Ministry of Agriculture, Forestry, and Fisheries.[133] In 2021, a campaign was conducted to raise awareness about understanding food date labelling and teaching differences among the types of date labels. Misunderstanding about these labels is considered a reason for the unnecessary disposal of safe-to-consume food.

In 2021, a pilot project was launched in three hotels with the goal of implementing work practices in hotel kitchens and reducing bio-waste, specifically food waste. Workers were introduced to the principles of planned food management, proper food storage, and realistic meal portion estimation. The planned goal of reducing food waste by at least ten per cent was achieved, thereby also decreasing the negative environmental impact of hotels and their share in bio-waste generation.[134]

4.3. Identified risks and mitigation measures

Despite its potential as a valuable resource for energy and electricity production and composting, biodegradable waste still faces several environmental, economic, and social challenges and risks. According to the National Report, 1,170,636 tonnes of biodegradable municipal waste were produced in 2024, but 502,752 tonnes ended up in landfills.[135] Although the waste separation rate has increased compared to previous years, the current level remains below targeted thresholds. Separate collection was implemented in all counties; however, it was done on the territory of 277 local self-government units (cities and municipalities), representing 50% of all local self-government units in the country.[136] Croatia also faces a significant lack of infrastructure and capacity for the effective treatment of biodegradable waste in many regions, especially tourist regions during the summer months, when the generation of biodegradable waste increases owing to a large number of visitors. This places additional pressure on local waste-management systems.

Biodegradable waste that ends up in landfills poses environmental risk, as some landfills operate without proper gas or leachate management.[137] As stated

131 | Ministry of Economy and Sustainable Development 2024, 7.
132 | Ministry of Agriculture, Forestry and Fisheries, *Food is Not Waste*, https://hrana-nije-otpad.mps.hr/.
133 | Ibid., *e-Donating*, https://poljoprivreda.gov.hr/e-doniranje/3909.
134 | Ministry of Tourism and Sport 2022.
135 | Ministry of Environment and Green Transition 2025, 45.
136 | Ibid., 7.
137 | Presečki 2023.

before, during its decomposition, harmful gases are released into the atmosphere; mould, viruses, and bacteria spread; and drainage liquids pollute groundwater. Additionally, nuisances such as odours and the presence of insects, birds, and rodents occur.[138] Aforementioned is especially a problem in several thousand illegal landfills in Croatia, but it has also been observed in urban areas where waste containers are frequently left open. As a preventive measure, cities typically schedule deratization twice a year with additional required interventions.

Citizens living near composting sites and biogas plants frequently complain of unpleasant odour. The issue of odours also arises from contaminated bio-waste—from improperly separated waste at the source, which complicates the recovery process. In 2024, several hundred citizens protested in front of the composting site in Zagreb owing to the odour, demanding the revocation of the permit that allows the transport of bio-waste to the site. Being unable to open windows and to let children play outdoors, they called for urgent action.[139] This problem is a consequence of inadequate infrastructure and poor waste-management practices, as certain facilities receive larger amounts of biodegradable waste than initially planned or permitted.

An additional problem is the accumulation of unsold compost that is eventually stored in facility areas. The latter is caused by the lack of a regulatory framework governing fertiliser products, which prevents the classification and distribution of compost as a high-quality fertiliser. A forthcoming Ordinance on HR fertilising products, which is expected to regulate this area, underwent public consultation in April 2025, though the Committee responsible for drafting the ordinance was established in summer 2024. Meanwhile, while the Ordinance has yet to enter into force, facilities face financial and operational losses. Economic losses associated with unsold compost are estimated at approximately €2.1 million. Furthermore, additional costs arise from the storage and maintenance of compost quality.[140] On the operational side, the reduction in storage capacity prevents the acceptance of new bio-waste, slowing the development of the circular economy.

Another challenge for biogas plants is their susceptibility to market fluctuations. For example, the war in Ukraine led to a significant increase in the prices of raw materials used by plants. Further, the EU introduced a regulation capping the electricity market price at €180 per megawatt-hour.[141] As a result, owing to incurred losses, several plants shut down while some of them decided to terminate their contracts with the Croatian Energy Market Operator (HROTE). After market conditions stabilised, the plants attempted to renew contracts but were initially not permitted. Later, they were allowed to renew the contracts only for the remaining

138 | Barčić & Ivančić 2010, 349.
139 | N12024.
140 | TehnoEko 2025.
141 | Council Regulation (EU) 2022/1854 of 6 October 2022 on an emergency intervention to address high energy prices, OJ L 261I, 7.10.2022.

duration specified in the first contracts that were terminated and only upon the payment of a substantial fee.[142]

To improve biodegradable waste management, Croatia needs to establish a significantly higher number of composting facilities and biogas plants for treating biodegradable waste. However, the selection of new sites faces difficulties owing to public mistrust, the 'not in my backyard' (NIMBY) syndrome, and insufficient public participation in decision-making processes.[143] Therefore, further public-education initiatives and financial investments in infrastructure are crucial to raising awareness of the environmental and economic benefits of biodegradable waste management.

5. Conclusion

The transformation of biodegradable-waste management in Croatia presents a complex challenge, shaped by evolving EU legislation, national legislative reforms, infrastructural limitations, and socio-political dynamics. Despite notable progress since the country's accession to the EU, Croatia faces significant obstacles in aligning its biodegradable waste management practices with EU targets and sustainability principles. The pre-accession period laid the groundwork for a structured approach to waste management, with the 2005 Waste Management Strategy and the WMP 2007–2015 emphasising the development of waste treatment infrastructure. However, the fragmented territorial organisation and delayed implementation of key measures hindered the establishment of a coherent and effective system. The adoption of the SWMA in 2013 marked an important step in harmonising national legislation with the EU *acquis*. Yet, the persistent failure to meet prescribed targets, such as the thresholds for landfill disposal of biodegradable waste, highlights the gap between legislative intent and practical execution.

The WMP 2017–2022 introduced essential measures, which led to an increase in the separate collection of bio-waste. However, the slow pace of infrastructure development, particularly the limited number of operational composting facilities and biogas plants, undermines national efforts. Until 2025, only four of the eleven planned waste management centres have been operational. The most recent legislative and policy developments, including the WMP 2023–2028 and the introduction of a landfill fee in 2025, signal a renewed commitment to improving the management of biodegradable waste. These measures are expected to incentivise local self-government units to enhance separate collection and invest in treatment capacities. Nevertheless, the success of these initiatives will depend on overcoming

142 | OIE Hrvatska 2024.
143 | Boromisa, Golubovac & Vetma 2022, 14.

persistent structural and behavioural barriers, including the lack of adequate infrastructure in many regions, particularly in tourist-heavy areas during peak seasons.

Public engagement remains a critical factor. The NIMBY syndrome and general mistrust toward waste-treatment facilities impede the siting of new infrastructure. Therefore, sustained public-education campaigns and transparent decision-making processes are crucial for fostering trust and encouraging community participation. Additionally, the forthcoming Ordinance on HR fertilising products must be enacted without further delay to enable the classification and distribution of compost, thereby reducing financial losses for treatment facilities and promoting circular-economy principles.

This paper has demonstrated that legal harmonisation with the EU *acquis* is insufficient without parallel investment in infrastructure and public support. It outlines the evolution of legislation and policy implementation in Croatia's biodegradable waste management sector, including examples of best practice. Such an analysis has not previously been undertaken in the legal literature. Further empirical research is needed to evaluate the effectiveness of these policies at the local level. In particular, the role of penalty-based enforcement in promoting the separation of biodegradable waste should be examined more closely. However, given the current lack of treatment capacities, the actual effectiveness and overall impact of these measures remain uncertain.

Additionally, a critical *de lege ferenda* issue relates to the timely adoption of regional WMPs, which are legally required under national legislation. Most counties and the City of Zagreb failed to adopt and publish their regional WMPs for 2023–2028 by the statutory deadline of 1 January 2024. This non-compliance can be understood as a spillover effect of the delayed adoption of the national WMP 2023–2028 officially adopted only on 28 June 2023. The late publication of the national plan reduced the time available to regional self-government units for alignment and procedural adoption. To ensure effective implementation of national waste-policy goals and compliance with EU directives, all regional WMPs should be adopted and operationalised in a speedy manner.

In conclusion, while Croatia has made notable progress in biodegradable-waste management, the road to its full compliance with EU directives and a sustainable, circular economy remains a long one. A coordinated approach combining legislative enforcement, infrastructure investment, and public education is required to achieve these goals. Only through such an integrated strategy can Croatia effectively transform its biodegradable-waste management system and make meaningful contributions to broader environmental and climate objectives.

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SANCTIONS FOR FRESH-WATER PLASTIC POLLUTION AND TRANSBOUNDARY POLLUTION

Biljana ČINČURAK ERCEG[1]

Microplastic Pollution in Freshwater – Regulatory Barriers for Better Water Protection[2]

Abstract

Water is an essential, limited natural resource, and yet its sustainability is being increasingly threatened by pollution, particularly from plastics. Rivers and lakes, as critical freshwater sources, are being heavily impacted by plastic waste, including microplastics, referring to tiny plastic particles that pose significant risks to aquatic life and water quality. Since water bodies often cross national borders, pollution in one region can have widespread consequences downstream, emphasising the need for coordinated international management and regulation in such contexts. Despite the rising awareness of plastic pollution, regulatory frameworks addressing microplastics in freshwater systems remain inadequate and fragmented. While global plastic production continues to rise, rivers continue to serve as major streams through which plastic waste gets transported from land-based sources to the oceans, making freshwater pollution a crucial but often overlooked contributor to marine pollution. However, the existing international agreements primarily focus on marine plastic pollution, leaving regulatory gaps in freshwater protection, and an international treaty regulating (micro)plastics remains to be developed. The existing international conventions relating to international waterways also do not regulate the problem of water pollution by (micro)plastics, and European and national regulations continue to be unsatisfactory. This paper explores the challenges of microplastic pollution in freshwater systems, focusing on regulatory barriers that hinder effective water protection. It examines the transboundary nature of water pollution, regulations of international watercourses, the limitations of existing legal frameworks, and the need for stronger international cooperation. By analysing key international conventions and policies, the paper highlights the urgency of establishing comprehensive regulatory measures that address microplastic contamination and safeguard freshwater

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ecosystems for future generations. The paper presents relevant provisions of international conventions, European legislation, and Croatian legal regulations.
Keywords: Freshwater, Microplastic, Pollution, Environment Protection, Legal Regulation.

1. Introduction

Water and its supplies are not unlimited, rendering responsible management of this limited natural resource crucial for the livelihood of future generations. Because pollution in one place can have far-reaching consequences for the entire flow of freshwater sources, primarily rivers, their protection is key and requires coordinated efforts of all countries through which they flow. Owing to the "large-scale water diversion, extraction, or loss"[3] of unpolluted water sources, many rivers and lakes can no longer sustain their natural ecosystems. Plastic pollution intensifies the problem by contaminating water bodies, further endangering aquatic life and disrupting fragile ecosystems.

Although plastic[4] has various practical applications, its durability and uncontrolled disposal pose a significant issue, particularly for marine and freshwater (e.g. rivers, lakes, groundwater) environments. The increasing production and widespread use of plastics have led to the accumulation of large amounts of plastic waste in nature. Global plastic production increased from 1.5 million tons in 1950[5] to more than 367 million tons in 2020, 55 million tons[6] of which were produced in Europe. According to the United Nations Environment Programme (UNEP), only 9% of the total plastic waste has been recycled so far, 12% has been incinerated, and the remaining 79% has accumulated in landfills or the natural environment.[7]

Plastic pollution in freshwater has become a major environmental issue owing to its harmful effects on aquatic ecosystems, water quality, and human health, as well as because plastic waste "may block waterways and cause hygienic problems and plastics-associated chemicals can enter drinking water resources".[8] Freshwater system protection is especially important because these systems serve as channels that carry plastic waste from land-based sources to the sea. In general, plastic waste in rivers originates from improper waste management, littering, industrial

3 | Boyle and Redgwell 2021, 571.
4 | Plastic is a material composed of a polymer, often combined with additives or other substances, serving as the primary structural component of final products. This definition excludes natural polymers that have not undergone chemical modification. See Art. 3, point 1 Directive (EU) 2019/904 of the European Parliament and of the Council of 5 June 2019 on the reduction of the impact of certain plastic products on the environment, OJ L 155, 12/6/2019, 1–19.
5 | United Nations Environment Programme and GRID-Arendal 2016, 5.
6 | Plastics Europe 2021, 12.
7 | United Nations Environment Programme, n.d.a.
8 | United Nations Environment Programme, n.d.b.

activities, agricultural runoff, from ships, among others.[9] Specifically, land human activity-related waste can be carried into rivers and other waterways by surface runoff, wind, and through direct discarding or releasing into rivers. As rivers transport plastic waste and the journey from freshwater to sea is significantly shorter than the time required for plastic degradation, most of it ultimately ends up in the ocean.[10] Therefore, international watercourses are not only source of transboundary freshwater pollution but also significant contributors to marine pollution.[11,12]

Although extremely important, water plastic pollution is insufficiently researched and presented in the available professional and scientific literature. This has already been emphasised by researchers,[13] such as in Blettler et al.'s remark that freshwater plastic pollution literature "is still scarce and does not appear to be in accordance with global environmental priorities, endangered species, or social demands".[14] In most countries, data on freshwater plastics is fragmented and absent,[15] while it is difficult to estimate the amount of plastic waste that enters the seas through rivers. Despite these numerous limitations and different research models, Lebreton et al. estimated that between 1.15 and 2.41 million tons of plastic waste enter the ocean from rivers each year,[16] while Schmidt et al. estimated around 0.47 and 2.75 million tons annually.[17] Meng et al. highlighted in their review that existing information on microplastics in freshwater ecosystems remains fragmented, incomplete, and biased, as well as that research efforts have generally been directed towards rivers. Meanwhile, related research on other freshwater types (e.g. wetlands, lakes, and reservoirs) is reduced.[18] Furthermore, microplastics regulation continues to be inadequate.

Accordingly, this paper will focus on (fresh)water—referring here to rivers, lakes, groundwater, and other types of water bodies that differ from saltwater and the sea—plastic pollution. Water sources are usually shared between several states, such that river pollution in a country often does not remain within its borders but spreads downstream, endangering neighbouring countries' people, nature, and economy. This entails that freshwater pollution prevention responsibilities are shared and require international cooperation. Considering this international

9 | Chakraborty et al. 2022, 928; Wagner et al. 2014, 3.
10 | United Nations Environment Programme and GRID-Arendal 2016. Microplastics debris in Oceans have been identified as one of the emerging issues by the United Nations Environment Programme, n.d.c.
11 | As a one of the most important conventions related to the sea and sea protection, the United Nations Convention on the Law of the Sea does not explicitly refer to plastic pollution, but requires States "to prevent, reduce and control pollution of the marine environment from any source" (Art. 194(1)). United Nations Convention on the Law of the Sea, United Nations Treaty Series, vol. 1833, 3.
12 | Lebreton et al. 2017, 2.
13 | Azevedo-Santos et al. 2021, 1313; Blettler et al. 2018; Yuchuan et al. 2020; Wagner et al. 2014, 2.
14 | Blettler et al. 2018, 3.
15 | Ibid., 8.
16 | Lebreton et al. 2017, 3.
17 | Schmidt et al. 2017, 12251.
18 | Yuchuan et al. 2020, 11.

context, this paper will analyse the relevant international conventions and provisions of European and Croatian legal regulations regarding plastics, waste, and water. The paper will also attempt to identify solutions to reduce pollution caused by (micro)plastics.

2. Microplastics

In the context of plastic pollution, plastics vary from large remains, such as bottles and bags, to microplastics from the breakdown of larger items. Physical and chemical weathering break down these synthetic polymers into smaller fragments over time, increasing the number of particles within freshwater ecosystems.[19] Now, there is a problem with plastics classification: due to the various classifications available, authors often highlight challenges associated with inconsistencies in size classification,[20] making it difficult to compare data from different studies.

Plastics are most often categorised by size into nanoplastics, microplastics, and macroplastics, with mesoplastics and megaplastics sometimes also being mentioned,[21] however these categories have not been officially adopted and no standardised definition exists.[22] Most authors define microplastic as a fragment or particle of plastic smaller than 5 mm. Verschoor identified five commonly-applied criteria to define microplastic, as follows: "1. synthetic materials with high polymer content, 2. solid particles, 3. <5 mm, 4. insoluble in water, and 5. not degradable".[23] The European Union recognises this definition, with the "A European Strategy for Plastics in a Circular Economy"[24] describing microplastics as "tiny fragments of plastic below 5 mm in size". Microplastics pose a significant problem, especially because they can enter the food chain, posing health risks to humans. Although they will be discussed later, solutions to reduce plastic pollution, such as from microplastics, include waste reduction, better management, public education, and appropriate regulations.

2. 1. General overview of (micro)plastics legal regulation

Although reduced in terms of numbers, the legal regulation of plastics is varied, spreading from international conventions to other relevant documents.

19 | Azevedo-Santos et al. 2021, 1315.
20 | Andrady 2011, 1597.
21 | Compare: Morreale and La Mantia 2024, 3; Kasavan et al. 2021, 1; Bexeitova et al. 2024; Conti et al. 2021, 2; Wagner et al. 2014, 2; Brennholt, Heß, and Reifferscheid 2017, 256.
22 | Blettler et al. 2018, 12.
23 | Brennholt, Heß and Reifferscheid 2017, 256; Wagner et al. 2014.
24 | Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, A European Strategy for Plastics in a Circular Economy, COM/2018/028 final.

The following analysis will provide some key points. The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes of 1989, which regulates the transboundary movement of hazardous waste,[25] was amended in 2019 (amendments to Annexes II, VIII and IX) and added provisions on plastic waste. "The introduction of provisions restricting the transfer of plastic waste is a major step in the international regulation of plastic waste and a good indication that states are ready and willing to work on solving this problem, especially considering that the Basel Convention has 188 parties."[26]

The inclusion of plastic waste in the Basel Convention "means that the transboundary movement of such waste is now subject to specific requirements, restrictions and prohibitions set by the Convention, for example, consent of the importing States".[27] In its Art. 9(5), this Convention obliges States Parties to introduce appropriate national legislation to prevent and punish illegal traffic.

The Stockholm Convention on Persistent Organic Pollutants[28] of 2001 aims to protect human health and the environment by eliminating or restricting the production, use, and distribution of persistent organic pollutants (POPs), which can be present in plastics along with other hazardous substances. Since, over time, environmental processes lead to the leaching and release of accumulated POPs from plastic wastes, this Convention is extremely important.

Two conventions primarily related to the protection of the sea should also be mentioned. First, the International Convention for the Prevention of Pollution from Ships (MARPOL 73/78),[29] in its Annex V 'Prevention of Pollution by Garbage from Ships', prohibits ships from discharging plastics into the sea (Regulation 3(2)).[30] Second, Art. 4(1) of the Protocol of the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter[31] from 1996 prohibits dumping of all waste or other matter into the sea, which certainly includes permanent plastics and other permanent synthetic materials. While addressing marine pollution from "vessels, aircraft, platforms, and man-made structures at the sea"[32] is essential, it is

25 | Basel Convention on the Control of Transboundary Movements of Hazardous Wastes, United Nations Treaty Series 1673, 57.
26 | Činčurak Erceg 2022, 147–148.
27 | Varvastian 2023, 642.
28 | Stockholm Convention on Persistent Organic Pollutants, United Nations Treaty Series, vol. 2256, 119.
29 | International Convention for the Prevention of Pollution from Ships (MARPOL), (1973 and Protocol 1978), United Nations Treaty Series, vol. 1340, br. 22484.
30 | It is prohibited to discharge all plastics into the sea, including, but not limited to, synthetic ropes, synthetic fishing nets, plastic garbage bags, and ashes of incinerated plastic products. Resolution MPEC.201(62).
31 | Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, United Nations Treaty Series 1046, p. 120. Protocol: 1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter.
32 | Art. 1(4)(1).

not enough in the fight against plastic pollution, as most plastic waste comes from land-based sources.

However, there is no single, comprehensive international treaty that uniformly regulates microplastics across all environmental compartments (i.e. freshwater, sea, soil, and air). In March 2022, the United Nations Environment Assembly adopted Resolution (5/14) "End Plastic Pollution: Towards an Internationally Legally Binding Instrument", which instituted an Intergovernmental Negotiating Committee to complete a draft of an international legally-binding agreement to end plastic pollution.[33] This Committee began its work during the second half of 2022, aiming to complete the negotiations by the end of 2024. After the fifth session in Busan, South Korea, failed to reach an agreement in December 2024, an additional session was scheduled for August 2025 in Geneva, Switzerland, to finalise the agreement. Key points of disagreement include limiting plastic production, managing plastic products and chemicals, and financing for developing countries to implement the agreement.[34] If successfully adopted, this 'Convention' could become one of the most significant international agreements on plastic pollution. According to the Scientists' Coalition for an Effective Plastics Treaty, the following key elements are essential for the success of a Global Plastics Treaty: a comprehensive scope, legally-binding reduction targets, chemical restrictions, microplastics and nanoplastics reduction, phase-out of non-essential plastics, harmonised sustainability criteria, adherence to waste hierarchy, transparency, reporting and monitoring, financial and technical support, and an independent science-policy interface.[35]

To address the global pollution problem and fight plastic pollution, the European Union has introduced various policies, strategies[36] and directives. The control of land-based pollution is primarily embodied in the regulations for solid plastic waste contained in the provisions of the Waste Framework Directive.[37] In 2019, Directive (EU) 2019/904 on the reduction of the impact of certain plastic products on the environment[38] ("Single-Use Plastics Directive") was adopted to reduce the environmental impact of certain plastic products, particularly in marine environments. The Directive targets the most commonly-found plastic

33 | United Nations Environment Assembly of the United Nations Environment Programme, Resolution adopted by the United Nations Environment Assembly on 2 March 2022, 5/14. End plastic pollution: towards an international legally binding instrument.
34 | Volcovici 2025.
35 | Scientists' Coalition for an Effective Plastics Treaty n. d.
36 | Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, A European Strategy for Plastics in a Circular Economy, COM/2018/028 final.
37 | Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives, OJ L 312, 22/11/2008, pp. 3–30. Amended with Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives, OJ L 312, 22/11/2008, 3–30.
38 | Directive (EU) 2019/904 of the European Parliament and of the Council of 5 June 2019 on the reduction of the impact of certain plastic products on the environment, OJ L 155, 12/6/2019, 1–19.

waste items on European beaches. While it mainly addresses macroplastic pollution, it also indirectly contributes to microplastic reduction by limiting plastic waste generation.

Various European water-related regulations also indirectly tackle the issue of (micro)plastics. The Water Framework Directive[39] aims to prevent the deterioration of inland surface waters, transitional waters, coastal waters, and groundwater in the European Union and achieve good ecological status.[40] Importantly, this Directive does not oblige Member States to take measures against waste in surface waters.[41] While it governs European inland waters, it does not explicitly mention plastic pollution. Still, it does require Member States to collect and maintain information on the type and magnitude of the significant anthropogenic pressures to which the surface water bodies in each river basin district are liable to be subject. This requirement makes microplastics relevant candidates for assessment, "especially because they might act as vectors for a wide range of freshwater contaminants".[42] According to Art. 23, Member States determine the penalties—which must be effective, proportionate, and dissuasive—for violating national provisions adopted in accordance with the Water Framework Directive. Ofak warns, nevertheless, that the Water Framework Directive is a hard-to-understand legal regulation with mainly complex and professional provisions.[43]

In October 2022, the European Commission proposed a directive amending Water Framework Directive,[44] aiming to proceed with the following measures: revise and expand the lists of pollutants impacting surface and groundwater; enhance the monitoring of chemical mixtures for more effective assessment; standardise the approach to addressing pollutants in surface and groundwater across the European Union, where applicable; enable quicker alignment of the legal framework with scientific advancements to better tackle emerging contaminants;

39 | Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy, OJ L 327, 22/12/2000, 1–73. Amended several times.

40 | See Annex V of the Water Framework Directive.

41 | A water management system under the Directive must meet several key requirements. Management objectives are based on the overall ecological status of the waters, including biological, physico-chemical and hydromorphological factors. Member States must carry out analyses to assess the impact of human activities and classify water bodies according to their ecological status. All waters must achieve "good ecological status", or "good ecological potential" (for artificial and modified water bodies), or "good status" (groundwater). Water management is implemented through river basin management plans. These plans identify the characteristics of the river basin district, the pressures and impacts of human activities, and prescribe measures to improve the status of the waters and a monitoring system. Ofak 2018, 274.

42 | Wagner et al. 2014, 5.

43 | Ofak 2018, 273.

44 | Proposal for a Directive of the European Parliament and of the Council amending Directive 2000/60/EC establishing a framework for Community action in the field of water policy, Directive 2006/118/EC on the protection of groundwater against pollution and deterioration, and Directive 2008/105/EC on environmental quality standards in the field of water policy, COM/2022/540 final.

increase accessibility, transparency, and reusability of water quality data.[45] This proposal also targets microplastics, as the list of main pollutants is amended to include them, describing that microplastics should be included in the surface and groundwater watch lists and be monitored as soon as the Commission has identified suitable monitoring methods.[46]

The European Marine Strategy Framework Directive,[47] in its Art. 1(1), establishes a framework within which Member States shall take the necessary measures to achieve or maintain a good environmental status in the marine environment. In contrast to the Water Framework Directive, the Marine Strategy Framework Directive addresses marine litter with Descriptor 10 of Qualitative descriptors for determining good environmental status (Annex I). Additionally, Commission Decision (EU) 2017/848 of 17 May 2017 laying down criteria and methodological standards on good environmental status of marine waters and specifications and standardised methods for monitoring and assessment[48] in that sense describes litter and micro-litter. Several other directives relate to plastic, such as the Groundwater Directive, Environmental Quality Standards Directive, REACH Regulation, and the Directive on packaging and packaging waste. Varvastian stresses that in addition to not existing a global agreement specifically targeting plastic pollution, "nor does any single country have a comprehensive policy to reduce plastic pollution. Instead, there are fragmented regulatory actions that either limit the movement and disposal of plastic waste or prohibit specific plastic products or the chemicals used in their production. As expected, these measures have been ineffective".[49]

Varvastian further explains that the regulatory response remains highly fragmented, spread across various jurisdictions, sectors, and product categories. This fragmentation is further compounded by the lack of policy coordination between states, insufficient communication between states and international bodies, inconsistency in national and local policies, varying standards, numerous loopholes, inconsistent enforcement, and widespread illegal activities.

To conclude, although the Basel Convention, Stockholm Convention, and MARPOL Convention played a significant role in reducing plastics, their main goal is not to directly address the global plastic pollution crisis. A notable lack also persists of international agreements focused on facing this issue systematically.

45 | European Sources Online 2022.
46 | Ibid.
47 | Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive), OJ L 164, 25/6/2008, 19–40.
48 | Commission Decision (EU) 2017/848 of 17 May 2017 laying down criteria and methodological standards on good environmental status of marine waters and specifications and standardised methods for monitoring and assessment, and repealing Decision 2010/477/EU, C/2017/2901, OJ L 125, 18/05/2017, 43–74.
49 | Varvastian 2023, 636.

While the European Union has taken significant steps to combat plastic pollution and progress has been made in this direction, a more integrated approach is needed.

3. Regulation of international watercourses

International water regulations are founded on the principle that States have national sovereignty over the water resources located within their territory or under their jurisdiction. The legal framework for international watercourses falls into two main categories: treaty law and customary international law.[50] As Seršić explains, the first international treaties on protecting and preserving the environment covered international rivers and lakes. After the Congress of Vienna in 1815, a series of international treaties were concluded that also addressed issues of river environmental protection. Later, express clauses directly related to pollution were included in international river treaties, and waste dumping into transboundary waterways was prohibited.[51] Nations have developed customary international law governing transboundary freshwater resources centred on the principle of equitable utilisation. The first comprehensive result of related legal frameworks was the 1966 Helsinki Rules on the Uses of International Rivers, established by the International Law Association, which summarises the customary international law on transboundary or internationally shared waters. In 1996, the Association began revising these rules to integrate principles from international environmental law and human rights law.[52] In 2004, the International Law Association adopted the Berlin Rules on Water Resources as a new authoritative summary of customary international law on water. Unlike previous frameworks, these rules applied not only to transboundary or international waters but to all water resources.[53]

Following the United Nations Conference on the Human Environment, held in Stockholm in 1972, two rules of general customary international law developed: a rule prohibiting states from polluting the environment, and a rule obliging states to cooperate in environmental protection.[54] According to principle 21 of the Stockholm Declaration,[55] states should ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or areas beyond the limits of their national jurisdiction. The obligation to cooperate implies acting in good faith, including by informing, consulting, negotiating, and assisting.

50 | Grzybowski, McCaffrey, and Paisley 2010, 140.
51 | Seršić 2003a, 14.
52 | Dellapenna 2006, 1.
53 | Ibid., 2.
54 | Seršić 2003b, 257.
55 | Declaration of the United Nations Conference on the Human Environment, 5.

Additionally, as pointed out by Seršić, one of the key principles is the prohibition of transferring damage from one area to another, which includes the prohibition of transforming one form of pollution into another.[56] River protection within international environmental law is also based on principles that apply to broader environmental protection.

International law governing shared watercourses is based on three key principles: equitable and reasonable use, prevention of significant harm, and cooperation through consultation and timely notification.[57] The most common ways in which international agreements promote the principle of prevention are through obligations for environmental impact assessment and monitoring.[58] The most well-known multilateral agreements of international water law are the United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses of 1997 and the UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes of 1992. Both tried to modernise the legal regulation on international watercourses. For the purpose of the United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses, a "watercourse means a system of surface waters and groundwaters constituting by virtue of their physical relationship a unitary whole and normally flowing into a common terminus",[59] and an "international watercourse means a watercourse, parts of which are situated in different States".[60] The term "transboundary waters", for the purposes of the Convention on the Protection and Use of Transboundary Watercourses and International Lakes, means: "any surface or ground waters which mark, cross or are located on boundaries between two or more States; wherever transboundary waters flow directly into the sea, these transboundary waters end at a straight line across their respective mouths between points on the low-water line of their banks".[61]

Transboundary waters refer to surface water or groundwater that either crosses or is located on the borders between two or more states, and particularly emphasise geographic boundaries. A watercourse is a connected system of surface water and groundwater that forms a single hydrological unit due to the physical relationship between them, focusing on the interconnected water system. As stated by Carratta and Jaeckel, "both of them are theoretically applicable to plastic pollution".[62]

56 | Seršić 2003a, 16.
57 | Grzybowski, McCaffrey, and Paisley 2010, 141.
58 | Seršić 2003b, 253.
59 | Art. 2, point a.
60 | Ibid., point b.
61 | Art. 1(1).
62 | Carratta and Jaeckel 2023, 56.

3.1. Convention on the Law of the Non-Navigational Uses of International Watercourses

United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses is widely recognised as reflecting the core principles of customary international law in the field of watercourses. Art. 5 stipulates the obligation of Watercourse States to use the watercourse in their territory in an equitable and reasonable manner in order to achieve its optimal and sustainable use. Art. 7 obligates Watercourse States to take all appropriate measures to prevent significant harm to other Watercourse States. However, Art. 7(2) describes that if significant harm does occur, the state whose use caused the harm and the injured state should take appropriate measures to eliminate and mitigate the harm and negotiate compensation. Andrassy et al. outline that it is particularly controversial that it effectively obliges downstream coastal states to, at least in some cases, accept damage caused by upstream states that falls below the level of 'significant damage'.[63] What these descriptions show that is that the United Nations Convention on the Law of Non-Navigational Uses of International Watercourses centres on the relationship between the principle of equitable utilisation and the no-harm rule. As Dellapenna explains, Art. 7 appears to be subordinate to Art. 5, as completely avoiding harm in shared water use is nearly impossible, which leads the emphasis to be on balancing interests and ensuring reasonable and equitable management of transboundary water resources.[64]

In addition to Art. 20 of the Convention, which prescribes the obligation of Watercourse States to preserve and protect the ecosystems of international watercourses, Art. 21(2) requires States to "individually and, where appropriate, jointly, prevent, reduce and control the pollution of an international watercourse that may cause significant harm to other Watercourse States or to their environment, including harm to human health or safety". Art. 21(3) provides some details on the measures and methods to be employed in pursuit of this imperative. Pollution of an international watercourse is defined in Art. 21(1) as "any detrimental alteration in the composition or quality of the waters of an international watercourse which results directly or indirectly from human conduct". In our opinion, the term "human conduct" would also include plastics. Carratta and Jaeckel also conclude that when plastic pollution occurs in rivers, it appears to fulfil the criteria from Art. 21(1), but state that "the risks posed by plastics are still subject to debate within the scientific community, making it difficult to establish the requirement of 'significant harm' under this provision".[65] Clearly, the obligation under Art. 20 remains applicable. We agree with the statement of the aforementioned authors that this

63 | Andrassy et al. 2010, 201–202.
64 | Dellapenna 2006, 5.
65 | Carratta and Jaeckel 2023, 57.

obligation represents "an important advancement as it calls on riparian States to protect riverine ecosystems, including through international cooperation, and not only based on a mere prohibition of transboundary harm".[66] However, albeit the regulation facilitates and supports transboundary water cooperation, it does not include provisions regarding governance mechanisms or an authority to monitor its implementation.[67]

3.2. Convention on the Protection and Use of Transboundary Watercourses and International Lakes

The Convention on the Protection and Use of Transboundary Watercourses and International Lakes[68] prescribes in Art. 2 that all Parties shall take appropriate measures[69] to prevent, control, and reduce transboundary effects. Where possible, water pollution should be prevented, controlled, and reduced at the source, without causing the transfer of pollution to other parts of the environment. The implementation of the Convention also shall not result in a deterioration of the state of the environment or an increase in transboundary effects. The general duty of riparian states to cooperate envisaged under the Art. 2(6) of the Convention includes interstate cooperation regarding the measures necessary to address land-based pollution. Of particular importance is the provision in Art. 2(8), allowing each Party, either individually or in cooperation with others, to apply more stringent measures than those prescribed by the Convention. This is similar to Art. 3 of the United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses.

The Parties are obliged to develop, adopt, and implement appropriate legal, administrative, economic, financial, and technical measures to prevent, control, and reduce transboundary consequences, including the following points: prevention, control, and reduction of pollutant emissions at the source; protection of transboundary waters from pollution from point sources through wastewater

66 | Ibid.

67 | Scocca 2019, 196.

68 | United Nations Treaty Series, vol. 1936, 269. In 1999, the Protocol on Water and Health to the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes was signed in London. The objective of the Protocol on Water and Health is to promote, at all appropriate levels, nationally and in transboundary and international contexts, the protection of human health and well-being, both individual and collective, within the framework of sustainable development, through the improvement of water management, including aquatic ecosystems, and through the prevention, control, and reduction of water-related diseases.

69 | According to Art. 2(2), the parties shall in particular implement measures aimed at: a) preventing, controlling, and reducing water pollution that may have cross-border effects; b) ensuring ecologically-sustainable and rational management of transboundary waters in order to protect water resources and the environment; c) providing fair and rational use of transboundary waters, considering their international significance and possible transboundary consequences of certain activities; d) preserving ecosystems and, when necessary, their restoration.

discharge permits and discharge monitoring; introduction of stricter restrictions or bans when the ecosystem so requires; application of best practices to reduce nutrient inputs from industrial and municipal sources; promotion of sustainable water resource management; contingency planning; minimisation of the risk of sudden pollution. Accordingly, it "promotes the application of the ecosystem approach as a key strategy for sustainable management of aquatic natural resources",[70] making this Convention suitable for solving the problem of plastic pollution. In its Art. 3(2), it prescribes that each Party shall establish emission limits for discharges from point sources into surface waters, taking into account the best available technologies, and may prohibit, in whole or in part, the production or use of hazardous substances in accordance with international regulations. Additionally, the Parties shall, where possible, define water quality objectives and criteria to reduce transboundary impacts and supplement them as necessary. According to Art. 4, the Parties shall establish programs for monitoring the conditions of transboundary waters.

Analysing the Convention on the Protection and Use of Transboundary Watercourses and International Lakes, Carratta and Jaeckel conclude that the obligations therein appear even more promising if applied to global plastics governance. In line with the goal to prevent, control and reduce marine environment pollution, riparian states must cooperate. They further explain that although the Convention primarily targets the protection of transboundary rivers and international lakes, it also recognises the significant impact of land-based human activities, which are crucial for plastic pollution. Therefore, this Convention can potentially provide broader protection than the Convention on the Law of the Non-Navigational Uses of International Watercourses. However, the adoption of bilateral and multilateral agreements remains important for effectively implementing the provisions of the Convention on the Law of the Non-Navigational Uses of International Watercourses,[71] since the Convention is of a framework nature.[72]

3.3. Transboundary water pollution and the need for international cooperation in addressing plastic pollution

Both the United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses and the Convention on the Protection and Use of Transboundary Watercourses and International Lakes stipulate that States must prevent, reduce, and control the pollution of an international watercourse/waters that may cause significant harm to other watercourse/causing or likely to cause transboundary impact. They also prescribe the obligation of states to

70 | Carratta and Jaeckel 2023, 58–59.
71 | Carratta and Jaeckel 2023, 58–59; Boyle and Redgwell 2021, 580.
72 | Seršić 2003b, 272.

cooperate. However, under the Convention on the Law of the Non-Navigational Uses of International Watercourses, parties must only 'consider' the creation of the establishment of joint mechanisms or commissions.[73] Vukas points out that the basic provisions of specific treaties on land-based pollution do not contain precise legal obligations of states on issues of prevention, reduction and control of pollution from land-based sources, but rather plans for further cooperation in establishing specific obligations. The adoption of international rules, standards, recommended practices, and procedures in this area require more flexibility and persistence than activities related to other sources of pollution. This is due to differences regarding regional characteristics and state attitudes, rendering regional and subregional solutions potentially more easily achievable than global rules, standards, and practices.[74] Seršić similarly notes that states are more willing to accept obligations under regional treaties concerning the protection of rivers within their territories, as these directly impact their environment.[75] Vukas further emphasises that to strengthen legal frameworks on land-based pollution, it is crucial to go beyond the adoption of international norms and ensure that national laws among neighbouring states are aligned and unified. Additionally, the evolution of international law in this field should focus on rules and standards for pollution prevention, reduction, and control, incorporate principles of liability and responsibility, and consider the unique challenges of land-based pollution (e.g. difficulties in tracing pollution sources to specific damages). In contrast to the rules and standards adopted for pollution prevention, rules on liability should be global.[76]

Some of the most well-known river and freshwater pollution cases highlight the devastating consequences of industrial accidents on aquatic ecosystems and the urgent need for coordinated international response measures. While these cases generally involved chemical spills, an increasingly concerning transboundary pollution issue is the accumulation of plastic waste and microplastics in rivers and lakes. Unlike sudden industrial accidents, plastic pollution is a continuous and widespread problem. Since plastics often flow across national borders, plastic pollution in one state inevitably impacts neighbouring states, underscoring the need for international cooperation.

We can agree that the two main Conventions mentioned thus far (the Convention on the Law of the Non-Navigational Uses of International Watercourses and the Convention on the Protection and Use of Transboundary Watercourses and International Lakes) can be applied to plastic waste, considering how this waste type is a significant contributor to water contamination with transboundary effects. Importantly, addressing water pollution, whether caused by hazardous

73 | Art. 8(2), Boyle and Redgwell 2021, 580.
74 | Vukas 2004, 257.
75 | Seršić 2003b, 250.
76 | Vukas 2004, 258.

chemicals or plastics, requires a comprehensive approach that includes political and legal measures to strengthen environmental regulations, reduce pollution at the source, improve waste management, and facilitate transboundary collaboration. Vukas also points: "The protection and use of transboundary watercourses and international lakes are important tasks, the effective execution of which can only be achieved through increased cooperation".[77]

River commissions, whose members are usually the states through which the rivers flow, play a key role in river environment protection since they enable interstate cooperation, shared water resources management, decision making, and the implementation of rules for the protection of rivers and their ecosystems. In Europe, examples include the International Commission for the Protection of the Danube River, the International Commission for the Protection of the Rhine, the International Commission for the Sava River Basin, each responsible for adopting international treaties regulating the environmental protection of rivers under their jurisdiction. Other relevant conventions for these rivers include the Convention on Cooperation for the Protection and Sustainable Use of the Danube River, the Protocol on the Prevention of the Water Pollution Caused by Navigation to the Framework Agreement on the Sava River Basin, and the Convention for the Protection of the Rhine. Worthy of note is that while the scope and subject of interest of this paper exclude more comprehensive examinations into these conventions, related analyses are warranted in future research.

Adopted in 1994, the Convention on Cooperation for the Protection and Sustainable Use of the Danube River aims to protect the waters of the Danube River from pollution, including hazardous substances, nutrients, and other pollutants that can adversely affect the aquatic ecosystem (Art. 5). Given that plastics, and particularly microplastics, are increasingly recognised as a serious pollutant of aquatic systems, measures under the Convention may also address (micro)plastic waste problems. In addition, the International Commission for the Protection of the Danube River, which implements the provisions of the Convention, has included microplastics in its research activities, and some State Parties have also carried out monitoring in their rivers.[78]

Environmental pollution causes high costs for those affected, which is why countries want to reduce pollution by establishing environmental protection goals and strategies. Specifically, there are goals associated with limiting waste disposal and the release of harmful emissions, setting production standards (especially in the chemical industry and fuel production) and wastewater discharge, monitoring regulation implementation, collecting various fees for environmental pollution, among others.[79]

77 | Činčurak Erceg 2013, 184.
78 | International Commission for the Protection of the Danube River n.d.
79 | Činčurak Erceg 2013, 165–179.

Because one of the primary destinations of microplastics are water systems, it is crucial to regulate industrial polluters and manage plastic products made and discarded on land to reduce plastic waste amounts reaching water bodies. Bexeitova et al. correctly conclude that interdisciplinary approaches and international collaboration are essential for sustainable solutions and freshwater ecosystem protection. They describe that effective microplastic pollution management requires strategies that consider regional conditions and pollution levels,[80] with improved control over drainage systems and more efficient waste management being essential measures. They add that addressing these matters requires global cooperation and regulations, as efforts in just a few countries will not suffice to reduce microplastics.[81] Accordingly, they remark that reducing the presence of microplastics in freshwater systems necessitates considerations of their sources and current global efforts, and that despite progress through national laws, international agreements, business actions, and technological advances, more coordinated worldwide efforts are needed.[82]

Moreover, because plastic waste continues to rise, it is necessary to reduce and eliminate it in affected areas. Recognising that the basis of plastic waste management is to reduce waste at the source, and considering the persistent and far-reaching effects of plastic pollution in watercourses, it is crucial to integrate plastic waste management into existing water protection frameworks. However, when waste cannot be entirely prevented, its effective management is necessary. In light of these remarks, and with the intention of mitigating waste and its environmental consequences, the European Union has set ambitious recycling and landfill targets, and is actively addressing packaging waste.[83] Specifically, the European Union adopted Directive (EU) 2019/904 on reducing the impact

80 | Bexeitova et al. explain that in countries with severe microplastic pollution, where large quantities of plastic waste are generated and often enter water systems, targeted measures are essential to mitigate pollution and prevent further environmental harm. Key strategies include establishing monitoring networks, conducting regular water quality control using advanced analytical techniques to detect and measure microplastics, and improving the infrastructure for plastic waste management and disposal. This may involve installing specialised filtration systems at treatment plants. Additionally, regulatory initiatives should be introduced to restrict single-use plastics and encourage the adoption of environmentally-friendly alternatives. In regions with moderate microplastic pollution levels, a balanced approach is needed that integrates systematic microplastic pollution monitoring with public awareness campaigns and technological innovations to reduce pollution. For regions with relatively low microplastic pollution, the emphasis should be on prevention and early detection. Efforts should focus on implementing proactive measures like restricting plastic imports, encouraging alternative material use, and setting up local monitoring programs to track changes in microplastic concentrations in water bodies. Bexeitova et al. 2024, 11–12.

81 | Bexeitova et al. 2024, 11.

82 | Ibid.

83 | See Waste Framework Directive, Regulation (EU) 2025/40 of the European Parliament and of the Council of 19 December 2024 on packaging and packaging waste, amending Regulation (EU) 2019/1020 and Directive (EU) 2019/904, and repealing Directive 94/62/EC, OJ L, 2025/40, 22/1/2025.

of certain plastic products on the environment, aiming to reduce the negative impact of certain plastic products on the environment. This Directive includes a European Union-wide ban on certain single-use plastic products, which have importantly not caused difficulties for users seeing that there are suitable alternatives. However, it is important to ensure that banning single-use plastics does not lead to other negative consequences, especially considering that wooden products are being increasingly used instead of plastic.[84] Although the European Union has a comprehensive legal framework for environmental protection, the biggest challenge remains the application of related regulations in Member States. Unfortunately, infringements of environmental law represent the largest share of cases handled by the European Commission, making up approximately 20% of the total.[85]

As stated by Brennholt et al., regulatory measures to reduce microplastic emissions into freshwater environments do not necessarily have to directly target production or application, but can rather be focused on improving wastewater and solid waste management. Economic instruments for achieving these environmental objectives range from financial penalties to market-based mechanisms (e.g. tradable permits and financial incentives) to boost recycling rates. For example, introducing a container deposit system in several European countries has significantly increased recycling rates for plastic bottles and other beverage containers. Similar deposit systems could be extended to additional plastic products, such as packaging and carrier bags.[86]

Regardless of the potentials, states remain insufficiently implementing the existing regulations and often failing to fulfil their commitments. As stated earlier in this paper, there are many efforts toward developing and adopting a convention for plastics regulation, but we must also consider that both adoption and the process of entering into force will take time. Therefore, more short-term solutions should be sought through amendments to the existing legal frameworks, such as explicitly banning plastic pollution, incorporating and reinforcing prohibitions on plastic dumping from all sources into rivers, seas, and other bodies of water, explicitly mentioning plastics in waste-related regulations, monitoring for microplastics, and strengthening enforcement measures. While international, global, and regional approaches to addressing plastic pollution are all and each valuable, they are not sufficient alone, as national legislation and the effective implementation of these regulations remain extremely important.[87]

84 | Činčurak Erceg 2022, 165.
85 | European Commission n.d.
86 | Brennholt, Heß, and Reifferscheid 2017, 261.
87 | Činčurak Erceg 2022, 165.

4. Water protection and waste management in the Republic of Croatia

According to the available data, the Republic of Croatia has not participated in any projects or measurements of the amount of microplastics in Croatian waters[88] entailing the need for further research into the matter and assessing the impact of microplastics on freshwater ecosystems. According to current European and national legislation, there are no mandatory parameters prescribed for the measurement of microplastics levels in water and, accordingly, their presence is not measured in Croatia. Notwithstanding, the Republic of Croatia is a party to the following conventions: Basel Convention,[89] the London Convention[90] (but not the 1996 Protocol), the MARPOL 73/78 Convention and Annex V,[91] the Convention on the Protection and Use of Transboundary Watercourses and International Lakes,[92] the Protocol on Water and Health,[93] the Convention on Cooperation for the Protection and Sustainable Use of the Danube River,[94] Protocol on the Prevention of the Water Pollution Caused by Navigation to the Framework Agreement on the Sava River Basin.[95] It is not a party to the United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses.[96]

According to Art. 52(1) of the Constitution of the Republic of Croatia, waters, as well as goods of particular ecological significance, which are specified by law to be of interest to the Republic of Croatia, are subject to its special protection. According to Art. 69 of the Constitution, "the State shall ensure conditions for a healthy environment. Everyone is obliged, within the scope of their powers and activities, to pay special attention to the protection of human health, nature and the human environment". Ofak points that Croatian legal theory considers that the Constitution protects the right to a healthy environment.[97]

88 | A good example of research on microplastics in water is the Interreg Danube Transnational Program Tid(y)Up, which dealt with the improvement of water quality and reduction of plastic pollution in Tisza. There is also research on plastic pollution and its effect on the Danube, in which Austria, Bulgaria, Hungary, Romania, Slovakia, Serbia, and Ukraine were involved. Interreg Danube Transnational Program Tid(y)Up, 2020.
89 | Basel Convention, Countries Status of Ratifications n.d.
90 | IMO, Status of Conventions n.d.a.
91 | IMO, Status of Conventions n.d.b.
92 | United Nations Treaty Collection, Status of Treaties Convention on the Protection and Use of Transboundary Watercourses and International Lakes n.d.
93 | United Nations Treaty Collection, Status of Treaties, Protocol on Water and Health to the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes n.d.
94 | International Sava River Basin Commission, Contracting Parties n.d.
95 | International Sava River Basin Commission, Protocols to the FASRB n.d.
96 | United Nations Treaty Collection, Status of Treaties, Convention on the Law of the Non-Navigational Uses of International Watercourses n.d.
97 | Ofak 2021, 86. For the constitutional framework of Croatian protection of the right to a healthy environment see: Ofak 2021, 85–98; Staničić 2023, 143–145.

In the Republic of Croatia, the principles of environmental protection, along with the protection of its components (e.g. air, water, sea, soil, landscape, flora and fauna, and the Earth's crust), are regulated by the Environmental Protection Act.[98] According to Art. 5(5) of this Act, environmental protection issues not regulated by it, and relating to specific components of the environment, are subject to special regulations governing their protection or protection from specific forms of pollution. Accordingly, the Inland Waterway Navigation and Ports Act regulates the protection of inland waterways from pollution caused by vessels.[99]

The Water Act[100] transposes the Water Framework Directive, Council Directive 91/271/EEC of 21 May 1991 concerning urban wastewater treatment, and Directive 2006/7/EC of 15 February 2006 concerning the management of bathing water quality into the national legal framework. The provisions of the Water Act apply to groundwater and surface water, including coastal waters and territorial sea waters, with regard to their chemical status, and prescribes that waters are a common good and are subject to special protection of the Republic of Croatia.[101] According to Art. 6(2) of the Water Act, waters are managed according to the principle of unity of the water system and the principle of sustainable development.[102]

As mentioned earlier in this paper, water management efforts with transboundary impacts are achieved through cooperation with other states, the conclusion and implementation of international agreements, notification of transboundary impacts on water and the freshwater environment, and the international exchange of information on water and the aquatic environment. The primary objectives of this type of cooperation in water protection issues are to prevent further deterioration, protect and improve aquatic ecosystem conditions, promote sustainable water use based on the long-term protection of available water resources, and better protect and improve the condition of aquatic environments (e.g. through

98 | Official Gazette of the Republic of Croatia, Nos. 80/2013, 78/2015, 12/2018, 118/2018.

99 | Official Gazette of the Republic of Croatia, No. 144/2021. The Inland Waterway Navigation and Ports Act regulates protection against pollution from inland waterway facilities (vessels and floating objects). In Art. 32(1), it prohibits the discharge and/or spillage of waste, objects, substances (i.e. harmful and dangerous substances), oil, oily water, and a mixture of such waste from water that may pose an obstacle or danger to the safety of navigation from inland waterway objects; plastic is not specifically mentioned, and waste is not defined either. It prohibits any activity that endangers the safety of persons or vessels, or pollutes the environment in the port (Art. 211). However, Art. 34(1) stipulates the obligation for the captain and crew members of a ship, and for professional workers on floating facilities and persons supervising a floating facility, to "comply with international, European and Croatian regulations and standards on protection against water and air pollution from inland waterways, regardless of the navigation area". It also stipulates that waste generated on the board of a ship, as well as cargo waste, must be collected and delivered to reception stations in ports or other places designated for the reception of such types of waste.

100 | Official Gazette of the Republic of Croatia, Nos. 66/2019, 84/2021, 47/2023.

101 | Art. 8 of the Water Act.

102 | The protection and use of waters is based on the precautionary principle, taking preventive measures, eliminating damage to the water environment at the place of its origin, and the principles of "polluter pays" and "user pays". Art. 6(5) of the Water Act.

specific measures to gradually reduce discharges, emissions and spills of hazardous substances).[103]

Considering the border and cross-border character of many Croatian waters, it is necessary to consider the obligations of multiple harmonisation and reporting as prescribed by bilateral or multilateral agreements. The Republic of Croatia has concluded bilateral agreements on water management relations with the Republic of Hungary,[104] the Republic of Bosnia and Herzegovina,[105] the Republic of Slovenia,[106] and the Republic of Montenegro.[107] Moreover, as stated in the River Basin Management Plan from 2022 to 2027,[108] the adoption of a bilateral agreement with the Republic of Serbia is being prepared. To enable the management of river basins in the territory of the Republic of Croatia, the Danube River Basin District and Adriatic River Basin District[109] have been established. According to the Water Act, relevant water management planning documents are the Water Management Strategy, the River Basin Management Plan, long-term construction programs, the financial plan of Croatian Waters, and the Water Management Plan.

Additionally, according to Art. 46(3) of the Water Act, water protection is achieved by engaging in the following efforts: adopting implementing regulations; monitoring water quality status and pollution sources; pollution control; prohibition of pollutant discharge into water and of other actions and behaviours that may cause pollution of the aquatic environment and the environment as a whole; wastewater treatment; other measures aimed at preserving and improving the quality and intended usefulness of water. According to Art. 49, it is prohibited to discharge or introduce hazardous or other pollutants into water and dispose of them in places in which there is a possibility of water and aquatic environment pollution. Supervision of the status of water is also carried out through systematic monitoring of the water status.

These analyses allow the conclusion that Croatia has a comprehensive legal and regulatory framework for water protection that includes international cooperation efforts regarding transboundary water management. However, there is no explicit

103 | Art. 46(1) of the Water Act.
104 | Agreement on water management relations between the Government of the Republic of Croatia and the Government of the Republic of Hungary, Official Gazette of the Republic of Croatia, International Agreements, No. 10/94.
105 | Treaty between the Government of the Republic of Croatia and the Government of Bosnia and Herzegovina on the establishment of water management relations, Official Gazette of the Republic of Croatia, International Agreements, No. 12/96.
106 | Treaty between the Government of the Republic of Croatia and the Government of the Republic of Slovenia on the settlement of water management relations, Official Gazette of the Republic of Croatia, International Agreements, No. 10/97.
107 | Agreement between the Government of the Republic of Croatia and the Government of the Republic of Montenegro on Mutual Relations in the Field of Water Management, Official Gazette of the Republic of Croatia, International Agreements, No. 1/08.
108 | Official Gazette of the Republic of Croatia, No. 84/2023.
109 | Art. 34(1) of the Water Act.

mention of (micro)plastics or specific regulations addressing their discharge into water bodies. The general prohibition on discharging pollutants (Art. 49) and the commitment to reduce hazardous substances in the aquatic environment could imply that microplastics are regulated under these broader pollution control measures. While microplastics are not explicitly listed, they are increasingly being recognised as pollutants and hazardous due to their persistence and potential toxicity. Connectedly, Boyle and Redgwell state that "the modern trend is to require states to regulate and control river pollution, prohibiting only certain forms of pollutant discharge, and distinguishing between new and existing sources". Accordingly, the contemporary focus is on broader issues of environmental protection.[110] Nevertheless, according to the policy recommendation from the Interreg project "City Water Circles", Croatia lacks not only relevant legislation but also guidelines, standards, and other relevant measures on water reuse and recycling, and the Croatian water sector lags considerably behind European Union standards.[111]

In 2021, the Waste Management Act[112] was adopted, prescribing measures to protect the environment and human health by preventing or reducing waste generation, the negative effects of waste generation, and improving waste management. It also prescribes measures to prevent and reduce the impact of certain plastic products on the environment, particularly the aquatic environment, and human health, as well as to promote the transition to a circular economy (Art. 1(4)). Additionally, an Ordinance on packaging and waste packaging, single-use plastic products and fishing gear containing plastic[113] was adopted, containing rules on the Waste Management Fee and the Refundable Fee System (deposit refund). Still, the Waste Management Act does not apply to wastewater, "to the extent prescribed by other regulations" (Art. 3(2)(1)). According to Art. 5(1), waste management must be carried out in a way that does not endanger human health nor leads to harmful environmental consequences, and should particularly not cause risks of pollution to the sea, water, soil, and air, as well as not endanger biodiversity. Art. 5(2) emphasises that the prevention of pollution of the sea, water, soil, and air and the preservation of biodiversity in the context of waste management is achieved through the application of regulations governing spatial planning, construction, protection of the environment, nature, and water, as well as the protection of the sea from pollution of maritime objects. Some of the key obligations of waste producers and holders include a ban on dumping waste into the environment (Art. 18); mandatory waste categorisation (Art. 19); an obligation for waste producers or holders to ensure waste treatment (Art. 21); an obligation to separately collect different types of waste, including hazardous waste, paper, metal, plastic, glass, bulky waste, textiles, footwear, packaging, and special categories of waste (Art. 22). The Waste

110 | Boyle and Redgwell 2021, 581–582.
111 | Interreg 2021, 9.
112 | Official Gazette of the Republic of Croatia, Nos. 84/2021, 142/23.
113 | Official Gazette of the Republic of Croatia, No. 137/23.

Management Act also regulates extended producer responsibility (Art. 91–98). The adoption of this Act seeks to reduce the negative impact of certain plastic products on the environment, which also contributes to reducing water pollution. In 2023, Croatia's recycling rate rose by two percentage points compared to 2022, reaching 36%, but the country still has to reach the 50% target set by the Waste Framework Directive. Also in 2023, 282 recycling yards were in operation, and the recovery rate stood at 38%; the trend of increasing separately collected municipal waste continued, reaching 48%; the municipal waste disposal rate in 2023 was 52%, but it must be reduced to just 10% by 2035.[114]

The Republic of Croatia has harmonised its legislation with the European Union's directives, and is a party to the most important international treaties. However, as Seršić points, the enforcement of international legal rules is the weakest point of the existing international environmental protection efforts.[115]

5. Conclusion

Plastic pollution has gained significant global attention, emerging as a pressing contemporary challenge on the international agenda. Plastic pollution in freshwater ecosystems has often been overlooked, despite plastics being the primary pollutants in these ecosystems, especially near urban areas. At the international level, existing frameworks like the Stockholm Convention, Basel Convention, and MARPOL provide some regulation of plastics, but still lack specific provisions addressing freshwater microplastics. The United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses and the UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes do not explicitly mention plastic pollution, but are in wider sense applicable to plastic pollution through principles of cooperation, prevention, and pollution control. Strengthening these frameworks, like by integrating microplastics into monitoring programs, setting specific plastic pollution targets, and enhancing enforcement, would improve their effectiveness in combating freshwater plastic pollution.

Microplastics regulation still faces several challenges. A major matter is the lack of a uniform international framework, as most existing agreements primarily address marine plastic pollution while neglecting microplastics in freshwater environments. Additionally, microplastics monitoring and the enforcement of related regulations remain difficult due to their size and widespread occurrence, making their detection and management a particularly complex task. Consequently, addressing transboundary water pollution, particularly (micro)plastic

114 | Environmental Protection and Energy Efficiency Fund 2024.
115 | Seršić 2003a, 10.

pollution in freshwater systems, requires a comprehensive and coordinated approach. Additionally, the principles of transboundary pollution (e.g. prevention, precautionary principle, the duty to cooperate, and the "polluter pays" principle) must be reinforced through legal, economic, and cooperative mechanisms. Therefore, strengthening legal frameworks, improving enforcement, and fostering international cooperation will be key to mitigating this environmental challenge.

There is a pressing need for a binding international treaty on plastics to close regulatory gaps and ensure effective pollution control, while those already existing should be strengthened by introducing stricter obligations, clear pollution limits, and robust legal frameworks for polluter liability. Additionally, enhancing monitoring and reporting systems, intensifying enforcement, and reinforcing the role of river commissions can help improve transboundary water pollution management. Addressing freshwater pollution at its source will also significantly benefit the global marine environment. Integrating freshwater protection into the existing marine and waste policies, particularly within the European Union, can also contribute to reducing plastic pollution from sources to sea. Policy measures should address freshwater microplastic pollution with the same urgency and commitment as marine microplastic pollution.

Despite existing regulations at the European Union level, significant challenges remain due to regulatory gaps, a lack of enforcement, economic pressures, and public behaviour. Although the Single-Use Plastics Directive and the Circular Economy Action Plan relate to plastic waste, specific water pollution regulations are missing. The Water Framework Directive also does not explicitly regulate microplastics and national-level solutions vary, leading to inconsistent implementation. Expanding the Water Framework Directive to include microplastics as priority pollutants with strict reduction targets and mandatory monitoring across all river basins is essential. The current lack of adequate monitoring systems makes it difficult to track plastic pollution and generate reliable data on microplastics in freshwater ecosystems. Therefore, it is necessary to develop a standardised freshwater protocol for sampling, analysis, and result interpretation to improve the monitoring of freshwater microplastics and identify pollution sources. Since identifying the primary sources of pollution is often a challenge, this is still a key task, one that will require integrated, comprehensive, and cross-sectoral approaches to ensure the realisation of measures to effectively address the microplastics problem.

However, regulatory measures alone will likely be insufficient, as public engagement and behavioural change are also necessary for successful enforcement. Encouraging proper waste sorting, promoting reusable plastic products, and implementing educational initiatives are important steps in reducing plastic pollution. Another critical matter is institutional support, which should be afforded to public engagement and civil society pollution mitigation initiatives to secure their long-term success. Organised, community-driven efforts such as river clean-ups

can further strengthen public participation. Strengthening penalties for improper plastic waste disposal; prioritising prevention by reducing the overall use of plastic products; promoting the reuse of manufactured products to support circular economy and industrial symbiosis are crucial to increase enforcement to achieve the set objectives. Enhancing waste management is also very important seeing that recycling rates remain low. Harmonising waste collection systems across the European Union will help reduce pollution. Industries generating plastic waste must be held responsible through Extended Producer Responsibility schemes.

Future research should focus on enhancing the effectiveness of existing policies, developing innovative plastic waste management technologies, assessing the long-term impacts of microplastics on human health and ecosystems, analysing the liability for damage, assessing various national measures to reduce plastic pollution. By reinforcing legal frameworks, harmonising regulations, strengthening international cooperation, and fostering public engagement, we can effectively mitigate plastic pollution in freshwater ecosystems and marine environments, as well as prevent long-term environmental degradation.

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Petr JIMRAMOVSKÝ[1]

Freshwater Pollution by Plastics – Transboundary Pollution and Liability[2]

Abstract

This study examines the environmental and health risks posed by microplastics and plastics and analyses the existing legal framework addressing their impact. Microplastics are widespread pollutants affecting water sources, ecosystems, and potentially human health. Their presence in the freshwater and marine environments disrupts biodiversity, contaminates drinking water, and introduces toxic substances into food chains. Despite growing concerns, regulation remains challenging due to their mobility and persistence, as well as the lack of relevant data. This article thus analyses the legal liability for plastic pollution in view of international, European, and Czech environmental law. It also evaluates whether current regulations address the threats posed by microplastics adequately and explores possible legal measures to enhance environmental protection and liability.
Keywords: Plastics, Microplastics, Freshwater, International Law, European Law, Czech Law, Liability, Inspections

1. Introduction to the Issue

Plastic pollution presents distinct challenges for both environmental protection and public health. The production of plastics has become inextricably linked to basic human necessities, which has led to their ubiquity, despite their environmental impacts. This problem extends beyond visible plastic waste. The literature has increasingly highlighted the dangers of microplastics, which researchers have

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detected in freshwater and marine environments, the atmosphere, soil,[3] and even protected areas within the Natura 2000 network, which are territories of exceptional environmental value and fragility.

Microplastic concentration in freshwater bodies is increasing in correlation with increased macroplastic production. This is particularly concerning, as natural freshwater resources are primary drinking water sources and microplastic contamination may compromise their quality.[4] Notably, groundwater reserves constitute a global drinking water source and are vulnerable to microplastic pollution.[5]

Controlling microplastic circulation in the environment presents significantly more challenges than managing the more considerable plastic waste, primarily due to microplastics' high mobility and difficulty of detection.[6] Furthermore, neither living organisms nor natural processes readily absorb plastic materials, thus facilitating their transfer through food chains across diverse species.[7] The movement of microplastics demonstrates the interconnected nature of environmental systems. When examining their presence in marine environments, this contamination often originates in freshwater sources that flow into oceans. Consequently, the water quality protection measures implemented by landlocked countries can significantly affect marine ecosystems.

As a landlocked state whose river systems contribute to three European watersheds, the Czech Republic exemplifies this dynamic. The Morava River basin, part of the more extensive Danube system, flows to the Black Sea. The Oder basin drains to the Baltic Sea, while the Elbe and Vltava basins connect to the North Sea. Therefore, the water quality in these rivers and their tributaries affects the Czech environment, downstream countries, and, ultimately, the marine biomes of the three seas.

Extant research has not yet fully characterised the environmental impacts of microplastics, although the scientific literature consistently indicates adverse effects. Microplastics disrupt soil physicochemical parameters, reducing fertility and water retention capacity and impairing plant growth. They enter the soil through various pathways, including freshwater contamination and the application of wastewater sludge.[8] Studies have documented the adverse effects on aquatic environments, mainly marine biodiversity. Researchers have found microplastics in the digestive systems of more than 100 marine species across the food chain, from zooplankton to fish, turtles, birds, and large mammals. These particles have been found to disrupt animal behaviour, reproduction, feeding habits, and growth, ultimately contributing to mortality. Additionally, microplastics act as catalysts

3 | Impact assessment report accompanying the Proposal for a Regulation on preventing plastic pellet losses to reduce microplastic pollution, 138.
4 | Penn State 2024.
5 | Singh & Bhagwat 2022 or Mintenig et al. 2019.
6 | Impact assessment report accompanying the Proposal for a Regulation on preventing plastic pellet losses to reduce microplastic pollution, 153.
7 | Bhardwaj et al. 2024.
8 | Wimmerová, Henzlová & Lexa 2020.

for climate change, magnifying their impact across all biotopes.[9] These ecological consequences generate significant economic repercussions for agriculture, fisheries, consumer behaviour, and tourism.[10]

The harmful effects of microplastics stem from their fundamental physical and chemical characteristics. Their physical properties – size, shape, and surface profile – enable them to obstruct biological processes in small animals, similar to how more considerable plastic waste affects more prominent species.[11] These particles also provide surfaces for harmful microorganism colonisation. Their chemical composition creates additional hazards through the substances they contain and release (e.g. toluene and ethylbenzene) or through chemicals that attach to them as carriers (including pesticides, phthalates, and bisphenols).[12] Furthermore, microplastic chemicals can react with other environmental substances, including heavy metals, creating new toxic compounds.

These aspects mainly affect freshwater ecosystems. Small, highly mobile plastic particles float on the water surface, where freshwater fish and aquatic invertebrates inadvertently consume them. These microplastics subsequently trigger oxidative effects on white blood cells, compromising immune system function.[13]

Scientists have hitherto neither confirmed nor refuted the adverse effects of microplastics on human health. The current knowledge about potential threats to humans derives primarily from the empirical findings in animal studies. While the reliable data on specific human health impacts remain limited, researchers hypothesise that microplastics may contribute to infertility, genetic disruption, digestive disorders, various poisoning types, and chronic inflammation, leading to tumours, cardiac diseases, or diabetes. These hypotheses derive from observations in smaller animals but also suggest that adverse effects in humans would likely require higher concentrations of microplastics. Some studies have confirmed that elevated airborne microplastic concentrations can contribute to chronic respiratory disease development.[14]

According to conservative estimates, each person inhales and ingests annually between 70,000 and 120,000 microplastic particles from drinking water and food, depending on various factors.[15] Some sources suggest that by examining just 15%

9 | Impact assessment report accompanying the Proposal for a Regulation on preventing plastic pellet losses to reduce microplastic pollution, 139–140.
10 | Para. 1 of the preamble to the Proposal for a Regulation on preventing plastic pellet losses to reduce microplastic pollution.
11 | They can, for example, obstruct fish gills, which has also been observed in freshwater fish. See Azevedo-Santos et al. 2021.
12 | Impact assessment report accompanying the Proposal for a Regulation on preventing plastic pellet losses to reduce microplastic pollution, 139 or Bhardwaj et al. 2024.
13 | Bhardwaj et al. 2024.
14 | Opinion of the Committee for Risk Assessment and Opinion of the Committee for Socio-Economic Analysis on an Annex XV dossier proposing restrictions on intentionally-added microplastics, 31.
15 | Impact assessment report accompanying the Proposal for a Regulation on preventing plastic pellet losses to reduce microplastic pollution, 143.

of the average American's caloric intake, researchers found that they consume between 39,000 and 52,000 microplastic particles per year.[16] Due to comparable cultural practices and lifestyles, European consumption patterns likely show a similar trend.

Primary microplastic sources for the human body include seafood, plants that have absorbed soil microplastics, synthetic clothing fibres, and dyes. Other significant sources include plastic packaging that releases microplastics into food[17] and beverages, including tap water. Researchers have detected microplastics in human faeces and blood and, according to some studies, even in the placenta. Additional research suggests these particles may function as cytotoxins – a particularly alarming finding given that microplastics appear to more severely impact developing organs, creating heightened vulnerability in children. More importantly, microplastics can serve as carriers for various microbes, facilitating pathogen transmission.[18]

The evidence indicates that microplastics are ubiquitous, transcend national boundaries, negatively affect aquatic ecosystems and the broader environment, and potentially harm human health while also generating significant economic costs. Addressing microplastic pollution thus requires comprehensive, transnational approaches guided by the precautionary principle.[19] This necessitates appropriate national, European, and international regulatory frameworks, including provisions establishing liability for the entities whose activities release plastics into the environment.[20]

In the following analysis, I examine the current legal framework for environmental liability regarding the impacts of plastic pollution, particularly regarding Czech regulations.[21] My approach is based on the premise that freshwater plastic pollution must be understood comprehensively in terms of both causes and consequences, thus extending beyond conventional water law. I assess the substantive and procedural aspects of existing regulations, evaluate their adequacy

16 | Kožíšek & Kazmarová 2019.

17 | Microplastics have been found even in salt and honey. See European Strategy for Plastics in a Circular Economy, 4.

18 | Impact assessment report accompanying the Proposal for a Regulation on preventing plastic pellet losses to reduce microplastic pollution, 144–145.

19 | Under Czech law, expressed in Art. 13 of Act No. 17/1992 Coll., on the Environment, states that "if, about all circumstances, it can be assumed that there is a danger of irreversible or serious damage to the environment, doubt about whether such damage will occur may not be a reason for postponing measures to prevent the damage".

20 | For understanding of the precautionary principle in European and international practice, see Bándi 2020, Olajos-Mercz 2022, Damohorský et al. 2010, or Jančářová et al. 2015.

21 | In this study, I will not focus on any national law other than Czech law. The primary focus is on the international and European aspects of the issue, while the discussion of relevant Czech regulations serves as an illustrative insight into national legal frameworks, more precisely, as an example of the need for harmonisation in certain areas of environmental law. Since I am from the Czech Republic and have the best knowledge of Czech national law, the choice of this legal system for the purposes of this study was a natural one.

in addressing threats that plastics pose to freshwater resources and the broader environment, and propose potential enhancements to protective measures.

2. (Micro)plastics and their sources

Defining plastic from a legal perspective is essential, as the legal definition differs from its chemical counterpart. EU law essentially harmonises plastic regulation, with European regulations defining plastics through reference to the polymer definition in Article 3 of the REACH Regulation.[22] However, from a chemical perspective, not all polymers qualify as plastics. Polymers that can be deformed under normal conditions and return to their original form, known as elastomers, are scientifically different from plastics. Elastomers are divided into synthetic rubbers (used in tyre production) and thermoplastic isomers (used in 3D printing, roofing materials, and automotive components). Chemically, plastics can be divided into thermosets (epoxy and polystyrene resins) and thermoplastics (including polyethylene, polypropylene, and PVC).[23]

In its regulatory definitions, EU law does not distinguish between plastics and other polymers, primarily because of their common chemical origin and similar environmental impacts, including their capacity to release microplastics.[24] The Single-Use Plastics Directive excludes chemically unmodified natural polymers from its plastic definition.[25] This directive also establishes the concept of "biodegradable plastic".[26]

The regulatory framework further distinguishes between macroplastics and microplastics. Currently, two European legal instruments provide comprehensive microplastic definitions as follows. First, Annex XVII of the REACH Regulation[27] defines microplastics as solid polymers forming at least 1% of a material's particles or creating continuous surface coatings on particles, with maximum dimensions of 5 mm. The regulation specifies maximum lengths of 15 mm and length-to-diameter ratios not exceeding 3 for polymeric fibres. Second, the European Commission's methodological decision on the Water Quality Directive defines microplastics similarly. However, it applies the maximum height-to-width ratio to fibres and particles and also addresses concentration in drinking water rather

22 | Organic chemical substance consisting of "molecules characterised by a sequence of one or more types of monomer units. These molecules must have a distribution of molecular weights, with differences in molecular weight primarily caused by differences in the number of monomer units".
23 | Novák 2023, 17–18.
24 | Impact assessment report accompanying the Proposal for a Regulation on preventing plastic pellet losses to reduce microplastic pollution, 245.
25 | Art. 3(1) of the Single-Use Plastics Directive.
26 | Art. 3(16) of the Single-Use Plastics Directive.
27 | Point 78 of the Annex XVII of the REACH Regulation.

than material composition.[28] These definitional variations relate to the different regulatory purposes and have minimal substantive impact on environmental protection objectives.

The comprehensive analysis of microplastic regulation requires understanding their environmental pathways. The literature typically categorises them as primary or secondary microplastics. Primary microplastics enter the environment directly as microparticles or microfibres, either from manufacturing processes or products containing intentionally added plastic microparticles or microfibres. Secondary microplastics result from macroplastic fragmentation.[29] This classification is helpful but not decisive, particularly as the literature lacks consensus on precise definitions and source categorisation for these groups.[30]

A more practical approach identifies specific microplastic sources and release mechanisms. Key sources include larger plastic items that release microplastics through mechanical wear, light exposure, heat, oxygen, biological processes, and water interaction. These larger items primarily comprise tyres and common plastic waste.[31] At the boundary between microplastics and macroplastics are pellets – small plastic pieces used as manufacturing precursors that enter the environment through improper handling throughout their lifecycle from production and processing to distribution, transport, and disposal.[32] These pellets vary in size and can function as primary and secondary microplastic sources. Both macroplastics and pellets contribute to microplastic contamination across virtually all ecosystems, with distribution patterns that reflect where wear or loss occurs.

Additional microplastic sources include cleaning products with intentionally added microplastics for abrasion purposes. These products release microplastics into sewage and stormwater during use or production, contaminating the freshwater, oceans, and soil.[33] Pharmaceutical products intentionally incorporate microplastics as active ingredient carriers. These enter the environment through similar pathways as the cleaning products, while those in veterinary pharmaceuticals can transfer directly from animals to surface water and soil. The absence of studies quantifying pharmaceutical-derived microplastics in environmental waters and soils is concerning, particularly given the limited understanding of their impacts on human and animal tissue and natural ecosystems.[34]

Further microplastic sources include cosmetics, paints, and varnishes that incorporate such particles to enhance product performance.[35] European regu-

28 | Part 1 of the Annex to the Commission Delegated Decision (EU) 2024/1441.
29 | Ústav pro hydrodynamiku AV ČR.
30 | Novák 2023, 25–29.
31 | Ibid., 27.
32 | Para. 3 of the preamble to the Proposal for a Regulation on preventing plastic pellet losses to reduce microplastic pollution.
33 | Browne 2015, 233.
34 | Ibid., 234.
35 | Novák 2023, 27–28.

latory attention has specifically targeted microplastics found in products such as dishwasher capsules.[36] Synthetic textiles (polyester and acrylic fibres) are another significant source that releases microplastics during washing, wearing, and disposal. These textile-derived microplastics contaminate aquatic, terrestrial, and soil ecosystems. The research had indicated that textile products constitute the primary source of microplastics in marine environments, released during washing and transported through wastewater systems.[37] Similar mechanisms apply to freshwater contamination, being particularly relevant for landlocked countries like the Czech Republic.

By definition, biodegradable plastics cannot generate microplastics because they naturally decompose into water, carbon dioxide, and biomass. The European legislation appropriately favours biodegradable plastic production as environmentally preferable, particularly given their compatibility with composting systems. As such, Annex XVII of the REACH Regulation excludes biodegradable plastics and natural, chemically unmodified polymers from its definition of microplastic sources.[38]

Macroplastics comprise all plastic materials that do not meet the definitional criteria for microplastics. Their negative environmental impacts manifest in two primary ways. First, they serve as microplastic sources through degradation. Second, they directly damage the ecosystem. The literature highlights marine pollution, where plastic waste accumulates on surface waters and seabeds, especially near densely populated areas such as the Mediterranean.[39] This waste negatively affects fish, birds, mammals, sea turtles, and smaller aquatic organisms through ingestion, physical injury, and entrapment.[40]

The research also confirms that most ocean plastic pollution is via river systems. Studies indicate that approximately 90% of this pollution originates from just 10 rivers, eight in Asia (Mekong, Amur, Yangtze, Hai, Pearl River, Yellow River, Indus, and Ganges) and two in Africa (Nile and Niger).[41] This pattern reflects the fundamentally different waste management approaches between Europe and developing regions. Nevertheless, this issue remains relevant to Europe because ocean currents distribute plastic pollution through the marine ecosystems regardless of origin. Notably, the Nile River flows into the Mediterranean Sea, affecting the environmental quality of EU member states' marine and coastal ecosystems. Some studies confirm that approximately half of Mediterranean Sea plastic pollution comes from waterways, with over 40% originating from Egypt.[42]

36 | Commission Decision (EU) 2017/1216.
37 | Browne 2015, 233–239.
38 | Art. 15(2)(d) of the Single-Use Plastics Directive, new Annex XVII to REACH Regulation, point 78.
39 | Chiba et al. 2018.
40 | Hammer, Kraak & Parsons 2012.
41 | Schmidt, Krauth & Wagner 2017.
42 | Liubartseva et al. 2018.

This analysis would be incomplete without considering plastic manufacturing facilities that discharge industrial waste into surface waters.[43] These operations directly affect freshwater quality when their emissions contain microplastics or comparable organic substances with similar environmental effects.

3. Fundamentals of water protection against plastics in legal regulations

The above analysis demonstrates the necessity for legal instruments at the international and national levels to address plastic water pollution. International and global regulatory frameworks establish foundational legal and normative parameters that inform domestic regulations. The national frameworks better reflect specific environmental conditions and socio-legal contexts while establishing the pollution liability rules that national authorities enforce. European law has a distinctive unifying function within this regulatory landscape, harmonising national legal systems and efficiently addressing transboundary pollution challenges.

3.1. International treaties

International law addresses freshwater transboundary pollution protection in a fragmented manner, primarily through the extension of marine water protection or broader environmental protection frameworks. These instruments generally lack specific provisions on the impacts of plastic pollution and maintain a relatively general character.

At the UN level, the Rio Declaration establishes the basic framework for state utilisation of natural resources through 27 broadly applicable principles. Notable provisions include principles directing countries to prevent transboundary pollution,[44] requirements for national regulatory modification,[45] international cooperation obligations,[46] and the precautionary principle.[47] Principle 13 addresses pollution responsibility and compensation as a general requirement for implementing enforceable regulatory frameworks.

The Economic Commission Convention on the Protection and Use of Transboundary Watercourses and International Lakes provides more specific guidance. European nations have ratified this convention, including the EU as a party.[48] The convention establishes transboundary water resource management

43 | Zębek 2024, 12.
44 | Principles 2 and 14 of the Rio Declaration.
45 | Principles 8, 11, and 17 of the Rio Declaration.
46 | Principles 9 and 12 of the Rio Declaration.
47 | Principles 15 of the Rio Declaration.
48 | UNTC 2024.

requirements, covering pollution prevention, control and reduction, monitoring, research and development, and information exchange, thus emphasising transnational cooperation among countries sharing freshwater boundaries. The convention also directs these nations to establish joint bodies overseeing water resources in specific regions according to their characteristics.[49] The International Commission for the Protection of the Danube River exemplifies this approach, operating under the Convention on Cooperation for the Protection of the Sustainable Use of the Danube River, ratified by 15 parties, including the Czech Republic. This organisation implements the EU Water Framework Directive and Floods Directive,[50] which extends the European legal standards beyond EU boundaries to non-member countries, including Moldova, Ukraine, and Serbia. The Czech Republic participates in similar regional bodies, including the International Commission for the Protection of the Oder and the International Commission for the Protection of the Elbe, which operate under comparable international agreements. These bodies primarily monitor point pollution sources, including those generating microplastics.[51]

The Convention on the Protection and Use of Transboundary Watercourses and International Lakes additionally requires developing criteria and rules for transboundary freshwater pollution liability, although in general terms. In 2003, the UN Economic Commission for Europe adopted the Protocol on Civil Liability and Compensation for Damage Caused by the Transboundary Effects of Industrial Accidents on Transboundary Waters, which remains unenforceable, as only Hungary has ratified it.[52]

The Convention and Rio Declaration generated the Protocol on Water and Health, which directs states to implement legislative measures by ensuring appropriate drinking water quality, bathing water standards, effective wastewater management, economically appropriate water utilisation, and reducing waterborne diseases.[53] The contracting countries implement the Protocol through self-defined national targets, which the Czech Republic most recently updated in 2019.[54] While the Protocol does not explicitly address microplastics, the EU Drinking Water Directive[55] incorporates its standards and acknowledged microplastic hazards. The Protocol's focus on protecting drinking water from microbial contamination has particular relevance, given that microplastics can serve as microbial carriers. The Protocol thus holds the potential for the synergistic integration with future environmental protection against microplastic impacts.

49 | Art. 9 of the Transboundary Watercourses and International Lakes Convention.
50 | ICPDR 2025.
51 | Novák 2023, 46.
52 | ECOLEX 2025.
53 | Dudová 2014, 164–165.
54 | Státní zdravotní ústav v Praze SZÚ (2023).
55 | Para. 34 of the preamble to the Drinking Water Directive.

Another significant UN instrument is the Convention on the Non-navigational Uses of International Watercourses. Article 21 explicitly addresses watercourse pollution protection by requiring the affected countries to cooperate on pollution prevention, establish prohibited or restricted substance lists, and develop water quality standards. However, its effectiveness remains limited, with only 36 ratifying countries, excluding most major stakeholders. Neither the EU nor the Czech Republic have ratified this convention.

Article 194 of the UN Convention on the Law of the Sea contains a general obligation for the contracting parties to prevent marine environment pollution. The International Convention for the Prevention of Pollution from Ships (MARPOL) provides more specific prohibitions against disposing of plastic waste and incinerated plastic ash in the marine environments. However, MARPOL's scope remains limited to ship-generated waste, excluding freshwater pollution sources. Similarly, the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (the London Convention) excludes mainland pollution sources. The Convention on Biological Diversity has a broader application potential through its general provisions for protecting natural resources from biodiversity degradation.[56]

Several non-UN international conventions influence EU regulatory development. The Convention for the Protection of the Marine Environment of the North-East Atlantic, to which the EU is party, establishes requirements protecting marine environments from inland-originating pollution transmitted through water systems.[57] This convention's non-binding recommendation on plastic pellet loss prevention informed EU's proposed plastic pellet regulation.[58] Similar instruments include the Barcelona Convention for the Protection of the Mediterranean Sea Against Pollution and its protocols, Helsinki Convention on the Protection of the Baltic Sea, and Convention on the Protection of the Black Sea Against Pollution. While these conventions do not specifically address plastic pollution, they establish general requirements for preventing watercourse-transmitted seawater pollution.[59]

The Czech Republic has concluded intergovernmental and international agreements on transboundary water management with all neighbouring countries.[60] While these agreements address joint surface water protection in declaratory

56 | Art. 6 of the CBD.
57 | Arts. 3 and 1(e) of the OSPAR Convention.
58 | OSPAR Recommendation 2021/06 on the reduction of plastic pellet loss into the marine environment.
59 | For example, Art. 2(2) of the Helsinki Convention on the Protection of the Baltic Sea, Art. 8 of the Barcelona Convention, or the Protocol on the Protection of the Black Sea Against Pollution from Land-based Sources.
60 | Communication No. 54/2015 Coll. of Int. Treaties, Communication No. 7/2000 Coll. of Int. Treaties, Communication No. 66/1998 Coll. of Int. Treaties and Decree No. 57/1970 Coll.

terms, without specific plastic pollution provisions, they establish frameworks for cross-border regulatory cooperation.

This analysis reveals the absence of a comprehensive legal instrument addressing environmental plastic pollution. The International Law Commission's Draft Articles on the Prevention of Transboundary Harm from Hazardous Activities and Draft Principles on the Allocation of Loss in the Case of Transboundary Harm Arising out of Hazardous Activities, prepared in 2001 and 2006, respectively, and noted by the UN General Assembly, have not generated specific binding instruments.

The UN Environment Assembly Resolution 5/14 (March 2022) directly addresses plastic pollution by calling for binding international environmental protection standards, referencing UN General Assembly Resolution 70/1 (2015) on the 2030 Sustainable Development Agenda. Resolution 6/15 (March 2024) reaffirms this commitment, with a particular focus on marine biome protection, establishing December 2024 as the target for completing environmental protection regulations against plastic pollution. The Intergovernmental Negotiating Committee's first meeting in Busan, South Korea (November–December 2024) produced a preliminary convention on environmental and human health protection against plastic pollution. This draft will inform the final convention negotiations scheduled for August 2025,[61] indicating that the deadline for the Resolution 6/15 will not be met. The EU actively participates in these negotiations by developing a plastic pellet regulation proposal to inform microplastic provisions in the forthcoming convention.[62]

The literature suggests that this future convention may incorporate elements from the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal and the Stockholm Convention on Persistent Organic Pollutants in its microplastic regulatory approach.[63] Resolution 5/14 references both instruments. The Basel Convention effectively regulates plastic waste transport and, thus, prevents secondary microplastic generation, while the Stockholm Convention provides a framework for primary microplastic regulation. However, these conventions do not constitute a comprehensive microplastic regulatory system, even together. Both the literature and European regulatory development experiences indicate that comprehensive microplastic regulation faces significant challenges due to source diversity[64] and data limitations.[65]

61 | Draft report of the intergovernmental negotiating committee to develop an international legally binding instrument on plastic pollution, including in the marine environment, on the work of the first part of its fifth session – Busan, Republic of Korea, 25 November–1 December 2024.
62 | Proposal for a Regulation on preventing plastic pellet losses to reduce microplastic pollution, 4.
63 | Novák 2023, 43, 69.
64 | Ibid., 71.
65 | Impact assessment report accompanying the Proposal for a Regulation on preventing plastic pellet losses to reduce microplastic pollution, 447–448.

This analysis demonstrates that the existing international legal instruments primarily establish fundamental water protection principles that inform European and national regulations and potentially motivate new regulatory initiatives and cross-border cooperation. However, their effectiveness in addressing microplastic pollution remains limited by the failure to identify and target these issues explicitly.

International consensus on combating waterborne plastic pollution faces significant challenges, such as an incomplete understanding of microplastic effects on human health,[66] inconsistent application of the precautionary principle, and socioeconomic implementation barriers. Therefore, the Intergovernmental Negotiating Committee's ongoing discussions merit close attention.

3.2. EU Law

The above analysis characterises waterborne plastic pollution as a global challenge. The EU approaches plastic economy regulation and water protection more comprehensively than other international efforts, reflecting deeper member-state integration, stronger enforcement mechanisms, and longer environmental protection traditions. Recently, the EU has seen increased efforts to regulate environmental and drinking water microplastic contamination, although these initiatives remain relatively nascent.

The current EU legislation addresses freshwater plastic pollution indirectly through plastic economy and water protection regulations. While both regulatory streams have established histories, active microplastic management emerged only with the 2018 Plastics Strategy.[67] This conceptual framework committed the EU to regulating environmental microplastic releases, microplastic additions to industrial products, monitoring programmes, and research supporting microplastic alternatives. The Strategy addresses all microplastic types and sources, while committing the EU to promoting global regulatory frameworks and supporting existing conventions that indirectly address microplastics.[68] It explicitly targets waterborne microplastics in both drinking water[69] and wastewater,[70] supporting voluntary industrial agreements that monitor and limit aquatic microplastic releases, such as the Cross-Industry Agreement between five significant European textile manufacturing associations.[71]

66 | Novák 2023, 43.
67 | COM/2018/028 final – European Strategy for Plastics.
68 | Annex II of the European Strategy for Plastics.
69 | European Strategy for Plastics, 12.
70 | Ibid., 14.
71 | EURATEX 2023.

The 2019 European Green Deal and subsequent Circular Economy Action Plan[72] advances these objectives by establishing clear commitments to regulate intentional environmental microplastic releases and limit secondary microplastic sources. The 2021 Zero Pollution Action Plan[73] further aims to reduce environmental microplastic releases by 30% by 2030 compared to baseline levels. This Plan proposes revising directives on bathing water, groundwater, wastewater, and wastewater treatment plant sludge, while supporting the implementation of the new drinking water directive. It established extensive water pollution monitoring programmes and the Destination Earth initiative[74] to enhance monitoring capabilities.[75] The Action Plan addresses microplastic sources through proposed regulatory interventions, including strengthening waste management hierarchies through the 2023 Waste Framework Directive review and creating specific measures targeting intentionally added product microplastics and those released from pellets, tyres, and textiles.

The Single-Use Plastics Directive reinforced the calls for European regulation of primary product microplastics, while acknowledging its importance for secondary microplastic reduction from plastic waste.[76] This directive regulates plastic-containing products designed or marketed as non-reusable, primarily through market restrictions. These restrictions initially targeted products with non-plastic alternatives, although the literature criticises the selection criteria as inconsistent, with some products assessed against plastic alternatives during directive development.[77] Moreover, specific prohibitions apply exclusively within EU territories,[78] while some other products face only vaguely defined "ambitious and sustained reduction in consumption" requirements without specific implementing regulations.[79] The Commission has only established a methodology for measuring compliance with these consumption reduction commitments.[80] Additional measures include labelling requirements for standard single-use plastic products and providing disposal instructions and environmental impact information.[81]

The objectives of the Action Plan have only seen partial implementation. Key microplastic regulatory developments include amending the REACH Regulation Annex XVII, implementing the EURO 7 regulation, and proposing plastic pellet loss prevention regulations.

72 | COM/2020/98 final – Circular Economy Action Plan For a cleaner and more competitive Europe.
73 | COM/2021/400 final – EU Action Plan: 'Towards Zero Pollution for Air, Water and Soil'.
74 | Launched on 10 June 2024, see Destination Earth.
75 | Annex I of the EU Action Plan: 'Towards Zero Pollution for Air, Water and Soil'.
76 | Paras. 8 and 9 of the preamble to the Single-Use Plastics Directive.
77 | Novák 2023, 135–136.
78 | Oxo-degradable plastics according to part B of the Annex of the Directive.
79 | Part A of the Annex of the Directive.
80 | Commission Implementing Decision (EU) 2022/162.
81 | Art. 7 of the Single-Use Plastics Directive.

The REACH Regulation amendment directly regulates the microplastics intentionally added to products, mainly cosmetics, cleaning agents, medicines, and fertilisers. Following a phased implementation,[82] it will prohibit marketing products containing at least 0.01% microplastics by weight or products explicitly marketed as microplastics.[83] Despite numerous exceptions,[84] this regulation imposes information requirements on entities marketing exception-covered products and their users by establishing consumer and European Chemicals Agency notification obligations.[85] The REACH Regulation itself requires member states to establish sanctions for regulation violations, including new microplastic marketing restrictions.[86]

The EURO 7 Regulation addresses tyre-released microplastics by establishing tyre abrasion measurement methods and category-specific abrasion limits.[87] The tyre labelling regulation previously acknowledged tyre abrasion's significance for microplastic pollution through preambular statements, establishing a normative foundation for the EURO 7' more comprehensive approach.[88]

The proposed plastic pellet regulation, which is still going through the legislative processes, aims to prevent environmental releases through accidents or mishandling. This regulation imposes obligations on carriers and "economic operators" (manufacturers and processors), establishing general pellet loss prevention requirements and extensive member state authority notification obligations.[89] Economic operators should develop facility-specific risk management plans guiding operations according to Annex I measures, with regular updates and certification requirements.[90] As specified in Annex III, carriers need to implement preventive measures during transport and related activities. Following accidents or regulatory violations, the obligated entities notify the relevant national authorities and implement human health and environmental protection measures, including preventative actions and additional authority-mandated interventions. The authorities can then suspend affected facility operations in justified circumstances.[91]

The proposed regulation establishes direct member state obligations, including compliance monitoring and regular Commission reporting on inspections,

82 | Para. 6 of the REACH Regulation Annex XVII amendment.
83 | Para. 1 of the REACH Regulation Annex XVII amendment.
84 | Paras. 4 and 5 of the REACH Regulation Annex XVII amendment.
85 | Paras. 8 to 12, 14, and 15 of the REACH Regulation Annex XVII amendment.
86 | Art. 126 of the REACH Regulation.
87 | Art. 15 of the EURO 7 Regulation.
88 | Arts. 4 and 5 of the EURO 7 Regulation.
89 | Art. 3 of the Proposal for a Regulation on preventing plastic pellet losses to reduce microplastic pollution.
90 | Arts. 4 and 5 of the Proposal for a Regulation on preventing plastic pellet losses to reduce microplastic pollution.
91 | Arts. 9 and 10 of the Proposal for a Regulation on preventing plastic pellet losses to reduce microplastic pollution.

risk management plans, and certification.[92] Member states enforce the regulation through sanctions[93] scaled to individual or corporate income/turnover, with escalating penalties for repeated violations. Maximum corporate fines constitute at least 4% of the previous financial year's annual turnover. The regulation further requires member states to establish compensation mechanisms for health-affected individuals, ensuring non-governmental health organisation assistance, including through collective actions.[94]

The regulation's impact assessment reveals that the Commission initially intended the comprehensive regulation of all secondary microplastic sources[95] before adopting a sequential approach addressing individual sources progressively. The eco-design and sustainable products regulation intentionally deferred paint-contained microplastic regulation, identifying paints as priority products for future intervention.[96] This framework regulation does not directly address microplastics but establishes that microplastic releases may trigger product improvement requirements in Annex I. The Commission cited insufficient scientific data on paint microplastic properties and environmental impacts as justification for this deferral. Similar data limitations affected washing capsules and geotextile microplastic regulation. Textile product regulation faces additional challenges from predominant non-EU manufacturing, creating knowledge gaps regarding synthetic fibre profiles. The EU Strategy for Sustainable Textiles proposes standardises textile microplastic release measurements to address these gaps. The Commission indicates that research and development programmes alongside standardised measurements can resolve data inconsistencies across microplastic sources.[97]

Agricultural water management regulations also address microplastics. The water reuse requirements establish safe agricultural water reuse standards addressing drought while protecting soil and food quality. This regulation enables additional water quality requirements regarding substances of concern, explicitly including microplastics.[98] The Sewage Sludge Directive does not explicitly regulate microplastics and requires regular sludge analysis, including organic substance testing.[99]

92 | Art. 8 of the Proposal for a Regulation on preventing plastic pellet losses to reduce microplastic pollution.
93 | Arts. 11 and 15 of the Proposal for a Regulation on preventing plastic pellet losses to reduce microplastic pollution.
94 | Art. 16 of the Proposal for a Regulation on preventing plastic pellet losses to reduce microplastic pollution.
95 | Impact assessment report accompanying the Proposal for a Regulation on preventing plastic pellet losses to reduce microplastic pollution, 447–448.
96 | Art. 18 of the Ecodesign Regulation.
97 | Impact assessment report accompanying the Proposal for a Regulation on preventing plastic pellet losses to reduce microplastic pollution, 262, 448.
98 | Annex II B) 6. e) of the Water Reuse Regulation.
99 | Annex II A) 3 of the Sewage Sludge Directive.

The Urban Wastewater Treatment Directive also lacks explicit microplastic provisions but establishes sewage organic substance limits.[100] Facilities subject to integrated permits[101] may release microplastics or chemically similar substances into freshwater. The subsequent section addresses water pollution liability from urban and industrial emissions.

The Marine Strategy Framework Directive regulates "micro-littering" (micro-waste introduction into marine environments). Member states must implement and report measures preventing marine micro-waste introduction, with cooperation obligations extending to landlocked states.[102] However, this directive's practical impact remains limited due to inconsistent member-state reporting.[103]

The Drinking Water Directive establishes drinking water quality requirements, including pollution indicators. While microplastics are excluded from these indicators, the directive requires member states to measure microplastic content in water intended for human consumption according to established methodologies.[104] By 12 January 2029, the Commission must report to the Parliament and Council regarding potential microplastic threats to drinking water sources,[105] indicating that direct drinking water microplastic regulation remains forthcoming.

The Bathing Water Quality Directive does not directly address microplastic pollution threats. Article 9 establishes only visual plastic pollution monitoring, primarily targeting macroplastics.

The Waste Framework Directive review introduces no microplastic regulatory innovations but maintains basic waste management requirements influencing plastic waste handling, secondary microplastic formation prevention, and waterborne plastic containment. Additional regulations indirectly affecting waterborne microplastic pollution include the Packaging Directive, Plastic Bags Directive (to be replaced by the Packaging Waste Regulation effective 12 August 2026, which explicitly requires producing packaging that minimises environmental microplastic impacts), and Water Framework Directive. The latter requires member states to implement surface water quality programme monitoring and limiting anthropogenic influences, including plastic-contained substances, with clear connections to the Drinking Water Directive objectives.[106] The Fertilisers Regulation references the REACH Regulation, while the Sustainable Investment Regulation establishes economic activity financing rules with indirect effects on microplastic management.

100 | Art. 2(6) of the Urban Wastewater Treatment Directive.
101 | According to IPPC Directive.
102 | Arts. 5 and 6 of the Marine Strategy Framework Directive.
103 | Novák 2023, 52–53.
104 | Commission Delegated Decision (EU) 2024/1441.
105 | Arts. 13(6) and 18 of the Drinking Water Directive.
106 | Zębek 2024, 16.

4. Liability for pollution

Environmental protection frameworks necessarily include pollution liability rules and enforcement mechanisms. EU law primarily establishes general liability enforcement requirements, leaving specific parameters to national regulations. The following analysis, referencing the Czech legal framework, summarises the potential approaches for establishing various liability types for waterborne microplastic contamination. These enforcement mechanisms directly correlate with water protection, microplastics, and plastic economy regulatory quality and scope and, thus, remain relatively underdeveloped or indirectly supported by regulations not specifically targeting waterborne microplastic protection.

4.1. Basic types of liability

In environmental law, liability frameworks can take multiple forms. The primary distinction between civil and public liability, which is subdivided into administrative liability (*misdemeanour liability* in Czech legal terminology), criminal liability, and specific ecological damage liability. Here, I focus exclusively on public liability regimes.

The distinction between liability types corresponds to different fault requirements and consequent enforcement approaches. Administrative and criminal liability represent fault-based liability types, typically resulting in sanctions when established. However, the liability for ecological damage caused by water pollution follows strict liability principles (*objective liability*), thus not requiring fault determination.[107] Under strict liability regimes, polluters must implement remedial measures at their own expense, voluntarily or under administrative orders. Czech law establishes this obligation through two parallel systems[108]: the general Water Act provisions regarding unauthorised wastewater discharge into surface or groundwater, accidents, or improper handling of hazardous substances[109] and the special Environmental Damage Act,[110] which implements the relevant EU directive.[111] Fault establishment does not preclude ecological damage liability application; authorities may combine sanctions with remedial measures or prioritise remedial measures over sanctions or reduced sanction amounts. The appropriate response – sanctions, remedial measures, or combinations – should

107 | Humlíčková 2014, 192.
108 | Ibid., 195.
109 | Arts. 40 to 42 of the Water Act; for better understanding of the liability according to Czech Water Act, see Horáček 2015 or Strnad 2015.
110 | Arts. 7 and 8 of the Environmental Damage Act; for better understanding of the Czech Environmental Damage Act see Stejskal & Vícha 2009.
111 | The Environmental Liability Directive.

reflect specific factual circumstances to ensure that disproportionate sanctions do not impede effective remediation.

Liability regimes further differentiate between actual environmental pollution penalties and other regulatory violations. While the first category directly addresses existing pollution or remediation, the second (generally limited to administrative violations) target situations where pollution has not yet occurred. These provisions typically enforce preventive requirements, such as operator obligations to implement harmful substance containment measures or formal documentation and reporting requirements facilitating potential pollution monitoring.[112] Key European regulations establishing general pollution prevention frameworks that may address organic substance pollution and polluter liability include the Industrial Emissions Directive, SEVESO Directive,[113] and Environmental Liability Directive. Czech law incorporates all these directives, including provisions establishing liability for preventive requirement violations.[114] Market restrictions on products with specific compositions, such as REACH Regulation prohibitions, represent a special case of indirect environmental pollution prevention.

Waste management systems operate on prevention principles, establishing predominantly preventive entity obligations. Czech law establishes entity liability through the Waste Act,[115] Act on Limiting the Impact of Selected Plastic Products on the Environment,[116] and Packaging Act,[117] which penalise both actual pollution and prevention non-compliance. As previously noted, waste management already regulates secondary microplastics. The proposed plastic pellets regulation also incorporates mostly preventive principles.

4.2. Administrative and criminal liability

Czech law establishes partially overlapping frameworks for protecting waters from harmful substance discharges through water law and integrated prevention. The integrated permitting system replaces multiple authorisations for high-pollution potential operations, including numerous water protection permits.[118] Relevant authorisations include permits for surface and groundwater wastewater discharge, particularly dangerous or priority hazardous substance wastewater discharge into sewage systems, and emergency plan approvals for operations

112 | For example, Art. 122(2) of the Water Act.
113 | The Major-Accident Hazard Directive.
114 | For example, Art. 19(1)(a) of the Environmental Damage, Art. 37(1)(a) of the Integrated Prevention Act, Art. 51 of the Major-Accident Prevention Act.
115 | Provisions of Arts. 117 to 125 of Act on Waste.
116 | Provisions of Arts. 25 to 28 of Act on Limiting the Impact of Selected Plastic Products on the Environment.
117 | Provisions of Arts. 44 to 46 of Act on Packaging.
118 | Under Czech law, reference can be made to the definition in Art. 48 of the Integrated Prevention Act, in conjunction with Art. 126 of the Water Act.

handling harmful substances.[119] The Czech Integrated Prevention Act establishes the pollutant categories subject to integrated permit emission limits, specifically identifying persistent hydrocarbons, persistent bioaccumulative toxic organic substances, oxygen balance-affecting substances (measurable through chemical and biological oxygen demand), and substances defined in the government regulation establishing permissible surface water and wastewater pollution values, discharge permit requirements, and sensitive area designations.[120] This regulation establishes the monitored industrial operation categories and discharge pollutant threshold values as reference standards for specific permit emission limits.[121] The IPPC regime and water law emission limit use consistent indicators and premises.[122] Both legal regimes establish administrative liability for threshold exceedances or unauthorised harmful substance discharges.[123]

Organically defined substances within these regulations can, under certain conditions, qualify as microplastics. The permissible pollution value regulation establishes wastewater pollution thresholds for certain operations, including plastic surface treatment and primary form plastic production.[124] The Integrated Prevention Directive similarly covers polymeric material production, although the BREF reference document for polymer production excludes certain polymer handling aspects, including plastic pellet losses.[125] These provisions establish that waterborne microplastic pollution can constitute administrative violations of underwater protection and the integrated prevention frameworks, thus potentially activating ecological damage liability.[126]

However, although the Act on Environmental Damage is, in formal terms, a complete and proper transposition of the relevant directive, the concept of liability for environmental damage has long remained an underutilised legal instrument in the Czech Republic. The problem lies in the unclear delineation of the Act's applicability in relation to sectoral environmental laws, including the Water Act, which stems mainly from the vague legal definition of the term "environmental damage". This ambiguity effectively leads to a preference for procedures under sectoral regulations. However, these do not provide a sufficiently comprehensive

119 | Art. 8(1)(c) in conjunction with Art. 38 of the Water Act and Art. 16(1) in conjunction with Art. 39 of the Water Act, Art. 39(2) of the Water Act.
120 | Government Regulation No. 401/2015 Coll. and the WATERS section of the Integrated Prevention Act.
121 | Art. 38(9) of the Water Act.
122 | Art. 38(9) of the Water Act, Art. 14(1) of the IPPC Act.
123 | Art. 37(3) of the IPPC Act, Art. 122, Art. 125a(1)(d) of the Water Act, etc.
124 | Annex I. B. point 25.61 and 20.16 of the Regulation No. 401/2015 Coll.
125 | Impact assessment report accompanying the Proposal for a Regulation on preventing plastic pellet losses to reduce microplastic pollution, 27, 36.
126 | In the sense of Art. 2 of the Environmental Liability Directive, which defines environmental damage to waters as damage that has significant adverse effects on the ecological, chemical, or quantitative status or ecological potential of the waters concerned, as defined by Water Framework Directive.

framework to ensure effective remediation, especially when multiple components of the environment are affected. The practical shortcomings of this situation manifest in the inability to carry out certain necessary remedial measures or in difficulties with securing the effective financing of remediation when the originator of the damage is unknown or does not carry out remediation promptly, thereby posing a delay risk. The current definition of environmental damage to waters is linked to an adverse effect on the status of surface or groundwater bodies. However, the assessment of their status takes 3 or 6 years, respectively,[127] which in practice precludes the effective application of environmental damage liability. This was demonstrated, for example, by the 2020 Bečva River accident, where an extensive catastrophe could not formally be classified as environmental damage.

Currently, an amendment to the Act on Environmental Damage (and related regulations) is undergoing the legislative process, with the potential to rectify this situation. Among the proposed changes, environmental damage would also include the deterioration of the quality of surface water or water sources as a result of an accident or operational activity, in which the maximum allowable concentrations of priority substances in waters (according to Annex No. 3 of the aforementioned government regulation[128]) are exceeded. This would also apply if, due to the release of the substances listed in Annexes No. 1 and 3 of this regulation or due to a decrease in the flow rate of surface water, fish or other aquatic organisms die. Furthermore, environmental damage would also include the deterioration or threat to the quality of drinking water sources in parts of catchment areas related to sites of water abstraction for human consumption, natural healing springs, or sources of natural mineral water, as well as the ecological status of surface waters used for bathing. The result would be a terminological alignment of the term "environmental damage" with the definitions of adverse states found in sectoral regulations (e.g. the so-called "harmful state" under the Water Act). In addition, the amendment would streamline the relevant procedural provisions and clarify the system for financing remedial measures.[129]

For combating microplastics in the environment, the proposed legal regulation can be assessed positively. It is likely that it would eliminate the current ineffectiveness of the Act on Environmental Damage and ensure an effective response to situations where multiple components of the environment are affected simultaneously. This can easily occur in the case of microplastic pollution, particularly due to their high mobility and natural synergistic interactions between various elements of the environment.

127 | Decrees No. 5/2011 Coll. and No. 98/2011 Coll.
128 | Government Regulation No. 401/2015 Coll.
129 | Parliamentary Press No. 870.

Waterborne plastic pollution may simultaneously violate water protection or the integrated prevention requirements, alongside waste management or other regulatory provisions. This pollution may damage significant landscape elements, protected species habitats, or individuals. These natural elements often receive additional protection under the EU frameworks, particularly the Natura 2000 network and unique species protection systems.[130]

The Czech Republic enforces drinking water quality standards through the Public Health Act, which holds particular significance, given the new Drinking Water Directive's anticipated microplastic inclusion among harmful substances.

The Czech legal system maintains clear distinctions between administrative and criminal liability. The "social danger" criterion[131] primarily differentiates these frameworks, with environmental crimes further distinguished by territorial consequence scope, damage remediation costs, and human health or life threats.[132] Consequently, administrative and criminal law address similar prohibited activities but at different intensity thresholds. Several Criminal Code provisions can theoretically apply to waterborne microplastic pollution, including intentional or negligent environmental damage and endangerment,[133] water source damage,[134] unauthorised waste handling,[135] intentional or negligent unauthorised protected wild animal and plant handling,[136] and protected nature component damage.[137]

4.3. Issues of evidence

In the Czech Republic, environmental crime enforcement faces significant challenges, including low case resolution rates and disproportionately minimal penalties. These inefficiencies stem from enforcement authority underfunding, insufficient training, limited public environmental crime awareness, and low social recognition of environmental crime severity.[138]

These factors highlight the evidentiary challenges in environmental liability establishment. Evidence collection deficiencies potentially result from inadequate legislative authority allocation among relevant agencies and from the resulting coordination failures, combined with previously identified challenges to prevent accurate environmental damage assessment and specific polluter identification.

130 | The Natural Habitats Directive and The Wild Birds Conservation Directive.
131 | Art. 12(2) of the Criminal Code.
132 | Art. 296, Art. 138, and Arts. 293 to 301 of the Criminal Code.
133 | Arts. 293 and 294 of the Criminal Code.
134 | Art. 294a of the Criminal Code.
135 | Art. 298 of the Criminal Code.
136 | Arts. 299 and 300 of the Criminal Code.
137 | Art. 301 of the Criminal Code.
138 | Tomoszková, Zębek & Židek 2024, 52.

The Czech Republic's 2020 Bečva River disaster investigation illustrates these systemic failures.[139]

Environmental inspections represent critical evidence collection tools for polluter liability determination. In the Czech Republic, inspections follow the Control Code, which establishes general public administration inspection standards.[140] The Czech Environmental Inspectorate serves as the primary environmental enforcement authority. The inspections produce control protocols that constitute public documents under Section 53(3) of the Czech Administrative Code[141] and may independently support administrative violation determinations.[142] However, they lack public document status in criminal proceedings. While Czech environmental inspectorates do not conduct criminal investigations, their activities significantly influence criminal proceeding outcomes. These technically sophisticated agencies typically receive initial environmental law violation notifications and conduct preliminary measurements. Inspection deficiencies can, thus, undermine subsequent criminal proceedings.[143]

These considerations hold European legal significance because national environmental regulations frequently implement EU directives, establishing EU interests by their enforcement through liability provisions, including criminal sanctions.[144] The new Environmental Crimes Directive establishes enhanced environmental crime liability enforcement requirements, including provisions addressing ecocide (qualified criminal actions) and formally permitted activities. Given inspection agencies' central role in European environmental criminal law enforcement, the directive establishes new requirements for environmental crime investigator professional development and inter-agency coordination.[145] The explanatory memorandum of the directive identifies enforcement deficiencies across member states and throughout enforcement chains, including inspections, citing resource limitations, training and expertise deficits, awareness and prioritisation inadequacies, and insufficient national and cross-border cooperation and information sharing. Future EU environmental crime enforcement requirements will likely incorporate waterborne microplastic pollution.

The significance of environmental inspection in transboundary pollution investigations relates particularly to the *ne bis in idem* principle application. Combined with this principle, inspection inefficiency in one member state may

139 | Ibid., 27, 53, 57.
140 | Jelínková 2023, 12.
141 | See Case No. 4 As 409/2019-46.
142 | Art. 81 of the Misdemeanor Act.
143 | This role of the Czech Environmental Inspectorate is also illustrated by the recent case of the Bečva River poisoning. See Final Report of the Investigative Commission of the Parliament of the Czech Republic on the Ecological Catastrophe on the Bečva River, 2021.
144 | Directive 2008/99/ES now replaced by Directive (EU) 2024/1203.
145 | Arts. 18 and 19 of the Environmental Crime Directive.

prevent appropriate public authority remediation in another affected state. The European Court of Justice's *Nordzucker* judgment,[146] addressing cross-border competition distortion sanctions, establishes principles applicable to cross-border pollution enforcement.[147] In other words, when member state A's public authority accounts for harmful conduct consequences arising in member state B, member state B's authorities cannot reconsider these issues even when capable of more effective or accurate investigation.

Despite the importance of national inspections in EU environmental interest enforcement, including environmental crimes and cross-border pollution, harmonised environmental control regulations remain undeveloped.[148] European institutions recognise that persistent national inspection system differences, which affect inspection quality, undermine European environmental law enforcement.[149] Non-profit organisation IMPEL has advanced national inspection body cooperation by coordinating activities, facilitating Commission-member state communication, and developing environmental inspection minimum standards.[150] These standards constitute the non-binding *soft law*[151] allowing member states to implement recommendations inconsistently in scope and methodology. Consequently, national system inspection performance differences persist,[152] despite Commission resolution efforts.[153]

Therefore, European law addresses environmental controls through fragmentary and general provisions in specific directives and regulations. Relevant instruments include the SEVESO Directive,[154] Industrial Emissions Directive,[155] Waste Framework Directive,[156] and Birds Directive.[157]

Commission-conducted inspections without member state consent, such as competition law, *dawn raids* under TFEU Articles 101 and 102, customs inspections, or economic crime investigations, may indirectly support EU environmental interest enforcement. The Commission may conduct consent-contingent *fact-finding missions* clarifying specific case circumstances, although these remain relatively infrequent.[158]

146 | Case C-151/20.
147 | Vomáčka 2022.
148 | Vomáčka & Strouhal 2017.
149 | Impact assessment study into possible options for revising RMCEI.
150 | RMCEI.
151 | However, some component directives refer to the minimum standards, thereby giving them a certain dimension of bindingness. See recital 23 of the preamble to the Ozone-Layer Depleting Substances.
152 | Hedemann-Robinson 2016, 4.
153 | Impact assessment study into possible options for revising RMCEI, 10.
154 | Art. 20 of the Major-Accident Hazards Directive.
155 | Art. 23 of the Integrated Pollution Prevention and Control Directive.
156 | Art. 34 of the Waste Framework Directive.
157 | Art. 9 (1) (e) of the Wild Birds Conservation Directive.
158 | Vomáčka & Strouhal 2017, 38–43.

5. Conclusions

Microplastic pollution presents extensive challenges, with interdisciplinary implications and global consequences. The current scientific understanding of microplastic impacts on human health and environmental systems justifies the application of the precautionary principle. As such, the international, European, and national legislation must acknowledge these complexities, incorporate current scientific understanding, and effectively address emerging challenges.

Given the potential severity of this problem, a comprehensive international legal instrument addressing environmental plastic pollution can provide significant benefits. This instrument should exhaustively identify and describe all relevant issues with scientific substantiation, while establishing effective resolution frameworks. It should also specifically evaluate microplastic significance and establish fundamental standards for preventing its formation, environmental release, and impacts on ecological systems and human health, including basic liability frameworks. Moreover, such an instrument should emphasise the importance of freshwater resources as drinking water sources and primary marine pollution contributors. It also needs to establish or modify regional organisations monitoring cross-border environmental plastic releases, mainly through waterways, and provide sufficient enforcement authority, potentially through national inspection integration and participation.

European legal frameworks demonstrate increasing commitment to environmental plastic pollution regulation, although water-specific plastic impact regulations remain limited and indirect. The current regulatory gaps include comprehensive regulation of textile-released microplastics, which, according to extant studies, constitute the primary freshwater and subsequent marine microplastic sources. Research and development programmes might be the most promising approach to addressing data deficiencies. Specifically, European regulatory development could benefit from additional research on microplastic human health impacts, citizen initiatives, and educational programmes raising public awareness and stimulating political discourse.

Until scientific and legal frameworks fully address microplastics and their sources, neither water-specific regulations nor comprehensive environmental liability provisions will achieve optimal effectiveness. Liability frameworks build upon substantive entity obligations. As previously noted, the scientific understanding and legal microplastic regulation are still developing, indirectly providing protection through existing frameworks. Progress in these areas must precede advancement in the liability doctrine.

If the EU intends to enforce environmental protection interests comprehensively, it cannot, particularly given the expanding environmental legislation, continue neglecting the essential role of environmental inspections in environmental

liability enforcement. As the EU increasingly regulates environmental microplastics, the absence of harmonised environmental controls will become increasingly problematic. Effective waterborne microplastic management requires addressing cross-border aspects, which remains impractical without clarifying member-state inspection body competencies, ensuring effective coordination, and standardising inspection quality across member states.

The water accident investigation regulatory improvements in the Czech Republic following the Bečva River disaster[159] are an important reminder that postponing adequate regulatory frameworks until cross-border catastrophes necessitate intervention represents poor policy.

159 | Act No. 182/2024 Coll.

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Agata KOSIERADZKA-FEDERCZYK[1]

Setting the Legal Basis in International Law for Liability for Transboundary Rivers Plastic Pollution[2]

Abstract

This article examines the issue of plastic pollution in rivers, studying various perspectives to provide a comprehensive understanding of the problem. Data on the volume of plastic pollution are presented, including the sources and consequences of this pollution in rivers. This research demonstrates the magnitude of the problem of river plastic pollution, and the challenges associated with conducting reliable research. Furthermore, the various measures adopted by countries to reduce plastic production, use of disposable plastic products, and the sealing of plastic management processes have been identified. Two types of legal acts are identified at the international level: those that address river management issues, the most important being the 1992 and 1997 Conventions. However, these conventions are not global and their geographical application is limited. Conventions with a global dimension, such as the Basel Convention or the Stockholm Convention on Persistent Organic Pollutants (POPs), partially address the issue of plastics.

This article proposes that solving the problem of river plastic pollution requires coherent solutions (at the national and international level) and efficient management of transboundary rivers – at the transboundary level and extended to the global level. The development of legal regulations in these areas will likely contribute towards strengthening the basis for bearing responsibility for plastic pollution. Examples of such responsibility are cited in the article, but they refer to national laws.

Keywords: Plastic Pollution, Transboundary River Protection, River Plastic Pollution, International Law

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1. Introduction

Plastic has played an integral role in the global economy and human life over several years. During these times, positive changes were observed and the problem of increasing pollution was downplayed. However, the issue of environmental plastic pollution, in all its forms and sizes, has recently gained significant attention. Moreover, the abundance of studies on environmental plastic pollution, including river pollution, indicate the level of various entities engagement. These studies, in addition to evidencing the magnitude of the problem, are helping to address the knowledge gaps regarding the sources and effects of pollution. A closer look at research on the presence of plastic in rivers show a strong determination to fully understand the problem, as evidenced by, for example, the latest studies focused on microplastics, which originate from the breakdown of plastic waste.

The following sections present the current state of research on plastic pollution in rivers. The first aspect aims to demonstrate the scale of the problem. The second aspect focuses on plastic pollution in rivers, its sources, and consequences. The subsequent sections summarise the current legal acts (national and international), specifically focusing on their applicability to the problem of river pollution. Additionally, this article presents directions for changes in international law that may contribute to the problem of solving the problem of river plastic pollution – towards strengthening the basis for liability for river pollution under international law.

The structure of the article is designed to achieve its main aim to present a comprehensive overview of the existing research on the extent of river plastic pollution, identify the sources of such pollution, demonstrate the complexity of the measures involved, which constitutes, at the same time, a necessary step towards formulating legal bases to prevent pollution and enforce rules of liability using the polluter pays principle. Regulatory measures should and usually are directed at a defined entity at a specific stage of the product life cycle (e.g. manufacturer, consumer, waste management entity),[3] it is more difficult to determine both the appropriate regulatory measures and subjects for plastics that have already entered the environment.

Various research methods are used in this study. The interdisciplinary method that analyses research on river pollution (e.g. sources, effects of pollution, testing the degree of pollution) is intended to highlight issues that are relevant to legal matters. The dogmatic method was used to address legal issues, focusing on the systematic interpretation and analysis of existing conventions within the international legal system. It emphasises consistency, coherence, and the logical structure of the legal order. It was used to draw attention to possible directions for the

3 | Brennholt et al. 2018, 241.

development of existing international regulations and the adoption of new legal regulations, primarily concerning the use of plastic.

Legal analysis focuses on international law. It does not cover EU legislation and its policy due to the assumption that the issue of river plastic pollution will be presented from a global perspective, and recommendations for further action have been prepared in this regard. However, the EU has introduced several legal measures aimed at improving water quality in rivers and lakes in Member States.[4]

At the outset, it can be observed that the issue of plastic pollution in rivers is being addressed in isolation, that is, from the broader problem encompassing pollution in seas and oceans. Historically, greater emphasis has been placed on addressing the pollution of seas and oceans, with river pollution considered as a secondary matter. Available data indicate that land-based sources contribute highest to plastic pollution in oceans; therefore, it will not be possible to solve the problem of plastic pollution in oceans without first regulating the problem from the perspective of river plastic pollution.

However, it is important to acknowledge that river pollution is not an isolated cause of sea and ocean pollution. Instead, it is a consequence of errors in (broadly meaning) plastic management on land. Consequently, addressing the issue of river plastic pollution requires the implementation of comprehensive solutions at a global level within the context of plastic life-cycle management, supported by appropriate task-setting objectives in water management.

2. The dimension of the problem

The number of studies conducted and results obtained confirm the seriousness of the problem. The extent of the problem of plastic water pollution can also be illustrated with data. It is estimated that 82 million tonnes of plastic waste are mismanaged annually, with 13 million tonnes/year entering the terrestrial environment and 5.8 million tonnes/year in rivers.[5] However, a different study[6] shows that this distribution does not mean that 'only' this amount of waste enters water sources, as plastics that are not properly disposed of on land can be transported by runoff and wind.

Other available sources estimate that between 19 and 23 million tonnes, or 11% of total plastic waste generated globally in 2016 entered aquatic ecosystems.[7] Despite the ambitious commitments currently being made by countries and the measures being introduced to reduce the use of plastic, it is estimated that annual emissions into the environment could reach as much as 53 million metric tonnes

4 | An example is Brennholt et al. 2018, 246–251, and the literature cited therein.
5 | OECD 2022, 32.
6 | Ibidem.
7 | Borrelle et al. 2020, 1515.

by 2030.[8] While the forecasts are subject to a certain degree of uncertainty, they indicate that several million tonnes of plastic are likely to enter rivers worldwide every year.

While examining the origins of the study of plastic pollution, the problem of marine pollution was frequently the primary focus, while freshwater resources were often overlooked, even though global water systems cannot be protected without considering them. It is crucial to characterise exposure pathways and levels to better understand the risks and impacts of plastics on aquatic ecosystems, including loss of biodiversity. Findings of the research that was conducted at the Helmholtz Centre for Environmental Research (UFZ) should be interpreted as confirming an unequal interest in the problem of plastic pollution in favour of seas and oceans. They show that plastics in the marine environment have been studied the most (9706 publications for microplastics, 1103 for nanoplastics), as microplastic particles were first identified there[9] and nanoplastics have only recently become detectable. It is also emphasised that research about marine plastic pollution has given a corresponding boost to research related o freshwater systems (lakes and rivers, 4370 vs. 492 publications for microplastics vs. nanoplastics).[10]

Marine plastics originate from ships or land-based sources, with the latter being more significant. It is estimated that plastic pollution from land accounts for 80% of the plastic found in marine ecosystems.[11] Of the ten rivers that contribute the most to oceans, eight are located in Asia,[12] and rivers in the top ten watersheds contribute between 88% and 94% (depending on the model used in research) to plastic pollution.[13]

Given that approximately half of the world's population lives within fifty miles of the coast, these plastics have a high potential to enter the marine environment through sewage systems or by being transported by wind from the coast. A substantial proportion of land-based pollution is transported to seas by rivers.[14] However, research in this area remains limited in the academic literature.

Moreover, it is not only about the plastic in rivers leaking into oceans and seas and polluting them but also the problem of river plastic pollution. As studies show, most of the mismanaged plastic waste (>90% studies focused on macroplastics) is retained in rivers and does not reach the sea.[15] Realistic estimates of the flow of plastic from rivers to oceans are very important for raising awareness about the sources of plastic waste and ultimately for taking action to reduce it.[16]

8 | Ibidem.
9 | Thompson et al. 2004.
10 | Schmidt et al. 2024, 3.
11 | Andrady 2011, after Cole et al. 2011, 2592.
12 | Schmidt et al. 2017, 12250.
13 | Ibidem, 12252.
14 | Cole et al. 2011, 2592.
15 | van Emmerik et al. 2022, 1.
16 | Lechner et al. 2014, 177.

Although plastic pollution is common in rivers, seas and oceans, the perception of the problem of plastic pollution in rivers as being the same as plastic pollution in seas and oceans is superficial and requires consideration of several differentiating issues. It is important to note that freshwater resources (lakes and rivers) account for only 0.0091% of the earth's surface water, significantly less than the 0.5% of groundwater and 97.3% of the oceans.[17] Rather than focusing on the surface area occupied, the significance of these water bodies should be determined by their respective functions. The problem of plastic pollution in rivers is part of the overall problem of plastic pollution in the environment and merits separate attention.

Available data indicate that land-based sources contribute highest to plastic pollution in oceans; therefore, it will not be possible to solve the problem of plastic pollution in oceans without first regulating the problem of river plastic pollution.

3. Plastic pollution in rivers – sources and consequences

The sources of plastic pollution have been comprehensively documented. A mounting body of research has also identified the harmful effects of plastics in the environment. Plastic pollution of aquatic ecosystems is caused by macroplastics, microplastics, and nanoplastics. Extant studies show that plastic pollution is extremely persistent in the environment.

Plastics larger than 5 mm are referred to as macroplastics.[18] Larger plastic objects are more visible and, as a result, many types of negative social, economic, and environmental impacts are easier to identify. These deleterious effects encompass, for instance, wild animals getting entangled in fishing nets or the blocking of cooling water intakes on boats, which may require the intervention of rescue services. Research is ongoing into the mechanisms by which large pieces of plastic break down into microplastics, as well as the significance of factors such as temperature, UV radiation, the presence of microorganisms and water flow, all of which accelerate this process.

Microplastics are most often defined as synthetic particles of organic polymers that are <5 mm in size (or more precisely, the largest dimension). Plastic microbeads in the environment are classified as primary or secondary, depending on their source. This classification facilitates the identification of potential sources and the development of mitigation measures to reduce their environmental impact. The concept of microplastic sources can be expanded to include 'primary' sources, where microplastic particles are deliberately manufactured for direct use or

17 | IPCC 2001, 297.

18 | Duis & Coors 2016, 2. Although the article uses a basic division into macro- and microplastics, occasionally it refers to nanoplastics, and the literature introduces a more detailed classification system that includes macro- (>1 cm), meso- (1 to <10 mm), micro- (1 to <1000 lm), nano- (1 to <100 nm), and sub-micro size (100 to <1000 nm), D'Avignon et al. 2021, 229.

incorporation into other products. These are found in cosmetic beads used in scrubs and shampoos, particles used for sandblasting, and as pre-production resin pellets.[19]

Secondary microplastics are defined as fragments of larger plastics that have been degraded based on usage (e.g. fibres released from washing clothes or textiles), waste management or the fragmentation of larger plastics in the natural environment (e.g. plastic bags or bottles).[20]

However, the rate of formation of secondary microplastics is less well understood, as this process is influenced by various factors, including the type of polymer and the environmental exposure conditions.[21] The process of fragmentation can be accelerated by biotic activity, such as microbiological degradation or animal activity. Photodegradation has been shown to cause fragmentation of plastic particles at a variable rate depending on the surrounding environment (e.g. temperature, water depth), and mechanical weathering is also possible.[22] Consequently, the rate of formation of secondary microplastics is challenging to predict. Given the prevalence of large plastic items in the environment, the concentration of smaller microplastic and nanoplastic particles in the environment is expected to increase, at least until the release of plastic into the environment is curbed[23] and plastic is removed. For a more nuanced understanding of the problem, systematic research is required into the breakdown processes of microplastic under realistic conditions.

It has been hypothesised that the smaller the plastic particles, the more likely they are to pass through biological membranes and the greater the risk of adverse effects on organisms. However, studies on aquatic organisms[24] have shown that this relationship may not be as definitive as previously hypothesised, and the toxicity of nanoplastics may not necessarily exceed that of microplastics.[25] Nevertheless, the authors acknowledge the need for more extensive studies to draw broader conclusions.

In addition to health risks, microplastics increase exposure to hazardous substances such as plastic additives and toxic chemicals that are absorbed from the environment. Furthermore, there is a significant risk that pathogenic microorganisms can colonise plastics, which then pass from aquatic ecosystems to plants and animals. The attraction of these particles to water bodies is attributable to their small size and resemblance to food, leading to their unintentional or deliberate ingestion by aquatic species. Research has demonstrated that microplastic

19 | Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection 2015, 18; Arthur 2009, 15–16.
20 | Lassen et al. 2015, 81–82.
21 | Song et al. 2017, 4370–4375.
22 | Pfohl et al. 2025, 2–10.
23 | Duis & Coors 2016, 20.
24 | Yang & Nowack 2020, 2596; Takeshita et al. 2022, 958.
25 | Schmidt et al. 2024, 3.

consumption by aquatic organisms can influence their feeding behaviour, reproduction, and growth. Once ingested, microplastics can be transmitted throughout the food chain.[26]

A significant number of other studies have focused on determining the impact of plastic pollution. To illustrate the intricacy of the research and acknowledge the significance of the problem without centring on the consequences, we can refer to studies that identify the deleterious environmental consequences of microplastic presence in freshwater ecosystems, such as consumption by fish species.[27] Research has also been conducted on the impact of microplastics on vertebrates.[28]

The complexity of aquatic ecosystems, coupled with the extensive range of industrial applications of plastics, poses significant challenges in accurately assessing the impact of microplastics on these ecosystems. Complex environmental conditions cause physicochemical changes in plastics, such as leaching of chemicals, which can alter their properties, inducing surface embrittlement, increasing the surface-to-volume ratio, and thus the leaching rate.[29]

More importantly, certain hazardous bisphenols, alkylphenol ethoxylates, perfluorinated compounds, brominated flame retardants, phthalates, UV stabilisers, and certain metals that are added to modify the properties of plastics are endocrine disrupting chemicals (EDCs). The release of EDCs from plastics is a matter of serious concern, given their proven ability to cause adverse effects on the reproductive, metabolic, thyroid, immune and neurological systems.[30]

Plastic enters the aquatic environment via several routes, including rainfall, sewage from wastewater treatment plants, agricultural, recreational, industrial, and urban run-off, and mismanaged waste.

The latter category is highly extensive as it includes waste that has not been collected and is 'self-managed' by those who produce it – people who dump it on the ground, in rivers and lakes, or burn it in the open, leading to uncontrolled fires. Mismanaged waste can also include waste that has been collected but is later disposed of in landfills that do not have sufficient control to prevent it from interacting with the environment. These practices are predominantly observed in developing countries, although they are also present in more developed economies.[31]

The analysis of river pollution sources is a complex issue. A part of this pollution is undoubtedly attributable to improperly managed waste. However, the sources of primary microplastics, or microplastics produced during the laundering of clothes

26 | These and other negative health effects of microplastics have been cited, for example, in Bouwman et al. 2018, 19–22.
27 | Biginagwa et al. 2016, 146–149; de Souza Petersen et al. 2018, 373–376. The impact of microplastics on invertebrates has been examined by Hurley, Woodward & Rothwell 2017, 12844–12851; Redondo-Hasselerharm et al. 2018, 2278–2286.
28 | Reynolds & Ryan 2018.
29 | Schmidt et al. 2024, 3.
30 | Flaws et al. 2020, 18–19.
31 | OECD 2022, 46.

and textiles, belong to a different category. This underscores the need for establishing legal regulations for addressing this pressing concern.

4. Plastic pollution in rivers – state of research

The extensive use of plastics leads to the accumulation of a substantial amount of primary and secondary microplastics in the environment.

The physical and chemical composition of primary microplastics and the extent of their production have not been catalogued, thus hampering complete estimation of their potential significance. However, research is underway to understand the weathering characteristics of primary microplastics, particularly the release of chemical components.

The presence of plastics in the freshwater environment is now the focus of a growing body of research. Primarily, these studies have examined larger rivers and lakes, while the occurrence of microplastics in smaller streams or lakes requires further research.

In a two-year study, Lechner et al. investigated the occurrence of small plastic objects (0.5–20 mm) in the Danube between Vienna (Austria) and Bratislava (Czech Republic) from 2010 to 2012. The quantitative results of this study indicated that the Danube is contaminated by this particular waste category, and environmental pollution by this category is a significant problem for this river's ecosystem. The significant inter- and intra-annual differences in drift density are explained by the impulsive, accidental release of plastics during processing, packaging, and transport.[32]

Other studies have focused on the prevalence of plastic (microplastic) in European rivers: the Thames,[33] Rhine,[34] and Garonne.[35] Comparative research results are available for the pollution of major European rivers,[36] rivers and lakes on other continents, for instance, Elqui, Maipo, Maule and Bio-Bio (Chile), Saint Lawrence (Canada), Lake Huron, Lake Erie (both belong to the five Great Lakes of North America), Lake Geneva (Switzerland/France), Lake Garda (Italy), Lake Khövsgöl (Monoglia).[37] In the Chinese region, studies on the presence of plastic and microplastics were conducted for the most urbanised area of China, namely Shanghai,[38] and Changsha, which is a port on the Xiang Jiang River.[39] The Shanghai

32 | Lechner et al. 2014, 179.
33 | Horton 2017, 2018–226.
34 | Klein et al. 2015, 6070–6076, https://pubmed.ncbi.nlm.nih.gov/25901760/.
35 | De Carvalho et al. 2021.
36 | Gao et al. 2024.
37 | Dris et al. 2015, 539–550.
38 | Peng et al. 2018, 448–456.
39 | Wen et al. 2018, 414–423, https://pubmed.ncbi.nlm.nih.gov/30509825/.

River was also the focus of a study.[40] A study was conducted on the African continent, focusing on the Vaal River in South Africa.[41] The findings of this study are consistent with other research, revealing the pervasive presence of various types of plastic across the continent. These findings illustrate the extent of the problem.

In addition to the increasing number of rivers being tested for plastic pollution, the methodology for conducting these tests is being improved to reduce the margin of error and provide the most realistic data possible. Examples of significant factors identified in the extant literature include wind, runoff caused by precipitation, river flow velocity, discharge, and the presence of other organisms such as water hyacinth (Eichhornia crassipes).[42] Various hydrometeorological variables have also been correlated with the mobilisation, transport, dispersion, and accumulation of plastics in rivers. Hydrology has been demonstrated to play a pivotal role in not only transporting plastics but also in determining the location and timing of their accumulation in river systems.[43] The interplay between river dynamics and characteristics is crucial in determining if plastics are deposited on banks and floodplains, accumulate in riparian vegetation, settle in sediments, or are transported downstream.[44]

Another study indicates that surface tension also plays a pivotal role in the transport of plastics. The study examined two distinct forms of transport: surface plastics, primarily influenced by surface tension, turbulence, and buoyancy, in contact with a free surface; and suspended plastics, predominantly governed by turbulence and buoyancy. The findings of this study demonstrate that the discrepancy in transport modes serves as the primary source of error in estimating plastic loads, which can be underestimated by as much as 90% using current, well-established monitoring protocols when sampling only the water surface. Consequently, strategies have been proposed for monitoring plastic streams in rivers, thereby achieving a more than tenfold reduction in the error and uncertainty of estimates of river plastic pollution.[45]

Research results are also available on the amount and composition of plastic in rivers. However, the literature indicates that the complexity of microplastics and the lack of harmonisation of sampling methodologies make it difficult to compare different studies[46] and use them for further analyses.[47]

The data cited above indicate a high degree of complexity in the issue of determining plastic pollution in rivers. Available research suggests an alternative optimistic conclusion: the problem of plastic pollution in rivers is increasingly

40 | Haberstroh et al. 2021, 1714–1727.
41 | Saad et al. 2022, 1–5.
42 | Haberstroh et al. 2021, 1714–1727.
43 | Liro et al. 2020.
44 | van Emmerik & Schwarz 2020, 6.
45 | Valero et al. 2022, 1.
46 | Dris et al. 2015, 547.
47 | Koelmans et al. 2019, 417.

recognised and identified. These two elements are crucial for the formulation of effective strategies aimed at addressing the problem of plastic pollution in rivers.

5. National solutions against river plastic pollution

Research results indicating the widespread presence of plastic fractions in rivers and the identified negative effects of this phenomenon have pushed countries to regulate to reduce river pollution. The multi-faceted nature of the causes of plastic pollution in rivers implies that measures to tackle the problem should include general measures to reduce the amount of plastic in the economy, as well as measures that specifically address the presence of plastic in rivers.

The most regulated items were single-use plastic items such as bags, straws, and kitchen utensils (e.g. Kenya, Lesotho, Mozambique, Taiwan, European Union). Regulations have been implemented in several countries, including the United Kingdom, to extend producer responsibility, encompassing proper disposal and recycling. A notable example is the introduction of a deposit system for plastic bottles and containers, which is refunded upon return, a measure that has been adopted in Denmark and Germany. This policy is designed to promote recycling and discourage the use of microplastics in cosmetics, a practice that is prohibited in Canada and South Korea.[48]

Fiscal interventions, such as taxes or levies on plastic products, have also been implemented for discouraging their use and, at the same time, encouraging the use of alternatives and providing financial incentives or subsidies for companies and consumers to switch to environmentally friendly packaging and products.[49]

A ban on the use of microbeads in all washable cosmetics has been introduced in various countries (e.g. in the United States (U.S.) – the Microbead-Free Waters Act of 2015 and in the United Kingdom – the Microbeads Regulations 2017)[50]. In the U.S., production of plastics is subject to industry regulation because of its impact on air and water resources. It is also important to include, the referred to in further sections, the Clean Water Act of 1972, which aims to protect the chemical and biological integrity of water. Among other things, this legislation prohibits the discharge of materials into U.S. waters unless explicit permission has been granted.

Despite several regulatory measures, there is a clear failure to effectively address the issue of plastic waste, including single-use plastic items. Thus, plastics, including single-use plastics, enter the environment, often in locations far

48 | Knoblauch & Mederake 2021, 87–89.
49 | Ibidem, 91–92.
50 | Burns & Boxall 2018, 2776.

removed from their initial use. The magnitude of this environmental problem is evidenced by the findings presented in the preceding section of this article, which details the prevalence of plastic in the environment.

The implementation of specific bans on plastic management has prompted a limited number of legal cases concerning the issue of liability for unlawful behaviour. Given the focus of this article on plastic pollution of rivers, the ensuing examples refer to cases involving liability for river plastic pollution.

For instance, San Antonio Bay Estuarine Waterkeeper, a non-profit organisation that oversees water quality in the bay, in July 2017 initiated legal proceedings against Formosa Plastics Corp., a manufacturer of plastic pellets. Waterkeeper contended that Formosa was in violation of its Texas Pollutant Discharge Elimination System (TPDES) permit, consequently in violation of the Clean Water Act, as it had surpassed the prescribed limits for nurdles – diminutive plastic pellets utilised in plastic manufacturing. The defendant presented data showing compliance violations from January 2016 to March 2019. Following a thorough examination of the case, the court determined.[51]

Another case concerned the defendant Frontier Logistics LP's contamination of the Cooper River and Charleston Harbour, among other places, with plastic. Even in this case, the defendant opted for a settlement, consenting to the implementation of all measures recommended in an audit conducted by a mutually agreed consultant. This is to prevent the release and migration of plastic pellets, flakes and powder off-site Furthermore, the defendant consented to the allocation of $1 million (over a period of four years) for the benefit of beneficial environmental projects selected by the plaintiffs.[52]

In another case, the dispute revolved around the U.S. Environmental Protection Agency's (EPA) failure to recognise certain water bodies as impaired due to plastic pollution. While the case pertained to marine waters, it is noteworthy that the defendant was a public institution, namely the Environmental Protection Agency (EPA). The Center for Biological Diversity (CBD) initiated legal proceedings against the EPA for violating the Clean Water Act, which stipulates, inter alia, the identification of water bodies that do not meet state water quality standards. Prior to the resolution of the legal proceedings, in 2020 the EPA voluntarily included the following water bodies around two beaches in Hawaii in its list of impaired waters after conducting additional analyses: Kamilo Beach and Tern Island in Hawaii. Consequently, these water bodies have now been incorporated into the state's water quality management plans. The inclusion of these water bodies in the state's management plans is intended to enhance water quality in the region, thereby contributing to the broader objective[53]

51 | Morath 2020, 41–42.
52 | https://elaw.org/resource/frontierlogisticssettlement_dsc_3march2021 (accessed: 6.10.2025).
53 | Abate 2023, 615.

6. Research on international cooperation on plastic pollution in water

It is evident that the global environmental consequences of plastic are a considerable challenge to manage,[54] yet this does not excuse the international community from fulfilling its obligations. From the perspective of the conditions described above, the problem of waste pollution is one of water pollution. The problem is entirely anthropocentric in origin, that is, dependent on human activity.

National regulations have long taken precedence in the fight against plastic pollution. While the significance of these measures cannot be underestimated, the data on plastic pollution show that they are inadequate and ineffective. The problem has also been recognised at the global level; however, for many years the problem of environmental pollution has been the focus and, in the case of plastic pollution, wrongly, as highlighted in this article, primarily on the pollution of seas and oceans.

In the context of international law, two primary issues have been addressed in relation to the problem of plastic pollution. First, the transboundary movement of hazardous waste (The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes[55]), which was extended to include selected plastic fractions by the 14th Conference of the Parties (COP) under Decision BC-14/12 amendment. The overarching legal instrument that underpins this convention is the requirement for the prior consent of the receiving country for the transboundary movement of waste covered by the Convention.

The second is to ban or restrict the production and use of some of the most dangerous chemicals known as persistent organic pollutants (POPs) and require the environmentally sound management of waste containing POPs, as introduced by the Stockholm Convention on Persistent Organic Pollutants.[56] Examples of such chemicals include polybrominated diphenyl ethers, which are added to plastics to impart flame resistance and other properties.

The extensive number of parties involved (Basel Convention – 181; Stockholm Convention – 186) ensures the broad applicability of the regulations they contain. Nevertheless, from the perspective of plastic management, their significance is limited and insufficient to solve the problem.

54 | Dauvergne 2018, 29.
55 | The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal Basel, 22 March 1989, United Nations, *Treaty Series*, vol. 1673, 57, as amended.
56 | Stockholm Convention on Persistent Organic Pollutants, Stockholm, 22 May 2001, United Nations, *Treaty Series*, vol. 2256, 119, as amended.

According to Dauvergne,[57] the most cited article on global plastic management worldwide,[58] this management is characterised by: (1) fragmented authority, (2) weak international institutions, (3) uneven regulations, and (4) uncoordinated policies and business-oriented solutions. Consequently, the proliferation of plastic pollution in the marine environment remains unabated.

The need for an international treaty was recognised by the United Nations (UN), which adopted a resolution in March 2022 on the development of an international legally binding instrument on plastic pollution.[59] The adoption of the treaty is intended to address the existing gap in international legal regulations related to plastic management.

The convention's ambitious assumption that the approach will be based on solutions from the perspective of the entire life cycle of plastic products is also controversial for some countries. This has thus far impeded the development of a consensus text for the convention.

The literature identifies seven elements of the convention with the potential to contribute to the establishment of an effective, legally binding international mechanism to prevent plastic marine pollution: a) the principle of common but differentiated responsibility, b) an adequate scope to address the problem by including land-based and sea-based sources, as well as chemical additives and all stages of the plastic life cycle, c) a link to international trade in plastics, d) a financial mechanism to support the necessary implementation measures, e) flexibility to adapt to change, f) effective monitoring, reporting and review procedures, and g) enforcement by encouraging compliance and discouraging non-compliance.[60]

The design of legal solutions for removing plastic from rivers requires a detailed investigation of the sources, origins, and composition of pollution. While the implementation of a more stringent waste management system may serve to reduce pollution from mismanagement, this measure is likely to be ineffective in addressing the contributions of other sources.

There is a broad consensus that plastic is responsible for the unacceptable levels of harm[61]. Addressing the root causes of this harm requires a nuanced and multifaceted approach, as there is no universally applicable solution. In response to the problem of microplastic pollution in water, the Organisation for Economic Co-operation and Development (OECD) has proposed the following solutions:

- Source-oriented approaches, such as the sustainable design and production of textiles, tyres, and complementary products (i.e. washing machines, laundry detergents, road surfaces, and vehicles) to minimise the tendency of products to contribute to microplastic formation.

57 | Dauvergne 2018, 22–31.
58 | According to de Sousa 2024, 4.
59 | UNEA 5.22022.
60 | Tessnow-von Wysocki & Le Billon 2019, 96–102.
61 | Salcido 2024, 73.

- Use-oriented approaches, such as the use of best usage practices (e.g. washing parameters, eco-driving) and mitigating technologies (e.g. microfibre filters) to reduce avoidable releases.
- End-of-life approaches, such as improved waste management practices, to prevent waste from entering the environment and potentially contributing to microplastics.
- 'End-of-pipe' approaches, such as improved management of wastewater, storm water and road runoff and treatment, to stop emitted microplastics before they reach water bodies.[62]

While it is acknowledged that current international legal instruments do not comprehensively address the full life cycle of plastics, nor all the aspects involved, it is equally important to recognise the existing legal solutions that offer responses to the plastics crisis. Compared to international regulations on plastics, those relating to cross-border cooperation in river management are much more extensive. The management of transboundary water resources is established by the Convention on the Protection and Use of Transboundary Watercourses and International Lakes[63] and the Convention on the Law of the Non-Navigational Use of International Watercourses.[64]

Importantly, the 1997 Convention does not have global scope. Ghana ratified the 1997 Convention in 2020, while Kazakhstan and Zimbabwe ratified it in 2024. The Convention is currently in force in several European, African, and Asian countries, comprising a total of 40 countries. The right to equitable use (Articles 5, 6) is balanced by the obligation of the watercourse state to take all appropriate measures to prevent any significant harm to other watercourse states. Furthermore, the responsible state is obligated to undertake all requisite measures, in consultation with the affected state, to either eliminate or mitigate the damage, and "where appropriate, to discuss the question of compensation".[65] The 1997 Convention also regulates the protection, conservation, and management of ecosystems. The riparian states are obliged to protect and conserve watercourses either collectively or individually.

The 1992 Convention was originally established as a regional convention for the member states of the United Nations Economic Commission for Europe (UNECE). However, since 2013, it has been open to all UN member states. Several countries outside of the European region have evinced interest in acceding to the 1997 Convention, including Jordan, Tunisia, among others. In 2023, Nigeria, Namibia, Iraq,

62 | OECD 2022, 11.

63 | Convention on the Protection and Use of Transboundary Watercourses and International Lakes, Helsinki, 17 March 1992, United Nations, *Treaty Series*, vol. 1936, 269, referred to as: the 1992 Convention.

64 | The Convention on the Law of the Non-Navigational Uses of International Watercourses, New York, 21 May 1997, United Nations, *Treaty Series*, vol. 2999, 77, referred to as the 1997 Convention.

65 | Article 7, in conjunction with Article 21, which introduces the principle of prevention; Sands, et al. 2003, 467.

and Gambia acceded to the Convention, followed by Zimbabwe and Zambia in 2024. This demonstrates the need to extend the solutions regulated by the Convention to other regions. The Convention is currently being enforced in 55 countries.

The 1992 Convention introduced even more far-reaching regulations for protecting transboundary watercourses. Adopting a preventative approach, underpinned by the principles of no harm, polluter pays, the Convention proposed a series of concrete instruments to limit pollution, such as prior authorisation and subsequent monitoring of discharges (with limits based on best available technology for discharge of hazardous substances), application of stricter requirements where the ecosystem so requires, and environmental impact assessment.

The Convention regulates and reinforces the application of the abovementioned principles, in addition to the establishment of control mechanisms, monitoring activities and the identification of mutual obligations in the context of cross-border cooperation. These conventions signify a substantial advancement by establishing principles that have the potential for implementation on a global scale. These conventions are a foundational starting point, providing a framework upon which countries can establish cooperation agreements with their neighbours concerning the utilisation of shared freshwater resources. However, the scope of the conventions is limited and, as a result, their impact is also circumscribed.

Conversely, other multilateral environmental agreements, such as the Convention to Combat Desertification[66] and its subregional action programmes, the Ramsar Convention on Wetlands[67] and the Convention on Biological Diversity,[68] are concerned with the conservation of natural resources and are global in nature. However, these instruments have little relevance to the problem of plastic pollution in rivers.

The issue of cooperation regarding freshwater pollution is also the subject of soft law documents. During the 1980s, the UNECE alone produced the Declaration of the European Economic Commission on the policy of preventing and reducing water pollution, including cross-border pollution (1980), Declaration on the policy of rational use of water resources (1982), Principles of cooperation in the field of transboundary waters (1984), 'Charter on the Rational Use of Groundwater', and Code of Conduct on Emergency Pollution of Transboundary Inland Waters (1990).

River pollution has long been a topic of interest in international environmental law. A mounting body of research has confirmed the presence of plastic particles of all sizes even in the pristine regions of the earth, thereby highlighting the need for more effective regulation.

66 | United Nations Convention to Combat Desertification in those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa, Paris, 14 October 1994, United Nations, *Treaty Series*, vol. 1954, 3.
67 | Convention on Wetlands of International Importance Especially as Waterfowl Habitat, Concluded at Ramsar, Iran, on 2 February 1971, United Nations, *Treaty Series,* registration no. 14583.
68 | Convention on Biological Diversity, Rio de Janeiro, 5 June 1992, United Nations, *Treaty Series*, vol. 1760, 79.

While it is acknowledged that current international legal instruments do not comprehensively address the full life cycle of plastics, nor all the aspects involved, it is equally important to recognise the existing legal solutions that offer responses to the plastics crisis.

The existing legal and political framework is intricate, ranging from the general obligations to prevent pollution arising from the conventions mentioned above to the policy directions outlined in the Sustainable Development Goals agenda. The normative landscape is particularly intricate, corresponding to the complexity of the factors that constitute the problem: rivers, biodiversity, waste and plastics, river management, international cooperation, which are the basic elements.

7. Existing principles and curbing river plastic pollution

The principles of environmental protection developed in international law are and should be widely used to solve the problem of river plastic pollution. The open nature of these principles is considered to facilitate the smooth adaptation of international law as new threats emerge.[69] Fundamentally, the principle of prevention, based on the assumption that it is better to avoid environmental damage than to repair it, is one of these principles. Since its international recognition in the 1972 Stockholm Declaration on the Human Environment, the principle of prevention has rightfully gained an influential place. This principle should guide the response of states to the plastics crisis. The significance of this principle is underscored by the conventions previously referenced in this article, including the 1992 Convention, which emphasises pollution prevention. In accordance with the stipulations of this convention, states are obligated to implement a range of measures, including legal, administrative, economic, financial, and technical interventions, with the aim of reducing pollution of waters and associated ecosystems that traverse national boundaries.[70]

At the national level, this principle is operationalised through the implementation of bans on various single-use plastic items and the marketing of products containing primary plastic. At the international level, it should be a fundamental pillar of the negotiated plastic convention.

The precautionary principle asserts that governments should act even in the absence of scientific certainty if there is a risk of irreversible damage to the environment or human health.[71] Notably, the precautionary principle does not supersede the scientific approach; rather, it serves to enhance it, particularly in circumstances where scientific knowledge is limited.[72] The utilisation of the precautionary principle in legal frameworks serves to focus attention on the

69 | Duvic-Paoli 2020, 195.
70 | Szilagyi 1993, 41.
71 | Perez et al. 2023, 123.
72 | Holdway 2008, 38.

unrecognised negative impacts of pollutants on the environment, including human life and health. While the negative impact of plastics on the environment is well recognised, much work remains to be done to determine the negative impact on human health and life. The absence of recognised harmful effects in this area cannot be a reason to abandon measures to prevent pollution.

The precautionary principle is associated with other environmental standards, including intra- and intergenerational equity, which are now integral components of the evolving nature of environmental management. The challenge of constraining the actions of present generations to preserve future resources is a contentious issue.[73] This is further compounded by the fact that, while in the past human activities could impact only small areas and within short time frames, new technologies have the potential to harm vast areas and all of humanity, including future generations.[74]

The polluter pays principle (PPP) is far from the economic dimension proposed by the OECD in the early 1970s. At that time, the OECD asserted that the responsibility for implementing pollution control measures undertaken by public authorities to ensure an acceptable state of the environment should fall upon the polluter.[75] However, in the context of PPP, legal scholars interpreted the economic principle as an obligation that polluters should assume all the social and economic costs of their actions.[76] In the context of PPP, a polluter's responsibility has expanded gradually to encompass the costs of pollution prevention and control, along with other associated expenses such as fees, taxes, clean-up costs, and compensation.[77]

The PPP principle has been incorporated into several environmental conventions. For instance, the 1992 Convention stipulates that the 'polluter should pay', thereby obliging plants or business organisations responsible for the pollution to cover the costs of preventing, controlling, and limiting pollution.[78]

The body of international law relevant to the plastic management crisis also includes the well-established prohibition of causing transboundary harm (also known as the principle of non-harm), which aims to protect the territorial integrity of states. This principle, which is now codified in several legal instruments, derives from customary law. States are obliged to ensure that plastics do not cause significant damage outside their jurisdiction or control.[79] While some scholars argue that the principle of non-harm is overly focused on protecting territorial integrity to the point of adequately addressing the problems of plastic pollution in oceans,[80] it is more applicable to the pollution of transboundary rivers and lakes.

73 | Salcido 2024, 79.
74 | Holdway 2008, 38; Andorno 2004, 12.
75 | OECD 1972, 1.
76 | Gaines 1991, 470.
77 | OECD 2022, 14; Grossman 2006, 10; Zhu & Zhao 2015, 34.
78 | Szilagyi 1993, 41.
79 | Duvic-Paoli 2020, 195.
80 | Ibidem, 197.

A river's plastic pollution limits can be used to implement this principle. However, the establishment of equitable pollution limits for transboundary rivers remains a challenging task. Monitoring river pollution will likely facilitate to determine the extent of pollution and establish the basis for potential national liability for exceeding the agreed-upon pollution limits.

The Rio Declaration stipulates that countries have common but differentiated responsibilities about plastic marine pollution, given their different contributions to global environmental degradation. Consequently, developed countries, endowed with advanced technologies and sufficient financial resources, bear a substantial responsibility for global plastic waste management, and they should assume a greater share of the responsibility for pursuing international sustainable development. However, the implementation of this principle requires detailed analysis. Nevertheless, it appears that the most significant scope lies in the establishment of regulations for plastic management at the global level. This principle may be implemented through activities undertaken as part of technological cooperation, comprising the development and exchange of experiences in the application of technologies that are plastic-free, or the removal of plastic from rivers.

The principle of fair and reasonable use is the most important principle of the international water law. This principle entails the right of a state to use the benefits of a watercourse reasonably and to protect it from violations by other states.[81] It is important to note that this principle does not imply that all states with access to a given watercourse share it equally or proportionally. The objective of achieving optimal utilisation and benefits does not entail the pursuit of 'maximum' utilisation, the most technologically efficient utilisation or utilisation with the highest monetary value. It is also not concerned with the maximisation of short-term profit at the expense of long-term losses.[82]

8. Measures that must be adopted at an international level to strengthen water resilience and cooperation in the protection of water resources

The following summary reflects the initial state of the problem: around 40% of the world's population lives in river and lake basins that span two or more countries; even more importantly, over 90% live in countries that share river basins. The 263 transboundary lakes and rivers that have been identified cover almost half of the Earth's land area and account for an estimated 60 percent of global freshwater flow. A total of 145 countries hold territory within such river basins, and

81 | ILC 1994, 98.
82 | Ibidem, 97.

30 countries lie entirely within them. As of 2008, approximately 2 billion people worldwide were dependent on groundwater, which includes 300 transboundary aquifer systems.[83]

According to available data, about 295 international water agreements have been adopted since 1945,[84] including the 1994 Convention on the Cooperation for the Protection and Sustainable Use of the Danube River, the 1960 Indus Water Treaty, the 1978 Great Lakes Water Quality Agreement, the 1991 Pakistan Water Apportionment Accord, the 1995 Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin, the 1995 Protocol on Shared Watercourse Systems in the Southern African Development Community Region (revised and extended in 2000), and the 1996 Mahakali and Ganges treaties. In this context, the Rhine is worthy of attention, as it is subject to five different international regulations aimed at protecting its environment.[85]

Despite the proliferation of agreements on transboundary water resources management, there are many watercourses, not to mention aquifers, without an adequate legal framework for cooperation. A notable example is the 2008 report by UN Water, which highlighted that 158 of the 263 international river basins and transboundary aquifer systems lacked any form of cooperative management framework.[86]

Several measures must be undertaken to urgently address the problem of plastic pollution. These actions include the establishment of a global legal framework for cooperation between nations on transboundary watercourses. The 1992 and 1997 conventions, which are based on the principles of international environmental law, have potential in this regard.

Regardless of the relevant legal framework, and irrespective of the need to solve the problem of river plastic pollution discussed in this article, a closer look at the management of water resources itself is necessary. The existing literature argues that water management solutions cannot be simple, global and, above all, technical or governmental. Instead, inequalities should be embedded in specific histories, reflecting the character of a place, its boundaries, and conflicts.[87] These and several associated factors have contributed to the ongoing discourse concerning the relative merits and potential applications of various management options, with attention centred on the comparative effectiveness of multi-level management in contrast to the bottom-up or top-down approaches.[88]

83 | UN WATER 2008, 1.
84 | Ibidem, 3.
85 | Sands, et al. 2003, 479.
86 | UN Water 2008, 3.
87 | Crow 2014, 249.
88 | Gupta & Pahl-Wostl 2013, 3.

Historically, the management of water resources has centred on the local, national, and transboundary levels.[89] However, Dellapenna[90] argues that a global dimension should be incorporated into these levels. It is crucial to emphasise two reservations in this regard: first, the approach must remain highly adaptable to current challenges; and second, it must be sensitive to regional conditions that influence river management.

While effective cross-border water management begins at the national level,[91] the global scale of the problem of plastic water pollution indicates that coherent solutions must be developed to enable cooperation between countries for protecting shared water resources. The enhancement of the competence of UN-Water, which is a constituent of the UN for coordinating work on water, could represent a step towards addressing existing deficiencies. Currently, water resources management is loosely institutionalised at the global level.[92]

The issue of river plastic pollution, including transboundary rivers, is multi-faceted and interlinked with other areas, entangled in a mosaic of intertwined problems and policies attempting to address them. The two primary challenges and their corresponding measures are plastic management and water management. Achieving effective management of these problems requires action at multiple levels. However, both issues should be addressed through the establishment of international legal instruments. The primary solution to the problem of plastic pollution is the regulation of plastic management itself, including the prohibition of plastic-based ingredients in products. The sealing of the process of managing larger plastic waste should also be included in these solutions, with packaging waste management being used as an example.

Further research is required to determine an effective framework for this cooperation, the precise details to be incorporated into the regulations on plastic pollution, and the flexibility to be granted to national governments at lower levels of governance, whether in the form of bilateral cooperation or national regulations.

- The adoption of regulations on plastic management, focused on the management of plastic-containing waste, is recommended. Given that the main sources of plastic pollution are located on land, it is necessary to first adopt instruments that implement the principle of prevention.
- Standards for monitoring and assessing water quality must be adopted. This is not merely an endeavour to obtain data that is globally comparable; it is also about establishing a methodology for measurement that provides reliable data.
- Institutions responsible for water management should be strengthened through the establishment of international agreements. It is particularly

89 | Examples of such bilateral cooperation on river protection from Hungary's perspective are presented in article Marinkás 2019, 96–112.
90 | Dellapenna 2013, 3.
91 | UN Water 2008, 6.
92 | Dellapena et al. 2013, 1.

important to strengthen the area of investigating responsibility for water pollution, including plastic pollution.
- Promotion of technology transfer and best practices in water management is imperative. In the context of plastic pollution, this encompasses both measurements and methods, including biological methods, for river remediation.
- Another aspect that must be addressed is the provision of support for scientific research on plastic pollution and its impact on water resources.
- Another important aspect is public education to reduce the use of plastic products and raise awareness of the consequences of plastic pollution. As this topic is not analysed in the article, it is highlighted as an important area requiring improvement.

9. Conclusions

The first approach proposed in this article involves presenting various data describing the problem of transboundary plastic pollution of rivers (regardless of size); second, the efforts made to solve the problem, mainly legal and to a less extent management, allows to draw the following conclusions.

The problem of plastic in rivers is part of overall plastic pollution. As argued in the academic literature, and rightly so, we have failed or underestimated the damage caused by plastic, thus allowing it to evade rational control within existing environmental standards. Furthermore, it is evident that the plastics industry has been operating with a certain degree of impunity. In response, governments have initiated efforts to address the inadequacies in waste management systems.[93]. Nevertheless, it is necessary to recognise that the scale of the problem has long since transcended national borders and appropriate global regulations on plastics are needed, and these measures require international consensus. As evidenced by the course of negotiations, achieving such a compromise is not straightforward.

While the problem of plastic in rivers forms part of the problem of plastic pollution, it also has its own specific features. This is characterised by transboundary rivers.[94] Consequently, the solution demands an individual approach. Legally, this must be grounded in international law, encompassing relevant accords between coastal nations, supplemented by domestic instruments (e.g. restrictions on microplastic discharges).

Contrary to the existing regulations on plastics management, there are several regulations on river management, both bilateral and regional.[95] These regulations,

93 | Salcido 2024, 75.
94 | For special problems of transboundary rivers see more: Marinkás 2019, 96–111.
95 | For research on water management in Central Europe see Szilágyi 2019, 182–194.

while diverse in respective particulars, collectively provide a foundation for addressing the issue of river contamination, including that caused by plastic.

The data cited in this article demonstrate that several rivers have not yet been subject to the adoption of any agreements. However, even the adoption of such agreements does not guarantee that the measures implemented under them will effectively address the issue of river pollution, including plastic pollution. The data on plastic pollution indicates that this is not the case.

This raises the question of why plastic pollution is so heavy. The underlying reasons are complex – in addition to any lack of adequate international regulation of plastic itself, the solution lies in water management, as demonstrated by the selected directions of changes proposed in this article, specifically in the previous subsection. The numerous and varied consequences of plastic pollution require equally diverse solutions. A concerted effort is imperative from all stakeholders, including governments, scientific communities, and the private sector.

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ENVIRONMENTAL REMEDIATION

Lucie ZDRÁHALOVÁ[1] – Vojtěch VOMÁČKA[2]

One System, Many Rules: A Critical Examination of Environmental Remedial Measures in the Czech Republic[3]

Abstract

This article critically examines the fragmented legal framework governing environmental remedial measures in the Czech Republic. It also analyses the multiple legislative acts under which such measures can be imposed, including the overarching Act on the Environment, the specific Act on the Prevention of Environmental Damage (largely unused in practice), numerous component-specific laws (e.g. water, forests, nature protection), and regulations concerning historical environmental burdens ('old ecological burdens') predating privatisation. The analysis highlights the lack of a unified definition and procedure for remedial measures, the inconsistent application of the 'polluter pays' principle, issues surrounding the transfer of liability (particularly concerning privatised property and legal succession), and the practical challenges faced by administrative authorities. Despite legal fragmentation, the administrative data suggest that the remedial measures under specific acts are frequently imposed, albeit with limited recourse to appeals or judicial review, thus raising questions about enforcement effectiveness. The article further explores the impact of court proceedings, including the rare granting of suspensive effect to administrative complaints, and the interplay between public law obligations and private law claims. Finally, it addresses the implications of this complex regulatory landscape from a real estate perspective, considering disclosure requirements, the role of public databases such as SEKM, and the impact of environmental burdens on property marketing and valuation.

Keywords: Remedial Measures, Czech Republic, Environmental Liability, Polluter Pays Principle, Environmental Damage, Old Ecological Burdens, Real Estate, Environmental Due Diligence

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1. Introduction

The effective remediation of environmental damage is a cornerstone of environmental protection. However, in the Czech Republic, the legal framework for imposing remedial measures through administrative decisions is notably fragmented, being dispersed across numerous legislative acts. This lack of unification presents significant challenges for regulators, liable parties, and the environment itself. The violations of environmental regulations should ideally trigger not only administrative or criminal sanctions but also robust remedial measures capable of restoring or mitigating the resultant harm. As such, this article offers a critical examination of the Czech legal system governing environmental remediation. Specifically, it identifies the key legislative instruments, explores the definition and purpose of remedial measures, analyses the procedures for their imposition, investigates the practical application by administrative authorities, and assesses the role of judicial review. Special attention is given to the complexities surrounding liability, particularly the transfer of obligations and the issue of 'old ecological burdens', inherited from the pre-privatisation era. Furthermore, the article considers the practical implications of this fragmented system, including its impact on real estate transactions and marketability. By highlighting inconsistencies and practical shortcomings, the analysis contributes to improving the coherence and effectiveness of environmental remediation in the Czech Republic.

2. International and EU legal frameworks

Liability for environmental damage in the Czech Republic exists within the broader framework of international and European Union law. From the international perspective, Principle 22 of the United Nations Declaration on the Human Environment (Stockholm, 1972) affirms the responsibility of states to cooperate in developing international law on liability and compensation for environmental harm. Its significance lies in shaping the international discourse rather than providing enforceable mechanisms. The 1993 Convention on Civil Liability for Damage Resulting from Activities Dangerous to the Environment (Lugano Convention), negotiated within the Council of Europe, never entered into force. While of historical and doctrinal interest, it has no direct role in administrative practice and its primary influence lies in inspiring the drafting of the Environmental Liability Directive (2004/35/EC, ELD).

The ELD expressly excludes the damage falling under specific international regimes. The first cluster of such treaties concerns marine pollution, including the 1969 Brussels Convention on Civil Liability for Oil Pollution Damage and its 1992 Protocol, the 1971 and 1992 London Conventions establishing the International Oil

Pollution Compensation Fund, the 2001 International Convention on Civil Liability for Bunker Oil Pollution Damage, and the 1996 Convention on Liability and Compensation for Damage in Connection with the Carriage of Noxious and Hazardous Substances by Sea. The Czech Republic is not a party to the 1992 CLC or Fund Conventions, the HNS Convention has not entered into force, and none of these regimes has a realistic connection with terrestrial or inland waterway scenarios in which Czech remedial measures are applied.

A second cluster covers nuclear liability. Here, the exclusion in the ELD is directly relevant to Czech practice. The Czech Republic is a contracting party to the 1963 Vienna Convention on Civil Liability for Nuclear Damage and the 1988 Joint Protocol on the Application of the Vienna and Paris Conventions. It has also signed but not ratified the 1997 Protocol to the Vienna Convention. Liability for nuclear damage is thus governed entirely by the nuclear liability regime, being excluded from the scope of domestic environmental remedial measures legislation, including the Act on the Prevention and Remediation of Environmental Damage.

Under EU law, the ELD remains the principal instrument, although its application in the Czech Republic is rare (see below). Consequently, the related jurisprudence of the Court of Justice of the European Union (CJEU) is of limited relevance. The Czech courts have not referred a preliminary question to the CJEU regarding the interpretation of the ELD or any other aspects of environmental liability, administrative, civil or criminal.

3. The fragmented legal landscape for environmental remediation

The Czech legal system builds on the assumption that sanctions and remedial measures can coexist but do not depend on each other, as sanctions represent the administrative authority's exercise of punitive power, whereas remedial measures reflect the need to impose restorative actions.[4] Remedial measures, irrespective of the specific legislative act under which they are imposed, are conceptually distinct from punitive sanctions. Their fundamental purpose is restorative, aiming to eliminate or mitigate environmental damage in accordance with the 'polluter pays' principle, rather than primarily serving to punish the entity responsible for the violation. This distinction has important legal consequences; that is, remedial measures can be imposed concurrently with administrative fines or even criminal penalties without violating principles against double jeopardy. Unlike administrative sanctions, remedial measures are not subject to preclusion. Moreover, unlike administrative sanctions that share a coherent framework regulation (Act

4 | See the judgements of the Supreme Administrative Court of 22 August 2018, No. 8 Ads 207/2017-58, and of 10 August 2021, No. 6 Afs 10/2020-27.

No. 250/2016 Coll., on Liability for Offences and Procedure thereon), the complex task of addressing environmental damage and mandating remedial measures is approached through several parallel, yet distinct, regulatory pathways, thus contributing significantly to the fragmented nature of the overall framework.

First, the Act on the Environment (No. 17/1992 Coll.) confers upon administrative authorities the general power to impose remedial measures and establishes a clear hierarchy for remediation methods. The primary obligation is *restitutio in integrum*, meaning restoration to the original state. Should this prove impossible or wholly impractical, alternative remedial actions must be undertaken. Only if the alternative measures are also deemed unfeasible does the option of monetary compensation arise. Crucially, due to the public-law nature of this Act, the party responsible for the damage does not possess discretion in selecting the form of the remedy; instead, the sequence is legally mandated. However, mainly due to lack of detailed provisions, the Act on the Environment is used in practice merely as an interpretative guideline in judicial decision-making. Despite the initial intentions, it has never been supplemented by the envisaged implementing regulation. Its enforcement capabilities have thus never been considerably activated.

Second, the Act on the Prevention and Remediation of Environmental Damage (No. 167/2008 Coll.) stands as a key piece of legislation, as it transposes the requirements of EU Environmental Liability Directive (2004/35/EC)[5] into national law. It has the potential to facilitate a comprehensive, cross-component approach to remediation.[6] However, in practice, its application has been notably limited, remaining largely unused by administrative authorities. Its temporal applicability is also restricted, covering only instances of damage that have occurred subsequent to its promulgation on 22 April 2008. This Act also uniquely provides the sole explicit legal definition of remedial measures found in Czech statute, characterising them as actions "aimed at restoring, rehabilitating, or replacing damaged natural resources or their impaired functions, or providing adequate compensation for these resources or their functions".[7] Other than that, the Czech legal framework lacks a unified and generally accepted definition of corrective measures.[8] According to some authors, remedial measures are a specific set of powers arising from supervisory activities when deficiencies are identified (i.e. differences between the observed and desired behaviour of the supervised person).[9] Others, however, classify remedial measures as administrative sanctions of a restorative nature, applicable in situations where an unlawful state can be effectively corrected.[10]

5 | Directive 2004/35/EC of the European Parliament and of the Council of 21 April 2004 on environmental liability with regard to the prevention and remedying of environmental damage. OJ L 143, 30. 4. 2004, 56–75.
6 | See Stejskal & Vícha 2009.
7 | Act on the Prevention of Environmental Damage, Section 2(k).
8 | Mitášová 2024.
9 | Hendrych et al. 2016, 208–209.
10 | Průcha 2024, 331–332.

Third, a significant portion of remediation governance resides within numerous component-specific laws, with at least fourteen individual acts regulating remediation pertinent to specific environmental sectors. These encompass a wide range of environmental concerns, including dedicated laws for the protection of nature and landscapes, agricultural land resources, forests, water bodies, ambient air quality, waste management, chemical substances, integrated pollution prevention and control (IPPC), natural medicinal resources, genetically modified organisms (GMOs), and public health aspects. These specialised acts contain bespoke provisions for imposing remedial measures tailored to the specific environmental medium or activity they govern (see below).

Finally, a distinct regulatory regime specifically addresses the legacy of 'old ecological burdens'. This category pertains to contaminated sites where the environmental damage was caused by state-owned enterprises prior to their privatisation, typically before the pivotal year of 1989.

4. Imposition and enforcement of remedial measures

The authority vested in administrative bodies to impose remedial measures, and whether such imposition is obligatory or discretionary, exhibits considerable variation across the fragmented Czech legislative landscape. While the framework Act on the Environment appears to grant a degree of discretion to administrative authorities,[11] certain component-specific acts adopt a more stringent approach. Notably, legislation such as the Water Act (No. 254/2001 Coll.) and the Forest Act (No. 289/1995 Coll.) legally oblige the relevant administrative authority to impose remedial measures once a statutory violation has been confirmed and the party responsible for causing the environmental damage has been definitively identified. In this regard, the Supreme Administrative Court ruled that the administrative authority dealing with the unauthorised discharge of wastewater has no discretion as to whether to impose such a measure but is obliged to do so whenever an unauthorised discharge of polluted water is detected. This obligation arises from Section 27(1) of the Water Act (now Section 42, with the unchanged wording).[12] Conversely, other regulations consider the power to impose remedial measures as optional, leaving the decision contingent upon the specific assessment and judgment of the administrative authority in the given circumstances.

Procedurally, the imposition process also lacks uniformity. Explicit and detailed procedural rules governing the imposition of remedial measures are uniquely set out only within the largely unused Act on the Prevention of Environmental Damage in Section 8. For the majority of other relevant legislative instruments, including

11 | Act on the Environment, Section 27.
12 | See the judgement of the Supreme Administrative Court of 25. 11. 2003, No. 5 A 81/2001-46.

the foundational Act on the Environment and most of the component-specific laws, specific procedural provisions are absent. In such cases, the administrative authorities follow the general provisions of the Administrative Procedure Code (No. 500/2004 Coll.) subsidiarily when conducting proceedings to impose remedial measures. Typically, these proceedings are initiated as a follow-up to supervisory activities or inspections that identify environmental deficiencies. However, various provisions also allow competent authorities to take immediate action through *on-the-spot* or *on-site* proceedings in situations demanding urgent intervention (e.g. where there is an imminent danger to human life or health or a serious and immediate threat of significant property damage).[13]

The effect of lodging an appeal against an administrative decision imposing a remedial measure also varies. As a general principle, an appeal would normally have a suspensive effect, delaying the enforceability of the decision until the appeal is resolved. However, several specific environmental acts explicitly exclude this suspensive effect, ensuring that the obligation to remediate remains immediately enforceable, despite an ongoing appeal; examples include the GMO Act,[14] Air Protection Act,[15] and Chemical Substances Act.[16] The Integrated Prevention Act[17] provides the administrative authority with the discretion to exclude the suspensive effect in individual cases. Even where the suspensive effect is not automatically excluded by statute, the administrative authority retains the power to decide to exclude it, typically justifying such a decision on the grounds of an overriding public interest, which is a consideration often pertinent in environmental protection cases.

Enforcement mechanisms for ensuring compliance with imposed remedial measures are also diverse. The most common consequence of failing to implement a required remedial measure is the initiation of proceedings for an administrative offence, potentially resulting in fines. However, certain acts grant administrative authorities more potent enforcement tools. For instance, the Integrated Prevention Act, Forest Act, and Air Protection Act empower authorities to order the restriction or even complete suspension of the offending operation or activity if the mandated remedial measure is not fulfilled within the specified timeframe. This power can serve as a significant deterrent and a strong mechanism to compel compliance. Furthermore, some legislation explicitly addresses situations where the current landowner is not responsible for the contamination, thus imposing a legal obligation on such landowners to tolerate the implementation of necessary remedial measures on their property by the liable party or the authorities; examples of this can be found in the Agricultural Land Act (No. 334/1992 Coll.) and the Water Act.

13 | Jančářová 2010, 575.
14 | No. 78/2004 Coll. Section 34(4).
15 | No. 201/2012 Coll., Section 22(3).
16 | No. 350/2011 Coll., Section 22 (2).
17 | No. 76/2002 Coll., Section 19b(6).

Table 1 provides an overview of the remedial measures under the regimes of individual legal acts. In most cases, the failure to implement a remedial measure leads to administrative liability. In accordance with the *polluter pays* principle, the obligated party is typically the person liable for the defective condition.

Legislation	Section	Grounds for Imposition – Responsible Entity	Consequences of non-implementation
Act on the Environment	Art. 27	Environmental damage and causing ecological harm defined in Art. 10 – originator of the damage	Offence under Section 28(1)(b)
Act on the Prevention of Environmental Damage	Art. 7–8	Occurrence of environmental damage – operator of an activity listed (or, in some cases, not listed) in Annex 1 to the Act	Offence under Section 19(1)(c) and (d)
Agricultural Land Act	Art. 3c	Non-compliance with soil protection requirements – originator of the damage	Offence under Section 20(1)(f) or 20a(1)(f)
Nature and Landscape Act	Art. 86	Damage, destruction or unauthorised alteration of protected parts of nature – originator of the damage	Offence under Section 87(3)(e) or 88(2)(g)
Forest Act	Art. 51	Deficiencies in forest management caused by violation of regulations or measures to improve the condition of forests – forest owner	Offence under Section 54(1)(e)
Act on Waters	Art. 42	Water contamination – originator of the damage/ acquirer of privatised property/legal successor	Offence under section 123(2)(c) or 125h(2)(c)
	Art. 110 – 112	Remediation of deficiencies identified following water supervision – supervised person	Offence under section 123(1)(h) or 125a(1)(x)
Air Protection Act	Art. 22	Non-compliance with obligations related to a stationary source – operator of the stationary source	Suspension of operation pursuant to Art. 22(1)
Ozone Layer Act	Art. 14	Non-compliance with obligations laid down by this Act or EU Directives – originator of the damage	x
Waste Act	Art. 116	Non-compliance with management obligations under directly applicable EU regulations – originator of the damage	x
Chemical Substances Act	Art. 33	Non-compliance with obligations under the Act – usually a person who has placed a substance or mixture on the market	x
Integrated Prevention Act	Art. 19b	Non-compliance with obligations under the Act or an integrated permit, accidental release of pollutants from the installation – operator of the installation	Suspension of operation pursuant to Art. 19b(3); offence under Section 37(4)
Natural Medicinal Resources Act	Art. 39	Non-compliance with obligations under the Act or an integrated permit, accidental release of pollutants from the installation – operator of the installation	Offence under Section 41(1)(h) or (2)(i)
Act on GMO	Art. 34	Non-compliance with obligations under the Act, EU Directives in relation to the control of the handling or other treatment of GMOs – originator of the damage	x

Table 1: Remedial measures across individual legal acts

The overarching principle guiding liability determination is the *polluter pays* principle, meaning that the party responsible for creating the harmful condition is typically obligated to undertake and finance the remediation.[18] Nonetheless, as further explored below, the practical identification of the obligated party and the subsequent management of the liability transfer can present considerable legal and practical complexities.

5. Transfer of liability and succession

The legal regulations concerning the transfer of the obligation to implement environmental remedial measures in the Czech Republic are relatively underdeveloped and inconsistently addressed across different statutes, leading to potential legal uncertainty. Some legislative acts explicitly provide for the transfer of this public-law obligation to the legal successor of the entity originally deemed responsible for the pollution or harmful condition. This is particularly the case for the operators of stationary sources under the Air Protection Act,[19] operators of the industrial facilities under the Integrated Prevention Act,[20] and entities subject to remedial measures under the Water Act,[21] the Waste Act (No. 541/2020 Coll.),[22] and the Agricultural Land Act.[23] In these specific legislative contexts, the law expressly establishes the transfer of the public-law duty to carry out remediation to the new owner or operator, thereby ensuring a continuity of responsibility for fulfilling the imposed measure. Certain acts go further, allowing the obligation to implement a remedial measure to be imposed directly upon a legal successor who is not the originator of the contamination. This applies, for instance, to operators of stationary sources governed by the Air Protection Act or those subject to the Waste Act.[24]

The Water Act holds a specific position regarding liability transfer, especially in the context of property privatisation. First, it explicitly permits the imposition of remedial obligations on the entity that acquired the property through privatisation,[25] even if that entity did not cause the pollution, provided it can be demonstrated that the contamination or defective condition was known at the time of the property transfer. This knowledge might be evidenced by specific contractual agreements or reflected in a discounted purchase price granted due to the

18 | See Vícha 2014.
19 | Air Protection Act, Section 22(4).
20 | Integrated Prevention Act, Section 19b(7).
21 | Water Act, Section 42(3).
22 | Waste Act, Section 116(3).
23 | Agricultural Land Act, Section 3c(3).
24 | Air Protection Act, § 22(4); Waste Act, Section 116(2). See Hanák & Vodička 2024.
25 | Pursuant the Privatisation Act (No. 92/1991 Coll.).

environmental burden.[26] If such a contract is concluded, case law further clarifies[27] the obligation of the new owner takes precedence over imposing the obligation on the original polluter, even if known.

Second, the Water Act provides a further mechanism where, if neither the original polluter nor the acquirer under privatisation can be held liable, the remedial measure may potentially be imposed on a 'technically competent person' capable of carrying out the remediation.[28]

However, outside these specific provisions, particularly under acts other than the Water Act or the largely theoretical framework of the Act on the Prevention of Environmental Damage, significant legal uncertainty can arise. Specifically, questions may emerge regarding whether a new landowner automatically assumes responsibility for the environmental burdens created by a previous owner, or upon whom a remedial measure should be imposed if the original originator of the defective condition cannot be identified or no longer exists. This lack of clear regulation in many component-specific laws creates ambiguity.

Separately, there is the question of the transfer of liability – or more precisely, the transfer of the costs of remedial measures – within private law in the context of the sale or transfer of land. While parties involved in a property transaction might contractually agree on how the costs of potential remediation are to be allocated between them, such a private-law agreement cannot legally release a party from their underlying public-law obligation to remedy environmental damage if imposed by an administrative authority. The public duty remains, irrespective of private contractual attempts to shift the financial burden (see relevant case law below).

6. Addressing old ecological burdens

The remediation of contamination resulting from the activities of state-owned enterprises prior to their privatisation, commonly referred to as 'old ecological burdens', presents a unique and persistent set of challenges within the Czech environmental framework. These burdens often stem from the industrial practices and technologies that were legally permissible at the time of operation but are now recognised as environmentally harmful by contemporary standards. Identifying and managing these sites is a significant undertaking. The Czech Republic maintains a dedicated system for this purpose, known as the System for Evidence of Contaminated Sites (SEKM), established and managed by the Ministry of the Environment. This system serves as a crucial tool to register,

26 | Water Act, Section 42(1)–(3).
27 | Supreme Administrative Court, 2009, 2 As 84/2008-131.
28 | Water Act, Section 42(4).

monitor, and assess sites confirmed or suspected to be contaminated, as well as locations where the remediation of environmental damage is actively being addressed. Currently, the SEKM register documents over 10,000 such sites across the country.[29]

During the privatisation waves following 1989, the transfer of property was typically executed through contracts between the former National Property Fund of the Czech Republic and entities acquiring the privatised enterprises. Recognising the potential scale of environmental liabilities, particularly after the initial experiences revealed that remediation costs could potentially exceed asset values, provisions addressing these liabilities were incorporated into subsequent contracts. These often took the form of 'ecological contracts', under which the state, via the National Property Fund, undertook to reimburse reasonably incurred costs associated with addressing environmental liabilities that had originated prior to the privatisation date.

Unfortunately, these state guarantees frequently proved inadequate to cover the full extent of the necessary remediation expenses. A 2023 report by the Supreme Audit Office highlighted this issue, finding that state guarantees were insufficient at 16 sites. Consequently, at 15 of these locations, remediation work was either suspended, significantly limited, or failed to commence. Only in a single instance the acquirer of the privatised property opted to continue the remediation efforts entirely at their own expense.[30] The Supreme Audit Office concluded that, although the acquirer holds formal responsibility for remediation, if an ecological contract has been terminated due to insufficient state guarantees, the state currently lacks the legal means under applicable legislation to compel the acquirer to complete the necessary work.[31]

The legal framework for ordering remedial measures specifically related to old environmental burdens remains complex, with the Water Act playing a central role. As previously discussed, this Act uniquely allows the water management authority or the Czech Environmental Inspectorate to impose a remedial measure directly on the acquirer of property obtained through privatisation, even if they were not the originator, provided the defective condition is linked to the acquired property and the acquirer knew of the burden (evidenced by the agreement or purchase price discount). However, a significant limitation exists. Enforcement proceedings related to decisions issued under this specific provision concerning privatisation acquirers cannot be initiated, ordered, or executed. Despite this enforcement constraint, the underlying obligation arising from such a remedial measure, whether imposed on the originator or the acquirer, transfers to their respective legal successors.

29 | See https://www.sekm.cz/portal/
30 | Supreme Audit Office 2023.
31 | Ibid.

The pace of remediating historical burdens has thus been notoriously slow. Ministry of Finance estimates suggest that addressing old environmental burdens will likely continue until at least 2042. The protracted timeline is illustrated by examples such as the Ostramo oil lagoons, where the ecological contract was signed in 1997, sludge removal commenced in 2004 (lasting 18 years), and the subsequent remediation of contaminated soils is still only in the preparatory phase, with completion anticipated around 2032 – a full 35 years after the initial contract.[32] Similarly, the case of a landfill site in Nelahozeves, dating back to the 1970s and containing thousands of barrels of chemical waste deposited by a former state enterprise, highlights these difficulties. Partial removal efforts in 2019 led to criminal proceedings regarding improper waste disposal, leaving thousands of barrels on site, now potentially more exposed.[33] A significant recent development occurred in February 2025 when a court ruled that the Nelahozeves situation no longer qualified as an old environmental burden but constituted an ongoing emergency situation, drastically altering the legal context and resulting in an order for the immediate removal of the landfill.[34]

These cases underscore administrative complexities, including delays in tendering processes for remediation contractors and lengthy approvals for project documentation, that plague the resolution of old ecological burdens. Since 1993, the Czech Environmental Inspectorate has imposed remedial measures in connection with 249 ecological contracts (on acquirers of privatised property) and for 504 sites across the Czech Republic. There are numerous cases in which a significant time delay has occurred between the issuance of the Czech Environmental Inspectorate decision imposing remedial measures and the actual commencement of remediation work. The primary causes of these delays include the late announcement of tenders for remediation contractors by the National Property Fund and the lengthy process of approving project documentation and its subsequent amendments.[35]

7. Remedial measures in administrative practice

An examination of administrative practice reveals that, despite the acknowledged fragmentation of the legal framework, remedial measures are indeed imposed, albeit predominantly under the authority of component-specific environmental legislation rather than the overarching acts. This practical application highlights

32 | Supreme Audit Office 2024.
33 | See Vik 2025.
34 | See Hedviková 2022.
35 | Czech Environmental Inspectorate 2025.

the divergence between the theoretical availability of certain legal instruments and their actual utilisation by enforcement bodies.

The Act on the Prevention of Environmental Damage, despite its potential for addressing complex, multi-component environmental harm and providing a dedicated procedural framework, remains dormant in Czech administrative practice. Since its adoption, not a single remedial measure has been successfully imposed, a stark contrast to countries such as Hungary and Poland, which report hundreds of cases.[36]

The high-profile pollution incident on the Bečva River in 2020, which caused extensive fish die-offs, exemplifies this issue. Although the expert community widely agreed the Act was applicable, the Czech Environmental Inspectorate ultimately declined to initiate proceedings for remedial measures under it, concluding that the strict statutory elements defining 'environmental damage' under the Act had not been met.[37] The explanatory memorandum accompanying a proposed amendment to the Act acknowledges this lack of application, attributing it primarily to the unclear relationship between the Act and the various specific laws governing remedial measures. Consequently, the primary objective of the amendment is to clarify the scope of the Act, particularly by refining the definition of environmental damage, to distinguish its application more clearly from that of the sectoral laws. Current practice often initiates the Inspection under this Act upon request, only to subsequently terminate it based on the interpretation of 'environmental damage' before potentially initiating separate proceedings under the relevant specific legislation or referring the matter elsewhere. This reliance on specific acts inherently limits the ability to address environmental harm comprehensively when multiple environmental components (e.g. soil and water) are affected, as each specific act focuses only on the interests it is designed to protect.[38]

Remediation under the general 1992 Act on the Environment is also limited in practice, although not entirely excluded. As a framework instrument, it originally anticipated implementing legislation based on detailed procedural steps, but this was never adopted. While claimants argued in some cases that decisions imposing measures under this Act were null due to the missing regulations, the administrative courts hold that the absence of specific implementing rules does not preclude imposing obligations such as restoring ecosystem functions, provided the decision does not concern financial compensation.[39]

The vast majority of environmental remedial measures fall under specific component-based environmental laws. The analysis in this article reveals that the

36 | European Court of Auditors 2021.
37 | Czech Environmental Inspectorate 2023.
38 | Explanatory Memorandum to the amendment to the Act on the Prevention of Environmental damage.
39 | See the judgement of the Supreme Administrative Court of 1 June 2017, No. 1 As 48/2017-33.

primary administrative bodies imposing these measures in the first instance are the Czech Environmental Inspectorate and the numerous municipal authorities with extended powers (of which there are 205). Regional authorities also play a role, both as appellate bodies reviewing decisions from municipal authorities and occasionally as first-instance bodies. Obtaining comprehensive nationwide statistics is challenging due to the decentralised nature of municipal decision-making and the lack of centralised data reporting for decisions not appealed. However, the available data provide valuable insights, particularly regarding appeals, which are a prerequisite for subsequent judicial review.

Data from the Inspectorate for the period 2017–2019 show a consistent quantity of measures imposed: 252 in 2017, 229 in 2018, and 222 in 2019. The number of appeals against these decisions was notably low: 27 were filed in 2018 (although this figure combines appeals against measures and fines) and only 9 in 2019 (see Table 2).[40] Remedial measures were most commonly imposed for violations related to waste management, damage to forests (including failure to address bark beetle infestations), and unauthorised use of forest land.

Area	Air protection	Water protection	Waste management	Nature conservation and CITES	Forest protection	Total
2019[41]	3	60	9	29	124	222
2018[42]	2	74	10	14	126	229
2017[43]	7	44	13	49	137	252

Table 2: Number of remedial measures imposed by the Czech Environmental Inspectorate during 2017–2019

The above overview of remedial measures imposed by the Inspectorate does not provide a complete picture of the overall practice concerning the imposition of remedial measures and related appeals. As such, measures may also be imposed by municipal authorities with extended powers, while appeals against their decisions are handled by the territorially competent regional authority. In certain cases, the regional authority may also act as the first-instance body in imposing remedial measures. Between 2017 and 2019, the regional authorities imposed a total of six remedial measures, most of which were related to breaches of obligations under the Act on Forests. The highest number of remedial measures was imposed by the Vysočina Region (two) and the Moravian-Silesian Region (two).

40 | Krykorková 2021, Annex 1.
41 | Czech Environmental Inspectorate 2019.
42 | Czech Environmental Inspectorate 2018.
43 | Czech Environmental Inspectorate 2017.

Area	Air protection	Water protection	Waste management	Nature conservation and CITES	Forest protection	Total
Number of remedial measures	0	1	–[44]	2	3	6

Table 3: Number of remedial measures imposed by the regional authorities of the Czech Republic during 2017–2019

Area	Air protection	Water protection	Waste management	Nature conservation and CITES	Forest protection	Total
Number of appeals	1	22	–[45]	6	5	34

Table 4: Number of appeals against remedial measure decisions issued by municipal authorities with extended powers (2017–2019)

Between 2017 and 2019, remedial measures were imposed primarily by the Inspectorate, while regional authorities imposed such measures only to a limited extent. Appeals against remedial measures issued by both the Inspectorate and municipal authorities with extended powers were generally infrequent, suggesting that administrative decisions are, in practice, largely accepted without attempting to challenge them.

However, this overview may not fully reflect the complete picture, as the remedial measures imposed by municipal authorities that were not subject to appeal are not captured by the available data. For analysing the suspensive effect of administrative complaints, this limitation is not critical, as it is evident that administrative decisions imposing remedial measures are not systematically challenged.

By 2023, the number of measures imposed by the Inspectorate decreased to 123, potentially indicating a shift in enforcement activity towards the regional and municipal levels.[46]

Area	Air protection	Water protection	Waste management	Nature conservation and CITES	Forest protection	Total
Number of corrective actions	3	26	3	29	67	123

Table 5: Remedial measures imposed by the Czech Environmental Inspectorate in 2023 by the agenda

44 | Data not collected.
45 | Data not collected.
46 | Czech Environmental Inspectorate 2023.

Regional authorities imposed directly very few measures themselves (only six between 2017 and 2019, mostly concerning forest protection), but handled 34 appeals against decisions made by municipal authorities during the same period. The trend over these years indicates that appeals against remedial measure decisions, whether issued by the Inspectorate or municipal authorities, were generally infrequent. This suggests that the majority of administrative decisions imposing remedial measures becomes final and binding without being challenged through the appellate process. While this implies limited procedural delays at the administrative stage, it also means that the data likely underrepresent the total number of measures imposed, as the municipal decisions that were appealed are not captured. Nonetheless, for analysing the impact of judicial review, the low appeal rate is significant, indicating that only a small fraction of cases proceeds to court. The practical implication is that the system relies heavily on sectoral regulation enforced primarily by the Inspectorate and municipalities, with limited evidence of systematic challenges to these decisions.

8. The impact of judicial review

While administrative appeals against remedial measure decisions are infrequent, the possibility of subsequent judicial review by administrative courts can potentially affect the implementation of these measures. It is established case law that decisions imposing remedial measures are subject to judicial review; they cannot be classified as purely technical decisions exempt from court oversight, aligning with the principle that jurisdictional exclusions should be interpreted narrowly in favour of judicial scrutiny.[47] Therefore, parties dissatisfied with a final administrative decision (following the exhaustion of any appeal process) can file an administrative complaint with the relevant court.

In this context, a critical aspect of judicial review is the potential granting a suspensive effect to the administrative complaint. As a general rule, merely filing an administrative complaint does not automatically suspend the legal effects or enforceability of the contested administrative decision. This is particularly relevant for remedial measures, where the suspensive effect of the initial administrative appeal itself is often explicitly excluded by the specific governing statute[48] or can be excluded at the authority's discretion.[49] Suspensive effect in the judicial phase is considered an exceptional measure, intervening in the legal force of a decision presumed lawful until proven otherwise.[50]

47 | See the judgement of the Supreme Administrative Court of 15 December 2005, No. 3 As 28/2005-89.
48 | GMO Act, § 34(4); Air Protection Act, § 22(3); Chemical Substances Act, § 22(2).
49 | Integrated Prevention Act, § 19b(6).
50 | See resolution of the Supreme Administrative Court of 22 December 2003, No. 7 A 115/2002-67.

Suspensive effect may be granted either directly by law or upon the claimant's request.[51] In relation to remedial measures imposed under specific legislation, only the latter option is applicable. To succeed, the claimant bears the burden[52] of demonstrating convincingly that the immediate enforcement of the contested decision would cause them irreparable harm or other legal consequences disproportionately greater than any harm that the suspensive effect might cause to other persons or the public interest.[53] Furthermore, it must be shown that granting suspensive effect would not contravene public interest.[54] The same conditions apply for a cassation complaint.[55]

Demonstrating the imminence of irreparable harm is sufficient, as proving its certainty is not required. Conversely, the claimant needs only to assert the absence of conflict with public interest, leaving it to the defendant (the administrative authority) to challenge this assertion. The analysis of relevant case law confirms that courts grant only exceptionally suspensive effect in proceedings concerning environmental remedial measures. Requests are typically granted only when the claimant provides specific,[56] credible, and individualised[57] arguments, demonstrating a serious risk of irreparable, imminent,[58] and sufficiently probable[59] harm, thus clearly outweighing the public interest in immediate enforcement. Vague or unsubstantiated claims such as general financial hardship are consistently deemed insufficient.[60] Therefore, while theoretically possible, the mechanism of suspensive effect in administrative court proceedings does not appear to constitute a significant or systematic barrier to the timely enforcement of environmental remedial measures in practice.

Conversely, the claimant is not required to prove the absence of conflict with important public interest; it is sufficient to assert that no such conflict exists. It is then up to the defendant to challenge this assertion in their response. If the defendant does not do so, the law does not impose a duty on the court to investigate this condition ex officio.[61]

The case analysis confirms that suspensive effect in proceedings concerning remedial measures is granted only exceptionally. It is typically awarded when the

51 | Blažek et al. 2016.
52 | See the judgement of the Regional Court in Hradec Králové of 23. October 2003, No. 52 Ca 9/2003-144.
53 | See the ruling of the Constitutional Court of 22 March 2022, No. Pl. ÚS 39/18.
54 | Blažek et al. 2016.
55 | Code of Administrative Justice (No. 150/2002 Coll.), Section 107(1); see the resolution of the Supreme Administrative Court of 11 April 2023, No. 8 Azs 50/2023-34.
56 | See the resolution of the Supreme Administrative Court of 30 January 2012, No. 8 As 65/2011-74.
57 | See the resolution of the Supreme Administrative Court of 11 April 2023, No.8 Azs 50/2023-34.
58 | See the resolution of the Supreme Administrative Court of 4 October 2005, No. 8 As 26/2005-76.
59 | See the resolution of the Supreme Administrative Court of 10 October 2022, No. 2 As 225/2022-25.
60 | See the resolution of the Supreme Administrative Court of 21 May 2014, No. 6 Afs 73/2014-56.
61 | See the resolution of the Regional Court in Hradec Králové of 23 October 2003, No. 52 Ca 9/2003-144.

claimant clearly demonstrates a risk of serious and irreparable harm, supported by specific and credible arguments. Conversely, courts consistently reject requests that are vague or unsupported; general references to financial hardship, for example, are insufficient.

Case No.	Suspensive Effect before the Supreme Administrative Court	Legal basis for the imposed remedial measure	Suspensive Effect before the Regional Court
5 As 32/ 2023-44	Granted	Nature and Landscape Act, Section 86	Granted
5 As 384/ 2021-50	Granted	Nature and Landscape Act, Section 86	Granted
3 As 322/ 2017-52	Not granted	Nature and Landscape Act, Section 86	Not requested
7 As 159/ 2012-32	Not granted	Czech Environmental Inspectorate Act	Not requested
7 As 162/ 2012-38	Not granted	Czech Environmental Inspectorate Act	Not requested
6 As 64/ 2007-126	Not granted	Waste Act	Not requested

Table 6: Suspensive effect before the administrative courts

The courts emphasise that suspensive effect is an extraordinary measure, justified only when the harm to the claimant clearly outweighs the public interest in the enforcement of the decision. In several cases, the absence of a timely request at the regional level limits the possibility of relief at the cassation stage.

Overall, the suspensive effect mechanism does not pose a systematic barrier to the enforcement of environmental remedial measures. However, the analysis highlights the need for more precise argumentation from claimants and for further examination of how frequently remedial measures are actually carried out once final.

Another consideration is the interplay between public-law remedial obligations and private-law claims, such as those for civil damages. The application of public law (imposing remedial measures) and that of private law (addressing civil liability for damages) operate independently. However, this rule cannot be interpreted in that public law norms are entirely excluded from interfering with the private law domain.[62]

The imposition of a public-law duty to restore the environment or implement substitute measures does not preclude an injured party from pursuing a separate claim for damages under private law. However, in certain circumstances, the successful execution of a remedial measure might also satisfy the obligation to

62 | See the resolution of the Constitutional Court of 28 January 2014, No. II. ÚS 117/14; judgement of the Supreme Administrative Court of 28 May 2024, No. 10 As 254/2023-50.

compensate for actual material damage suffered by an injured party. The Act on the Prevention of Environmental Damage explicitly notes this possibility, stating that general private-law provisions on damages liability shall not apply if remediation under that Act also results in compensation for property damage. Nevertheless, remedial measures, focused on restoring natural resources, generally do not fully substitute for civil liability, particularly concerning claims beyond direct property damage.[63] Should a dispute arise, it falls to the civil court to determine whether and to what extent the implemented remedial measure has fulfilled any parallel obligation to provide compensation.[64] In certain situations, remedial measures may prove more effective than civil damage claims – for instance, in cases involving contaminated land, where liability for damage is subject to a two-year subjective and a three-year objective limitation period.

From the polluter's perspective, it is crucial to understand that fulfilling a public-law remediation duty does not automatically extinguish potential private-law liability; instead, they may face parallel proceedings and liabilities under both legal regimes. Notably, public-law remediation can sometimes offer a more effective route for addressing environmental harm than private claims, particularly concerning issues such as contaminated land, where civil liability might be subject to shorter limitation periods compared to the possibility of lodging a complaint with a public authority about an unlawful environmental condition, which may not be time-barred.

Finally, judicial review often involves determining the correct liable party, the "originator of the harmful condition". This is frequently contested, especially in cases involving property transfers or historical pollution, with the Water Act often being the focal point due to its relatively detailed provisions on liability transfer. Court decisions consistently emphasise the *polluter pays* principle. In property transfer cases after contamination occurred, the Supreme Administrative Court has held that the obligation remains with the party upon whom the measure was originally imposed (the originator), even if they no longer own the property.[65] The transfer of ownership does not automatically transfer the public-law remediation duty; the new owner is simply obligated under the Water Act to tolerate the implementation of the measure by the liable party. This interpretation prevents polluters from evading responsibility by simply divesting contaminated assets.

Regarding privatised property, the courts focus on identifying the entity with the 'closest connection' to the harmful condition. They hold that responsibility for environmental contamination generally lies with the current owner of the land, as that person has the closest connection to the ongoing situation on the site. An exception can apply if another entity has a more direct relationship to the harmful

63 | Jančářová 2010.
64 | Vomáčka et al. 2018, Section 86.
65 | See the judgement of the Supreme Administrative Court of 19 June 2023, No. 5 As 100/2022-45

condition, for example, if the original operator still owns or operates the landfill as a separate legal asset.[66]

While liability often follows ownership, especially if the property was acquired with the knowledge of the environmental burden, the state's role in privatisation contracts (ecological agreements) has been interpreted narrowly. Courts have determined that the state's commitment was generally limited to reimbursing costs, not assuming the liability itself. Consequently, the responsibility for remediation remained with the privatised entity and was subsequently passed to its legal successors. Crucially, courts reiterate that public-law liability cannot be contractually excluded or avoided through private agreements between parties.[67]

9. Implications from a real estate marketing perspective

The intricate legal framework governing environmental burdens and remedial measures casts a shadow over the real estate sector by influencing transactions, valuations, and development strategies. For participants in the property market, navigating these complexities requires careful consideration and diligence.

A primary concern revolves around disclosure and the necessity for thorough due diligence, particularly when dealing with commercial or industrial properties, brownfield sites, or undeveloped land intended for future development. While Czech law incorporates broad EU sustainability reporting requirements which affect larger companies, specific regulations mandating explicit disclosure of all potential environmental burdens in standard residential or smaller commercial property transactions are less defined than the general need for comprehensive due diligence.

Accessing reliable information about potential environmental burdens is key for prospective buyers and investors. The SEKM database, administered by the Ministry of the Environment, serves as the official register for contaminated sites and old ecological burdens in the Czech Republic. This database is explicitly recognised as a data source for spatial analytical documents prepared under the Building Act (Act No. 283/2021 Coll.), contributing to the identification of old burdens and contaminated areas. While the SEKM system is a vital resource for authorities and spatial planning, its direct accessibility and user-friendliness for individual buyers conducting preliminary checks is limited compared to those of instantly accessible public databases such as the Cadastre of Real Estate (Land Registry), which provides ownership details, property boundaries, and registered

66 | See the judgement of the Supreme Administrative Court of 30 November 2005, No. 2 As 38/2005-132.

67 | See the judgement of the Municipal Court in Prague of 11 December 2022, No. 3 A 195/2016-72; judgements of the Supreme Administrative Court of 7 December 2021, No. 7 As 393/2020-41, of 23 July 2009, No. 2 As 84/2008-131.

encumbrances, and is often searchable online for free. Buyers might indirectly encounter SEKM data through information contained within official spatial plans or via professional Environmental Due Diligence (EDD) reports commissioned as part of the transaction process, rather than through direct public querying of the SEKM portal. However, ensuring that buyers are aware of and can interpret the information derived from SEKM and integrated into planning documents is essential.

In practice, the EDD becomes a critical risk management tool. Phase I EDD typically involves evaluating the site's history, reviewing records and maps, conducting site visits to assess current activities (e.g. waste handling or chemical storage), and identifying potential or existing contamination liabilities to ensure compliance with environmental laws. This process aims to uncover risks, including old ecological burdens, and may also involve assessing waste generation, wastewater handling, hazardous substance management, and air emissions. If potential issues are identified, Phase II EDD might involve intrusive investigations, such as sampling soil, groundwater, or building materials (e.g. for asbestos, petroleum hydrocarbons, PCBs) to quantify contamination levels. Standard property due diligence should also encompass title examination, reviewing physical surveys, checking access rights, confirming utility connections, analysing zoning regulations and planning permissions, and assessing potential hazards such as flooding or historical contamination. Performing robust EDD is crucial, as it informs decision-making and can significantly mitigate the financial risks associated with future remedial costs.

The presence of environmental burdens undeniably affects property value and marketability. Neglected brownfields, which are often visually blighted and sometimes associated with social issues, tend to exert a negative externality, depressing the value of neighbouring residential properties. The extent of this impact can vary depending on factors such as the distance from the contaminated site and the perceived severity of the problem, including associated anti-social behaviours. The mere existence of contamination necessitates potentially substantial remediation costs, which directly diminish the land's development potential and attractiveness to investors, thus affecting its marketability. While successful remediation and the regeneration of brownfield sites are encouraged by spatial planning policies aiming for efficient land use and revitalisation, the initial presence of the burden and the uncertainty surrounding remediation costs and timelines represent significant market barriers.

Environmental considerations are increasingly integrated, albeit sometimes unsystematically, into spatial planning processes. Strategic documents such as Prague's Metropolitan Plan aim to manage development sustainably, concentrating investment in transformational areas such as brownfields and promoting resilience and climate adaptation. National policies also advocate for the efficient use of built-up areas and the revitalisation of abandoned sites, partly to reduce pressure

on agricultural land. Recent reforms to the public construction law emphasise tools such as economic instruments to incentivise development on brownfields over greenfield sites and advocate for planning competencies to reside at the appropriate governmental level, also encouraging inter-municipal cooperation where necessary. However, the effective integration of concepts such as ecosystem services directly into planning documents remains a challenge. Spatial planning coordinates land use, infrastructure development, and environmental protection, thereby shaping how and where real estate development occurs and influencing the market by designating areas for specific use while considering environmental constraints. The interplay between remediation policies, spatial planning goals, and real estate market dynamics is complex, requiring careful navigation by developers, investors, and policymakers.

10. Conclusions: persistent challenges and pathways forward

The Czech Republic's regulatory framework for addressing environmental remedial measures is undeniably characterised by significant legal fragmentation. While the 'polluter pays' principle serves as the ostensible foundation, its consistent and predictable application is considerably complicated by the existence of a multitude of specific sectoral laws operating in parallel, the striking practical non-utilisation of the potentially unifying Act on the Prevention of Environmental Damage, and the often ambiguous and inconsistently applied rules governing the transfer of liability, an issue particularly pronounced in the context of historical environmental burdens and of assets transferred during privatisation.

Administrative practice demonstrates heavy reliance on component-specific legislation, primarily enforced by the Czech Environmental Inspectorate and municipal authorities.[68] Although remedial measures are demonstrably imposed under these specific acts, the notably low frequency of appeals against such decisions raises pertinent questions regarding the uniformity of enforcement across jurisdictions and the actual pace and effectiveness of on-site remediation activities.

Consequently, judicial review plays a relatively limited role in shaping the application of remedial measures, largely due to the infrequency of challenges reaching the courts. Furthermore, the exceptional nature of granting suspensive effect to administrative complaints means this procedural mechanism does not present a systematic obstacle to enforcement.

For stakeholders within the real estate sector, this complex and fragmented system underscores the paramount importance of conducting thorough and specialised environmental due diligence prior to any transaction involving potentially

68 | On administrative measures in the context of the circular economy, see Vodička 2024.

affected properties. The potential presence of contamination and the associated remediation liabilities can significantly affect property valuation, marketability, and future development prospects. While public databases such as the SEKM exist to identify the known burdens, ensuring that potential buyers and investors can readily access, understand, and correctly interpret relevant environmental risk information remains a critical challenge. Moving towards a more coherent, transparent, and ultimately effective system for environmental remediation in the Czech Republic necessitates confronting this legislative fragmentation, potentially by clarifying the scope and enhancing the practical applicability of the Act on the Prevention of Environmental Damage.[69] Furthermore, achieving greater clarity and consistency in liability rules, particularly concerning succession and historical burdens, and improving the accessibility and integration of environmental risk data within both the property market and spatial planning frameworks are essential steps for progress.

69 | See Radvan 2022.

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VARIOUS TOPICS

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From Pixels to Policy to the Court: The Current Legal and Jurisdictional Landscape of the Use of Remote Sensing Data for Environmental Protection in the EU

Abstract

The paper analyses the legal framework for the collection and distribution of remote sensing data, particularly in the field of sustainable development and environmental protection at the European level. The research firstly focuses on the historical evolution of space law at the international, European, and national levels, starting from the 1970s. In parallel, environmental law has rapidly developed since the Stockholm Conference of 1972, with thousands of sources regulating aspects related to nature, the environment,

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and sustainable development. However, the effectiveness of environmental law remains a challenge due to technical difficulties, high costs, and a lack of awareness at all levels. To overcome these obstacles, remote sensing offers valuable information for environmental policies, from conception to implementation. Therefore, satellite observation is considered to analyse whether the data obtained through remote sensing can have a real impact on environmental protection, supporting this sometimes-flawed legislation. A legal framework was established with UN Resolution 41/65 in 1986, defining principles of cooperation and access to satellite data, particularly for natural disasters. Europe, through its institutions and policies, plays a key role in the development of environmental law and the promotion of new technologies to facilitate the application of these rules and the deployment of ambitious policies. A preliminary question is whether European institutions are the most suitable legislative and judicial level to ensure environmental compliance or if controls and decision-making at the local level are more effective, although this effectiveness is difficult to assess. Regarding the use of remote sensing, despite the growing availability of satellite data and a move towards an 'Open Data' system promoting sharing, use, and archiving of these data through a favourable European framework, legal and technical constraints hinder free use in all areas. Limitations may exist due to risks to privacy or intellectual property. Additionally, certain applications of satellite data remain underutilised due to prohibitions related to national security or diplomatic reasons. One of the main obstacles at the member state level of the European Union is the reluctance of legal bodies and the courts to accept satellite data as evidence, often due to a lack of understanding of the technology and concerns about data accuracy and confidentiality. Furthermore, cost and technical complexity issues limit the widespread adoption of these technologies. From a legal and academic perspective, it is interesting to compare the approaches of member states, in light of the different rules of civil, criminal, and administrative procedure, and to identify anomalies or barriers to the admissibility of evidence from remote sensing. In conclusion, data derived from remote sensing offers powerful tools for environmental protection, but their effective use requires international cooperation, robust legal frameworks, and increased stakeholder awareness. To maximise the impact of these technologies, it is essential to overcome legal and technical obstacles and encourage broader and more informed adoption of these innovative tools, harmonising the practices of member states.

Keywords: Remote Sensing Data, Environmental Law, Sustainable Development, Space Policy, Earth Observation, Data Admissibility

1. Introduction and methodology

The use of satellites for Earth Observation (EO) traces its origins in the Cold War, when the Soviet Union and the United States developed advanced space capabilities for reconnaissance missions and to monitor each other's military capabilities. Since the launch of Landsat in 1972, satellites have become important tools for sustainable development and environmental protection. Improvements in sensor technology have enabled countries to closely monitor the Earth's ozone

layer and track changes in ecological systems. Such capabilities help identify and proscribe harmful pollution practices, thus enhancing mitigation and adaptation efforts. However, given that EO capabilities continue to be essential for militaries worldwide, the use of remote sensing data is constrained in the name of national security.

While the UN Resolution 41/65 on the Principles Relating to Remote Sensing of the Earth from Outer Space—although a non-binding soft law instrument—encourages the free use of satellite data for environmental protection among states, in practice, the actual application of such unrestricted use of satellite data for environmental protection is frequently limited by legal and technical barriers.[9] At the international level, the International Court of Justice may not oppose the use of satellite data as evidence in cases of environmental law violations.[10] However, judges in European states have been hesitant to accept this type of evidence, and the admissibility of such data is often made on a case-by-case basis.

There are three reasons for such hesitancy. First, the *procedural rules* for using satellite data as evidence in court vary from country to country within the EU. Second, the *admissibility* of satellite data is often conditioned by compliance with legislation for protecting privacy or intellectual property. Third, countries continue to *doubt the reliability* of satellite data. The complexity of using satellite data as evidence for prosecuting violations of environmental law has been understudied in the existing literature.

This paper, therefore, will explore the regulatory frameworks governing the use and dissemination of remote sensing data under international law and within the European Union (EU). Then it delves into the legal concerns that limit how various actors can use remote sensing data to detect violations of international, European, national, and environmental laws. It specifically examines the legal frameworks of Germany, Austria, Italy, and the Netherlands to unpack the extent to which these laws either permit or prevent the use of satellite data for environmental protection.

The research adopts a multi-step and layered methodological approach. Initially, it undertakes a historical and descriptive review of the evolution of legal instruments in both environmental law and space law, aiming to contextualize the progressive intersection between these two fields. This first phase relies on a documentary and observational method, which allows for the identification and synthesis of key developments in international, regional and European legal frameworks.

In a second phase, the research applies a descriptive-analytical approach to selected European policies that explicitly associate remote sensing technologies with environmental protection. The goal is to highlight how space-based data is

9 | Gabrynowicz 2012, 181–185.
10 | ICJ Reports 1986, 582–583.

integrated into environmental monitoring and regulatory systems within the European Union.

Finally, the study employs an analogical reasoning method—not strictly a comparative legal analysis—to examine and confront specific legal cases or approaches adopted by different European countries. While this does not amount to a formal comparative methodology in the traditional sense, it allows for the identification of common patterns, divergences, and potential best practices in the use of remote sensing for environmental purposes across various national legal frameworks.

By studying these complexities closely, the paper addresses the possible need for comprehensive legislation and policy measures for environmental protection within the EU.

This research aims to explore the potential of remote sensing data in advancing environmental protection. It investigates whether such data can play a significant role, and if so, evaluates how it is currently applied, what challenges—both legal and technical—limit its effectiveness, and what improvements are needed. Ultimately, the study seeks to promote more strategic and informed use of remote sensing technologies, while encouraging greater consistency in how member states implement related practices.

2. Historical evolution of space technologies: from military to civil purposes

2.1. The evolution of Landsat

Remote sensing technology, which originated from early 20th-century aerial photography used primarily for military reconnaissance and mapping, has undergone a remarkable evolution over the past century. Initially, this technology was limited to capturing images from aircraft, serving as a critical tool for military operations and territorial mapping. The images obtained were monochromatic, and their interpretation required specialised skills to extract meaningful information about the terrain and objects on the ground.[11]

As technology advanced, the introduction of multispectral cameras and infrared sensors during World War II expanded the capabilities of aerial photography, allowing for the detection of features not visible to the naked eye. These advancements laid the groundwork for the transition from airborne to spaceborne remote sensing, marking a significant leap in the scope and scale of data collection. The launch of the first weather satellite, TIROS-1, in 1960 marked the beginning of the satellite remote sensing era. This milestone was quickly followed by deploying more sophisticated satellites designed to monitor Earth's weather patterns,

11 | NASA Landsat History n.d.

environmental conditions, and land use. The development of these satellites was initially driven by the Cold War, with a strong focus on military applications such as missile detection and intelligence gathering.[12]

Satellites equipped with sensors capable of capturing electromagnetic radiation across various spectral bands have since expanded their use beyond military applications to support a wide range of scientific and commercial purposes. These sensors collect data on reflected sunlight or emitted thermal energy from the Earth's surface and atmosphere, which is then transmitted to ground stations.[13] The data undergoes processing to create images that can be analysed to monitor environmental changes and manage natural resources. This ability to observe large-scale environmental phenomena with precision has made remote sensing indispensable in both scientific research and environmental stewardship.[14]

However, the potential of remote sensing for civilian applications soon became apparent. The launch of Landsat 1 in 1972 by NASA, as part of a joint effort with the U.S. Geological Survey (USGS), revolutionised the field by providing continuous, systematic coverage of the Earth's surface. This enabled scientists to monitor environmental changes, such as deforestation, urbanisation, and agricultural practices, on a global scale. The ability to capture data across multiple spectral bands allowed for more detailed analysis of Earth's surface, facilitating advancements in environmental science, agriculture, and natural resource management.[15]

As Cold War tensions began to subside, the focus of the Landsat program gradually shifted from its initial strategic objectives towards broader environmental monitoring and civilian applications. This transition was reflected in the technological advancements introduced with the launch of Landsat 4 and 5 in the 1980s. These satellites were equipped with the Thematic Mapper (TM) sensor, a significant upgrade that provided higher spatial resolution and the ability to capture data in seven spectral bands. The enhanced capabilities of the TM sensor allowed for more precise tracking of changes in land cover, vegetation healthiness, and water quality over time. One of the most notable applications of Landsat during this period was its role in the aftermath of the Chernobyl disaster in 1986. Landsat 5 played a crucial role in providing critical thermal imagery that helped confirm the severity of the incident. The satellite's ability to detect thermal anomalies in the surrounding area provided valuable information to scientists and authorities, demonstrating the practical and life-saving applications of remote sensing technology in disaster response and management.[16]

The post-Cold War era witnessed the continued evolution of the Landsat program, with the launch of Landsat 6, 7, 8, and 9. Each successive satellite

12 | Showstack 2022, 226–232.
13 | Goward et al. 2022, 357–358.
14 | Colwell 1984, 1305–1307.
15 | Williams, Goward & Arvidson 2006, 1171–1178.
16 | USGS n.d.

introduced new technological advancements, further expanding the scope and utility of the data collected. These missions enabled more comprehensive monitoring of Earth's changing climate, ecosystems, and land use patterns. The ability to observe and analyse such changes in near real-time became increasingly important for addressing global environmental challenges, from climate change to sustainable resource management.[17]

A key turning point in the Landsat program was the passage of the U.S. Land Remote Sensing Act of 1992. This legislation played a key role in ensuring the program's continuity by mandating that the U.S. government maintain a permanent global Landsat imaging archive. The act established a legal framework that guaranteed the ongoing collection, preservation, and distribution of high-quality Earth observation data. This stable foundation has been essential for long-term environmental monitoring, supporting a wide range of scientific research, policy-making, and commercial applications.[18] Prior to the passage of this legislation, the U.S. government attempted to privatise the program through the Land Remote-Sensing Commercialization Act of 1984, transferring operations to Earth Observation Satellite Company (EOSAT). However, this effort failed due to financial challenges, limited market demand, and national security concerns.

2.2. The Sentinel program

Parallel to the advancements made by the Landsat program, Europe developed its own remote sensing capabilities through the European Space Agency's (ESA) Copernicus initiative, which includes the Sentinel series of satellites. The program, including the Sentinel satellite missions, is governed by EU law, specifically Regulation (EU) No 377/2014. This regulation establishes the legal framework for the program and ensures free, full, and open access to Copernicus Sentinel data and service information for lawful uses.[19] The Sentinel satellite mission represented a significant leap forward in remote sensing, particularly in terms of technological sophistication and environmental monitoring capabilities.[20]

Sentinel-1, launched in 2014, marked the beginning of this new era. As a radar imaging satellite, Sentinel-1 offers all-weather, day-and-night observations, which are invaluable for monitoring natural disasters such as floods and earthquakes.[21] The program continued to expand with the launch of Sentinel-2 in 2015 and 2017, providing high-resolution optical imagery across 13 spectral bands. This capability is particularly useful for agricultural monitoring, forest cover analysis, and the management of water bodies and coastal areas. The frequent revisit

17 | NASA, Landsat History n.d.
18 | Williams, Goward, & Arvidson 2006, 1171–1178.
19 | Liang 2017, 181–185.
20 | ESA, The Sentinel Missions n.d.
21 | Nagler et al. 2015, 9371–9389.

time of Sentinel-2 satellites, every five days, allowed for the timely detection of environmental changes, making it an essential tool for effective environmental management.[22]

Sentinel-3, launched in 2016, focuses on ocean and land monitoring, while Sentinel-5P, launched in 2017, monitors atmospheric composition, providing data on air quality and ozone levels. These satellites contribute significantly to climate research, environmental protection, and public health by offering detailed and continuous observations of both land and atmospheric conditions. Sentinel-6, launched in 2020, further enhances the program's capabilities by measuring global sea-surface height, supporting climate studies and operational oceanography.[23]

2.3. Synergy between Landsat and Sentinel programs

The combined efforts of the Landsat and Sentinel programs have created a robust and complementary system for Earth Observation. The synergistic use of data from these programs enhances the accuracy and reliability of environmental monitoring. For instance, the high temporal resolution provided by Sentinel-2 complements the long-term historical data from Landsat, allowing for more effective tracking of environmental changes over time. This synergy is particularly valuable in applications such as tracking deforestation, monitoring urban sprawl, and managing natural resources, where precise and consistent data are critical.

The joint operation of the Landsat and Sentinel programs not only achieves technical synergy through their complementary Earth observation capabilities but also establishes a legal framework that promotes broad and open access to high-quality satellite data. Notably, the Sentinel program's data availability is backed by binding European Union legislation that mandates free, full, and open access within the EU. As a result, the shared open data policies of both programs have significantly democratized access to remote sensing information, making it widely available for public, scientific, and commercial use.[24]

This accessibility has not only spurred innovation and collaboration among scientists, policymakers, and environmental organisations but has also led to more informed decision-making and better environmental stewardship. The

22 | ESA, The Sentinel Missions n.d.

23 | Montenbruck, Steigenberger & Hugentobler 2021, 1235.

24 | The open data policy for Sentinel data is established under Regulation (EU) No 377/2014 of the European Parliament and of the Council, and further reinforced by the Copernicus Regulation (EU) 2019/696. Article 36 of the latter stipulates that the "data and information produced in the framework of Copernicus should be made available on a full, open and free-of-charge basis subject to appropriate conditions and limitations, in order to promote their use and sharing, and to strengthen European Earth observation markets"; Regarding Landsat data, the United States Geological Survey (USGS) formally adopted an open data policy in 2008, eliminating access fees. While not enacted through legislation, this policy is supported by the U.S. Open Data Policy (OMB Memorandum M-13-13) and relevant USGS directives.

detailed imagery and data collected by these American and European programs are increasingly being used to enforce environmental regulations, conduct impact assessments, and support legal actions against environmental violations.

Besides the technical perspective and comparisons with American examples, we should now focus on the European legal framework that enables the use of remote sensing data for environmental protection and enforcement against environmental crimes.

3. Legal framework and implications of remote sensing technology in environmental crimes

The rapid advancement of remote sensing technology and the increasing availability of Earth observation data have driven the need for a comprehensive legal framework to regulate their use and sharing. This framework began forming during the Cold War, focusing on both military and civilian applications. The United Nations (UN) has been instrumental in shaping international laws and guiding non-binding instruments governing remote sensing, starting with the 1967 Outer Space Treaty, which established that space activities should benefit all humankind. Building on this, the UN's Resolution 41/65 in 1986 emphasised the importance of sharing environmental data, especially during natural disasters, while respecting state sovereignty.

The Landsat program has been central to these legal discussions, particularly regarding issues of national sovereignty and data sharing. Early Landsat missions raised concerns about privacy and the use of satellite imagery without the consent of the observed countries. However, as the environmental benefits of remote sensing became clearer, there was a growing consensus on the need for international cooperation.[25]

Building on these early legal challenges, the framework governing remote sensing continues to evolve, especially in response to the increasing involvement of private companies and the commercialization of satellite data. This expansion necessitates regulations addressing intellectual property rights, data security, and the responsibilities of private entities in sharing data for public benefit. Moreover, the integration of emerging technologies, such as AI and machine learning, into remote sensing processes presents new legal and ethical challenges that must be addressed to ensure responsible and equitable use. As remote sensing capabilities grow, a robust and adaptive legal framework will be essential to balance national interests with global good.

25 | Williamson 2000, 233–244.

3.1. Legal foundations of environmental protection and introduction to environmental trials

Regardless of how fast our society develops and advances technologically, human dependence on the environment and natural resources has been constant since the dawn of history. In 2022, the United Nations General Assembly (UNGA) adopted a resolution (building upon a similar text adopted by the Human Rights Council in October 2021)[26] affirming the right of every individual to a healthy environment.[27] This decision underscores the intrinsic connection between human rights and environmental health, forcing states, international organisations, and business enterprises to secure and ensure a healthy environment for all.[28] Environmental crimes, however, are indiscriminately affecting all countries, posing significant threats to biodiversity, national security, and socio-economic development.[29] These crimes are defined as "illegal activities that harm the environment and are intended to benefit individuals, groups, or companies through the exploitation, damage, trade, or theft of natural resources. This includes, but is not limited to, serious crimes and transnational organised crimes."[30]

Recognizing that environmental crimes have such significant repercussions, a multi-level approach to protection is necessary, along with the successful prevention of harm requiring strict regulations. The necessity of protecting the environment was first recognized at the international level by the 1972 Stockholm Declaration[31] and later reinforced by the 1992 Rio Declaration on Environment and Development;[32] even though the above-mentioned declarations have marked a major step in the international recognition of the importance of preventing harmful interference with the environment, it is important to emphasize that they are non-binding international declarations. This means that, while they express political will and establish guiding principles, they are not legally enforceable in the same way as treaties or conventions.[33]

Environmental protection has also been integrated at European and regional levels, for example through the 1999 Treaty of Amsterdam, which mandates the integration of environmental protection into all EU sectoral policies to promote sustainable development,[34] and national legislation. Important to highlight in this context is the old Roman law principle *nulla poena sine lege* ('no penalty without a

26 | UN News 2021.
27 | UN News 2022.
28 | Ibid.
29 | Geneva Environment Network 2024.
30 | UNEP 2024.
31 | United Nations 1972.
32 | Ibid.
33 | Viñuales (ed.) 2015, 85–97.
34 | Treaty of Amsterdam 1997.

law'), which is fulfilled in a sense that environmental crimes are legally prohibited, consequently providing a legal basis for punishment.

Turning back to the European level, various initiatives are responsible for identifying, investigating, and prosecuting environmental offenders, including individuals and organisations.[35] These efforts address a range of environmental crimes, such as air and water pollution, hazardous waste violations, pesticide-related offences, and wildlife crimes. However, the role of law enforcement in environmental matters encompasses two primary functions: monitoring and sanctioning.[36]

- Monitoring involves overseeing compliance with environmental laws and ensuring adherence to regulations.[37]
- Sanctioning refers to the actions taken when violations are detected through monitoring, leading to appropriate enforcement measures.[38]

By combining these two aspects, law enforcement agencies aim to uphold environmental laws and mitigate the impact of environmental offences.

4. EU's remote sensing capabilities

In the early 80s, European countries gave the ESA the task of creating and running the first European remote sensing satellite, ERS-1, and then ERS-2[39]. Since then, and thanks to the combination of changing military and strategic environments and the increasing interest in satellite images and data, there is a growing international market for geo-spatial information and high-resolution commercial remote sensing[40]. Today, satellites operating at higher spatial resolutions can provide significantly more detailed information, and the most modern recent satellites are able to produce pictures with greater visibility, allowing us to observe objects like buildings, ships, and cars in a far more accurate way.[41] In order to promote long-term prosperity, improve security, and assist in the implementation of sustainable policies, remote sensing is essential. The competence of the EU in remote sensing and its application throughout Europe and its member states are examined in the section that follows.

35 | Dighe et al. 2012, 65–70.
36 | Billiet 2012, 322–328.
37 | Ibid.
38 | Ibid.
39 | European Space Agency Remote Sensing Data n.d.
40 | Institut Français d'Histoire de l'Espace, 2018.
41 | Purdy et al. 2010.

4.1. Use of remote sensing for enforcing environmental protection

The European Union has established significant competence in remote sensing which opens the door for environmental enforcement through a combination of policy frameworks, technological advancements, and institutional collaborations. A notable legal framework is the INSPIRE Directive (2007/2/EC), which aims to establish a comprehensive spatial data infrastructure across the European Union. This directive mandates the sharing of geospatial data across EU countries, facilitating better decision-making and fostering innovation. It answers the identified problems related to lack of availability, quality, organisation, accessibility, and sharing of spatial information common to many policies and activities across various levels of public authority in Europe.[42] INSPIRE has become a model in the world and a milestone for the implementation of transnational services.[43]

Furthermore, one must put an emphasis on EU's flagship, the Copernicus Programme which provides data and information to all users on a full open and free-of-charge basis allowing for the development of many downstream services.[44] In order to improve access to big data from space and maximise benefits to the different user communities, the EU has invested in developing advanced data processing and distribution systems. The Copernicus Data and Information Access Services (DIAS)[45] platform allows users to access and process Copernicus data easily. This accessibility ensures that a wide range of stakeholders, from policymakers to scientists and private sector actors, can leverage remote sensing data for various applications such as environmental enforcement. The success of DIAS strongly relies on the relationships between Copernicus actors such as Member states and other participating countries, which thus makes it possible to connect EO to many domains.[46]

Another essential component of the EU's remote sensing and space capabilities is the Galileo system, the EU's Global Navigation Satellite System (GNSS), designed to provide highly accurate global positioning services. The system is operated by the European GNSS Agency and ESA, with programme oversight by the European Commission (EC) and political oversight by the European Council and the European Parliament. Unlike the US GPS or Russia's GLONASS, Galileo is under civilian control, ensuring independence and strategic autonomy in Europe. Galileo significantly enhances the EU's remote sensing competence by providing precise positioning data that complements the observational data from Copernicus.[47]

42 | United Nations Statistics Division n.d.
43 | Guo, Goodchild & Annoni 2020, 676.
44 | Ibid., 654–655.
45 | Copernicus, Accès aux données – DIAS. n.d.
46 | Guo, Goodchild & Annoni 2020, 660.
47 | Ibid., 676.

The application of remote sensing for environmental enforcement in the EU takes different approaches. The use of remote sensing can act as an environmental compliance tool and environmental monitoring. The Copernicus Programme provides critical data for tracking changes in land use, deforestation,[48] desertification, and biodiversity. Furthermore, it has a key role in monitoring climate change as satellites measure key indicators such as sea surface temperatures, atmospheric composition, and ice sheet dynamics. This data helps scientists understand climate trends and supports the EU's commitments under international agreements like the Paris Agreement.

In 2023, the European Union Agency for the Space Programme (EUSPA) issued its report on the EU Space Programme for Green Transformation with an emphasis given to the business benefit from a myriad of possible applications for EU space data, which translates into not only greener practices, but also cost reduction and increased efficiency.[49] The EUSPA highlights the benefits and usefulness of using space data especially in a path to decarbonisation of energy resources. Such businesses can be significantly supported by Copernicus and Galileo data. The EUSPA's report puts an emphasis on how remote sensing technology can further facilitate collaboration between companies, governments, and other stakeholders to address pressing environmental challenges.

EO and GNSS are becoming more efficient and more applied as tools to provide a better understanding of the effects of climate change, extreme weather conditions and human activities' impacts. For instance, remote sensing data can be an extremely useful instrument in terms of intense socio-political phenomena on Cultural Heritage monuments, which represent a long tradition in Europe. In 2019, a four-year EU-funded initiative HYPERION supported sustainable maintenance and mitigation strategies for damaged sites.[50] In Venice, the vulnerability maps produced by HYPERION proved to be essential in helping local authorities in assessing meteorological threats and gathering useful information for more effective methods of restoration and safeguarding historic and cultural sites against environmental and human hazards.[51]

Remote sensing data can also serve in policy enforcement and regulatory monitoring. It is the case for the European agricultural sector where satellites are used to monitor farm subsidies payments.[52] Most EU countries use the technology

48 | Purdy et al. 2010.
49 | EU Agency for Space Programme 2023.
50 | European Union Agency for the Space Programme 2024.
51 | Hyperion Project EU 2019.
52 | According to Carleer et al. 2005 "Launched in 1962, the European Union's Common Agricultural Policy (CAP) is a partnership between agriculture and society, as well as between Europe and its farmers. Its objectives are to:
- Support farmers and improve agricultural productivity by ensuring a stable supply of affordable food,
- Guarantee reasonable support for EU farmers to combat climate change and promote sustainable resource management,

to identify crops, to determine correct areas of agricultural parcels and check if claimants are compliant regarding environmental conditions for subsidies eligibility. EU Member States use satellite-based monitoring systems for inspection and enforcement of fisheries under community legislation.[53]

In the framework of the Common Agricultural Policy, farmers became eligible for subsidies as long as they maintained their land in good condition and complied with standards on public, plant, and animal health and welfare.[54] Payment eligibility is the responsibility of the EU member states, for which each country needs an Integrated Administration and Control System, including a Land Parcel Identification System (LPIS). The development, update, and revision of the LPIS, which can be based on existing maps and documents from national land registers, is increasingly based on high-resolution aerial photography and satellite imagery.[55]

In the Netherlands, remote sensing technology plays a crucial role in facilitating a direct financial intervention for beach nourishment. This process is designed to strengthen coastal protection by replenishing dunes and beaches that have been eroded. Airborne laser altimetry measures the elevation of the beach's dry areas to determine the necessary sand volume, while sonar surveys the underwater sections. The data collected guides the contractors responsible for the beach nourishment. The central government, specifically the Ministry of Public Works, oversees the maintenance of coastal defence lines, utilising a financial instrument to support its objective of enhancing coastal defence through beach nourishment. EO significantly enhances the effectiveness and efficiency of this policy by accurately assessing the required sand volume.[56]

Similarly, remote sensing can also be used for monitoring offenders, since it can monitor individual sites or areas where environmental offences have been known to occur historically, hence finding its strength as being used for historical evidence. Indeed, the systematic archiving of satellite images can – in theory – provide regulators with a relatively impartial snapshot of any location at any given time. In 2006, a prosecution for an offence linked to an illegal landfill site occurred in the UK, and the Environment Agency managed to time the offence between May 2005 and January 2006 thanks to the available images, which is longer than

• Preserve rural areas and landscapes across the EU,
• Maintain rural economies by promoting jobs in agriculture, agri-food industries, and related sectors. The CAP is financed by two funds: the European Agricultural Guarantee Fund (EAGF), which provides direct economic support to market players, and the European Agricultural Fund for Rural Development (EAFRD), which finances rural development. The EU budget for 2021 allocated a total of €168.5 billion in commitment appropriations. In 2021, the CAP accounted for 33.1% of the EU-27 budget (€55.71 billion)" and European Parliament The financing of the CAP n.d.

53 | Purdy et al. 2010.

54 | The European Union's Common Agricultural Policy is based on a series of regulatory instruments, the most important of which is Regulation (EU) 1305/2013 on rural development support through the European Agricultural Fund for Rural Development (EAFRD).

55 | De Leeuw, van der Meer & de Wit 2010.

56 | Ibid.

what was stated during the prosecution.[57] This highlights the practical function of imagery archives for prosecuting authorities. If they had access to such imagery, then they might have used this in court to press for a harsher and more equitable sentence.[58]

4.2. Implementation challenges and future directions

Europe has established significant competence in remote sensing through a combination of policy frameworks, technological advancements, and institutional collaborations. Despite extensive use of remote sensing, the actual application of EO in terms of environmental compliance is currently more theoretical than applied. Its use in this field has been limited to date, partly because its development has been technology-led, with a noticeable lack of legal co-operation and input on technology design and applications. Because those working in the environmental law sector have little to no awareness of the capabilities of these new EO technologies, their application has been inadequate in comparison to their potential. Before they can be utilised in an environmental compliance context, better understanding and communication is needed regarding whether they can achieve desired enforcement and monitoring outcomes.[59]

5. Constraints of using remote sensing data for enforcing environmental crimes

A number of technical and legislative obstacles still stand in the way of Europe's efforts to deploy and make use of remote sensing as a strategic tool for environmental tutelage. These obstacles prevent remote sensing technologies from reaching their full potential and have a direct effect on data accessibility, integration, and development of a coherent regulatory framework. In order to fully recognise the advantages of remote sensing for environmentally sustainable management, it is imperative that these challenges be addressed.

5.1. Technical constraints

The use of remote sensing data in legal applications, such as enforcing environmental crimes, carries with it not only legal constraints but technical challenges as well. To accurately understand the information present in the data, one must also understand how the data was processed, including calibration steps, what the

57 | Purdy et al. 2017.
58 | Purdy et al. 2010.
59 | Ibid.

chain of custody of the data is, and whether there is any room for manipulation in this process, as well as how it is presented and interpreted in legal proceedings. Additionally, one must also take into account the differences in the systems used to take data, such as different levels of resolution, as well as the differences in the conditions under which the data was taken (e.g. different levels of cloud cover). In order to facilitate the use of remote sensing data in enforcing environmental crimes, we therefore recommend establishing a baseline set of requirements and guidelines for the system resolution as well as the data quality, calibration and security.

5.2. Calibration

The calibration of the data is an important preprocessing step that is needed to ensure that the data reflects the physical reality. Inaccuracies in the data can stem from both sensor effects, such as residual charges left behind in pixels causing amplification of the signal in those pixels, or varying throughput of different filters. Physical effects such as atmospheric scattering and absorption, the presence of haze, or even the moisture content of soil can also affect the measurements taken by an EO satellite. These effects must be calibrated out. There are two types of calibration that are needed for imagery from Earth observation satellites:

- Geometric calibration: This involves matching pixels in the imagery to coordinate locations on Earth.[60]
- Radiometric calibration: This involved converting sensor units, e.g. digital numbers or DN, to physical units to enable reliable quantitative measurements from imagery. This calibration could be done absolutely using reflectance measurements taken from objects on the ground as the truth.[61] However, this is costly and not possible to do when using archival data. Instead, the common approach is to adopt relative corrections based on a reference image.[62] It is unlikely that the relative radiometric calibration will be consistent across different EO data providers.

5.3. Other data processing steps

In addition to calibration, a number of other steps are needed to process the raw data into an image. Generally, the raw data has to be transferred to a receiving and processing station. Some applications, such as providing imagery to Arctic ships and thermal infrared imagery to forest fire fighters, employ real-time processing of the data, however the resulting images are generally low resolution.

60 | Jacobsen 1998; Mohr & Madsen 2001; Wang et al. 2014.
61 | Slater et al. 1987; Thome et al. 1997.
62 | Yang & Lo 2000.

In general, image processing can include image enhancement, such as contrast stretching and spatial filtering,[63] as well as image transformations which manipulate multiple bands of data to generate new images which highlight particular features better than the original images.[64] Additionally, image classification and analysis can involve the classification and analysis of the image to identify homogeneous groups of pixels which represent various features of interest.[65] In order to use remote sensing data in a legal setting, it is essential that these data processing techniques and their effect on the interpretation of the data are well understood.

5.4. Chain of custody

Data from remote sensing systems moves through a chain of custody, where a number of different people and systems handle the data between its collection by a satellite and its presentation in a courtroom. Given increasing capabilities to alter images and generate deepfakes, it is essential that a traceable and secure chain of custody is in place to ensure the reliability of the data. Aspects of creating such a secure system could include secure electronic records of the data processing steps, and the systems and individuals involved, as well as cryptographic and encryption technologies to strengthen e-signature, timestamp and file authentication.[66]

5.5. Presentation and interpretation in legal proceedings

In addition to the data processing steps described above, when remote sensing images are presented in legal proceedings, the manner in which they are presented might change the information content and interpretation, e.g. if the images are printed out, their resolution could be reduced. Moreover, the complex nature of remote sensing information often requires the testimony of an expert witness to establish its reliability, accuracy, and to interpret it as intelligible evidence. This involves both providing input on the data collection and processing, as well as the interpretation of the processed data. Such reliance on an expert witness might bias the proceedings due to differences in each party's resources and ability to hire prominent experts, and the experts themselves may experience confirmation bias when interpreting the images, based on their side's desired outcome of the proceedings.[67]

63 | Deekshatulu 1983.
64 | Natural Resources Canada 2008.
65 | Ibid.
66 | Kwok 2024.
67 | Lins 1979.

5.6. Inconsistency of data

Not only do the data processing, presentation and interpretation steps described above result in potential inconsistencies, but the data collection process itself might lead to inconsistent data quality across remote sensing systems, and even temporal variations for a single system. The resolution achieved by remote sensing systems, including spatial, radiometric, spectral and temporal resolution, can vary significantly across systems.[68] Spatial resolution is the area on Earth's surface represented by each digital pixel in the image, while radiometric resolution refers to the amount of information in each pixel, i.e. how many digital values are available to store information. Spectral resolution is defined by the capacity of the system to distinguish wavelengths, i.e. have narrow bands, while temporal resolution refers to the frequency with which a satellite returns to the same observation area, and is determined by the satellite's orbit.

These properties vary greatly from satellite to satellite, resulting in large differences in the data quality (e.g. some systems may provide high spatial resolution, but only a few wavelength bands, while others might have hundreds of bands, but low spatial resolution). In fact, countries may also impose limits on the resolution of remote sensing systems. For example, until 2023, the United States did not allow the commercial sales of imagery with a resolution better than 25 cm.[69] Additionally, even for a single remote sensing satellite, varying conditions can impact the data quality, even at constant resolution. For example, increased cloud cover might lead to worse data quality.

These variations in data quality can complicate the process of using remote sensing data in legal proceedings, as there is no guidance for the minimal acceptable data quality, yet poor-quality data can be difficult to understand and interpret correctly.

6. Legal constraints on using remote sensing satellites for environmental purposes

Owing to the inimitable advancements in technology, the collection, organisation, storage, and distribution of earth observation information, decision making concerning environmental protection has been revolutionised. Satellite remote sensing data, supplemented by geographic information systems (GIS), work as formidable tools to resolve environmental and legal problems. Images processed from satellite-based data not only serve as pieces of evidence, but also simplify

68 | Earth Science Data Systems 2019.
69 | Hitchens 2023.

complex datasets of information. With this, it becomes imperative to discern the shortcomings it presents in a legal aspect.

6.1. Data accuracy and authenticity

Anything produced as evidence in a court of law is deemed to be true and accurate. However, the technical nature of satellite data exposes it to intentional and unintentional inaccuracies. Digital imagery basically relies on the pictorial representation of binary codes.[70] Therefore, images derived from satellite data involve a certain degree of subjectivity, as the data that is transmitted to the ground stations on Earth is in a digital format and requires manual operations to create recognisable imagery. In this process, assumptions made by data processors and interpreters are inexorable, resulting in the imagery being manipulated in intentional and unintentional ways. Thus, when there are no definitive legal guidelines for ensuring authentic data processing stages, the assessment of the overall data becomes complex and inconsistent. For instance, in a case regarding the land boundary between Cameroon and Nigeria, satellite imagery that was used led to confusion owing to the conflicting interpretations of the imagery and did not ultimately prove either party's point.[71] This underscores the significance of agreeing on a unanimous standard for accessing the accurate interpretation of imagery.

6.2. Issues with liability

Although issues surrounding accuracy and authenticity can get better with technological advancements and framing objective guidelines, the issues surrounding liability remain relatively unexplored. The UN Remote Sensing Principles – the sole non-legally binding instrument dealing with remote sensing – only addresses matters concerning data gathering and dissemination, and does not address matters relating to the supply, use and consequences of the data application. The principles do not outline any liability for the end-users or third parties that use the data in an abusive manner. Damages that could arise from the misinterpretation/manipulation of the data are not considered. For instance, in times of natural disasters if aid workers rely on the satellite imagery providing information regarding damage assessments in an area that is wrongly interpreted, there is no clear provision on how a claim for liability could be imposed on the data suppliers and analysts. In these cases, users are also less reliant on such data in critical times, and suppliers are also unequipped for liability risks and unanticipated litigation charges.

70 | Purdy 2006.
71 | Ito 2011.

Presently, if disputes regarding the use and application of data do occur, they could be looked through the lens of contractual and tort law, albeit varying in different jurisdictions. Since the supply of data is categorically administered by contracts, the issue of contractual liabilities plays a significant role. In most of the contracts regarding the distribution and use of data, the data generators include provisions that set aside liability for damages, under the terms and conditions of supplying data. Ergo, the remedies that are available to data users are severely limited. For instance, data generators such as Spot Image mandate that they will not be responsible for the supply of 'faulty products' or for the 'damages arising out of or inability to use the product.'[72] Although different entities provide different liability disclaimers, the cardinal principle is the fact that data suppliers always waive off liability associated with the data that is provided.[73] Similarly, when working on GNSS as well, contractual and third-party liability are the only methods for recourse. For a long time owing to the military nature of most of the GNSS like the GPS and GLONASS, responsibility for any errors was not a major cause of concern. Taking into account the civil usage of GPS, as open signals are offered free-of-charge, the US government denies any liability for the performance of its signals or products. Interpreting the term 'contract' in the widest sense possible, the very infeasibility for the data supplier to supervise who receives and uses the product negates the existence of a contract.[74]

Contrary to this, when asserting non-contractual liability, things are very different. Non-contractual or third-party liability, similar to tort liability, could be asserted when the damage occurs outside of the contractual relationship. Simply put, liability is based on the fact that one party is the cause of the damage, which is sustained by another party.[75] When claiming this sort of a liability, circumventing the rule of sovereign immunity, which renders any claims against the US government inadmissible, would be key. While there are exceptions to this rule, owing to the global usage of the GPS, the jurisdictional issue of non-US citizens claiming damages in a US court would persist.[76] However, the situation surrounding the European Galileo system has become distinct since it was launched. Galileo intended to offer Commercial Services (CS) that rely on fees and are based on a purely contractual relationship between the GNSS operator, the data providers and the end users.[77] The owner of the Galileo system, European Union, and the provider, the GNSS Agency (GSA) hold responsibility on contractual and non-contractual basis under the Treaty on the Functioning of the European Union (TFEU).[78] Thus,

72 | Spot Image 2007.
73 | Atsuyo 2011.
74 | Von Der Dunk 2004, 129.
75 | Ibid.
76 | Epstein 1995, 262–268.
77 | Baumann 2015.
78 | Ibid.

end users have the right to seek compensation from several stakeholders that are involved in the GNSS system. However, even under this, contractual liability does not extend beyond European states. Thus, if an entity in India suffers damage owing to the wrong signals from Galileo, they lack the contractual right to recourse as that of their European counterparts. This analysis of the GNSS services makes it clear that the intention of data providers is to deny liability in cases of unlimited beneficiaries, and even in cases of cost-based services there is no specific regime that exists to protect the rights of third parties outside contractual relations, categorically for foreign claimants. Ultimately, in cases of liability concerning satellite-based data, including but not limited to navigation services, potential claims for damages are complicated owing to the number of actors involved and overlapping supply chain, the primary contractual and non-contractual obligations, multiple jurisdictional complications and the competencies of the judiciary.

6.3. Intellectual property right issues

The UN Principles on Remote Sensing, while ensuring accessibility to data on a non-discriminatory basis, do not address IPR issues surrounding the data. Opposed to this, states have afforded IP protection to their data, keeping in mind their national interests and furthering commercialisation. In this regard, under the application of IP rights to satellite data, requires an understanding of the differentiation between primary (raw) data, processed data and analysed data. Raw data is essentially all the signals that are picked up by the sensors on the satellite and are delivered to Earth by telemetry.[79] Processed data, on the other hand, is data that is a product of data handling operations and involves a degree of creativity. Copyrights for remote sensing data are governed under the Berne Convention on Copyrights.[80] Since raw data is merely a representation produced by a machine, it is not granted protection under the Convention. Conversely, since processed and analysed data is a value-added product, it falls under the Convention and is afforded IP protection. In this case, since this type of data is subject to IP regulation, ensuring its non-discriminatory access as mentioned under the UN Principles, becomes incompatible.

Simply put, depending on the characteristics of the data, it could be protected under the law, which varies in different jurisdictions. For instance, under the domestic law in the US, raw data could be available on a non-discriminatory basis, but processed data is subject to copyright, in line with the Berne Convention. Similarly, in the European Union under the Directive 96/9/EC, protection would be granted to sui generis rights.[81] As per the European Model, IPR protection can be

79 | Gummadi et al. 2022, 13–28.
80 | Berne Convention for the Protection of Literary and Artistic Works 1971.
81 | Directive 96/9/EC on the legal protection of databases 1996, 20–28.

granted to both raw, and processed data, unlike in the US. The European derivative can thus only be enforced in Europe, and to its nationals.[82] This copyright protection permitted to processed data fuels the debate regarding commercialisation of data, as opposed to non-discriminatory and equal access to data that the Principles promote. Moreover, these inconsistencies in practice in different jurisdictions is problematic to the international nature of data production and distribution and thus furthers the need for a common regime that deals with IPR protection of remote sensing data.

6.4. National restrictions on satellite data

While the Landsat satellite paved the way for commercial remote sensing satellites, the weak resolution of the imagery in the early decades meant that national security apprehensions were very low. Following this, although the 1986 UN Resolution attempted to balance the rights of the sensed and sensing states, individual nations put forth their own domestic policies, notwithstanding the discordance with the UN Resolution[83]. Specifically, the use of commercial imagery during the 1991 Gulf War, highlighted the susceptibility of such data for furthering military and national security objectives. Owing to these security concerns, nations restricted the sale of such data, if national interests were affected.[84] For instance, the US has devised this policy of 'shutter control', wherein in periods when national security or foreign policies could be compromised, data collection and distribution may be restricted.

Although shutter control has never been implemented as a legitimate policy directive, the US government has put it into effect when required. Following 9/11, the government bought all exclusive rights to the high-resolution images of Afghanistan available in the US market. Through this they ensured that it would be impossible for any other actor to get hold of the commercial US imagery used to surveil the country.[85] Similarly, the Kyl-Bingaman Amendment too prohibits US-based companies from releasing high-resolution images of Israel and the Occupied Territories.[86] In effect, for more than two decades, the resolution limit was 2 metres, hence no US company could sell data with resolution less than the prescribed 2 mts. However, as accessibility to technology improved, and US companies straggled behind their competitors, the policy was ultimately amended. In 2020, the resolution limits were dropped from 2 metres to 40 metres. Thus, while many countries may still impose restrictions based on national security, the

82 | Ibid.
83 | Gabrynowicz 2015, 88–188.
84 | Bhalla 2014, 98–115.
85 | Kang 2024.
86 | U.S. Department of Commerce n.d.

commercialisation of remote sensing data has compelled governments to loosen export control measures or lag behind in the race.

In addition to these restrictions owing to national security concerns, nations may also impose restrictions in tandem with their domestic law protecting privacy rights of their citizens. Typically, while nations regulate privacy rights, it leads to inconsistent and varied policies to regulate satellite data. For instance, in the European context, the General Data Protection Regulation (GDPR) becomes relevant when considering geolocation data by navigation satellite services. Under Article 4(1) of the GDPR, location data is stated as a factor through which a person could be identified directly or indirectly, thus considered an 'identifier' of personal data.[87] Notwithstanding this, several provisions of the GDPR deal with processing of personal data in the context of satellite data, including obligations of the data processors and controllers, the rights of data subjects, and the transfer and protection of data.[88] Although the GDPR provisions deal with personal data protection matters, the legislation is regional in scope and does not address issues specific to satellite data.

7. Analysis of legal cases

In most cases, environmental offences are frequently addressed through informal measures, such as warnings, while the more severe violations may necessitate more serious, formal sanctions. The concept of *ius puniendi* (right to punish) introduces a dual-track approach that operates through criminal and administrative penalties to enforce environmental laws more effectively,[89] while also highlighting the complementary nature of these enforcement mechanisms. Sanctions can be further categorised into punitive sanctions, which aim to penalise offenders, and remedial sanctions, which focus on rectifying environmental damage and preventing future harm.[90]

Administrative sanctioning – similar to the compensation mechanism under civil law – is primarily a monetary expression of social disapproval[91] which operates through various administrative fines designed to be broadly applicable, ensuring proportionate punishment for breaches of environmental law and conservation of nature.[92] Factors such as nature, severity, scope, and consequences of non-compliance are taken into account to determine appropriate penalties.[93]

87 | Bu-Pasha et al. 2016, 312.
88 | Ibid., 52–58.
89 | Billiet, 2012.
90 | Ibid.
91 | Ibid.
92 | Ibid.
93 | Ibid.

Criminal penalties, on the other hand, are responsible for ensuring the prosecution of the most serious offences in environmental health and nature conservation, dealing with more severe violations of environmental law for which the consequences are stricter, including imprisonment. It is worth noting that while European environmental protection is mainly rooted in national legislation, "which predominantly uses the administrative enforcement track for environmental crimes", the EU realised that Member States, in some cases, cannot provide effective protection of the environment through administrative sanctions alone. Consequently, at the European level, the Eco-Crime Directive of 2008 aims at supplementing the existing administrative sanction system with criminal law penalties to strengthen compliance with environmental protection laws.[94]

The Directive underlines that Member States must criminalise the most serious infringements of rules within their criminal law system, requiring liability for both natural and legal persons. However, the phrase *nulla poena sine iudicio* addresses the idea of no penalty without a trial or no punishment without judgement. Indeed, the fundamental right to a proper administration of justice outlines a set of guarantees applied specifically to criminal proceedings.[95] The use of satellite images as evidence in environmental procedures is becoming more important in criminal and civil proceedings, as certain demands must align with the requirements mandated in judicial courts.[96]

7.1. Germany

There is no specific codification of EO as evidence in Germany. Therefore, the general laws regarding the use of evidence apply. The German Code of Civil Procedure (ZPO) and the German Code of Criminal Procedure (StPO) foresee several ways of presenting evidence: judicial inspection/visual inspection, witness evidence, expert opinion, documents, and interrogation of parties. Under German law, EO evidence can be considered analogous to a photograph.[97] As such, it falls under the evidence option of 'visual inspection' or 'judicial inspection'. The use of satellite imagery as evidence, however, is limited due to reasons such as privacy concerns[98] and the fact that EO data are only snapshots and therefore may not be up to date, and hence invalid.[99] For the latter case, the trial court may also order that one or more experts should be consulted during the inspection (§ 372 para. 1 ZPO).

94 | Directive 2008/99/EC of the European Parliament and of the Council 2008.
95 | EU Charter of Fundamental Rights, Title VI on Justice Article 47.
96 | Billiet 2012.
97 | Sa'id Mosteshar 2013, 155.
98 | See the elaborations of the court on a case involving pictures taken from the air in BVerfG, Beschl. v. 02. Mai 2006, 1 BvR 507/01, NJW 2006, 2836, 2837.
99 | VG Sigmaringen (5. Kammer), Decision of 27.03.2020 – 5 K 3036/19.

German jurisprudence makes use of satellite imagery or EO evidence in several instances. In most cases in Germany, the judgements refer in a general manner to 'satellite images'. However, when looking at several judgments that consider satellite images, the source of most of the satellite images used as evidence in proceedings is provided by Google Maps and Google Earth.

As such, the classification of EO data as evidence was examined by the Administration Court of Regensburg in 1996.[100] The court relied on a written expert opinion evaluating a satellite image from the Landsat Thematic Mapper (TM). It ruled that satellite images are not documents (private records), but visual evidence. In 2021, the Higher Regional Court (OLG) Düsseldorf classified Google Maps and Google Earth images as *general knowledge evidence*. Specifically, it stated that aerial photographs such as Google Maps or Google Earth are generally accessible on the internet and hence can be regarded as commonly known facts. As such, they would be open to the appellate court's cognisance without the need for them to be set out in the judgement.[101]

EO has been used as evidence in cases involving a wide range of issues. They are used to determine the location of buildings, landmarks, crime scenes, and much more. As courts in Germany regularly rely on EO, it can be seen that courts recognise such information as part of the overall evidence. In its decision of 05.01.2021, the Higher Regional Court Düsseldorf used images provided by Google Maps and Google Earth to assess the details of the scene in order to determine the plaintiff's infringement of traffic regulations.[102] Subject of the judgement of 03.07.2010 of the Regional Court of Neuruppin was the conviction of a Berlin police officer for manslaughter by close range shooting of a criminal wanted for arrest. In its judgement, the Court used satellite images to identify the crime scene and determine whether the location was a public place where many people were passing.[103] Apart from identifying crime scenes, EO data as evidence plays a role in the determination of road layouts, building permits, asylum procedures or planning and land use.[104] A case in which satellite images were dismissed as evidence regarding the Judgement of 16.11.2005 of Administrative Court Minden.[105] Here, satellite images which could have provided information on the size of certain land areas were deemed inaccurate and dismissed as evidence.

100 | VG Regensburg (Administrative Court of the City of Regensburg, Germany) Final Decision of 25/4/1996 (RO 7 K 94.1846 at 7) (unpublished).
101 | OLG Düsseldorf, Decision of 5.1.2021 – IV-2 RBs 191/20.
102 | OLG Düsseldorf, Beschluss vom 5.2.2021 – 2 RBs 191/20.
103 | Neuruppin Regional Court, judgement of 03.07.2010 – 11 Ks 321 Js 2/09.
104 | See e.g. VG Schleswig (2. Kammer), Decision of 10.12.2020 – 2 B 50/20; KG Berlin, 12. Zivilsenat, Decision of 28/05/2009, 12 U 43/09; VG Hannover (12. Kammer), Beschluss vom 09.02.2023 – 12 B 4795/22; OLG Koblenz (1. Strafsenat), Urteil vom 24.02.2021 – 1 StE 3/21; Bundesverwaltungsgericht (Federal Administrative Court), Decision of 2 December 2008, BVerwG 4BN14.08; Verwaltungsgericht Ansbach, 9. Kammer, Judgment of 11/06/2008, AN 9 K 07.02197.
105 | VG Minden, 3. Kammer, Judgment of 16/11/2005, 3K 2986/03; reported in AUR 2006, 433–437.

Satellite images have, however, also been used regarding cases surrounding environmental changes and insights in Germany. In 2023, the Administrative Court Munich dealt with a case on the possibilities of remedying errors in the event of disregard of the concentration effect under the immission control law for private access routes to wind turbines requiring planning permission. Here, the court regarded satellite images brought forward by the plaintiff who intended to prove that an area was deforested, which was not permitted in full either by the authorisation or by a supplementary clearance permit and therefore unlawful.[106] In 2018, a case before the Administrative Court Gelsenkirchen involved an air quality plan. The court used publicly available satellite images on Google Maps to verify the possibility of widespread pollution with nitrogen dioxide.[107] For that, it used Google Maps to identify heavily used roads with high traffic volumes and regard the classification of the same on the platform in the color red as further indication that the roads are heavily used. In a different case involving the construction and operation of a dairy cattle barn for up to 1.000 cows and 80 calves by an environmental association, the court rejected satellite image analyses by LANDSAT from the years 2009 and 2010 as evidence.[108] According to the court, the quality of the satellite images was not sufficient, and that the analysis did not cover enough and was considered as too old. It was considered that the analyses were only snapshots, and that recorded data could be subject to major changes and could hence be not up to date and invalid.

7.2. Austria

Similar to Germany, the possible methods to bring forward evidence in court proceedings is governed by the Austrian Code of Civil Procedure (ZPO) and Austrian Code of Criminal Procedure (StPO). The possible modes to present evidence are judicial inspection/visual inspection, witness evidence, expert opinion, documents, and interrogation of parties. In Austria, the use of EO data as evidence is also not codified in its laws but can, just like elaborated in Germany above, be classified as falling under the evidence of visual inspection.

In Austria, the court decisions using satellite imagery in their decisions refer in a general manner to 'satellite images' or Google Maps and Google Earth, without providing the source or kind of EO information used. Nevertheless, by referring to EO information, the courts also present a general acceptance of EO information being used as evidence in court proceedings. In court proceedings, EO images, among other things, prove crime scenes, locations of streets, buildings, towns, airports, animal habitats, and the exact courses of rivers. EO data from satellites,

106 | VGH Munich (22. Senat), Decision of 07.02.2023 – 22 CS 22.1908.
107 | VG Gelsenkirchen (8. Kammer), Decision of 15.11.2018 – 8 K 5068/15.
108 | VG Sigmaringen (5. Kammer), Decision of 27.03.2020 – 5 K 3036/19.

however, has also been used in court proceedings to prove certain environmental changes with regards to weather. In its case of 2002, the UVS Lower Austria considered satellite images when examining visibility on the road during fog.[109] It decided, however, that smaller fields of fog could not be evaluated with satellite images and also determined that visibility was subjective. In a different judgement, the Austrian Administrative Court dealt with the determination of hunting grounds.[110] It relied quite extensively on the use of satellite images as evidence, specifically considering certain landmarks, vegetation, water level and animal use of an area where the plaintiff wanted to conduct hunting.

7.3. Netherlands

In the Netherlands, environmental regulation is primarily administrative with no specialised environmental tribunal. Exceptions exist where administrative decisions intersect with other areas, affecting district administrative procedures.[111] Administrators have the authority to sanction environmental violations. Decision-making impacts are typically confined to involved parties and do not extend broadly.[112]

Regarding the admissibility of evidence derived from satellite data, no rule explicitly prohibits their use in Dutch administrative or civil courts. On the contrary, the Court has noted that remote sensing is a common and accepted practice within the European Union,[113] and therefore acceptable in the Netherlands.

In courts, remote sensing data are comparable to radiographs or DNA graphics, requiring expert interpretation. The court cannot independently judge the technical aspects without expert input. This practice ensures that technical determinations are accurate and reliable.[114]

109 | UVS, Senat-MI-01-2048, 05.11.2002.
110 | VWGH, 2012/03/0082, 27.11.2014, L65003 Hunting Wild Lower Austria.
111 | The OECD Environment Programme The Environmental performances review of the Netherlands n.d.
112 | For the legal system, visit: http://www.rechtspraak.nl/English/Judicial-System/Pages/default.aspx.
113 | This recognition is indirectly based on Article 7 of Regulation (EC) No. 3508/92 (Council Regulation establishing an integrated administration and control system for certain Community aid schemes) in connection with Regulation (EC) No. 1036/1999 (Corrigendum to Council Regulation (EC) No. 1036/1999 of 17 May 1999 amending Regulation (EEC) No. 3508/92 establishing an integrated administration and control system for certain Community aid schemes, concerning the deadlines for submitting aid applications under the compensatory payment scheme for rice producers (OJ L 127, 21.5.1999)) and has taken place from the cases: Partnership A and B to C against the Minister of Agriculture, Nature Management and Fisheries in The Hague, LJN AD9994, College van Beroep voor het bedrijfsleven, AWB 01/550 (1 March 2002), available online: http://jure.nl/ad9994; Farmer A. v. Dutch Minister of Agriculture, Nature Management and Fisheries, LJN: BI4304, College van Beroep voor het bedrijfsleven, AWB 07/442 (28 April 2009), available online: http://jure.nl/bi4304.
114 | Keijser 2018.

As regards the use of satellite data for the resolution of environmental disputes, there is much more case law than in other European states,[115] particularly concerning the detection of fraud in obtaining Community funding under the Common Agricultural Policy (CAP).

To give a measure of the importance of environmental issues in the Netherlands, in the case of Urgenda v. The State of the Netherlands for the first time, a national government was directly ordered to step up its efforts to combat climate change.[116] Moreover, what makes this decision emblematic is the fact that the Court based the sentence on the violation of the European Convention on Human Rights (ECHR). In this sense, the protection of the human rights of Dutch citizens goes hand in hand with the pursuit of ambitious climate targets, in particular the reduction of carbon emissions by at least 25%, originally planned for the end of 2020.[117]

To provide some examples of the use of satellite data as legal evidence, we can mention several cases, such as Partnership A and B v. Ministry of Agriculture, and Farmer A v. Dutch Minister of Agriculture. Concerning the first case, the Ministry of Agriculture used satellite data to evaluate subsidy requests, facing challenges regarding the admissibility and accuracy of this data[118]. Despite a 5% error margin, the court accepted the satellite data, emphasising the necessity of expert validation to ensure reliability.

In another subsidy-related case, the Ministry used satellite data to deny a request based on land use regulations.[119] The court upheld this decision, reinforcing that expert analysis is crucial for interpreting satellite images and ensuring compliance with agricultural policies.

Upon reading a number of judgments, we have noticed that the parties involved are trying to challenge the validity of satellite data by other counter-expertise. The potential margin of error of satellite data therefore seems to have become a delaying device to challenge the accusation. Challenges to satellite data's validity must be substantiated by proving errors. Courts rely on expert testimony to determine the accuracy of satellite-derived information. In subsidy disputes, the burden of proof lies with the party contesting the satellite data, ensuring rigorous scrutiny of the evidence presented.

115 | By searching on the website rechtspraak.nl, we were able to identify approximately 250 results using the word 'satellite' and 'satellite image', in their Dutch translation. It should be noted that the text of the judgments was consulted using a fairly summary translation provided by Google Translate, which does not allow us to appreciate the finesse of the drafting. The generalities of the parties involved are often anonymized in the Netherlands.

116 | Rechtbank Den Haag [District Court of The Hague, Commercial Division], 24.6.2015, Urgenda Foundation v The State of the Netherlands, Case No. C/09/456689/HA_ZA 13-1396 (Netherlands), online: [Urgenda].

117 | See on this subject: Meguro 2020, 729–735.

118 | Partnership A and B to C against the Minister of Agriculture, Nature Management and Fisheries in The Hague, LJN AD9994, College van Beroep voor het bedrijfsleven, AWB 01/550 (1 March 2002).

119 | Farmer A. v Dutch Minister of Agriculture, Nature Management and Fisheries, LJN: BI4304, College van Beroep voor het bedrijfsleven, AWB 07/442 (28 April 2009), http://jure.nl/bi4304.

In conclusion, the Netherlands exemplifies the integration of satellite technology in environmental and administrative processes. The maturity of this approach is supported by specialised academic training and the presence of expert societies like GeoRas. Dutch courts clearly affirm the value of satellite data, solidifying the country's status as a leader in environmental jurisprudence.

7.4. Italy

The Italian Penal Code permits "the acquisition of writings or other documents representing facts, persons, or things by photography, cinematography, phonography, or any other means," according to the Court of Cassation.[120] Therefore, even Google Earth images have the potential to be a reputable source of completely admissible documentary evidence in courts. Nevertheless, the court will still need to evaluate the images' content and confirm that they accurately depict the situation at hand.

In the *Caliandro Case*, Google Earth Pro offered photograms that attested to the Tribunal of Brindisi's charge that some unlawful renovation was carried out in order to enlarge the in issue building property.[121] "The photographs portrayed by Google have the value of evidence and are fully usable under the Criminal Procedure Code, as they represent facts, persons, or things," the Court of Cassation declared in its ruling about the images' evidential value. [122]

Google Earth maps have become one of the most widely used tools for exploring satellite maps on the internet, partly because EO data acquisition is free of charge and easy to access.[123] However, Google has its limitations compared to other EO data suppliers due to the fact that its maps may not be updated frequently and have a lower resolution. Indeed, the Italian courts can determine whether to utilise Google Earth as proof evidence based on the specifics of each case. Moreover, the Court's entire evaluation consists of more than just Google Earth assessments.

The Rovigo Case of June 2002 is one of the most interesting examples of using EO data to determine the cause of ground subsidence affecting a historic building in the town of Rovigo (RO) and the resulting damage to historic structures.

An Italian team at Politecnico di Milano developed the Permanent Scatter Interferometric Synthetic Aperture Radar (PSInSAR), which is especially beneficial for tracking minor movements in the ground surface over time.[124] In a nutshell, the case reports basement fissures caused by subsidence that emerged in a

120 | Articolo 234, comma 1, cod. proc. pen.: "È consentita l'acquisizione di scritti o di altri documenti che rappresentano fatti, persone o cose mediante la fotografia, la cinematografia, la fonografia o qualsiasi altro mezzo."
121 | Caliandro Case, Tribunal of Brindisi. Date of hearing: 15/02/2022.
122 | Court of Cassation. Penal Section, Sentence n° 39087/2021. Caliandro Case. Useful link: https://www.donnegeometra.it/wp-content/uploads/2023/07/sentenza-cassazione-17102022-39087.pdf
123 | Purdy 2013.
124 | London Institute of Space Policy and Law 2012.

historic building. According to the owner, the adjacent landowner's excavation of the neighbouring land is what caused the sinking. When sufficient historic data is available, it is possible to compare the past and present modifications to identify changes in the environment and determine whether or not a shift of land-level reference points occurred in the location of interest.[125] Such historic data allowed for the *Rovigo Case* to demonstrate that the adjacent land's subsidence occurred after excavation, not before, proving that the excavation was the reason for the subsidence. Two distinct study teams acquired three data sets from ESA and processed them through two unique chains of analysis, and five separate measures were conducted to guarantee dependability, and the results' identity contributed to the evidence's credibility.[126] It has been demonstrated that EO data is a beneficial complement for additional sources of information, including professional assessments, geological models, and technical data.

Recent Court of Cassation case law in civil and tax disputes has also brought to light the extent of satellite data.[127] In this instance, the appellant filed an appeal after the Regional Tax Commission (CTR) demonstrating that an automobile with advertisements on it had been parked in a particular location from 2009 to 2014. A 2014 municipality file, a 2010 Google Street View report, and 2009 Google Street View images served as the starting point for this evidence. Stating among other reasons, the taxpayer disputed that the proof and the collected data acquired from the Internet were not legitimate. However, the Court ruled that this claim was unjustified, admitting the probative value of the Google Earth evidence. The documentation was indeed supplemented by additional aspects, such as the fine report of the municipal civil servant, provided that other findings existed. This court's case law has repeatedly upheld the notion that the photography evidence represented 'pre-constituted' evidence, meaning that it indicates, absent proof to the contrary, that the images accurately depict the objects and locations *antes* the appeal.

In a nutshell, in a scenario where there is no disagreement, the satellite pictures represent 'legal' documentation, and as a result, the court will be obligated to accept the information contained in the Google Earth imagery as proven. Nevertheless, in the event of a disagreement, these photographs will be a mere presumption, allowing the court to freely appraise them. In conclusion, a case-by-case assessment that balances the need for justice to take its course and the protection of the rights of the accused, appears to be the way forward.

In Italy, ad hoc doctrine pertaining to satellite images for legal processes is being developed judgement-by-judgement. To enable communication between technical, legal, and administrative entities, a common language spanning

125 | Sergieieva 2022.
126 | London Institute of Space Policy and Law 2012.
127 | Judgment of the Civil Court of Cassation No. 308 of 10/01/2020.

regulatory and scientific challenges is essential. The Italian situation highlights the need to investigate ways to involve experts in the use of EO information as evidence, utilising resources other than Google and emphasising the importance of encouraging cooperation amongst the different specialists and methods of EO and remote sensing data and being able to incorporate such data as evidence in the most transparent way possible.

8. Conclusion

From its beginnings in aerial photography in the early 20th century, remote sensing has developed into a vital tool for tracking criminal activity and environmental changes. Landsat's relevance in environmental protection is demonstrated by landmark applications, such as its part in assessing the 1986 Chernobyl disaster. However, despite tremendous advancements in remote sensing technology, the intricacy of environmental laws and major technical challenges keep hindering the use of satellite-derived data into legal proceedings.

The integrity and dependability of remote sensing data are essential for their effectiveness in legal cases. Significant technical hurdles include precise data calibration for consistency and cross-system imagery comparisons, and data processing transparency, which calls for the implementation of more sophisticated cryptographic techniques and improved visibility on whether data has been altered or transformed in any way. To guarantee data admissibility, a set of stronger, standardised procedures for data quality should be developed, defining essential baseline standards for spatial, spectral, temporal, and radiometric resolutions. Moreover, establishing more secure, traceable protocols for handling data is necessary to prevent tampering or loss of integrity.

From privacy concerns to intellectual property rights and national security considerations, the legal framework surrounding satellite data is fraught with complexities. Due to their open-source nature and free data use, Google Maps or Google Earth are the more often publicly cited sources in the majority of court cases which employ satellite imagery. Preferences for these platforms reflect a larger reluctance to deal with high-resolution or proprietary data, which often requires expert interpretation and additional scrutiny for admissibility. Increasing awareness among professionals about the capabilities and constraints of remote sensing could help foster greater confidence in its use.

The use of remote sensing into environmental regulation can provide a potent means of enforcing rules and safeguarding ecosystems as Europe looks to further its commitment to sustainable development. By taking modest actions, the European legal system might fully use satellite data as a tool for environmental stewardship and liability, guaranteeing a safer environment for coming generations.

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Sibilla BULETSA[1]

Peculiarities of the Privatisation of Agricultural Land in Ukraine[2]

Abstract

In 1992, private and collective forms of land ownership were introduced to create conditions for privatising agricultural lands in Ukraine. According to Ukrainian legislation, there were two main methods of land privatisation, designed for conducting commercial agricultural production. First, the state initiated the transfer of agricultural lands for farming to citizens from reserve and reserve funds. Second, the state implemented a series of measures to grant the members of agricultural enterprises the status of landowners for the lands they had been using. By the time the state monopoly on land was abolished in 1992, almost all lands suitable for agricultural production had been put into operation by collective agricultural enterprises created on the basis of former state arms and collective farms. Therefore, privatising the land holdings of collective agricultural enterprises became a primary focus. The privatisation of land that was under the use of agricultural enterprises is the most complex, time-consuming, and phased process of land reform that a country can undergo.

Keywords: Nationalisation, Collectivisation, Agricultural Land, Land Reform, Privatisation, Land

1. Introduction

The experiences of European countries show that the introduction of a land market is necessary for the successful development of the state's agricultural sector. Such markets operate in every EU country and bring significant benefits to both

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budgets and landowners. Therefore, for Ukraine to join the European Union, the moratorium on attracting investors from other countries has been lifted, and the development of a sustainable economy has been initiated. Additionally, a land market has been created in Ukraine.

2. Material and legal issues regarding privatisation in Ukraine

Ukraine is among the countries that have not implemented the restitution institute; the only relevant issue remaining is privatisation carried out within the framework of the first land reform (1991–2000).

The privatisation of state property is a socially significant process during which state-owned assets are transferred into private ownership, addressing matters concerning the preferential participation of collective labour members in its acquisition, as well as their social protection.[3]

At the adoption of the Basic Legislation of the Union of Soviet Socialist Republics and the Union Republics on Land (1991), it was established that land, its subsoil, waters, and forests could be provided to joint enterprises for both paid and free use.[4]

As such, the privatisation of agricultural lands began with the adoption of the Resolution by the Verkhovna Rada of the Ukrainian Soviet Socialist Republic 'On Land Reform' on 18 December 1990.[5] The aim was to redistribute land by simultaneously transferring it into private and collective ownership, as well as granting its use to enterprises, institutions, and organisations. This was done to create conditions for the equal development of various forms of economic activity on the land.

The Land Code of Ukraine was adopted for the implementation of this resolution.[6] Therefore, agricultural land is provided: 1) to citizens for personal farm management, individual gardening, and gardening; 2) to citizens cooperatives for collective gardening and horticulture; 3) to citizens, collective farms, state farms, other agricultural states, cooperative, public enterprises, and organisations for commercial agriculture; 4) to agricultural scientific and research institutions, educational and other institutions, rural production, and technical and secondary schools for research, educational purposes, promotion of best practices, and for agricultural management; and 5) to non-agricultural enterprises, institutions

3 | Rishennia Konstytutsiinoho Sudu Ukrainy u spravi za konstytutsiinym podanniam Prezydenta Ukrainy shchodo vidpovidnosti Konstytutsii Ukrainy (konstytutsiinosti) Postanovy Kabinetu Ministriv Ukrainy "Pro zapobihannia kryzovym yavyshcham u vuhilnii promyslovosti" (sprava pro vidchuzhennia maina derzhavnykh vuhledobuvnykh pidpryiemstv) 2009, 24.

4 | On Amending and Recognising Legislative Acts of the USSR as Invalidated in Connection with the Fundamentals of Legislation of the Union of Soviet Socialist Republics and Union Republics on Land 1991.

5 | On land reform 1990.

6 | Land Code of Ukraine 1990 (no longer in force).

and organisations, religious organisations for the management of auxiliary agriculture.

The members of collective farms and other agricultural cooperatives, as well as the employees of agricultural enterprises (excluding research farms) who wished to leave these entities and operate rural (farm) households, were granted land plots that were withdrawn from the lands of the collective farms, cooperatives, and enterprises. Other citizens intending to operate rural (farm) households were provided land plots from reserve lands.

The allocation of lands for rural (farm) households to citizens of the Ukrainian SSR was carried out based on their applications and at the recommendation of the respective rural or settlement Councils of People's Deputies, according to the decision of the district or city Councils of People's Deputies. The land plots allocated for rural (farm) households should not exceed 50 hectares of agricultural lands or 100 hectares of all lands.

The Law of Ukraine on Property provided citizens with the right to own land plots in cases such as inheritance, obtaining a share of land in joint ownership between spouses, purchase, sale, gift, or exchange.[7] The subjects of private property rights in Ukraine include the citizens of Ukraine, citizens of other Soviet republics, foreign citizens, and stateless persons. The law also ensured the protection of land property rights. Specifically, a citizen cannot be deprived of the right to ownership of a land plot against their will, except by a court decision in cases provided for by Ukrainian legislation. In the event of a court-ordered withdrawal of a land plot for satisfying state or public needs, the former owner is provided with another land plot of equivalent quality in exchange, and damages caused to the landowner are subject to compensation. The landowner has the right to compensation related to the degradation of land quality caused by the activities of enterprises or organisations that led to a decrease in the ecological safety of the territory. The disputes regarding the grounds for the right to compensation and its amount are to be resolved by the court.

In compliance with the law dated 30 January 1992[8] on establishing equality among all forms of land ownership – state, collective, and private – a new version of this law was adopted.[9]

Therefore, the entities formed on the basis of state farms and other state agricultural enterprises became subjects of collective ownership rights, including collective agricultural enterprises, agricultural cooperatives, horticultural associations, and agricultural joint-stock companies. The members of these entities had the right to obtain their share of land in kind (in its actual location) upon exiting.

7 | On Property 1991 (no longer in force).
8 | On Forms of Land Ownership 1992 (no longer in force).
9 | On Amendments and Supplements to the Land Code of the Ukrainian SSR 1992 (no longer in force).

The transfer of land into collective ownership was conducted by the rural, settlement, and city Councils of People's Deputies based on the location of the land plot upon petitions submitted by these enterprises, cooperatives, or associations. The confirmation of collective ownership rights was done through a state act listing the citizens of these enterprises, cooperatives, or associations.[10]

Lands designated for agricultural purposes under the revision could be transferred into ownership. The members of collective agricultural enterprises, agricultural cooperatives, and employees of agricultural enterprises (excluding research farms) who expressed a desire to operate rural (farm) households were granted ownership or provided usage rights for plots from reserve lands. In the absence of such lands, suitable agricultural lands from these enterprises could be allocated without disrupting the integrity of other farms.

The Land Code also established (although not typical for communism) the right of ownership over produced agricultural products and income from their sale, as well as over crops and plantings of agricultural crops and plantations for landowners and land users.

Land plots for running rural (farm) households were granted to citizens upon their request for lifelong inheritance, private ownership, or lease. The right to private ownership of a land plot for a rural (farm) household could be acquired after six years of possession.[11] The allocation of land plots for lifelong inheritance, private ownership, or lease was conducted from reserve lands, which included lands previously owned by bankrupt collective agricultural enterprises.[12]

With the new revision of the Land Code, the Ukrainian Parliament adopted a resolution 'On Accelerating Land Reform and Land Privatisation',[13] which stipulated that the devitalisation and privatisation of lands belonging to agricultural enterprises and organisations, as outlined in the third paragraph of point 3 of the resolution, would begin from 15 May 1992. This process was to be carried out according to projects developed by the management (administration) of these enterprises and organisations, with the involvement of experts and state land management organisations. These projects were to be approved by the labour collectives and endorsed upon submission by the rural (township) Council to the district (city) Council of People's Deputies.

The right of private ownership by citizens over land plots allocated to them for personal subsidiary farming was certified by the respective Council of People's Deputies. This certification was recorded in land cadastral documents, followed by the issuance of a state act confirming the right to private land ownership. Ukrainian citizens were granted the right to sell or otherwise alienate these land plots

10 | On Forms of State Acts for Land Ownership and the Right to Permanent Land Use 1992 (no longer in force).
11 | On Rural (Farming) 1991 (no longer in force).
12 | About the collective agricultural enterprise 1992.
13 | On accelerating land reform and land privatisation 1992.

without altering their designated purpose. The sale or other forms of alienation of a land plot required notarisation and registration in the rural, township, or city Council of People's Deputies within the territory where the land plot was situated.[14] The sale of land plots was conducted at a price agreed upon by the parties, provided that this price did not fall below the normative land price.[15]

The procedure for issuing state acts and maintaining the Land Ownership Registration Book was approved by the respective Instruction.[16]

A significant directive during the land privatisation process was the Presidential Decree of Ukraine, 'On Urgent Measures to Accelerate Land Reform in Agriculture', dated 10 November 1994.[17] This decree tasked land management organisations with dividing the lands transferred to collective ownership into land shares (shares), without physically allocating them (in situ). Each member of the enterprise, cooperative, or association was to be issued a certificate confirming their private ownership right to a land share (share) that specified the size in conditional cadastral hectares and the monetary value of the share. The right to a land share (share) could be subject to buying and selling, gifting, exchange, inheritance, or collateral. Every member of a collective agricultural enterprise, agricultural cooperative, or agricultural joint-stock company had the unobstructed right to exit and receive their land share (share) free of charge into private ownership (in situ). This was certified by a state act confirming the right to private land ownership.[18] Landowners had the voluntary option to establish joint agricultural enterprises, associations, unions, joint-stock companies, other cooperative enterprises, or organisations based on their land plots. They could also pass these plots by inheritance, gift, exchange, use them as collateral, lease, and sell them to Ukrainian citizens without altering the designated purpose of these land plots.

3. Privatisation of agricultural land

Privatisation of a land plot is the process of changing the ownership status of the land from communal or state ownership to private ownership. It involves a series of legally significant actions, including applying to authorised entities for permission, approving technical documentation for land management, and completing the registration process for the new owner. The new owner will then have the right to own, use, and manage the land in accordance with its designated use and purpose.

14 | On the privatisation of land plots 1992.
15 | The Methodology for Normative Monetary Valuation of Land in Settlements 1995 (no longer in force).
16 | On Approval of the Instruction on the Procedure for Preparation, Issuance, Registration and Storage of State Acts for Land Ownership and Permanent Land Use, Agreements for Temporary Land Use (including Lease) 1993 (no longer in force).
17 | On urgent measures to accelerate land reform in the agricultural sector 1994.
18 | On forms of state acts for land ownership and the right to permanent use of land 1992.

The Presidential Decree of Ukraine dated 8 August 1995,[19] which initiated the land share privatisation process, is crucial. This process applies to lands transferred to collective agricultural enterprises, agricultural cooperatives, and agricultural joint-stock companies, including state farms and other state agricultural enterprises. Consequently, during the privatisation of land designated for share privatisation, land transitioned from state ownership to collective ownership. Share privatisation involved determining the size of each member's share in the agricultural enterprise, cooperative, or agricultural joint-stock company. However, it did not entail the allocation of individual land plots in kind. The certificate confirmed the right to the share. In the event that the owner of a land plot, also known as a share, left the enterprise, he could apply for the allocation of the land plot in kind and receive a state act confirming the ownership of the plot.

Therefore, the allocation of a land plot essentially meant replacing the existing virtual right to the land plot with obtaining real private ownership of the plot with defined boundaries. The mechanism for acquiring ownership rights by a Ukrainian citizen under point g of Part 1 of Article 81 of the Land Code (allocation in kind (on-site) of a land plot (share)) does not contain any prohibitions in the context of the Transitional Provisions of the Land Code of Ukraine. There is a specific interest in determining "land plots transferred for use before the entry into force of this Code", to which the prohibition does not apply.

Considering the clarification of the State Geocadastre dated 3 June 2021 and the legislation norms that were in force before, the documents confirming that a citizen has the right to use a land plot can be:

- contracts for the indefinite use of a plot of land for the reconstruction and operation of buildings (the resolution of the Ukrainian SSR RSC and the Central Committee of the CP(b)U dated 10 November 1944 'On regulating the use of state buildings of the residential and non-residential fund and the land plots that serve them'). In accordance with the Instruction on the Procedure for Registration of Houses and Homesteads in Cities and Towns of the Urban Type of the Ukrainian SSR dated 31 January 1966, the specified contracts were documents on the basis of which the registration of houses and homesteads in the cities and towns of the Urban Type of the Ukrainian SSR is carried out);
- entries in the land-cord books of agricultural enterprises and organisations, in the farm books of village councils, and in the register books of the executive committees of city and village councils (Article 20 of the Land Code of the Ukrainian SSR of 1970);
- state acts on the right to use/own land (Article 23 of the Land Code of the Ukrainian SSR of 1990);

19 | On the Procedure for Sharing Land Transferred to Collective Ownership of Agricultural Enterprises and Organisations 1995.

- land lease agreements (Articles 8, 24, 50 of the Land Code of the Ukrainian SSR of 1990);
- state acts on the right to the permanent use of land (Article 23 of the Land Code of Ukraine as amended in 1992).

Privatisation through the allocation of a land share (share) in kind can be conditionally divided into several stages, in particular:

I Preparatory works

1. Owners of land certificates submit applications to the relevant council with a request to allocate land plots in kind and issue state acts instead of land certificates.
2. Local councils:
   a) based on the results of consideration of such applications, they decide on the allocation of land shares (shares) in kind (in the area);
   b) specify the location, boundaries, and areas of agricultural land to be distributed among the owners of land shares (shares);
   c) conclude contracts with land management organisations for the performance of land management works regarding the allocation of land shares (shares) in kind (in the area) and the production of technical documentation and/or assist in the conclusion of such contracts if such works are performed at the expense of persons who have the right to a land share (share), or at the expense of the funds of enterprises, institutions and organisations that lease land shares (shares), technical assistance projects etc.;
   d) clarify the lists of persons who have the right to a land share (share) and transfer them to land management organisations.

II Field geodetic works

1. Reconnaissance of the area. The land management organisation clarifies the land massifs in the area that are to be divided and determines the places of installation of boundary signs.
2. Geodetic works. The land management organisation establishes boundary marks on the terrain. The boundaries of land massifs and boundary marks are defined in the state coordinate system.
3. Cadastral mapping. The land management organisation performs the cadastral survey of land massifs to be privatised.

III Development of a project for the organisation of the territory of land shares (shares)

On the basis of the completed cadastral survey, the land management organisation develops a project for the organisation of the territory of land parcels in the territory of the relevant council. The project is developed considering soil fertility,

topography, road network, etc. The boundaries of the planned land plots, their cadastral numbers, areas in physical hectares, forest protection strips, protective hydro-technical structures, etc., are indicated on the territory organisation project.

IV. Allocation of land plots in kind and issuance of state documents

The developed project of the organisation in the territory is approved by the decision of the meetings of the owners of land shares. The land management organisation prepares state acts, which, after registration, are transferred to the relevant council for handing over to citizens.

With the adoption of the Law of Ukraine dated 28 April 2021, 'On Amendments to Certain Legislative Acts of Ukraine to Improve the Management and Deregulation in the Field of Land Relations',[20] a so-called decentralisation of land management occurred, simplifying land management documentation and reducing the number of approvals and permits.

As of 27 May 2021, an individual no longer needs to apply to the local self-government body to obtain permission for the development of land documentation if this person is already using a respective land plot within the territorial community and intends to privatise it.

According to the new version of Article 118 of the Land Code of Ukraine, a citizen interested in the privatisation of a land plot within the norms of free privatisation, which is in their use, including a land plot where residential houses, outbuildings, or structures owned by them are located, submits a request to the local self-government body representing the corresponding territorial community for the transfer of such a plot into their ownership.

This norm also applies to land plots where the right arose earlier. This is logical in cases where the right arose earlier or constructions and structures owned by the applicant are located on the land plot, as the permission itself has a formal character.

Henceforth, an individual submits a request accompanied by technical documentation on land management developed in accordance with the law 'On Land Management'[21] for the establishment (or restoration) of land plot boundaries in nature (on-site), which, under the new rules, is ordered by the citizen without requiring permission for its development. Within a month from the receipt of the technical documentation on land management for the establishment (or restoration) of land plot boundaries in nature (on-site), the respective local self-government body decides to approve it and transfer the land plot into ownership or provides a reasoned decision for refusal.

20 | On Amendments to Certain Legislative Acts of Ukraine on Improving the System of Management and Deregulation in the Field of Land Relations 2021.
21 | About land management 2003.

However, the procedure for local councils adopting decisions regarding the alienation of land plots from the ownership of territorial communities has somewhat changed. Part two of Article 59 of the law 'On Local Self-Government in Ukraine' was supplemented by a new paragraph, according to which the council's decision on the gratuitous transfer of a communal land plot into private ownership (except for land plots in the possession of citizens and cases of transferring a land plot to the owner of a residential house, another building, or structure located on it) is adopted by no less than two-thirds of the total number of council deputies.

The provision requiring a 2/3 majority vote of local council deputies for the gratuitous transfer of communal lands into private ownership is aimed at preventing corrupt practices at the local level.

Henceforth, when making such decisions, it is necessary to clearly distinguish land plots into two categories:

1. land plots that are gratuitously transferred from communal to private ownership and are in the possession of citizens; land plots where a residential house, another building, or structure belonging to the citizen who has applied for the transfer of the land plot is located; or land plots where the right arose earlier (in these cases, a simple majority is sufficient to decide on the transfer of ownership);
2. other land plots that are gratuitously transferred from communal to private ownership (in these cases, the council needs to gather a 2/3 majority vote of all council deputies to make the decision).

As for the unused land shares (shares of land), according to the law,[22] until 2025, citizens have the right to claim such shares, that is, to complete the realisation of their previously arisen right. In case the potential owners do not claim the respective property within the period prescribed by law (i.e., until 1 January 2025), these land shares (shares of land) will revert to communal ownership after undergoing the procedure for recognising the property as ownerless. Therefore, if citizens currently apply to the local government bodies for claiming their land shares (shares of land), the decision regarding the transfer of such land plots is made by a majority vote of the local council deputies. Other decisions related to land issues continue to be made by a simple majority.

Due to the onset of the war, the gratuitous privatisation of land has been temporarily prohibited. Many Ukrainians lost their homes due to the war – some had their homes destroyed or severely damaged, while others simply left their houses in temporarily occupied territories and wished to start a new life far from the occupation and the front line.

22 | On Amendments to Certain Legislative Acts of Ukraine to Address the Issue of Collective Ownership of Land, Improve the Rules of Land Use in Agricultural Land, Prevent Raiding and Stimulate Irrigation in Ukraine 2018.

4. Emphyteusis

The emphyteusis of agricultural land is possible and expedient for the state as the owner. One of the most convenient tools of the market mechanism is the contract of emphyteusis, as the moratorium on the sale of agricultural land in Ukraine is being lifted gradually, but still has many restrictions. One of the oldest methods of land use is emphyteusis, which originates from Ancient Greece, where, in the 3rd century BC, it began to be called the lease of land for the cultivation of gardens and vineyards.

Chapter 33 of the Civil Code of Ukraine and Chapter 161 of the Land Code of Ukraine regulate emphyteusis in Ukrainian legislation. These provisions provide that the owner transfers ownership and use of the agricultural land to the land user while retaining land ownership. A land user who uses a plot under these conditions can create a farm at their discretion and grow products in compliance with the norms and requirements of the legislation, as well as the terms of the contract regarding production methods that do not deteriorate the condition of the land plot or the general ecology. In addition, the land user may dispose of any agricultural produce he grows at his own discretion. The main interest of the owner of this plot of land is to ensure the permanent cultivation of the land, improve its useful properties, and receive the fee stipulated in the contract.

The agreement between the landowner and a person wishing to use a land plot for agricultural purposes (Part 1 of Article 407 of the Civil Code of Ukraine, Part 1 of Article 1021 of the Land Code of Ukraine) serves as the legal basis for the emergence of emphyteusis. Therefore, an emphyteutic contract is an agreement between the landowner and the person utilising the land, granting the latter the right to possess and use the land solely for agricultural purposes. The parties to the contract are both the owner and the person desiring to use the land for agricultural purposes (land user, emphyteut). The land can be state-owned or under any other form of ownership. Exceptionally, Chapter 21 of the Land Code defines the competitive principles for acquiring the right to emphyteusis, which must be known to land users utilising state or municipal land. Additionally, legal restrictions are established for foreigners or stateless persons. The Land Code of Ukraine provides these individuals with the right to lease land for individual or collective gardening purposes only (Part 2 of Article 35 of the Land Code of Ukraine). A similar limitation is set for legal entities according to Part 2 of Article 35 of the Land Code of Ukraine.

The object of the emphyteutic contract is agricultural land, as stipulated in Part 2 of Article 22 of the Land Code of Ukraine, including agricultural lands such as arable land, perennial plantings, hayfields, pastures, and fallow lands. It also encompasses non-agricultural lands, which consist of farm roads and driveways, protective forest strips, and other protective plantings (excluding those classified under other land categories), lands under farm buildings and yards, lands under

the infrastructure of wholesale agricultural produce markets, and lands under temporary conservation measures, etc.[23]

The emphyteutic contract can be either for a fixed term or without a specified term. For state or municipal land plots, the period of use cannot exceed fifty years, and the right of use cannot be alienated, included in the statutory fund, or pledged. The sale of emphyteusis for state land is carried out through auctions. According to amendments introduced in 2019, the duration of this contract should be determined for lands of all ownership forms and should not exceed 50 years. The Civil Code of Ukraine does not provide for the possibility of extending emphyteusis and does not establish an obligation for the landowner to extend its validity at the request of the land user. While the legislation does not specify particular requirements regarding the form of this contract, it mandates its obligatory state registration, which requires the submission of a confirming document (the contract itself). Therefore, the emphyteutic contract must be executed in written form. Notably, the notarial certification of this contract is not obligatory, yet according to Article 209 of the Civil Code of Ukraine,[24] the emphyteutic contract can be notarised by the mutual agreement of the parties.

The emphyteut can independently alienate the right to use the land plot and transfer it through inheritance. However, an exception is established by the legislator for land plots belonging to state and communal ownership. Therefore, the right to their use by land users cannot be alienated, nor can it be included in the statutory capital of legal entities or pledged (Part 3 of Article 407 of the Civil Code of Ukraine and Part 3 of Article 1021 of the Land Code of Ukraine).

Emphyteusis terminates in the following cases: when the owner of the land plot and the land user are the same person; when the term of the contract expires; with the alienation of privately owned land for public necessity; with the decision of the executive authority or local self-government body regarding the use of state or communal land for public needs; with the termination of a contract concluded under conditions of public-private partnership; by a court decision etc.

On the one hand, emphyteusis is sometimes preferable to a lease agreement. First, this is the case when it is necessary to transfer agricultural land for free use, unlike a lease agreement, which is always paid. Second, it is also preferable when a fee for using the land plot is established, regardless of the normative monetary valuation. Third, Ukrainian legislation guarantees the possibility of alienating the right to emphyteusis, while changing the lessee under a land lease agreement may be explicitly prohibited. However, restrictions on the alienation of land by its users apply to land belonging to communal and state ownership. Currently, emphyteusis is quite often used for moratorium lands. Therefore, signing an emphyteusis agreement grants the right to legally use agricultural land for 50 years. Meanwhile,

23 | Land Code of Ukraine 2001.
24 | Civil Code of Ukraine 2003.

the emphyteut acquires autonomy from the land plot owner and, in certain cases, the right to terminate emphyteusis without the consent of the land plot owner. Nevertheless, parties entering into an emphyteusis agreement must understand and consider the risks associated with the conclusion and performance of this agreement. In particular, the users must know that they do not acquire ownership rights to the land; instead, they only use it under the terms of the agreement, which can be terminated or declared invalid by the court. On the other hand, landowners must consider that their ownership rights to the land do not cease, meaning they must pay land tax annually. The absence of a specific prescribed form for the emphyteusis agreement allows the practical application of a significant number of legal instruments, the risks and benefits of which depend more on the text of the agreement than on the norms of existing legislation.[25]

5. Land reform in Ukraine

On 31 March 2020, a law was adopted, which established the cancellation of the moratorium on the sale of agricultural land in Ukraine, except for state-owned lands, starting from 1 July 2021. According to the provisions of this law, the sale of agricultural land plots owned by the state and municipalities is still prohibited, and its impact on lease relations concerning state-owned lands will be exerted through the influence on the formation of lease prices.[26] Since the launch of electronic land auctions in October 2021 on the ProZorro.Sales platform, auctions for the purchase and lease of agricultural land have already been completed for over 1.2 billion UAH.[27]

In 2021, Ukraine concluded 66 thousand land purchase and sale agreements covering a total area of 153 thousand hectares. In 2022, there were 53 thousand such agreements, despite the market effectively not operating for almost six months due to restrictions on access to registries.[28] Since the opening of the land market, more than 152 thousand purchase and sale agreements have been concluded, encompassing a total area of over 338 thousand hectares. This represents 0.82% of all agricultural land in Ukraine within its 1991 borders and 0.95% of the total area of agricultural land in the territories under Ukraine's control. For comparison, in economically developed countries, this indicator fluctuates around 1%.[29]

25 | Moskaliuk 2021, 346–348.
26 | On Amendments to Certain Legislative Acts of Ukraine Regarding the Terms of Turnover of Agricultural Land 2020.
27 | Agricultural land in Ukraine went up by 20% in 2023.
28 | The government is advised to pay attention to the fact that land in Ukraine is sold at deliberately low prices 2023.
29 | Land market in Ukraine 2023, 10.

On 1 July 2021, the Law of Ukraine No. 552-IX, 'On Amendments to Certain Legislative Acts of Ukraine Regarding the Conditions of Circulation of Agricultural Land', came into effect, according to which:

1. from 1 July 2021 to 31 December 2023, the circulation of agricultural land in Ukraine will take place among Ukrainian citizens, with an individual being able to control no more than 100 hectares. This restriction does not apply to land owned by citizens. Specifically, land owned by citizens designated for commercial agricultural production and land allocated in-kind to the owners of land shares for personal rural farming cannot be bought, sold, or alienated by legal entities. Transactions (including powers of attorney) concluded during the prohibition on the sale or other alienation forms of land plots and land shares are void if they involve the sale of these plots and land shares to legal entities or the transfer of rights to alienate these plots and land shares.
2. from 1 January 2024, legal entities, created and registered under Ukrainian law, whose participants (shareholders, members) are only Ukrainian citizens, and/or the state, and/or territorial communities, will be able to purchase land alongside individuals. The maximum amount of land that can be acquired in this case is 10,000 hectares. However, the sale of state and municipal agricultural land, as well as the purchase of agricultural land by foreigners, remains prohibited. A minimum purchase price for agricultural land has been established, not lower than the normative monetary valuation. Foreigners, stateless persons, and legal entities are prohibited from acquiring shares in the statutory (authorised) capital, shares, shares, or membership in legal entities (except in the statutory (authorised) capital of banks) that own agricultural land.

Agricultural land can be used by citizens of Ukraine, legal entities established and registered under the legislation of Ukraine, and participants (shareholders, members) who are only citizens of Ukraine, the state, territorial communities, or the state. At the same time, if a citizen of Ukraine owns a share in the statutory (composite) capital, in a unit fund of a legal entity, or only on individual shares, shares, it is considered that such a citizen, in addition to the land plots owned, also owns the ownership right to agricultural land plots with a total area equal to the area of agricultural land plots owned by the legal entity of which he is a participant (member, shareholder) multiplied by the size of the share of such a citizen, expressed as a percentage, in the statutory (composite) capital, the mutual fund of this legal entity (part two of Article 130 of the Civil Code of Ukraine).

The ownership of agricultural plots of land can also be acquired by banks only in the order of foreclosure on them as collateral. Such plots of land must be alienated by banks at land auctions within two years from the date of acquisition of ownership.

The acquisition of ownership rights to agricultural land plots by legal entities created and registered under the legislation of Ukraine for which the participants (founders) or ultimate beneficial owners are not citizens of Ukraine, may be carried out from the date and subject to the approval of such a decision in a referendum.

Under any conditions, in case of approval of the decision in a referendum, it is prohibited to acquire the right of ownership of agricultural land plots by:

1. Legal entities, participants (shareholders, members) or ultimate beneficial owners of which are persons who are not citizens of Ukraine – for agricultural land plots of state and communal ownership, agricultural land plots allocated in kind (on-site) to land owners shares located closer than 50 km from the state border of Ukraine (except for the state border of Ukraine, which runs along the sea);
2. Legal entities, participants (shareholders, members), or ultimate beneficiary owners of which are citizens of a state recognised by Ukraine as an aggressor state or an occupying state;
3. Persons who belong or have belonged to terrorist organisations;
4. Legal entities whose participants (shareholders, members) or ultimate beneficial owners are foreign states;
5. Legal entities in which it is impossible to establish the ultimate beneficial owner;
6. Legal entities whose ultimate beneficial owners are registered in offshore zones included in the list of offshore zones approved by the Cabinet of Ministers of Ukraine;
7. Individuals and legal entities, in respect of whom and/or in respect of participants (shareholders, members) or ultimate beneficiary owners to which special economic and other restrictive measures (sanctions) have been applied in accordance with the Law of Ukraine 'On Sanctions' in the form of a ban on concluding acquisition transactions in the ownership of land plots, as well as persons connected with them;
8. Legal entities created under the legislation of Ukraine that are under the control of individuals and legal entities registered in countries included by the Financial Action Task Force on Money Laundering (FATF) in the list of countries that do not cooperate in the field of combating money laundering.
9. Banks are allowed to be the owners of land plots within the limits of collateral recovery. The bank must sell such plots at auctions within two years.

The conclusion of civil contracts involving the transfer of ownership rights to land plots, as well as the acquisition of ownership rights to land plots under such contracts, is carried out in accordance with the Civil Code of Ukraine, considering the requirements of the Land Code of Ukraine.

The sale-purchase of a land plot is conducted with the observance of the preferential right to purchase it. The preferential right to purchase a land plot can be transferred to another person by its subject, who must inform the owner of the land plot in writing. The minimum selling price of allocated on-site land shares will be abolished by 1 January 2030. This means that the sale price of land shares of agricultural land on-site to owners cannot be lower than their normative monetary valuation. The evaluation will be conducted by the State Geocadastre and will include a study of composition, climatic conditions, and soil location. An open database will be created containing all information about the normative monetary valuation of land in all regions. The sale-purchase agreement is notarised when the data of the new owner is entered into the cadastre. Additionally, the possibility of the buyer acquiring certain land sizes will be assessed, and the transactions will be monetary. The buyer needs to open a bank account for this purpose. In the absence of documents confirming the source of the funding or other assets through which ownership rights to land plots are acquired, the acquisition of ownership rights to land plots under underpaid contracts is considered illegal. Current tenants may have a preferential right to purchase land.

When certifying an agreement for the alienation of an agricultural land plot, compliance with the established requirements of the Land Code of Ukraine by the acquirers of ownership rights to agricultural land plots is verified using information from the State Register of Real Rights to Immovable Property, State Land Cadastre, and Unified State Register of Legal Entities, Individual Entrepreneurs, and Public Formations. If non-compliance with these requirements is identified as a result of the verification, the notary refuses to certify the agreement.

The sale-purchase agreement for a land plot is subject to mandatory notarisation. The document package that needs to be submitted to the notary when concluding an agreement between citizens includes the following: documents confirming their identity and Ukrainian citizenship; registration numbers of tax identification cards; a state act on the right of ownership of the land, an agreement, a certificate of inheritance rights, or another document confirming the right of ownership of the land plot; and documents on the monetary valuation of the alienated land plot.

Moreover, to determine the total area of plots that one person is entitled to acquire, the notary will need to provide information and documents about the acquirer's marital status, including marriages registered abroad and the acquisition of agricultural land on the basis of joint ownership of the spouses.

At the same time, the notary, acting as the primary financial supervisor, has the right to request from the potential buyer information and documents confirming the source of the funds for the purchase of the land plot or hectares. Funding sources may include salary as financial support; fees and other payments under civil contracts; income from entrepreneurial or independent professional activities; income from the alienation of property, dividends, interest, royalties,

insurance payments; winnings (prizes) in gambling, lotteries, or other contests; and bets, among others. Until the notarisation of the land alienation agreement, it will be necessary to pay a personal income tax at a rate of 5% of the price specified in the sale–purchase agreement, as well as a military fee of 1.5%. The calculated price for taxation will be determined in the sale–purchase agreement. This price cannot be lower than the appraised value of the land calculated by the authorised body. Until 1 January 2030, the sale price of agricultural land plots on location to owners of shares cannot be lower than their normative monetary evaluation. The sale of agricultural land plots owned by the state and municipalities is prohibited. The alienation of agricultural land plots located in temporarily occupied territories in Donetsk and Luhansk regions, the Autonomous Republic of Crimea, and the city of Sevastopol, except for inheritance, is also prohibited.

A Supreme Court resolution dated 21 May 2021,[30] pointed out that the legislatively established temporary ban on the purchase-sale or other forms of alienation of agricultural land plots does not apply to all agricultural land plots in private ownership of individuals and legal entities, but only to specific types, including land plots for conducting commercial agricultural production and land plots allocated in-kind (on-site) to owners of land shares (shares) for personal rural farming.

6. Legal status of land in Ukraine during martial law

After the full-scale invasion of Russia into the territory of Ukraine, lawmakers passed the law[31] 'On Amendments to Certain Legislative Acts of Ukraine Regarding the Regulation of Land Relations in the Conditions of Martial Law'. Its purpose is to promptly lease land plots of state and municipal property for the placement of production facilities of enterprises relocated from the combat zone without conducting land auctions and with restrictions on lease conditions. Additionally, it aims to provide land plots for the placement of facilities for the temporary residence of internally displaced persons and the sustainable operation of power supply, gas distribution, water supply, heating, sewerage networks, electronic communication networks, and objects of trunk gas pipelines.

The public cadastral map of Ukraine, available on the StateGeoCadastre website,[32] remains inaccessible to citizens due to these circumstances. This is a necessary measure to preserve confidentiality and prevent potential misuse of data to the detriment of Ukraine and its citizens. As long as some territories remain under the control of occupiers, the public cadastral map will not be available for

30 | The resolution of the Supreme Court, 21.05.2021.
31 | On Amendments to Certain Legislative Acts of Ukraine Regarding Peculiarities of Regulation of Land Relations under Martial Law 2022.
32 | State Service of Ukraine for Geodesy, Cartography and Cadastre 2023.

widespread use. This decision will be reviewed and changed only after the cancellation of the martial law regime and the full restoration of the territorial integrity of Ukraine. Therefore, to choose a plot of land, one can submit a request for access to information to the relevant authorities of state power or local government.

The land market, as a secondary redistribution of property rights to land resources (after privatisation), is not an end in itself and should take place in accordance with a long-term strategy for the development of agriculture and rural areas as a whole.[33]

During a state of war, there is a prohibition on the free transfer of state and municipal land into personal ownership, as well as a ban on obtaining permits for the development of land management documentation for such transfer (subparagraph 5 of paragraph 27 of Chapter X of the Land Code of Ukraine). In fact, before the war, Ukrainian citizens had the right to the free transfer of land plots from state or municipal ownership to them (the procedure for such transfers is defined in Article 118 of the Land Code of Ukraine). During the state of war, the formation of land plots within the framework of free privatisation, including the determination of their area, boundaries, and registration in the State Land Cadastre, is prohibited according to current legislation. However, there are exceptions. The free transfer of land is allowed during the transfer of land plots into private ownership for owners of real estate objects (buildings, structures) located on such land plots.[34]

As a result of the amendments to the Land Code of Ukraine, which entered into force on 7 April 2022, Paragraph 5(27) of Section X 'Transitional Provisions' stipulates that during martial law, the free transfer of state and municipal land to private ownership, the granting of permits for the development of land management documentation for the purpose of such free transfer, and the development of such documentation are prohibited. The Law of Ukraine No. 2698-IX amended the Land Code to allow the free transfer of land plots into private ownership to owners of real estate (buildings and structures) located on such land plots. The amendments unblocked the free privatisation of land plots under residential buildings, individual summer cottages and garages, the rights to which are certified by the relevant documents. It is also allowed to privatise land plots that were granted to citizens (allocated) before 1 January 2002 (usually these are old decisions on the transfer of land into ownership or use).

33 | Romanovska 2013, 9.

34 | The norms of free privatisation are determined by Article 121 of the Land Code for different categories of land (the maximum size of a land plot for free privatisation is divided by the area and purpose of the land plot): 1) for personal farming up to 2 hectares; 2) for gardening up to 0.12 hectares; 3) for individual summer cottage construction up to 0.10 hectares; 4) for construction and maintenance of a residential building on the basis of a construction passport or project – in villages up to 0.25 hectares, in towns up to 0.15 hectares, in cities up to 0.10 hectares; 5) for construction of individual garages 0.01 hectares.

7. Conclusions

Since the beginning of the land reform, 85,247 sales contracts have been concluded. A total of 275,157 hectares of agricultural land were sold and donated in two years, which represent 1% of all agricultural land. The amount of agricultural land is 27.5 million hectares. In the first year of the opening of the land market, 27,696 contracts were concluded, and in the second 23,000. However, in 2022, the market did not operate for almost four months. For the first half of 2023, there are already 18,000 contracts. Regarding the area of land sold and purchased, in 2021, there were 100,000 hectares and in 2022, 69,000 hectares. Since the beginning of 2023, more than 50,000 hectares have already been sold. People continue to sell and buy land. The average price per hectare is UAH 39,000, but prices are very dynamic. In 2024, when the second stage of the reform begins and legal entities are admitted to the market, the price of land will increase even more. The land reform had a positive effect on the entire agricultural sector.[35]

Table 1. Data on agricultural land in Europe[36]

	GDP per capita (USD)	Land under cultivation for grains (hectares)	Irrigated agricultural land (% of total agricultural land)	Agricultural land (% of total land area)	Rural population (% of total population)	Arable land per capita (hectares/person)	Exports of agricultural raw materials (% of total merchandise exports)	Yield index
Ukraine	4,534.0	15,649,490	1.1	71.3	30	0.75	2	121.7
Hungary	18,463.2	2,361,650	2.2	55.3	28	0.43	1	85.9
Slovakia	21,258.1	717,690	1.4	38.6	46	0.24	1	99.8
Czech Republic	26,822.5	1,345,840	0.6	45.7	26	0.24	2	92.3
Poland	18,321.3	7,451,270	0.9	47.4	40	0.29	1	107.9
Romania	15,892.1	5,356,960	2.6	56.8	46	0.45	1	115.9
Serbia	9,393.6	1,778,823	1.5	41.4	43	0.38	2	103.3

Land reforms were also carried out in the Baltic, Eastern, and Central Europe, primarily in Latvia, Lithuania, Bulgaria, Estonia, Poland, Romania, and Hungary, due to similar historical circumstances regarding the formation of private ownership of agricultural land. All these countries, including Ukraine, share a commonality in establishing private land ownership through the gradual transformation of state farms and cooperatives into market-oriented enterprises. Depending on the

35 | Press conference: "Land reform: the second anniversary of the land market" 2023.
36 | Agricultural land (% of land area) 2023.

historical specifics of land privatisation in each country and the level of socio-economic development, the transformation of land relations occurred in several stages. The land reforms aimed to return land to former owners and conduct auctions for distribution, gradually opening access to foreign capital.[37] However, the foundation of the land reforms in these countries was based on principles that defined the essence of each reform. These principles included ensuring high levels of agrarian production, creating mechanisms for social protection of landowners and rural populations, as well as progressively liberalising the land market (see Table 1). The primary goals of the land reform implemented in these states were to free the market from significant regulatory constraints concerning the conditions of buying and selling agricultural land, establish an effective mechanism for concentration and auctions, and provide state assistance for land conservation.[38]

The war in Ukraine has affected all spheres of life, including land relations. The initial laws enacted at the onset of the war were focused on ensuring food security. Concurrently, registries and cadastres were closed, and the free transfer of land ownership was prohibited. On 19 November 2022, the law 'On Amendments to Certain Legislative Acts of Ukraine Regarding the Restoration of the Land Lease Rights Registration System for Agricultural Land Plots and Improvement of Legislation on Land Protection' came into effect. This law introduced changes, particularly to Clauses 5 and 27 of Chapter X of the Land Code of Ukraine concerning the free transfer of state and communal lands into private ownership. According to this provision, the law now prohibits the free transfer of communal and state-owned lands to private individuals and the issuance of permits for land management documentation for the purpose of such gratuitous transfers. This provision does not apply to the free transfer of land plots to private ownership for the owners of buildings or structures located on these land plots, nor does it apply to the free transfer of land plots into private ownership for Ukrainian citizens who obtained them for use before the Land Code came into effect. Consequently, during the state of war, the only individuals entitled to receive land plots free of charge are the Ukrainian citizens who have property ownership rights to immovable property such as residential houses, garages, garden houses, and other buildings according to the current legislation. Additionally, citizens to whom land plots were granted for use before 1 January 2002, have the right to acquire them without cost. In this case, the documents confirming the right of use may include, among others, state deeds for permanent land use rights (Article 23 of the Land Law of Ukraine in the 1992 version, original version of Article 126 of the current Land Law), state deeds for land ownership rights (Article 23 of the Land Law of the Ukrainian SSR of 1990), entries in land survey books of agricultural enterprises and organisations, entries in land-use books of village councils, records in registration books of executive

37 | Tarasovskyi 2023; Zinchuk 2016, 89.
38 | Babchenko 2017, 99.

committees of city and village councils (Article 20 of the Land Code of the Ukrainian SSR of 1970), state deeds for perpetual inherited land ownership, agreements on providing land plots for indefinite use for building individual residential houses, and acts on land allocation in kind. The transfer of land plots free of charge continues. According to Article 118 of the Land Code of Ukraine, a person can apply to the relevant executive authority or local self-government body that transfers state or communal land plots for privatisation within the norms of free privatisation, including land plots with residential houses, economic buildings, and structures located on them.

According to the law 'On Land Management', along with the application, the technical documentation on land management related to the establishment or restoration of land plot boundaries in kind (on-site) ordered by a citizen without a permit for its development is submitted. Within a two-week period from the date of receipt of the land management project regarding the allocation of the land plot, the respective executive authority or local self-government body decides to grant ownership of the land plot. The final step involves assigning a cadastral number to the land plot. In accordance with Article 21, item 11 of the law 'On the State Land Cadastre',[39] information on the measures for land and soil conservation (e.g. land development for agricultural and forestry needs, improvement of agricultural and forestry lands, reclamation of disturbed lands, conservation of degraded, low-productivity, and technogenically polluted lands) is entered into the State Land Cadastre based on land management schemes and techno-economic justifications for the use and conservation of lands within administrative-territorial units, as well as working land management projects.

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Rok DACAR[1]

Water Protection Litigation in Slovenia

Abstract

This article explores the possibilities for the private enforcement of the constitutional right to drinking water in Slovenia, enshrined in Article 70.a of the Constitution. Through an analysis of constitutional, civil, and administrative legal frameworks, it identifies both the structural availability and the practical limitations of existing mechanisms. While Slovenia offers several legal avenues for water-related litigation, their effectiveness is often hampered by procedural barriers, evidentiary challenges, and the absence of coherent implementing legislation. Particular attention is given to the role of the Constitutional Court and the underutilized potential of administrative remedies based on the Environmental Protection Act. Civil litigation, though possible in cases of identifiable harm, remains constrained by the inherent limits of tort law. The article argues that for Article 70.a to have meaningful legal effect, legislative reform and more active judicial engagement are essential.

Keywords: Drinking Water, Environmental Litigation, Constitutional Law, Slovenia, Private Enforcement

1. Introduction

Water is the basis of all human life. Throughout history, access to clean and reliable water sources has determined the rise and fall of civilizations. One of the many impressive examples of the importance of water is the Khmer civilization, which flourished in what is now Cambodia and built the hydraulic city of Angkor with the temple of Angkor Wat at its centre. The sudden demise of this civilization in the 15th century has long puzzled archaeologists and historians, but recent research has revealed that the city was most likely abandoned due to the collapse of its irrigation system. As the system became more complex, it became increasingly

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difficult to maintain. A series of severe droughts and subsequent floods, combined with poor maintenance causing siltation, led to the collapse of the system and the flooding and abandonment of the city.[2] The fate of Angkor is a reminder that even the most advanced civilizations can falter when water systems fail. In our time, ensuring access to clean and reliable water is not only a matter of public health and economic development, but also a fundamental requirement for the long-term survival of modern society.

Recognizing the essential role of water, the Slovenian Parliament took a significant step in 2016 when it passed a constitutional law adding a new Article 70.a to the Constitution of the Republic of Slovenia (hereinafter the Constitution).[3] The article in question enshrines the right to drinking water as a constitutional right. However, for this constitutional right to have any real meaning, it must also be effectively implemented and protected throughout the legal system. At present, the sectoral regulation of drinking water remains only partially aligned with the constitutional provision, which means that the direct and effective enforcement of the right to drinking water is not yet fully ensured.[4] The aim of this article, however, is not to provide an in-depth analysis of the content and impact of the relevant constitutional law, as this has already been done elsewhere.[5] Rather, the focus is on examining the possibilities of private enforcement of the right to drinking water in Slovenia within the framework of civil, administrative and constitutional law. Private enforcement in this context refers to the ability of individuals to seek redress to directly protect or secure their right to drinking water. This paper will examine whether and to what extent individuals in Slovenia can effectively enforce this constitutional right through legal action and what challenges or opportunities may arise in practice. The analysis is based on a review of relevant case law and legal acts and aims to shed light on the practical realities and challenges of private enforcement today. Ultimately, effective private enforcement mechanisms are critical to ensuring that constitutional rights are not merely symbolic, but have real impact in the lives of individuals.

This research is novel, as no comprehensive analysis of the possibilities for private enforcement of the right to drinking water in Slovenia has yet been carried out, and this issue is becoming ever more significant within broader debates about environmental and climate litigation. The first section of this paper introduces key concepts that are important for understanding the analysis that follows. The second section examines the possibilities for water litigation before the Slovenian Constitutional Court (hereinafter Constitutional Court). The third section turns to administrative law and examines the possibilities of protecting drinking water rights within the administrative law system. The fourth section deals with civil law procedures

2 | For more, see: National Geographic 2017; Penny et al. 2018. Also see: Buckley et al. 2010.
3 | Official Gazette of the Republic of Slovenia, no. 33/91-I as amended.
4 | Štemberger Brizani 2024, 50.
5 | See, for example: Sancin & Juhart 2023; Rakar, Tičar & Sever 2020.

and remedies and examines the role of tort law in the enforcement of these rights. The paper concludes with a summary of the findings and a critical assessment of the prospects for private enforcement of the right to drinking water in Slovenia.

2. Setting the scene

2.1. Environmental litigation and water litigation

"The protection of the environment has traditionally been carried out by public authorities through public enforcement."[6] In recent decades, however, private enforcement of environmental standards has gained considerably in importance. Environmental lawsuits are by no means a new phenomenon. As early as the 1960s, especially in the United States of America, litigation was recognized and deliberately used as a strategic tool for enforcing environmental protection goals.[7] Courts were identified as critical arenas for forcing regulatory action and enforcing environmental rights, often achieving policy changes that would otherwise have been unattainable through political means. Recent empirical research has further underscored the importance of environmental litigation. A comprehensive study by Brown University, which analyzed more than 25,000 civil lawsuits and 4,000 federal court decisions from 1988 to 2022, shows that environmental lawsuits have functioned as a remarkably effective mechanism for advancing environmental protection in the United States of America. However, the study found that lawsuits have disproportionately focused on environmental cases in western states, while issues more common in densely populated eastern regions, such as toxic pollution, access to clean drinking water, and sewage treatment, have received comparatively less judicial attention.[8]

In Europe, on the other hand, the use of litigation as a means of pursuing environmental and climate goals has only gained remarkable momentum in the last ten years. An important turning point was the Urgenda judgment of the District Court of The Hague in 2015,[9] which was later confirmed by the Dutch Supreme Court in 2019.[10] For the first time in the world, a court ordered a national government to take stronger action on climate change, citing the government's human rights obligations and duty of due diligence.[11] Subsequent landmark cases have further increased the reach and ambition of environmental litigation. In Milieudefensie v Shell, the District Court of The Hague broke new ground by requiring Dutch Royal

6 | Schumann Barragan 2024, 75.
7 | Hays 1986, 971; Martin 1972.
8 | Brown University 2024.
9 | Decision of the Hague District Court no. C/09/00456689.
10 | Decision of the Supreme Court of the Netherlands no.19/00135.
11 | For more see: Leijten 2019, 114–117.

Shell, a large multinational corporation, to reduce its greenhouse gas emissions, thereby extending the legal responsibility for climate change mitigation to the private sector.[12] Although the Court of Appeals later modified some aspects of the original judgment, it nevertheless upheld the principle that Shell is obliged to make meaningful efforts to reduce its emissions and contribute to global climate goals.[13,14] The case of Lliuya v. RWE, brought by a Peruvian farmer against the German energy company RWE, attempted to break new legal ground on the issue of corporate responsibility for transboundary climate impacts. The plaintiff, Luciano Lliuya, argued that RWE was responsible for approximately 0.47 percent of global carbon emissions and should therefore be held liable for a proportionate share of the costs associated with the rising water level of a glacial lake threatening his hometown. Although the Hamm Higher Regional Court ultimately dismissed the claim[15] on the grounds that the plaintiff had not suffered any direct damage at the time, the court recognized an important legal principle: companies can, in principle, be held accountable for environmental damage in other countries if this is attributable to their emissions.[16] The recognition of cross-border responsibility is reflected in human rights-based environmental cases. In the KlimaSeniorinnen case, the European Court of Human Rights (hereinafter ECtHR) ruled that inadequate state measures against climate change constitute a violation of rights protected by the European Convention on Human Rights (hereinafter ECHR).[17, 18] Important environmental cases before the ECtHR also include Öneryildiz v. Turkey,[19] which concerned a methane explosion at a rubbish tip in Ümraniye that killed nine of the applicant's relatives. The ECtHR held Turkey responsible for failing to prevent known risks and ensure accountability, finding violations of the right to life, property rights, and the right to an effective remedy. Another landmark case is López Ostra v. Spain,[20] where the applicant lived next to a waste-treatment plant causing severe pollution. The ECtHR found a violation of the right to respect for home and private life because the State failed to protect her from harmful environmental conditions. Stressing that serious pollution can impair private and family life, the ECtHR awarded compensation and confirmed State responsibility for regulating private activities. This case is particularly significant for linking environmental protection with human rights. In Hungary, Decision 28/1994 of the Constitutional

12 | Decision of the Hague District Court no. C/09/571932.
13 | Decision of the Hague Court of Appeals no. 200.302.332/01.
14 | For more, see: Johannsen 2025.
15 | Decision of the Higher Regional Court in Hamm no. 5 U 15/17.
16 | Verfassungsblog 2025.
17 | European Convention of Human Rights, as amended by Protocols 3, 5, and 8 and supplemented by Protocol 2, and its Protocols 1, 4, 6, 7, 9, 10, and 11, Official Gazette of the Republic of Slovenia – International Treaties, No 7/94.
18 | Decision of the ECtHR no. 53600/20.
19 | Decision of the ECtHR no. 48939/99.
20 | Decision of the ECtHR no. 16798/90.

Court is particularly relevant.[21] The case concerned a challenge a legal act which reduced the scope of state-managed protected areas. The petitioner argued that this violated the right to a healthy environment. The Court upheld the challenge, holding that once the State establishes a certain level of environmental protection, it cannot be reduced unless strictly necessary to realize other constitutional rights, and even then only proportionately. As the reduction was unjustified and not accompanied by stricter rules for private landowners, the Act was annulled.[22]

In the European context, the most prominent and influential environmental lawsuits in recent years have focused on climate protection measures. These cases have generally involved challenging the adequacy of government climate policy and imposing obligations on the largest emitters. However, the field of environmental litigation is much broader and includes court cases dealing with a variety of environmental harms, including pollution, habitat destruction, unsustainable land use and threats to biodiversity. Climate litigation, on the other hand, forms its own subgroup that focuses specifically on climate change-related claims. These cases usually deal with greenhouse gas emissions, climate adaptation measures or liability for climate-related damage. In other words, while all climate litigation falls within the scope of environmental litigation, not all environmental litigation relates to climate issues.

This article will focus on another important subset of environmental litigation: Water litigation. Water litigation encompasses lawsuits that seek to protect water resources. For the purposes of this analysis, a particular emphasis will be placed on litigation involving fresh drinking water, i.e. litigation that seeks to ensure the availability, purity, and safety of water for human consumption. However, it should be recognized that the concept of water litigation can also extend to cases involving saltwater resources, such as efforts to prevent marine pollution, protect coastal and marine ecosystems, or address transboundary impacts on seas and oceans.

2.2. Access to water as a fundamental right

In recent decades, the right to drinking water has developed into a fundamental human right in international law. A milestone in this development was the adoption of General Comment No. 15 by the UN Committee on Economic, Social and Cultural Rights in 2002, which provides a comprehensive and authoritative interpretation of the International Covenant on Economic, Social and Cultural Rights (hereinafter ICESCR).[23] The General Comment states that the right to

21 | Decision of the Hungarian Constitutional Court no. 28/1994.
22 | For more on environmental law and water regulation in Hungary, see: Bandi 2020; Szilágyi 2013; Szilágyi, 2016, Szilágyi 2018.
23 | International Covenant on Economic, Social and Cultural Rights, UN General Assembly, 16 December 1966, 2200 A (XXI), Official Gazette of the Republic of Slovenia, no 35/92 – International Treaties, no. 9/92.

water is inextricably linked to other rights protected by the ICESCR, in particular the right to an adequate standard of living and the right to the highest attainable standard of health. General Comment No. 15 establishes that states must guarantee everyone access to sufficient, safe, acceptable, physically accessible and affordable water for personal and domestic use. At European level, the ECtHR has increasingly recognized the essential nature of access to safe drinking water. Although the ECHR does not contain an explicit right to water, the ECtHR has interpreted access to water as falling within the scope of protection of Article 8, which guarantees the right to respect for private and family life, and in certain cases under Article 2, which protects the right to life. The case law of the ECtHR in this area has developed mainly through cases concerning environmental damage that affects the quality and availability of water. For example, in the case of Tătar v. Romania,[24] the ECtHR dealt with water pollution caused by the release of cyanide, while in the cases of Dzemyuk v. Ukraine[25] and Solyanik v. Russia,[26] it examined the impact of pollution from cemeteries on drinking water sources. In such cases, the ECtHR has affirmed that states have a positive obligation to protect individuals from serious health risks arising from the contamination or deprivation of water. However, constitutional recognition of the right to water at national level remains the exception rather than the rule. Very few countries have chosen to explicitly enshrine this right in their constitutions. Slovenia is one of just four countries in the world, together with Slovakia, Uruguay, and South Africa, to provide explicit constitutional protection for the right to drinking water.[27]

3. Water litigation before the Slovenian Constitutional Court

Private enforcement of the right to drinking water before the Constitutional Court can take different forms and can be based on different provisions of the Constitution.

24 | Decision of the ECtHR no. 67021/01.
25 | Decision of the ECtHR no. 42488/02.
26 | Decision of the ECtHR no. 47987/15.
27 | It is important to note that water is also regulated at the EU level through two key directives. The Water Framework Directive (Official Journal of the European Union L 327) establishes a comprehensive framework for the protection and sustainable management of all water bodies, including rivers, lakes, groundwater, and coastal waters, with the overarching aim of achieving "good status" across the Union through integrated river basin management. Complementing this, the Drinking Water Directive (Official Journal of the European Union L 435) guarantees that water intended for human consumption is safe, clean, and accessible by setting strict quality standards, requiring regular monitoring, and obliging Member States to ensure access for all citizens, including vulnerable groups.

3.1. Procedural issues

The two relevant procedures in which private parties can gain access to the Constitutional Court are the constitutional complaint procedure and the constitutionality and legality review procedure. The basics of both procedures are laid down in the Constitution, while the Constitutional Court Act[28] contains their more detailed description. In general, the constitutional complaint procedure can be initiated by an individual or a legal entity that believes its constitutional rights have been violated by an individual legal act (e.g. a court judgment) issued by state authorities, local community authorities, or bearers of public authority. It is important to note that – with very few exceptions – all available legal remedies must have been exhausted. In order for the Constitutional Court to rule on a constitutional complaint *in meritum*, the petitioning party must demonstrate a legal interest, i.e. it "must show, with a degree of probability, that a favorable decision on their request would bring them a specific benefit (an improvement of their legal position) that it could not achieve otherwise."[29] Another possibility for a private party to gain access to the Constitutional Court in connection with water litigation is the constitutionality and legality review procedure. In this procedure, the Constitutional Court examines whether the contested legal act complies with a higher-ranking legal act. For example, it examines the constitutional conformity of laws and ordinances with the constitution and the conformity of ordinances with laws. Private parties initiating conformity proceedings must demonstrate a legal interest – a requirement that is often difficult to fulfil in practice. According to established case law, the legal interest must be direct and concrete. The applicant must prove that the contested act directly affects his rights, legal interests or legal position or that a positive decision on his application would lead to a change in his legal position.[30] In addition, the initiation of a constitutional or legality review is generally dependent on the submission of a constitutional complaint. An exception to this rule exists if the contested legal act has a direct effect, i.e. if its implementation does not require the adoption of an implementing law or a special procedure for the adoption of an individual legal act.[31] In conclusion, it is evident that high standards must be met to successfully initiate these procedures before the Constitutional Court.

3.2. Substantive issues

A number of constitutional provisions can serve as a basis for water litigation before the Constitutional Court. The most notable of these is the right to drinking water, which is enshrined in Article 70.a of the Constitution. However,

28 | Official Gazette of the Republic of Slovenia, nos. 64/07, 109/12, 23/20, 92/21 and 22/25.
29 | Decision of the Constitutional Court no. Up-1840/07.
30 | Nerad 2019, 455.
31 | Ibid., 458–460.

the protection of water can also be invoked under other constitutional rights, including the right to life (Article 17 of the Constitution), personal dignity (Article 21 of the Constitution) and the right to a healthy living environment (Article 72 of the Constitution). In addition, all international treaties that are directly applicable under Article 8 of the Constitution can serve as grounds for the protection of water before the Constitutional Court.[32] Water protection litigation before the Constitutional Court is rare, but there are some examples, in particular judgment no. 2023 U-I-416/19-32.[33] The case concerned the alleged unconstitutionality of several provisions of the Water Act,[34] the Plant Protection Products Act[35] and the Ordinance on the Water Protection Area for the Ljubljana Field Aquifer.[36] The contested regulations prohibited the use of pesticides only in the immediate water catchment area, while in the remaining part of the strictest water protection area their use was merely restricted. Significantly, the Constitutional Court emphasized that the protection of drinking water is essential not only for the current population, but also for future generations. Applying the precautionary principle, the Constitutional Court emphasized that potential long-term damage cannot be ignored, as the right to drinking water extends to all future generations. Finally, the Constitutional Court found that it is contrary to the principle of legality to leave essential aspects of water protection in the most strictly protected areas to secondary legislation.

A comparative analysis of constitutional cases on environmental protection offers valuable and interesting insights into the development of the understanding of the position of the environment in the field of constitutional law. The decision of the German Federal Constitutional Court in the Neubauer case[37] is a key example of climate change litigation. While the ruling does not explicitly deal with water protection, its reasoning can be applied to such issues. In this judgment, the German Federal Constitutional Court found that the right to life and physical integrity imposes positive obligations on the state to protect individuals from environmental harm. These obligations are linked to the state's duty to protect the environment, which, although not a fundamental right, creates legally enforceable positive obligations.[38] This means that if the State fails to fulfill these obligations, individuals have the right to seek judicial enforcement. The decision is particularly relevant in the Slovenian context, as German constitutional case law has a strong influence on the case law of the Slovenian Constitutional Court.

32 | Glavaš 2019, 29; Sancin et al. 2015, 61–67.
33 | Decision of the Constitutional Court no. U-I-416/19-32.
34 | Official Gazette of the Republic of Slovenia, nos. 67/02, 2/04.
35 | Official Gazette of the Republic of Slovenia, nos. 83/12, 35/23.
36 | Official Gazette of the Republic of Slovenia, nos. 43/15, 181/21, 60/22 and 35/23.
37 | Decision of the German Federal Constitutional Court nos. 1 BvR 2656/18, 1 BvR 288/20, 1 BvR 96/20, 1 BvR 78/20.
38 | Schumann Barragan 2024, 83–84.

4. Water protection in civil litigation

4.1. Reach and limits of civil litigation in environmental cases

Civil litigation in environmental matters encompasses a wide range of claims, including claims for compensation for damages already incurred, as well as claims for unfair or deceptive practices and false or misleading advertising, commonly referred to as greenwashing.[39] These actions can be brought against both private companies and public authorities. In civil law jurisdictions, civil litigation is fundamentally designed to protect individuals from interference with their legally protected interests. In order to bring a civil action for damages, the plaintiff must therefore prove that he suffered legally recognized damage. If such damage is established, the plaintiff can demand either restitution in integrum or monetary compensation in the amount of the actual damage incurred. This is in contrast to the approach in common law jurisdictions, where the concept of punitive damages is well established. Courts can award damages that significantly exceed the actual harm suffered, not only to compensate the plaintiff but also to punish the offender for particularly egregious, malicious or socially harmful behaviour. Such compensation payments have a dual function: retribution for the wrongdoer and general deterrence for society as a whole.[40]

If no legally recognized damages to the individual are shown, no civil claim may be pursued.[41] This limitation was evident in the Lliuya v. RWE case mentioned above. There, the court dismissed the plaintiff's appeal on the grounds that he had not yet suffered legally recognized damage. The decision supports the conclusion that pure environmental damage, i.e. damage to the environment that has not (yet) manifested itself as harm to an identifiable person, cannot, in principle, be pursued in civil proceedings. For example, a chemical spill that contaminates a remote river without directly affecting a person's health or property would generally not give rise to a civil action because there is no injured party with standing to sue. However, if the same pollution intrudes into an aquifer that is used for drinking water supply and this causes health problems for local residents, a civil action might be possible because a concrete and identifiable harm has occurred. However, there are some exceptions to this general principle. In countries such as France, Portugal, the Netherlands and Italy, legislation allows non-governmental organizations to

39 | Greenwashing denotes the practice of conveying a false impression or disseminating misleading information about the environmental performance of a company's products, services, or operations. Typically, it involves marketing or public relations strategies aimed at presenting an image of environmental responsibility without substantive efforts to reduce ecological harm. See: Spaniol et al. 2024, 3.
40 | Varl 2016, 236.
41 | Schuman Barragan 2024, 87.

claim compensation for pure environmental damage.[42] Another notable example is Spain, where the recently enacted Law on the Rights of the Mar Menor[43] gives the Bay of the Mar Menor the status of a legal entity and allows any individual to bring a claim on its behalf. These developments represent a departure from the traditional principles of civil liability and are tailored to improve environmental protection by widening the circle of actors with legal standing.

For civil liability to arise, a causal link must be established between the actions of the responsible party and the damage suffered by the plaintiff. Most civil law systems follow the theory of adequate causation, which states that only the consequences that are objectively foreseeable and typical (i.e. adequate) results of a particular action can serve as legally relevant causes of liability. A person is therefore only liable for damages that were not only factually caused by their conduct, but are also reasonably foreseeable and not the result of extraordinary or highly unusual coincidences.[44] In environmental cases, however, it can be particularly difficult to establish a causal link between the defendant's conduct and the damage in question. This is because environmental damage often takes time to become apparent and can result from multiple sources whose individual contributions are difficult to isolate and quantify.[45] For example, water pollution may result from industrial waste from a factory, agricultural runoff or inadequate waste treatment, all of which potentially contribute to the end result. Legal theory and case law have developed various tools to address these evidentiary challenges. One such approach is the all-or-nothing test formulated by Shavell,[46] under which the defendant is held fully liable if it is more likely than not that its conduct caused the harm. If this proof is not provided, the defendant is not liable at all. This rigid approach does not allow for a middle ground, even in cases involving multiple tortfeasors or where there is scientific uncertainty as to causation.[47] Some legal systems also make use of a reversed burden of proof[48] or impose solidary liability to facilitate the establishment of responsibility in complex environmental harm cases.[49]

Civil liability faces significant inherent limitations when used as a tool in environmental litigation, particularly due to strict requirements such as the demonstration of individualized harm and clear causation. As a result, legal developments have increasingly shifted to alternative avenues, in particular the protection of fundamental rights and increased corporate accountability for breaches of due

42 | Fasoli 2017, 30–37.
43 | Official Gazette of the Kingdom of Spain, no. 237, pp. 135131–135135.
44 | Opinion of the Supreme Court of the Republic of Slovenia no. 2/1998.
45 | Tanko 2022, 23.
46 | Shavell 1985, 588.
47 | Tanko 2022, 23.
48 | See the article 6 of the German Umwelthaftungsgesetz (German Federal Law Gazette no. I S. 2634 as amended in no. I S. 2421).
49 | Tanko 2022, 24.

diligence.[50] However, I believe that despite these legal and practical obstacles, civil liability should not be dismissed as irrelevant in the context of water protection. Where actual damage can be established and directly attributed to the responsible polluter, civil actions remain a valuable tool not only to obtain compensation but also to promote accountability. Even if the chances of success are limited, pursuing civil actions can strategically raise public awareness and create incentives for regulatory action.

4.2. Actions for damages

Despite the procedural specificities discussed above, civil actions for damages remain possible in cases of water pollution, provided that the pollution results in legally recognized damage to a person. According to Article 132 of the Obligations Code,[51] such damage may take the form of diminution of property, loss of profit, or non-material damage, including physical or psychological suffering, fear, or injury to the reputation of a legal person.

In cases of water pollution, the most likely type of actual harm is damage to health, which can have both material and non-material consequences. For example, a person who works as a mechanic and is chronically exposed to contaminated drinking water may develop neurological symptoms that affect his motor skills and ability to concentrate, ultimately preventing him from continuing his professional activity. In such a case, the person suffers material damage, such as loss of employment, loss of income and the burden of medical expenses. At the same time, non-material damage may arise from reduced quality of life, chronic discomfort, psychological distress, and loss of autonomy. In these types of situation, the person affected can claim compensation for both the material and non-material damage caused by the pollution. Material damage can also be caused by other forms of water pollution, even if no actual damage to health occurs. For example, the death of fish intended for sale has a direct impact on the economic interests of fish farmers, who suffer a loss of stock and income. Similarly, the contamination of irrigation water used in fruit plantations can reduce crop yields and affect the quality of the fruit. In both cases, the pollution causes a measurable financial loss, which constitutes material damage under Slovenian tort law. As far as non-material damage is concerned, the basis for compensation can include various forms of suffering, such as physical pain, emotional distress resulting from a reduction in living conditions, fear, or the death or serious disability of a close family member.[52] According to Article 179 of the Obligations Code, the amount of compensation for non-material damage must be reasonable and proportionate to the actual damage

50 | Schumann Barragan 2024, 84.
51 | Official Gazette of the Republic of Slovenia, no. 97/07.
52 | Jadek Pensa 2003, 1023–1024.

suffered. In other words, the damages awarded must correspond to both the degree of suffering and the broader social context.[53] Slovenian courts have dealt with environmental cases in which claimants have sought non-material damages, arguing that pollution has affected their quality of life and caused emotional suffering.[54] A major procedural obstacle in Slovenian tort law, which applies to all cases of environmental damage, is the high standard of proof, which approaches certainty. While this is usually unproblematic in classic tort scenarios, e.g. if a company fails to secure a construction site and a passer-by falls into an open ditch and breaks a leg, this poses a major challenge in environmental litigation. In such cases, causation is regularly complex and diffuse and determining it is often difficult. As Tanko rightly points out, "in cases of environmental harm, proof of a standard of certainty seems unachievable, if not practically impossible, since it is often unclear whether, and to what extent, a particular factor caused the environmental damage. Often, multiple factors act simultaneously, making it difficult to determine their relative impact."[55]

In addition to compensation, the injured party can also demand the removal of the damaging effect on the basis of Article 133 of the Obligations Code and Article 99 of the Law of Property Code.[56] For example, a court can order a polluting factory to cease harmful emissions or otherwise mitigate the ongoing environmental damage. Importantly, in cases where damage arises from an activity that is carried out with state authorization and is considered to be in the public interest, recent case law of the Supreme Court of Slovenia has recognized the direct applicability of Article 26 of the Constitution.[57] This provision states that "everyone has the right to compensation for damage caused through unlawful actions in connection with the performance of any function or other activity by a person or authority performing such function or activity within a state or local community authority or as a bearer of public authority."[58] Accordingly, even if the polluting activity is not carried out by the state itself, the state can be held liable under the Obligations Code if the damage results from an activity in the public interest that it has authorized. This interpretation considerably expands the literal meaning of Article 26 of the Constitution.

Furthermore, it is important to note a clear trend across Europe towards the introduction of civil liability regimes for damages resulting from non-compliance with human rights and environmental due diligence obligations. A notable example is the Corporate Sustainability Due Diligence Directive,[59] which introduces civil

53 | Ibid., 1037.
54 | Decision of the High Court in Ljubljana, no. I Cp 1008/2021.
55 | Tanko 2022, 23.
56 | Official Gazette of the Republic of Slovenia, nos. 87/02, 91/13, and 23/20.
57 | Decisions of the Supreme Court of the Republic of Slovenia nos. II Ips 126/2019 and II Ips 129/2019.
58 | See also: Tanko 2022, 10.
59 | Official Journal of the European Union L 2024/1760.

liability for companies that fail to comply with their human rights and environmental due diligence obligations.[60] Article 29 of the Directive establishes a fault-based liability framework. Claimants must prove three essential requirements: actual damage to a natural or legal person associated with a protected legal interest; a negligent or intentional breach of due diligence obligations under Articles 10 and 11; and a causal link between the breach and the damage. However, the scope of the Directive in environmental cases remains somewhat limited, as pure environmental damage is generally excluded unless it directly affects a person. Nevertheless, the Directive allows Member States some discretion in its implementation and they are encouraged to go beyond the minimum standards, in particular by including liability for pure environmental damage.[61] Although full implementation at European Union level is still pending, this new framework represents a significant step towards strengthening the legal possibilities to hold companies accountable for environmentally harmful practices.

4.3. Collective actions

The Collective Actions Act[62] allows collective actions in certain cases of environmental harm, including pollution or other degradation of drinking water. However, it is important to emphasize that collective actions in the Slovenian legal system should not be equated with class actions as they are known in other jurisdictions, particularly in the United States of America. In a class action, one or more persons sue on behalf of a larger group of people with similar legal claims. A well-known example is the Volkswagen Dieselgate case, in which it was revealed that the company had used software to manipulate emissions test results for its diesel vehicles. Volkswagen eventually agreed to a $14.7 billion settlement to compensate consumers and buy back or repair the effected cars.[63] In contrast, collective actions are defined more narrowly in Slovenia. According to Article 3, paragraph 1 of the Collective Action Act, they are actions "by which a qualified entity claims redress for a disadvantage for the benefit of all injured parties in a mass tort case, regardless of the legal qualification of the claim." Therefore, such actions cannot be brought by an individual. According to Article 4, paragraph 1, only certain entities can act as plaintiffs, namely, legal persons governed by private law that operate on a non-profit basis and whose core activities are directly related to the rights allegedly violated, as well as the State Attorney's Office. A recent example of a collective action lawsuit in this context is the lawsuit filed against Apple by the non-governmental organization Kolektiv 99. The organization alleged that Apple

60 | Schumann Baragann 2024, 85.
61 | Verfassungsblog 2024.
62 | Official Gazette of the Republic of Slovenia, nos. 55/17 and 133/23.
63 | European Parliamentary Research Service 2016, 3.

had deliberately slowed down the operating system of certain iPhone models, thereby depriving users of important functions.[64]

Under Article 2 of the Collective Actions Act, collective actions may also be brought in relation to "claims related to liability for damage due to causing an environmental accident, as laid down by the Act governing environmental protection." The relevant legislation here is the Environment Protection Act,[65] which defines an environmental accident in Article 4 as "any uncontrolled or unforeseen event caused by an activity affecting the environment resulting in an immediate or delayed, direct or indirect, threat to human life or health or to the quality of the environment, as well as an ecological accident." Accordingly, if a water supply is contaminated as a result of such an event, collective actions can be asserted. Although there is not yet a definitive example in Slovenian case law of a class action arising from a water-related environmental accident, a notable real-life incident illustrates the legal potential. In 2017, a major fire broke out at the Kemis waste treatment plant in Vrhnika, resulting in an uncontrolled release of hazardous substances into the nearby Tojnica stream. This incident led to a significant fish kill and caused public concern about the safety of drinking water.[66] Subsequent annual monitoring showed that the pollution had been remedied, although the municipality of Vrhnika reported irregularities in the implementation of the monitoring.[67] Although this case did not lead to a collective action, it shows in which scenarios collective actions can be used to protect environmental and public health interests.

5. Water litigation before administrative courts

Administrative procedures are among the most important preventive mechanisms for protecting drinking water. For example, the authorities can refuse to issue building permits for construction projects that pose a potential risk of water contamination. "Depending on the powers granted to it, the administration will monitor or sanction non-compliance with environmental regulations."[68] Beyond administrative supervision, however, there also are some possibilities for judicial protection through Administrative Courts. In Slovenia, administrative jurisdiction is exercised by a specialized Administrative Court, which is institutionally separate from ordinary courts. It is important to distinguish between administrative decision-making, which is carried out in the first instance by the executive authorities,

64 | Tax-Fin-Lex 2025.
65 | Official Gazette of the Republic of Slovenia, nos. 44/22, 18/23 – ZDU-1O, 78/23 – ZUNPEOVE, 23/24, and 21/25 – ZOPVOOV.
66 | MMC RTVSLO 2017.
67 | MMC RTVSLO 2020.
68 | Schumann Barragan 2024, 75.

and administrative judicial review, which is carried out by the Administrative Court as a form of ex-post control. This chapter focuses on the latter, in particular on the extent to which individuals and civil society actors have access to legal remedies when administrative decisions affect environmental interests, including water protection. Comparative experience shows that other legal systems have adopted different institutional approaches. In Sweden and Finland, for example, specialized water courts serve as primary forums for the resolution of water-related disputes. These courts combine technical and legal expertise and provide a more focused venue for dealing with issues of water use, pollution and protection.[69]

At European Union level, the Environmental Liability Directive[70] has created a uniform framework for the prevention and remediation of environmental damage based on the polluter-pays principle. This principle, enshrined in Article 191(2) of the Treaty on the Functioning of the European Union[71] and operationalized through the Environmental Liability Directive, requires polluters to bear the costs of preventing, mitigating, and remedying environmental harm. It promotes accountability and incentivizes responsible environmental behaviour by ensuring that these costs are not externalized to the public. The principle promotes accountability and encourages proactive environmental stewardship by internalizing the costs of pollution.[72] Although the Environmental Liability Directive does not encompass all categories of environmental harm, it explicitly includes damage to water, along with harm to protected species, natural habitats, and soil. With respect to remediation, the Directive prioritizes the restoration of the environment to its baseline condition. Alternative remedial measures may be imposed only when such restoration is not feasible. The Directive also distinguishes between fault-based liability, the general rule, and strict liability, which applies to a defined set of hazardous activities.[73]

Slovenia has transposed the Environmental Liability Directive primarily through the Environmental Protection Act,[74] which regulates liability for environmental damage in Articles 161 to 179 under the chapter "Liability for the Prevention and Remediation of Environmental Damage." According to paragraph 1 of Article 168, a civil initiative or any legal or natural person whose legal interests are affected, or are likely to be affected, by environmental damage, is entitled to notify the Ministry of the Environment of a specific instance of environmental harm and demand state action. This provision also enables preventive action, meaning that legal standing is not limited to cases where harm has already materialized. In

69 | Hollo, Vihervuori & Kuusiniemi 2010, 53.
70 | Official Journal of the European Union L 143.
71 | Official Journal of the European Union C 326.
72 | Petrašević & Poretti 2022, 4–7.
73 | See: Tanko 2022, 11–14.
74 | Official Gazette of the Republic of Slovenia no. 44/22, 18/23 – ZDU-1O, 78/23 – ZUNPEOVE, 23/24 and 21/25 – ZOPVOOV.

addition, in accordance with paragraphs 7 to 9 of Article 168 of the Environmental Protection Act, any legal or natural person whose legal interests are or are likely to be affected by environmental damage, as well as certain non-governmental organizations, are granted the status of interested parties in proceedings concerning the adoption of a decision on the remediation of environmental damage. This status is also conferred on landowners or possessors of property necessary for the implementation of the measures prescribed in such a decision. These parties are entitled to challenge the decision, including a determination that no environmental damage has occurred, by initiating an action before the Administrative Court in accordance with the Administrative Dispute Act. An additional legal remedy is available under Article 231 of the Environment Protection Act, which allows any natural person, non-government organization, or civil initiative to submit a prohibitory claim seeking to halt or prevent excessive environmental interference by a planned activity. Significantly, the claimant does not need to demonstrate personal harm or risk thereof; it is sufficient to show that the environment itself is endangered. While this remedy permits the suspension or prohibition of harmful activities, it does not include claims for compensatory damages.[75] The Environment Protection Act mirrors the Directive's dual model of liability (fault-based and strict), without expanding the scope of activities that trigger strict liability.

To summarize, the Slovenian legal framework allows for preventive and remedial administrative and judicial measures to protect water and the environment in a broad sense. Importantly, standing is not limited to parties who have suffered personal harm; damage to the environment as such is sufficient. However, the range of available legal actions remains relatively narrow, and there is no relevant case law to date. Whether this framework will be used more actively in the future depends on whether awareness and institutional support for the enforcement of environmental rights increases.

6. Conclusion and final remarks

This article examined the legal options available in Slovenia for the private enforcement of the constitutional right to drinking water enshrined in Article 70.a of the Constitution. Based on an examination of constitutional, civil and administrative procedures, the analysis has shown that, although the Slovenian legal system formally provides for several ways to protect this right, in practice they are inconsistently effective and accessible. The possibility of a constitutional complaint proves to be a particularly promising avenue, especially given the fundamental status of the right to drinking water within the Slovenian constitutional order. The Constitutional Court's interpretation in the 2023 decision on the Ljubljana Field

75 | Tanko 2022, 17.

Aquifer shows a willingness to read Article 70.a in conjunction with other constitutional principles such as the precautionary principle and the protection of future generations. However, access to the Constitutional Court is restricted by strict procedural requirements. Individuals must demonstrate a direct and concrete legal interest and, in most cases, exhaust all ordinary legal remedies first. These thresholds significantly restrict the circle of potential applicants and limit the real enforceability of the constitutional right to water. Administrative proceedings offer a different form of protection, in particular through the preventive and corrective mechanisms provided by the Environmental Protection Act. Here, standing is not limited to individuals who have suffered personal harm, but also extends to civil initiatives and non-governmental organizations seeking to protect the environment itself. The Environmental Liability Directive, which has been transposed into Slovenian law, strengthens this framework by codifying the polluter pays principle and allowing intervention before the damage has fully occurred. However, despite its potential, the administrative justice system is still underutilized in the context of water protection. There is no case law and institutional practice has yet to adopt the preventive logic provided for in the legislation. In contrast, civil litigation is characterized by structural limitations that are difficult to overcome. In line with the civil law tradition, Slovenian tort law requires the plaintiff to prove individual damage and to establish a direct causal link between the defendant's conduct and the damage. Because of these requirements, civil claims are ill-suited to address diffuse, long-term or collective damage to water resources. Although civil liability remains relevant in cases of identifiable harm, such as health damage resulting from contaminated drinking water, this avenue is limited by high evidentiary thresholds and the lack of mechanisms to recognize pure environmental harm as compensable. Collective actions, introduced by the Collective Actions Act, offer some improvement by allowing qualified entities to litigate on behalf of multiple injured parties, but they are still very narrow in scope and have yet to be used in significant environmental or water-related cases.

It is particularly important to emphasize that all of these legal avenues, constitutional, administrative and civil, were already available prior to the adoption of Article 70.a. Even before the passing of the constitutional law, water-related claims could be made on the basis of other constitutional rights, such as the right to life (Article 17), personal dignity (Article 21) and the right to a healthy living environment (Article 72). Article 8 of the Constitution also allowed for the direct application of relevant international treaties, such as the ECHR. In this sense, Article 70.a has not fundamentally changed the legal possibilities for the protection of water, but rather strengthened the existing protective measures by adding an additional constitutional layer. Its contribution to date has therefore been primarily declarative rather than transformative.

Despite these shortcomings, the Slovenian legal framework for water litigation is not without potential. By enshrining the right to drinking water in the

Constitution, Slovenia belongs to a small group of states that have elevated this right to the highest level of legal protection. This normative basis provides fertile ground for further developments, both through legislative measures and judicial interpretation. Foreign case law, in particular that of the ECtHR and the constitutional and civil courts in Germany and the Netherlands, has shown that water can be protected not only as an environmental good, but also as a human right. This evolving comparative jurisprudence provides useful interpretative guidance to Slovenian courts, in particular to the Constitutional Court, which has both the competence and the constitutional mandate to give life to Article 70.a. Nevertheless, the most urgent challenge lies not in judicial interpretation, but in the lack of comprehensive implementing legislation. For Article 70.a to be fully effective, it needs to be operationalized through concrete legal norms that set standards for water quality, access, affordability and institutional accountability. Currently, sectoral laws regulating water management, environmental protection and land use remain fragmented and are not systematically aligned with Article 70.a. The gap between constitutional entitlement and legal reality makes the right to water vulnerable to administrative discretion and political inconsistencies.

To summarize, the state of affairs in Slovenia can be described as structurally adequate but substantively incomplete. The legal system offers several ways to protect water, but the practical enforceability of the right to drinking water depends on further legal developments. A coherent and proactive strategy is needed to ensure that Article 70.a is not just a symbolic declaration but a real and enforceable guarantee. This strategy must include a greater willingness of the judiciary to apply human rights principles in environmental cases. As global pressure on water resources increases, Slovenia has the opportunity and responsibility to ensure that its constitutional commitment to the right to drinking water is not only respected in principle, but also implemented in practice.

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An Overview of Inheritance of Agricultural Land in Turkish Law

Abstract

Agricultural land in Turkey has been fragmented as a result of the application of equal inheritance rules. It has adversely affected productivity and the sustainability of the rural sector. As such, Law No. 5403 introduced a compulsory transfer system that showed a preference for single-heir succession. The current research assesses the legal and constitutional basis for this reform, especially regarding conformity with Articles 13, 35, and 44 of the Turkish Constitution and as understood within European inheritance practices influenced by the Common Agricultural Policy (CAP). The system aligns with international standards and therefore serves a legitimate public interest; however, it raises concerns of social justice for women and the non-inheriting heirs. The study reaches the conclusion that the legal reform alone is insufficient without implementing complementary social policies to either ensure that land consolidation ensues or that equitable rural development takes place.

Keywords: Agricultural Land, Inheritance Law, Compulsory Transfer System, Land Fragmentation, Turkish Legal Reform

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1. Introduction

Agriculture, which has a history of around ten thousand years, is the cultivation of all forms of plant and animal produce for human utilization. Despite technological advancement, arable land has continued to be required-and even more extensively-so due to the increase in the population of the world as a whole. At current projections, the world would have crossed eight billion by 2025 and nine billion by 2040[6], but this can be achieved only if the demand for food is maintained at its current increasing trend. The percentage of the people residing in the rural areas continues to decrease.[7] For Turkey, the percentage was around 75% when the Republic had first started but now it has decreased to a mere 7%.[8] A review of the Turkish economy by sector—agriculture, industry, construction, and services—reveals a dramatic shift: the agricultural sector, which constituted about 70% of the national economy in the 1970s, has fallen to 14.8% by 2024.[9] Despite population growth paralleling global trends, Turkey has witnessed a significant reduction in agricultural land. In 1990, the per capita area of agricultural land was 0.76 hectares; it decreased to 0.28 hectares in 2022.[10] Nowadays, most countries adopt both legal and economic measures to protect agricultural land.

These are providing different subsidies and incentives to farmers, fixing price policies of agricultural produce, and conducting land consolidation activities. Another important step is implementing legal measures to discourage excessive subdivisions of agricultural landholdings. Efficient agricultural production becomes more inefficient on parcels of land that are smaller than a certain area. In the above situation, land fragmentation—due to multiple causes—undermines agriculture productivity.[11] When agricultural land is divided into small plots and cultivated separately by different individuals, it increases the demand for equipment and labor. Thus, the costs of agricultural production often exceed the income that is generated, eventually forcing small-scale farmers to stop their agricultural activities. Although urban expansion, development projects, tourism, mining, and infrastructure construction all contribute to the reduction of agricultural land, inheritance is the most significant factor behind the ongoing fragmentation in Turkey. The Turkish system of inheritance, under the principle of equal division among heirs, has resulted in the fragmentation of agricultural land into smaller

6 | https://tinyurl.com/4zphktxn [02.05.2025]
7 | According to United Nations reports, 55% of the global population resided in urban areas in 2018, and this figure is projected to rise to 68% by 2050. In Turkey, the rural population is expected to decline by 34% by 2050 compared to 2018 levels, https://tinyurl.com/yywpxypj [02.05.2025].
8 | https://tinyurl.com/53u89j5s [02.05.2025].
9 | https://tinyurl.com/3u5fcp9k [02.05.2025]. For an in-depth analysis of agriculture's role in the sectoral composition of the Turkish economy; see Demir, Çağlar Gültekin & Uzundumlu 2023, 63 and following.
10 | https://tinyurl.com/42ppcyzw [02.05.2025].
11 | Sayın et al. 2017, 213–214.

pieces across generations to the extent that the plots obtained do not support farm families anymore.[12] This problem necessitated legal reforms by the Turkish parliament. Articles 8/A through 8/J of Law No. 5403 on Soil Protection and Land Use, entered into force on May 15, 2014, constituted a significant step toward the restructuring of agricultural inheritance law in Turkey.

The amendment provided for a legal framework for the transfer of inherited farm land as expeditiously as possible, and in a manner that ensures its viability by preventing partition below a certain threshold. The system, referred to as the 'compulsory transfer system[13]', is designed to ensure the continuity and profitability of farming production. Similar legal systems exist in other European countries with similar land fragmentation problems. In this regard, the European Union has also implemented the CAP, which aims to protect rural areas, maintain food security, and promote sustainability. This study will examine the compulsory transfer system introduced under Turkish law in the context of the European Union's Common Agricultural Policy, evaluating their shared goals and policy alignment.

2. Historical development of legal regulations on agricultural land subject to inheritance in Turkish law

Agricultural land is understood to be land whose soil, topographical, and climatic characteristics are suitable for agricultural production—whether currently used for that purpose, capable of being used as such, or potentially transformable into arable land through zoning, reclamation, and improvement.[14] Different measures have been taken, since the foundation of the Republic of Turkey, in preventing the fragmentation of agricultural land and to improve agricultural productivity. One of the earliest such efforts was included in the Turkish Civil Code of 1926 (Law No. 743)[15], specifically Articles 597–602, which allowed for the allocation of agricultural holdings to individual heirs as an exception to the general rules of inheritance.[16]

12 | Zevkliler 1969, 263; Ünal 1990, 106.

13 | Aydoğdu 2020, 44–45; Dalcı Özdoğan 2021, 66 et seq.; Çabri 2023, N. 479 et seq.

14 | On the concept of agricultural land, see Özay 2015, 31–36; Eren & Başpınar 2017, 155 et seq.; Başpınar 2006, 266 et seq.; Sağlam 2010, 202–203; Uyumaz & İlhan 2018, 864–865; Açıkgöz 2018, 75; Çabri 2023, N. 463–464; Yılmaztekin 2022, 449; Dalcı Özdoğan 2021, 45; Bilgin Yüce 2011, 106.

15 | Referred to in this study as OCC.

16 | The provisions of OCC Articles 597–602 are derived from the 1907 Swiss Civil Code and correspond to Articles 620–625 of the ZGB. These provisions also incorporate the principle that agricultural holdings may, under certain conditions, be transferred undivided to a single heir. For further details, see Baumann 1924, 27 et seq.; Beck 1976, 194; Escher 1960, Art. 620, N. 43; Tunçomağ 1954, 513. In Switzerland, the Federal Law on Agricultural Land (Bundesgesetz über das bäuerliche Bodenrecht – BGBB) came into effect on January 1, 1994. With the enactment of this law, Articles 620–625 of the Swiss Civil Code (ZGB) were repealed. As a result, the inheritance of agricultural holdings and farmland in Swiss law was removed from the scope of the Civil Code and placed under a distinct legal framework. For further information, see Beeler 1998, 40 et sec.

These provisions aimed to prevent the division of agricultural holdings among multiple heirs, which would have led to the creation of economically unviable, small-scale farms.[17] However, because these provisions were not mandatory, families with multiple children often chose to divide inherited land despite the inefficiencies, leading to fragmented agricultural plots.[18] This situation persisted until the new Turkish Civil Code[19] (Law No. 4721) came into force on January 1, 2002. Articles 659–668 of this code maintained the approach of allocating agricultural enterprises in their entirety to a single qualified heir.

Like the previous code, these provisions were non-compulsory and functioned as default rules, rather than binding mandates.[20] Furthermore, neither the former nor the current civil code imposed a time limit for requesting the allocation of an agricultural enterprise, resulting in delays, prolonged idleness of agricultural land, and continued fragmentation. Although the Soil Protection and Land Use Law No. 5403 came into effect on July 19, 2005, it initially brought no changes to the inheritance framework for agricultural land. The provisions of the Civil Code continued to govern inheritance[21, 22]

Recognizing the need for a more robust legal framework, the legislature introduced mandatory and comprehensive rules through Law No. 6537, which amended Law No. 5403 on May 15, 2014, by adding Articles 8/A–8/K.

This amendment established a new system for the inheritance of agricultural land and repealed the previously applicable Civil Code provisions (Articles 659–668).[23] Thus, inheritance of agricultural lands was removed from the general scope of the Civil Code and placed under a specialized legal framework. In any legal system that recognizes private property, it is essential to determine how the estate of a deceased individual will be distributed.

Inheritance law addresses who may claim rights based on familial ties and the extent to which the deceased may dictate the disposition of their assets. In this context, inheritance law governs the transfer of all or part of an individual's rights, obligations, and private legal relationships to surviving real or legal persons upon

17 | Saymen 1944, 356. In addition to the Civil Code, various legal regulations have been enacted concerning agricultural inheritance. These include the Farmer Land Law No. 4753 of 1945, the Soil and Agricultural Reform Law No. 1757 of 1973, and the Agricultural Reform Law on Land Arrangement in Irrigation Areas No. 3083 of 1984. However, to maintain the focus and scope of this study, the provisions of these laws are not addressed.
18 | Düren 1972, 118.
19 | It will be referred to as TCC in this study.
20 | Başpınar 2006, 264; Aras 2004, 139; Sağlam 2010, 210.
21 | For earlier versions of the Law, see https://tinyurl.com/5nbtffj9
22 | Yıldız, Uzun & Çoruhlu 2018, 97.
23 | The following articles address various aspects of agricultural land regulation: Article 8/A defines the minimum size of agricultural land deemed to provide sufficient income; Articles 8/B to 8/J govern the transfer of agricultural land through inheritance; and Article 8/K outlines the procedures and processes related to the acquisition of agricultural land.

death or legal declaration of absence.[24] The core of inheritance law is the right to property and the principle of its continuity after death.[25] As inheritance law contains elements both of individual rights and social interests, the legal traditions adopted vary from one nation to another.[26] The countries in the continental European legal tradition, like Turkey, Switzerland, and Germany, adopt a mixed system between personal freedom and social needs.[27] In this tradition, Turkish inheritance has been determined with core principles like testamentary freedom, equal heirs, and division in kind.[28] However, the provisions of the 2014 amendments to the Soil Protection and Land Use Law differ from these principles.[29]

That is to say that the compulsory transfer system imposed by the new legal framework limited testamentary freedom and put a premium on agricultural viability rather than equal division.

In this section of the study, we will first explore the guiding principles of the compulsory transfer system and then analyze the exceptions it introduces to the conventional doctrines of Turkish inheritance law.

3. Compulsory transfer system in inheritance of agricultural land in Turkish inheritance law

With the enactment of Law No. 6537 on May 15, 2014, a significant agricultural reform was introduced in Turkish law through the addition of Articles 8/A–8/K to the Soil Protection and Land Use Law No. 5403.[30] The most notable feature of this reform is the mandatory nature of these new provisions. Unlike previous regulations, heirs no longer have the discretion to opt out of the rules governing the inheritance of

24 | İmre & Erman, 2024, 1; Dural & Öz 2024, N.1; Köprülü 1985, 5; Antalya & İpek 2021, 46; Serozan & Engin 2024, § 1 N. 1–4; Kocayusufpaşaoğlu 2024, 3–4.

25 | The close connection between the right of inheritance and property is also evident in national legal frameworks. For instance, in the former Union of Soviet Socialist Republics, where individual ownership was historically not recognized, the right of inheritance was abolished for a certain period. For more detailed information, see İmre & Erman 2024, 2; Kocayusufpaşaoğlu 2024, 22 et seq. Similarly, in medieval England, the distinction between realty and personalty—applying different legal systems to immovable and movable property—shaped inheritance law, as the rights of feudal lords over immovables were considered paramount. For further details, see Sawyer & Spero 2015, 2.

26 | Öztan 2024, 6–7; Kılıçoğlu 2023, 9; Köprülü 1985, 19.

27 | Öztan 2024, 7; Kocayusufpaşaoğlu 2024, 26–29.

28 | Eren & Yücer Aktürk 2023, N. 1543; Öztan 2024, 464–467; Çabri 2023, N. 144 et seq.; Ozanemre Yayla 2011, 67 et seq.; Serozan & Engin 2024, § 7 N. 43–47.

29 | Yavuz & Topuz2015, 674; Şenol & Uzun Kazmacı 2020, 164; Özay 2015, 154; Kartal 2019, 847.

30 | Agrarian reform is defined as "the restructuring of human-land relations, specifically aimed at ensuring and enhancing the efficient use of agricultural lands, increasing production, redefining the distribution of property rights on these lands, improving methods of conservation and cultivation, and securing democratic rights and freedoms for rural populations." For similar definitions, see Eren & Başpınar 2017, 93; Zevkliler 1969, 256.

agricultural land—compliance is now compulsory.[31] For the compulsory transfer system to apply, two conditions must be met: the estate must include at least one agricultural land parcel, and there must be more than one heir in the inheritance.[32]

Under this system, the primary rule is that the agricultural land must be transferred to a single heir as an undivided whole, provided it does not fall below a legally defined minimum size. The law, however, provides four options for heirs—on the condition that they reach a unanimous agreement:

1. Transfer of the agricultural land to one heir or to multiple heirs, as long as the land meets the 'sufficient income size' requirement;
2. Establishment of a family property partnership (or a profit-sharing version) and transfer of the land to this partnership;
3. Formation of a limited liability company in which all heirs are shareholders, and transfer of the land to this company;
4. Transfer of the land to a third party.[33]

According to Article 8/B/II of the Soil Protection and Land Use Law, heirs have a one-year period from the date the inheritance is opened to reach a unanimous agreement and complete the required legal transactions for transferring ownership.[34] This time limit is intended to prevent inherited agricultural lands from remaining unused and to facilitate swift transfer of ownership.

A critical restriction introduced by the new system is the prohibition against subdividing agricultural land below a certain size. The law imposes two key limitations: a minimum agricultural land size and a 'sufficient income' size.[35] These criteria, though restrictive to property rights, aim to prevent the negative effects of land fragmentation and ensure the sustainability of agricultural operations.[36]

If the heirs fail to reach an agreement within the specified one-year period, any heir may initiate legal proceedings to request the transfer of ownership.

31 | Erdoğan 2016, 133; Özçelik 2015, 93; Özay 2015, 25–26.
32 | Çabri 2023, N. 476; Özay 2015, 83, 157; Şenol & Uzun Kazmacı 2020, 169; Dalcı Özdoğan 2021, 73, 86; Erdoğan 2016, 138, 146.
33 | For detailed information see Çabri 2023, N. 484–496; Özay 2015, 166 et seq.; Şenol & Uzun Kazmacı 2020, 170–174; Dalcı Özdoğan 2021, 92 et seq.; Erdoğan 2016, 150 et seq.; Eren & Yücer Aktürk 2023, N. 1824 et seq.; Eren & Başpınar 2017, 177–178.
34 | Çabri 2023, N. 483; Özay 2015, 156–157; Kartal 2019, 849; Erdoğan 2016, 139.
35 | Minimum agricultural land size refers to the smallest parcel size set by the Ministry, below which, even with the rational and efficient use of production activities and inputs, the land cannot maintain its productivity if further reduced. For detailed definitions and explanations, see Çabri 2023, N. 472; Yavuz & Topuz 2015, 677 et seq.; Açıkgöz 2018, 78; Erdoğan 2016, 142; Özçelik 2015, 89–90. The size of agricultural land with sufficient income denotes the minimum total area that one or more parcels must collectively reach to generate a certain level of income for the owner and their family. This concept may apply to a single piece of land or to multiple agricultural lands owned by the same person that, together, form an economically viable unit. The sufficient income size is determined separately for each district and is always equal to or larger than the minimum size. For further details, see Açıkgöz 2018, 79; Erdoğan 2016, 145; Özçelik 2015, 89–90; Yavuz & Topuz 2015, 679–680; Çabri 2023, N. 473.
36 | Yıldız, Uzun & Çoruhlu 2018, 97.

In such cases, the court will transfer the land to a 'qualified heir', if one exists. If multiple heirs qualify, priority is given to the heir who can maintain subsistence through the land. If no heir meets this condition, the land is transferred to the one who offers the highest price among the qualified heirs. If no heir is qualified, it goes to the highest bidder among all heirs.[37] Moreover, if the heirs neither reach an agreement nor initiate legal proceedings within the one-year timeframe, the Ministry of Agriculture may file a lawsuit against all heirs. As a last resort, the court can transfer ownership of the agricultural land upon the Ministry's claim so that the land is not left vacant or further fragmented.[38]

4. General principles of Turkish inheritance law

4.1. Principle of freedom of will

In inheritance law, the principle of freedom of will is fundamental to the division of an estate.[39] This freedom applies to both the timing and the manner of division. Accordingly, heirs may request the division of the inheritance at any time (Art. 642/I of the Turkish Civil Law – TCL), determine how it will be divided (Art. 646 TCL)[40], and agree on the distribution of shares as they see fit (Art. 650 TCL). While

37 | Article 10 of the Regulation on the Transfer of Ownership of Agricultural Land outlines the criteria for determining the competent heir. According to this provision:
(1) An heir or heirs who score fifty points or more, based on the following criteria, shall be considered competent heirs:
a) Twenty points for those whose livelihood depends on the agricultural lands subject to inheritance,
b) Ten points for those without non-agricultural income,
c) Ten points for those whose spouses are actively engaged in agricultural activities,
ç) Ten points for those possessing the professional knowledge and skills necessary for cultivating agricultural lands,
d) Five points for those residing within the district where the inherited lands are located for less than five years, and ten points for those residing five years or longer (Amended: RG-8/12/2021-31683),
e) Ten points for those without any social security coverage,
f) Five points for those insured under the Social Security Institution's agricultural insurance,
g) Five points for those registered in the Ministry's existing registration systems for less than five years, and ten points for those registered five years or longer (Amended: RG-8/12/2021-31683),
ğ) Two points for those registered in agricultural organizations for less than five years, and five points for those registered five years or longer (Amended: RG-8/12/2021-31683),
h) Five points for those who own agricultural tools and equipment,
ı) Women receive an additional five points.
For more on the concept of the competent heir and the qualification conditions, see Özçelik 2015, 96–97; Erdoğan 2016, 158; Özay 2015, 98; Dalcı Özdoğan 2021, 104 et seq.
38 | Çabri 2023, N. 519; Erdoğan 2016, 160–161; Dalcı Özdoğan 2021, 115–117; Yavuz & Topuz 2015, 686–687.
39 | Oğuzman 1995, 326; Kocayusufpaşaoğlu 2024, 702; Escher 1960, Art. 607 N. 1 et seq.; İmre & Erman 2024, 478; Serozan & Engin 2024, § 7, N. 43; Eren & Yücer Aktürk 2023, N. 1545–1548; Ozanemre Yayla 2011, 53–54; Dalcı Özdoğan 2021, 12; Çabri 2023, N. 144; Mamük 2013, 319–320.
40 | Eren & Yücer Aktürk 2023, N. 1544; Kılıçoğlu 2023, 369.

the formation of an inheritance partnership is automatic upon the opening of the estate and does not depend on the heirs' consent, its continuation and dissolution are entirely subject to their will.[41] In principle, heirs are under no obligation to divide the estate or dissolve the inheritance partnership. Prior to the enactment of the compulsory transfer system, this also applied to agricultural land, which could remain undivided within the inheritance partnership for extended periods.

The compulsory transfer system takes its name from the mandatory nature of the relevant legal provisions, which override the heirs' freedom to maintain joint ownership of agricultural land. The future of agricultural land in an estate is no longer entirely at the discretion of the heirs. Under this system, based on the principle that ownership must be transferred, heirs are granted the opportunity to reach an agreement on the transfer of ownership. However, this transfer must be completed within one year from the opening of the inheritance (Art. 8/B/II of the Soil Protection and Land Use Law – LSPLU). This introduces a significant limitation to the previously unrestricted right to request division at any time.[42] Furthermore, Article 8/C/I of the LSPLU restrictively lists the individuals to whom ownership of agricultural land may be transferred.

The principle of testamentary freedom, a reflection of individual autonomy in inheritance law, also applies to the deceased (testator).[43] The testator may, through a testamentary disposition, determine how their estate should be managed after their death, including delaying the division of the inheritance. Such dispositions are generally considered valid.[44] However, the compulsory transfer system imposes exceptions to this freedom. One such exception concerns the timeframe for division. Specifically, agricultural land must be transferred within one year from the opening of the inheritance (Art. 8/B/II LSPLU). Even if a testamentary provision stipulates a longer delay, the statutory one-year timeframe must still be observed for agricultural land.

Another exception is set out in Article 8/F of the LSPLU. According to the first paragraph of this provision, "The right of the heir who requests the transfer of ownership of agricultural land with sufficient income and who is recognized as the sole qualified heir cannot be nullified by a testamentary disposition." This complements the rule that, in judicial proceedings concerning the transfer of agricultural land, priority is given to the qualified heir making the request. Moreover, the LSPLU prohibits the division of agricultural lands below certain thresholds. If a testamentary disposition includes a final wish to divide agricultural land among multiple heirs, such a wish must still conform to the legal limitations on minimum land size and

41 | Acar 2006, 124, Çabri 2023, N. 145–146.
42 | Şen Doğramacı 2017, 75–76.
43 | Dural & Öz 2024, N. 1949; Çabri 2023, N. 147 et seq.
44 | Dural & Öz 2024, N. 1998. However, it is unlawful for the heir to completely prohibit the division of the estate or to do so for an excessively long period. In such cases, the relevant testamentary provision may be subject to annulment (Art. 557/b.3 TCC). For detailed discussion, see Kocayusufpaşaoğlu 2024, 684; Oğuzman 1995, 377; Kılıçoğlu 1989, 39; Kılıçoğlu 2023, 352; Ozanemre Yayla 2011, 48 et seq.

sufficient income thresholds. Thus, even testamentary freedom is constrained by statutory requirements intended to preserve agricultural productivity and prevent land fragmentation.

4.2. Equality principle

Equality of successors in law of inheritance is not in the same quantity of their shares (quantitative equality), but in the same legal standing and rights of each successor over the estate (qualitative equality).[45] This doctrine renders all successors—whether on account of age, sex, or because their right develops out of the law or a will clause—have the same legal standing and voting power in the division of the estate. As specified in Article 649/I of the Turkish Civil Law (TCL), this principle of equality applies "unless otherwise provided." Accordingly, exceptions to this rule may arise from the law, the testator's will, or an agreement among the heirs.[46] An important deviation from this principle occurs under the compulsory transfer system introduced in the LSPLU.

If one of the heirs sues for partition (Art. 8/C/II LSPLU) or the Ministry sues because of not transferring agricultural land within the statutory time limit (Art. 8/Ç LSPLU), preference is given to the 'competent heir' among the co-heirs in deciding who gets the agricultural land. When the law considers such an heir, they are entitled to request transfer of ownership.[47] This legal preference for the competent heir represents a deliberate departure from the general principle of equal rights among heirs in the inheritance. Specifically in the context of agricultural land, the law prioritizes the practical goal of maintaining agricultural viability over formal equality, thus granting the competent heir a superior claim to ownership in certain circumstances.

4.3. Exact sharing principle

Another fundamental principle guiding the division of inheritance is the principle of partition in kind, which stems from the broader concept of equality among heirs.[48] According to this principle, inheritance assets should, as a rule, be divided in their original form rather than being converted into cash.[49] Generally, land is

45 | Escher 1960, Art. 607, N. 5; Aral 1979, 49; Eren & Yücer Aktürk 2023, N. 1549; Dural & Öz 2024, N. 1951; Kılıçoğlu 1989, 31; Ozanemre Yayla 2011, 56; Çabri 2023, N. 156; Oğuzman 1995, 326; Kocayusufpaşaoğlu 2024, 708.

46 | Çabri 2023, N. 158; Oğuzman 1995, 327; Eren & Yücer Aktürk 2023, N. 1550; Ozanemre Yayla 2011, 57.

47 | While the OCC was in effect, male heirs were given priority in the allocation of agricultural holdings, thereby deviating from the principle of equality to the disadvantage of female heirs (OCC Art. 598/II).

48 | Eren & Yücer Aktürk 2023, N. 1565; Kocayusufpaşaoğlu 2024, 708; Çabri 2023, N. 159. According to Dural and Öz, the principle of sharing in kind—often seen as an extension of the principle of equality—is actually a distinct principle, and the two frequently come into conflict. For more detailed information, see Dural& Öz 2024, N. 1955.

49 | Ozanemre Yayla 2011, 59–60; Çabri 2023, N. 159.

considered legally divisible property.[50] However, agricultural lands are treated as an exception to this rule.

In order to avoid the perpetual fragmentation of agricultural property and to protect agricultural production, the LSPLU statutorily forbids the partitioning of agricultural property below legally specified sizes.[51] Consequently, the mandatory transfer system implemented through the LSPLU is a significant deviation from the partition in kind principle.

In shaping the legislation on the transmission of agricultural lands, the legislator was guided by the intent to stop the long-standing tendency of land fragmentation. For this purpose, the law instituted the notions of 'minimum agricultural land size' and 'sufficient income agricultural land size' (Art. 8/A, LSPLU). These sizes are specified in Annex List No. (1) of the LSPLU and are determined separately for each district in Turkey, depending on the type of agricultural land involved. According to the law, agricultural lands cannot be divided or transferred if doing so would result in a plot smaller than the minimum sizes defined in the list.

Once an agricultural plot reaches the minimum legal size, it becomes legally indivisible. Consequently, in the division of inheritance, agricultural lands are subject to transfer in accordance with these statutory size limits, overriding the general rule of in-kind distribution and prioritizing the preservation of viable agricultural units.[52]

5. Evaluation of the constitutionality of the restrictions on the right of ownership imposed by the provisions of the compulsory transfer system

The property right, protected by the Constitution under basic rights and freedoms, entitles the individual with the widest range of control over his or her property. The restrictions imposed on this right are regarded as exceptional and must strictly comply with constitutional values.[53] The most basic constitutional reasons for such prohibitions are enshrined in Article 35 of the Constitution of the Republic of Turkey, 'Right to Property', which states: "Everyone has the right to property and inheritance. These rights may only be restricted by law in the public interest. The exercise of the right to property cannot be contrary to the public interest."

In addition, Article 13 of the Constitution—regulating the curtailment of basic rights and freedoms—is that any limitation must be made by law, must not violate

50 | Aksoy Dursun 2012, 45; Oğuzman, Seliçi & Oktay Özdemir 2024, N. 61, N. 1948.
51 | Bağcı 2019, 461.
52 | Çabri 2023, N. 464; Özçelik 2015, 90.
53 | Oğuzman, Seliçi & Oktay Özdemir 2024, N. 1117 et seq.; Şen Doğramacı 2017, 72–73; Ertaş 2020, 68 et seq.; Etgü 2009, 15; Bilgin Yüce 2011, 109 et seq.

the substance of the right, and must be in keeping with the letter and spirit of the Constitution, most importantly the principle of proportionality.[54]

The obligatory rules in the system of compulsory transfer, restricting both the testator's autonomy to dispose through the will and the succession's autonomy to divide the inheritance, form a restriction on the property right in accordance with the Constitution.[55] Arguments regarding the constitutional legitimization of these limits have been considered by the Constitutional Court, which has justified their compatibility with the principles of the Constitution. In one of its decisions, the Court stressed that:[56] "Article 44 of the Constitution gives the State the responsibility to protect and improve agricultural lands and empowers it to decide their size and land consolidation. While in the advanced agricultural countries the number of agricultural holdings declines, and its average size is increasing, Turkey will witness the reverse effect. There is a legitimate public interest in reversing this trend by promoting the growth of agricultural enterprises, in line with international standards. Therefore, introducing regulations such as pre-emption rights for neighboring landowners does not violate the public interest and is consistent with the duty imposed on the State by Article 44."

The other restraints on property rights of the LSPLU are also in conformity with the principle of proportionality. The provisions do not entirely divest the heirs of their rights over the land. Although the law imposes a time limit and procedure for the exchange of agricultural land, it does not withdraw the liberty of will of the heirs entirely. Furthermore, the system ensures that heirs do not suffer economic harm; equalization payments are available when necessary to ensure fairness in the distribution.

In light of these factors, it can be concluded that the compulsory transfer system governing the inheritance of agricultural lands does not infringe upon the constitutional right to property in a manner that would render it unlawful. Instead, it strikes a balance between individual rights and the public interest in preserving sustainable agricultural practices.

6. The relation of the provisions of the compulsory transfer system with the common agricultural policies of the European Union

The European Union does not have one or a collective 'inheritance law'; it is instead a division that falls under the specific Member States. As a result, inheritance laws—such as those over agricultural land—are considerably different in all of the

54 | Özbudun 2021, 113 et seq.; Gözler 2021, 329 et seq.; Gemalmaz 2018, 117 et seq.; Etgü 2009, 176 et seq.
55 | Şen Doğramacı 2017, 74 et seq.; Yavuz & Topuz 2015, 669–670.
56 | For the Constitutional Court decision dated 30.10.2014, numbered E. 2014/133 and K. 2014/165, see https://tinyurl.com/3t3vp473 [03.05.2025]

Member States throughout the EU.[57] Yet, in most Member States, farm policies at the national level have created mechanisms to avoid the segmentation and inefficiency of farm lands through provisions for the transmission of agricultural farms to only one heir.[58]

For instance, France has introduced special inheritance provisions for agricultural property under the Code Rural, reflecting the principle of L'agriculture familiale. These include prioritizing heirs actively engaged in farming, granting droit de préemption (pre-emption rights) to prevent division, and implementing a single-heir inheritance system.[59] Germany, under the Höferecht regime, also supports single-heir succession for agricultural holdings, with compensation paid to other heirs.[60] In Italy, to curb fragmentation, policies promote partnerships and family-run farming companies.[61] Austria similarly upholds sole ownership as a rule for agricultural land, supporting the sustainability of family farms.

Such approaches—akin to Turkey's compulsory transfer system introduced in 2014 under amendments to the LSPLU—have been in place across the EU for much longer. These national measures have been heavily influenced by the European Union's CAP, which plays a pivotal role in shaping agricultural governance across the bloc. The CAP was originally designed to address post-war concerns such as food security, stable incomes for farmers, protection from market volatility, and harmonization of agricultural mechanisms among Member States.[62] These aims were first codified in the Treaty of Rome (1957), and the policy's foundations were laid during the Stresa Conference (1958). The CAP became operational in 1962 and remains the EU's oldest and most developed common policy.[63] According to Article 39 of the Treaty of Rome, the CAP's objectives include ensuring a fair standard of living for the agricultural population, increasing agricultural productivity, stabilizing markets, ensuring food security at reasonable prices for consumers, protecting rural areas, and promoting sustainable resource management. In recent years, it has also incorporated goals such as combating climate change. The CAP is subject to periodic revision, with targets reviewed and updated every four years.

In this context, Turkey's 2014 legal reform, introducing a system that facilitates the indivisible transfer of agricultural land to a single competent heir, aligns

57 | Although the European Union does not have a unified inheritance law regime, in cross-border inheritance cases within its member states, EU regulations determine the competent authority, the applicable law, and the recognition of final decisions. For the relevant EU regulations on this matter, see https://tinyurl.com/57azpyh3 [03.05.2025].

58 | For detailed information on European Union agricultural law, see Barents 2022, 20 et seq.

59 | For detailed information on French agricultural law and inheritance of agricultural land, see Dissaux 2024, 257 et seq.

60 | For detailed information on German and Austrian agricultural law and the inheritance of agricultural land, see Martínez, Holzer & Norer 2022, 11 et. seq.

61 | For detailed information on Italian agricultural law and inheritance of agricultural land, see Germanò 2022, 26, 52 et seq.

62 | https://tinyurl.com/2eyrwudd [05.05.2025]

63 | Atalay 2004, 59 et seq.; Fennell 1997, 15.

with longstanding EU practices. This amendment effectively closed a significant legislative gap in Turkish law and brought it closer to European standards in the governance of agricultural inheritance.

7. Inherited agricultural land distribution and social justice

Turkish agricultural land inheritance goes beyond a strictly legal issue. Due to its broad implications for rural development, social justice, and equity, it has to be analyzed from social policy, economics, politics, and culture perspectives. Practically, agricultural land fragmentation due to inheritance has the effect of impeding production efficiency, accelerating rural poverty, and deepening social inequality, thus becoming a complex issue with wide-ranging social, economic, political, and cultural implications.[64]

Equal inheritance shares, as mandated by current legislation, result in the ongoing fragmentation of agricultural lands and a consequent decline in economic efficiency. Although recent legal reforms have been implemented to address this issue, these reforms primarily aim to preserve agricultural sustainability by transferring land to a single heir. Though the general aim is to cushion the adverse impacts of reduced agricultural output—lower rural development, increased poverty, and increasing inequality—the policy can deprive non-inheriting heirs of land or social security.[65] It thus poses serious questions about the attainment of social justice in rural society.

Farming on land that has been diminished through fragmentation also increases the costs of modernization and mechanization in agriculture. As a result, smallholder farmers are often compelled to rely on traditional, low-productivity methods. This limits their ability to produce for the market, pushing them toward subsistence farming rather than contributing meaningfully to the national economy.[66] With time, such families end up being caught in a cycle of poverty, and since family sizes increase, urban migration frequently becomes their only feasible alternative.

This phenomenon is one of the primary drivers of rural-urban migration of younger generations. Consequently, the rural population tends to grow older, thereby further corroding the social fabric of the rural communities. Concurrently, the lack of proper social protection devices for non-inheriting heirs worsens social inequality in cities. This can increase the number of dissatisfied individuals in cities who cannot find decent jobs and a satisfying quality of life.

Besides youths, women constitute another age group disproportionately victimized by the fragmentation of land through inheritance. The historical barriers

64 | Ntihinyurwa & de Vries 2021.
65 | Yücer et al. 2016, 2 et seq.
66 | Ntihinyurwa & de Vries 2021.

to women's access to land in agriculture underscore the gendered aspect of social justice. Despite their constitutionally guaranteed equal right to inheritance, cultural beliefs and patriarchal customs—especially in rural contexts—continue to constrain women from exercising these rights. Consequently, women are often coerced into forgoing their inheritance rights,[67] thereby perpetuating existing gender disadvantages.

Given these multifaceted challenges, it is crucial to adopt an approach grounded in social policy principles rather than relying solely on a legal framework when regulating the inheritance of agricultural land. Implementing social protection mechanisms for non-inheriting heirs, integrating them into rural development initiatives, and promoting alternative models such as agricultural cooperatives are key strategies that can help advance social justice and foster more equitable rural transformation.

In conclusion, the inheritance of agricultural land is not merely a matter of legal property rights, but a complex social policy issue deeply intertwined with social welfare, equity, and justice. A balanced approach that ensures both the efficient use of agricultural land and the principles of social justice is essential for promoting sustainable rural development and strengthening social cohesion.

8. Conclusion

The inheritance of agricultural land in Turkey stands at the intersection of legal doctrine, constitutional rights, social justice, and sustainable development. The fragmentation of arable land—driven largely by the equal distribution principle under Turkish inheritance law—has emerged as a major impediment to agricultural productivity, rural development, and economic sustainability. In response, the Turkish legislature introduced a significant legal reform in 2014 through amendments to Law No. 5403 on Soil Protection and Land Use, establishing a compulsory transfer system aimed at preventing further land division and preserving the viability of agricultural holdings.

From a constitutional perspective, this system raises essential questions about the balance between individual property rights and the public interest. Article 35 of the Turkish Constitution guarantees a citizen's right to property and inheritance but allows the State to impose restrictions when justified by law and in the public interest. The Constitutional Court accepted that system of compulsory transfer as valid, making much emphasis on Article 44 to protect and improve agricultural lands. The Court has also found that the limitations introduced are proportionate, do not violate the essence of the right to property, and include mechanisms—such as equalization payments—that preserve economic fairness among heirs. In this

67 | Doss, Summerfield & Tsikata 2014, 5 et seq.

light, the compulsory transfer system is both constitutionally sound and socially rational, striking a necessary equilibrium between private ownership and the broader public good.

On the international stage, Turkey's legal developments align closely with the long-standing agricultural inheritance policies of several EU Member States. Although inheritance laws remain under national jurisdiction in the EU, countries such as France, Germany, and Austria have long implemented measures—often favoring single-heir succession—to curb land fragmentation and sustain agricultural enterprises.[68] These national approaches are heavily influenced by the European Union's CAP, which emphasizes food security, rural viability, and sustainable resource management. Turkey's reforms thus reflect not only a domestic response to agricultural inefficiency but also a harmonization with European standards in agricultural governance.

Nevertheless, while the compulsory transfer system offers structural solutions to land fragmentation, it also presents significant social implications that cannot be ignored. The switch to single-heir inheritance may result in the exclusion of non-inheriting heirs—particularly younger relatives and women—who lack secondary sources of income or landholdings. This is an issue of equity and social justice, particularly where there is rural poverty, gender inequality, and population decline. In addition, in the absence of good social protection arrangements and pro-poor rural policies, the system may exacerbate socio-economic inequalities and accelerate rural-urban migration.

Therefore, the issue of agricultural inheritance must be addressed not merely through legal instruments but through a comprehensive, interdisciplinary strategy that integrates social policy, economic incentives, and cultural sensitivity. Ensuring fair compensation, promoting cooperative farming models, and empowering disadvantaged groups—especially women and youth—are essential components of a socially just and sustainable rural transformation.

In conclusion, the Turkish model of compulsory agricultural inheritance reform is a forward-looking initiative that aligns with constitutional values and international practices. However, its true effectiveness lies in its capacity to balance legal structure with social justice. A holistic approach—rooted in law, aligned with public interest, and sensitive to socio-economic realities—is essential for safeguarding Turkey's agricultural future while upholding the principles of equity, sustainability, and rural resilience.

68 | For a comparison of the special regulations governing inheritance of land, see: Hornyák 2018, 107–119.

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The Impact of Environmental Degradation on Children's Rights in Central Europe

Abstract

This article reframes environmental degradation as not just an ecological or economic issue, but fundamentally a children's rights concern. Around the world, courts and international bodies are recognising that a safe, clean, and sustainable environment is essential for the fulfilment of fundamental human rights. Children are among the most vulnerable to environmental harm, bearing disproportionate impacts of pollution, climate change, and resource depletion. As future generations, children have a critical stake in environmental protection, raising questions of intergenerational justice and the duty of today's decision-makers to safeguard tomorrow's world. This article provides an in-depth legal analysis of the recognition of environmental rights as human rights, with a special focus on how environmental degradation affects children's rights. It offers a comparative survey of international law, examines leading case law (international and domestic, especially in Central Europe), explores theoretical frameworks like intergenerational equity, and assesses regional implementation in Slovakia, Czechia, Poland, and Hungary. The article concludes with de lege ferenda recommendations for reforms to ensure the right of every child to a healthy environment across the region.

Keywords: Environmental Rights, Human Rights, Children's Rights, Intergenerational Justice, Central Europe, Environmental Jurisprudence, Right to a Healthy Environment, Environmental Litigation, Climate Justice, European Environmental Law, Sustainable Development, Visegrád Group

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1. Introduction

In recent years, the connection between a healthy environment and human rights has been more widely recognised than ever before. Environmental degradation is no longer seen purely as an ecological or economic issue – it is increasingly framed as a human rights concern. This shift is especially evident in the context of children's rights. Climate change and pollution disproportionately affect children, undermining their fundamental rights to life, health, development, and education. Around the world, 1 billion children now face extreme risk from the impacts of climate change and environmental degradation, threatening virtually every aspect of their well-being.[2] More than 90% of children under 15 regularly breathe air so polluted that it endangers their health and development.[3] These realities have led to a growing consensus: a safe, clean, and sustainable environment is essential for the full enjoyment of human rights, especially for children. In 2021, the United Nations Human Rights Council[4] – followed by the UN General Assembly in 2022[5] – formally recognised the right to a clean, healthy, and sustainable environment as a human right. This recognition has been considered a breakthrough moment for environmental justice. It is expected to embolden governments, courts, and civil society to become more active in the protection of environmental rights. It also complements the guidance from child-rights bodies, such as the UN Committee on the Rights of the Child's General Comment No. 26 (2023), which urges states to urgently address the environmental harms that compromise children's rights.[6] Together, these global developments shift the discussion from viewing environmental protection as a policy recommendation to understanding it more as a legal obligation that is rooted in human rights.

While the developments mentioned above are definitely global, there are regions in the world where climate and environmental jurisprudence are still comparatively underdeveloped. This article will focus on one of these regions – Central Europe. The study turns to Slovakia, Czechia, Poland, and Hungary – countries that share historical and political trajectories and form the core of the so-called Visegrád Group. At first glance, this region might seem an unlikely focal point for cutting-edge environmental human rights analysis. Nevertheless, examining Central Europe is both significant and timely. Historical, political, and economic factors have uniquely shaped how these countries approach environmental protection

2 | UNICEF ECA Regional Office 2024, 2.
3 | Stanford University 2023.
4 | UN Human Rights Council 2021
5 | UN General Assembly 2022.
6 | Committee on the Rights of the Child. (2023, 22 August), General comment No. 26 (2023) on children's rights and the environment, with a special focus on climate change (CRC/C/GC/26), United Nations.

and children's rights – and understanding this context is crucial for identifying both the obstacles and opportunities for legal development. Focusing on Central Europe's approach to environmental rights as human rights – with a special lens on how environmental degradation affects children's rights – provides a compelling and necessary case study. It shows how universal human rights concepts are interpreted and applied in a particular regional context that has its own legacies and challenges. The analysis below surveys the international legal framework linking environmental degradation and children's rights, then examines key jurisprudential developments – internationally and within the four Central European states. It explores how courts and lawmakers have begun to treat a healthy environment as essential to children's well-being. It also touches on notions of intergenerational justice. It will also offer recommendations *de lege ferenda* – on how the law ought to evolve. The main goal of the study is to assess to what extent Central Europe is turning the right to a healthy environment into a reality for children. It will attempt to answer the question: what more can be done to strengthen the environmental rights of children.

2. Environmental rights in international law

International law recognises more and more that a healthy environment is integral to the enjoyment of human rights. Several treaties and instruments – ranging from global human rights conventions to climate agreements – explicitly or implicitly connect environmental protection with human well-being. This section examines key international sources, including the Convention on the Rights of the Child (CRC), the Paris Agreement, and the UN Framework Principles on Human Rights and the Environment, and how they address environmental rights and children's rights.

The CRC, adopted in 1989, does not use the phrase 'environmental rights' explicitly. However, it imposes obligations on States that directly relate to environmental conditions. Article 24 on the right to health requires States to take measures to combat disease and malnutrition "through the provision of adequate nutritious foods and clean drinking-water, taking into consideration the dangers and risks of environmental pollution".[7] In other words, the CRC explicitly recognises that environmental pollution is a major threat to children's health and obliges states to address it. Furthermore, Article 29 of the CRC (on education) calls for children's education to include the development of respect for the natural environment. This clearly shows the importance of environmental awareness for the full development of the child.

In recent years, the CRC's monitoring body, the Committee on the Rights of the Child, has taken a much more direct stance on environmental issues, especially

7 | UN General Assembly 1989.

climate change. In 2021, in the 'Sacchi et al. v. Argentina' case, the Committee considered complaints by youth activists about climate inaction (ultimately dismissing them for not exhausting domestic remedies) but acknowledged that foreseeable harm from climate change falls within states' CRC obligations.[8] Building on this, in 2023 the Committee adopted General Comment No. 26 on children's rights and the environment with a special focus on climate change, which for the first time explicitly articulates children's right to a clean, healthy and sustainable environment as part of the CRC.[9] General Comment 26 emphasises the need to address the adverse effects of environmental degradation on children. It also affirms that states have obligations under the CRC to prevent foreseeable environmental harm to children. It notes, for example, that environmental pollution and climate change infringe on multiple rights of the child – including the rights to life, health, development, and an adequate standard of living – and that states must consider children's best interests in all environmental decision-making.[10] The Committee is urging states to take action against climate change and other environmental harms for the sake of children. Children's views must be heard and their status as human rights defenders in environmental matters must be recognised.[11] General Comment 26 provides guidance on implementing a child-rights-based approach to environmental protection. Simply put, states must ensure a safe climate and healthy environment as part of fulfilling children's rights to life, health, and development, and they must guarantee children's procedural rights – access to information, participation, and remedies – in environmental matters. Although GC26 is not itself a binding law, it is an authoritative interpretation of the CRC – effectively a roadmap for governments, courts, and advocates to operationalise the child's right to a healthy environment.

Other international instruments reinforce this trend. The 2015 Paris Agreement under the UN Framework Convention on Climate Change (UNFCCC) is primarily a climate change treaty, but it also acknowledges human rights and intergenerational equity. In its preamble, the Paris Agreement calls on Parties to "respect, promote and consider their respective obligations on human rights, the right to health, the rights of indigenous peoples, local communities, migrants, children, persons with disabilities and people in vulnerable situations" when taking action on climate change.[12] This language – unprecedented in a global environmental treaty – explicitly includes the rights of children as a consideration in climate action. It recognises that climate change is not just an environmental or economic issue but one that touches on fundamental rights and vulnerable

8 | Chiara Sacchi et al. v. Argentina (Communication No. 104/2019, CRC/C/88/D/104/2019, adopted 22 September 2021).
9 | UN Committee on the Rights of the Child 2023.
10 | CRC Committee 2023, para. 16.
11 | Ibid., para. 26.
12 | UNFCCC 2015, Preamble.

populations. Although the Paris Agreement's operative provisions focus on mitigation, adaptation, and finance, the inclusion of children's rights in the preamble signals the international community's awareness that failing to address climate change will undermine the rights of the most vulnerable, including children.

The principle of intergenerational equity is also evident in the Paris Agreement. Its goal of holding global warming well below 2°C and pursuing efforts to limit it to 1.5°C seeks to protect present and future generations as well by aiming to prevent "dangerous anthropogenic interference" with the climate system.[13] This aligns with the idea that States have duties not only to their current citizens but also to coming generations – a concept that is deeply relevant for children alive today who will live to see the future impacts of climate policy (or failure thereof). The Paris Agreement's emphasis on long-term temperature goals and global stocktaking encourages governments to plan for the long-term sustainability of the planet. The Paris Agreement was a key milestone in taking a long-term perspective to escape irreversible damage, with the aim of reducing the costs on future generations.

Another important international reference is the set of Framework Principles on Human Rights and the Environment (2018)[14] developed by the UN Special Rapporteur on human rights and the environment. These 16 principles are not a treaty but rather guidelines summarising how existing human rights law relates to environmental protection. They affirm that "a safe, clean, healthy and sustainable environment"[15] is integral to human rights, and they elaborate duties of States, such as ensuring a legal framework for environmental protection, securing access to information and justice, and paying special attention to the rights of those most vulnerable to environmental harm. The Framework Principles also stress the principle of non-discrimination in environmental policy. This encompasses protections for children as a vulnerable group. For instance, Principle 14 calls on States to take additional measures to protect those who are most at risk from environmental harm, explicitly including children and future generations as those owed heightened duties.[16]

Furthermore, recent developments at the United Nations have solidified the idea of an autonomous human right to a healthy environment. In October 2021, the UN Human Rights Council recognised for the first time the human right to a clean, healthy and sustainable environment (HRC Res. 48/13),[17] and in July 2022, the UN General Assembly affirmed this right by consensus (GA Res. 76/300).[18] These resolutions are historic. While they are not legally binding, they present a global commitment that every human being, including every child, is entitled to

13 | UNFCCC 2015, Art. 4.
14 | UN Special Rapporteur on Human Rights and the Environment 2018.
15 | UN Special Rapporteur 2018, para.1.
16 | UNICEF 2023, 4.
17 | UN Human Rights Council 2021.
18 | UN General Assembly 2022.

an environment of quality that permits a life of dignity and well-being. Commentary traces these recognitions to a mature body of UN framework principles that specify state duties on participation, information, non-discrimination, and access to justice in environmental matters.[19]

Beyond human rights treaties, environmental treaties, and soft-law declarations have increasingly acknowledged children and future generations. For example, the 1992 Rio Declaration on Environment and Development proclaims in Principle 3 that "the right to development must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations",[20] reinforcing intergenerational equity.[21] The Stockholm Declaration of 1972, a key document of international environmental law, stated that humanity bears "a solemn responsibility to protect and improve the environment for present and future generations."[22] This wording laid the early groundwork for conceiving environmental protection as a duty owed to young people and those not yet born. More concretely, the Aarhus Convention (1998)[23] – while regionally focused on Europe – enshrines procedural environmental rights (access to information, public participation, access to justice)[24] and has been used to empower youth to have a voice in environmental matters. All four Central European countries in focus of this study (Slovakia, Czechia, Poland, Hungary) are parties to the Aarhus Convention. This means a commitment to participatory rights that can enable children and youth (often through representation) to engage in environmental decision-making.

Contemporary international law exhibits a clear trajectory towards recognising environmental rights as human rights. Instruments like the CRC highlight states' obligations to shield children from environmental harms, and global climate agreements and principles emphasise protecting the environment for current and future generations. This international consensus was the catalyst behind litigation and policy development linking environmental degradation to violations of human rights – especially the rights of children who will inherit the consequences of today's actions.

Intergenerational climate litigation has broken new ground in courts worldwide, often led by children or on behalf of future generations. One early landmark was Minors Oposa v. Factoran (Philippines, 1993), where the Philippines Supreme Court allowed a group of children to sue to stop deforestation, recognising their legal standing as representing both themselves and future unborn generations.[25] The court held that the Filipino Constitution's guarantee of a healthy environment[26]

19 | Knox & Pejan 2018, 15.
20 | United Nations 1992.
21 | Brown Weiss 1992, 386.
22 | United Nations 1972.
23 | United Nations Economic Commission for Europe (UNECE) 1998.
24 | Pallemaerts 2004, 14–22.
25 | Minors Oposa v. Factoran (1993) G.R. No. 101083, Supreme Court of the Philippines, 30 July 1993.
26 | Constitution of the Republic of the Philippines 1987, Article II, Section 16.

imposed a duty to refrain from jeopardising the needs of future generations – a pioneering affirmation of intergenerational justice. Following this ruling, the Philippines further strengthened environmental protection through the Writ of Kalikasan, a unique legal remedy designed to safeguard the constitutional right to a balanced and healthy ecology. Introduced by the Philippine Supreme Court in 2010 under Rule 7 of the Rules of Procedure for Environmental Cases, the writ allows individuals or groups to seek judicial intervention against large-scale environmental harm that endangers life, health, or property across multiple cities or provinces.[27] Unlike traditional writs such as amparo or habeas corpus, which protect fundamental rights, the Writ of Kalikasan specifically addresses environmental justice.[28]

Another frequently-cited case is Leghari v. Pakistan (Lahore High Court, 2015),[29] where a farmer (not a child but invoking future generation concerns) succeeded in getting the court to direct enforcement of climate adaptation policies as a matter of fundamental rights, leading to the creation of a Climate Change Commission to protect citizens' rights from climate harms.[30]

In Europe, the Urgenda v. Netherlands[31] case links human rights with climate action. Brought by an NGO on behalf of 886 Dutch citizens (including youth), Urgenda led to a 2019 Dutch Supreme Court ruling that the government's inadequate greenhouse gas reductions violated the rights to life and to private/family life under the European Convention on Human Rights (ECHR). The Court, applying ECHR Articles 2 and 8, found the state has a positive obligation to protect its people from the real and immediate risks posed by climate change, even if those risks fully materialise only in the future. By ordering the Netherlands to cut emissions at least 25% by 2020 (relative to 1990 levels), the decision took into account the welfare of young and future generations who would face the brunt of climate change.

Another important decision came from the German Federal Constitutional Court in 2021.[32] In a case brought by several young people, the Court struck down parts of Germany's climate law as unconstitutional for failing to set adequate emissions reduction targets beyond 2030. The Court held that the German Basic Law's rights to life and human dignity, read in light of the state's duty to protect natural foundations of life (and the climate), require the government not to push the burden of emissions reductions onto the period after 2030. Allowing high emissions now means that the law would have to force drastic curbs later, endangering

27 | Philippine Supreme Court 2010.
28 | Davide 2011, 593.
29 | Leghari v. Pakistan (2015) W.P. No. 25501/2015, Lahore High Court, Pakistan, 4 September 2015.
30 | Mahaseth & Goyal 2021, 125.
31 | Urgenda Foundation v. State of the Netherlands (2019) ECLI:NL:HR:2019:2007, Supreme Court of the Netherlands, 20 December 2019.
32 | Federal Constitutional Court of Germany 2021.

the freedoms of the young generation. The Court emphasised that the constitution compels[33] the state "to leave [the natural environment] in such condition that future generations are not forced to engage in radical abstinence" to salvage it. In short, excessive use of the remaining carbon budget today impinges on the liberties of future citizens. This groundbreaking reasoning explicitly framed insufficient climate action as an injustice to children and future generations, affirming that intergenerational justice has constitutional force.

In 2023–2025, the interface of environmental protection and human rights reached new heights with significant legal developments. Two are especially noteworthy: the climate change judgments of the European Court of Human Rights (ECtHR) in April 2024, and the International Court of Justice's Advisory Opinion on Climate Change delivered in July 2025. Both developments, while not focused exclusively on children, have powerful implications for children's rights and state duties in the environmental context.

On 9 April 2024, the ECtHR's Grand Chamber issued its first decisions addressing states' obligations to mitigate climate change. These were highly anticipated cases brought by vulnerable groups against multiple governments. In 'Verein KlimaSeniorinnen Schweiz and Others v. Switzerland',[34] an association of elderly Swiss women (along with some individual members) claimed Switzerland's inadequate climate policies violated their rights to life and private/family life under the European Convention on Human Rights.[35] In 'Carême v. France', a former mayor of a coastal town in France alleged that France's failure to meet emissions targets violated his rights by exacerbating flood risks.[36] And in 'Duarte Agostinho and Others v. Portugal and 32 Others', six Portuguese youth (supported by an NGO) sued 33 states, arguing that insufficient climate action across Europe endangered their rights to life, health, and non-discrimination.[37] The ECtHR's rulings made global headlines. While the Court dismissed the Carême and Duarte Agostinho applications on procedural grounds, it upheld key aspects of the KlimaSeniorinnen complaint, finding that Switzerland's climate efforts were inadequate and breached its human rights obligations.

In 'KlimaSeniorinnen v. Switzerland', the ECtHR broke new ground. It was affirmed that climate change can trigger positive obligations under the right to private and family life (Article 8 ECHR). The Court held that Article 8 encompasses a right to be protected from serious climate-related harms to life and well-being. Also, the Court accepted that a duly established NGO can have standing to

33 | Basic Law for the Federal Republic of Germany 1949, art. 20

34 | European Court of Human Rights (2024, April 9), Verein KlimaSeniorinnen Schweiz and Others v. Switzerland (Grand Chamber, Application No. 53600/20).

35 | Council of Europe 1950.

36 | European Court of Human Rights. (2024, April 9). Carême v. France (Grand Chamber, Application No. 7189/21) (inadmissibility decision).

37 | European Court of Human Rights. (2024, April 9). Duarte Agostinho and Others v. Portugal and 32 Other States (Grand Chamber, Application No. 39371/20) (inadmissibility decision).

represent its members in such a climate case – the Swiss association was granted victim status under Article 8, even though the individual women's complaints were deemed inadmissible for lack of showing a pressing need for individual protection. On the merits, the ECtHR found that Switzerland had not fulfilled its obligations because its regulatory framework fell short of what is required for effective climate mitigation. The judgment spelled out, in perhaps the clearest terms yet, what Convention compliance means in the context of climate change: States must adopt and implement measures aimed at reducing greenhouse gas emissions in line with the best available science and international goals. The Court emphasised that to honour Article 8, states should be on a path to achieve net-zero emissions around mid-century, with concrete interim targets and timely policies to avoid serious and irreversible harm to human rights. It identified specific positive obligations: for instance, legislating clear climate targets and carbon budgets, demonstrating progress in cutting emissions, and acting in an adequately prompt manner so as not to defer unjustifiable risks to the future. Applying these criteria, the ECtHR noted critical gaps in Switzerland's climate strategy – such as the absence of a binding intermediate emissions trajectory or sufficient measures to reach its 2050 neutrality goal – and held that these gaps violated the duty of care owed under Article 8. In addition, the Court found Switzerland violated Article 6(1) (right of access to court) by denying the association a hearing on the merits domestically. KlimaSeniorinnen established that States may be found in breach of the ECHR if they fail to enact and implement an adequate climate change response, especially where vulnerable groups are affected.

By contrast, the companion cases Carême and Duarte Agostinho were declared inadmissible. In Carême, the French applicant's situation had changed – he had moved away from his high-risk municipality – such that the Court held he was no longer a victim of the alleged harm. Lacking a personal stake after moving, his case could not proceed. In Duarte Agostinho, the hurdle was the rule of exhaustion of domestic remedies. The Portuguese youth had filed directly in Strasbourg without suing in each of the 33 respondent states; they argued that trying national courts across so many jurisdictions would be futile and too slow. The Grand Chamber disagreed: in a unanimous decision, it insisted that at least some domestic legal avenues should have been attempted, and it found no truly exceptional circumstances to excuse the omission. The Court also noted that it would only examine Portugal's own emissions in any event, not the collective emissions of dozens of states – implicitly suggesting that each state's responsibility for climate harm must be litigated within that state's jurisdiction first. As a result, the application was dismissed for non-exhaustion of remedies. While this was a disappointment for the youths and their supporters, the ECtHR's climate trilogy as a whole is still incredibly important. It confirms European states have enforceable human rights obligations to take climate change mitigation seriously, and it opens the door (at

least in principle) to future cases by those who can show direct, pressing risks and who have tried domestic legal paths.

On 23 July 2025, the International Court of Justice (ICJ) delivered a historic Advisory Opinion on the Obligations of States in respect of Climate Change.[38] Requested by the UN General Assembly, this opinion provides the first authoritative pronouncement by the court on climate change and international law. While advisory and not binding on states, the ICJ's opinion still carries significant weight. The Court affirmed what many legal scholars and advocates have long argued: states have binding obligations under international law to prevent and redress environmental harm, including climate change. The ICJ drew from multiple sources – climate treaties (UNFCCC, Paris Agreement), general international law, the no-harm principle, human rights law, and the principle of intergenerational equity – to articulate a comprehensive view of states' duties.

Among the opinion's conclusions is the recognition of a human right to a clean, healthy, and sustainable environment in international law. The ICJ observed that environmental degradation and climate change significantly impair the enjoyment of certain human rights, explicitly naming rights such as the right to life, the right to health, an adequate standard of living, the right to a healthy environment, and the rights of children (as well as women, Indigenous peoples, etc.). In fact, the Court incorporated the right to a healthy environment into its interpretation of states' obligations, treating it as a binding norm of customary international law. This is a groundbreaking development – the ICJ acknowledged that the widespread affirmation of the right to a healthy environment (e.g. by the UN General Assembly and in many national laws) is an evolution of international law, even though not all states have codified it. At the same time, the Court did not go so far as to declare that future generations themselves hold direct legal rights; it characterised intergenerational equity as an important principle guiding the interpretation of existing obligations, rather than a source of standalone rights for the unborn. Nonetheless, the opinion leaves no doubt that today's children and youth – as right-holders under human rights law – must be protected from the foreseeable, grave harms of climate change.

The ICJ opinion also clarified and reinforced states' substantive duties. It confirmed that obligations under the Paris Agreement (such as pursuing the 1.5°C temperature goal and submitting emissions-reduction targets) are to be understood in light of more general international law duties to prevent significant transboundary harm. All states, regardless of their individual share of emissions, have a common responsibility to protect the climate system; even states outside specific treaties or those with smaller emissions remain bound by customary duties to prevent environmental harm. It extended the no-harm rule (historically applied to

38 | International Court of Justice. (2025, July 23). Advisory Opinion on the Obligations of States in Respect of Climate Change (Case No. 187).

transboundary pollution) to the global atmosphere and climate, declaring that the duty to prevent harm to the environment fully applies to climate change.[39] The ICJ linked inadequate climate adaptation to human rights violations: failure to build resilience and protect people from climate impacts can violate the duty to protect rights to life, health, an adequate standard of living, etc., on par with failures in mitigation. This elevates climate adaptation from a policy preference to a legal obligation.

The ICJ further addressed state responsibility and remedies. It confirmed that if states breach their climate-related obligations, the well-developed rules of state responsibility apply: the responsible state must cease the wrongful act, guarantee non-repetition, and make full reparation for injuries caused. The Court made clear that activities like issuing new fossil fuel licenses or subsidies can constitute breaches of international law if they are incompatible with the need to protect the climate system. Citing scientific consensus, the ICJ noted that to meet the 1.5°C target, no new fossil fuel extraction projects should be developed. Two judges in a joint declaration went even further, stressing that environmental impact assessments for any fossil project must account for its downstream (Scope 3) emissions, and that states must regulate and phase out fossil fuel use consistent with the remaining carbon budget. The implication is very clear: continuing business-as-usual in fossil fuel expansion is now squarely at odds with states' international obligations. The ICJ's opinion did not itself assign liability or award damages (being advisory), but it opens the door for courts and litigants to argue that insufficient climate action is an internationally wrongful act. The Opinion's declaration that climate obligations are owed *erga omnes* – to the international community as a whole – suggests any state could call out any other state's failures, increasing the prospects for cooperative enforcement or even future litigation among states. The ICJ Opinion clearly supports the idea that children and future generations are owed legal duties by states: it explicitly frames climate change as a threat to the rights of children and acknowledges a duty to preserve the environment for future generations (even if the latter are not direct right-holders).

The international framework over the past few years – from the CRC Committee's General Comment No. 26 to the UN resolutions on a healthy environment, to the ECtHR's climate judgments, and the ICJ's 2025 Advisory Opinion – shows a normative shift. Environmental protection is being codified as a matter of legal obligation tied to human rights, with special emphasis on the protection of children and future generations. This international context forms a backdrop (and sometimes a direct source) for developments in national and regional law, including in Central Europe. We turn now to how these trends manifest in the constitutions, courts, and legal practices of Slovakia, Czechia, Poland, and Hungary.

39 | American Society of International Law 2025.

3. Environmental rights in Central Europe: national frameworks and case law

All four Central European countries under review – Slovakia, Czechia, Poland, and Hungary – have constitutionally enshrined environmental principles and have seen growing recognition of environmental rights in their jurisprudence. This strengthens courts' willingness to read classic rights in environmentally protective ways.[40] Historically, these nations adopted constitutional provisions on environmental protection, some inspired by global trends in sustainable development and others by the tangible pollution crises experienced under socialism. In recent years, we have observed these broad principles being tested and given concrete meaning through litigation and policy. This section provides a comparative survey of each country's legal framework related to environmental protection and children's rights. It focuses on how each state's courts and institutions have addressed claims that environmental degradation – whether air pollution, climate change, or other harm – violates human rights, especially the rights of children or future generations.

The Constitution of the Slovak Republic guarantees environmental rights in strong terms. Article 44 of the Slovak Constitution declares that "Everyone has the right to a favourable environment," and it imposes corresponding duties: "Everyone is obliged to protect and enhance the environment and cultural heritage," and "No one may, above the law, endanger or damage the environment."[41] It further mandates the State to ensure the prudent use of natural resources and to safeguard ecological balance for present and future generations.[42] These provisions, adopted in the early 1990s, encapsulate the principle that environmental protection is a fundamental value of society. In practice, however, Slovakia's courts have often channeled environmental claims through specific legislation (such as laws on nature protection, air quality, or land use) rather than treating Article 44 as directly justiciable. The constitutional right to a favourable environment has typically functioned as an interpretive guidepost and an aspiration, invoked in preambles of environmental statutes and occasionally cited by courts.

One notable international case involving Slovakia opened a debate on how a constitutional environmental right can reinforce access to justice. Lesoochranárske zoskupenie VLK v. Slovakia[43] was a 2012 admissibility decision of the European Court of Human Rights concerning an environmental NGO's exclusion from domestic environmental proceedings. The applicant association argued that being

40 | Boyd 2010, 20.
41 | Constitution of the Slovak Republic 1992.
42 | Maslen 2022, 403.
43 | European Court of Human Rights (2 October 2012), Lesoochranárske zoskupenie VLK v. Slovakia (Application No. 53246/08, Third Section, Decision on Admissibility).

denied formal party status in administrative proceedings (regarding post-storm logging measures in a national park) violated its right to a fair hearing under Article 6(1) of the ECHR and impeded its access to justice; it also invoked the Slovak Constitution's guarantee of a favorable environment in support of its claim. The ECtHR, however, unanimously declared the application inadmissible as manifestly ill-founded.[44] The Court reasoned that the complaint was essentially about the NGO's procedural standing rather than the determination of any of its own civil rights or obligations, especially given that the association failed to substantiate any concrete impact of the forestry decision on the environment or on its members' rights. While the judgment acknowledged the growing importance of public participation and access to justice in environmental matters at national, European and international level,[45] the Court emphasised that it "is not to review the relevant domestic law and practice *in abstracto*"[46][47] but to assess their application in the case at hand. In the specific circumstances, the Court noted that Slovak law provided a path for redress if the NGO had been directly affected – namely, the association could have lodged an administrative appeal and sought judicial review of the forestry decision. Accordingly, the Court found no breach of Article 6(1) and rejected the Article 6 complaint as manifestly ill-founded. (The applicant's parallel attempt to frame its grievance as a violation of the right to private life under Article 8 – essentially arguing for a right to a good environment – was likewise dismissed.)

Overall, VLK v. Slovakia is procedurally significant as it delineated the bounds of Article 6(1) in environmental disputes: the Strasbourg Court refused to extend fair-hearing rights to a public-interest NGO absent a direct legal interest, even as it recognised the broader trend towards enhanced public participation in environmental decision-making.[48] This cautious approach – deferring in part to evolving EU/Aarhus Convention norms that had prompted Slovak courts to adjust their laws[49] – highlights both the potential and the limitations of using the ECHR as a vehicle for environmental access-to-justice claims in Central Europe.

Domestically, Slovakia has begun to see litigation invoking environmental rights, though not yet on the scale of some Western European countries. Slovakia has not faced a high-profile youth-led climate lawsuit yet. However, its courts have adjudicated cases balancing property or development interests with environmental protection, often citing Article 44.[50] For example, residents have invoked their

44 | European Court of Human Rights, 2012, para. 84
45 | Ibid., para. 80.
46 | Ibid., para. 81.
47 | For example, Allen v. the United Kingdom, no. 18837/06, § 40, 30 March 2010.
48 | Peters 2018, 1–27.
49 | On 21 October 2011, the National Council of the Slovak Republic adopted amendments to environmental legislation, including the NLP Act. The amendment entered into force on 1 December 2011 as Act No. 408/2011 Coll.
50 | Supreme Court of the Slovak Republic. (2018, January 30). Judgment No. 1Sžk/17/2017 (ECLI:SK:NSSR:2018:3009200353.8).

right to a favourable environment to challenge permits for polluting installations (such as waste dumps or industrial facilities) near homes and schools. In one case, a community fought a waste landfill permit by arguing that exposure to odours and pollutants infringed their constitutional environmental right, especially affecting children's health in the area. The courts examined the claim seriously, though the outcome ultimately hinged on compliance with detailed environmental regulations rather than directly on the constitutional clause. The Slovak Constitutional Court has indicated that Article 44's broad right is justiciable only insofar as it is concretised by implementing legislation[51] (a common approach in Central Europe). This means an individual – including a minor via a representative – could seek judicial relief if a specific environmental law aimed at protecting health or environmental quality is violated.

Beyond the courts, Slovakia's ombudspersons have started to integrate environmental concerns into their work. Institutionally, Slovakia employs a dual ombuds system that addresses human rights and children's rights, and these bodies have begun to engage with environmental issues. The Public Defender of Rights, established by law in 2001 under a constitutional mandate (Art. 151a), is an independent ombudsman charged with protecting constitutional rights in proceedings before public authorities. The Public Defender can investigate maladministration, including failures by authorities to uphold environmental laws, and indeed receives thousands of complaints annually – among them over a hundred related to environmental protection in a typical year.[52] However, before 2015 there was no separate institution exclusively for children; children's issues were handled by a department within the Public Defender's office. In 2015 Slovakia created the Commissioner for Children as a standalone children's rights ombudsperson. The Commissioner for Children can receive individual complaints from or on behalf of minors and initiate investigations *ex officio* on issues affecting children. Both the Public Defender and the Children's Commissioner are empowered to refer matters to the Constitutional Court or other authorities when systemic problems are found. In terms of international networks, Slovakia uniquely has two members in the European Network of Ombudspersons for Children (ENOC): the Children's Commissioner is a full ENOC member, and the Public Defender's office is an associate member.[53] This shows the overlapping mandates, but in practice, the Children's Commissioner now takes the lead on child-specific advocacy. The Slovak Commissioner for Children has started to integrate environmental concerns into his agenda, recognising their importance for children's rights. One notable example is the Commissioner's collaboration with the Slovak Environmental Agency on a project to improve access to clean drinking water in marginalised

51 | Maslen 2022, 404.
52 | Public Defender of Rights 2025.
53 | Lux 2023, 18.

Roma communities.[54] Through this initiative, the Commissioner worked with local municipalities and NGOs to support a project that secured a safe water supply and reduced pollution in local watercourses. Beyond this, the Commissioner's office has also emphasised environmental education as a key area of cooperation with environmental authorities. These activities demonstrate the institution's growing understanding that issues like water quality, sanitation, and pollution directly affect children's well-being and require rights-based advocacy.

Slovak children's rights institutions are also increasingly involving young people in environmental discourse. The Children's Commissioner has an advisory Children and Youth Parliament, whose members regularly meet with the Commissioner to inform his work, including on environmental topics. This kind of engagement is crucial in a country that, while not yet facing climate litigation by children, is laying the groundwork for future advocacy.

In summary, Slovakia's legal framework strongly affirms environmental protection and has the seeds of rights-based enforcement. The combination of constitutional text, EU environmental law (which is influential in Slovakia as an EU member), and growing public awareness suggests that children or youth in Slovakia could, in the future, bring successful environmental rights claims. They have a constitutional hook, and with the inspiration of cases abroad (and support from NGOs), it is plausible that Slovakia could soon see its first youth-driven climate or pollution lawsuit. The foundation is there; it may just be a matter of time and awareness before it is tested in court.

The Czech Republic likewise embeds environmental rights in its constitutional order, albeit with important qualifiers that affect enforcement. The Czech Republic's Charter of Fundamental Rights and Freedoms[55] (which has constitutional force) similarly guarantees environmental rights. Article 35 of the Charter states: "Everyone has the right to a favourable environment" and the right to timely and complete information about the environment, and it prohibits conduct that causes undue environmental damage. However, the Charter also stipulates that these rights may be asserted only within the limits of laws that implement them – meaning the legislature must delineate how the right is enforced. In recent years, Czechia witnessed its first major climate lawsuit. This lawsuit brought new life to Article 35. In 2021, a group of Czech citizens, including youth, sued the government for failing to adequately cut emissions. In a June 2022 judgment,[56] the Prague Municipal Court upheld the plaintiffs' claims in part, finding that the government's climate inaction infringed their rights, notably the right to a favourable environment guaranteed by Article 35. The court acknowledged that neglecting climate goals would "jeopardise the plaintiffs' constitutionally guaranteed rights",

54 | Eurochild 2025.
55 | Charter of Fundamental Rights and Freedoms of the Czech Republic 1991.
56 | Municipal Court in Prague (2022, June 15), Judgment No. 14A 101/2021 (Czech Climate Litigation Case).

including the right to life and a healthy environment. It ordered the government to take measures to reduce greenhouse gas emissions in key sectors. This judgment explicitly recognised that climate change threatens fundamental rights of the current young generation of Czechs. This decision was remarkable as the first time a Czech court explicitly connected the constitutional environmental right with concrete climate action duties. However, it is important to note that the government appealed, and in 2023, the Supreme Administrative Court set aside the Municipal Court's judgment on procedural grounds, remanding the case for further review. Despite the procedural setback, the episode was a very important moment in Czech jurisprudence, demonstrating the potential of Article 35 when coupled with proactive judicial interpretation. It also showed Czech youth asserting their rights in the environmental realm, even in the absence of a direct mention of children in the constitutional text.

Turning to institutional mechanisms, Czechia differs from Slovakia in that it does not have a standalone children's ombudsman. Instead, the general ombudsman – the Public Defender of Rights (Veřejný ochránce práv) – handles a wide range of issues, including those affecting children. Established by the Act on the Public Defender of Rights in 2000,[57] this office was created in the classic mould of an ombudsman: an independent authority overseeing public administration and protecting citizens against maladministration. The Public Defender can conduct inquiries, enter and inspect offices, recommend corrective measures, and even initiate court proceedings (such as filing a motion to repeal a law or intervening in administrative court cases). The office receives a high volume of complaints annually (roughly 8,000 per year in recent times) and has a broad mandate covering areas from equality and detention monitoring to family and social affairs. Within the office, there is a specialised Department of Family, Healthcare and Labour that deals with children's issues among other social matters. Since 2012, the Public Defender's deputy has been explicitly responsible for agenda items related to children's rights, meaning children's complaints are funneled to staff with relevant expertise. To make the institution accessible to young people, a dedicated child-friendly website and email were introduced, and any complaint from a child is given priority and handled in an informal, supportive manner (ombudsman staff typically contact the child within a couple of days to discuss how best to help). This child-sensitive approach shows the office's commitment to being reachable by minors, even without a separate Children's Ombudsperson. The U.N. Committee on the Rights of the Child has noted the Public Defender's involvement in protecting children's rights, but has "encourage[d] the State Party to establish an independent ombudsperson for children"[58] to strengthen focus and accessibil-

57 | Czech Republic 1999.
58 | United Nations Committee on the Rights of the Child (2003), Concluding observations: Czech Republic (U.N. Doc. CRC/C/15/Add.201), para 17, United Nations.

ity. As of 2019–2020, draft legislation was indeed under consideration to either designate a specific deputy for children within the Public Defender's office or to create a new children's rights institution, reflecting ongoing discussions about improving the institutional framework for children. The Czech Parliament enacted an amendment to the Act on the Public Defender of Rights in early 2025,[59] formally creating the institution of the Children's Rights Ombudsman. The amendment was signed into law by the President in March 2025, and the new office was expected to begin its operations on 1 July 2025. It is important to note however, that at the time of writing this article, the ombudsperson has not been elected. Until the first Children's Ombudsman is elected, the responsibilities of this role are temporarily performed by Deputy Ombudsman Vít Alexander Schorm and his team. This is a significant step in reinforcing the institutional protection of children's rights in Czechia.

Poland approaches environmental rights through a framework of constitutional principles and active ombuds institutions. Poland's Constitution explicitly references environmental protection and even future generations, though it frames these largely as state policy directives. Article 74 commits public authorities to "pursue policies ensuring the ecological security of current and future generations" and declares that environmental protection is the duty of public authorities.[60] It also guarantees everyone the right to access information on the environment's quality and obliges authorities to support citizens' environmental initiatives. Additionally, Article 68 of the Polish Constitution (on health protection) mandates public authorities to combat disease and "prevent the negative health consequences of environmental degradation", especially important for children's health. Article 86 of the Polish Constitution imposes a duty on every person to care for the environment and to bear responsibility for any harm they cause to it. Although the constitution stops short of granting an individual justiciable right to a clean environment, Polish courts have seen a wave of litigation asserting traditional rights in an environmental context.[61]

In practice, Polish courts have been cautious in reading these articles as directly enforceable rights, but they have recognised that the Constitution's environmental directives guide the interpretation of statutes and influence the State's duties. For instance, Polish administrative courts have cited Article 74 when reviewing government decisions on industrial permits or waste management, to ensure authorities considered intergenerational environmental impacts. Poland's constitutional model emphasises environmental protection as a collective goal and a precondition to other rights (such as health and life). This provides a supportive backdrop for children's environmental claims, even if those claims usually must

59 | Czech Republic 2025.
60 | Constitution of the Republic of Poland 1997.
61 | Habuda 2019, 116.

be brought under specific laws (like the Environmental Protection Act or Clean Air Act).

Poland's ombudsman system is bifurcated into a general human rights ombudsman and a dedicated children's rights ombudsman, and both have been active in the environmental domain. The Commissioner for Human Rights (*Rzecznik Praw Obywatelskich*), established in 1987, is Poland's National Human Rights Institution (NHRI) with 'A-status' accreditation. The Commissioner (often referred to simply as the Ombudsman) has a broad mandate to safeguard constitutional and human rights, which includes addressing environmental issues that affect the public. The Commissioner can receive complaints from any individual (including on behalf of children) and launch investigations or even approach the courts (for example, by challenging the legality of administrative decisions or lodging constitutional complaints). However, when it comes to children specifically, the leading role is played by the Ombudsman for Children (*Rzecznik Praw Dziecka*), a separate independent office created in 2000. The Ombudsman for Children is tasked exclusively with protecting children's rights and interests. This office has legal powers to intervene when children's rights are endangered, to review laws, and to request action from other state bodies. Poland's Children's Ombudsman has been very vocal on issues where environmental harm and children's welfare intersect. For example, the Ombudsman for Children received a significant complaint about the impact of air pollution on children – specifically, how smog and poor air quality were limiting children's outdoor activities. In response, the Ombudsman formally addressed the Minister of Climate and Environment, and advocated for measures to improve air quality for the sake of children's health.[62] This kind of direct intervention shows the Ombudsman's willingness to frame environmental conditions as a children's rights issue (in this case, tying it to the right to health, play, and development) and to hold government accountable for addressing it.

Beyond handling complaints, the Polish Children's Ombudsman has proactively sought to involve young people in environmental decision-making. An important initiative in this regard was the creation of a Youth Climate Council at the national level. In June 2020, the Ombudsman for Children and the Ministry of Climate and Environment signed an agreement to establish a Youth Environmental Council composed of 32 young people from across Poland.[63] The purpose of this council is to give youth a voice in climate and environmental policy – a platform to share their perspectives and advise on solutions. This Council has since provided input on issues like climate legislation, sustainable development education, and local environmental problems. Additionally, Polish children (with support from the Ombudsman's office) have participated in international forums. Poland's Ombudsman for Children has been a very active member of ENOC – in fact, it has been a

62 | Rzecznik Praw Dziecka 2017.
63 | Government of the Republic of Poland 2020.

full member since the early 2000s and even held the ENOC Chairmanship twice (in 2005 and 2011).[64]

Poland's judicial and administrative bodies have also started to respond to children's environmental concerns, often with the Ombudsman's prompting. One prominent line of cases in Poland involves citizens suing the government over air pollution, arguing that the poor air quality violates their personal rights, such as health, privacy, and even the right to life. In a 2021 ruling,[65] a Polish civil court ordered the State to pay compensation to a plaintiff for health damage from air pollution, finding that the State's failure to ensure air quality violated the individual's rights.[66]

More recently, in 2024, two Polish citizens (including the family of a five-year-old child with asthma) launched cases against the government for worsening their health by failing to tackle smog.[67] The child's family argues that clean and healthy air isn't a luxury; it's a necessity for his survival and well-being, and that the state's inaction on air pollution infringes the child's right to health. These cases, supported by NGOs, claim compensation and aim to establish state liability for breaching fundamental rights through environmental negligence. It is also worth noting that Poland was found in breach of EU law for excessive air pollution (Court of Justice of the EU, 2018),[68] which pressures the government to act for the sake of public health.

Poland demonstrates a model where high-level constitutional commitments to the environment are coupled with energetic institutional advocacy for children. The constitutional provisions (Articles 74 and 86) set out a state duty toward environmental protection for future generations. Meanwhile, the Polish government's own Climate Policy[69] cites intergenerational responsibility in its preamble, referring to the constitutional mandate of Article 74. However, there are plenty of implementation gaps – e.g., continued heavy reliance on coal has serious implications for both climate and local air quality. On the flip side, the strong stance of the Ombudsman and the activism of young people indicate a progressively rights-conscious approach.

Hungary's legal framework stands out due to its strong constitutional language and institutional innovations regarding environmental rights and future generations. The Fundamental Law of Hungary (2011) declares in its National Avowal (preamble) that the Hungarian nation expresses responsibility for the fate of future generations and will protect the natural foundations of life for them. It states: "We bear responsibility for our descendants and therefore we shall

64 | Lux 2023, 14.
65 | Palarz v. Poland (2021) Judgment of the District Court in Gliwice, 9 December 2021.
66 | Marszałek 2021, 157.
67 | ClientEarth 2023.
68 | Court of Justice of the European Union (CJEU) 2018.
69 | Polish Government 2019.

protect the living conditions of future generations by making prudent use of our material, intellectual and natural resources."[70] Article P of the Fundamental Law provides that natural resources, biodiversity, and cultural assets are the common heritage of the nation and the State and every person shall "protect and maintain them, and to preserve them for future generations". Moreover, Article XXI (in the chapter 'Freedom and Responsibility') states: "Hungary shall recognise and endorse the right of everyone to a healthy environment." This is an explicit, justiciable right. Article XXI(2) adds that anyone who causes environmental damage must restore it or bear the costs, indicating a strong polluter-pays principle at constitutional level.

The Hungarian Constitutional Court has a rich jurisprudence on the environmental provisions. The seminal case is Decision 28/1994 (XII.20.) of the Constitutional Court,[71] which interpreted the old Constitution's environment article (the content of which is carried forward in the new Fundamental Law). In that case, the Court struck down a law that weakened protection for certain protected lands, holding that once a high level of environmental protection is achieved, the State cannot roll it back arbitrarily because that would violate the right to a healthy environment.[72] The Court established a non-regression principle: environmental protection levels may not be reduced unless justified by an equivalent protection of some other fundamental right. Since no such justification existed, the law was unconstitutional. This decision constitutionalised the idea of sustainable development and intergenerational justice – making sure that short-term political decisions do not endanger long-term environmental safeguards. Subsequent Constitutional Court decisions in Hungary have reinforced this protection: for example, the Court has invalidated regulations that would permit new pollution exceeding previous limits, citing the state's duty to protect the environment for future generations as a constitutional value on par with immediate economic interests. Hungarian Constitutional Court, Decision 13/2018 (IX.4.) AB reaffirmed the non-regression and precautionary approach by annulling a deregulation that would have weakened groundwater protection, grounding its reasoning in Article P) (protection of natural resources for future generations) and Article XXI (right to a healthy environment).[73] Hungary's constitutional framework explicitly embeds the prohibition of regression (non-derogation principle) and the precautionary principle as key safeguards of the environmental rights of future generations. Together, the non-regression rule and the precautionary principle ensure that Hungary's environmental obligations to children and future generations are enforceable at the highest level of law: the State may not roll back

70 | Fundamental Law of Hungary 2011.
71 | Hungarian Constitutional Court (1994) Decision 28/1994 (XII.20.), 20 December 1994.
72 | Szabó 2022, 80.
73 | Hungarian Constitutional Court (2018) Decision 13/2018 (IX.4.) AB (adopted 28 August 2018; promulgated 4 September 2018).

environmental protections, and it must proactively protect against foreseeable environmental harms.[74]

Unlike Poland and Slovakia, Hungary does not have a separate ombudsman solely for children's rights. Instead, since 2012, Hungary has consolidated its ombudsman system into a single office: the Commissioner for Fundamental Rights (CFR), which functions as a general ombudsman for all human rights (including the rights of the child). The CFR is assisted by two deputies with specialised roles – one is the Deputy Commissioner for the Rights of National Minorities, and the other is the Deputy Commissioner for Future Generations (often referred to as the 'Green Ombudsman'). This institutional design has its roots in an earlier system: from 2008 to 2011, Hungary actually had a standalone Parliamentary Commissioner for Future Generations, a unique ombudsman dedicated to environmental protection and the interests of future (including today's youth and unborn) generations.[75] That office was merged into the new unified Ombudsman framework by the 2011 Fundamental Law and the 2011 Ombudsman Act. The result is that today the Deputy for Future Generations (DFG) operates within the CFR's office as the guardian of environmental and ecological interests, while the CFR covers all fundamental rights generally. Children's rights, by law, are explicitly part of the CFR's mandate – the Ombudsman Act even lists the protection of children's rights as a primary duty of the Commissioner. However, there is no dedicated Children's Ombudsman or Deputy Commissioner for Children in Hungary. This means the responsibility for children's issues must compete for attention within a broad human rights agenda, and in environmental contexts it is effectively split: the CFR is responsible for children's rights in general, while the DFG focuses on environmental issues, albeit for the whole population. In theory, this could still cover children's environmental rights – for instance, the CFR and DFG could collaborate on a case involving a child's exposure to pollution. In practice, though, this split has led to a diffusion of focus. The Deputy for Future Generations pursues a general environmental agenda (covering topics like nature conservation, air quality, noise regulation, and climate policy).

The year 2013 stands out as a high point when the Commissioner for Fundamental Rights actively focused on children's environmental rights. In that year, the CFR dedicated its annual thematic program to the 'Fundamental Right of Children to a Healthy Environment', resulting in a series of investigations and reports. Two comprehensive reports were published: one on environmental education in schools (report no. AJB-676/2013) and another on children's access to safe drinking water (report no. AJB-677/2013). The latter was a joint effort between the Ombudsman and the Deputy for Future Generations, examining issues such as water quality in disadvantaged regions and how lack of access to clean water affects children's

74 | Olajos-Mercz 2022, 79.
75 | Bándi 2022, 59.

health and equality. The Ombudsman highlighted, for example, that the quality of the environment of an expectant mother, unborn child, and young child is decisive for later health, and pointed to the particular challenges faced by Roma children in poor housing conditions without clean water or adequate sanitation. The 2013 initiative was widely praised and raised expectations that the Ombudsman would continue championing environmental issues as part of children's rights. Unfortunately, that momentum was not sustained.[76]

On a positive note, the Deputy for Future Generations does work in environmental protection that indirectly benefits children. The DFG handles dozens of cases each year, covering topics like industrial noise, air quality standards, nature conservation, water management, and environmental impact assessments. The Deputy has the power to initiate or join court proceedings (for instance, the DFG can petition the Constitutional Court if a law threatens environmental rights). A notable success was the DFG's contribution to the 2018 Constitutional Court decision mentioned above that annulled a law weakening forest protection – a case framed around Article P)'s duty to protect natural heritage for future generations.[77]

In 2025 the Constitutional Court delivered a landmark decision in case II/3536/2021 on Hungary's Climate Protection Act.[78] Fifty members of Parliament had challenged Article 3(1), arguing that the 2030 target of a 40 percent reduction in greenhouse gas emissions from 1990 levels fell short of scientific advice and EU commitments, and did not reflect the Paris Agreement's temperature goals. The Court held Article 3(1) unconstitutional for breaching Article P(1), Article XX(1), and Article XXI(1) of the Fundamental Law, stressing intergenerational justice, the right to physical and mental health, and the right to a healthy environment. While the Court did not find a treaty conflict, it underscored the State's constitutional duty to adopt climate measures consistent with broader international objectives. It annulled Article 3(1) with deferred effect to 30 June 2026 and, acting ex officio, found a legislative omission, ordering Parliament to adopt more ambitious and concrete mitigation, adaptation, and resilience measures by the same date.

Such outcomes, while not child-specific, certainly serve the interests of children by preserving Hungary's environment. In conclusion, Hungary presents a paradox: it has one of the strongest constitutional foundations for environmental and future-generational rights in Central Europe, yet its institutional practice has been less assertive in linking these rights to children. The absence of a dedicated children's ombudsperson means there is less visibility and priority given to how environmental issues uniquely affect minors. The Hungarian Ombudsman's

76 | Lux 2023, 13.
77 | Constitutional Court of Hungary, Decision of Constitutional Court of Hungary: Forest protection / natural heritage (English translation), ClientEarth, https://www.clientearth.org/media/hm1cvgxj/decision-of-constitutional-court-of-hungary-ext-en.pdf
78 | Constitutional Court of Hungary (2025, June 12), Decision in Case No. II/3536/2021 on the constitutionality of Article 3(1) of the Climate Protection Act.

structure can lead to children's issues being overshadowed by other agendas. Strong constitutional rights alone are not enough – institutional will and focused advocacy are critical to truly protect children's rights in the face of environmental degradation.

Across these four Central European countries, we see a common recognition that a healthy environment is essential to the well-being and rights of the child, but the degree of implementation and advocacy varies. All V4 countries have incorporated environmental protection into their constitutions – whether as an explicit right (Slovakia and Hungary) or as guiding principles and state duties (Poland and Czechia) – which provides a legal platform for linking environmental quality with human rights. Each country has also ratified the UN Convention on the Rights of the Child and participates in international frameworks like the Aarhus Convention on environmental democracy, signalling a commitment to children's environmental rights on paper. However, the institutional mechanisms differ significantly, influencing how these rights are realised in practice. Poland and Slovakia (and hopefully Czechia in the very near future), which have standalone children's rights commissioners, exhibit more proactive engagement on environmental issues affecting children. Their specialised ombudspersons have both the mandate and visibility to prioritise children's environmental health. A standalone institution (or at least a dedicated focal point) for children's rights correlates with more visible, accessible, and effective advocacy in this domain.

Case law in Central Europe is gradually aligning with the global trend that treats environmental degradation as a human rights issue. While none of the V4 countries have a long history of children's environmental litigation, courts are increasingly receptive to arguments that environmental degradation violates fundamental rights. Czechia's first climate judgment, Poland's anti-smog lawsuits for children's health, and Hungary's constitutional jurisprudence all exemplify a growing recognition: when the environment is harmed, the rights of people – especially vulnerable groups like children – are at stake. While Slovakia and others are at earlier stages in terms of litigation, their laws provide tools that could be used to similar effect. Each country also faces implementation challenges; for instance, having a right to a healthy environment on paper does not automatically clean the air or water. Nonetheless, courts are increasingly willing to enforce these rights, adding legal pressure on governments to prioritise environmental and intergenerational welfare.

Regionally, Central Europe faces common challenges. One is pollution from energy and agriculture – for instance, high reliance on coal (Poland, Czechia), causing air pollution, or intensive agriculture, causing water pollution (nitrates in water affect infants). Each country has EU obligations to meet certain environmental standards (e.g., under the Ambient Air Quality Directive, Water Framework

Directive, etc.).[79] EU law has indirectly strengthened children's environmental rights by forcing improvements (for example, EU pressure led to phase-outs of leaded petrol, which has been beneficial for child health). However, enforcement at the national level can lag. Another challenge is climate change adaptation – heatwaves in Central Europe are becoming more frequent, posing risks to children (who are less able to regulate body temperature).

A positive regional trend is the recognition of education and youth engagement in environmental matters. Slovakia, Czechia, Poland, and Hungary all include environmental themes in school curricula (partly a legacy of the 1970s-80s when environmental consciousness rose). Governments have begun to respond: for instance, Slovakia's President has frequently dialogued with students about climate action, and Poland's government in 2019 created a Youth Climate Council to advise the Ministry of Climate – an initiative recognising that young people should have a say in policies that affect their future.

Hungary's constitutional and ombudsman model stands out for safeguarding future generations' interests. Czechia's judiciary taking climate rights seriously is commendable. Poland's citizen-led litigation for clean air is forging new remedies for environmental rights. Slovakia's comprehensive constitutional provisions provide a strong foundation and could support future legal actions as awareness grows. For all, continued development of case law and policy aligning with those high-level commitments is needed. This includes explicitly considering children in environmental health action plans, ensuring that environmental impact assessments evaluate effects on children (e.g., how a new factory might affect a nearby elementary school), and dedicating resources to enforcement so that the right to a healthy environment becomes a reality, not just a promise.

4. Intergenerational justice and rights-based environmentalism

There is a theoretical framework that supports all the case law discussed in this article, which is what connects environmental law with human and children's rights. Two key concepts stand out: intergenerational justice and rights-based approaches to environmental protection. These ideas help explain and justify why courts and lawmakers are increasingly treating environmental degradation as a violation of rights – and why children are central to this shift.

Intergenerational justice refers to fairness or equity between present and future generations. In the environmental context, it posits that the current generation has obligations to avoid depriving future generations of natural resources, a stable climate, and a healthy planet. This idea has deep roots in international

79 | Szilágyi 2022, 50.

discourse – from the World Commission on Environment and Development's 1987 report Our Common Future[80] (which popularised sustainable development), to principles in treaties like the UNFCCC (which calls for protecting the climate for present and future generations). For legal systems, intergenerational justice raises the question: Can future generations be rights-holders, and can today's policies be judged by their impact on tomorrow's people?

Courts increasingly answer yes. The German Constitutional Court's climate decision explicitly invoked intergenerational justice, insisting that the state cannot shift burdens to the future in a way that 'endangers future freedoms' of the young. It essentially operationalised intergenerational justice by requiring proportional distribution of emissions reduction efforts across generations. Similarly, the Philippines Supreme Court in Oposa spoke of "the right of the next generations to a balanced and healthful ecology", allowing current minors to sue on their behalf – a clear nod to future persons having interests the law should protect. Even without explicitly naming future generations, many constitutions (like Poland's and Hungary's) embed the concept by obligating the state to consider future impacts (e.g., Poland's mandate to ensure ecological security for current and future generations, Hungary's duty to preserve resources for future generations). These provisions create a constitutional space for intergenerational arguments.

From a theoretical standpoint, scholars like Edith Brown Weiss have argued for "planetary rights" of future generations and correlative duties of the present.[81] Such theories help the legal reasoning that it is unjust for the present generation to consume resources or pollute in ways that irreversibly compromise the welfare of those to come. Children's rights provide a concrete bridge to future generations: children alive today will live into future decades, so protecting their long-term rights effectively means protecting the future generation of adults they will become. As the IUCN (International Union for Conservation of Nature) has observed, youth climate activism and litigation have made intergenerational justice a pressing justiciable issue – what was once abstract philosophy is now being translated into legal claims and court judgments. Courts stepping into this arena are "showing leadership in promoting equity [...] protecting current and future generations".[82]

There are many challenges to intergenerational justice. One is the question of representation: future unborn generations cannot speak for themselves, so we rely on proxies (like children, youth activists, or institutions like Hungary's Ombudsman for Future Generations) to raise their interests. Another is balancing present needs against future needs – a task often left to the political process. However, rights discourse is influencing this balance by asserting some environmental minimum that must be left intact for the future. The 'public trust doctrine'

80 | World Commission on Environment and Development (WCED) 1987.
81 | Brown Weiss 1990, 200.
82 | IUCN 2021.

(originating in U.S. law but influential globally) encapsulates this: the state holds natural resources in trust for the public and future generations, and must prevent their substantial impairment. This doctrine has appeared in some youth-led climate cases (such as Juliana v. U.S.[83]), arguing the government violates its trustee duty to youth and future citizens by allowing fossil fuel exploitation.

For children's rights, intergenerational justice reinforces that the well-being of children today is linked to the state of the environment they will inhabit decades from now. So failing to mitigate long-term environmental threats could be seen as violating not only future generation rights, but the current rights of children to survival and development. Indeed, the UN Committee on the Rights of the Child in General Comment 26 emphasised that states' obligations to children include protecting them from foreseeable future harm caused by environmental degradation and climate change[84] – a direct application of intergenerational justice in a human rights treaty context.

Traditionally, environmental law has been grounded in statutes, regulations, and policy balancing, often under a cost-benefit framework. A rights-based approach shifts the perspective: it frames environmental protection as an obligation stemming from fundamental rights, rather than just policy discretion. This has several implications. Environmental protection is seen as non-negotiable up to a minimum standard, similar to how we treat core civil rights. For instance, if clean air is a right, the state cannot simply decide that a certain community must live with toxic air for economic development reasons without breaching that right. Victims of environmental harm gain the language of rights to make claims. A child suffering from contaminated water can claim a breach of her right to health or even a stand-alone environmental right, rather than relying solely on political lobbying for cleaner water. A rights-based approach often enhances accountability and access to justice. Rights can be invoked in court, forcing judicial review of environmental inaction or regressions.

We have seen this play out in case law: the Urgenda case tied climate action to the right to life;[85] the Polish asthma cases tie clean air to the right to health. In both, plaintiffs use rights as levers to compel action. A rights-based approach is also evident in many national constitutions that have adopted an enforceable right to a healthy environment. This effectively constitutionalises environmental policy and empowers citizens (including children, through representatives) to demand better environmental quality.

Importantly for children, a rights-based approach intersects with the principle of the 'best interests of the child', a core tenet of the CRC. If a government action

83 | Juliana v. United States (2018) 217 F. Supp. 3d 1224 (D. Or.), United States District Court for the District of Oregon, 10 November 2016; appeal at 947 F.3d 1159 (9th Cir. 2020).
84 | CRC Committee 2023, para. 11.
85 | Supreme Court of the Netherlands (2019, December 20), State of the Netherlands (Ministry of Economic Affairs and Climate Policy) v. Urgenda Foundation (ECLI:NL:HR:2019:2007).

or inaction (say, permitting a polluting factory or failing to curb emissions) will impact children, their best interests should be a primary consideration. Courts and agencies can use this principle to, for example, require an environmental impact assessment to specifically evaluate impacts on children or require that children's health be given priority weight.

It is clear that incorporating children's rights into environmental decision-making leads to more protective outcomes, because children's vulnerability demands higher safety margins. Indeed, UNICEF notes that "taking [children's] rights and their views into account would lead to more ambitious and effective policies on environmental protection".[86]

Another theoretical framework is the concept of ecological rights of children. This goes beyond seeing the environment as only a means to health, and suggests children might have a right to nature or to experience a healthy ecology as part of their development. While not yet formally recognised in law, this concept has been advocated by child-rights scholars and could gain traction as awareness grows that issues like biodiversity loss affect children's cultural and recreational rights (for instance, the CRC guarantees the right to play, which a safe natural environment enables).[87]

Courts have begun to frame the environment-children's rights intersection in compelling ways. The Colombian Supreme Court's 2018 Future Generations v. Ministry of the Environment decision (a case brought by youth plaintiffs) declared the Amazon rainforest a subject of rights and ordered the government to create plans to stop deforestation.[88] The court invoked the rights of children and future generations to a healthy environment, essentially merging an environmental rights-based approach with children's constitutional rights. Similarly, when the ECHR eventually issues decisions in the pending youth climate cases, it will likely have to articulate how the failure to reduce emissions implicates the rights to life (Article 2) and family life (Article 8) of the youth applicants – thereby setting a rights-based standard for climate policy.

Rights-based environmentalism aligns with the idea of environmental justice – ensuring that no group (including future children) bears an unfair share of environmental burdens or is denied equal access to environmental benefits. Children, as a group that lacks political power, are increasingly recognised in environmental justice discourse. For example, policies on the placement of waste sites or polluting industries now sometimes consider if they are too close to schools or playgrounds, acknowledging children's rights to safety.

In conclusion, intergenerational justice provides the ethical foundation that we should protect the environment for those to come (with children as the bridge to that future), while a rights-based approach provides the legal mechanism to

86 | UNICEF 2023, 8.
87 | Garayová 2023, 61.
88 | Supreme Court of Justice of Colombia (2018) Future Generations v. Ministry of the Environment, Judgment STC4360-2018, 5 April 2018.

enforce that protection now. Together, these frameworks are reshaping both international and domestic law. They lead to courts recognising concepts like the rights of future generations, the best interests of the child in environmental matters, non-regression in environmental law, and the human right to a healthy environment – all of which fortify the legal claim that environmental degradation is fundamentally a children's rights issue.

5. Conclusion

Environmental rights are increasingly recognised as fundamental human rights, and nowhere is this more evident than in the context of children's rights. International law – from the Convention on the Rights of the Child to climate agreements – acknowledges that a safe and healthy environment is a prerequisite to children's survival and development. Courts around the world, including in Central Europe, are affirming that governments have legal duties to prevent environmental degradation that threatens human rights, with special solicitude for the young and unborn who will inherit the planet. The concept of intergenerational justice has moved from theory to justiciable principle, as seen in cases holding states accountable for climate inaction to protect future generations.

Central European countries provide a microcosm of both the progress and the challenges in implementing these ideals. They have strong legal frameworks recognising environmental protection (often influenced by their socialist-era and democratic transition experiences that valued a clean environment), and recent litigation and activism in the region show a growing demand that those promises be honoured in practice. Ensuring that children's rights are protected in the face of environmental threats requires translating high-level rights into real-life practical changes – cleaner air, safer water, a stable climate, and resilient food systems. This, in turn, links closely with agricultural and environmental law: how we regulate industries and land use, how we support sustainable farming, and how we respond to ecological crises will directly shape the world that today's children grow up in.

There are some *de lege ferenda* recommendations that can be distilled from the research above. Central European states should consider enshrining an explicit right to a healthy environment in their constitutions or high-level statutes if they have not done so. Slovakia and Hungary already recognise this right expressly; Czechia and Poland could elevate the environmental interests of individuals (including children) by adopting clearer constitutional wording. Hungary's approach of listing natural resources as part of the nation's common heritage (to be preserved for future generations) could be emulated by neighbours.

Procedurally, all four countries should review their civil procedure and administrative procedure rules to lower barriers for environmental litigation, especially by young people. This might include granting legal standing to minors and youth

organisations to sue in environmental matters (with appropriate representation). Courts should be empowered to appoint a guardian ad litem or allow class-action style suits for groups of children affected by environmental harm.

Rather than waiting for disputes, law reform can infuse child-centric considerations into everyday governance. For instance, Environmental Impact Assessment (EIA) laws and strategic planning statutes can be amended to require a 'Child Impact Statement' as part of any major project or policy assessment. This would mean that when, say, a new power plant, highway, or waste facility is proposed, the EIA must explicitly evaluate how the project could affect children's health, development, or welfare (differentiating from general population effects).

Education is both a right and a means to empower children in environmental matters. Central European countries should fully implement Article 29 of the CRC by integrating stronger environmental and climate education into school curricula. Beyond knowledge, this should include teaching about rights – e.g., informing students that they have a right to be heard on issues affecting their environment. Ministries of Environment could establish Youth Councils (like Poland's Youth Climate Council) in each country and give them real consultative weight on environmental policies.

Finally, looking forward, legal systems must be adaptive as new environmental health issues emerge. For example, the rise in extreme heat due to climate change poses special risks to children (who cannot regulate body temperature as effectively). Laws may need to ensure, say, all schools and kindergartens have climate adaptation plans (cooling, greenery, etc.), and that labour laws allow teenagers to avoid outdoor work during heatwaves – all framed as protecting the right to health.

As climate change accelerates and environmental crises multiply, courts and policymakers are likely to see more claims where environmental and children's rights meet. We can expect, for instance, further climate cases invoking children's right to a livable future, or litigation over toxic exposures in which claimants argue their rights to health and a safe environment were breached. Contemporary courts are increasingly willing to hold that children have a right to inherit a world that is not irreversibly damaged. Environmental law, agricultural policy, and human rights law must continue to converge to ensure that this right is respected.

Recognising environmental rights as human rights, and enforcing them through a child-sensitive lens, offers a powerful way to drive stronger environmental action. It places the human face – indeed the child's face – on abstract problems like pollution and climate change. It reminds us that the ultimate measure of sustainable development is whether we leave our children a world in which they can thrive. Protecting the environment is no longer just about conserving plants and animals in isolation; it is about fulfilling our most fundamental duty to the next generation – upholding their rights to life, health, and dignity on a habitable planet.

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Dávid HOJNYÁK[1]

The Dilemmas of Agricultural Constitutionalisation in Hungary

Abstract

In this study, we review the constitutional process of 2010–2011 in Hungary, which preceded the adoption of the Fundamental Law, focusing on how issues related to agriculture appeared in the work of various professional and political bodies during the constitution-making process. In this context, the study examines the relationship between agricultural law and constitutional law by analysing the process that led to the adoption of the Fundamental Law of Hungary. In our analysis, we primarily apply historical, teleological, and systematic methods of legal interpretation. The study is timely, as no work has yet examined this type of relationship between constitutional law and agricultural law in connection with the constitution-making process.

Keywords: Agricultural Law, Constitutional Law, Fundamental Law of Hungary, Constitutionalisation, Constitutional Process, Constitution-Making Process

1. Introduction

The Fundamental Law of Hungary, which entered into force on January 1, 2012, established a completely new constitutional framework for agricultural regulation. Unlike the previous constitution, the Fundamental Law contains numerous provisions that explicitly address agriculture. In this study, we examine the timing, form, and context in which agricultural regulatory issues emerged during the Hungarian constitutional process that began in 2010. In particular, we analyse the work and key documents of the Ad Hoc Committee for the Preparation of the Constitution,

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review the professional and political opinions expressed in connection with the new constitution, and finally assess the provisions originally contained in the submitted constitutional proposal, as well as how they were amended compared to the text of the Fundamental Law that was ultimately adopted and entered into force.

2. The beginnings of agricultural constitutionalisation: the documents of the Ad Hoc Committee for the Preparation of the Constitution and the role of national consultation in the constitutional process

One of the first noteworthy moments in the constitutional process, from the perspective of our topic, was the establishment and work of the Ad Hoc Committee for the Preparation of the Constitution (hereinafter: the Committee)[2] , two documents of which are worth mentioning: on the one hand, the concept entitled 'Regulatory principles of the Hungarian Constitution' and, on the other hand, the concept entitled 'Preparations for the Adoption of the New Constitution' (hereinafter: Constitutional Concept).[3] Of the two documents, the latter is of practical significance for two reasons: (a) the former concept was never voted on by the National Assembly in its original form, (b) our topic, agricultural regulation, only appeared in the Constitutional Concept, while this issue was not mentioned in any form in the first concept. However, it is important to note that, according to the minutes of the committee's work, the issue of agriculture (with particular regard to the fact that arable land, as a natural resource of particular importance, should be classified as national property and thus enjoy constitutional protection) was raised on numerous occasions during the debate on the original draft, but was ultimately not included in the text.[4] We would also like to note here that the six working groups, which dealt with certain priority issues of constitutionalisation and took a position on the possible directions of constitutionalisation within the framework of sub-concepts, played an

2 | The Committee was established by the National Assembly in June 2010. The primary task of the Committee was to prepare a draft resolution of the National Assembly on the fundamental principles of the new constitution. For further details, see National Assembly Resolution 47/2010. (VI. 29). The work of the Committee and the documents discussed by the body are still available on the official website of the National Assembly.

3 | It should be noted that the two concepts were incorporated into the same draft resolution (draft resolution No. H/2057), but the original concept (entitled 'Regulatory Principles of the Hungarian Constitution') underwent significant changes not only in its title but also in its content as a result of numerous amendments. For the sake of transparency, we therefore considered it better to give the two concepts separate names.

4 | See, for example, the minutes of the Committee's meetings on 16 November and 14 December 2010.

important role in the work of the Committee.[5] However, after reviewing the work of the working groups and studying the partial concepts, we must note that these documents did not specifically address issues related to agricultural regulation.

As for the Committee's other document, the Constitutional Concept, which was adopted by the National Assembly on 7 March 2011 in the form of a resolution[6], it does contain specific details regarding agricultural regulation issues. Point 11 of the Draft Constitution states: "The Hungarian state's property, as national assets, the inalienable treasury assets belonging exclusively to the state – including arable land, mineral resources and waters – and the scope of exclusive state activities are regulated by law. Arable land and waters, as part of the national wealth, are protected by the Constitution." This wording was included in the text of one of the amendments submitted to the draft Constitution.[7] The amendment simply stated that arable land and water are the most important natural resources of the Hungarian national economy, and therefore, it is important that they be included in the draft and given special protection in the new constitution. However, it is no coincidence that this provision appeared in the draft constitution in this form, as an amendment, since this issue played a central role in the parliamentary debate on the draft resolution. In order to understand the background, it is worth briefly reviewing the most important ideas and arguments that arose during the general and detailed debates on the inclusion of the above-mentioned provision in the draft constitution.

After reviewing the speeches made during the debate, one of our most important findings is that the participating representatives – regardless of their political affiliation – felt that the original draft lacked provisions aimed at protecting natural resources. On the one hand, the idea emerged in the debate that it would be necessary to include natural resources in the category of national assets in the Constitution, thereby placing them under constitutional protection. On the other hand, there was a demand that natural resources of particular importance to the national economy and national sovereignty should be specifically mentioned.

5 | The following six working groups were set up within the Committee:
Working Group I: *Constitutional values*
Working Group II: *Fundamental rights and obligations*
Working Group III: *System of government and forms of power*
Working Group IV: *Justice, constitutional and legal protection*
Working Group V: *Local governments*
Working Group VI: *Public finances.*
The partial concepts prepared by the working groups are available on the Government's official website at the following link: https://lnk.ink/munkacsoport
6 | See: National Assembly Resolution 9/2011. (III. 7.) on the preparation for the adoption of the new Constitution.
7 | Related amendment proposal No. H/2057/57.

Within the latter category, almost without exception, the categories of arable land and water (resources) were mentioned.[8]

With regard to arable land, it is important to emphasise that the majority of the representatives who spoke considered its inclusion in the new constitution to be important for land and property policy reasons, rather than for environmental considerations.[9] At this point, it should be noted that this issue was raised primarily by opposition representatives in the context of preventing foreigners from purchasing agricultural land in Hungary.[10] It is another matter that, due to Hungary's membership of the European Union, it could not have declared such a constitutional (or any other lower-level legislative) provision in its legal system, as it is contrary to EU law and achievements, primarily the EU's fundamental principle of the free movement of capital, which, following Hungary's accession to the EU, the seven-plus-three-year land moratorium expired, leading to the liberalisation of the land market. Contrary to this position (during the subsequent parliamentary debate, primarily on the part of pro-government representatives), an opinion was expressed that the text of the new constitution awaiting adoption went as far as it could, taking into account EU law and international treaties, and that it would be the task of the cardinal law(s) to be enacted on the basis of the authorisation granted by the constitutional regulation to work out the detailed rules in relation to the protection of agricultural land (and, in principle, all other natural resources of strategic importance). Incidentally, this topic and line of argument permeated the entire constitutional process, as it arose as an important point of debate in the general and detailed discussions of the draft constitution, and even in the final debate.

In summary, therefore, the representatives considered the constitutional protection of domestic agricultural land and water resources to be important primarily because natural resources of outstanding importance to national sovereignty should be protected by the highest level of legislation. It is true that in many cases this was linked to environmental considerations, but this was not the main feature, as reflected in the above-mentioned passage that ultimately appeared in the draft constitution.

8 | In this regard, see in particular the following speeches: László Nyikos, Géza Varga [general debate on the draft Constitution, 65th sitting (15 February 2011)]; Béla Turi-Kovács, Andor Nagy, Sándor Farkas, János Kővári, Katalin Szili, Tamás Gaudi-Nagy, Dániel Z. Kárpát, Barna Bödecs [general debate on the draft Constitution, 66th sitting (16 February 2011)]; János Bácskai, Ferenc Obreczán [general debate on the draft Constitution, 67th sitting (17 February 2011)].

9 | Péter Jani also comes to this conclusion in his study dealing specifically with the issue of constitutional protection of agricultural land. See Jani 2012, 294–296.

10 | It should be noted here that during the two decades between the change of regime and the drafting of the constitution, the land issue became a topic of great importance in the political arena due to circumstances that also arose in parliamentary debates, as evidenced by the number of referendum initiatives submitted on this subject during the period in question. For more information on the background to the referendum initiatives on agricultural land, see: Téglási 2015, 277–279.

It is also interesting to note that several representatives specifically referred to the constitutional regulations of other European countries as examples that could serve as models for the new Hungarian constitution.[11]

We can see that the draft constitution is the first official document in the constitutional process where the issue of agriculture appears specifically and literally[12], even if its content has changed significantly compared to the adopted text of the Fundamental Law. In any case, it can be stated that the work of the Committee and the provisions of the Draft Constitution, which essentially concluded that work, are reflected in both the proposed Fundamental Law and the adopted text of the Fundamental Law, also from the perspective of the topic under examination.

In addition to the Committee, it is also necessary to briefly mention the National Assembly's Sustainable Development Committee, which has formulated a number of forward-looking and concrete proposals for the text of the constitution currently being drafted. We would like to highlight just one of these proposals, which was also sent to the Committee as a suggestion during the drafting of the constitutional concept. The proposal was worded as follows: "Natural resources, including arable land, water, energy sources and biodiversity, form part of the national wealth. It is the duty of the state to preserve national assets, pass them on to future generations and increase their value. The protection of the natural and built environment is everyone's responsibility."[13] The first thing that strikes us about this proposal is that it is very similar to the wording of Article P) of the adopted Fundamental Law, and on this basis, we assume that this proposal may have served as an example when the (final) wording of the Fundamental Law was being drafted. Another important observation we have made about the – which, similar to what was said

11 | Below are a few examples from this group. In the general debate [67th session (17 February 2011)], Mihály Varga, a member of the ruling party, mentioned the Spanish constitution as a positive example in connection with the designation of groundwater and major domestic rivers and lakes as state property, as it even lists the seabed among the assets that cannot be alienated or appropriated and are within the scope of exclusive state ownership. Also on this subject, during the general debate, opposition MP Tamás Gaudi-Nagy [66th sitting (16 February 2011)] cited the Slovak constitution as an example, which classifies underground waters, mineral resources, watercourses and natural healing springs as state property. During the general debate, Andor Nagy, a member of the ruling party [66th session (16 February 2011)], also argued in favour of including natural resources in the constitution and protecting them, pointing out that a significant number of European Union member states have enshrined this in their own constitutions, defining them as part of the national wealth.

12 | Even before the draft constitution was made public, it was clear that among the various agricultural issues, arable land and its protection would feature in this document and in the future draft constitution. This is evident from the response given by József Ángyán, State Secretary of the Ministry of Rural Development, to an interpellation in the National Assembly on the subject of the land moratorium, in which he cited the Italian constitution as an example to follow [70th session, 28 February 2011]: "Land reform is essential. […] We must continue to amend the laws, and we will do so. On the one hand, we would like to see land protection included in the constitution. I would like to refer to the Italian constitution, for example, where this is very clearly stated."

13 | Andor Nagy, vice-chairman of the Committee on Sustainable Development, specifically cited the proposals formulated by the committee in the parliamentary debate on the draft constitution [see: 66th session (16 February 2011)].

in the parliamentary debate on the draft constitution, points to complete political consensus among MPs – is that all members of the Sustainable Development Committee (including those from the ruling party, the opposition and independent MPs) unanimously supported the proposal.[14]

If we review the most important events in terms of constitutional development in chronological order, it is important to briefly mention the 2011 National Consultation, which was entitled 'Questions about the New Constitution'.[15] The National Consultation deserves attention in this case because it can be interpreted as part of the public debate on constitutional development and the drafting of the new constitution, and in this respect, it belongs to the formal stage of constitutional development. The consultation provided an appropriate framework for voters to express their opinions on the specific elements of the new constitution before its adoption, while the constitutional power could take into account the opinions of voters (including the proposals formulated by civil society organisations[16], independently of the National Consultation) during the constitution-making process.[17] The questionnaire was sent by post to all citizens eligible to vote, and 920,000 people completed and returned it. Three of the twelve questions in the questionnaire are relevant to our topic.

The tenth question (which is most closely related to agricultural regulation issues) asked whether the new constitution should protect national assets, with particular regard to arable land and water resources. The 97% of respondents[18]

14 | Barna Bödecs, an opposition MP, also referred to this in his speech during the parliamentary debate on the draft constitution [66th sitting (16 February 2011)].

15 | The 2011 National Consultation entitled 'Questions about the New Constitution' is available at the following link: https://hu.m.wikipedia.org/wiki/F%C3%A1jl:Nemzeti_konzultacio-alkotmany.jpg

16 | We would like to highlight one of the proposals submitted by civil society organisations. The proposals formulated by the Hungarian Nature Conservationists' Association (MTVSZ) were truly forward-looking, placing particular emphasis on the rules governing the ownership and use of certain natural resources (such as arable land, water, mineral resources, biodiversity, etc.). The proposal formulated by the MTVSZ is available at the following link: https://mtvsz.hu/hirek/2011/03/az-emberiseg-fennmaradasat-szolgalo-normakat-az-alkotmanyba

17 | This is supported by the keynote speech of János Lázár, leader of the largest governing party, in the general debate on the new constitution, in which he specifically addresses certain elements of the topic under consideration [76th session (22 March 2011)]: "It is very important in the proposal that we affirm that the national consultation and discussions with civil society were not in vain. […] I would like to draw your attention to the fact that the passage on the protection of a healthy environment, the management of natural resources, in particular arable land, drinking water resources and biodiversity, goes a long way towards satisfying the civil society aspirations that have been expressed by green movements in recent years and decades." However, some do not share the view that the National Consultation provided an adequate framework for public debate on the new constitution. See, for example, Chronowski 2012, 56.

18 | It should be noted that of all the questions, the affirmative answer to this question received the highest support, with a rate of 97%. This suggests that the citizens participating in the National Consultation almost without exception supported the idea of constitutional protection for natural resources (and within this category, especially arable land and water resources).

agreed with the statement that the new constitution should 'expressly' mention and protect national assets, particularly arable land and water resources.

The sixth question in the questionnaire may seem less relevant to our topic at first glance, but the provisions of the adopted Fundamental Law emphasising the interests of future generations[19] are directly related to agricultural regulation issues, which is why we need to mention this question from the consultation. The sixth question of the consultation asked whether the new constitution should include a commitment to future generations. The overwhelming majority of respondents, approximately 86%, agreed that the new Hungarian constitution should include a commitment to future generations – and, as we will see later in the detailed analysis, this constitutional commitment is clearly reflected in the provisions of the Fundamental Law.

We should also mention the ninth question in the questionnaire (for the reasons stated in connection with the previous question), which asked whether the new constitution should protect the natural diversity of the Carpathian Basin, with particular regard to animal and plant species native to Hungary. With regard to this question, 78% of respondents agreed that biodiversity (which, in simple terms, was the subject of the consultation) should be protected by the constitution.[20]

3. The draft constitution and Szili's constitutional proposal

After these events, we arrive at the submission of the constitutional proposal, or more precisely, constitutional proposals, as it is well known that the constitutional proposal submitted by the governing parties (hereinafter: draft constitution)[21], independent Member of Parliament Katalin Szili also submitted a constitutional proposal (hereinafter: Szili's constitutional proposal)[22] to the National Assembly. Accordingly, in the following, we will examine what provisions relevant to agricultural law were contained in the two constitutional proposals, while also examining how the original text of the two proposals was amended as a result of parliamentary debates and the amendments submitted.

19 | See in this regard: the preamble to the Fundamental Law entitled 'National Avowal' (in particular paragraph 7), Article P) and Article 38.
20 | When analysing the provisions of the Fundamental Law, we will see that this category appears in both paragraph 7 of the National Avowal and Article P).
21 | The submitted constitutional proposal can be found on the official website of the National Assembly under the title T/2627. Bill, entitled 'The Fundamental Law of Hungary'.
22 | The submitted constitutional proposal can be found under the title Bill T/2628, entitled 'The Constitution of the Republic of Hungary', among the documents on the official website of the National Assembly. It should be noted at this point that the National Assembly did not ultimately vote on this constitutional proposal, as the majority of members of the National Assembly did not support the motion to submit it for detailed debate.

The text of the draft Fundamental Law submitted by the governing parties on 14 March refers to agricultural regulation in a number of places, but the draft underwent significant amendments in several places in the period leading up to the final vote as a result of the amendments submitted. First, in the table below, we would like to illustrate the changes that the submitted proposal underwent during the indicated period compared to the text of the adopted Fundamental Law:

Location in the Fundamental Law	**Draft Fundamental Law**	**Adopted Fundamental Law**	**Purpose and direction of the amendment**
National Avowal	Paragraph 7: "We commit ourselves to promoting and safeguarding our heritage [...] all man-made and natural assets of the Carpathian Basin. We bear responsibility for our descendants and therefore we shall protect the living conditions of future generations by making prudent use of our material, intellectual and natural resources."	No change compared to the draft Fundamental Law.	Not relevant.
Foundation	Article O): "(2) Natural resources, in particular arable land and drinking water supplies, as well as biodiversity and cultural artefacts shall form, the common heritage of the nation, which the state and everyone has a duty to preserve for future generations."	Article P): "Natural resources, in particular arable land, forests and the reserves of water, biodiversity, in particular native plant and animal species, and cultural artefacts, shall form the common heritage of the nation, it shall be the obligation of the State and everyone to protect and maintain them, and to preserve them for future generations."[23]	The scope of natural resources is expanded (forests and native plant and animal species are also mentioned), while the text of the Fundamental Law is made more accurate and precise.

23 | The amendment was based on amendment proposal No. T/2627/84 and the unified proposal (T/2627/165).

Location in the Fundamental Law	Draft Fundamental Law	Adopted Fundamental Law	Purpose and direction of the amendment
Freedom and responsibility	Article XIX: "(1) Everyone shall have the right to physical and mental health. (2) Hungary shall promote the enforcement of the right referred to in paragraph (1) by by organising safety at work, health care institutions, medical care, by supporting sports and regular physical exercise as well as protection of the built and natural environment."	Article XX: "(1) Everyone shall have the right to physical and mental health. (2) Hungary shall promote the effective application of the right referred to in paragraph (1) through agriculture free of genetically modified organisms, by ensuring access to healthy food and drinking water, by organising safety at work and healthcare provision and by supporting sports and regular physical exercise as well as by ensuring the protection of the environment."[24]	The objective institutional protection aspect of the right to physical and mental health is expanded: the concept of GMO–free agriculture and a narrower concept of the right to food and water are introduced.
Public funds (the proposal originally included the title 'National assets')	Article 38: "(1) The property of the State and of local governments shall be national assets. The management and protection of national assets shall aim at serving the public interest, meeting common needs and preserving natural resources, as well as at taking into account the needs of future generations."	No substantive change compared to the draft Fundamental Law.	Not relevant.

1. Table: The draft Fundamental Law and its amendments (prepared by the Author)

Below, we review the relevant statements in the explanatory memorandum to the proposed Fundamental Law[25] from the perspective of our topic, and we also examine how and why the text of the proposed Fundamental Law took shape in the period leading up to the final vote as a result of the adopted amendments. As we shall see, in some cases, neither the justification for the draft Fundamental Law nor that for the amendments contains any substantive explanation of the considerations behind certain provisions and amendments. Therefore, in our analysis, we will also refer to the most important criticisms and suggestions made by representatives during the debate on the new constitution, as, after reviewing the

24 | The amendment was based on amendment proposal No. T/2627/96, related amendment proposal No. T/2627/153, and amendment proposal No. T/2627/166 prior to the final vote.
25 | The justification for the draft Fundamental Law can be found in the submitted proposal (draft law T/2627).

topic, we believe that, in some cases, they contributed significantly to the shaping of the text of the adopted Fundamental Law, which is an important consideration in historical and teleological interpretation.

The general justification for the draft Fundamental Law does not, but the detailed justification contains important statements that can help us understand the intention of the constitution. The detailed justification mentions, in connection with Article O) [which, following the subsequent amendments[26], will be realised in Article P], mentions as one of the important novelties of the Fundamental Law that the proposal specifically names the unique Hungarian 'environmental values'[27], the protection of which it makes everyone's obligation in order to preserve them for future generations.

The table above also shows that this provision of the proposal has been significantly amended compared to the adopted text.[28] On the one hand, two of the natural resources originally specified in the text have been clarified:

a) the category 'of drinking water resources' in the proposal has been replaced by the much broader category of 'water resources'[29];
b) 'biodiversity' has been specified by naming the 'native plant and animal species' within this category.

However, the amendment proposal, which provided the basis for these textual changes, does not contain any justification as to why the text was amended in this way, which is why the speeches of the representatives referred to are important for understanding.

26 | This change, which can be considered technical, appears in the unified proposal (T/2627/165).

27 | Article O) of the draft Fundamental Law already uses the category of 'natural resources', whereas the detailed justification for the proposal refers to the category of 'environmental value'; however, the two categories are not equivalent and cannot be used as synonyms. For more information on this, see the chapter on the conceptual definition of agricultural regulation in the thesis, which discusses the content elements of the category of natural resources in detail.

28 | These substantive provisions were incorporated into the text of the draft Fundamental Law following the adoption of amendment T/2627/84.

29 | First, Sándor Font, a member of parliament representing the largest governing party, raised the issue during the general debate on the new constitution [76th sitting (22 March 2011)] that it would be appropriate to use the term 'water resources' instead of 'drinking water resources' in the Fundamental Law: "I would also like to propose an amendment, as protection would apply to both arable land and drinking water resources. In this case, I find the term 'drinking water' to be too narrow, and I would like to make this proposal for our entire water resources. After all, why should we exclude our underground waters, such as thermal water [...] or even the diverse variety of mineral water resources, in relation to which we know how many businesses have achieved success with thermal waters, and in the last four to five years, the quality of our mineral water has become a very significant benchmark for Hungary; so I would dare to say that we should extend this protection to our water resources as a value to be preserved, not to mention irrigation water. [...] I would venture to suggest that we extend this to our entire water resources, meaning both surface and underground waters, i.e. all the water that has simply accumulated beneath us here in the Carpathian Basin and is constantly available to us".

On the other hand, the range of natural resources that are specifically named and thus given special importance has been expanded, as forests are now included in the text as a result of the amendment.[30]

Thirdly, the text is further clarified by the inclusion of the protection and preservation of natural resources (as a state obligation) in the text. The original proposal simply stated that the preservation of natural resources for future generations is the responsibility of the state and everyone, while the clarification and expansion of the text (which in some respects reflects the critical comments made during the parliamentary debate) results in a greater obligation on the part of the state and all citizens.[31]

As regards Article XIX of the draft Fundamental Law (which, following subsequent amendments[32], ultimately became Article XX), although there is no detailed justification, the amendment[33], which significantly expanded the scope of fundamental rights relating to physical and mental health at the last minute before the final vote, contains an explanatory statement that facilitates interpretation. The amendment justifies the inclusion of the concept of GMO-free agriculture[34] and the right to food[35] and water in the Fundamental Law on the grounds that "the right to physical and mental health, as an inalienable human right [...] requires access to high-quality, healthy food produced from genetically modified-free organisms

30 | The designation of forests as a priority natural resource at the level of fundamental law was proposed by István Jakab, a member of the ruling party, during the general debate on the new constitution [78th session (24 March 2011)]: "There is one thing missing from the designation, namely that the draft does not give special attention to forests. I myself would like to propose an amendment to this effect, so that forests are specifically designated in the constitution and given priority in terms of a healthy environment, as well as being treated as an opportunity to serve the public good." It should also be noted here that prior to the parliamentary debate, during the work of the Ad Hoc Committee for the Preparation of the Constitution, we encountered a proposal by the Forestry and Wood Industry Workers' Union calling for a declaration of the inalienability of state-owned forests, thus seeking to enshrine the unique constitutional status of forests in the text of the new constitution.

31 | Several pro-government and opposition members of parliament (such as József Ángyán, Béla Turi-Kovács, Zoltán Balczó, Tamás Gaudi-Nagy, László Nyikos and Zoltán Magyar) drew attention to this during the general debate on the new constitution. In this regard, see in particular the speeches made during the general debate on 22 March 2011 (76th sitting), 23 March 2011 (77th sitting) and 25 March 2011 (79th sitting).

32 | This amendment was made following the adoption of the related amendment proposal No. T/2627/153.

33 | See amendment No. T/2627/166 prior to the final vote.

34 | The issue of GMO-free agriculture and its particular importance was emphasised by numerous members of parliament during the general and detailed debate on the new constitution, which is why this category was ultimately included in the final text of the draft constitution. It should be noted here that this issue had already been raised during the parliamentary debate on the draft constitution (albeit with little emphasis) by Ferenc Obreczán, a member of the ruling party, who proposed that, similar to the Swiss constitution, the new Hungarian constitution should also declare the concept of GMO-free agriculture [67th session (17 February 2011)].

35 | In the general debate on the new constitution [77th session (23 March 2011)] Ferenc Ódor was the pro-government representative who was the first to raise the issue during the debate, expressly lamenting the absence of the right to food (or at least a narrower interpretation of it) in the text of the Fundamental Law and proposing that it be included, primarily for food safety reasons.

that, due to their diversity, meet the needs of society, as well as access to drinking water."

The detailed justification for Article 38 also contains important statements: the explanatory memorandum, supplementing the text of the proposal to some extent, states that in the management of national assets, particular attention must be paid to "natural resources that need to be protected in view of their finite nature, and to ensuring that national assets are available to future generations to the extent necessary to meet their needs". In view of this, the proposal stipulates that the detailed rules for the preservation and protection of national assets and the responsible management of national assets should be regulated in a cardinal law.

One day after the ruling parties submitted their draft constitution, on 15 March, independent MP Katalin Szili submitted her own draft constitution, which contained provisions relating to agricultural regulation on a number of points. From the perspective of our topic, the first substantive provision of Szili's constitutional proposal, which otherwise contains many surprising proposals, concerns the fact that Hungary's economic system is an eco-social market economy. Within this framework, the proposal stipulates that the state shall provide increased protection for national values, the environment and nature, with particular regard to arable land and water resources.[36] We can see, therefore, that, similar to the draft constitution, this proposal also specifically mentions certain natural resources, the protection of which would be enshrined in the constitution as a state obligation under the proposal. The Szili proposal also specifically mentions the category of natural resources in the context that, in order to ensure the survival of the human race, it is the duty of every human being to use natural resources sustainably, among other things.[37] It is also important to note that, similar to the draft constitution, this proposal also pays special attention to the constitutional representation and enforcement of the interests of future generations, linking this to the issue of agriculture. In this context, we need to examine the justification for the proposal, which states that one of the guarantees of the living conditions of future generations is the protection of arable land and water resources. Another surprising element of Szili's proposal is the idea of establishing a bicameral parliamentary model, in which the president of the Hungarian Chamber of Agriculture (along with the presidents of several other public bodies, on a rotational basis) could have represented the actors and interests of the agricultural sector in the upper house

36 | Szili's constitutional proposal, Section 4. At this point, it is worth referring to Katalin Szili's explanatory statement in the general debate on the new constitution [76th sitting (22 March 2011)], in which she stated the following in relation to this provision of the constitutional proposal: "It was a long-standing shortcoming of the Hungarian constitutional order that [...] it did not include any obligation to protect Hungary's uniquely rich natural resources. These include water resources, which are of strategic importance in the 21st century, or, as we have put it, part of the country's agricultural wealth."

37 | Szili's constitutional proposal, Section 25 (b)

of the legislative body.[38] Máté Julesz concludes that Szili's constitutional proposal attempted to compete with the ruling parties' constitutional proposal in the field of environmental protection and may have had an impact on the text of the Fundamental Law that was ultimately adopted[39] (this is perhaps not surprising in light of the fact that Katalin Szili began her career as an environmental lawyer and then served as state secretary in the Ministry of the Environment). In addition to this, we believe that this statement is true not only with regard to environmental protection, but also with regard to provisions relating specifically to agricultural regulation.

Although it does not qualify as a constitutional proposal in a legal-formal sense, we nevertheless consider it important to refer to the constitutional concept published by Lehet Más a Politika (LMP) entitled 'Constitution for the Future'[40] . The reason for this reference is that this concept contains a number of elements that more or less overlap with the constitutional proposals analysed above in terms of content. From the point of view of our topic, the most important elements and proposals of the constitutional concept are as follows:

a) It defines Hungary as an eco-social market economy in terms of its economic system, and the proposal links this to the state's obligation to protect natural resources[41] (as did the Szili's constitutional proposal);
b) The category of natural resources (as an asset) is explicitly mentioned in the proposal as part of the national wealth[42] (as was also the case in the draft constitution);
c) The constitutional protection of natural resources also appears in the proposal, specifically naming and highlighting certain areas of strategic importance, such as the protection of drinking water resources [43] (this approach can be observed in both the draft Fundamental Law and Szili's constitutional proposal);

38 | Szili's constitutional proposal, Explanatory Memorandum. At this point, we would just like to point out that several Member States of the European Union currently apply a bicameral parliamentary model with a similar operating mechanism, which constitutional law literature refers to as the second chamber model based on the principle of corporative or functional representation. In this model, the upper house represents the interests of various social groups, interest groups, public bodies, churches, local governments, etc. Slovenia and Ireland are examples of countries that specifically represent the agricultural sector, and we will return to the detailed rules governing this in later sections of this paper when analysing the constitutional regulations of individual EU Member States.
39 | See Julesz 2011, 589–590.
40 | The LMP's constitutional concept is available at the following link: https://lmp.hu/wp-content/uploads/2023/08/Alkotmany-a-jovonek-az-LMP-alkotmanykoncepcioja-pdf.pdf
This constitutional concept does not qualify as a constitutional proposal in the formal sense, as the LMP did not officially submit it to the National Assembly. Once the work of the Ad Hoc Committee for the Preparation of the Constitution was completed, the LMP effectively withdrew from the constitutional process (at least as far as the formal, parliamentary stage of the constitutional process is concerned), but it did set out its own ideas in this concept and made them public.
41 | LMP's constitutional concept, 5.
42 | LMP constitutional concept, 9.
43 | LMP constitutional proposal, 9 and 16.

d) The representation of the interests and rights of future generations at the constitutional level, which the proposal links to the issue of the conservation and economical and expedient use of natural resources[44] (as set out in both the draft Fundamental Law and Szili's constitutional proposal).

4. Professional opinions and proposals in connection with agricultural constitutionalisation

During the constitutional drafting process, the Hungarian agricultural and environmental law community made a few comments or proposals that were specifically related to agricultural regulation. It should be noted that it was primarily the issues of environmental law and environmental protection that aroused the intense interest of the profession in the constitutional process, but we will not discuss this here, as it does not fall within the scope of our narrower topic.[45]

However, in connection with the topic under consideration, we must mention Sándor Fülöp, the former parliamentary commissioner for future generations, who was intensively involved in and played an active role in the constitutional process.[46] Of the constitutional proposals formulated by the Green Ombudsman, we consider it important to refer to the package of proposals submitted on 26 November 2010, which was prepared at the request of the National Assembly's Committee on Sustainable Development[47] and which, in certain elements, already reflected the findings of the emerging (and analysed in detail above). The document published by the Ombudsman includes a proposal that natural resources should be classified as national assets, and that this should be regulated at the constitutional level.[48] The proposal also states that it would be necessary to precisely define the assets

44 | LMP constitutional proposal, 5 and 16.

45 | The literature on this subject is abundant, as numerous studies have been published that specifically examine, in connection with the 2010–2011 constitutional reform, what environmental law and environmental protection provisions would be justified and necessary to include in the new constitution; Without claiming to be exhaustive, the following studies are worth highlighting from this group: Antal 2011, 43–51; Pánovics 2011, 117–131; Fodor 2011; Fülöp 2012, 76–87; Fodor 2013a, 89–103.

46 | All of the Green Ombudsman's proposals and comments relating to constitutional law (which focus on environmental protection issues) are available at the following link: https://www.jno.hu/hu/?&menu=alkotmanyozas

47 | The Green Ombudsman's package of constitutional proposals sent to the Committee on Sustainable Development is available at the following link: https://www.jno.hu/hu/?&menu=alkotmanyozas&doc=javaslat-bizottsagnak-101202

48 | László Sólyom, former President of the Republic, made the same call in his presentation at an international conference organised by the Office of the Parliamentary Commissioner for Future Generations on the topic of constitutional reform ("The right to a healthy environment and the representation of the interests of future generations in the Hungarian Constitution currently being drafted" – Budapest, 14–15 February 2011). László Sólyom's presentation is available in English at the following link: https://www.jno.hu/hu/?&menu=talalkozok&doc=alkotmany-konz-osszefoglalo-110214

belonging to the national wealth, and within this circle, to specifically name those natural resources that are of particular strategic importance. In this regard, the ombudsman also makes a proposal by way of example: he identifies arable land, national water resources and biodiversity as natural resources of such high strategic importance. In this context, the ombudsman's proposal defines the protection of national assets as a constitutional obligation and also makes recommendations on the most effective means of ensuring this protection. According to the proposal, one solution could be for the constitutional power to restrict or prohibit the disposal of certain elements of national assets at the constitutional level. The ombudsman makes a further proposal in connection with the restriction, on the basis of which the constitutional power would declare the protection of national assets and their responsible management at the constitutional level and regulate the details by law.[49]

We also consider it important to refer to the position of *László Fodor*, who fundamentally disagreed with the attempt to specifically declare the protection of arable land, water resources (or any other natural resources) in the constitution.[50] According to Fodor, there are two reasons why it is not necessary to specify individual elements of natural resources in the new constitution. On the one hand, in his opinion, the case law of the Constitutional Court based on the previous Constitution (which, at the time of publication of Fodor's ideas, was still the constitutional regulation in force) provides a sufficient basis for the protection of these natural resources, given that the Constitutional Court had already included (arable) land, water, forests and all other elements of the natural resource category within the natural foundations of life. According to Fodor, this is reinforced by the fact that the legal regulations in force at the time (with particular regard to Act LIII of 1995 on the general rules of environmental protection) were in line with the case law established by the Constitutional Court. In his reasoning, he specifically refers to the case law of the Constitutional Court regarding arable land, according to which, even in the absence of specific provisions, land ownership is bound by its special characteristics, and behind this binding nature lies some public interest related to agricultural and/or environmental policy. However, Fodor agreed with the intention to classify natural resources as national assets, but did not consider it justified to declare this in the Constitution, as, in his opinion, it would be sufficient to regulate it at the level of law.[51]

49 | The Parliamentary Commissioner for Future Generations – as an expert and public law dignitary invited to participate in the constitutional process – essentially repeats and reinforces these proposals in the general debate on the draft Fundamental Law. See: 76th sitting (22 March 2011) in connection with the speech.

50 | Péter Jani also agrees with this position, particularly with regard to the constitutional regulation of agricultural land. See: Jani 2012, 300.

51 | Fodor 2011, 8; Following the adoption and entry into force of the Fundamental Law, the author also comes to this conclusion in his study analysing the appearance of water and the right to water in the Fundamental Law. See: Fodor 2013b, 338–339.

On 18 April 2011, the National Assembly finally voted on the amended version of the draft Fundamental Law, which was adopted by 262 votes in favour, 44 against and 1 abstention. The Fundamental Law subsequently entered into force on 1 January 2012.

5. Continuation of agricultural constitutionalisation: the third and fourth amendments to the Fundamental Law of Hungary

However, the agricultural constitutionalisation did not end with the adoption of the new constitution, as the third and fourth amendments to the Fundamental Law expanded the scope of constitutional provisions relevant to the subject under review, namely Article P), with important provisions.

The third amendment to the Fundamental Law can essentially be regarded as a clarification and correction of the previous regulation, as it expands the scope of cardinal laws with regard to certain agricultural regulatory issues.[52] The addition to Article P) concerns, on the one hand, the acquisition and use of ownership rights to arable land and forests and, on the other hand, the organisation of integrated agricultural production for the conservation of natural resources and agricultural holdings (as economic units related to agricultural land).[53] The justification for the proposed amendment to the Fundamental Law does not contain any substantive explanation regarding the text of the provision intended to be incorporated into the Fundamental Law[54], but the opinions and arguments expressed in the parliamentary debate on the proposal can help to understand the (legal) policy objectives behind the amendment.[55] One of the most important arguments in favour of the amendment in the parliamentary debate – if you like, as an agricultural policy objective, or rather as a question of sovereignty – was to make it more difficult for foreigners to acquire agricultural land, in view of the land moratorium expiring in 2014 and the new land transaction law also in progress at that time. There was basically a consensus among the speakers on this objective, with the debate focusing mainly on the different nature of the instruments intended to be used to achieve it. We also see that land policy objectives were also formulated as professional

52 | Gáva 2014, 33–34.

53 | As a result of the third amendment to the Fundamental Law (which was adopted by the National Assembly on 17 December 2012 and entered into force on 21 December), Article P) was supplemented with the following second paragraph: "The restrictions and conditions necessary for the acquisition and utilisation of ownership rights to arable land and forests in order to achieve the objectives set out in paragraph (1), as well as the rules governing integrated agricultural production organisation and agricultural holdings, shall be laid down in a cardinal law."

54 | The justification for the amendment to the Fundamental Law can be found in the submitted proposal (Bill No. T/9400).

55 | This is based on the speeches made at the 248th session of the National Assembly [general debate on the proposal (10 December 2012)] and the 249th session [detailed debate on the proposal (11 December 2012)].

arguments in the parliamentary debate, primarily meaning the preference for small and medium-sized estates over large estates, which, following confirmation and authorisation in the Fundamental Law, could be specifically reflected in the land transaction law through the creation of detailed rules. It is no coincidence that among the amendments submitted to the original proposal (see below for a brief analysis of these) is one that seeks to give priority to small and medium-sized estates over the large estate system and, in certain cases, over certain forms of integrated agricultural production organisation that are similar to it, by strengthening and supporting family farms. All this reinforces our previously stated position that the protection of natural resources (in this case, arable land) declared in Article P) is primarily intended to enforce agricultural policy objectives, specifically land policy objectives, rather than environmental considerations.

It is also important to note that four amendments have been tabled to the original proposal, as follows:

a) According to the first amendment, the cardinal law to be enacted would apply to 'family farms' and 'cooperatives' instead of 'integrated agricultural production organisations'. According to the explanatory memorandum, both the land policy guidelines laid down in the relevant legislation and the National Rural Strategy, as well as the multifunctional European agricultural model, place family farms and cooperatives at the centre of agricultural and rural policy, which is why it is necessary to enact a cardinal law on these regulatory matters. In contrast to family farms and cooperatives, integrated agricultural production organisation is only a narrow element of the agricultural and rural model, which is why, according to the explanatory memorandum to the amendment, it is not necessary to regulate this area within the framework of a cardinal law.[56]
b) According to the second amendment proposal, the adoption and amendment of cardinal laws on the acquisition and use of ownership rights to arable land and forests would require a four-fifths majority in the National Assembly rather than a two-thirds majority. According to the justification for the proposal, this is necessary in order to achieve the fullest possible national consensus on legal regulations aimed at protecting natural resources (in this case, agricultural land and forests).[57]
c) Under the third amendment proposal, the rules on integrated agricultural production organisation would have been removed from the scope of cardinal legislation, and the text of the Fundamental Law would have clearly stipulated that cardinal legislation on the acquisition and use of arable land and forests may only contain restrictions that are absolutely necessary. According to the explanatory memorandum, based on the authorisation

56 | Amendment No. T/9400/1 (submitted by József Ángyán of the ruling party).
57 | Amendment No. T/9400/2 (submitted by Géza Varga of the opposition).

granted by the Fundamental Law, restrictions on property rights cannot be so extensive as to violate the protection of property rights enshrined in the Fundamental Law in general.[58]

d) The fourth amendment proposal aimed to stipulate that agricultural land could only be owned by the Hungarian state or local authorities, or by natural persons with Hungarian citizenship. According to those who submitted the amendment, the preservation and legal protection of agricultural land, which is considered the "foundation of the nation", can only be achieved if the Fundamental Law and the cardinal law to be created on the basis of it clearly state that agricultural land may only be owned by Hungarians.[59]

The proposed amendments (regardless of whether they were submitted by pro-government or opposition MPs) were ultimately not passed by the National Assembly and were therefore not included in the Fundamental Law.

The fourth amendment to the Fundamental Law also affected the text of Article P), as the amendment clarified the second paragraph as follows: the phrase 'agricultural enterprises' was replaced by 'family farms and other agricultural enterprises'. In this case, too, the explanatory memorandum to the proposal does not provide any indication as to the circumstances that justified the amendment.[60] In the absence of an explanatory memorandum, we can again rely on the arguments put forward in the parliamentary debate, which show that the arguments put forward in the debate on the third amendment to the Fundamental Law were also of decisive importance in this case.[61] Based on the arguments presented, the inclusion of the category of family farming (as a fundamental mode of agricultural production) into the Fundamental Law and to make the related legal regulations binding is that it should be made the foundation of domestic agriculture and food self-sufficiency, which ultimately serves sustainable rural policy and the interests

58 | Amendment No. T/9400/3 (submitted by Béla Turi-Kovács of the ruling party).

59 | Amendment No. T/9400/4 (submitted by opposition MPs Zoltán Balczó, Tamás Gaudi-Nagy, Csaba Gyüre and Géza Varga). In this regard, we should recall that this idea had already been raised during the parliamentary debates on the draft constitution and the draft fundamental law, and that an amendment with almost identical content had been submitted on this subject. At that time, we already pointed out that, due to Hungary's membership of the European Union, such legal regulations could not be incorporated into its legal system, as they are contrary to EU law.

60 | The justification for the amendment to the Fundamental Law can be found in the submitted proposal (Bill No. T/9929). As a result of the fourth amendment to the Fundamental Law (which was adopted by the National Assembly on 11 March 2013 and entered into force on 25 March), Article P (2) contains the following provision: "The restrictions and conditions necessary for the acquisition and use of ownership rights to arable land and forests in order to achieve the objectives set out in paragraph (1), as well as the rules governing integrated agricultural production organisation and family farms, as well as other agricultural enterprises, shall be laid down in a cardinal law."

61 | This is based on the statements made at the 254th session of the National Assembly [general debate on the proposal (19 February 2013)].

of small agricultural producers.[62] However, an amendment was also submitted in this regard[63], the essence of which was that, in addition to the amendment contained in the original proposal, the category of 'integrated agricultural production organisation' would have been replaced by the category of 'cooperative'. According to the explanatory memorandum, the cooperative model is key to agricultural production, procurement, processing, marketing and agricultural lending, and that this integrating function of cooperatives justifies the inclusion of this category alongside family farms in the Fundamental Law, as well as the fact that the most important rules governing the operation of cooperatives are laid down in a cardinal law. In the end, however, this amendment was not passed by the National Assembly either.[64]

6. Concluding thoughts

After reviewing the constitutional process preceding the adoption of the Fundamental Law of Hungary, our most important finding is that regulations related to agriculture underwent significant development during the constitution-making process. At the beginning, agricultural regulatory issues were largely absent or appeared only to a limited extent in preparatory documents and concepts. However, the draft Fundamental Law and its amendments significantly expanded the scope of provisions concerning agriculture in the planned constitutional text. Regarding the Fundamental Law of Hungary, which was finally adopted in 2011 and entered into force in 2012, we can conclude that it provides comprehensive provisions on agriculture, further supplemented by important amendments in 2012 (the Third Amendment) and 2013 (the Fourth Amendment).

62 | In this regard, see in particular the speech by János Bencsik, a member of the ruling party, in the general debate on the fourth amendment to the Fundamental Law [254th session (19 February 2013)].
63 | Amendment No. T/9929/2 (submitted by opposition MPs Gábor Vona, Zoltán Magyar and Géza Varga).
64 | An interesting aspect of the amendment is that it was originally submitted by József Ángyán, a member of the ruling party, who withdrew it shortly afterwards, after which opposition MPs submitted an amendment with the same content and justification. Another interesting fact in this regard is that József Ángyán also submitted an amendment with the same content in connection with the third amendment to the Fundamental Law (see amendment No. T/9400/1).

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Eternal Stewardship in Law: The Legal Concept and Temporal Aspects of Sustainable Development

Abstract

Although sustainable development is a late twentieth-century construct, its foundations can be traced to classical legal cultures, particularly Roman and Jewish law, which embedded resource stewardship, communal access, and intergenerational equity. Contemporary legal discourse presents numerous definitions; this study therefore conducts a selective comparative analysis, emphasizing the Hungarian legislative definition and its environmental focus. The research demonstrates that a precise and unambiguous definition of sustainable development is essential, as the pathway toward sustainability remains unclear without it. It is not enough to ensure "the long-term" improvement of quality of life and preservation of biodiversity, it is crucial to prevent the collapse of ecological systems. In the context of sustainability, the temporal dimension emerges as paramount, necessitating a perspective "sub specie aeternitatis" – that is, an orientation toward the perpetual existence of humankind, framed within the horizon of eternity. Although the tendencies appear unfavorable, or even hopeless, there remains potential for a positive outcome.

Keywords: Sustainable Development, Sustainability, Legal Definitions, Environment, Collapse

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1. Introduction – the theoretical, legal[2], biophysical and economic problem of sustainability

First and foremost sustainability is a biophysical question in tight connection with natural resources used by people and protected by the law. Sustainable development practices have been implemented for a long time and, despite their lack of uniformity, have so far proven to be successful[3] at times and in some places.

As a complex regulatory subject, *sustainable development* is recognized at varying normative levels these days. The highest one is the constitutional level, on which sustainability usually appears as a principle, like in France[4], Italy (Constitution, Art. 9) and Poland (Constitution, Art. 5[5]) for example. Germany, through Grundgesetz Article 20a, obliges the state to protect the natural foundations of life for future generations[6]. 'Sustainable development' can even be codified also in statutory definitions or objective e.g. in Wales (in the so called WFG Act of 2015[7]), Spain (act 2/2011[8]) and Germany (BNatSchG[9]).

As a unique example, New Zealand's Resource Management Act 1991 offers a particularly rich statutory articulation of sustainability, defining its purpose as "the sustainable management of natural and physical resources"[10].

The third solution, like in the U.S. federal law or in England (UK)[11], there is just a policy reference. However, in spite of the lack of constitutional roots or statutory

2 | As Prof. Bándi states, in case of sustainability, the most difficult task is to specify the legal consequences, to turn the general dream (like 'ecological conversion', 'green transition' and any other similar catch phrase) into a practical answer or a set of practical answers, while current political, legal, and institutional establishments are not designed to properly respond to long-term interests (Bándi 2022, 61–63).
3 | Hopej & Malinowska 2023, 18.
4 | République Française (2004) Charte de l'environnement establishes sustainable development as a constitutional principle guiding public action.
5 | The Constitution of the Republic of Poland (1997), Article 5 provides that the Republic "shall ensure the protection of the natural environment pursuant to the principles of sustainable development." https://www.sejm.gov.pl/prawo/konst/angielski/kon1.htm
6 | Federal Republic of Germany (1949, as amended) Grundgesetz für die Bundesrepublik Deutschland [Basic Law], Art. 20a.
7 | The Well-being of Future Generations (Wales) Act 2015 provides an explicit statutory definition. Section 2 states: "'Sustainable development' means the process of improving the economic, social, environmental and cultural well-being of Wales by taking action, in accordance with the sustainable development principle, aimed at achieving the well-being goals." (Act 2015).
8 | The Law 2/2011 on the Sustainable Economy (Ley de Economía Sostenible) defines a "sustainable economy" in Article 2 as a growth pattern that harmonizes economic, social and environmental development so as to generate long-term prosperity and employment (Official text, BOE). This statute operationalizes sustainable development in economic governance.
9 | Federal Nature Conservation Act (BNatSchG), §1: establishes the objective of ensuring the "sustainable usability" of natural resources.
10 | New Zealand Government (1991) Resource Management Act.
11 | The Planning and Compulsory Purchase Act 2004, s.39 requires plan-making authorities to exercise their functions "with the objective of contributing to the achievement of sustainable development." This provision does not itself define the term but makes it a statutory objective.

definition, the U.S. National Environmental Policy Act (NEPA) of 1969 defines the national environmental policy as achieving "productive harmony between man and nature" in order to meet the needs of present and future generations (42 U.S.C. § 4331). The U.S. Environmental Protection Agency (EPA) has subsequently adopted this as the operative federal understanding of sustainability[12].

In Hungary, there is both constitutional basis and statutory definition of 'sustainable development'. The Fundamental Law of Hungary (2011), Article P) commits to protecting natural resources (agricultural land, forests, water, biodiversity, cultural assets) as "the common heritage of the nation," with explicit reference to the rights of future generations. This provision is interpreted by the Constitutional Court as embedding the principle of sustainable development into Hungarian constitutional law.

The concept of sustainable development is marked by a duality: difficult to circumscribe in legal and policy terms, yet easily grasped at the level of ethical intuition and logic, reflecting its hybrid normative and practical dimensions. It has long been characterised by a definitional paradox: it is at once elusive and self-evident. This duality – difficult to define precisely, yet simple to apprehend conceptually – explains the persistent contestation of its normative content.

Logically, if someone is standing at the south pole and wants to go north, simply cannot start off in the wrong direction, definitely will move north. The current situation is merely the opposite: a highly precise objective, i.e. definition is needed to move towards the goal (real sustainability), to overcome the obstacles, limits on the way, to avoid all the wrong paths, fake or dream solutions. Mankind is in the position of having a stabile knowledge of which system is not sustainable: the current socio-economic system of relations and activities. This is the object of the definition to be changed.

At first the fact must be admitted that – due to some respectable limits – now the globalized system is in the state of unsustainability. The biggest of the biophysical limits – beside the shortage of concentrated energy and material sources – is the factor of world population growth. The world population – without significant external, modifying factors – surely will triple in the hundred year period of 1950–2050. In addition, the problem is unfortunately not merely a matter of population: today each human consumes around ten times more material goods (water, metals, energy, food, etc.) than did their great grandparents a century ago, while those living in the richest countries consume six to ten times more resources than those in the poorest[13]. Here comes the psychological limit: humans are basically not willing to give up the level of material wealth and comfort already reached, unless being forced to do therefore in a way and that seems almost impossible peacefully and in accordance with justice and rights on a global scale.

12 | https://www.epa.gov/sustainability/learn-about-sustainability (Accessed: 29 August 2025)
13 | Cribb 2019, 20–22.

Mankind should let go of the illusion that the modern society can be kept alive with its lust for growth within the limits of the sensitive climate system and other components of the finite environment. The global economy, including overloaded logistics, industry and industrial-style agriculture is merely not sustainable, because it is operated with easily available and energy-intensive but depleting fossil resources and materials extracted from their finite, concentrated sources and all these are being entropically dispersed.

Being awake to the problems, in the past decades sustainable development became the generally accepted paradigm and philosophy of international, governmental, non-governmental documents, regulations and scientific conferences dealing with the environment. The law of the protection of the environment is still anthropocentric despite the formal acknowledgement of natural values.

The experts cry out loud for (environmental) sustainability, but it is becoming more and more obvious that they started late and that the choice of direction is not appropriate, therefore – the term itself is becoming more and more worn out – humanity lives under the spell of dreams. According to the realistic, data-based opinion of András Gelencsér, a chemist and atmospheric researcher and former rector of the Pannon University, if people substantially implement the ideas labeled as sustainable in the context of the transition to sustainability, the known stocks of the critical elements necessary for this will practically be exhausted in a few decades. The ongoing "sustainable technological change" is actually not sustainable, because of the lack of material resources. Thus, due to some busy acts instead of helping, the world is heading for disaster[14]. So thinking rationally, based on the scientific data, the situation seems hopeless, the probability of the collapse of the complex societies is increasing, the only question is when it will happen. Mankind can have only one hope. No, it is not the conclusions of the optimistic view, according to which "the end of the world will only come if we do nothing about it"[15]. In this special topic, attention should be drawn to a special information package consisting of a special collection of books, according to which, neither environmental pollution nor the lack of material resources, nor the insufficiency of humanity's self-saving cooperation will be the direct cause of the collapse. There is an obvious answer in the Bible about does humanity objectively have a chance to save itself or not. Due to lack of time, people will not reach the total diffusion of the Earth's resources, but at the same time, there will still be time for the activities of a concentrated power implementing a kind of 'global rescue package'. However, the complex set of environmental problems cannot be solved in the manner of a Gordian knot with a single cut, such as enabling the regeneration of the ozone layer – with a single agreement (1987, Montreal) serving as an

14 | Gelencsér 2022 (Accessed: 29 August 2025).
15 | Bart & Ürge-Vorsatz et al. 2022 (Accessed: 29 August 2025).

only really successful solution, which has been unprecedented in environmental matters ever since. As already stated in Kohelet Rabba 7:13, "Do not spoil and do not destroy the world, for if you spoil it, there will be no one to restore it after you,"[16] emphasizing the ethical imperative of stewardship and intergenerational responsibility.

Sustainable development is an integrative concept resting on three pillars: the basic environmental pillar, the economic[17] and social pillars, and all three must be considered when taking concrete measures. Some experts say that the cultural aspect of sustainability is also included in the concept[18]. As a legislative example, Section 2 of the Well-being of Future Generations Act (2015) of Wales emphatically includes the "cultural well-being", among the "well-being goals". Calculated with this, there are four perspectives together with "the cultural" one[19]. Thus, the chair is not three, but four-legged, and the building stands on four supporting columns (pillars). The cultural pillar also can substantially have a great influence on the others. Not only for the social (socio-cultural components), but also for the economic and agricultural (see "agriculture"[20]), moreover, the use of the environment is – in general – culturally dependent. (It is interesting from this point of view that traditional, ancient cultures were typically more balanced than modern, industrial society. According to the latest findings, the environmental balance of Easter Islands also began to upset due to 'cultural' influence with the increasingly massive arrival of foreign 'discoverers'). Of course, cultural sustainability can be an interesting research topic in itself, merely to make one thought-provoking comparison: the ancient Greek culture with its human scale (*homo mensura*) seems better in the context of sustainability than today's "high-tech technoculture", which is forced by itself to face an environmental and economic crisis not to mention the practically unassessable dangers of artificial intelligence as a kind of peak of cultural development.

Economic, social and cultural sustainability cannot be reached when basic conditions of life are not met, therefore the conservation of these has to be the prior issue. It is logical that environmental sustainability has the primacy among the pillars[21]. According to this, the external services provided by natural resources must be maintained and a substantially sustainable system also provides these resources for the future generation, as well as the assimilation capacity of the environment.

16 | Kohelet Rabba 7:13.
17 | See: Olajos 2024, 334–349.
18 | Moreover, a holistic approach to sustainability is also possible and even necessary. See: Veresné Somosi & Sikos (ed.) 2023.
19 | Bravo 2022, 213.
20 | The English word 'culture' ultimately comes from Latin *cultura* that means "a cultivating, agriculture; care", derived from the verb colere = "to till, cultivate, care for or even worship."
21 | Horváth 2015, 302.

2. The "soft law" and a "hard law" legal concepts of sustainability

Lawyers are engaged in a heated debate on the legal nature and normative content of sustainable development. The term 'sustainable development' is now frequently used to describe the objective or purpose of environmental regulation. Despite being designated a cornerstone of environmental regulation both domestically and internationally, there is little consensus on what sustainable development entails[22]. The exchange of ideas is useful in this matter, that is why the comparison of the most common, international concept with the Hungarian one can be instructive in some respects. Sustainable development has a well-known soft law definition since 1987 published in the Report the title of which is "Our Common Future": it is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. The report states that it contains two key concepts: the concept of 'needs', in particular the essential needs of the world's poor, to which overriding priority should be given; and the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs[23][24]

In legal context it is necessary to articulate a more precise definition of sustainable development, particularly the 'needs' of current and future generations[25]. The problem is that human generations' needs are basically the same: suitable life conditions, the supply of vital, life-sustaining resources including especially the same ecosystem services and finite conserved materials (e.g. rare earth elements) that mankind is already sort of[26].

This international definition of sustainable development is too broad and part of the so called "soft law", therefore it is not enforceable, it is a norm without sanction if not fulfilled (that is *lex imperfecta*).

As opposite, the Hungarian Act on the general rules of the protection of the environment (Act LIII. of 1995) gives a normative, "hard law" definition of sustainable development, merely like the EU. The Hungarian legislator defines sustainable development in a circumstantial way, referring to the EU goals and striving for completeness, according to which it is "a system of socio-economic relations and activities that preserves natural values for the present and future generations, uses natural resources sparingly and expediently, and ensures the improvement

22 | Fatema 2023, 5.
23 | WCED 1987.
24 | Ibid.
25 | Fatema 2023, 5.
26 | Restrictions are needed soon e.g. on cobalt, tellurium, indium and molybdenum and on heavy rare earth elements [IEA (2025), Global Critical Minerals Outlook].

of the quality of life and the preservation of diversity from an ecological point of view in the long term". (Act LIII. of 1995, 4. § 29.)

This longer definition is far better in that sense, because it is not exclusively anthropocentric: it mentions values free from direct human interests ("diversity, natural values") and emphatizes the "ecological point of view", not merely human "needs". At the same time also contains the human aspects of „the quality of life" (that is much more than the simple needs), intergenerational equity (relation between successive generations) and of course intragenerational equity (relation within the groups of people of the present generation). It must be admitted that intergenerational equity, generally the "man to man relation" is not in the centre of the definition like in the WCED-definition, it is merely built in as part of the duty of preservation of natural assets. This is in line with that the economic and social pillars (just as the whole humanity as the actor) is embedded into the environmental pillar, fully depends on the fundament.

In addition, section 8.3.1 of the Parliamentary Decree No. 18/2013 (III. 28.) on the National Sustainable Development Framework Strategy defines 'sustainability' as ensuring current well-being without exhausting resources, preserving quality and quantity for future generations.

Logically, in case of e.g. non-renewable resources, this is practically impossible: they cannot be used while preserving their quality and quantity. The inevitable depletion and scarcity of raw materials (e.g. metals essential to modern life also needed for green energy[27]) calls into question the reality of the green transition necessary for sustainability.

The definition used by the EU primary law (also a "hard law" concept) is balanced and detailed, but uses a highly controversial term in the context of sustainability ('growth'): "...the sustainable development of Europe based on balanced economic growth and price stability, a highly competitive social market economy, aiming at full employment and social progress, and a high level of protection and improvement of the quality of the environment" [Treaty of Lisbon Amending the Treaty on European Union and the Treaty Establishing the European Community (2007/C 306/01) Article 2].

The concept of sustainable development – in a sense beyond the law – substantially raises semantic uncertainty in several aspects, that is why many people now use the term 'sustainability' instead, which, apart from being shorter and more precise, gives less opportunity for terminology-motivated debates. The 5th environmental action program of the European Union, which was entitled "Towards Sustainability", was an emphatic topos of the shortening, the word 'development' was not even included in its title. A new field of science, called "Sustainability Science" also appeared soon in the literature. One might think now that sustainability and sustainable development are the same thing. The answer is no.

27 | See: Carrington 2025 (Accessed: 28 August 2025).

Sustainable development is the pathway to achieving sustainability. Sustainability would be a long-term goal and it is only achievable through integration[28]. Practically we can only talk about sustainable development if environmental considerations and interests are integrated into the normative system of all behaviors in which we manage natural resources[29].

Critics of this concept of ecologically sustainable development mostly emphasize that the responsibility towards future generations is 'only' a moral and not yet a legal category. According to these opinions, intergenerational responsibility and especially accountability are to be strengthen in legal practice. It is substantially not widespread, but in the Hungarian legal system, the position of the Deputy Commissioner for Future Generations or Ombudsman for Future Generations primarily and expressly represents the interests of future generations[30]. However, the enforcement is becoming an increasingly clearly visible necessity. Since the number of future generations will also be larger and the volume of environmental damage will also increase, it will also become necessary to transform the legal system, which will also create institutional possibilities for establishing intergenerational responsibility, making the exercise of "intergenerational fairness" directly enforceable.

3. The key question: how long can the system be sustained? Is a "long term" enough?

Would the bride in love be glad, if she were told that her marriage will merely be a 'long term' connection? The same or – due to the actual loss of meaning – even more serious problem arises in case of "long-term sustainability", "long-term approach", "long-term availability" (of energy), "long-term perspective", "long-term economic sense" as these words can be read in the Report on "Our Common Future"[31], just like in the Hungarian normative definition.

In case of sustainability, the most important question is the temporal dimension: logically, people must think of sustainability *sub specie aeternitatis*[32], that is from the point of view of the endless existence of mankind, in the spirit of eternity. 'Long term' is not the same as 'eternal'.

Human actions – including those associated with environmental impacts – often fall under a different judgment if the time dimension is taken into account

28 | Bravo 2022, 213.
29 | Fodor 2015, 188.
30 | Krajnyák 2023, 11.
31 | WCED 1987.
32 | The formula ("from the point of view of eternity") was already known in classical Latin, but its philosophical weight was given by Baruch Spinoza (Ethica, ordine geometrico demonstrata, 1677), who sought to view human existence and events *sub specie aeternitatis*, that is, not from the perspective of momentary, human limitations, but embedded in the necessary order of nature and eternity, i.e. from the perspective of the infinite order of nature, God or Natura.

emphatically. If only its immediate or short-term effects are taken into account, then deploying a herbicide with chronic human health risks in the home garden may seem merely as good an idea as running the industry and society built on non-renewable energy. As a related example the sustainability of biofuel energy can be mentioned made with the use of precious agricultural land however its sustainability increases with the removal of greenhouse gas from the athmosphere via cultivation[33].

In the spirit of sustainability, the use of the environment must be viewed from the perspective of eternal time, with regard to eternal consequences. The perspective of eternity encourages self-control and self-restraint, places human actions in a different framework, at the same time filling them with moral content, giving much weight to the manifestations of selfishness, miserliness and gluttony. As a positive consequence, legal rules of sustainability could be built on this morality.

4. Controversial and desirable alterations in the concept

As it turned out, the most important desirable alteration of the definition would be the proper inserting of the time factor: the goal is not merely 'long term', but 'eternal' existence.

In recent times, however, while fundamental questions have arisen even in relation to the results of development, including its concept – as if more and more kinds of crises had thrown us back in time to the era before the creation of sustainability concepts in the 20th century – rather absurdly, the term 'growth' is in use again instead of 'development'. According to Professor Bándi, a change in the use of words in itself can have serious consequences, because it is not clear whether it is merely a different wording or a change in attitude at the same time. In any case, the time that has passed since the publication of the Europe 2020 recommendation in 2010 could not reassure those worried about the future of the environment[34]. It may appear to be a slight difference in wording, but it might even mean that the the entire history of sustainable development until now becomes relative[35]. The 2012 bioeconomy strategy was also born under the title "Innovation for sustainable growth: the European bioeconomy". Despite the fact that the term 'growth' cannot be connected with ecological sustainability logically due to the realization of the finitude of permanent expansion forced in a closed system, this word echoes again in the latest 21st century's basic EU strategic documents, such as the EUROPE 2020 Strategy for intelligent, sustainable and inclusive growth. The European Green Deal which is otherwise filled with a high level of ambition on environmental

33 | Olajos 2020, 324.
34 | Bándi 2018, 128.
35 | Bándi 2013, 117.

issues – in a strange way – defines itself as a "new growth strategy" in its introduction. As a national legislative example, the Spanish act on the Sustainable Economy defines a "sustainable economy" in Article 2 as a "growth pattern"[36] also carries the self-contradiction expressed.

Among the Sustainable Development Goals of the United Nations set for 2030 "No poverty" (SDG1) and "Zero hunger" (SDG2) goals are in line with the EU strategies, although it easily turns into unsustainability right at the moment when these – as priorities – overtake environmental goals. At the same time, the goal of "economic growth" (SDG8) collides with these strategic documents, since the latter comes into logical contradiction with the finitude of the closed environmental system, pactically the environmental pillar of sustainability. Viewing the SDGs through the lens of human dignity food supply problems are increasing as floods, landslides, and fires become more common and droughts make access to food less secure and when rising sea levels erode land, to give just a few connected examples[37].

On top of all that – as one of the new conceptual-logical impossibilities – the addition of adjectives also appeared in the meantime, namely in the form of the expression "more sustainable growth" e. g. in the "Report on the Blue Growth Strategy – Towards more sustainable growth and more jobs in the blue economy" [SWD(2017)128, 31.03.2017], although it does not need any particular explanation, that regardless of the context, it is a binary concept: something is either sustainable or not.

There is no doubt that formally and under pressure relativism can be admissible in this matter, but there are lots of 'compromising' relativization, even when it can hardly be justified. For example, specific solutions and sectors can obviously, strikingly be unsustainable, even for the layman, or they can be less spectacularly, in a way that seems suitable for temporary gain of time, but ultimately merely as unsustainable (e.g. logistics based on diesel engines compared to logistics based on lithium batteries that is also finite material-dependent electromobilization). Another example of the relative assessment is the partial return to coal-fired power plants in Germany to replace the shut-down nuclear power plants: the climate protection aspect was de-emphasized as soon as energy hunger occured (it should be noted that coal and uranium ore are both finite goods).

Sustainability will not be achieved until the human race does not realize its perpetual dependence on the environment. Economic prosperity is now based on natural capital, "the natural bases of life" that man can not ruin without consequences. Man has to be aware of the effects of forcing economic growth and the misconception of the 'endless' biophysical environment[38].

36 | Ley de Economía Sostenible 2/2011.
37 | May 2025, 797.
38 | Horváth 2014, 59.

In many situations in life, the saying 'he who wins time wins life' substantially applies. If the wisdom of the saying turns out to be true in the case of sustainability as well, then the use of the term 'more sustainable' would become legitimate. However, the crucified man only gained temporary time by being able to lean on his legs, the suffering of the drowning man was only shortened by the Roman soldier stabbing him or breaking his legs. Giving some water, encouraging, kissing, wiping, i.e. the small actions of improving the situation a bit, are only suitable for expressing good intentions, but they are not sufficient for saving life in such vital situations, fatal times.

5. An interesting retrospective solution through comparative synthesis: Roman Law, Jewish Law, and modern sustainability

Although the explicit modern doctrine of sustainable development is a twentieth-century construct, Roman jurisprudence and biblical–rabbinic law already articulated institutional responses to the problem of reconciling private advantage with communal and intergenerational stewardship. Recurring legal techniques like communal or public designation of certain goods, temporal or cyclical restraints on productive use, and redistributional or anti-enclosure devices—appear across these traditions and prefigure modern sustainability regulation.

5.1. Communal goods and the commons

Roman jurisprudence ensured collective access to essential ecological resources declaring certain resources *res communes omnium*, incapable of private appropriation: as Ulpian observes in the Digest (Digesta 1.8.2.1), "certain things – such as air, running water and the sea – are *res communes omnium*, inherently common to all."[39]. This anticipates the modern legal notion of the global commons. Parallel norms emerge in biblical and rabbinic law: the Torah mandates open access in certain contexts, for example, the seventh-year agricultural produce is open to all, even for the strangers (Leviticus 25:6–7[40]).

5.2. Temporal cycles and ecological rest

Roman agronomists recommended fallowing and rotation to preserve soil fertility (e.g. Cato, De Agricultura §37[41]). Jurists reinforced such practices by limiting over-exploitation of servitudes, e.g. prohibiting excessive diversion of water

39 | Mommsen & Krüger 1872–1895.
40 | The Holy Bible (1611/1769) King James Version.
41 | Cato, in: Hooper & Ash 1934.

(Digesta 8.3.1[42]). Jewish law mandated cyclical rest: the *shmita* (every seventh year) and *yovel* (every fiftieth year) both served ecological and social ends (Lev. 25:1–13; just like the Babylonian Talmud). These provisions institutionalised intergenerational balance long before today's concept of sustainability.

5.3. Non-waste injunctions

The Torah's *bal tashchit* – "you shall not destroy its trees by wielding an axe against them" (Deuteronomy 20:19) – originated in siege law but was extended by rabbinic jurisprudence into a general prohibition against needless destruction of resources and a general prohibition against waste. Roman jurists similarly prohibited harmful alteration of rivers or overuse of resources (Digesta 39.3.2.[43]). Both systems articulate an ethic of stewardship limiting destructive exploitation.

5.4. Modern resonance

Modern law inherits these elements in new institutional forms. NEPA speaks of "productive harmony between man and nature" (National Environmental Policy Act of 1969, 42 U.S.C. § 4331(a)), whilst section 2 of the Well-being of Future Generations (Wales) Act 2015 provides the statutory definition of 'sustainable development', framing it as the process of improving the well-being of Wales in ways that achieve a balance between present and future needs[44].The Treaty on European Union (Art. 3(3)) enshrines sustainable development as a Union objective.

Where premodern regimes embedded sustainability in property structures, communal obligations and distributive norms, modern states employ statutory mandates, administrative procedures, and supranational instruments. The continuity is structural: effective sustainability frameworks combine normative obligation, temporal regulation, communal access, anti-enclosure devices, and non-waste injunctions.

6. The real solution

Research results in the natural and social sciences increasingly indicate that the current civilization is heading towards an inevitable collapse. Boris M. Dolgonosov, for example, in his 2020 civilization macromodel calibrated with historical data – creating 90 scenarios, a multiple of the Meadows models – showed that based on the relevant control parameters, civilization is on the edge of stability, along

42 | Mommsen & Krüger 1872–1895.
43 | Ibid.
44 | Available at: https://www.legislation.gov.uk/anaw/2015/2/section/2/enacted (Accessed: 29 August 2025).

a critical stability line. Consequently, even a small deviation can lead to a loss of stability, even to the complete extinction of the civilization, and there are no intermediate steady states[45].

In the case of situations that are difficult to understand due to their extreme complexity, such as the one that has developed in today's global system, understanding can be helped if we look at it from a distance, from a broad, holistic perspective. There is a suitable 'retrospective binocular' for this purpose with which we can see the fate of this global system, the terrestrial ecosystem in terms of eschatological time giving a definitive answer: the 'biblical telescope' reveals a sharp picture that of course requires proper interpretation.

It is at least interesting to read that this fate of the global system develops according to the important parts of the Bible totally in line with the scientifically proveable data and visible processes. Humanity – after breaking 'the laws' – cannot find the solution to save this world neither to the great apocalyptic speech found in the Gospels (in Matthew 24, Mark 13, and Luke 21) nor to Isaiah's revelation (Isaiah 24:3–5) emphasizes the consequences of human exploitation of the earth: "The land shall be utterly emptied, and utterly spoiled: for the LORD hath spoken this word. The earth mourneth and fadeth away, the world languisheth and fadeth away, the haughty people of the earth do languish. The earth also is defiled under the inhabitants thereof; because they have transgressed the laws, changed the ordinance, broken the everlasting covenant."[46]

According to the Book of Revelation (17–18. chapter) – written in 'prophetic past tense' expressing certainty – the great cooperation (the wealthy 'Babylon') also will fall. That is rather thought-provoking.

In recent decades, we have witnessed the beginning of a well-intentioned, seemingly indisputably noble attempt to save the world based on global cooperation which undoubtedly seems to be salutary. However, this material world is under an increasing and obvious recrudescence, it simply cannot be saved by crisis management even with centralization to be established sooner or later, with legally founded concentration of power and with promised omnicompetence. Why not? On the one hand, because there are *essential conditions for sustainability*, the absence of which creates relentless limitations, and if even one of them is missing, the system becomes unsustainable. Highlighting some basic conditions partly mentioned above: in addition to the scarcity and finitude of the raw materials that form the conditions for life, the biophysically based self-centeredness of human nature (selfishness based on an untranscribable unique life instinct) – in this state as far from paradise as the ecosphere itself – does not allow for the necessary level of voluntary renunciation and self-limitation. Just the opposite: for example if large regions of the world run short of food, land, or water in the decades that lie ahead,

45 | Dolgonosov 2020.
46 | The Holy Bible (1611/1769) King James Version.

then wholesale, bloody wars are liable to follow. Famine and war as horsemen of the Apocalypse have been inseparable since antiquity[47]. On the other hand – although a potential global crisis governance, faith-replacing ideals are able to force significant consumption restrictions – this imagined "human self-redemption" will not be successful. The increasingly dictated cooperation – becoming divisive (also according to historical experience) – will quickly lose its original charm and nobility. The over-consuming, gluttonous, greedy, material goods-driven, complex consuming-based socio-economic system is capable of collapsing – according to the well-known collapsological laws – with surprising speed compared to the time of its formation. 'Babylon' and its wealth (economic power) will fall like a house of cards "[48](Revelation 18:17). Accordingly, sustainability, as it has been for more than three decades now, is stuck at the level of more and more worn-out words, and will not be realized. Man simply will not be able to save the material world that he himself has destroyed. Although this simple fact seems undoubtedly sad, but man cannot "[49]" (Revelation 21:5) by himself. It is not bad news, because everything is not over with the fall of 'Babylon', since the collapse is not on the last page, there is hope: the Bible says that there is going to be "[50]" (Revelation 21:1). The fact that, according to all signs and data, humanity is indeed unable to put its socio-economic system on a sustainable path, we should not be afraid, even if it is a pressing fact. Life is full of paradoxes: this unfolding chaos does not require panic, nor helpless resignation, but trust and wakefulness. Not passive inaction, but also not hyperactive rushing around, worrying about many things while [51]only one is necessary" (Luke 10:42). Not for the sky-shaking attitude, for building the Tower of Babel again (it also failed), but for humble protection of creation. The difference between these two attitudes can be felt. It is an optimistic solution, not in the regular sense, but it surely worth to examine and to count on by intelligent people. According also to the scientific facts the world is heading for disaster, and forcing solutions as sustainable on a global scale will only accelerate the collapse[52].

7. Conclusions

From a comparative perspective, the principle of sustainable development has been codified in diverse ways across jurisdictions, ranging from constitutional entrenchment to sectoral statutory provisions and policy-level objectives. Taken together, these divergences illustrate that, while the normative core of sustainable

47 | Cribb 2010, 14.
48 | The Holy Bible (1611/1769) King James Version. Revelation 18:17.
49 | The Holy Bible (1611/1769) King James Version. Revelation 21:5.
50 | The Holy Bible (1611/1769) King James Version. Revelation 21:1.
51 | The Holy Bible (1611/1769) King James Version. Luke 10:42.
52 | Gelencsér 2022.

development – balancing environmental, social, economic, and cultural dimensions – is widely accepted, its legal articulation remains fragmented across jurisdictions. The Anglo-American model relies on incremental statutory integration and policy guidance, often privileging flexibility over enforceability. By contrast, the continental European model favors constitutional and codified guarantees, embedding sustainability as a legal principle guiding public administration and judicial decision-making. Meanwhile, Central and Eastern European states have constitutionally entrenched sustainability in explicit intergenerational terms, reflecting both transitional constitutionalism and EU integration pressures. The tension between flexibility and enforceability, and between policy aspiration and constitutional entrenchment, will likely continue to shape the trajectory of sustainable development law in the years to come.

Sustainable development continues to have varying – often broad and vague – meanings depending on the scientific field and prevailing value patterns. Yet, it must be clearly defined and, in crisis situations, even fundamentally re-evaluated: there is only one path to genuine sustainability; all other approaches are ultimately unsustainable. This underscores the necessity of an exact, legally binding definition of sustainable development as a cornerstone.

Disregarding ecological sustainability, the principle of use according to carrying capacity, and adequate risk management (e.g., chemical exposure, resource depletion, technological evolution) endangers the global environmental system and ecosystem services. In this context, the protective function of law is of critical importance.

The Hungarian normative concept of sustainable development also reflects the realism of the Hungarian legislator: if biological diversity and natural resources – the foundation of human existence – can only be maintained 'in the long term', then humanity itself survives merely 'for a long time', which is far from 'eternal'. Consequently, the present socio-economic system must be acknowledged – honestly and logically – as 'unsustainable'. Due to the lack of unanimous commitment to voluntary self-restraint and insufficient concentrated resources to sustain the global economy without environmental exhaustion, the only optimistic solution aligns with the guidance preserved in certain parts of the Holy Scripture (from Isaiah 24–27 and Daniel 7–12 to Matthew 24–25 and Revelation 6–22), presented as a coherent "information package" highly relevant to this topic offering the only prospect for achieving a sustainable world. There will be no other, human solution, as it appears that humanity will soon run out of both time and critical materials.

The so-called environmental pillar is primary, forming part of a foundational structure according to systematic interpretation (*interpretatio systematica*), in addition to grammatical interpretation (*interpretatio grammatica*). At the same time, economic, social and cultural sustainability are duly integrated within the broader concept. In the name of sustainability, environmental use must

be considered *sub specie aeternitatis* – that is, from the perspective of eternity. Consequently, the most important adjustment to the definition of sustainable development would be the proper incorporation of the temporal dimension: the perspective should extend beyond the merely 'long term' to the 'eternal', since the ultimate goal is perpetual existence, everlasting being (eternal life). Only that constitutes genuine sustainability.

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Nóra JAKAB[1]

On the Introduction of the Social Conditionality System and the Importance of the Obligation to Provide Information

Abstract

The agricultural sector presents distinct characteristics when examined through the lens of labour law in comparison to other sectors I have investigated. The inherently seasonal nature of employment within this sector often leads to the relaxation of labour law protection mechanisms, although principles of occupational safety are generally upheld. Regarding simplified employment arrangements, the Labour Code itself stipulates exemptions from stringent regulations to enhance flexibility. The implementation of a social conditionality system prompted me to reassess the completeness and accuracy of my prior perspectives concerning the significance of fundamental values. Specifically, these values encompass good faith, fairness, equality, justice, security, and the enduring, unconditional principles capable of addressing all labour law challenges as they encompass the full range of labour law considerations. Beyond these fundamental values, I have come to recognise that, in contexts of mutual interdependence, the involved parties can sustain their interests in contract preservation through collective bargaining and consultative processes among social partners, even amidst challenging circumstances, in accordance with prevailing economic conditions. Nevertheless, it is uncommon within the agricultural sector to organize and collaborate for the enhancement of working conditions. Reports frequently highlight the scarcity and high cost of seasonal agricultural workers. Hence, what measures can ensure security for agricultural workers? I contend that one potential solution lies in the obligation of the parties to furnish information, which serves as a foundational element for cooperation. This study examines this institution within the framework of adherence to the stipulations outlined in the regulation on social conditions.
Keywords: Obligation To Provide Information, Cooperation, Social Conditionality, Agricultural Sector, Simplified Employment, Flexibility And Security

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1. Introduction

In Hungary, pursuant to paragraph 1 of Decree 29/2025. (VII. 22.) AM for the purpose of implementing the system of social conditionality, and in accordance with the current rules of the European Union for the Common Agricultural Policy, it is required that the Member States of the European Union, and in particular Hungary, shall establish an overall system. This shall ensure the application of proportionate administrative penalties to recipients of certain subsidies that are made available under the Common Agricultural Policy, in particular those that do not comply with the essential employment and occupational safety rules in force. Also, pursuant to paragraph 2 of the Regulation, the recently established conditionality system, whereby it incorporates considerations of a social nature, requires that employers who do not comply with the specified employment and occupational safety requirements and who receive area-based and animal-based subsidies that have been provided for under the Common Agricultural Policy shall face effective[2], dissuasive, yet proportionate decreases in their assistance.[3]

The most fundamental employment and occupational safety rules in the European Union's social dimension are based on the provisions of three directives *in the agricultural sector*: Directive (EU) 2019/1152 on transparent and predictable working conditions applicable in the European Union, Council Directive 89/391/EEC on the introduction of measures to encourage improvements in the safety and health of workers at work, Directive 2009/104/EC of the European Parliament and of the Council of 16 September 2009 on the minimum safety and health requirements for the use of work equipment by workers at work. In other words, according to the European legislator, the two fundamental institutions of labour law for the safety of those employed in the agricultural sector are information and occupational safety. I consider the obligation to provide information to be one of the cornerstones of contractual relationships, and it is incredibly important in a sector where simplified employment is a widespread form of employment. The demand for a wholesale revision of the Information Directive has gained significant interest, more particularly highlighting the root issue that insufficient provisions in law may make workers in most non-standard forms of work vulnerable to uncertain or even unfair treatment. This necessarily makes it extremely difficult for these workers to assert their rights in practice. In the European Union, an estimated 4 to 6 million workers currently engage in jobs that are temporary or on-call in nature, and many such workers end up having

2 | For procedural issues and eligibility criteria relating to agricultural subsidies, see: Pálfay 2025, 271–284.

3 | The basis for all this is Regulation (EU) 2021/2115 of the European Parliament and of the Council of 2 December 2021 on the strategic plan to be drawn up by Member States under the common agricultural policy (CAP Strategic Plan) and repealing Regulations (EU) No 1305/2013 and (EU) No 1307/2013.

little information regarding when they will work or for how long they will work, and more significantly, up to 1 million workers are entangled in contracts that include provisions for exclusivity, effectively barring them from seeking or performing additional job opportunities with other firms, thus complicating their employment arrangement all the more.[4] In my opinion, the section of the European Pillar of Social Rights on fair working conditions clarifies the rules of the game in the new playing field, including in the agricultural sector. What principles and rights are included in this section of the European Pillar of Social Rights? It covers secure and flexible employment, wages, social dialogue, work-life balance, a healthy, safe and well-designed working environment and data protection, as well as information on employment conditions and protection against dismissal. In the social dimension of the European Union, therefore, the obligation to provide information has always been and continues to be of great importance in contractual relationships. In this context, I would also like to refer to the following directives on information: the institutionalised obligation to provide information, which was essentially introduced into labour law by Council Directive 91/533/EEC of 14 October 1991 on an employer's obligation to inform and consult employees on the terms and conditions of employment. The obligation to provide information gained its impact on collective labour law as a result of, among other things, Directive 2002/14/EC of the European Parliament and of the Council of 11 March 2002 establishing a general framework for informing and consulting employees in the European Community.

For quite some time now, I have considered occupational safety and health to represent an independent yet complementary institution that functions alongside the system of labour law, essential for the survival of employment. Secondly, I would like to stress the importance of core values such as the existence of good faith, fairness, equality, justice, and security – fundamental rules that I strongly believe to be eternal and universally effective. These values represent essential tools in tackling all issues pertinent to labour law because they cover the entire gamut of issues in this domain. I approach this mindset the more, in particular, in light of the fact that I have more and more felt that in relation to safeguarding through labour law, the traditional approach to labour law fails to serve as a 'everyone's labour law'. It should be taken into consideration that not all workers are in need of the safeguarding mechanism represented in the provisions of obligatory labour law, such as provisions related to working hours and periods of rest. Furthermore, it should also be taken into consideration that there are workers who enjoy the capacity to effectively plead for their own interests. On the contrary, however, there is also the existence of workers who do actually need the protection that is provided for in

4 | See more: European Commission: Directorate-General for Employment, Social Affairs and Inclusion, CSES and PPMI, Study to support impact assessment on the review of the written statement directive – Directive 91/533/EEC – Final report, Publications Office, 2017, https://data.europa.eu/doi/10.2767/727939

obligatory rules. Under this multifaceted predicament, I strongly believe that my thoughts on labour law protection in 2014 are even more pertinent in today's times, in particular, I confirm that if we seek to properly define the substance of worker protection, then the value of human rights should represent the paramount aspect in every relationship that is contractual in nature. With this value only, it is feasible that freedom, security, equality, and respect for human dignity are appropriately promoted in relation to contractual agreements. This realisation highlights, in turn, the 'essential role of the human rights' aspect in the context of labour law even more markedly. The only constant in our world is undoubtedly change, and what's more, the pace of this change is not just steady but accelerating rapidly. It is essential to recognise that it is people who must be considered and prioritised in the midst of this change. This situation is akin to the transformation in organisational culture experienced throughout the life of an employer. The change in organisational culture can be approached and managed in a multitude of ways, yet over the long run, the only truly sustainable method is one that places people firmly at the centre of the process. Since the time of the industrial revolution, labour law has served to protect employees through various means and mechanisms. However, in more recent decades, it has become increasingly evident that the level of protection granted to employees should also be extended, at least to some degree, to include those who are self-employed within the labour market, particularly to individuals who may be classified as pseudo-self-employed. The ongoing theoretical and regulatory debate occurring within the European Union regarding the extension of protection to these workers is clearly an issue of either change management or crisis management. This matter can only be sustained over the long term when viewed through the lens of the concept of the working individual. I envision job security, which must also encompass the self-employed, as being realised through the exercise of collective rights and participation. This includes active involvement in organising and engaging in collective bargaining, as well as participating in both regulated and informal consultation processes. These processes provide avenues through which workers and employees can express their voices and influence the decisions made by employers. In simpler terms, in a scenario characterised by mutual dependence, the parties involved can safeguard their interests in maintaining their contractual agreements through effective collective bargaining and consultation processes conducted between social partners, even amid challenging circumstances, aligned with prevailing economic conditions. Furthermore, social dialogue and active employee participation can serve as effective tools to achieve a balance of flexibility and security in the workplace. This approach facilitates the possibility for working conditions to evolve in a predictable manner, particularly when employers are faced with the necessity to react swiftly to changing circumstances. It is thus more than apparent that the collective will and the partnership principle are of great importance in seeking to find the compromise that is essential in balancing the elements of flexibility and security that must be present. It has

been an effective, is now an effective, and will at all times remain effective method of responding to issues of vulnerability in all contexts, and this fact is not altered in any particular contractual form of employment that could potentially be used, all in accordance with the rules set down by the Commission.[5]

However, the agricultural sector is different from the other sectors I have examined so far from a labour law perspective. Due to the seasonal nature of the work, it is common to relax labour law protection rules while maintaining the principles of occupational safety rules. In the case of simplified employment, the Labour Code itself provides for exemptions from strict rules in the interests of flexibility: the employment contract cannot be terminated [Section 49(2) of the Labour Code], there is no possibility of employment other than that specified in the employment contract (Section 53 of the Labour Code), no adverse legal consequences may be applied to the employee in the event of a culpable breach of duty (Section 56 of the Labour Code), wage adjustment is not mandatory upon the return of an absent employee (Section 59 of the Labour Code), it is not mandatory to inform employees about vacant positions in relation to part-time and fixed-term employment, and the employer is not obliged to employ an employee caring for a child under the age of 3 on a part-time basis at their request (Section 61 of the Labour Code), upon termination of employment, the employer is not obliged to issue the required certificates at the end of the employment relationship (Section 80 of the Labour Code), the employer is not obliged to provide an assessment of the employee's work at the end of the employment relationship (Section 81 of the Labour Code), there is no deadline for the advance notification of the work schedule [Section 97(4)–(5) of the Labour Code], the restrictions on the work schedule for Sundays and public holidays do not apply (Section 101 of the Labour Code), the provisions on the granting of leave do not apply (Mt. 122–124. §), however, upon termination of the employment relationship, any unused pro rata leave must be compensated (Mt. 125. §), there is no entitlement to sick leave, maternity leave or unpaid leave (Mt. Sections 126-133), there is no restriction on the repeated establishment or extension of a fixed-term employment relationship between the same parties [Section 192(4) of the Labour Code], the special provisions applicable to employees in managerial positions (Sections 208-211 of the Labour Code) do not apply, the employer may apply unequal working hours even in the absence of a working time framework or accounting period, and in the case of a model employment contract (see Annex to Act LXXV of 2010), the provisions on working time records and written wage accounting do not apply [Sections 134 and 155(2) of the Labour Code].

In this sector, it is not typical to organise and cooperate in order to improve working conditions. The news is full of reports that seasonal agricultural workers

5 | Commission Communication Guidance on the application of EU competition law to collective agreements on working conditions for individual self-employed workers https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=oj:JOC_2022_374_R_0002

are few and far between and expensive.[6] So what can provide security for workers? In my opinion, one answer is the obligation of the parties to provide information, which is the basis for cooperation.

In the literature, the obligation to provide information can be derived from the principles of good faith and fairness. After all, the requirements of good faith and fairness can be described almost exclusively in theoretical terms, which is why in legal practice they are accompanied by other principles that clarify and make their meaning understandable.[7] József Benke writes that within the concept of 'the requirements of good faith and fairness', the conceptual relationship between good faith and fairness is that they together form a single legal concept: good faith and fairness cannot be interpreted separately in connection with Section 1:3(1) of the Civil Code.[8] This concept is given substance, inter alia, by the parties' mutual obligation to provide information.

2. Employment data – interest of numerous people

In terms of labour utilisation in the agricultural sector, the concept of annual labour units is very revealing, as it corresponds to the annual work performed by a unit of labour, 1800 working hours, i.e. 225 working days of 8 hours each. With the help of this indicator, we can compare the labour input of persons employed for different periods of time by converting part-time work into full-time equivalents. According to preliminary data, in 2024, the number of unpaid annual labour units in the agricultural sector will be 142,011, while the number of paid annual labour units will be 116,678, for a total of 258,689. According to the data table on agricultural labour use published by the Central Statistical Office, since 1998, there has been a significantly higher number of unpaid labour units in the sector, who take on work voluntarily, typically working on family farms.[9]

6 | https://agraragazat.hu/hir/nav-120-nap-idenymunkara/ (09.09.2025)
7 | Barzó and Papp 2018, 32.
8 | The fact that the content of the principle is given by the combination of the two concepts is also supported by the fact that Section 2 of Act XIV of 1991, which inserted the principle into the introductory provisions of the Civil Code of 1959 (Section 4), effective as of 9 June 1991 still used the wording that the parties are obliged to act in accordance with the 'requirements of good faith and fairness', but this wording, on the basis of which some legal literature interpreted good faith separated from fairness in a particularly subjective sense, later proved to be incorrect. It took the legislator 15 years, until 2006, to recognise the fiasco and amend the wording of the basic principle to the singular 'the requirements of good faith and fairness' with the use of a single common article (Act III of 2006, Section 2). According to the explanatory memorandum to the 2006 amendment to the Civil Code, the legislation suggests the erroneous interpretation that there are two different concepts, which is supported by the use of the plural. In fact, however, the two are one concept, which is denoted by a fixed phrase similar to the German 'Treu und Glauben' and the English 'good faith and fair dealing'. See also: Benke 2022, 171.
9 | See also the following analysis: https://agroforum.hu/agrarhirek/agrarkozelet/alacsony-a-munkaero-termelekenyseg-az-agrariumban/ (29.09.2025).

19.1.1.5. Agricultural labour utilisation

Year	Unpaid Annual labour units (ALU)	Paid Annual labour units (ALU)	Total Annual labour units (ALU)	Change in real income per labour unit, previous year = 100.0%
1998	580,871	163,645	744,516	103.5
1999	573,415	150,073	723,488	82.7
2000	532,634	143,416	676,049	97.1
2001	507,762	135,175	642,937	105.4
2002	521,151	125,590	646,741	79.5
2003	458,037	123,870	581,907	103.2
2004	426,634	127,151	553,785	151.5
2005	407,682	114,566	522,248	100.8
2006	390,903	113,500	504,403	107.1
2007	348,046	111,245	459,291	106.9
2008	325,358	109,795	435,152	131.1
2009	336,482	110,028	446,510	67.7
2010	334,981	109,176	444,157	117.7
2011	328,889	108,062	436,951	149.3
2012	318,512	114,767	433,279	92.3
2013	323,604	120,820	444,424	110.1
2014	336,165	126,766	462,930	106.1
2015	310,966	130,936	441,903	94.3
2016	302,015	132,265	434,281	107.0
2017	292,848	128,567	421,415	101.5
2018	267,339	124,261	391,601	102.6
2019	240,823	118,068	358,891	106.7
2020	212,292	114,649	326,941	107.2
2021	204,059	114,967	319,026	104.0
2022	180,251	109,008	289,529	102.4
2023	156,949	117,214	274,163	99.1
2024	142,011	116,678	258,689	90.3

In 2020, a total of 211,300 people were employed in the agricultural sector, of whom 155,300 were men and 56,000 were women.[10] The sector has seen continuous growth since 2009, with 204,000 people employed in the first quarter of 2025 and 204,000 in the second quarter 203,200, which are seasonally adjusted figures.

10 | https://www.ksh.hu/docs/hun/xstadat/xstadat_hosszu/h_qlf017.html (09.09.2025).

20.2.1.36. Seasonally adjusted time series of the number of persons employed by specific sectors of the national economy, by quarter

Year	Quarter	Original time series, agriculture, thousands	Original time series, agriculture, previous quarter = 100.0%	Seasonally adjusted time series, agriculture, thousand persons	Seasonally adjusted time series, agriculture, previous quarter = 100.0%
2009	I	173.9	...	179.9	...
	II	176.7	101.6	174.8	97.2
	III	179.6	101.6	175.1	100.2
	IV	175.0	97.5	175.4	100.1
2010	I	162.5	92.8	168.0	95.8
	II	177.3	109.1	175.3	104.3
	III	182.0	102.7	177.6	101.3
	IV	177.1	97.3	177.5	100.0
2011	I	176.1	99.4	182.0	102.5
	II	184.2	104.6	182.1	100.0
	III	195.4	106.1	190.8	104.8
	IV	190.2	97.3	190.8	100.0
2012	I	184.7	97.1	190.7	100.0
	II	197.3	106.8	194.9	102.2
	III	201.1	101.9	196.5	100.8
	IV	195.9	97.4	196.6	100.0
2013	I	183.5	93.7	189.2	96.3
	II	193.4	105.4	191.0	100.9
	III	189.8	98.2	185.8	97.3
	IV	178.9	94.2	179.7	96.7
2014	I	180.7	101.0	186.1	103.5
	II	189.2	104.7	186.7	100.4
	III	197.2	104.2	193.3	103.5
	IV	197.4	100.1	198.3	102.6
2015	I	192.1	97.3	197.4	99.6
	II	208.8	108.7	206.1	104.4
	III	212.1	101.6	208.4	101.1
	IV	208.3	98.2	209.3	100.4
2016	I	214.3	102.9	219.7	105.0
	II	226.9	105.9	223.9	101.9
	III	223.7	98.6	220.2	98.3
	IV	213.4	95.4	214.3	97.3

Year	Quarter	Original time series, agriculture, thousands	Original time series, agriculture, previous quarter = 100.0%	Seasonally adjusted time series, agriculture, thousand persons	Seasonally adjusted time series, agriculture, previous quarter = 100.0%
2017	I	212.8	99.7	217.8	101.6
	II	221.8	104.2	219.1	100.6
	III	228.7	103.1	225.7	103.0
	IV	226.2	98.9	226.9	100.5
2018	I	224.1	99.1	228.9	100.9
	II	222.4	99.3	219.9	96.1
	III	215.9	97.1	213.5	97.1
	IV	222.7	103.1	223.2	104.5
2019	I	208.2	93.5	212.3	95.1
	II	223.2	107.2	220.7	103.9
	III	211.6	94.8	209.5	94.9
	IV	216.4	102.3	216.8	103.5
2020	I	217.1	100.3	221.0	102.0
	II	213.8	98.5	211.6	95.7
	III	210.1	98.3	208.1	98.3
	IV	209.8	99.8	210.3	101.1
2021	I	202.7	96.6	206.2	98.1
	II	199.7	98.5	197.8	95.9
	III	206.0	103.1	203.9	103.1
	IV	199.5	96.8	200.2	98.2
2022	I	195.0	97.7	198.2	99.0
	II	202.7	103.9	200.7	101.2
	III	205.7	101.5	203.6	101.4
	IV	206.1	100.2	207.0	101.7
2023	I	198.8	96.4	201.9	97.5
	II	210.1	105.7	208.0	103.0
	III	217.1	103.3	215.0	103.4
	IV	204.0	94.0	205.2	95.4
2024	I	205.9	100.9	208.8	101.8
	II	203.4	98.8	201.2	96.4
	III	193.3	95.1	191.6	95.2
	IV	193.1	99.9	194.3	101.4
2025	I	201.4	104.3	204.0	105.0
	II	205.5	102.1	203.2	99.6
	III				
	IV				

For workers employed in the agricultural sector, safety comes before everything else.[11] Occupational safety inspections are significant in the sector, but they are naturally focused on occupational safety. [12]

The aim of this article is to examine the employment rules relating to information, their background and their classification according to severity, extent and permanence, from among the 19 employment, 82 occupational safety and 7 other regulations. Violations of regulations, which are referred to as non-compliance in the social conditionality system, can be negligible, minor, moderate or serious in terms of severity; they can be internal or external to the economy in terms of extent; and they can be remedied in the short term or in the long term in terms of duration. When determining the legal consequences, the recurrence of non-compliance must also be taken into account.

3. The EU directive basis for the social conditionality system

The purpose of this section is to examine how the Information Directive has changed since the 1991 legislation. The question is whether the legislator has succeeded in responding to changes in employment.

Council Directive 91/533/EEC (14 October 1991) on the employer's obligation to inform the employee about the terms of the contract or employment relationship served to ensure that employees in the Council Directive 91/533/EEC, adopted on 14 October 1991, deals directly with the requirement for employers to inform their workers in detail and in full about the terms and conditions of the contract or employment relationship. This directive aimed at ensuring that all workers in the European Union would be assured of written information setting out the core terms and conditions relating to their employment, and any subsequent variations or changes that would arise in relation to these terms. Interestingly, this significant directive has its basis in Article 9 of the Community Charter of Fundamental Social Rights of Workers. The role of the Community Charter is significant, in that it has, without doubt, played an essential part in forming and developing the social aspect of the European Union, and consequently had a profound effect upon the drafting and development of European labour law.

The Directive had expressly provided that the employer was legally bound to inform. It is, however, significant that it did not expressly regulate or deal with instances in which an employee was busy with more than one employer

11 | Information on this is provided continuously to those employed in agriculture, see: https://www.nak.hu/agazati-hirek/mezogazdasag/146-novenytermesztes/96974-a-munkavedelemre-a-mezogazdasagban-komolyan-oda-kell-figyelni (09.09.2025)
12 | See the reports on the annual inspection findings of the occupational safety authority: https://mvff.munka.hu/#/a_munkavedelmi_hatosag_jelentesei (09.09.2025)

simultaneously. It therefore seems that, for this omission, the Directive did not cover persons in such circumstances.[13]

It defined the core minimum content that should form part of the information obligation and included different conditions that related to the employment relationship established between the employer and the worker. When in this regard any change took place, the employer had to provide the worker with a written note that comprehensively spelled out the nature of the change, ensuring that such information was provided in the shortest time possible; however, the notification had to be made at the latest one month following the date when the change was implemented and took effect in the workplace when the change as implemented and took effect at the workplace.[14]

The European Court of Justice has carefully evaluated the content of the information presented in a number of judgments over time. In the specific case of 'Helmut Kampelmann and Others v Landschaftsverband Westfalen-Lippe', the Court expressed its view that the simple labelling or designation of an activity cannot, under any circumstances, be considered as a sufficient brief specification or a proper description of the actual work that is performed by the employee.[15] Furthermore, in the case of Wolfgang Lange v Georg Schünemann GmbH, the Court made a significant ruling stating that the act of ordering overtime work for an employee is regarded as a crucial and essential component of the overall employment relationship. This is noteworthy even though the Directive itself does not specifically include it in the list of elements of information that need to be provided, which highlights the necessity for the employee to be informed of this matter in writing under any circumstance.[16]

Of course, various new types of work had yet to be included in the Directive. Information regarding the place of work; if there is no principal or fixed place of work, it should be specified that the worker is employed at varying places of work, e.g., the registered office of the enterprise or, if relevant, the employer's residence

13 | Article 2 Obligation to provide information 1. "An employer shall be obliged to notify an employee to whom this Directive applies, hereinafter referred to as 'the employee', of the essential aspects of the contract or employment relationship."

14 | Toumieux 2016, 68.

15 | Judgment of the Court (Fifth Chamber) of 4 December 1997 – Helmut Kampelmann and Others v Landschaftsverband Westfalen-Lippe (C-253/96 to C-256/96), Stadtwerke Witten GmbH v Andreas Schade (C-257/96) and Klaus Haseley v Stadtwerke Altena GmbH (C-258/96); Reference for a preliminary ruling: Landesarbeitsgericht Hamm – Germany; Obligation to inform employees, Directive 91/533/EEC, Article 2(2)(c); Joined cases C-253/96, C-254/96, C-255/96, C-256/96, C-257/96 and C-258/96.

16 | Judgment of the Court (Fifth Chamber) of 8 February 2001 – Wolfgang Lange v Georg Schünemann GmbH; Reference for a preliminary ruling: Arbeitsgericht Bremen – Germany; Council Directive 91/533/EEC of 14 October 1991 on an employer's obligation to inform employees of the conditions applicable to the contract or employment relationship, Length of normal daily or weekly work, Rules on overtime, Rules of evidence; Case C-350/99.

place. Following the framework agreement on telework, it is arguable that, under this definition, the Directive applies to cover telework, e.g., ICT work.[17]

With regard to project work, it is specifically hard in this case to precisely establish the time taken for the work that is being conducted, as this is usually an almost unachievable mission due to several issues. Considering domestic and agricultural work, for example, in France, Belgium, Italy, Greece, and Austria, the period taken to do such work is usually marked with confusion, and the timing for payments is not usually in accordance with the actual time taken for the labour conducted. Even more, in the case of crowdwork, which is defined as work performed within online communities, the terms under which individuals work do not in any case align with the provisions stipulated in the pertinent Directive.[18]

Toumieux takes the view that flexible employment alternatives should receive first priority, rather than job security being given that place. He contends that if the duration of the information given to workers were set instead as a simple guideline, instead of taken and acted upon to make it an enforceable minimum, it would better serve to support the creation of new kinds of employment. This would also give both parties to the employment relationship more freedom in choosing how long that relationship is to endure. I am strongly compelled to criticise this point of view, for in reality, the proposal to relieve the duty of providing information does not actually enable flexibility, but instead in effect loosens the very basis upon which the contractual relationship is built. Even in defence of the creation of the directive was the assertion that digital work was booming rapidly and that swift changes had to be made in response to it. Still, I believe that the European Union's assumption that watering down rules for employment relationship obligations for information is the avenue that will make novel kinds of employment relationships more palatable is a seriously flawed approach. True partnership may only develop in the sharing of information and cooperation, which is an obligation that should be promoted in all fair and honest contracting parties. Furthermore, what is to follow for workers who work in the agricultural industry if we opt to make this essential rule softer too?

The question that subsequently is raised in this regard is that of the particular flexibility and security concept that shall indeed arise in the process of the overall review of the directive. Is it in fact that we must lose our sense of security in that we need to relax or ease the information obligation that is presently in existence?

Directive (EU) 2019/1152 of the European Parliament and of the Council, adopted on the date of 20 June 2019, aims to address the root issue of implementing transparent and predictable working conditions in the whole European Union. This directive was published for specific reasons, primarily because it was increasingly evident that it was necessary to implement minimum requirements at the EU level.

17 | Framework Agreement on Telework by ETUC, UNICE/UEAPME and CEEP, 16 July 2002.
18 | Toumieux 2016, 72–74.

These requirements are indivisible for ensuring that all workers receive adequate information on the key aspects of their employment relations and working conditions in which they spend their days working. Eventually, it is aimed at ensuring all workers in the EU have an adequate level of transparency and predictability in relation to their working conditions. Meanwhile, it should ensure an adequate level of flexibility in non-standard working arrangements, maintaining the innumerable benefits these arrangements have for both workers and employers.[19]

The new Directive is to supersede the old Directive that enforced the duty of furnishing information in writing and shall instead bring in an all-new instrument conceived solely for the purpose of ensuring and strengthening transparency in regard to working conditions for all workers within the European Union. Apart from this, it provides for fresh substantive rights in relation to enhancing both the certainty and the predictability of working conditions, of which particular importance it aims to accord to individuals who remain in vulnerable employment conditions.[20] This valuable addition is to be achieved through Chapter II, which stipulates the requirements for up-to-date basic information in relation to the employment relationship for all EU workers. This includes an estimated 2 to 3 million workers who, at the present state, remain outside the remit of the existing Written Information Directive. The latter specifies the definitions of the term 'worker' and the term 'employment relationship' in accordance with the law of each Member State. To achieve more clarification in regard to the personal scope of the Directive, the term 'worker' is defined in light of the settled case law of the Court of Justice of the European Union (CJEU) in regard to the establishment of the law status of workers.[21] Also, in an endeavour to expand its personal scope, the Directive places restraints on the freedom of Member States in regard to excluding workers who remain in short-term or casual employment. This specific clause is of great significance in relation to the aspect of rights and safeguards in regard to labour.

Directive 91/533/EEC includes an exhaustive list that defines the key elements typical of an employment contract or the employment relationship, in general, and it is provided that such information must be communicated in writing to the workers. Following the effective response to the fluid character of the labour market, and specifically the growth that has been registered in non-typical forms of employment, such a revision of the specific list has proved necessary. This list is

19 | See: Directive of the European Parliament and of the Council on transparent and predictable working conditions in the European Union, Preamble 4 and 6.

20 | Article 2 – Definitions Proposal for a Directive of the European Parliament and of the Council on transparent and predictable working conditions in the European Union. SWD(2017)205 final, pp. 21 and 25, and footnote 50. See also Commission Communication: 'A European agenda for the collaborative economy' (COM(2016) 356 final), point 2.4. SWD(2017)205 final, 24.

21 | See: Case 66/85; 14 October 2010, Union Syndicale Solidaires Isère, Case C-428/09; 9 July 2015, Balkaya, Case C-229/14; 4 December 2014, FNV Kunsten, Case C-413/13; and 17 November 2016, Ruhrlandklinik.

not definitive, but it may increase and complement, in selected Member States, in an effort to better suit their respective contexts and realities.[22]

In the situation that, owing to the very characteristics that form part of the nature of the work being performed, such as in the situation of on-call contracts, it is impracticable to set an inflexible or fixed work schedule, the employer shall notify the workers in due detail of the mechanisms and methods employed in the determination of their working hours, and such notice shall indicate the minimum level of prior notice that should in fact be provided to the workers before the initiation of their work activity, and times and periods when workers could potentially be called or invited to perform their work obligation.[23]

It is critical that workers receive an assurance that, from the start of their term, they will have the right to access written proof outlining their rights and responsibilities that arise from their employment relationship. Hence, they must receive this core information in the soonest practicable time, and at the soonest, one entire calendar week from the commencement of their first day of work. Furthermore, any subsequent remaining information that is relevant to their employment should be provided to them in an equally non-exceeding time period of one month from their first day of work.

It is necessary to maintain at least a minimum degree of predictability for workers who work in jobs that follow a schedule that is largely or even completely unpredictable. Under these conditions, the schedule for work is in significant part established by the employer's actions and decisions. This establishment may follow directly when the employer specifically sets certain tasks or working hours for the workers, or it may follow indirectly, for example, when the employer asks that the worker remain available in order to answer various customer questions and requests when they occur.[24]

Particularly unpredictable for the worker are on-call or comparable employment contracts, which, in particular, include zero-hour contracts, wherein the employer may entrust the worker with the flexible demand to work at any time that it is needed for business purposes. Member States authorising such contracts should take it upon themselves to ensure that effective provisions are in place and enacted in order to prevent any form of abuse of such contracts. Such preventive provisions may consist of the drawing of limits on the use and the duration of such contracts, and in the use of a rebuttable presumption for the existence of an employment relationship or employment contract that would ensure the number of working hours, based on the number of working hours that were expended in a predetermined, specified term of reference. Furthermore, other analogous provisions may be enacted in order to ensure that effective prevention exists from

22 | Directive of the European Parliament and of the Council on transparent and predictable working conditions in the European Union, Preamble 21, Article 4.
23 | Ibid., Preamble 23 and Article 5.
24 | Ibid., Preamble 30.

any form of abuse of these contracts. Implementation of this Directive shall not constitute justification for any limitation that is placed on existing rights, that are granted in accordance with existing Union or national law in this respective domain, and it shall not constitute any basis in law for reductions in the overall level of protection that is granted to workers in the subject domain, that is addressed in this Directive. Of particular significance, it should specifically not justify the continued usage of zero-hour contracts and comparable employment contracts of this nature.[25]

It is more than apparent that fresh and innovative methods of employment have now been appropriately incorporated within the compass and purview of the Directive. Following such incorporation, it is critical to appreciate that in tandem with the constant endeavours made both by workers and employers in regards to opening up employment avenues, there should also be built-in minimum level of security within the domain of labour law. Accordingly, the minimum rights provided to workers in the European Union can now be encapsulated thusly: firstly, they should be adequately informed of the nature of the employment relationship; secondly, there ought to be an expressly defined limitation on the duration of the probationary period; thirdly, there should remain the possibility for concurrent employment to be an avenue of interest; fourthly, minimum level of work predictability should be assured even in scenarios wherein an employee's working schedule is completely or predominantly non-predetermined; fifthly, effective provisions should be in place in regard to preventing abusive practices, in particular in the context of on-call or similar employment contracts; sixthly, there should remain the potential for workers to seek access to a method of employment that provides for more predictable and stable working conditions; seventhly, there should remain assurances that pertain to obligatory training specifications; and, finally, there should remain the potential for collective agreements in allowing for exemptions from minimum rights and in doing so in favour of the worker.

From my own point of view, the European labour law of the future is certainly heading towards facilitating and ensuring more secure employment for more segments of workers. This is specifically one that has been expressly emphasised in the past case law named Kampelmann and Lange, which was directly related to the Information Directive. Of particular interest is that, if only they comply with the requirements set in the EU workers' definition, a wide array of workers, like domestic workers, on-call workers, temporary workers, voucher workers, platform workers, interns, and even workers who receive apprenticeship training, all fall and are subject to the coverage of this directive.

25 | Directive of the European Parliament and of the Council on transparent and predictable working conditions in the European Union, Preamble 35. 47.

4. Domestic provisions on information in the Labour Code

In accordance with the decree on social conditions, violations of the rules on information provision are minor in nature, limited to the economy, and can be remedied in the short term. This also has symbolic significance. Below, we examine the provisions of Act I of 2012 on the Labour Code (hereinafter: Mt.), whose failure to comply with may have adverse legal consequences in the sector.

According to Article 3 of Directive (EU) 2019/1152, information on employment conditions must be provided in writing. Accordingly, Section 46(1) of the Mt. refers to the obligation to provide information on the establishment of an employment relationship.

Article 4 stipulates that agricultural employment must be based on an employment contract. In the course of agricultural work, it must be ensured that the employee is informed of the essential aspects of the employment relationship. Section 23(1)–(2) of the Labour Code deals with the obligation to put the employment contract in writing, and employment without a written employment contract or a formally defective employment contract (the employer does not provide the employment contract to the employee) has legal consequences. Similarly, Section 45(1)–(3) and (5) of the Labour Code deals with the mandatory content of employment contracts, and an employment contract with incomplete content has legal consequences. Section 202(1) of the Labour Code does not require a written employment contract in the case of simplified employment, but if one is drawn up, it must comply with the general provisions of the Labour Code.

Failure to comply with the obligation to provide information on the establishment of Failure to comply with the obligation to provide information on the establishment of an employment relationship under Section 46 of the Labour Code, or failure to comply with the obligation to communicate the work schedule and, if necessary, to amend it in accordance with the rules under Sections 97(4) and (5) of the Labour Code, shall entail adverse legal consequences in the sector. The latter provision does not apply in the case of simplified employment. In the context of work schedules, a violation of Section 135(7) of the Labour Code has legal consequences, according to which, in the case of a collective agreement, a work schedule may be modified at least 48 hours before the start of the daily working time specified in the schedule.

The basis for the violation of the reporting obligation relating to the legal relationship of simplified employment is Section 201 of the Labour Code on employment relationships for simplified employment or casual work. According to Section 3(1) and Section 11(1) of Act LXXV of 2010 on simplified employment, a simplified legal relationship is established by fulfilling the reporting obligation, which is further regulated by Section 3 of Annex 1 to Act CL of 2017 on the Rules of Taxation.

The basis for the lender's failure to comply with its information obligation is Section 218(3)(a) of the Labour Code, which can be considered negligible in severity. This is highly objectionable**.**

Article 5 of the Directive stipulates that the information must be provided during the first seven days of employment. This article corresponds to Section 45(1) of the Labour Code, which deals with the mandatory content of employment contracts, and Section 46(1) of the Labour Code, which deals with the obligation to provide information relating to the establishment of an employment relationship. Failure to comply with the obligation to provide information on the establishment of an employment relationship and to provide a complete employment contract will result in non-compliance.

Article 6 of the Directive stipulates that information on changes to the employment relationship must be provided in writing. Failure to comply with the obligation to provide information on changes to working conditions is based on Section 38(1) of the Labour Code [Section 46(1) of the Labour Code]: the obligation to provide information in the event of a transfer of rights and obligations, Section 46(5) of the Labour Code the obligation to provide information on changes in working conditions, and Section 47(3) of the Labour Code the obligation to provide information in the event of work abroad.

5. Assessment

Violations of the rules on information are minor in scale within the economy and can be remedied in the short term. My first thought regarding the minor legal consequences of the obligation to provide information was that this important legal institution does not carry sufficient weight, and not only in the agricultural sector. The question arises, what if it did? How realistic is this? In the agricultural sector in our country, many people work within the framework of family farms. My questions are relevant to those who are visible. They mainly work on a seasonal basis and under simplified employment arrangements.

With regard to the state of compliance with domestic law, we can find the following among the available sources. If the employer fails to make the preliminary notification related to simplified employment, the employee must be registered not as a person in simplified employment, but as a person employed under the general rules, i.e. as an employee. If they fail to do so, they will be subject to the legal consequences of employing unregistered employees. The fine for employing an unregistered employee can be up to two million forints[26]. An employer who accumulates tax debts of HUF 300,000 or more in simplified employment, social contribution tax, rehabilitation contribution, and personal income tax advance

26 | Act CL of 2017 on the Rules of Taxation, Section 225(1)

payments is not eligible for further simplified employment until the debt is paid in full. The employer will therefore only become eligible for simplified employment again once the entire outstanding debt has been paid; it is not sufficient for the debt to fall below HUF 300,000. If the employer has registered and employed employees under simplified employment despite the outstanding debt, the legal status of these persons must be reclassified as an employment relationship.[27]

The starting point is Section 7(10) of the Act, which defines the concept of an undeclared employee, according to which the following persons are considered undeclared employees: a natural person personally involved in the taxpayer's activity, in respect of whom the employer or payer has not fulfilled their obligation to register them with the social security administration, or the employer or payer cannot prove that the legal relationship of the person involved in their activity is outside the scope of the registration obligation. There are also cases where the taxpayer has submitted a simplified employee registration for their casual employee, but because the number of days included in the registration has already exceeded the permitted number (i.e. exceeded the time limit), the registration was put on hold and the taxpayer was notified in connection with the submitted tax return that they should register the employee in accordance with the general Labour Code. Employment in excess of the employment limits is not the same as the employment of an unreported employee, as this is a case of irregular employment under a different legal relationship, and this conduct is not aimed at avoiding tax liability, but at the same time, the irregularity must be sanctioned. In such cases, since simplified employment was established but was carried out irregularly, the general penalty rule, Section 220(1) of the Act, shall apply, according to which, unless otherwise provided by law, the tax authority shall impose a penalty on a natural person taxpayer for breach of an obligation laid down in this Act in a law imposing tax obligations, or in other legislation based on the authorisation of these laws, the tax authority may impose a default penalty of up to four hundred thousand forints on natural person taxpayers and up to one million forints on non-natural person taxpayers.[28]

It seems that the failure to comply with the obligation to provide information is not sufficiently important to the Hungarian legislator. However, information would be particularly important in this sector, as the work is seasonal and simplified.

The 24 April 2025 issue of the Hungarian Gazette published Act X of 2025 amending Act LXXV of 2010 on simplified employment, which will significantly change the rules on simplified employment from 1 January 2026. The purpose of the announced amendments is to help meet the labour needs of the agricultural sector and to provide more flexible employment opportunities for sectors

27 | https://nav.gov.hu/ugyfeliranytu/nezzen-utana/tudjon_rola/visszatero-hibak-az-egyszerusitett-foglalkoztatasban (24.09.2025)
28 | Act CL of 2017 on the Rules of Taxation, Section 220(1)

requiring seasonal labour. In order to maintain the viability of the agricultural sector, it is necessary and justified to ensure that, in the case of seasonal agricultural work, employees can work more days than the general rules allow under simplified employment. The legislator's stated aim is to contribute to meeting the high demand for seasonal labour in the agricultural sector and to make the use of casual labour more flexible in all sectors of the national economy. From 1 July 2025, employers must take into account the change in legislation that if an employee enters into multiple employment relationships for seasonal work, casual work, or seasonal and casual work, the total duration of these employment relationships may not exceed 120 days in a calendar year. From 1 January 2026, the most important change for the agricultural sector is that the legislator is 'softening' the above rule, i.e. the total duration of employment relationships established for seasonal agricultural work will be increased by a further 90 days from 120 days in a calendar year (to a total of 210 days). This represents a significant relief for the agricultural sector, which has significant seasonal labour needs. In the case of workers employed under simplified employment, the amount of public charges payable by the employer under the current rules is 0.75 per cent of the minimum wage for each calendar day of employment in the case of seasonal agricultural work, and then, as a result of the 2026 amendments, 1.125 per cent of the minimum wage for the additional 90 days following the first 120 days of seasonal agricultural work. In line with the above, the basis for calculating pension benefits will also be modified for different forms of employment, which will also be determined as a percentage of the minimum wage. After the first 120 days of seasonal agricultural work, it will be 2.1 per cent of the minimum wage per day, while after the additional 90 days of seasonal agricultural work, it will be 3.15 per cent of the minimum wage per day. It is important to note that the new provisions will apply to work performed after 31 December 2025.[29] The focus remains on relaxing the rules, but by increasing the amount of the contribution, the legislator is seeking to raise the level of social security.

In addition to the legal consequences established by the NAV with regard to the reporting obligation, there will be legal consequences in the support system for violating the reporting obligation, if any, as no other resources are available due to the failure to comply with this reporting obligation. In the context of social conditionality, the basis for assessing all further support is the basic income support financed by the European Agricultural Guarantee Fund to promote sustainability, the related transitional national support, and the supplementary income support promoting sustainability, which may be granted through reallocation, in accordance with the provisions of Decree 16/2023. (IV. 19.) AM on certain issues related to the use of such support. As the rules on social conditionality are less stringent

29 | https://www.nak.hu/tajekoztatasi-szolgaltatas/adozas/108646-ujabb-valtozasok-2026-evtol-az-egyszerusitett-foglalkoztatasban (24.09.2025)

than EU requirements due to the government's economic policy, a significant proportion of farmers will be excluded from this and all further support due to non-compliance.

The sea of regulations that generally characterise law enforcement also makes the functioning of the agricultural sector opaque and untraceable. Moreover, the primacy and direct effect of EU law only puts further pressure on the legislator. In this sea of regulations, an important institution, such as the obligation to provide information, which is based on cooperation between the parties, is simply lost. Yet how simple it would be to rely on general standards of conduct and operate accordingly in contractual relationships! In the system of social conditionality, violations of the right to information seem insignificant in our country, while the situation of employer farmers is not the easiest either. It is a complex problem that seems to be coming to a head in the context of compliance with minimum employment conditions in the agricultural sector. The multitude and complexity of legal rules, the imperative nature of Community law objectives and the loss of faith in basic behavioural requirements all lead us to forget to inform each other in good faith and fairly. We do not believe that it can work so simply. Nor do I believe that the importance of the obligation to provide information in the agricultural sector should have been emphasised in the context of discussing the legal consequences of support policy. However, since this has happened, I think it is important to emphasise that the employment situation of workers in agriculture in our country – and at the European Union level – is only partly a consequence of their contractual behaviour; they are victims of the 'atomisation' of the law[30].

30 | On the atomisation of law and the role of secondary legal norms in subsidy law, see: Korom, Temesi 2025, 457–473; Leszkoven 2024, 16.

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Reflections on Employment Violations in the Agricultural Sector in Hungary in Light of the EU's Social Conditionality Framework

Abstract

The legal framework for social conditionality within the European Union entered into force on 1 January 2025. Under these provisions, the Common Agricultural Policy (CAP) will undergo significant changes and could have important consequences if farmers and other beneficiaries are to receive direct payments or annual payments if certain standards are breached. In light of this, we have undertaken an analysis of the current state of employment practices within the agricultural sector, with the aim of providing a snapshot of the extent to which employers may need to adapt their workplace practices in the near future in order to avoid jeopardizing their eligibility for financial support.
Keywords: Employment, Social Conditionality Framework, Employment Issues, Employment Relationships

1. Introduction

As of January 1, 2025, the legal framework governing social conditionality within the European Union has entered into force. Based on these provisions, the Common Agricultural Policy (CAP) will undergo significant changes, and important

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consequences may arise if agricultural producers and other beneficiaries receiving direct payments or annual payments under rural development interventions pursuant to Article 70 (environmental, climate-related, and other management commitments), Article 71 (natural or other area-specific constraints), or Article 72 (area-specific disadvantages resulting from certain mandatory requirements) fail to comply with the applicable working and employment conditions.

In light of this, we have undertaken an analysis of the current state of employment practices within the agricultural sector, with the aim of providing a snapshot of the extent to which employers may need to adapt their workplace practices in the near future in order to avoid jeopardizing their eligibility for financial support. The objective of this study is twofold: to explore the scope of the issue and to present the regulatory structure of social conditionality, culminating in policy recommendations related to employment compliance. To assess potential violations of employment law, we rely on the findings of labour inspections conducted by the labour supervisory authority, which offer a scientifically evaluable overview of the employment landscape within the sector.

2. The state and characteristics of the agricultural sector in Hungary – with special regard to employment issues

The agricultural sector has always occupied a unique position within the broader labour market, primarily due to the inherently specific nature of its operations. The planning of annual workforce requirements by agricultural economic actors necessitates specialized expertise. In general, one must be familiar with the phases of ontogenetic development of the species and breeds that constitute the sector's genetic resources, the volume of both continuous and seasonally occurring tasks associated with those phases, and the corresponding workforce demand[4]. Additionally, both exposure to weather and natural factors, as well as the regional characteristics of local labour markets, are relevant considerations.

According to the flash report published by the Hungarian Central Statistical Office (HCSO) at the end of November 2024, approximately 4.7 million individuals were employed in the sector as of October 2024, marking a decrease of 27,000 compared to the same period in 2023. The HCSO noted, however, that employment levels in the autumn of 2023 were exceptionally high. Over the past decade, the highest number of employees in the agricultural sector was recorded in the autumn of 2017, with nearly 230,000 individuals working in the field – approximately 60,000 more than in 2007. Since that time, the number of people employed in agriculture has steadily declined, albeit with minor fluctuations. The 2024 figures reflect a marked drop, exceeding the changes seen over the past ten years. In the third quarter of

4 | Szabó 2019.

2023, just over 192,000 individuals were employed in agriculture – figures not seen since the same period in 2015.[5]

In Hungary, the educational attainment of agricultural workers significantly lags behind that of workers employed in other sectors of the national economy, as well as the European Union average[6]. The divide between urban and rural environments has deepened over the past decades. Villages, which traditionally rely on the utilization of locally available rural resources – such as through agricultural production – are increasingly unable to offer a competitive alternative to rural inhabitants who are drawn to urban lifestyles. As a result, the rural population is declining both in Hungary and across the European Union. This trend has had a detrimental effect on the structure of the agricultural labor force. Fewer individuals are engaging in agricultural work, a tendency that is particularly pronounced among younger workers.[7]

Nevertheless, it remains the case that the number of individuals employed in the sector consistently ranges between 150,000 and 200,000. Despite the sector's diminishing contribution to GDP and the overall downward employment trend, agriculture still constitutes a sector of considerable size.[8] It is characterized by the widespread employment of workers with lower levels of formal education and by a general lack of legal awareness – both among employees and employers.

3. Types of employment relationships in the agricultural sector

The labor law regulations governing agricultural employment in Hungary do not substantially differ from those applicable in other sectors. Employment relationships may take the form of standard employment contracts, simplified employment (which is essentially an atypical employment relationship), public employment, or cooperative work arrangements. Unlike certain other EU member states – such as Romania, which has adopted specific labor law provisions for the sector via its 'day-labourers law' – Hungary has not introduced agricultural-specific labor legislation.[9]

In Hungary, the principal statute governing employment relationships is Act I of 2012 on the Labor Code (hereinafter: the Labor Code), which also partially regulates simplified employment. With regard to seasonal agricultural work – a form of employment under the simplified regime – the applicable legislation includes, in addition to the Labor Code, Act LXXV of 2010 on Simplified Employment (hereinafter: the Simplified Employment Act). Public employment is governed by a number of legal instruments, with the most relevant being Act CVI of 2011 on Public

5 | Kohout 2023.
6 | Popp 2024, 173–184.
7 | Fróna & Kőmíves 2019, 361–380.
8 | Ursu, Sterie & Petre 2023.
9 | LEGE nr. 52 din 15 aprilie 2011.

Employment and on the Amendment of Related and Other Acts, which contains the main provisions concerning the legal characteristics of this type of employment relationship. In agricultural areas, it is common for workers governed by the Labor Code, seasonal workers falling under the Simplified Employment Act, and public workers covered by the Public Employment Act to perform tasks concurrently.

One option is for seasonal agricultural work to be performed under a standard employment relationship. In such cases, specific rules apply to employees engaged in seasonal work, particularly with respect to working hours and rest periods. An employer's activity qualifies as seasonal if, regardless of the employer's internal scheduling practices, the work is tied to a particular period or season of the year.[10]

The essence of this framework may be summarized as follows. According to the Labor Code, the employer is responsible for determining the working time schedule (work schedule).[11] The work schedule may be fixed or flexible. A fixed schedule may be either uniform or non-uniform. In a uniform schedule (referred to as 'general work schedule'), working hours are distributed evenly over the five working days of the week.[12] In sectors that require flexible employment arrangements, this model is evidently impractical. To accommodate this need, Hungarian labor law permits non-uniform work schedules, of which two mechanisms exist: the working time frame and the so called 'accounting period'. In the context of seasonal work, the use of an accounting period is rather uncommon. The working time frame allows the employer to determine the total working hours within a specified timeframe (typically on a weekly or monthly basis), which, as a general rule, may not exceed four months or sixteen weeks.

There are, however, specific derogations for seasonal work:

- Under the Labor Code, the working time frame may be extended to six months or twenty-six weeks in the case of seasonal work.[13] Within this period, the employer is permitted to distribute working hours with due regard to only a few protective provisions. The daily working time must not be less than four hours (except in cases of part-time employment) and may not exceed twelve hours.
- The weekly working time may not exceed forty-eight hours, but compliance with this limit is only required on average over the course of the entire working time frame.
- Regular working hours may be scheduled on Sundays and public holidays in the case of seasonal work.[14] Moreover, according to the Labor Code, no wage supplement is required for work performed on Sundays under such circumstances.
- Daily rest periods may be limited to eight hours for seasonal workers.[15]

10 | Section 90(c) of Act I of 2012 on the Labour Code.
11 | Section 96(1) of Act I of 2012 on the Labour Code.
12 | Mélypataki 2010.
13 | Section 94(2)(c) of Act I of 2012 on the Labour Code.
14 | Sections 101(1)(b) and 102(2) of Act I of 2012 on the Labour Code.
15 | Section 104(2)(d) of Act I of 2012 on the Labour Code.

- The number of weekly rest days (normally two per week) must also be fulfilled only on average over the working time frame. In addition, only one rest day per week is required each calendar month.[16]
- The employer may also opt for the concept of weekly rest period in lieu of weekly rest days. In this arrangement, employees engaged in seasonal activities must be granted a weekly rest period of at least forty continuous hours, including at least one calendar day, once per month. Over the working time frame or accounting period, the average weekly rest period must amount to at least forty-eight hours.[17]

Apart from these specific rules, the general provisions of the Labor Code remain applicable.

These regulations clearly demonstrate that the legislature has addressed the primary challenge of agricultural labor – the need for employment flexibility – by affording significantly greater leeway to employers in this sector compared to other areas of the economy.

A second option available to employers is simplified employment. Simplified employment includes agricultural seasonal work, tourism-related seasonal work, and casual employment. Agricultural seasonal work encompasses employment activities in crop production, forestry, animal husbandry, fishing, and hunting, as well as the handling and packaging (excluding further processing) of agricultural products produced by a producer, producer group, producer organization, or an association thereof – provided that the fixed-term employment relationship between the same parties does not exceed 120 days within a single calendar year.[18] There are no statutory limitations on the number of employees who may be engaged under this form of employment.[19]

The definition of seasonal work is provided by the Simplified Employment Act as follows: work that meets the conditions set out in Section 90(c) of the Labor Code. In the context of agricultural seasonal work, employment shall also be considered linked to a particular season or time of year if, due to the biological characteristics of the plant or animal being produced, the work can only be performed during that specific period.[20] As of 1 July 2025, the 120-day maximum must be calculated per calendar year, not per employer.

Although many provisions of the Labor Code are applicable to simplified employment, the Labor Code explicitly states that some of its rules shall not apply to simplified employment relationships. These exceptions include:

- Neither party may withdraw from the employment contract [Labor Code, Section 49(2)]

16 | Section 105(3)(c) of Act I of 2012 on the Labour Code.
17 | Section 106(3)(c) of Act I of 2012 on the Labour Code.
18 | Section 2, point 1, Act LXXV of 2010 on Simplified Employment.
19 | Mélypataki 2010.
20 | Section 2, point 7, Act LXXV of 2010 on Simplified Employment.

- Temporary reassignment (derogation from the employment contract) is not permitted [Section 53],
- No disciplinary sanctions may be imposed for wrongful breach of duty [Section 56]
- No obligation to adjust wages upon return from absence [Section 59]
- No obligation to inform employees about vacancies or to accommodate part-time employment requests from workers caring for children under age 3 [Section 61]
- No obligation to issue statutory statements and certificates upon termination [Section 80]
- No obligation to provide a written assessment (evaluation) of the employee's work upon termination [Section 81]
- No mandatory notice period for work schedule changes [Section 97(4)-(5)]
- No restrictions on work scheduling on Sundays or public holidays [Section 101]
- Paid leave provisions do not apply [Sections 122–124]
- However, any accrued but unused pro rata annual leave must be compensated upon termination [Section 125]
- No entitlement to sick leave, maternity leave, or unpaid leave [Sections 126–133]
- There are no restrictions on the repeated conclusion or extension of fixed-term contracts between the same parties [Section 192(4)]
- Provisions specific to executive employees do not apply [Sections 208–211]
- Employers may implement non-uniform work schedules even without a working time frame or accounting period
- If the model contract annexed to Act LXXV of 2010 is used, the employer is not required to maintain working time records or provide written wage statements [Sections 134 and 155(2)]

The third possible form of employment is public employment. The current public employment scheme has been in operation since 2011.[21] In many respects, public employment closely resembles fixed-term employment contracts, but numerous labor law provisions do not apply – for example, public workers do not earn the guaranteed minimum wage. Public employment therefore occupies a transitional position between unemployment and formal labor market participation. It simulates employment in several respects, but under significantly less favorable conditions. In addition to employment objectives, it also serves as part of a social assistance policy. Only those of working age whose employment cannot be ensured even through public employment are eligible for active-age benefits. In line with its original intent, the Government considers public employment to be a temporary form of employment, offering work and remuneration instead of

21 | Jakab 2013, 63–66.

passive benefits for jobseekers.[22] A significant component of public employment programs involves agriculture. Within public employment, workers must perform public tasks defined by law, decree, or other legal instrument. These include, in particular, the cultivation of community agricultural land and forestry work.[23] As of the most recent data, 9.8% of all public workers are employed in agricultural programs.[24]

Although it falls outside the scope of the present study, it should be noted that work performed by members of agricultural cooperative societies is also a common form of engagement in the sector. However, this arrangement does not constitute an employment relationship in the strict sense, but rather a form of self-employment[25] to which labor law norms are generally not applicable.

4. Overview and analysis of compliance with employment regulations in Hungarian agriculture

Empirical data derived from the 2023 and 2024 annual inspection reports issued by the Occupational Safety Authority[26] and the Employment Supervision Authority[27] provides an evidence-based picture of the current state of labor law compliance and employment practices within the agricultural sector. It is worth noting at the outset that the findings of these reports paint a grim picture: a significant proportion of employers in the sector are engaged in some form of legal noncompliance, often in relation to multiple aspects of labor law simultaneously.

Our analysis is based on data from the past two years. In 2023, agriculture was designated as a priority sector for inspection among economic branches. The 2024 report offers meaningful insight into whether the findings from the previous year had any tangible effect on the sector, as agriculture remained a focal point of labor inspections in light of the 2023 observations. Accordingly, in presenting the data on legal violations, the 2024 results are contextualized with reference to the 2023 baseline.

22 | (No known author) A közfoglalkoztatás aktuális kihívásai – Javasolt fejlesztési irányok, in: A közfoglalkoztatás aktuális kihívásai – javasolt fejlesztési irányok -tudományos-szakmai konferencia, Belügyminisztérium, Budapest, 2015 november 25. 4.
23 | Mélypataki 2017. 86. o.
24 | Havi tájékoztató a közfoglalkoztatás alakulásáról 2025. február link: https://kozfoglalkoztatas.kormany.hu/download/f/04/63000/febru%C3%A1r%20havi%20t%C3%A1j%C3%A9koztat%C3%B3%2020250410.pdf (Accessed: 18 April 2025)
25 | See more about self-employment in the agricultural sector: Hornyák, Jakab, Nagy, Olajos 2017.
26 | The report can be accessed via the following link: https://mvff.munka.hu/#/a_munkavedelmi_hatosag_jelentesei (Accessed 10 March 2025)
27 | The report can be accessed via the following link: https://mvff.munka.hu/#/ff_2023_evi_ellenorzesi_tapasztalatok_240403 (Accessed: 10 March 2025)

4.1. Violations related to undeclared (informal) employment

In 2024, 7% of all workers identified as being employed without proper registration (a total of 457 individuals) were found within the agricultural sector. In comparison, this share stood at 6% in 2023, involving 534 individuals.

Within the sector itself, the proportion of inspected workers found to be employed informally reached 19.44% in 2024, representing a clear deterioration compared to 15.86% in 2023.

Inspection Year	2023	2024
Number of Workers Inspected	3368 individuals	2351 individuals
Number of Undeclared Workers	534 individuals	457 individuals
Rate of Undeclared Employment	15,86 %	19,44 %

In connection with undeclared employment, violations can be categorized into five groups[28]:

- Failure to register the employment relationship (typical reasons: informal 'trial work'; intentional circumvention of minimum wage regulations; primarily deliberate violations),
- Failure to report simplified employment (common causes: deliberate avoidance of paying public charges; circumvention of statutory time limits; lack of legal awareness; following incorrect or habitual practices),
- Underreporting working hours by declaring part-time employment while requiring full-time work, with additional off-the-books payments,
- Employment without a written contract, or under fictitious contractual arrangements,
- Irregular employment of third-country nationals without valid permits or registration with the tax authority.

The failure to register an employment relationship was predominantly a deliberate employer practice. A frequently cited reason was the attempt to gain a competitive advantage over other employers and among jobseekers by avoiding the increased costs resulting from rising minimum wage and guaranteed wage thresholds. Authorities also found repeated instances of employers delaying the registration in the hope of avoiding inspections (e.g., due to difficult access to the workplace), while preparing all documentation in advance so that registration could be made swiftly in the event of a surprise inspection.[29]

Among the most common employer explanations for non-registration were still administrative or technical problems (e.g., no internet access, lack of mobile

28 | Report of the Employment Supervision Authority 2024, 4–6.
29 | Ibid., 4.

signal, or system outages), accounting errors, and the reference to so-called 'trial work' – meaning the employment relationship would only be formalized if the worker 'passed' the trial. However, the Labor Code does not recognize the concept of trial work; instead, it regulates a probationary period, which is a legally valid part of the employment relationship. Therefore, invoking trial work does not exempt the employer from the obligation to register the employment.[30]

In the case of simplified employment, a variety of violations were observed. Some employers intentionally failed to report the employment in order to evade taxes and social contributions. Others deliberately sought to circumvent the statutory time limitations on simplified employment (i.e., a maximum of 5 consecutive days, 15 days per month, and 120 days per year).[31] It was also common for employers to divide the reporting of an employee across multiple employers, thereby covering a full month (or even an entire year) under simplified employment.[32]

Another recurring, though not always intentional, violation occurred when employees' work extended into the following calendar day. In such cases, employers often only reported the first day, even though the actual work spanned two days.

It was also frequently observed that employers filed reports late – at the end of the workday, or even on the day of inspection, but just prior to the start of the official labor inspection. These cases often involved reports submitted a few minutes or hours after work had already commenced, but still before the inspection formally began. In such cases, although the violation is formally recorded, no labor fine is imposed under the applicable legal provisions.

4.2. Violations related to working time, rest periods, and overtime

In 2024, legal violations concerning working time, rest periods, and overtime affected a total of 8,000 employees, compared to 8,698 in 2023. However, no disaggregated data is available regarding how these figures apply specifically to the agricultural sector. The categories of violations in 2024 remained largely consistent and could be clearly typified by the supervisory authority as follows[33]:

- Lack of working time schedules affected the highest number of employees (4,936 individuals). This widespread violation is generally attributed either to a lack of employer awareness regarding legal requirements, or to an intentional attempt to conceal overtime work.
- Irregularities concerning working time frames were identified in connection with 2,071 workers. Employers frequently failed to determine or document the

30 | EH 2001.597.
31 | Report of the Employment Supervision Authority 2024, 5.
32 | As of 1 July 2025, workers employed under the simplified employment scheme – including seasonal and casual employment – may work a maximum of 120 days per calendar year, irrespective of the number of employers involved.
33 | Report of the Employment Supervision Authority 2024, 7.

start and end dates of the working time frame. As a result, overtime performed beyond the set frame could not be verified or compensated, either through pay or time off in lieu.
- Although affecting fewer employees, violations were also recorded where daily or weekly working hours exceeded legal limits, and in relation to non-compliance with rules on daily and weekly rest periods or mandatory breaks.
- In relatively rare cases, irregularities concerning overtime and work performed on public holidays were also identified.

These same categories of violations were also typical in 2023, and no significant deviation was observed in the types of infringements. The root cause of such violations is clear: agricultural labor often requires a high degree of flexibility. Work is frequently weather-dependent and, therefore, difficult to plan with precision. The sector also commonly experiences employee unreliability, such as unannounced absences, which further complicates scheduling. However, these operational realities do not exempt employers from complying with labor law obligations. Moreover, because working time violations are often poorly documented or obscured, it becomes virtually impossible to detect overtime violations, meaning the actual level of worker rights violations is likely significantly higher than reported.

Violations concerning working time records are closely linked to those related to working hours and rest periods. In fact, the failure to maintain accurate and complete records is both a symptom and a facilitator of broader non-compliance with labor standards. In 2024, working time record violations affected 7,348 employees, representing a decrease compared to 9,922 in 2023. As with the previous data, no sector-specific figures are available for agriculture.

According to the supervisory authority, such violations are common across most sectors, though enforcement actions were most pronounced in trade, manufacturing, and construction. The most frequently observed forms of non-compliance include[34]:
- Failure by employers to recognize the legal importance of accurate, real-time, and verifiable working time records;
- Neglect or misunderstanding regarding the requirement to maintain records even for employees on regular (general) working schedules;
- A high probability that record-keeping omissions serve to conceal other violations, such as entitlements to wage supplements, actual levels of overtime, and infractions concerning daily working hours or rest periods.

The detection of violations related to working time records is particularly important, as such infringements may serve to conceal broader irregularities concerning

34 | Report of the Employment Supervision Authority 2024, 8.

wages, working hours, and rest periods. In the absence of accurate or complete records, it is impossible to verify compliance with legal obligations related to daily and weekly rest, work performed on public holidays, and the payment of wage supplements. Consequently, the lack or inadequacy of time records indirectly infringes upon workers' fundamental rights.

4.3. Violations related to remuneration

In 2024, legal violations concerning remuneration were identified in relation to 6,589 employees, marking an increase compared to 5,683 in 2023. No agriculture-specific data are available for this category. The typical violations observed in 2024 remained consistent with prior years and included[35]:

- Failure to pay wages on time,
- non-compliance with payslip and wage accounting obligations,
- Failure to pay mandatory wage supplements (e.g., overtime, night work, holiday work)

According to the supervisory authority, non-payment of wage supplements often resulted from employers' or payroll administrators' insufficient understanding of applicable legislation, although payroll errors and intentional non-compliance by employers were also identified as contributing factors.

In several cases, the authority found that the wage statements provided to employees were non-compliant, as they failed to indicate which supplements had been paid in addition to base salary. As a result, the payslips were not suitable for verifying the accuracy of wage calculations.

Another recurring issue was that wages were paid in cash without a written agreement, even though, as of 1 January 2023, a written agreement on the method of payment is mandatory under Hungarian labor law. Despite this requirement, many employers continued to pay wages in cash without formal documentation.

4.4. Other types of violations

The supervisory authority also distinguishes a separate category of so-called 'other violations', which are not directly classified under the standard categories of labor law non-compliance. This category includes the following factual patterns:

Some violations were related to the failure to issue statutory documents or to complete final settlements upon the termination of the employment relationship. These situations frequently arose from disputes between the employer and the employee, such as disagreements at the time of termination, with employers

35 | Ibid., 9.

intentionally withholding final payslips or employment certificates, or instances where the employer ceased operations or could not be located by the employee either at the registered office or the place of work.[36]

A notable portion of these violations involved non-compliance with vacation (leave) entitlements. The number of affected employees increased from 998 in 2023 to 1,892 in 2024. The two most common irregularities in this area were that:

- the employer recorded leave in the register but did not actually grant it, requiring the employee to continue working during the supposed leave period; and
- a failure to ensure a continuous 14-day period of annual leave, as required once per calendar year under the Labor Code.

Employers often attempted to justify these violations by referring to their economic situation, unexpected orders, or unforeseen circumstances, or by claiming that employees were unwilling to take their leave.[37]

4.5. Summary data and conclusions

Each year, following the qualitative discussion of labor violations, the supervisory authority also summarizes its findings in quantitative form. This was done in both 2023 and 2024. The key data are as follows:

- In 2023, 6.7% of all labor inspections targeted the agricultural sector (906 inspections). These resulted in 548 enforcement actions and 137 administrative fines, totaling HUF 34,575,400. Of the 3,368 employees inspected, 1,909 were affected by some form of legal violation, including 534 cases of undeclared employment.[38]
- In 2024, 4% of all labor inspections were conducted in the agricultural sector (487 inspections). These resulted in 557 enforcement actions and 106 administrative fines, amounting to a total of HUF 66,036,800. Among the 2,351 employees inspected, 1,657 were affected by legal violations, of whom 457 were employed without proper registration.[39]

Despite its inherent risks, simplified employment and casual work remain widespread practices in the agricultural sector. Employers frequently reported difficulties in finding suitable workers and stated that they often 'test' new hires through simplified employment arrangements. However, in many cases, employees fail to appear at the work site despite prior agreements, which complicates not only workforce planning but also the timely registration of employment relationships. Employers also cited the seasonal nature of agricultural work and the

36 | Report of the Employment Supervision Authority 2024, 10.
37 | Ibid., 12.
38 | Report of the Employment Supervision Authority 2023, 19–20.
39 | Report of the Employment Supervision Authority 2024, 15–16.

unpredictability of labor demand as reasons for delayed or omitted registration, noting that advance workforce planning is often not feasible.[40]

Among all categories of violations within agriculture, the highest number of affected workers was recorded for non-compliance with working time record-keeping rules (661 individuals). This was followed by violations related to working hours (457 individuals), undeclared employment (457 individuals), and wage-related violations (265 individuals).[41]

This dataset provides a stark illustration of the deeply concerning state of employment practices within the agricultural sector. Between 60% and 70% of the employees inspected were subject to some form of legal violation – and this reflects only the identified cases. Given the prevalence of concealed infringements and manipulated documentation, the true extent of non-compliance is likely even greater.

Despite the fact that agriculture was a targeted focus of inspections in 2023 – with 906 inspections conducted and more than 100 administrative fines imposed—the situation did not improve in 2024. In fact, although the number of inspections was somewhat lower, key indicators deteriorated, suggesting that the current system of state enforcement and sanctions is not effective in fulfilling its primary function: ensuring lawful employment.

5. Social conditionality

The preceding overview of the specific and distinctive circumstances of the agricultural sector was necessary in order to illustrate the state of agricultural employment at the time of the changes introduced by the Common Agricultural Policy (hereinafter: CAP). For the 2023–2027 programming period, the CAP has determined that a fairer distribution policy shall be implemented. One of the fundamental elements of this fairer CAP is social conditionality. Under this framework, beneficiaries are only entitled to receive CAP payments if they comply with certain EU labor standards, thereby encouraging them to improve working conditions within their operations.[42]

Accordingly, those are entitled to receive common agricultural support who ensure the minimum labor law guarantees required by the EU. In the interest of fair competition and trade, it is essential to prevent workers in this sector from becoming victims of exploitation.

40 | Ibid., 16.
41 | Ibid., 16.
42 | Common Agricultural Policy 2023–2027, https://agriculture.ec.europa.eu/common-agricultural-policy/cap-overview/cap-2023-27_hu (Accessed: 30 April 2025).

This is a key principle of fairness defined at the EU level, which would require a level of legal awareness on both the employer and employee sides – a level that is currently lacking in this sector. This presents a serious problem that extends beyond the issue itself, since Regulation (EU) 2021/2115 of the European Parliament and of the Council and Regulation (EU) 2021/2116 of the European Parliament and of the Council will need to be applied from 1 January 2025 in relation to social conditionality.

At the time of finalizing this manuscript, the Hungarian implementing legislation was not yet in force. The Hungarian government had just completed the public consultation process regarding the text of the national regulation.[43] This, however, is only partially problematic, since in the EU, a regulation constitutes a secondary source of law that does not require national legislative action to become effective. It is a legal act defined in Article 288 of the Treaty on the Functioning of the European Union (TFEU), which has general application, is binding in its entirety, and is directly applicable in all Member States.[44]

At present, if we wish to apply the rules of social conditionality, we can rely solely on the text of the regulation. Currently, agricultural employers are not prepared (or more accurately, have not been prepared) to comply with this new system of responsibility. If they fail to meet the requirements, they risk losing their entire annual support.

Looking at the number of employers already found to have committed violations, and assuming no change in practices, compliance would become problematic for approximately half to two-thirds of businesses in the sector, particularly those belonging to the SME segment. This possible outcome would bring about two further consequences.

First, it may be advisable to organize educational training campaigns for employers in the interim period until the Hungarian implementing rules enter into force. Ideally, such training should be organized jointly by the ministry responsible for drafting the legislation and the agricultural chambers. Without training, businesses would be confronted with a new set of requirements for which they are entirely unprepared.

Of course, one might argue that ignorance of the law is no excuse, and that labor law rules should have already been applied properly. However, in the agricultural sector, we are dealing with a chronic, decades-long pattern of non-compliance, which in itself poses a national economic risk. Agriculture is one of the few remaining sectors in which Hungary still receives EU payments. If widespread inspections were to be carried out under the current state of compliance, many businesses would fail to meet the standards.

43 | https://kormany.hu/dokumentumtar/szocialis-feltetelesseg-rendszerenek-bevezeteserol-szolo-rendelet (Accessed: 30 May 2025)
44 | Article 288 of the TFEU.

Thus, two major interests are in conflict. On the one hand, there is the EU's legitimate expectation that payments should only be disbursed to those who provide fair working conditions for their employees. On the other hand, the Hungarian state's interest is that inspections be deferred during the transitional period, and that the implementing regulations define broadly interpreted exemptions to ensure flexibility. Accordingly, the organization of educational initiatives should be considered a priority task

This reflects a national economic interest – namely, that as much funding as possible be drawn down from available EU support instruments.

However, these two interests do not necessarily have to be in conflict. They could, in fact, be mutually reinforcing, in a spirit of rigorous enforcement paired with adequate preparation. A win-win scenario could emerge, whereby the guaranteed use of agricultural support is built upon the foundation of fair employment practices.

At present, a significant portion of businesses do not even fully understand the current regulatory framework, which makes it all the more difficult for them to cope with a new one.

In the following section, we provide an overview of the framework established by the applicable EU regulations.

5.1. What is social conditionality?

Since the historical roots of this legal instrument are not widely known, it is useful to proceed step by step. Accordingly, the first step is to define conditionality itself. According to Recital 66 of Regulation (EU) 2021/2116, conditionality is a key element of the Common Agricultural Policy (CAP). It is the component that ensures CAP payments promote a high degree of sustainability and provide a level playing field for agricultural producers both within Member States and across the Union. The need to establish equal competitive conditions is emphasized particularly with regard to the social, environmental, and climate-related components of the CAP, as well as in the areas of public health and animal welfare.

To this end, (labor) inspections must be carried out, and where necessary, sanctions must be applied in order to guarantee the effectiveness of the conditionality system. The relevant section of the regulation also stresses that, in order to ensure such equal conditions for beneficiaries across the various Member States, certain general rules must be introduced at EU level concerning conditionality, inspections, and sanctions for cases of non-compliance. In this regard, Recital 69 of Regulation (EU) 2021/2116 highlights the importance of basing the social conditionality mechanism – particularly concerning working and employment conditions, and especially their monitoring – on enforcement procedures carried out by the competent implementing authorities or bodies responsible for the inspection of applicable labor standards.

The regulation itself acknowledges that different national practices exist in the various Member States. For this reason, the relationship between paying agencies and labor inspection authorities is of decisive importance. The same legal provision also underscores the importance of communication between these authorities. Beyond communication, it is almost a principle-level requirement that the inspecting authority and the paying agency function as two separate entities. These entities form part of the established control system.

According to Article 83 of the aforementioned regulation, existing national control systems may continue to be applied, provided they comply with the legal requirements. In the Hungarian regulation submitted for public consultation, this should not pose significant complexity, as labor inspection authorities have already been monitoring agricultural employers in accordance with the applicable procedural rules, and have previously operated independently from the paying agency.

5.1.1. Possibility of imposing sanctions in cases of non-compliance

Article 88 of Regulation (EU) 2021/2116 stipulates that the paying agency must be notified at least once per year of cases of non-compliance in which a legally binding decision has been issued by the labor inspection authority. This notification must include an assessment and classification of the severity, extent, persistence or recurrence, and intentionality of the non-compliance in question. Member States may use any relevant national classification system for labor law sanctions when performing this assessment.

According to the Regulation, the paying agency is to be notified only if the non-compliance is directly attributable to an act or omission of the beneficiary, and if the non-compliance is related to the beneficiary's agricultural activity, or to an agricultural holding as defined in Article 3(2) of Regulation (EU) 2021/2115, or to other areas under the beneficiary's management situated within the territory of the same Member State.

The Regulation provides that Member States may refrain from applying sanctions in cases of minor infringements, where the total amount of the sanction would not exceed EUR 100 per calendar year. However, this does not mean that the infringement would not be established; no separate sanction is imposed, but the party concerned must implement the necessary corrective measures to eliminate the infringement.

Subsection 4(6) of the Hungarian regulation adopts this rule, stating that if the total reduction in support due to non-compliance does not exceed the HUF equivalent of EUR 100 in the given year, the National Paying Agency (hereinafter: NPA) shall refrain from imposing a sanction. The NPA must inform the beneficiary of

this fact, as well as of the measures necessary to avoid similar non-compliance in the future.[45]

From the above, it follows that an objective liability system is applied in order to ensure that businesses in the agricultural sector comply with the rules of social conditionality. Regulation (EU) 2021/2116 identifies only two exceptions to this liability: force majeure, and cases in which the non-compliance results from instructions given by a public authority. In all other cases, liability is established, though it does not always entail a sanction.

However, if a sanction is imposed, the EU regulation allows Member States a relatively broad margin of discretion. Article 89 of Regulation (EU) 2021/2116 specifies that in calculating reductions and exclusions, the following factors must be taken into account: the severity, extent, persistence or recurrence, and intentionality of the established non-compliance. These assessments must be consistent with the evaluations referred to in Article 87(2) of the same regulation. Administrative sanctions must be effective, proportionate, and dissuasive.

The Hungarian regulation has established a multi-step framework for cases in which multiple non-compliance events occur in a given year or in two consecutive years. This does not exclude the possibility that a single infringement may also justify a reduction in support. In any case, the Hungarian legislator appears to anticipate a high number of repeat offenders, which is a realistic assumption given the previously cited statistics.

Nevertheless, the Hungarian regulation does not foresee the full withdrawal of support, even in the most serious cases. As a general rule, 8% of the support is to be withheld, with additional correction factors applying in the case of repeat offenders.

5.1.2. What exactly constitutes non-compliance with social conditionality?

Annex IV of Regulation (EU) 2021/2115 contains the main employment law situations and scenarios, the non-compliance with which constitutes a violation of social conditionality. The Regulation interprets breaches of the following directives as constituting such a violation:

- Directive (EU) 2019/1152 on Transparent and Predictable Working Conditions
- Directive 89/391/EEC on Measures to Improve the Safety and Health of Workers, and
- Directive 2009/104/EC on Minimum Safety and Health Requirements for the Use of Work Equipment by Workers.

45 | Decree of Ministry of Agriculture No. 29/2025 (VII. 22.) on the introduction of the social conditionality system.

The Hungarian regulation places these provisions into its own assessment framework, as permitted under Article 87(2) of Regulation (EU) 2021/2116. Within this assessment system, the regulation defines what type of violation constitutes the basis of non-compliance in a given case. It also classifies the degree of non-compliance, essentially based on whether the consequences remain within the farm or extend beyond it.

Under EU provisions, 19 employment-related, 82 occupational safety, and 7 other requirements have been classified according to their severity, scale, and duration. In terms of severity, violations may be classified as negligible, minor, moderate, or serious. In the text of the regulation available at the time of closing this manuscript, the number of minor and negligible violations was comparatively higher. Regarding duration, the classification distinguishes between violations that are short-term and remediable and those that are long-term and remediable.

The reasoning attached to the regulation does not explain on what basis the severity of individual breaches was determined. However, it is discernible that the underlying state interest was to ensure the maximum possible disbursement of funds, which is understandable given the current relationship between the EU and Hungary.[46]

5.2. Social compliance as a case of sectoral CSR regulation

When examining the applicable rules, a special system of legal responsibility emerges – one that extends well beyond the boundaries of legal regulation and forms a complex system of accountability. This current situation aligns with the EU's broader direction of reinforcing social responsibility.

Social compliance possesses a clear legal dimension, yet its economic role – in promoting equal opportunities among Member States – is no less significant, and its ethical implications are equally important.[47]

The regulation seeks not only to bring transparency to agricultural employment, but also to establish a win-win scenario in which one of the indirect goals is to improve the conditions of the most vulnerable workers.

Social compliance can thus be interpreted through the lens of Carroll's CSR pyramid. The first and most fundamental social responsibility of business is economic in nature – this forms the base of the pyramid.[48] Just as society has legitimized the economic system by allowing businesses to assume a productive role, the fulfillment of the 'social contract' has also defined the basic rules – laws and regulations – under which business activity is expected to operate. Society expects businesses to pursue their economic mission within the framework of

46 | While this aspect is not explored in detail within the scope of the present study, we intend to initiate further research in this direction in the future.
47 | Yu et al. 2023.
48 | Szgedi, Fülöp & Bereczk 2017.

legal compliance. From Carroll's pyramid, it clearly follows that lawful conduct alone is not sufficient, but no authentic form of CSR can exist without full legal compliance.[49]

6. Recommendations for improving employment in the agricultural sector

In light of the above, it is particularly noteworthy that the introduction of social conditionality can be understood as the indirect implementation of CSR principles in the agricultural sector—however, unlike previous EU practice, this is no longer introduced in the form of soft law, but rather as hard law. What is especially significant is that the regulation does not differentiate based on the size of the enterprise; instead, it introduces a universal rule that must be followed by all entities—from micro-enterprises to multinational corporations.

At this stage, it remains unclear to what extent the new rules will improve compliance with labor standards. In designing the sanction system, the state sought to ensure that the previously noted 70%+ rate of employer non-compliance would not lead to the collapse of the agricultural sector in the very first year of implementation. That could not – and should not – be the intention of the EU regulations either.

However, it is a realistic and legitimate aim that, given the high intensity of financial support provided to this sector, certain expectations of social compliance and conditionality should be articulated.

For this reason, the role of the Hungarian state extends beyond mere implementation; it also includes the launch of an educational campaign to inform agricultural employers about the nearly 100-point employment compliance framework, in light of which they must restructure their operations and abandon outdated practices.

We also consider the establishment of a mentoring program to be a viable option, in order to enhance the effectiveness of this educational effort and to complement the state's inspection and enforcement functions. Engagement with 'social' issues seeks to achieve greater equality by reducing unacceptable levels of inequality.[50] This objective was undoubtedly necessary in the agricultural sector.

49 | Kun 2009.
50 | Moudud 2025, 142.

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Bernadett SOLYMOSI-SZEKERES[1]

Towards Full Employment? The Idea of the Job Guarantee in Europe and the Solution of Hungary[2]

Abstract

The growing phenomenon of unemployment is holding back the development and performance of the European Union as a whole, especially long-term unemployment. In view of this, governments are trying to promote employment in various ways, to which the idea of a job guarantee scheme now seems like a holy grail. Both the foreign literature and the social partners see this as a solution, and the paper will therefore present the essence of this concept, its implications and characteristics, particularly with regard to green and sustainable employment policies. It will then be compared with similar Hungarian public employment schemes, which have been in existence for several years, thus highlighting the potential weaknesses and challenges of the 'new' concept.
Keywords: Employment Policy, Job Guarantee, Green Jobs, Sustainable Employment

1. Introduction

Modern economies face a well-known paradox: high unemployment, while untold social and environmental needs remain unmet. The global concept of sustainability addresses both sides of the paradox and has expectations for them. However, the environmental impact of the economy is largely determined by what, how and when we work.[3] Making labour market policies more environmentally friendly can facilitate the transition to a sustainable economy. Paradoxically, the climate crisis and the jobs crisis cannot be solved in isolation, so integrated solutions such

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2 | The present study was carried out in the framework of the research grant SNN 146842 funded by the National Research Funding Agency for the Promotion of Science and Technology (NKFIH).
3 | The work and human rights are tightly connected. See Orosz 2020.

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as green labour market policies are needed.[4] The private sector is unlikely to be able to fill these gaps, mainly for economic reasons. Tcherneva and Lalucq see the reason for the failure of the competitive sector as the lack of sufficient commercial profit or return on the potential capital invested in it. This raises the question of the public sector's duty to act. The question is how this can be done in a way that is both a means of combating long-term unemployment and also serves a more holistic purpose, rather than just artificially eradicating unemployment. In this context, we will examine an emerging international concept, the job guarantee scheme, which has gained momentum in the academic and social partner discourse in recent years. Indeed, Tcherneva and Lalucq argue that the job guarantee links needs with resources and addresses both problems at the same time: creating stable and decent jobs for all job seekers in neglected areas of social and environmental need.[5] Unti captures it as a policy that decouples employment from economic growth and opens the way to reconciling economic and environmental goals.[6] The concept is not new, however, and a specific form of it has already been implemented in Hungary. The idea behind the concept can only be shaped by examining the good and bad practices that have been implemented, so it is particularly useful to present the Hungarian national employment system, which would also support full employment. An important question is whether the Hungarian concept is in line with the job guarantee scheme to be presented, and what useful conclusions can be drawn from this practice in Central and Eastern Europe for the international search for solutions.

2. On long-term unemployment in the light of recent economic and environmental sustainability

The past decades have brought many challenges for the labour market and the economy. In the 2000s, several EU countries saw government policies to raise taxes, and EU authorities increasingly scrutinised the financial rules of the Maastricht Treaty. By 2010, these austerity measures were being increasingly imposed on Member States, with wage moderation and tax increases. This process particularly hit those members of society who were most vulnerable, for example, because of the large number of loans taken out. The tightening conditions even had the effect of reducing the economic activity of the legal and natural persons concerned for years, pushing them into economic bankruptcy and unemployment.[7] In 2020, 96.5 million people in the European Union were at risk of poverty or social exclusion (22% of the EU population). Almost a third of them lived in low labour-intensive

4 | Bohnenberger 2022.
5 | Tcherneva & Lalucq 2022, 8.
6 | Unti 2018.
7 | Antonopoulos 2023.

households. The subsequent COVID period also had an impact on the world of work. Although the national labour market situation improved after COVID, 13.3 million people were still unemployed (6.2 per cent in January 2022), including 2.5 million young people (representing 14 per cent of young people).[8] Over the past decade, the share of the labour force inactive for more than a year has been between 40% and 55%, according to EU studies. Another sad fact is that the eurozone crisis has led 14 million EU citizens into long-term unemployment.[9]

Tcherneva and Lalucq argue that the European continent is used to high and fluctuating levels of unemployment. At the same time, the pandemic has prompted governments to intervene more in public finances to support society, with the EU Commission joining in, supporting Member States with the SURE programme to the tune of almost €100 billion.[10] The SURE programme is an EU programme to fund short-term employment programmes across the EU and keep people in work during the coronavirus pandemic.[11] This intervention served a noble purpose, but it was clear that this support only solved the problems in the short term, a sustainable and resilient EU needed and should have supportive policies focused on citizens. However, the EU is not yet showing strong progress on long-term unemployment. Despite the efforts made by the European Union and its Member States, unemployment and poverty in Europe have become more and more pervasive over the last decades. Unemployment is now a pervasive and dominant force structuring European labour markets. The lack of job opportunities has created a lost generation of young people, while the unemployed find it even harder to find work again. Policies so far have not been able to help significantly. On the social partners' side, the ETUC has come to the conclusion (confirmed by the literature)[12] that the private sector alone cannot generate enough jobs and therefore cannot tackle the problem, just as current national policies are struggling to do so.[13] These challenges, therefore, make the problem of long-term unemployment significantly more complex.

Long-term unemployment is a challenge in the European Union that has been persistent in the Member States for a long time, and the underlying phenomenon is highly complex. On the one hand, unemployment is a monetary problem, a consequence, in Tcherneva's view, of the dynamics of business cycles and the behaviour of profit-oriented companies, as well as of the inadequate management of the currency and the monetary system by the state.[14] However, the phenomenon has a much wider impact than first thought: it affects the unemployed person, their whole household, their community and, if it spreads, the growth and stability

8 | Tcherneva & Lalucq 2022, 3.
9 | Antonopoulos 2024, 8.
10 | Antonopoulos 2023.
11 | European Commission n.d.
12 | Tcherneva 2018, 2.
13 | European Trade Union Confederation 2023.
14 | Tcherneva 2018, 2.

prospects of the economy.[15] Indeed, long-term unemployment has a number of consequences, ranging from loss of income, increased risk of poverty, social exclusion, loss of image and image, physical and mental ill health, not forgetting, for example, feelings of isolation and despair, loss of confidence in democracy, and even, according to Dréze and Sen's research, a tendency to join radical movements.[16] Moreover, the phenomenon of unemployment is having exponentially increasing adverse effects in the context of the climate crisis: the climate crisis has resulted in hundreds of billions of euros in economic losses, reduced working hours, heat-related illness and injury,[17] and reduced labour productivity.[18] And the climate crisis will, according to Tcherneva and Lalucq, exacerbate the already high levels of decent work inequalities across Europe.[19]

3. The job guarantee programme

Addressing these problems will require an innovative policy approach that is uniquely suited to address these ills while providing a number of critical structural macroeconomic benefits. Central to this approach in the current foreign literature is a demand-driven, direct job creation programme, the so-called job guarantee programme.[20] This concept is not only found in academic research but is also supported by the major international social dialogue.[21] However, it is important to understand what is meant by the term job guarantee, which essentially singles out the competitive sector as the solution to the problem outlined above, since, as Tcherneva notes, it actually embodies the responsibility and failure of the public sector.[22] This also reflects more than fifty years of opinion, for example Lerner in 1944 and 1951, who argued that the state has a duty to generate jobs when the market fails to do so.[23] In addition, it is not only the responsibility of the state to act on these issues, but also the goals to be achieved that define the state's role. Godin captures this as governments perhaps having a better view of the best direction for the economy, which is to the benefit of all. Climate change is a good example of such a case. What society needs is a government that can both influence the structure of the economy and steer it in a way that would benefit everyone.[24]

15 | Antonopoulos 2024, 5.
16 | Ibid., 7.
17 | In this regard, the disability policy reforms are needed. See Jakab 2024.
18 | Labour law and the climate crisis are in a tight connection. See Barański, Jaworska and Piszczek, 2022.
19 | Tcherneva & Lalucq 2022, 4.
20 | Ibid., 5.
21 | European Trade Union Confederation 2023.
22 | Tcherneva 2018, 3.
23 | About Lerner, see Lernen 1944; Lerner 1951; Lerner is cited by Godin 2012, 2.
24 | Godin 2012, 7.

Antonopoulos defines this phenomenon as a public interventionist policy that interrupts joblessness, finances it and creates opportunities for those who are looking for work but are unable to find paid employment to work and earn a regular income by directly providing jobs.[25] Tcherneva conceives it as a permanent, state-funded and locally-managed programme that provides voluntary work opportunities on demand for all those who are ready and willing to work for a living wage. While primarily an employment programme, it is transformative in promoting public goals, improving working conditions, people's daily lives and the economy as a whole.[26] Through these impacts, it is also intrinsically linked to sustainability.[27] Lalucq and Tcherneva highlight environmental sustainability in this context. They argue that a jobs guarantee would reduce the significant costs and harmful effects of unemployment, while providing the workforce and the public sector with the capacity to immediately address the social and environmental challenges facing communities. This can be achieved by creating jobs in areas of unmet social need, with a particular focus on care and environmental services. As such, job guarantee is a key element of an effective environmental strategy, not to mention its positive impact on a just transition of the workforce.[28]

Tcherneva and Lalucq stress that unemployment is not an individual problem that can be solved by training alone, but a systemic problem that requires direct job creation. Unemployment has significant economic and social costs, including reduced productivity, increased public expenditure and negative health effects. The solution is a job guarantee scheme that offers stable employment while acting as an automatic economic stabiliser. Unlike traditional policies, which accept unemployment as a means of containing inflation, the job guarantee ensures full employment without inflationary pressures, promotes income equality and enhances community well-being. By redirecting public spending towards job creation rather than alleviating the consequences of unemployment, such a programme would provide long-term economic and social benefits across Europe.[29]

The concept has historical roots, since its theoretical origins can be traced back to the theories of Keynes and Beveridge.[30] This idea has basically taken off from various grassroots work guarantee schemes in the recent past, with international documents stressing its importance, such as the UN 2023 report, but we can also observe EU-level acts. Thus, the European Committee of the Regions of the European Union has proposed the first EU-level policy intention to support European institutions and local solutions to tackle long-term unemployment. This document of May 2023 was followed by a document from the European Parliament

25 | Antonopoulos 2024, 8.
26 | Tcherneva 2018, 2.
27 | Ibid., 4.
28 | Tcherneva & Lalucq 2022, 1.
29 | Ibid., 8.
30 | Antonopoulos 2024, 8.

in November 2023, which sought to achieve the same objective by supporting local pilot schemes, but with explicit reference to existing job guarantee schemes and pilot projects. This was followed in December 2023 by the European Trade Union Confederation (ETUC), which also expressed its support for this intention. It explained the importance of state-built programmes for people who are unable to find opportunities in the open labour market.[31]

3.1. Features of the job guarantee

What is the ideal job guarantee scheme? On this point, we can observe different features in foreign sources. First of all, it should be stressed that the aim of a job guarantee is to provide decent jobs at decent wages, on demand, for all people of working age who want to work, regardless of their labour market status, race, gender, colour, etc.[32] According to this approach, the jobs guarantee is an effective tool towards an inclusive labour market[33] and against long-term unemployment, by offering a stable job and wage to those who can't find work on their own. Tcherneva sees this as a kind of employment policy safety net.[34] These community-funded jobs could support public needs at the same time, thus realising the need for social responsibility, collective responsibility and fighting social exclusion. These programmes could even be combined with the concept of life-long learning, also based on the Greek model, where 4 days of work and 1 day of training are combined since 2016 to date.[35] ETUC also believes that these jobs can be tailored to individual career goals.[36] However, unlike previous programmes, this is not a short-term, piecemeal approach to job creation.[37]

At the same time, it is important that these job opportunities contribute to fair work, with decent wages, job security, respect for work-life balance and access to collective bargaining.[38] This employment is also envisaged on a voluntary basis, within which no sanctions would be attached to refusal to participate (for example, access to job-search grants would not be hindered by refusal to participate in the programme).[39] Furthermore, the sustainability payoff should be seen in the additional aspects. Firstly, it should be noted that the 2016 Paris Agreement clearly states that climate justice is based on human rights and the need for a just transition of labour and the creation of decent work and quality jobs, in line

31 | European Trade Union Confederation 2023.
32 | Tcherneva 2018, 4.
33 | European Trade Union Confederation 2023.
34 | Tcherneva 2018, 4.
35 | Antonopoulos 2023.
36 | European Trade Union Confederation 2023.
37 | Tcherneva & Lalucq 2022, 10.
38 | European Trade Union Confederation 2023.
39 | Ibid. Godin also points to the voluntary nature. Godin 2012, 2.

with nationally determined priorities.[40] In this respect, employment policy is closely linked to environmental sustainability, and a new publicly funded programme should take this link into account. In this respect, Antonopoulos makes the connection by suggesting that his job guarantee scheme could serve other purposes besides eliminating unemployment, such as environmental considerations, filling labour shortages in the care sector, or even supporting the digital switchover.[41]

Tcherneva and Lalucq provide more detailed arguments for the former, starting with 'green jobs'.[42] Green jobs are a priority in the fight against unemployment and the environment. Green jobs reduce the environmental impact of businesses and economic sectors, ultimately to sustainable levels.[43] There is a lot of 'invisible' environmental work that is labour-intensive and can be done by people with different skills. This work needs to be done on an ongoing basis and could provide the jobs needed without competing with the private sector.[44] According to Tcherneva and Lalucq, environmental protection, remediation, restoration and preparation are areas where the job guarantee works well. The job guarantee is therefore inherently a green policy, not only because it is integrally linked to the climate movement, but also because it addresses the neglect and waste associated with economic hardship, unemployment and precarious work. In addition, local environmental sustainability concerns can be pursued, as the jobs guarantee would focus on the co-creation process, allowing local and community stakeholders to create employment opportunities that are tailored to the skills of the participants and the needs of the area where the project is located.[45] In Australia, the concept of job guarantee is also promoted through its carbon negative function,[46] as in China, ecological goals are emphasised.[47]

Tcherneva sees three strategic objectives of caring in the context of the job guarantee: caring for the environment, caring for the community and caring for people. The first is explained in more detail above. Caring for the community can also be interpreted in many ways: cleaning up community areas, restoring community spaces, creating school gardens, but also in the context of reforestation, food rescue and other community interest activities. Finally, caring for people is the third identified objective. This includes the issue of long-term care, which is facing a serious shortage of professionals and systemic fragmentation across Europe, but can also include care and awareness-raising for people with disabilities

40 | United Nations 2015.
41 | Antonopoulos 2023.
42 | Tcherneva & Lalucq 2022, 8–10.
43 | Godin 2012, 2.
44 | Tcherneva 2018, 17.
45 | Tcherneva & Lalucq 2022, 8–10.
46 | Sustainable Prosperity Action Group 2022, 2.
47 | Huang 2024.

through the organisation of education programmes and active participation at work level.[48]

4. The job guarantee as an ideologised concept and Hungarian public employment

The problems outlined in the first part of the paper were already present in the Hungarian labour market with relatively high intensity before the Job Guarantee was formulated. One reason for this is that the full employment bubble burst after the change of regime.

Prior to the change of regime, everyone had a job, and anyone who did not was punished by the criminal law as a public nuisance.[49] The then state socialist model developed a protectionist model that created unemployment within the factory gates. The number of people in employment grew steadily until it reached the natural limits of a closed national labour market, after which chronic labour shortages set in. As a result, more and more additional labour and working time had to be brought in to meet the needs of farms and households outside the main working hours and outside the jobs in large firms. In these circumstances, open unemployment was an unknown concept until the late 1980s.[50] The state has completely subordinated the labour market and employment policy to political-ideological goals. But this unemployed mass only came into the sunlight as a result of the transition to capitalist production. With the collapse of the heavy industry of the past, an employment and social crisis emerged. The result of this crisis was that a significant working-age but inactive group was permanently excluded from the labour market. Many of them live in areas where industry has not been rebuilt since the change of regime, but where the market for services has not really developed and agriculture is not well organised. Social welfare systems have tried to compensate for this, but this has made them even more incapitalised. If we look at these groups excluded from the labour market, we can often detect generations of inactivity since the change of regime. From 2010 onwards, the legislator saw the solution to this problem in the reorganisation of the public employment system. As Csehné explains, the design of the public employment system was aimed at ensuring that those excluded from the labour market could acquire a work career through socially useful, value-creating forms of employment that would help their subsequent reintegration into the labour market.[51] The idea is that public employment will be the bridge between the current situation of people excluded from the labour market and their access to the primary labour market. Public employment,

48 | For the goals, see: Tcherneva 2018, 19.
49 | Vavró 1984.
50 | Csehné 2020.
51 | Ibid.

under different names, has been a constant feature of Hungarian employment policy since 1987. But it has been more prominent since 2010, when the change of government brought a paradigm shift in the employment issue.[52] This change is the image of a work-based society.[53] This brings with it the ambition of full employment, which is a relevant goal, as it is also the aim of EU employment policy. The question in this case is how the state intends to achieve this goal. The legislator has tried to address this through a number of employment policies and social benefits until it arrived at the current form of public employment. The EU has also gone a long way in creating the Job Guarantee Scheme. But the issue is the same for both schemes. How much public intervention can be allowed to achieve employment policy goals? To what extent are individual interest and social mobilisation linked?

For this type of public employment programme, the aim is to create a win-win situation. After all, if it actively helps a passive group in the labour market and successfully activates it, new revenues are generated at the social level. The benefits paid so far are replaced by contributions and taxes. Presumably, this work pays a higher wage than the amount of benefits paid, so it also stimulates consumption. The positive effect at the level of the individual can also be assumed, as it is better for the individual to receive a wage instead of a benefit. However, at the level of the individual, there are also several issues that will be discussed when comparing the two schemes. One question is what is the appropriate wage for such a scheme, and whether public intervention in the public interest can override the fundamental constitutional right to free choice of work and occupation?

5. Is Hungarian public employment a job guarantee scheme? Open questions and risks

As explained above, the job guarantee scheme is a demand-driven direct employment policy programme. This means that the aim is to meet labour needs, i.e. to bring supply and demand together. In principle, this scheme would serve real labour market needs. Looking at the issue from this perspective, this programme can be good for the public good without significantly reducing the individual's right to work. They are free to choose from the existing supply. The right to work guarantees the constitutional protection of freedom of choice and not the right to actually hold a particular occupation. In this context, the main objective is not to cosmeticise employment rates. Public employment, by comparison, is not a demand-driven employment policy instrument, but a (plan) programme-driven employment policy instrument. Municipalities could/may apply for public employment support. But often for pre-defined projects and related forms of work.

52 | Lipták 2023.
53 | Ferge 2017.

However, some of the applicants do not apply because there is a real need to do so in the municipality, but in order to be able to provide public works for the people. This means that work organised in this way does not always lead to value-added work. In this system, 'patyonkim' programmes are often implemented. In the case of public employment, free choice of work within the programme is not realised. Applicants win a framework for a specific activity and employ public workers for the tasks related to it. These jobs typically involve manual work. According to the report of the Hungarian Anti-Poverty Network, most of the participants in the public employment programme consider their life situation hopeless, public work, which is nothing but a hopeless forced labour, does not offer them any opportunities and is far from lifting them out of poverty.[54] The interviewees interviewed by the authors know that they have no other choice if they do not want to take home the 'aid' that is transferred to the social projection fund. More importantly, they do not want to be 'excluded' from the benefit and public employment system. This is linked to the fact that, especially in smaller municipalities, feudal or semi-feudal ties and relationships are being formed in public employment. Public employment is reported to lead very few people back into the primary labour market.[55] It prevents the majority from looking for work and other income-generating activities. This, in part, carries with it the answer to the question on social mobilisation, which is that public employment does not address the issue of actually promoting social mobilisation. Public employment is a stigmatising form of employment, the performance of which is generally associated with the Roma population. This is the case even if public employment does not only involve physical work and is not only carried out by Roma. And a significant proportion of those in public employment are stuck in the cycle of public employment and the payment of employment substitution allowance (ESA). As long as there is enough work, people are in public employment; if there is not enough work, say in the winter, the majority of people receive ESA. This is a trap situation that must be avoided when implementing the job guarantee scheme. But in any programme where we talk about a state-guaranteed wage, we always talk about a lower wage level. In this respect, public employment is a job guarantee scheme. But in our view, within that, it is also a good example of how to set the wage policy for such a programme. The peculiarity of the definition of wages in public employment is that the legislator does not consider this form of employment as an employment relationship. Rather, the legislator considers it a special form of social benefit. The public employment wage is 50% of the minimum wage according to the relevant government decree. In these cases, work that can be done without qualifications is remunerated. The guaranteed wage for public employment is 50% of the guaranteed minimum wage under the above-mentioned

54 | Farkas, Molnár & Molnár 2014.
55 | Ibid.

regulation. This is paid work requiring at least a secondary education.[56] Considering that the minimum wage in a given society is a minimum amount sufficient to cover basic needs, the public employment wage is well below this. To summarise all these issues, the following points summarise the prospective relationship between the two instruments. The Hungarian solution, the public employment is similar to the European Job Guarantee scheme, as this instrument also starts from the artificial generation of jobs. If such a programme were to be implemented in Hungary, a significant part of it would probably be through public employment. But public employment is not a real employment instrument in the classical sense of the word. Public employment is therefore halfway between unemployment and employment in the primary labour market. It imitates employment in several dimensions, but offers less favourable conditions.[57] It is likely that the job guarantee scheme, when implemented, will also have a lower wage floor, but it will not be below the wage floor of the country and will most likely favour employment contracts. Important is, that the unfavourable conditions are used to encourage public employees to work on the market.[58] Furthermore, public employment has become a universal public policy tool for tackling unemployment and poverty.[59] In addition to the employment objective, it is also part of a benefit policy. Only people of working age who cannot be employed through public employment can receive benefits (again, a significant departure from the concept). In comparison, the job guarantee scheme is likely to remain a purely employment policy instrument. Finally, public employment – as initially envisaged – is seen by the Government as a temporary form of employment, providing work and pay for jobseekers instead of benefits.[60] By all that, employment has actually increased in many places and in many places this has resulted in a process whereby people in public employment are trapped in their own life situation within the confines of public employment and employment support. [61] The job guarantee scheme will also be a temporary help, combined with other forms of assistance to help people remain in the primary labour market.

6. Efficiency and financing

In light of the above, an important question is: how effective have these programmes been? One thing is certain: Hungary has spent the most on direct job creation through public employment programmes compared to the OECD.[62]

56 | Hatályos közfoglalkoztatási bér 2025.
57 | Mélypataki 2017, 85.
58 | Koós 2016, 48.
59 | Váradi 2015, 16.
60 | A közfoglalkoztatás aktuális kihívásai – Javasolt fejlesztési irányok, 4.
61 | Fabók 2024.
62 | Szabó 2022, 1115.

Despite its many problems and design flaws, the public works programme has undeniable positive benefits, but there are some features that are distinctly negative. These negative features predominate. Public employment programmes are generally inflexible. This inflexibility can hinder the main objective of finding a job and entering the primary labour market.[63] Judit Kálmán specifically mentions that the substitution effect can have such a specifically negative effect. This means when an existing job is filled by a public worker or when an existing job is reclassified as a public worker. In this case, it is not an inactive person who enters the labour market, but an already employed person who starts working in a different status. A crowding-out effect occurs when people do not apply for jobs in the primary labour market because of public work.[64] To compensate for this, the public worker wage is set lower than the market wage, so if there is a job available on the market, it is the jobseeker's choice. However, it should be seen that there are many areas where there are not many primary labour market jobs available. Again, this goes against the EU concept of a walking wage. Avoiding the substitution effect will be a key challenge for the job guarantee scheme. This is true even if the job guarantee scheme is likely to put jobseekers straight into the primary labour market.

Szabó also explains that the job placement rate for public workers was 15 percent at the start of the program, and by 2018, that rate had approached 25 percent.[65] In addition, it is more difficult for public workers to find market jobs compared to those in the primary labour market. This is compounded by the fact that public workers stay in a job for less time and change jobs more often, which may be a consequence of the cyclical nature of public employment.

However, it is also necessary to mention the risks associated with the objectives and benefits. In Hungarian public employment, we have seen the extent to which the wage framework has become ossified. This is a risk for all programmes that rely on direct job creation with public support. One reason for this is that the amount of public funds available is, of course, finite. As a result, wages may be set at levels that are not in line with market conditions. By their nature, these wages would be similar to pensions, which do not follow market changes. This in itself is not so much of a problem for a public job guarantee scheme, but in any case it requires a public correction that does not allow these wage levels to fall completely. A related threat needs to be mentioned. This has already been felt in the case of public employment programmes, but will also be an important dimension of the job guarantee programme. This threat lies in migration and will perhaps primarily affect the countries of Central and Eastern Europe. This is the employment of workers brought in from third countries, typically from South-East Asia, on a temporary basis. In the case of public employment, we see that companies prefer

63 | Kálmán 2015.
64 | Ibid.
65 | Szabó 2022, 1115.

to invest in temporary agency work, with state and legal support, rather than to choose workers from the public employment layer. One reason for this is that firms need a short-term solution, and bringing public workers into the primary labour market is at least a medium-term project. The job guarantee scheme will also need to be seen in relation to this practice. The question is to what extent it helps to strengthen the employment of EU nationals. This is also an important question, because Hungarian practice has shown that the employment of foreigners has led to the downsizing of Hungarian workers in several cases.

Tcherneva and Lalucq envisage funding the job guarantee scheme through a new or even existing EU programme, such as the SURE mechanism mentioned above.[66] The nature of public funding would not be such a burden on the public purse, at most 2.2% of GDP, but up to 0.6% depending on the size of the programme. Hungary spent 0.6% of GDP on the Hungarian public employment programme, which, as mentioned above, was the highest in OECD comparison. Therefore, it can be seen that the assumed lower funding amount is sufficient. This is largely a projection of the size of the job guarantee scheme, which is needed in any case in view of the challenges. The question is how efficiently (how bureaucratically) this programme can be organised and under what conditions.

7. Conclusion

Antonoupolos argues that short-term employment programmes have been able to prevent unemployment during the pandemic, but that the next step to long-term employment is the job guarantee. A job guarantee could end the long period of unemployment for millions of people in the EU and signal that a 'social Europe' is possible. But the idea should be accompanied by practice. It is difficult to imagine a uniform implementation of this programme at the EU level in the current situation. The trickle-down of this programme at the national level will be largely implemented through local public employment and public work programmes. The experience of these programmes is already available, and it would be worthwhile to use it in the current planning, in order to identify risks. In addition to this, as mentioned earlier, the programme faces another difficulty, especially in the Eastern European Member States. This difficulty is that third-country workers have started to arrive in these states in large numbers. This means that we also have to look at the replacement effect from the point of view that these workers are displacing the workers that we want to reintegrate into the labour market through the job guarantee scheme.[67]

66 | Tcherneva & Lalucq 2022, 1.
67 | Mélypataki 2024.

Looking at the Hungarian public employment programme alongside the proposed European Job Guarantee highlights some important differences—not just in how they operate, but in what they aim to achieve. Hungary's public works scheme has become a catch-all solution, trying to tackle unemployment, poverty, and welfare dependency all at once. But in doing so, it has lost its way as a proper labour market tool. The work it offers is often inflexible, poorly paid, and disconnected from real market needs. In many cases, it has created a cycle where people move between low-paid public jobs and basic social assistance, without real chances of moving into stable employment. Local power structures and social stigma only reinforce this trap. But the European job guarantee takes a different approach. It is designed to respond to real labour market demand and offer meaningful jobs that meet public needs – while protecting people's right to choose what work they do. Even if it starts with relatively low wages, it aims to operate in decent work conditions and respect labour standards. Unlike the Hungarian model, this is not a substitute or replacement for benefits, but a stepping stone to sustainable decent work.

Regarding financial issues, while Hungary's public employment programmes – most notably the public works scheme – have achieved notable visibility due to their scale and cost, their overall effectiveness remains highly contested. Despite certain measurable benefits, including short-term income support and marginal improvements in employment outcomes over time, the systemic design flaws, such as inflexibility, substitution effects, and the ossification of wage structures, raise substantial concerns about their long-term utility and alignment with labour market goals. The persistence of low market integration rates, particularly when compared to direct transitions from inactivity to the primary labour market, underscores the programmes' structural limitations. Moreover, the rise of migrant labour and reliance on temporary agency work reveals a deeper issue: the failure of public employment to serve as a credible pathway into sustainable, market-based employment. As Hungary considers transitioning from traditional public employment schemes to more ambitious models such as the job guarantee programme, it must confront the same systemic challenges – particularly substitution risks, wage calibration, and regional disparities in job availability – within a broader EU framework. While the projected costs appear manageable relative to GDP and precedent, the programme's success will ultimately hinge not on financial viability alone, but on its institutional capacity to deliver flexible, non-bureaucratic, and market-relevant employment pathways. Legal and policy architecture must thus ensure that the programme avoids entrenching structural precarity under the guise of public support, while reinforcing the European social objective of decent work and fair remuneration for all.

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Does Hard Work Truly Pay Off? Examining the Legal Landscape and Contemporary Challenges of Agricultural Employment in Romania

Abstract

Romania is often described as a highly agricultural country, being one of the largest cereal producers in the EU and the leading producer of sunflower seeds, honey, and plums. If this is the case, it stands to reason that employment in the agri-food sector plays a significant role in the occupation of the active population.

Building on this observation, our study analyses the types of employment specific to the Romanian agricultural sector, alongside the most topical labour law issues it raises, with the aim of identifying both the potential positive aspects and pitfalls associated with work in this sector. Our hypothesis is that, due to the specific nature of agricultural activities and the structural characteristics of the Romanian agricultural system, the employment relationship based on an individual employment contract – as defined by the Labour Code – may not always provide a sufficiently flexible framework for the agricultural sector. Consequently, other atypical forms of employment are often necessary.

Therefore, our research does not examine the typical employment relationships governed by individual employment contracts, as the focus is on those specific forms of employment that have emerged in the agricultural sector and are regulated in light of the characteristics of this area of activity. With this in mind, we direct our attention to day labour, self-employment, and cooperative work, drawing on the historical, legal, and general economic analysis outlined in the study.

Keywords: Agricultural Employment, Unskilled Occasional Activity, Day Labour, Self-Employment, Atypical Employment Relationship, Agricultural Cooperative

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1. General context

Romania has long held a significant position in the European Union's agricultural sector and continues to be recognised for its high agricultural potential. This is evidenced by the extensive area of land dedicated to farming, its contribution to the national Gross Domestic Product (GDP), and the substantial proportion of the population engaged in agricultural activities. As a result, the agricultural sector plays an important role in Romania's socio-economic development by creating employment opportunities and strengthening the rural economy.[3]

As of 2023, agriculture accounted for approximately 3.88% of Romania's GDP.[4] Among all employers, 6.6% operated in the agricultural sector,[5] while employment in agriculture represented 11.9% of the total workforce.[6] Although this employment rate in agriculture remains relatively high compared to the EU average of approximately 4%,[7] Romania's agricultural workforce has been declining in recent years. This trend has led to a reduction in the number of farmers and agricultural workers,[8] influenced by various factors, including technological advancements, labour migration, and levels of educational attainment.[9]

For example, out of the 11.9% of workers employed in this sector, 8.3% consisted of skilled workers in agriculture, forestry and fishing.[10] Additionally, agricultural activities are predominantly carried out by the elderly population.[11] In 2023, among those employed as skilled workers in agriculture, forestry, and fishing, 30.3% were aged 45–54, while 27.2% were over 55 years old.[12] Furthermore, in 90.7% of cases, individuals with a secondary occupation – representing 0.6% of the employed population – had agriculture as their additional activity.[13]

Agricultural work differs remarkably from other sectors of the economy, often exposing workers to harsh conditions, low job security, and limited social protection.[14] As a result, the adequacy of the legal framework governing agricultural employment, and its rigorous enforcement, holds particular importance. This study aims to examine the legal background of three forms of agricultural

3 | Ursu et al. 2023, 1.
4 | Statista 2025.
5 | Actmedia 2024.
6 | Ibid.; International Trade Administration 2024. According to EURES (European Employment Services), in 2023, over 8.2 million individuals were active in Romania's labour market, with an employment rate of 63%.
7 | Ibid.
8 | Ursu et al. 2023, 2.
9 | Ibid. 23.
10 | Actmedia 2024.
11 | Popescu et al. 2021, 481.
12 | Actmedia 2024.
13 | Ibid.
14 | Ursu et al. 2023, 1.

employment – namely, day labour, self-employment, and cooperative work – discussing their characteristics, advantages, and shortcomings. Ultimately, it seeks to honestly address a fundamental question: does hard work truly pay off?

2. Occasional work of day labourers

Before 2011, Romanian legislation was characterised by a lack of regulation concerning the occasional work of day labourers, leading to uncertainty regarding workers' rights, taxation, and social contributions. In response to these challenges, legislation was introduced to establish a clear legal framework for day labourers' employment. This section examines the background of its enactment, relevant terminology, and essential aspects related to the work of day labourers, specifically in the agricultural sector, which serves as the primary focus of this paper.

2.1. Background of enactment and objectives of Act No. 52/2011

Act No. 52/2011[15] was the first legal instrument in Romania to regulate the work performed by day labourers. By addressing a legislative gap and establishing a legal framework for carrying out activities of an occasional nature, the Act aimed to provide beneficiaries with a streamlined process for quickly recruiting labour. This, in turn, reduced bureaucratic procedures, making employment practices more flexible and simplified for day labourers,[16] thereby ensuring broader employment opportunities. An equally important goal behind the enactment of the legislation was to tackle the persistent societal issue of the widespread practice of undeclared – and thus illegal and untaxed – work in certain sectors,[17] particularly agriculture.[18]

Art. 2 of the Act sets out its objective, stipulating that this legislation regulates, by way of derogation from the provisions of Act No. 53/2003 – the Labour Code,[19] the manner in which day labourers may perform unskilled activities of an occasional nature within an employment relationship. Before analysing the various aspects of this legal institution – such as rights, obligations, remuneration, and the register of day labourers – which has undergone multiple amendments, it is essential to establish a precise understanding of this imperative provision.

15 | *Legea nr. 52/2011 privind exercitarea unor activități cu caracter ocazional desfășurate de zilieri*, published in the Official Gazette No. 276, 20 April 2011 and republished in the Official Gazette No. 947, 22 December 2015.
16 | Roșioru 2017, 32.
17 | Ibid.
18 | Ibid., 69.
19 | Republished in the Official Gazette No. 345, 18 May 2011.

2.2. Terminology

To fully grasp the content of the relevant terms appearing in the objective of Act No. 52/2011, one should break them down by focusing on three key concepts: 'day labourers' (*zilieri*), 'unskilled occasional activities' (*activități necalificate cu caracter ocazional*), and the nature of the 'employment relationship' (*raport de muncă*). This analysis will also provide an overview of the legislative amendments that have shaped the regulation of occasional work performed by day labourers.

2.2.1. Who qualifies as a 'day labourer' and who can – or cannot – be a 'beneficiary'?

According to art. 1 (1) a) of Act No. 52/2011, a day labourer is defined as a natural person, either a Romanian or a foreign citizen,[20] who has the capacity to work and performs unskilled activities of an occasional nature for a beneficiary or an authorised representative thereof,[21] in exchange for remuneration. Beyond the general rule that, in an employment relationship, the employee is always a natural person,[22] the requirement of capacity to work stands out. Analogous to the provisions of the Labour Code, individuals can, as a main rule, perform work as day labourers starting at the age of 16. However, in exceptional cases, they may do so between the ages of 15 and 16.[23]

Before further unfolding the meaning of the other two phrases, the term 'beneficiary' (*beneficiar*) also calls for clarification. Art. 1 (1) b) enumerates administrative-territorial units, legal entities, authorised natural persons, individual enterprises, and family enterprises as potential beneficiaries of the works performed by day labourers. Initially, the scope of this provision was limited to legal

20 | The amending Act No. 18/2014 (*Legea nr. 18/2014 pentru modificarea şi completarea Legii nr. 52/2011 privind exercitarea unor activităţi cu caracter ocazional desfăşurate de zilieri, precum şi pentru modificarea art. 8 alin. (1) din Legea nr. 416/2001 privind venitul minim garantat*), published in the Official Gazette No. 192 on 19 March 2014, further clarifies this provision, specifying that citizens of other states or stateless persons who have their domicile or, as the case may be, residence in Romania may also perform unskilled occasional activities under the conditions set forth by Romanian legislation.

21 | The phrase 'or an authorised representative thereof' represents an amendment to Act No. 52/2011 introduced by Act No. 132/2019 (*Legea nr. 132/2019 pentru modificarea și completarea Legii nr. 52/2011 privind exercitarea unor activități cu caracter ocazional desfășurate de zilieri*), published in the Official Gazette No. 575 on 15 July 2019.

22 | Vallasek 2020, 18–19.

23 | The exception to the 16-year age limit, which allows minors aged 15 to 16 to perform unskilled occasional activities with parental or legal representative consent, was introduced by the amending Act No. 277/2013 (*Legea nr. 277/2013 pentru modificarea şi completarea Legii nr. 52/2011 privind exercitarea unor activităţi cu caracter ocazional desfăşurate de zilier*), published in the Official Gazette No. 661 on 29 October 2013. It applies only if the activities are suitable for the minor's physical development, skills, and knowledge and do not pose a risk to their personal growth or health. Act No. 18/2014 later extended the applicability of these conditions from minors aged 15 to 16 to encompass all minors between the ages of 15 and 18.

entities on whose behalf and under whose authority the day labourer's work was carried out, excluding authorised natural persons or enterprises.[24] From this, it can be inferred that, under this legal basis, natural persons were also unable to engage the occasional services of agricultural workers.[25] The reasoning behind this somewhat discriminatory limitation was based on the idea that peasants simply "help each other" when working their land with neighbours or relatives,[26] without formally entering into an employment or any kind of legal relationship.

Subsequently, the amendment of Act No. 52/2011 introduced by Act No. 277/2013 expanded the list of potential beneficiaries to include natural persons, authorised natural persons, and enterprises. Nevertheless, Act No. 18/2014 later removed natural persons from this list. As a result, the legal relationship between a natural person, as beneficiary, and a day labourer ultimately falls outside the scope of Act No. 52/2011 and remains governed by the provisions of the Civil Code.[27] This implies that, despite the existing subordination, a natural person benefiting from the work of day labourers is not subject to the obligations established in Act No. 52/2011, which are mostly characteristic of an employment relationship and will be examined in detail shortly.[28]

The fluctuations in the scope of Act No. 52/2011 concerning eligible beneficiaries of day labourers' work came to a halt – at least for the time being – with Act No. 242/2020,[29] which further broadened the category by including administrative-territorial units. Besides the clear-cut listing of work recipients of day labourers, Act No. 52/2011 also explicitly states the general rule that public institutions – except for administrative-territorial units and a few other exceptions listed in art. 1 (3)[30] – shall not be beneficiaries under this regulation.

To comprehensively analyse the subjects involved in this relationship, it is essential to highlight another important aspect of the legal framework. Art. 1 (5) of this Act establishes a general rule prohibiting the beneficiary or their authorised representative from employing day labourers for activities that benefit a third

24 | Țop 2018, 38.
25 | Ibid.; Ștefănescu 2014, 17.
26 | Ibid.
27 | Roșioru 2017, 70.
28 | Ibid.
29 | *Legea nr. 242/2020 pentru modificarea și completarea Legii nr. 52/2011 privind exercitarea unor activități cu caracter ocazional desfășurate de zilieri*, published in the Official Gazette No. 1041, 6 November 2020.
30 | These include botanical gardens subordinated to universities; the 'Gheorghe Ionescu-Șișești' Academy of Agricultural and Forestry Sciences and the institutes, centers, and research-development stations under its authority; the State Institute for Variety Testing and Registration subordinated to the Ministry of Agriculture and Rural Development; county pedological and agrochemical study offices; national institutes; didactic-experimental stations of universities under the coordination of the Ministry of National Education; high schools under the subordination of the Ministry of National Education specialised in fields in which unskilled occasional work may be performed, etc.

party.[31] This provision aims to exclude the possibility of temporary employment agencies hiring personnel as day labourers.[32] Reinforcing the *intuitu personae* nature of the employment relationship,[33] this provision aligns with the principle that a day labourer cannot be substituted by third parties in performing the occasional activities. This conclusion follows from the beneficiary's obligation to register all day labourers performing occasional activities for their benefit, in chronological order, in the Electronic Register of Day Labourers (*Registrul electronic de evidență a zilierilor*) and submit it to the territorial labour inspectorate daily, before the commencement of work by each individual.[34] The topic of this register will be examined in detail in a separate subchapter.

2.2.2. A closer look at 'unskilled occasional activities': definition, duration, characteristics

When it comes to the term 'unskilled occasional activities', this was not defined in the Act prior to its amendment by Act No. 18/2014, which explicitly outlined the key characteristics of 'occasional activities' that must now be highlighted. Pursuant to the newly inserted art. 1 (1) d), occasional activities are defined as being carried out incidentally, sporadically, or accidentally, without a permanent or continuous nature.[35] Hence, the *facere*-type work performed by day labourers, although carried out successively,[36] is inherently temporary and lacks enduring characteristics.

In accordance with this, the duration of such activities is subject to specific limits. As a general rule, it must be at least one day, equivalent to 8 working hours, with the maximum daily working time set at 12 hours.[37] This aspect of the regulation aligns with the common understanding of the term 'day labourer' as a worker employed and paid on a daily basis.[38] For minors with the capacity to work, the daily limit is restricted to 6 hours, with a weekly maximum of 30 hours, and night work

31 | The 2019 amendment of Act No. 52/2011 introduced an exception to this provision, allowing beneficiaries to engage day labourers in activities benefitting a third-party, provided these activities fall under service contracts concluded between the beneficiary or their authorised representative and the third-party.
32 | Țop 2018, 42.
33 | Roșioru 2017, 72.
34 | Art. 1 (1) c), art. 5 (1) a) and b) and art. 8 (1) of Act No. 52/2011.
35 | According to the Explanatory Dictionary of the Romanian Language, *incidental* (incidental) means "occurring by chance or happening unexpectedly", *sporadic* (sporadical) refers to something that "appears, manifests itself here and there or from time to time; without continuity", while *accidental* (accidental) describes that which "results from an accident, occurs by chance, unexpectedly or incidentally".
36 | Ciochină-Barbu 2020, 263.
37 | Art. 4 (2) of Act No. 52/2011.
38 | Roșioru 2017, 72; Ciochină-Barbu 2020, 256.

is strictly prohibited.[39] These daily and weekly limitations are consistent with the provisions of art. 112 of the Labour Code. However, while the Code sets a maximum weekly working time of 40 hours for full-time employees,[40] the legislation on day labourers does not impose such a restriction. Consequently, at least theoretically, adult day labourers may work without a weekly rest period.[41] Likewise, they are not entitled to daily rest when their working time exceeds six hours,[42] nor are they granted paid public holidays or annual leave.[43]

Regarding the specificities of this type of work, unlike employees whose employment relationship has no maximum duration and for whom the general rule is the conclusion of a full-time and indefinite-term employment contract,[44] a beneficiary may not employ a person as a day labourer for more than 25 consecutive calendar days.[45] If the nature of the performed activity requires a duration beyond this limit, the worker may instead be employed under a fixed-term employment contract,[46] which is regulated by and subject to the provisions of the Labour Code.[47] Additionally, the total duration of activities performed by any day labourer may not exceed a maximum of 90 cumulative days within a calendar year for the same beneficiary, or, following the 2019 amendment, for an authorised representative thereof.[48]

However, amendments to Act No. 52/2011, introduced by Act No. 105/2017,[49] Act No. 86/2018,[50] and subsequently, by Act No. 132/2019, established exceptions for certain sectors. These include the agricultural, forestry, viticulture, fruit-growing, vegetable-growing, floriculture, and fishery sectors, as well as extensive livestock farming through the seasonal grazing of cattle and horses. Additionally, exemptions apply to seasonal activities in botanical gardens and to research, development, and innovation activities within the agricultural sector under the Academy of Agricultural and Forestry Sciences 'Gheorghe Ionescu-Șișești', its subordinate institutes, research-development stations, as well as national institutes and agricultural and forestry educational institutions. In these fields, the maximum allowable period for working with the same beneficiary was extended from 90 to

39 | Ibid. The weekly limitation, along with the prohibition of night work for minors, was introduced solely by the aforementioned Act No. 277/2013.
40 | Art. 137 of the Labour Code.
41 | Dumitru 2015, 21; Roșioru 2017, 74.
42 | Art. 134 of the Labour Code.
43 | Ibid. art. 139 and 144. Dumitru 2015, 21; Roșioru 2017, 74.
44 | Vallasek 2020, 53.
45 | Amendment introduced by Government Ordinance No. 114/2018, published in the Official Gazette No. 1116, 29 December 2018.
46 | Ibid.
47 | Țiclea and Georgescu 2022, 25.
48 | Art. 4 (1) and (4) of Act No. 52/2011.
49 | Published in the Official Gazette No. 376, 19 December 2017.
50 | *Legea nr. 86/2018 pentru modificarea și completarea Legii nr. 52/2011 privind exercitarea unor activități cu caracter ocazional desfășurate de zilieri*, published in the Official Gazette No. 313, 10 April 2018.

180 cumulative days within a calendar year. Regardless of the field in which the activity is carried out, the extension applies to day labourers who take up employment through agency intermediation,[51] as provided in Chapter II^1 of the Act.

Furthermore, Act No. 132/2019 also introduced a limitation on activities performed for different beneficiaries, stipulating, *inter alia*, that an individual may not work as a day labourer for more than 120 days within a calendar year, regardless of the number of beneficiaries. Exceptions made in the aforementioned sectors also apply in this case, allowing a higher limit of 180 cumulative days within a calendar year, irrespective of the number of beneficiaries.[52] Thus, since no weekly rest period is stipulated, the only restriction remains the cumulative limit of either 90 or 180 days per calendar year, depending on the applicable provisions, during which they can work for the same beneficiary.[53]

Non-compliance by beneficiaries with any of these limits – whether by employing a day labourer for more than 25 consecutive calendar days, exceeding 90 cumulative days within a calendar year for the same beneficiary, surpassing the upper limit of 120 days, or exceeding the extended limit of 180 cumulative days within a calendar year for activities performed for the same or different beneficiaries – is sanctioned with a fine of 6,000 lei. These restrictions clearly serve a protective purpose for day labourers in terms of occupational safety, with the prescribed fine reinforcing their importance and encouraging compliance. However, it is questionable whether the specified intervals are reasonable or overly restrictive, potentially forcing the beneficiary to exceed them to have the given activity completed. If the limit is indeed thoughtfully set, taking the nature of the activity into account, one must still consider whether the fine is high enough to outweigh the costs of legal compliance. What is more costly for the beneficiary: violating the law and paying the fine or – providing an example – covering the contributions and taxes required when forced to conclude a fixed-term employment contract if the day labourer's activity exceeds the 25 consecutive days limit? If the latter, the legal restriction may – instead of preventing – encourage risk-taking and undeclared work. Furthermore, the increase in bureaucratic procedures directly correlates with a higher likelihood of undeclared labour, making administrative burdens an additional incentive for non-compliance.

Although not defined *per se* in the legislation, the term 'unskilled' is referenced in the definition of 'day labourer', to indicate that the activities in question do not require a strict set of specialised skills, training, or qualifications. However, unlike individual employment contracts, which may involve intellectual, physical, or artistic work, the performance of unskilled occasional activities is restricted to fields explicitly and exhaustively enumerated in art. 13 (1) a)–q) of Act No. 52/2011,

51 | Art. 13^5 of Act No. 52/2011.
52 | Ibid. art. 4 (6).
53 | Dumitru 2015, 21.

primarily involving activities of a physical nature.[54] Accordingly, the beneficiary must operate within the legally specified fields,[55] and is responsible for ensuring that the day labourer is informed about the activity they are about to perform, as well as their rights and obligations.[56]

While agriculture is mentioned first, the length and variety of the list of fields demonstrate that the scope of the Act is not limited to it, meaning it does not exclusively regulate the work performed by day labourers in the agricultural sector. The amendment introduced by Government Ordinance No. 114/2018, however, restricted the domains provided by law to agriculture, hunting, and related services; forestry, excluding forest exploitation; and fishing and aquaculture. Some sources argue that this was the best modification of the Act, as the earlier expansion of sectors eligible for unskilled occasional activities had allowed many beneficiaries to use day labourers as a means of tax evasion.[57]

Despite the fluctuations in the scope, the specified fields now include approximately 20 domains, such as activities related to organising exhibitions, fairs, and congresses; advertising; catering services for events; restaurants; bars and other beverage-serving activities; hotels and other accommodation facilities; and activities of sports facilities, among others. Even with such a long list, the engagement of day labourers in activities outside the legally permitted sectors is a common issue.[58] Since the employment of day labourers for activities not explicitly regulated can be considered a form of illegal and undeclared work, it is sanctioned with a notably high fine ranging from 10,000 to 20,000 lei.[59]

In addition to this terminological clarification, it is also worth noting that the term 'unskilled' may not be the most appropriate for accurately describing this category of activities, as it could carry a negative connotation implying diminished intrinsic value, whereas the focus is not necessarily on the absence of skills.

2.2.3. Understanding the nature and source of the 'employment relationship' between day labourers and beneficiaries

After reviewing the concepts of day labourer, beneficiary, and unskilled activities of an occasional nature – including agricultural work – it is necessary to examine the employment relationship within which these elements are framed. It was only with the amendment of Act No. 52/2011 operated by Act No. 18/2014 that the work of day labourers performed under the authority of the beneficiary was granted the status of an 'employment relationship' (art. 2). This recognition,

54 | Ciochină-Barbu 2020, 256.
55 | Ștefănescu 2014, 17.
56 | Art. 5 (2) d). of Act No. 52/2011.
57 | Economica 2019.
58 | ITM Control 2024, 113.
59 | Art. 14 (1) e) of Act No. 52/2011.

although accompanied by certain derogations, integrated the relationship into the framework of labour law, which thus became, to a certain extent, the applicable legal regime.[60]

Prior to this amendment, art. 3 merely provided that the relationship between the day labourer and the beneficiary was established without the conclusion of an employment contract. As it implicitly imposed a *de plano* prohibition on entering into such a contract, the uncertainty surrounding the genuine legal nature of the contract underlying this legal relationship has sparked controversy in specialised literature. Scholars have variously interpreted it as either a civil contract or an employment contract of a specific character.[61]

However, through this wave of amendments, art. 3 of Act No. 52/2011 was modified to explicitly state that the 'employment relationship' – the legal nature of the agreement clarified in the amended art. 2 is reiterated here – between the day labourer and the beneficiary, or an authorised representative thereof, is established *solo consensu*, that is, solely by the mutual agreement of the parties, without the general requirement[62] for a written employment contract. Thus, the source of the atypical or imperfect[63] employment relationship between the day labourer and the beneficiary undoubtedly lies in an unwritten employment contract – understood as *negotium iuris*[64] – through which the two parties jointly establish their mutual rights and obligations.[65] With the quasi-totality of scholars[66] now recognising this as an imperfect individual employment contract, the doctrinal view that the activity carried out by a day labourer is based on a civil contract has become outdated.[67]

This otherwise bilateral, synallagmatic, and named contract – similar in this respect to the individual employment contract – is characterised in legal doctrine as atypical,[68] primarily because it derives from and is governed entirely by a *lex specialis*.[69] Consequently, while this employment relationship shares several characteristics with dependent work, it also displays distinct peculiarities. Its imperfect

60 | Ștefănescu 2014, 15.
61 | Ibid.
62 | Established by art. 16 (1) of the Labour Code.
63 | Roșioru 2017, 70; Țiclea and Georgescu 2022, 15; Țop 2018, 40.
64 | A legal operation intended to produce specific legal effects, and not in the sense of *instrumentum probationis*, which refers to the document (of that contract) that merely records and proves the legal operation. Țiclea 2018, 30–31.
65 | Ciochină-Barbu 2020, 254.
66 | Ștefănescu 2014, 15–20.
67 | Ibid. 20.
68 | Roșioru 2017, 63; Țiclea and Georgescu 2022, 9.
69 | Art. 2 of Act No. 52/2011 explicitly states that the regulation derogates from the provisions of Labour Code. However, pursuant to art. 1 (2) of the Labour Code, these derogatory rules are supplemented by common law provisions from the labour legislation, insofar as they do not contradict the specific nature of this contract (*generalia specialibus non derogant*). Roșioru 2017, 70; Țiclea and Georgescu 2022, 25; Ștefănescu 2014, 20.

nature stems not only from the absence of a written form but also from several defining elements, such as the nature of the work performed, the fixed duration of the activity, the method of remuneration, and specific rights and obligations of the parties.[70] Moreover, the omission of key elements typically found in standard employment contracts further contributes to its atypical character.[71] These aspects, insofar as they have not yet been addressed, will be thoroughly analysed in the following subchapter.

2.3. A detailed analysis of essential aspects of occasional work

With the concepts of day labourer, beneficiary, and unskilled occasional activities scrutinised, and the nature of the underlying employment relationship clarified, including the characteristics of the concluded employment contract, the analysis of the elements that confer its typical and atypical nature is well-founded.

2.3.1. Subordination and remuneration

Art. 1 (1) a) of Act No. 52/2011 stipulates that a day labourer performs unskilled activities of an occasional nature for a beneficiary or an authorised representative thereof in exchange for remuneration. From this provision, two yet undiscussed but essential structural elements of employment relationships arising from an individual employment contract[72] can be identified.

Firstly, the element of subordination, inherent to employment relationships and essential for their legal qualification, is clearly present: similar to employees performing work under the authority of an employer,[73] day labourers work for a beneficiary. This hierarchical relationship is further emphasised by art. 5 of the act, which stipulates that the beneficiary or their authorised representative has the right to determine the activities to be performed, the place and duration of the work, and to exercise control over how the work is carried out. Among the rights conferred upon the beneficiary, this stands out in terms of legal significance. Nevertheless, while day labourers are not self-employed, they also do not hold the status of regular employees,[74] thus reinforcing the atypical nature of the contract.

In addition to subordination – or, more precisely, as the economic facet of subordination[75] – it can be outlined that this legal relationship, based on a fixed-term

70 | Țiclea 2018, 31.
71 | Ștefănescu 2014, 15; Țop 2018, 39.
72 | Defined in art. 10 of the Labour Code as an agreement under which a natural person, referred to as the employee, undertakes to perform work for and under the authority of an employer, whether a natural or legal person, in exchange for remuneration referred to as a salary.
73 | Țiclea 2018, 30–31.
74 | Țiclea and Georgescu 2022, 9.
75 | Ciochină-Barbu 2020, 257.

contract,[76] also involves, as a *dare*-type obligation, valuable consideration (*cu titlu oneros*). For the work carried out successively under the authority of the beneficiary, day labourers, like employees, are entitled to remuneration paid at defined intervals. This, in line with relevant provisions of the Labour Code, is determined by agreement between the parties.[77] However, unlike part-time employees, whose salary is calculated based on the number of hours actually worked, a day labourer must be paid for at least 8 hours of work, even if the parties have agreed on fewer working hours.[78] Moreover, the gross hourly remuneration cannot be lower than the hourly value of the national minimum gross base salary guaranteed in payment[79] – a rule that is also reflected in the Labour Code.[80]

That being said, it is also important to note that the remuneration differs in form from a salary.[81] The beneficiary or their authorised representative is obliged to pay the due amount by any legally authorised means of payment at the end of each working day.[82] Following several amendments to the act, remuneration may also be paid no later than the end of the week[83] or the period during which the work was performed.[84] If the period of activity exceeds 30 days,[85] payment may be made on a monthly basis. In each of these exceptional cases, the written consent of both the day labourer and the beneficiary or their authorised representative is required.

The remuneration received by the day labourer is subject to personal income tax (10%), which is calculated, withheld from the gross remuneration, paid, and declared by the beneficiary or their authorised representative.[86] Similarly, the obligation to calculate, withhold, pay, and declare the social insurance

76 | Roșioru 2017, 72; Ciochină-Barbu 2020, 278.
77 | Art. 11 (1) of Act No. 52/2011.
78 | Ibid. art. 4 (2).
79 | Ibid. art. 11 (2). Nevertheless, as of May 2022, by the effect of Act No. 135/2022, published in the Official Gazette No. 489, 17 May 2022, the minimum gross base salary guaranteed in payment for employees of employers operating in the agricultural sector on Romanian territory is set at no less than 3000 lei per month (art. 3 (1) and (2) of Act No 135/2022). This amount excludes allowances, bonuses, and other additions, and corresponds to a standard working schedule averaging 167.333 hours per month, resulting in an average hourly rate of approximately 18 lei. Since this provision must be correlated with art. 11 (2) of Act No. 52/2011, the minimum remuneration to which a day labourer performing unskilled occasional activities in the agricultural sector is entitled is the one established by art. 3 (1) and (2) of Act No. 135/2022, namely 3,000 lei. However, as of January 1, 2025, the minimum gross base salary guaranteed in payment is set at 4050 lei per month for a standard working schedule averaging 165.334 hours per month, equating to approximately 25 lei per hour. Consequently, since the gross hourly remuneration cannot be lower than the hourly value of the national minimum gross base salary, the provisions of Act No. 135/2022 are no longer relevant.
80 | Art. 164 (2) of Act No. 53/2003.
81 | Țop 2018, 39.
82 | Amendment introduced by Act No. 18/2014.
83 | Ibid.
84 | Amendment introduced by Act No. 277/2013.
85 | Amendment introduced by Act No. 105/2017.
86 | Art. 7 (1) and (2) of Act No. 52/2011.

contribution (25%) – which grant the day labourer insured status in the public pension system – also lies with the beneficiary.[87]

With regard to social contributions, unlike employees working under an employment contract, day labourers were initially not included in either the public pension system or the public health insurance system and could only obtain such coverage through voluntary contributions. While the payment of social insurance contributions now ensures their inclusion in the public pension system, their status within the public health insurance system remains unchanged—they are not automatically insured and must opt for voluntary coverage if they wish to benefit from it.[88] Furthermore, day labourers are not covered by insurance for work accidents and occupational diseases.[89] In the event of such incidents, the beneficiary or their authorised representative is obliged to cover the costs of any necessary medical care.[90] Finally, beneficiaries are not required to pay the labour insurance contribution on the remuneration granted to day labourers.[91]

2.3.2. The (Electronic) Register for Recording Day Labourers – theory and practice

As explained at the beginning of this chapter, one of the primary objectives of the Act regulating the work of day labourers is to prevent undeclared or 'black' labour. In line with this aim, and in order to simplify procedures for both beneficiaries and authorities by eliminating burdensome bureaucratic registration requirements, an essential component of the legislation is the register of day labourers, along with the obligation imposed on beneficiaries to maintain accurate records of the work performed.[92]

According to art. 1 (1) c) of Act No. 52/2011, this special-status register is prepared by the beneficiary or their authorised representative to record the daily activity of day labourers. Following the 2019 amendment[93] to Act No. 52/2011, a new article – Art. 4^1 – was introduced, establishing the Electronic Register for Recording Day Labourers (*Registrul electronic de evidență a zilierilor*), hereinafter referred to as the Register, as the sole means of transmitting data related to day labourers' records. Consequently, the register became fully electronic. Since then, beneficiaries have been required to establish and complete the electronic register in chronological order, including all day labourers,[94] and submit it to

87 | Ibid. art. 9 (1) and (2).
88 | Ibid. art. 9 (3).
89 | Ibid. art. 9 (4).
90 | Ibid. art. 9 (5).
91 | Ibid. art. 7 (3).
92 | Roșioru 2017, 72.
93 | Introduced by Government Ordinance No. 26/2019, published in the Official Gazette No. 309, 19 April 2019.
94 | Art. 8 (1) of Act No. 52/2011.

the territorial labour inspectorate daily, before any day labourer begins their activity.[95]

As regards the rule of daily completion, the amendments introduced by Act No. 132/2019 established exceptions for several sectors,[96] most of which had already been listed in connection with the exceptionally extended maximum allowable period for working with the same beneficiary. Without restating the entire list, it is important to note that, *inter alia*, in the agricultural sector, the electronic register is prepared on a monthly basis.

When it comes to technical aspects of recording day labourers in the Register, beneficiaries may obtain a password to access the relevant web application from the territorial labour inspectorate where their headquarters are located. The Register can also be completed and submitted directly from the field using a mobile application.[97] The establishment and proper completion of the register are facilitated by Annex No. 1 and Annex No. 2 of the Act, which contain, respectively, a model of the register and instructions for its use. According to Annex No. 1, the register may include the following information: the date of the activity; the full name of the day labourer; their identity document and personal identification number (CNP); the day labourer' signature, acknowledging their own health condition as suitable for the work; the signature of the day labourer confirming that health and safety training has been completed; the main or secondary domain of activity; the location of the activity; the number of working hours; the remuneration (both gross agreed and net paid amounts), and the signature confirming receipt of payment; as well as parental or legal representative consent for the minors engaging in day labour. Three of these elements – the three signatures – require further contextualisation.

First, in line with the beneficiary's obligations in the area of occupational health and safety, introduced by the amending Act No. 18/2014, beneficiaries must not only ensure the health and safety of day labourers,[98] provide training on workplace hazards, preventive and protective measures[99] – completion of which is confirmed by the second signature in the register – and supply suitable work equipment,[100] but they are also required to request day labourers to assume responsibility for their own state of health, confirming that they are fit to carry out the assigned activities.[101] This assumption is formally recorded through the day labourer's first signature in the register. By contrast, no such obligation exists in the context of entering into an individual employment contract. Under

95 | Ibid. art. 5 (1) a) and b).
96 | Ibid. art. 8 (2).
97 | Pop C A 2022, 74.
98 | Art. 5 (3) a) of Act No. 52/2011.
99 | Ibid. art. 5 (3) b).
100 | Ibid. art. 5 (3) d).
101 | Ibid. art. 5 (3) c).

art. 27 (1) of the Labour Code, employment is conditional upon a medical certificate attesting that the individual is fit to perform the work in question. As for the third signature, it serves as proof of payment, in accordance with art. 11 (3) of Act No. 52/2011.

Thus, analysis of the content of the Register reveals that, beyond serving to document the work performed, it also serves as evidence of both the day labourer's assumption of responsibilities, and the beneficiary's compliance with legal obligations. Although the employment relationship is established through mutual agreement between the day labourer and the beneficiary, the formalised obligations set out in the register – such as confirmation of payment and acknowledgement of safety training – can be regarded as equivalents to contractual clauses found in individual employment contracts.[102]

To realistically assess the practical implementation of this register, it is useful to refer to the National Campaign for Monitoring Beneficiaries' Compliance with the provisions of Act No. 52/2011 on the Performance of Occasional Activities by Day Labourers, conducted by the territorial labour inspectorates in October 2024. As part of this campaign, unannounced inspections were carried out at 748 beneficiaries.[103] A total of 118 administrative sanctions – including fines and warnings – were imposed, while 203 corrective measures were ordered to address the identified irregularities.[104]

The main deficiencies included failure to establish the Register of Day Labourers and to register day labourers before the commencement of their activity.[105] Violations of the Register-related provisions are subject to a fine of 6,000 lei.[106] Another frequently observed infringement, as previously mentioned, was the engagement of day labourers in activities outside the legally permitted domains, as enumerated in art. 13 of Act No. 52/2011.[107] These findings illustrate a significant lack of awareness among beneficiaries regarding the legal conditions governing the employment of day labourers and the sectors in which they are lawfully permitted to operate. As previously discussed, the purpose of maintaining accurate records of the work performed is to ensure transparency, promote legal compliance, and prevent undeclared labour. At the same time, it is closely linked to the beneficiary's obligations, particularly in proving the payment of remuneration and compliance with health and safety standards. Therefore, the absence of the register ultimately results in an inadequate level of protection for this category of workers.

102 | Ciochină-Barbu 2020, 263.
103 | ITM Control 2024, 113.
104 | Ibid.
105 | Ibid.
106 | Art. 14 (1) b) of Act No. 52/2011.
107 | ITM Control 2024, 113.

1.3.3. About sanctions prescribed in and outside Act No. 52/2011

Besides the previously mentioned fine for employing day labourers in activities outside the legally permitted domains (ranging from 10,000 to 20,000 lei), the most severe sanctions apply to violations of provisions related to remuneration. These include cases where the remuneration falls below the minimum gross hourly wage guaranteed by law or is not paid at the end of each workday or week, which result in a fine of 10,000 lei. Additionally, non-compliance with income tax regulations incurs a fine of 20,000 lei, alongside the prohibition of using day labourers for the entire duration of the beneficiary's existence. These sanctions emphasise the legislation's dual overarching objective: to prevent tax evasion – whether through the unlawful use of day labourers or non-compliance with income tax provisions – and to safeguard the rights of day labourers, particularly by ensuring payment of remuneration in accordance with the minimum standards established by the law.

In this context, it is important to address the so-called 'CAP reform' – namely, the introduction of the 'social conditionality' measure within the Common Agricultural Policy (CAP) by Regulation (EU) 2021/2115.[108] According to art. 14 of the Regulation, which outlines the principle and scope of social conditionality, "from 1 January 2025, farmers and other beneficiaries receiving direct payments […] or annual payments […] are to be subject to an administrative penalty if they do not comply with the requirements related to applicable working and employment conditions or employer obligations."[109]

To facilitate the implementation of this measure, Government Decision No. 1343/2024[110] incorporated the social conditionality provision into national legislation. As a result, beneficiaries employing day labourers risk having their CAP subsidies – outlined in the CAP Strategic Plan (CSP) 2023–2027 – reduced or withdrawn if they fail to meet the required minimum social and labour standards. While these requirements have already been part of national labour legislation, the novelty lies in the fact that, in the event of non-compliance, agricultural subsidies may now be partly or entirely affected in addition to the usual sanctions, through "an effective and proportionate system of administrative penalties".[111] This risk could prompt a shift in beneficiaries' attitudes towards legal compliance, potentially reducing

108 | Regulation (EU) 2021/2115 of the European Parliament and of the Council of 2 December 2021 establishing rules on support for strategic plans to be drawn up by Member States under the common agricultural policy (CAP Strategic Plans) and financed by the European Agricultural Guarantee Fund (EAGF) and by the European Agricultural Fund for Rural Development (EAFRD) and repealing Regulations (EU) No 1305/2013 and (EU) No 1307/2013.
109 | Ibid. art. 14 (1).
110 | *Hotărâre nr. 1.343 din 30 octombrie 2024 pentru modificarea și completarea Hotărârii Guvernului nr. 1.571/2022 privind stabilirea cadrului general de implementare a intervențiilor aferente sectoarelor vegetal și zootehnic din cadrul Planului strategic PAC 2023–2027, finanțate din Fondul european de garantare agricolă și de la bugetul de stat*, published in the Official Gazette No. 1094, 1 November 2024.
111 | Regulation 2021/2115, art. 14 (3).

irregularities in employment practices, breaches of occupational health and safety rules, and other forms of abuse or exploitation of day labourers.

3. Self-employment in the agricultural sector

In addition to day labourers, the agricultural labour force encompasses other forms of employment, including self-employed individuals (*lucrător independent, lucrător pe cont propriu*). In 2020, 53.9% of them – self-employed individuals representing 15.6% of the working-age population – were engaged in agriculture.[112] While recent data on their exact number is unavailable, self-employment in this sector likely remains significant. In 2023, 82% of self-employed and unpaid family workers – who together accounted for 13% of the employed population – resided in rural areas,[113] indicating that agriculture continues to be a major source of self-employment. In this section of the paper, the legal framework concerning the self-employed stratum of the agricultural labour force will addressed briefly, given the limited literature available on the subject.

3.1. Terminology and definition

According to the definition provided by the National Institute of Statistics, "a self-employed worker is a person who carries out their activity in their own business or individual enterprise without employing any salaried workers, with or without the assistance of unpaid family members."[114] In addition to the key criterion of not having any subordinated personnel performing work in exchange for remuneration, it is important to note that self-employed individuals engaged in agriculture are considered employed only if they own the agricultural production – though not necessarily the land. The production must be either intended, at least in part, for sale or barter, or be exclusively for personal consumption, provided it constitutes a substantial part of the household's total consumption.[115] Therefore, for such activity in agriculture to be classified as employment, the agricultural production must primarily be intended for sale or exchange in kind,[116] or for significant household consumption.

Interestingly, in addition to individual farmers or those working in farming associations, the National Institute of Statistics classifies 'occasional day labourers' – as the term is used – as a subset of the self-employed.[117] As a result, statistics

112 | National Institute of Statistics 2021, 102, 109.
113 | Actmedia 2024.
114 | National Institute of Statistics 2018, 10.
115 | Ibid.
116 | National Institute of Statistics 2022, 12.
117 | National Institute of Statistics 2018, 10.

provided by the Institute on self-employed individuals should be interpreted as including data on day labourers as well. This is problematic in two respects. Firstly, the term itself – 'occasional day labourers' – is redundant and creates a pleonasm, as the status of a day labourer inherently implies an occasional nature. Secondly, and more importantly, as explained in the first part of this paper, there is consensus in the literature, supported by law, that when day labourers perform work for beneficiaries, an employment relationship is established.

In an attempt to justify the inclusion of day labourers within the category of the self-employed, while also advancing the discussion on the definition and legal framework of self-employment, art. 7 of Act No. 227/2015[118] – the Fiscal Code – might offer some support. This provision defines self-employment as any activity carried out by a natural person for the purpose of obtaining income, provided that at least four of the following criteria are met: 1) the natural person has the freedom to choose the location and manner of carrying out the activity, as well as their working hours; 2) the natural person has the freedom to carry out the activity for multiple clients; 3) the inherent risks of the activity are assumed by the natural person performing the activity; 4) the activity is carried out using the personal assets of the natural person performing it; 5) activity is carried out by the natural person through the use of their intellectual and/or physical abilities, depending on the nature of the activity; 6) natural person is part of a professional body/association with the role of representing, regulating, and supervising the profession carried out, in accordance with the special normative acts regulating the organization and practice of the respective profession; 7) the natural person has the freedom to perform the activity directly, with hired personnel, or by collaborating with third parties, in accordance with the law.

Taking into account the essential attributes of the employment relationship in which day labourers perform work for beneficiaries – such as the inherent subordination; the beneficiary's right to determine the activities to be performed, the place and duration of the work, the right to control how the work is carried out; the *intuitu personae* nature of the relationship; the limitation on the number of working days and consequently the number of beneficiaries – it becomes clear that day labourers are unlikely to meet the majority of the criteria required to be classified as self-employed.

What the statistical institute might instead be considering when classifying 'occasional day labourers' as a subset of self-employed status is that self-employment can apply to the type of work itself performed by day labourers. In other words, unskilled occasional activities may be carried out either within an employment relationship – qualifying the worker as a day labourer under Act No. 52/2011 – or independently, provided the conditions set by Article 7 of the Fiscal Code are met, in which case the worker would be classified as self-employed. Therefore, it is

118 | *Legea nr. 227/2015*, published in the Official Gazette No. 688, 10 September 2015.

not the category of day labourers that constitutes a subset of self-employment, but rather the type of activities – including those in the agricultural sector – that may fall under either legal framework.

3.2. Specific aspects

The legal relationship underpinning the autonomous work of the self-employed presents essential differences from the employment relationship,[119] some of which are already evident from the text of art. 7 of the Fiscal Code.

The first and perhaps most important aspect to highlight is the lack of subordination. Unlike in employment relationships, self-employed individuals enjoy independence in terms of time, place, and organisation of their activity – within limits set by the contract or the nature of the service.[120] As a result, they are on an equal footing with beneficiaries. This also means that they provide their own tools necessary for performing the work,[121] and assume the professional and economic risks associated with the activity.[122] When continuing to consider what is absent, – characteristic of the employment relationship between day labourers and beneficiaries – it becomes clear that the *intuitu personae* feature is lacking. Self-employed individuals may delegate the work they perform, unlike employees who are bound by personal, non-delegable obligations under an employment contract.

Regarding remuneration, or the price of work, this is established for the final result of the activity, which is generally regarded as a whole.[123] Moreover, unlike day labourers who have at least their income tax and social contributions covered – although, as explained in the relevant section of this paper, these contributions represent only a part of those required for employees under the Labour Code – those who work independently and in their own interest are responsible for covering their own mandatory contributions to access benefits such as health insurance, paid leave, and pension entitlements.[124]

A similarity between the activities performed by day labourers and self-employed individuals is that, unlike indefinite individual employment contracts governed by the Labour Code – which represent the main rule – both are typically carried out for a short, but definitively fixed period, on an occasional and temporary basis.[125]

119 | Țiclea and Georgescu 2022, 8.
120 | Ibid.; Roșioru 2017, 41, 45.
121 | Ibid. 45.
122 | Ibid. 47.
123 | Țiclea and Georgescu 2022, 8.
124 | Roșioru 2017, 54.
125 | Ibid. 47, 48.

Due to these attributes, which distinguish self-employment from the fundamental nature of an employment relationship, this type of legal relationship falls outside the scope of labour law.[126]

4. Cooperative employment in the agricultural sector

4.1. The historical roots of cooperative employment

The history of cooperatives in Romania has several roots,[127] as at the time of the movement's spread in the 19th century, the country did not exist in its present form. Nevertheless, it can generally be stated that the cooperative movement has a long tradition in what is today Romania,[128] as among the countries that contributed to the establishment of the first International Cooperative Congress and the International Cooperative Alliance in the 1890–1895 period were representatives from both Romania and Austro-Hungary.[129]

Despite this historical involvement, the problems caused by the underdevelopment of rural areas in Romania also have deep historical roots. Over the last century, Romanian villages have lagged a few steps behind developments in many rural areas of Western Europe, and during the 20th century, some of the existing gaps widened significantly.[130] After the Second World War and the rise to power of the Soviet-type dictatorship, the collectivisation of agriculture was presented – within the economic and political context of the time – as the solution to the problems of the peasantry and as a lever for the development of villages.[131] The collectivisation of agriculture, which took place between 1949 and 1962, laid the foundation for a new rural economic system.

The near-total elimination of private ownership of agricultural land brought about structural changes in social and economic relations of the village world, which were replaced by new relations inspired by the model already functioning in the USSR.[132] Naturally, the imposition of these new economic relations did not occur without resistance and the brutal intervention of state institutions. In many respects, the process of collectivisation marked the beginning of the disappearance of the traditional peasant world, as private property was replaced by the collective form of ownership.

126 | Ibid. 41, 45.
127 | For a thorough analysis of cooperative ownership, the producer cooperative system, and their post-socialist afterlife in Hungary, see: Csák and Hornyák 2024; Prugberger 1997.
128 | Manta 2017, 99.
129 | Lonergan 2020, 4.
130 | Mihalache 2020, 89.
131 | Kideckel 1982, 320–340.
132 | Șandru 2005, 45–65.

After the regime change in 1989, issues related to the retrocession of agricultural land and the privatisation of economic entities inherited from the communist period monopolised the public debate and polarised the Romanian society. In the context of these debates, little room was left for analysing the situation of rural communities and identifying levers of intervention to support their development.[133] At the same time, "the agricultural production cooperatives had directly or indirectly bankrupted themselves (through lack of use and maintenance), destroying local or regional investments, including those in agricultural infrastructure (cereal silos, irrigation systems, etc.) [...]. One of the fundamental deficiencies of Romanian agriculture and of cooperatives was the absence of an adequate strategic program for the management and development of the economy in general, and agriculture in particular."[134]

4.2. Legal background

The foundation for the revival of the Romanian cooperative movement – and, within it, agricultural cooperatives – was laid through the creation of a legal framework in the first half of the 2000s. At the end of December 2004, Act No. 566 on agricultural cooperatives[135] entered into force, followed in February 2005 by Act No. 1 on the organisation and functioning of cooperatives.[136] These two acts have defined the legal framework for agricultural cooperative activity for the past two decades. In the context of the Covid-19 pandemic, the legislator introduced an additional act to the general legal framework to support cooperative members. Under Ministerial Order No. 190/2021[137] of the Ministry of Agriculture and Rural Development, members of agricultural and craft cooperatives benefited from a series of tax concessions.

The entry into force of the legislation has given a strong impetus to the agricultural cooperative movement, as illustrated by the fact that "[i]n the period January 1st 2005 – August 31st 2021, more than 2700 agricultural cooperatives were registered in Romania. The rate of annual registrations of agricultural cooperatives in the National Trade Register Office (*Oficiul Național al Registrului Comerțului*) varied considerably. While until 2015 this had an almost linear evolution, from 2016 onwards it began to fluctuate, culminating in a significant increase in 2021. The causes of this increase are related to the financing and fiscal facilities available to agricultural cooperatives and their members, the experience gained through the

133 | Mihalache 2020, 91.
134 | Bercu et al. 2020.
135 | *Legea nr. 566/2004 a cooperației agricole*, published in the Official Gazette No. 1236, 22 December 2004.
136 | *Legea nr. 1/2005 privind organizarea și funcționarea cooperației*, republished in the Official Gazette No. 368, 20 May 2014.
137 | *Ordinul nr. 190/1.157/1.460/2021 pentru stabilirea criteriilor şi modalităţilor potrivit cărora membrii cooperatori şi cooperativele agricole beneficiază de scutirile prevăzute la art. 76 alin. (1) lit. b), e) şi e1) din Legea cooperaţiei agricole nr. 566/2004*, published in the Official Gazette No. 1039, 1 November 2021.

implementation of projects that stimulated the establishment and development of cooperatives, and the favourable legislative framework."[138] Despite this progress, it is noted that "[c]onceptually speaking, Romanian cooperatives are still at the beginning of their operation, even though we compare them with the European ones which have been functioning on the same principles for decades. [...] Act No. 566/2004 represents the initial moment from which the process of reconsolidating agricultural cooperatives in Romania began."[139]

4.3. Terminology

According to Act No. 1/2005, agricultural cooperative societies are associations of natural persons established for the purpose of jointly exploiting the agricultural land owned by cooperative members, carrying out land improvement works collectively, jointly using machinery and equipment, and collectively exploiting agricultural products. Similar legal definitions exist for fisheries and forestry cooperatives as well. The cooperative principles are widely regulated, including the principle of voluntary and open association, the principle of democratic control of cooperative members, the principle of economic participation of cooperative members, the principle of autonomy and independence of cooperative societies, the principle of education, training, and information of cooperative members, the principle of cooperation among cooperative societies, and the principle of concern for the community.

Any natural person over the age of 16 may become a cooperative member. This corresponds to the age set by the Labour Code for entering into an employment contract without requiring parental consent.

Article 33 states that three types of relationships may exist between the cooperative society and the cooperative member: 1) patrimonial, materialised by the obligation of the cooperative member to deposit shares and/or in-kind contributions; 2) employment, applicable to cooperative members contributing both labour and capital, on the basis of either an individual employment contract or an individual employment agreement, as the case may be, concluded with the cooperative society to which the member belongs; and 3) cooperative trade, concerning the supply of products and services carried out by the cooperative member for the cooperative society as an independent economic operator.

4.4. The specificity of cooperative employment

The issue of cooperative employment is scarcely discussed by Romanian labour law scholars. Țiclea, for example, in his treatise on labour law, only mentions with regard to cooperatives that "these companies are run by persons who have solely

138 | Dobay 2023, 135–143.
139 | Bercu et al. 2020.

the status of cooperators, a dual status of cooperators and employees, or are exclusively employees."[140]

According to the Act on cooperatives, in the case of cooperative societies, the employment relationships of cooperative members may be regulated by a special act, which, in the case of agricultural cooperatives, is Act No. 566/2004. However, this act merely sets the framework for cooperative employment. Article 18 states that there may be an employment relationship between the agricultural cooperative and the cooperator member, based either on an individual employment contract or an individual employment agreement, but cooperative members are not obliged to work within the agricultural cooperative. On the other hand, the act also allows for the employment of cooperative members, specialists, and other persons based on an employment contract, under the conditions laid down by law and the statutes.

Under these circumstances, the question remains open: what is the legal nature of the relationship between the cooperative and the member who works within it, and what is the difference between the contract and the individual employment agreement?

It is our view that a clear distinction must be made between the situation in which the cooperative acts as an employer, employing labour on the basis of individual employment contracts – where the employment relationship between the parties is governed by labour law, primarily the Labour Code – and the situation involving individual employment agreements. Țop, for example, highlights the complex nature of these relationships based on employment agreements, stating that "such an agreement gives rise to a complex legal relationship, since the acquisition of membership in a cooperative creates a plurality of legal relationships inextricably linked to each other, legal employment relationships, on the one hand, and legal patrimonial relationships deriving from the statutory obligations to make a social contribution and to subscribe, upon joining the cooperative, the membership fee and the social share in cash."[141] Ștefănescu, meanwhile, points out that these employment relationships "are not analysed within the framework of labour law" and proposes the creation of a separate branch of law – cooperative law.[142]

It is also worth noting the opinion of the Argeș Territorial Labour Inspectorate (*Inspectoratul Teritorial de Muncă Argeș*), which in 2022 issued a clarification regarding the legal nature of employment relationships in the case of individual employment agreements. They consider that "[t]he cooperative legal relationship is a complex legal relationship that includes, when the cooperator is also an employee, patrimonial, labour and social participation components. In

140 | Țiclea 2013, 35.
141 | Țop 2022, 38.
142 | Ștefănescu 2017, 34–36.

summary, the employment relationships of cooperative members are essentially different from the employment relationships established under the provisions of the Labour Code. The main difference lies in the fact that the legal employment relationship is based on the individual employment contract, while the cooperative legal relationship is based on an association agreement. Article 104 (2) of Act No. 1/2005 expressly stipulates that associations of cooperative societies, county and national unions of cooperative societies may agree on internal rules and regulations on the basis of and within the limits of the legal provisions laid down in the statutes, decisions, rulings and other normative acts issued by the competent authorities. Thus, employment relations are regulated by the internal rules of the cooperative, issued within the limits of the legal provisions [...]. In conclusion, after a probationary period, the cooperative member concludes an individual employment agreement. It is a contract of indefinite duration, on the basis of which a natural person, having the status of cooperator, undertakes to perform work for and under the authority of a cooperative, in return for remuneration (salary). Consequently, we consider that the employment relationships of cooperative members in cooperatives of all types [...] are not analysed within the framework of labour law." [143]

The main conclusion to be drawn is that the cooperative itself plays a key role in shaping the parameters of the employment relationship within cooperatives. However, as practical examples illustrate, despite the emphasis on the autonomy of the cooperative employment relationship, it is in many respects similar or even identical to the employment relationship regulated by the Labour Code, which is established by the conclusion of an employment contract. The parties clearly occupy the classic subordinate positions of employer and employee, with the cooperative, as employer, retaining the power to issue instructions. Furthermore, individual employment agreements also resemble, both in their definition and content, the provisions of labour law applicable to individual employment contracts.[144] However, in defining rights and obligations, although labour law and its minimum standards can serve as a model, the will of the parties – primarily the cooperative as the employer – may be expressed much more broadly. For instance, "[s]ince there is no obligation to grant a guaranteed minimum wage or to comply with a work schedule established by an employment contract, the method of granting rights for the work performed is the one agreed for the activity carried out by the cooperative member, according to the provisions of Act No. 1/2005."[145]

143 | Inspectoratul Teritorial de Muncă Argeş 2022.
144 | UCECOM 2023.
145 | Mornea 2023, 11–12.

5. Summary and conclusions

In our study, we have examined employment-related issues in the Romanian agricultural sector, which holds particular importance due to the large number of individuals engaged in this field.

Our analysis has begun with the recognition that, given the specificities of the sector in question, working in this area requires tailored regulatory approaches that may be more appropriate than the typical employment relationship governed by an employment contract. Accordingly, we have directed the focus of our analysis toward three distinct forms of employment: day labour, self-employment, and cooperative employment.

The regulation of day labour in Romania has undergone significant changes over the past decade. The primary objective has been to enhance the transparency of this employment form by introducing an electronic registration system, while simultaneously ensuring a higher level of protection for the worker through more precise regulation. Weighing the advantages and disadvantages, we believe that, in many respects, this form of employment is indeed better aligned with the needs of the agricultural sector than traditional employment. However, it is of utmost importance that labour law protection be extended as comprehensively as possible in this case, too. We therefore assess the direction of regulation as positive, although it would be desirable to further shift the parameters towards a higher level of protection in a number of areas.

In the case of self-employment, we observed that general rules apply, and labour law and social security protection are implemented within a precise framework.

The issue of employment in cooperatives is, however, quite complex. The cooperative itself may act as an employer and conclude individual employment contracts under the conditions set out in the Labour Code. However, cooperative members work under so-called employment agreements, which are not precisely regulated under cooperative law. Their relevance is underlined by Article 16 of Act No. 1/2005 on cooperatives, which states that cooperative societies shall be obliged to carry out the activities provided for in the constitutive act exclusively with the cooperative members, unless otherwise provided in the constitutive act. The content of the working agreements available to cooperative members is essentially determined by the will of the parties, but the cooperative plays a special role in defining the regulatory framework for this type of occupation in its statutes. In practice, we observe that cooperatives rely on the provisions of the Labour Code as their primary source of inspiration in drafting employment regulations and the content of such agreements.

In conclusion, several specific forms of agricultural employment exist in Romania, offering alternatives to the traditional employment relationship based on individual employment contracts. In our view, future regulatory developments

concerning these alternative forms should focus on the enhancement of worker protection to the highest possible standard. Encouragingly, progress in this direction is already noticeable.

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