

# INCREASED PLASTIC WASTE POLLUTION OF FRESHWATER RESOURCES – DO WE HAVE THE APPROPRIATE LEGAL FRAMEWORK TO ADDRESS IT?

Stelian-Mihai MIC\*  
Cristiana MIC-SOARE\*\*

## Abstract

*It is widely known and demonstrated that plastic waste pollution is a significant factor contributing to the deterioration of the worldwide freshwater resources. In close relation to this is also the marine and oceanic pollution, which is influenced, among other, by the pollution of the freshwater resources which discharge into the seas and oceans. On top of that comes the latest research, which shows that plastic waste pollution is predicted to exceed the efforts to mitigate such pollution with reference to the year 2030.*

*In such context, we find that it is important to determine, from a legal standpoint, if and how the currently applicable Romanian legal framework is capable to address and contribute to the mitigating mechanisms against freshwater pollution by plastic waste.*

*First, this paper undertakes to briefly discuss the latest findings related to the plastic waste pollution of freshwater resources. Second, we will analyse the most important and relevant legal provisions in the field of water protection against pollution with plastic waste, on one hand, and in the field of (plastic) waste management, on the other hand. Third, we will try to determine if and how they can be seen as establishing a coherent and integrative legal framework, capable of addressing the above-mentioned issues. Last but not least, we will present the conclusions of our study and potential areas of improvement of the applicable legal provisions in Romania in relation to pollution of freshwater resources by (plastic) waste.*

**Keywords:** *plastic waste, waste management, freshwater resources, pollution, Romanian legal framework.*

## 1. Introduction

Plastics – they are everywhere. They surround us with an ever-increasing speed, because they come from everything: from plastic food-packaging (e.g. bottles used for water, juices, milk), cosmetic and other products, to the classic plastic bags of all kinds, or even to fashion products which include (perhaps surprisingly) a high amount of plastic in them.

Not only are plastics everywhere, but their quantities are continuously rising, being found in various forms in the soil, oceans, freshwater resources and in the air (e.g. the notorious PM 2.5), “even in the most remote and pristine areas of the world”.<sup>1</sup> Thus, even though – ideally and purely theoretically – assuming there would exist an effective plastic management system at all levels, they should not enter the environmental systems, in practice they do, and in large amounts.

Due to their potentially harmful impact and high volume, various bodies at international and intergovernmental level (for example, the United Nations, the World Bank, etc.), regional level (e.g. the

European Union) and national level are debating the issue of plastics in the surrounding environment, addressing it by means of various policies and regulations.

Nonetheless, even though plastics are a major concern and have been extensively documented and regulated in relation to marine environments, plastic pollution affecting freshwater resources has been subject to limited research and even more limited regulation, such research being also more recent, as we will discuss in more detail below in section 2.1. One important example is that of the European Water Framework Directive,<sup>2</sup> which, although older than the European Marine Strategy Framework Directive (which includes provisions related to plastic waste pollution),<sup>3</sup> does not encompass specific provisions related to the issue of plastic pollution, as we will further show in section 2.2. below. By contrast, the Romanian Water Law<sup>4</sup> does include certain provisions regarding waste in general, thus encompassing also the plastic waste, as will be detailed in section 2.2. below.

In this context, this study undertakes to answer the following main research questions, which will be subsequently analysed in the following sections:

---

\* Stelian-Mihai MIC, PhD Candidate, Faculty of Law, University of Bucharest (e-mail: stelian.mic@mialegal.ro).

\*\* Cristiana MIC-SOARE, PhD Candidate, Faculty of Law, University of Bucharest (e-mail: cristianamicsoare@gmail.com).

<sup>1</sup> Karen Raubenheimer and Niko Urho, *Possible elements of a new global agreement to prevent plastic pollution* (Copenhagen: Nordic Council of Ministers, 2020), 20, <https://norden.diva-portal.org/smash/get/diva2:1477124/FULLTEXT02.pdf>.

<sup>2</sup> 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 (“Water Framework Directive”).

<sup>3</sup> 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”).

<sup>4</sup> Romanian Water Law no. 107/1996, as subsequently amended and supplemented, published in the Romanian Official Gazette no. 244 dated 8 October 1996 (“Romanian Water Law”).

1. What is the current status of freshwater resources from the perspective of their pollution with plastics?

2. Are the current Romanian legal frameworks regarding freshwater resources protection against pollution by plastic waste, on one hand, and plastic waste management, on the other hand, appropriately drafted so as to address issues of pollution with plastics in such increasing amounts?

3. How are these Romanian legal frameworks working together in order to coherently mitigate the issues of plastic pollution of freshwater resources and what improvements could be brought thereto?

## 2. Discussions on the Romanian legal framework addressing plastic pollution of freshwater resources

### 2.1. Current status of freshwater resources from the perspective of their pollution with plastics

Plastic is a type of waste that is among the most frequently identified as polluting the international freshwater resources. It affects virtually every freshwater and marine ecosystem globally, being thus a “planetary threat”,<sup>5</sup> and a very pervasive one as well.<sup>6</sup> Freshwater resources – particularly rivers – have been identified as being the main transporters of plastic waste to marine resources, thus significantly contributing to the pollution of our oceans and seas.<sup>7</sup>

Even though there is extensive research on the plastic pollution of marine environments, similar research conducted with respect to freshwater resources is much more limited and quite recent.<sup>8</sup>

Thus, it has been shown that, by restricting the plastic pollution from river freshwater ecosystems into

marine ecosystems, the globally accumulated plastic waste into the environment would be diminished.<sup>9</sup> Nevertheless, it would not seem to be sufficient even to completely stop the global production of plastic – which seems rather like a long-term, rather than short- or mid-term goal – since plastic has a very long degradation duration<sup>10</sup> (e.g. in the marine environment, 3.1 years for a biodegradable plastic bag, 3.4 years for a plastic bag, 58 years for plastic bottles, 1200 years for plastic pipes).<sup>11</sup>

In this context, a life-cycle approach to plastics would be highly recommended, coordinated at global level, where attention would be drawn, *inter alia*, to the limitation of production of virgin plastics, use of more environmentally-friendly materials for plastics, alignment of global standards for the use of recoverable and recyclable designs for commodity plastics, but also to the waste cycle of plastic – such as plastic waste reduction, waste management or even environmental recovery.<sup>12</sup>

Recent studies have shown that, even if the waste management capacities would be increased, this measure alone would not suffice taking into account the projected plastic waste generation growth, being essential to reach a circular economy of plastics, “where end-of-life plastic products are valued rather than becoming waste.”<sup>13</sup>

We also note that, in addition to the – perhaps more obvious and more researched upon – macroplastics, one of the most frequently identified forms of plastic found in freshwater systems all over the world are microplastics,<sup>14</sup> which is rarely regulated at international and national level under different policy

<sup>5</sup> Stephanie B. Borrelle *et al.*, “Predicted growth in plastic waste exceeds efforts to mitigate plastic pollution”, *Science* 369, no. 6510 (September 2020): 1515, <https://doi.org/10.1126/science.aba3656>.

<sup>6</sup> S. B. Sheavly and K. M. Register, “Marine Debris & Plastics: Environmental Concerns, Sources, Impacts and Solutions”, *J Polym Environ* 15 (2007): 301, <https://doi.org/10.1007/s10924-007-0074-3>.

<sup>7</sup> See, for example, Jenna R. Jambeck *et al.*, “Plastic waste inputs from land into the ocean”, *Science* 347, no. 6223 (February 2015): 768–771, <https://doi.org/10.1126/science.1260352>; Maarten van der Wal *et al.*, “SFRA0025: Identification and Assessment of Riverine Input of (Marine) Litter. Final Report for the European Commission DG Environment under Framework Contract No ENV.D.2/FRA/2012/0025” (2015): 59–60, <https://ec.europa.eu/environment/marine/good-environmental-status/descriptor-10/pdf/iasFinal%20Report.pdf>; Laurent C.M. Lebreton *et al.*, “River plastic emissions to the world’s oceans”, *Nat Commun* 8, no. 15611 (2017): 5–6, <https://doi.org/10.1038/ncomms15611>; Christian Schmidt, Tobias Krauth, and Stephan Wagner, “Export of Plastic Debris by Rivers into the Sea”, *Environ Sci Technol* 51 (2017): 12246, 12251, <https://doi.org/10.1021/acs.est.7b02368>; Martín C.M. Blettler *et al.*, “Freshwater plastic pollution: Recognizing research biases and identifying knowledge gaps”, *Water Research* 143 (2018): 416–417, 422, <https://doi.org/10.1016/j.watres.2018.06.015>.

<sup>8</sup> Blettler *et al.*, “Freshwater plastic pollution: Recognizing research biases,” 417; Dafne Eerkes-Medrano, Richard C. Thompson, and David C. Aldridge, “Microplastics in freshwater systems: A review of the emerging threats, identification of knowledge gaps and prioritisation of research needs,” *Water Research* 75 (2015): 63–82, <http://dx.doi.org/10.1016/j.watres.2015.02.012>; Martin Wagner *et al.*, “Microplastics in freshwater ecosystems: what we know and what we need to know,” *Environmental Sciences Europe* 26 (2014): 12, <http://www.enveurope.com/content/26/1/12>.

<sup>9</sup> Olivia K. Helinski, Cara J. Poor, and Jordyn M. Wolfand, “Ridding our rivers of plastic: A framework for plastic pollution capture device selection,” *Marine Pollution Bulletin* 165, no. 112095 (2021): 1, <https://doi.org/10.1016/j.marpolbul.2021.112095>.

<sup>10</sup> Helinski, Poor, and Wolfand, “Ridding our rivers of plastic,” 1.

<sup>11</sup> Ali Chamas *et al.*, “Degradation Rates of Plastics in the Environment,” *ACS Sustainable Chem Eng* 8 (2020): 3502, <https://dx.doi.org/10.1021/acssuschemeng.9b06635>.

<sup>12</sup> Winnie W. Y. Lau *et al.*, “Evaluating scenarios toward zero plastic pollution,” *Science* 369 (2020): 1455–1461, <https://doi.org/10.1126/science.aba9475>; Borrelle *et al.*, “Predicted growth in plastic waste,” 1517.

<sup>13</sup> Stephanie B. Borrelle *et al.*, “Predicted growth in plastic waste exceeds efforts to mitigate plastic pollution”, *Science* 369, no. 6510 (September 2020): 1517, <https://doi.org/10.1126/science.aba3656>.

<sup>14</sup> Chaoran Li, Rosa Busquets, and Luiza C. Campos, “Assessment of microplastics in freshwater systems: A review”, *Science of the Total Environment* 707, no. 135578 (2020): 7, <https://doi.org/10.1016/j.scitotenv.2019.135578>.

fields (such as waste management, chemical regulation, water management).<sup>15</sup>

A very recent study – published on 22 March 2021 – performed on Romanian freshwaters indicates that microplastic is present in all analysed samples from the freshwaters, recommending the elaboration of specific measures for preventing and combating microplastic pollution of freshwaters in Romania.<sup>16</sup> Per article 11 para. 2. lit. (a) of the European Waste Directive,<sup>17</sup> “by 2020, the preparing for re-use and the recycling of waste materials such as at least paper, metal, **plastic** and glass from households and possibly from other origins as far as these waste streams are similar to waste from households, shall be increased to a minimum of overall **50 %** by weight”. A similar provision was also transposed in the Romanian Waste Law<sup>18</sup> in article 17 para. (1) lit. b).

In spite of these regulations, against a European Union average of 47.7% in 2019, according to Eurostat data, the reality shows a decreasing rate of the waste materials from households that are recycled in Romania, with 14.8% in 2012, 13.9% in 2017 and only 11.5% in 2019 being prepared for re-use and recycling in Romania, situating our country on the second to last place in the European Union – only Malta having a lower percentage of 8.9% in 2019.<sup>19</sup>

We note also the recycling rates for plastic packaging waste (referring to the total quantity of recycled packaging waste, divided by the total quantity of generated packaging), which state that, against a European Union average of 41.2% in 2017 and of 41.5% in 2018, Romania had a higher recycling rate – of 47.6% in 2017, respectively of 43% in 2018.<sup>20</sup>

On the other hand, however, the view has been expressed that there are significant margins of error with respect to the Eurostat data, since this is received from the Romanian National Environmental Protection

Authority, which receives it in its turn from local authorities and waste operators.<sup>21</sup>

It is important to notice that the pollution of freshwater resources with plastic waste has been for a long time at alarming levels in Romania, despite the fact that, in 2016, 66.14% of the freshwaters that were inventoried had a good ecological status (for details regarding this notion, please see section 2.2. below), 33.33% had a moderate status, and only under 1% had a poor or bad ecological status.<sup>22</sup> The 2018 National strategy for sustainable development mentions that one of the main measures taken for improving the quality of the freshwater resources was “the elimination of uncontrolled depositing of wastes”, identifying at the same time depositing as the main method for eliminating municipal wastes (among which also plastic wastes) and confirming the existing deficiencies related to selective collection, recycling and re-use of wastes or their incineration in the waste-to-energy system.<sup>23</sup>

Moreover, as indicated in the report issued by the Romanian Court of Accounts on 16 March 2021 with respect to the management of municipal waste between 2016 and 2018, the authorities have identified numerous cases of uncontrolled dumping of waste and of lack of sanitation of the areas affected by this illegal activity.<sup>24</sup> Emphasis was placed on the fact that, despite numerous breaches of the applicable regulations on the uncontrolled depositing of waste that were observed by the National Environmental Guard, this authority did not frame the respective actions according to their gravity and the applicable legislation, thereby not actually discouraging such illegal practices.<sup>25</sup>

Against this background, we will proceed to analyse the most important provisions shaping the Romanian legal framework regarding freshwater resources protection against pollution by plastics and the waste management.

<sup>15</sup> Nicole Brennholt, Maren Heß, and Georg Reifferscheid, “Freshwater Microplastics: Challenges for Regulation and Management”, in *Freshwater Microplastics. Emerging Environmental Contaminants?*, ed. Martin Wagner and Scott Lambert, The Handbook of Environmental Chemistry, vol. 58, eds. Damia Barcello and Andrey G. Kostianoy (Springer Open: 2018): 267, <https://link.springer.com/content/pdf/10.1007%2F978-3-319-61615-5.pdf>.

<sup>16</sup> Asociația Act for Tomorrow, “Cartografierea Microplasticului în Apele României. Mapping Microplastic in Romanian Waters. Raport” (March 2021): 39, [https://drive.google.com/file/d/15HYeJeqxE6B3Cflwv9dxIDWzAxSAA6aK/view?fbclid=IwAR0HDSzc6pJ110I3OwH\\_Sw\\_FT9KReC40Se1qznFbVgaTSXdK6z3OROAL1\\_c](https://drive.google.com/file/d/15HYeJeqxE6B3Cflwv9dxIDWzAxSAA6aK/view?fbclid=IwAR0HDSzc6pJ110I3OwH_Sw_FT9KReC40Se1qznFbVgaTSXdK6z3OROAL1_c).

<sup>17</sup> Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives (“European Waste Directive”).

<sup>18</sup> Romanian Law no. 211/2011 on wastes’ regime, as subsequently amended and supplemented, republished in the Romanian Official Gazette no. 220 dated 28 March 2014 (“Romanian Waste Law”).

<sup>19</sup> “Recycling rate of municipal waste (online data code: SDG\_11\_60),” Source of data: Eurostat, available at [https://ec.europa.eu/eurostat/databrowser/view/sdg\\_11\\_60/default/table?lang=en](https://ec.europa.eu/eurostat/databrowser/view/sdg_11_60/default/table?lang=en).

<sup>20</sup> “Recycling rates for plastic packaging waste (online data code: TEN00063),” Source of data: Eurostat, available at [https://ec.europa.eu/eurostat/databrowser/view/cei\\_wm020/default/table?lang=en](https://ec.europa.eu/eurostat/databrowser/view/cei_wm020/default/table?lang=en).

<sup>21</sup> Sorin Ioniță, Otilia Nuțu, and Ilie Brie, “Celelalte crize ale României. Ce învățăm din proasta gestionare a gunoaielor și calității aerului după aderarea la UE” (English “The other crises of Romania. What do we learn from the bad management of litter and air quality after the admission to the EU”), May 2020: 19, <https://expertforum.ro/wp-content/uploads/2020/05/Raport-EFOR-Deseuri-2020.pdf>.

<sup>22</sup> 2018 National strategy for sustainable development for Romania 2030, adopted by Government Decision no. 877/2018 regarding the adoption of the National strategy for sustainable development for Romania 2030, published in the Romanian Official Gazette no. 985 dated 21 November 2018 (“2018 National strategy for sustainable development”), chapter 6.

<sup>23</sup> 2018 National strategy for sustainable development, chapter 6.

<sup>24</sup> Romanian Court of Accounts, “Sinteza raportului de audit al performanței. Analiză și diagnoză în gestionarea deșeurilor menajere” (English: “Synthesis of the performance audit report. Analysis and diagnose of the management of municipal waste”), 16 March 2021, [http://www.curteadeconturi.ro/Publicatii/Sinteza\\_deseuri\\_16032021.pdf](http://www.curteadeconturi.ro/Publicatii/Sinteza_deseuri_16032021.pdf), 38.

<sup>25</sup> Romanian Court of Accounts, “Sinteza raportului de audit”, 39.

## 2.2. Main provisions of the Romanian legal framework regarding the protection against pollution by plastics of freshwater resources

Plastic waste – or waste in general – is not regulated in the Water Framework Directive, which was transposed in Romania within the Romanian Water Law.

The Water Framework Directive makes reference to the states' obligation to “implement the necessary measures to prevent deterioration of the status of all bodies of surface water”,<sup>26</sup> as well as to “protect, enhance and restore all bodies of surface water, ... with the aim of achieving good surface water status at the latest 15 years after the date of entry into force of this Directive”.<sup>27</sup> “Good surface water status” refers to the status achieved by a surface water body when both its ecological status and its chemical status are at least “good”,<sup>28</sup> whereas a “good ecological status” relates to the quality of the structure and functioning of aquatic ecosystems associated with a body of surface water, so classified in accordance with Annex V of the Water Framework Directive,<sup>29</sup> and a “good surface water chemical status” refers to the chemical status required to meet the environmental objectives for surface waters established in Article 4 para. (1) lit. (a) of Water Framework Directive, that is the chemical status achieved by a body of surface water in which concentrations of pollutants do not exceed the environmental quality standards established in Annex IX and under Article 16 para. (7), and under other relevant Community legislation setting environmental quality standards at Community level.<sup>30</sup>

Nevertheless, even despite the lack of specific provisions in the Water Framework Directive related to measures of protection of watercourses against plastic pollution, the necessity to prevent the deterioration of the status of all bodies of surface water indirectly implies their protection against pollution with plastics. Thus, the occurrence of plastics (and even, more specifically, microplastics), can have a significant impact on the quality of the freshwaters, being able to influence the ecological status thereof, while a number of substances listed in the Water Framework Directive as priority substances, the concentration of which should not exceed certain levels in order to maintain a good chemical water status, are frequently (although not exclusively) used as additives in plastics.<sup>31</sup>

By contrast to the Water Framework Directive, the Romanian Water Law also includes – in addition to similar provisions regarding the good surface water status, good ecological status and other provisions as discussed in relation to the Water Framework Directive

– a number of provisions regarding waste in general, thus encompassing also the plastic waste in its field of regulation.

One of the specific interdictions laid down in Article 16 para. (1) lit. c) of Romanian Water Law is the express prohibition to dump, introduce, or to deposit in anyway in the riverbeds or lake basins any kinds of waste. Depositing waste of any kind is forbidden also in the protection areas instituted by the Romanian Water Law, whereas the use, transportation and handling of waste in areas near waters and in other areas from which they could reach the surface waters is allowed only if it does not pollute waters. At the same time, the depositing of waste in areas near waters can only be performed according to the water rights permit (Romanian *aviz de gospodărire a apelor*) issued by the competent Romanian water authority.

We notice that Romanian Water Law does not couple these specific interdictions with directly correlated sanctions. This approach will be further discussed in section 2.4. below.

Nevertheless, Romanian Water Law includes a list of actions and inactions which are qualified as contraventions, if they are not performed as to be crimes. Among these, we note the following as the most relevant with respect to waste affecting freshwater resources:

- lack of operative measures taken by the local public administrative authorities regarding the establishment of special places for depositing any kinds of waste. We note that this is the only contravention expressly related to waste. This can be sanctioned by fine ranging between lei 75,000 (approximately EUR 15,370<sup>32</sup>) and lei 80,000 (approximately EUR 16,400) for legal persons, and between lei 25,000 (approximately EUR 5,125) and lei 30,000 (approximately EUR 6,150) for natural persons;
- depositing “any kinds of materials” in the riverbeds or at the shores of, among other, the freshwaters (rivers or lakes), or in their protection areas – we consider that this provision can also be interpreted as indirectly referring to (plastic) waste. This can be sanctioned by fine ranging between lei 75,000 (approximately EUR 15,370) and lei 80,000 (approximately EUR 16,400) for legal persons, and between lei 25,000 (approximately EUR 5,125) and lei 30,000 (approximately EUR 6,150) for natural persons;
- dumping residues “or any other materials” in water resources, in breach of the water rights permit (Romanian *aviz de gospodărire a apelor*) or of the water rights authorisation (Romanian *autorizație de gospodărire a apelor*) – this provision can be

<sup>26</sup> Article 4 para. 1. lit. (a) pt. (i) of Water Framework Directive.

<sup>27</sup> Article 4 para. 1. lit. (a) pt. (ii) of Water Framework Directive.

<sup>28</sup> Article 2 pt. 18. of Water Framework Directive.

<sup>29</sup> Article 2 pt. 21. and 22. of Water Framework Directive.

<sup>30</sup> Article 2 pt. 24. of Water Framework Directive.

<sup>31</sup> Charlotte Wesch *et al.*, “Microplastics in Freshwater Environments. A Need for Scientific Research and Legal Regulation in the Context of the European Water Framework Directive,” *Zeitschrift für Europäisches Umwelt- und Planungsrecht* 4 (2014): 277, <https://www.researchgate.net/publication/269572531>.

<sup>32</sup> All exchange rates in this paper have been calculated at a level of EUR 1 = lei 4.88.

interpreted, in our view, as encompassing the interdiction to dump (plastic) waste into freshwater resources, in breach of an existing water rights permit or authorisation, or even in lack of one. This can be sanctioned by fine ranging between lei 35,000 (approximately EUR 7,175) and lei 40,000 (approximately EUR 8,200) for legal persons, and between lei 10,000 (approximately EUR 2,050) and lei 15,000 (approximately EUR 3,075) for natural persons;

- not informing the water authorities regarding a case of accidental pollution, by the users that have produced it, respectively not taking operative measures, by the users that have produced the accidental pollution, for eliminating the causes and effects thereof – such pollution could also be made by (plastic) waste. This can be sanctioned by fine ranging between lei 35,000 (approximately EUR 7,175) and lei 40,000 (approximately EUR 8,200) for legal persons, and between lei 10,000 (approximately EUR 2,050) and lei 15,000 (approximately EUR 3,075) for natural persons;

Moreover, the following acts are qualified by the Romanian Water Law as crimes and are punished by imprisonment between 1 and 5 years:

- the evacuation, throwing or injecting in the surface waters of any kinds of waste containing substances, bacteria or microbes in a quantity or concentration that could change the water's characteristics, endangering life, health or corporal integrity of people, animals' lives, the environment, the agricultural or industrial production or the fishing stock;

- any kind of pollution of water sources (thus including plastic waste pollution) if it is systematic and it causes damages to the downstream water users.

If the above-mentioned acts are performed without criminal intent, the imprisonment is reduced by half.

### **2.3. Currently applicable Romanian legal framework regarding plastic waste management, relevant with respect to the protection of freshwater resources against pollution by plastics**

The legislation regarding waste management is very diverse and numerous. Therefore, for the purposes of this study, only a limited number of provisions will be analysed and presented, respectively the ones directly related to the protection of freshwater resources against pollution by plastic waste.

To begin with, we note that “waste” is defined by Romanian Waste Law as “any substance or object that its holder throws or intends to or has the obligation to throw”,<sup>33</sup> whereas the plastic waste is included in the notion of “municipal waste”, which is defined as “mixed waste or separately collected waste from

households, including ... plastic materials ...”.<sup>34</sup> Waste is also defined in a number of other national and international legal instruments, such as the Government Emergency Ordinance no. 195/2005 on environment protection, which refers to the notion of “waste” as referring to any substance, chemical or object included of the categories established by the relevant waste legislation which is thrown by its holder or which the holder intends or is obliged to throw.<sup>35</sup>

The ecological management of waste is considered to be primarily ensured by an adequate legal framework regarding the collection, transport, recovery and elimination of waste, on one hand, and by the supervision of such operations and further maintenance of the corresponding facilities (especially the ones for elimination of waste).<sup>36</sup>

One of the main provisions included in the Romanian Waste Law refers to the general obligation that the management of waste (thus, also of plastic waste) must be performed without endangering the human health and without prejudicing the environment, especially, also among other, without generating risks to the water.<sup>37</sup> There are a number of obligations which must be performed by complying with this above-mentioned general obligation, among which we note the following:

- the obligation of waste producers and waste holders to recover it. The breach of this obligation is qualified as administrative offence and can be sanctioned by fine ranging between lei 20,000 (approximately EUR 4,100) and lei 40,000 (approximately EUR 8,200) for legal persons, respectively between lei 3,000 (approximately EUR 615) and lei 6,000 (approximately EUR 1,230) for natural persons;

- the obligation of waste producers and waste holders to perform the treatment operations accordingly or to transfer such operations to a competent authorised economic operator, respectively the obligation of collectors or transporters of waste to deliver and transport waste only to authorized units for sorting, treating, recycling and depositing waste. The breach of any of these obligations is qualified as administrative offence and can be sanctioned by fine ranging between lei 20,000 (approximately EUR 4,100) and lei 40,000 (approximately EUR 8,200) for legal persons, respectively between lei 3,000 (approximately EUR 615) and lei 6,000 (approximately EUR 1,230) for natural persons;

- the obligation of waste producers and waste holders to eliminate the waste that was not recovered in secure conditions. Interestingly, the breach of this obligation does not have a direct correlative sanction.

<sup>33</sup> Point 9 of Annex 1 of Romanian Waste Law.

<sup>34</sup> Point 9<sup>2</sup> of Annex 1 of Romanian Waste Law.

<sup>35</sup> Article 2 point 19 of Government Emergency Ordinance no. 195/2005 on environment protection, as subsequently amended and supplemented, published in the Romanian Official Gazette no. 1196 of 30 December 2005.

<sup>36</sup> Daniela Marinescu and Maria-Cristina Petre, *Tratat de Dreptul mediului*, 5th ed. (Bucharest: Editura Universitara, 2014), 537.

<sup>37</sup> Article 20 lit. a) of Romanian Waste Law.

Additionally, Romanian Waste Law specifically forbids:

- the abandonment of waste. The breach of this provision can be sanctioned by fine ranging between lei 20,000 (approximately EUR 4,100) and lei 40,000 (approximately EUR 8,200) for legal persons, respectively between lei 3,000 (approximately EUR 615) and lei 6,000 (approximately EUR 1,230) for natural persons. A complementary sanction can be imposed in this case as well, that of picking up the waste deposited in areas other than the authorised ones, cleaning the respective land, as well as eliminating it according to the legislation in force;

- the elimination of waste outside of areas authorised with this purpose. The breach of this provision can be sanctioned by fine ranging between lei 20,000 (approximately EUR 4,100) and lei 40,000 (approximately EUR 8,200) for legal persons, respectively between lei 3,000 (approximately EUR 615) and lei 6,000 (approximately EUR 1,230) for natural persons.

Probably most of the activities that lead to the pollution of freshwater resources with plastic waste could be considered as representing abandonment of waste and could thus be sanctioned as such. Moreover, such activities could also be sanctioned as contraventions with a fine ranging between lei 30,000 (approximately EUR 6,150) and lei 60,000 (approximately EUR 12,300) for legal persons, respectively between lei 5,000 (approximately EUR 1,025) and lei 10,000 (approximately EUR 2,050) for natural persons, based on Government Emergency Ordinance no. 195/2005 on environment protection, which forbids, among other, throwing and depositing any types of waste in the surface waters. However, as we will show below in section 2.4., the actual application of the above-mentioned legal provisions is insufficient in Romania.

#### **2.4. Potential areas of improvement of the currently applicable Romanian legal framework regarding waste management and freshwater resources protection against pollution by plastics**

As previously stated in section 2.2, Romanian Water Law does not link specific sanctions to the breach of the interdictions regarding waste. It does indeed include a number of sanctions (qualified as contraventions or crimes, as the case may be) for various actions or inactions, which can be interpreted to include also as indirectly referring to the above-mentioned interdictions. However, we consider that, for a higher impact and better clarity of the consequences of such forbidden acts related to waste (including plastic waste), the sanctions should be directly linked to the interdictions stated in the

Romanian Water Law. If necessary, more general, broad-ranging sanctions could also be maintained, complementary to the specific ones.

Moreover, we are of the view that more specific interdictions referring to various types of waste should be included in the Romanian Water Law, with different sanctions depending, mainly, on the severity of the impact of the pollution of the respective waste on the freshwater environments, but also on other factors such as the recurring character of the action.

Additionally, the amounts of the fines should also be significantly increased, and the actual collection of the respective fines should be ensured by the Romanian competent authorities, in order for these obligations and their correlated sanctions not to remain simply „obligations on-paper”.

Other legislative amendments could regard the following:

- exclusion of the currently applicable legal provisions stating that if the penalties applied in respect with environmental breaches are paid within 48 hours, they are diminished to half;

- removal of any statute of limitation regarding the right to action against the breach of at least the environmental provisions regarding the contamination of freshwater resources and negligent or irresponsible waste management, considering the specific consequences of the ecologic damages caused by plastic waste pollution;

- development of better enforcement mechanics for the „polluter pays” principle, in order to ensure not only the sanctioning of the polluter via the fine, but also the cleaning of the contaminated water resource on the cost of the actual polluter;

- introducing in the Romanian Water Law the specific obligation to monitor the presence and concentration in freshwaters of plastics in general, and of microplastics in particular;<sup>38</sup>

- development of a national strategy for preventing and combating Romanian freshwater pollution with waste.<sup>39</sup>

Last but not least, we submit, in line with other authors, that even the Water Framework Directive could benefit from amendments in the sense of including waste or even, more specifically, (micro)plastics provisions therein,<sup>40</sup> even though this could indeed be a cumbersome process, particularly due to the increased monitoring obligations which would be imposed on Member States of the European Union.<sup>41</sup> Moreover, the regional coordination of Member States with river basin authorities would also have an important role in limiting or even decreasing the plastics reaching the freshwater environments.<sup>42</sup>

<sup>38</sup> For a similar recommendation, Asociația Act for Tomorrow, “Cartografierea Microplasticului în Apele României”: 39.

<sup>39</sup> For a similar recommendation, Asociația Act for Tomorrow, “Cartografierea Microplasticului în Apele României”: 40.

<sup>40</sup> Charlotte Wesch *et al.*, “Microplastics in Freshwater Environments,” 277.

<sup>41</sup> Maarten van der Wal *et al.*, “SFRA0025,” 73.

<sup>42</sup> *Id.*

### 3. Conclusions

As shown above, plastic pollution of freshwater resources is a growing and very challenging problem, and therefore “without a well-designed and tailor-made management strategy for end-of-life plastics, humans are conducting a singular uncontrolled experiment on a global scale, in which billions of metric tons of material will accumulate across all major terrestrial and aquatic ecosystems on the planet.”<sup>43</sup> This aspect has to be placed in the context that water (in general), and freshwater (in particular), has a very important ecological and economical value as a natural resource, and therefore its quantitative and qualitative protection and conservation represent imperative objectives.<sup>44</sup>

However, only 79% of the Romanian citizens expressed their concern about the effects of plastics on the environment, in the 2017 Special Eurobarometer on attitudes of EU citizens towards the environment – this

being the lowest proportion in the EU, where the average was of 87%.<sup>45</sup>

Therefore, along with the legislative amendments proposed above, we are of the view that the raising of awareness of the Romanian population on the effects that their daily actions have on the environment could have a significant impact on the improvement of the huge problem represented by the plastic pollution of freshwater resources and thus, raise the level of separate collection of plastic waste. Additionally, the strict and careful application of the provisions stating that the polluter should always support the cost of the cleaning process supplementary to the sanctions imposed by the applicable legislation, in all cases where breaches are identified are also essential. This requires a well improved monitoring by the authorities, but also the closer implication of various non-state actors such as NGOs or even natural persons for alerting the competent authorities when they notice such breaches.

### References

- 2018 National strategy for sustainable development for Romania 2030, adopted by Government Decision no. 877/2018 regarding the adoption of the National strategy for sustainable development for Romania 2030, published in the Romanian Official Gazette no. 985 dated 21 November 2018;
- Asociația Act for Tomorrow, “Cartografierea Microplasticului în Apele României. Mapping Microplastic in Romanian Waters. Raport” (March 2021): 1-86, [https://drive.google.com/file/d/15HYeJeqxE6B3Cflwv9dxlDWzAxSAA6aK/view?fbclid=IwAR0HDSzc6pJ1I0l3OwH\\_Sw\\_FT9KReC40Se1qznFbVgaTSXdK6z3OROAL1\\_c](https://drive.google.com/file/d/15HYeJeqxE6B3Cflwv9dxlDWzAxSAA6aK/view?fbclid=IwAR0HDSzc6pJ1I0l3OwH_Sw_FT9KReC40Se1qznFbVgaTSXdK6z3OROAL1_c);
- Blettler, Martín C.M., Elie Abrial, Farhan R. Khan, Nuket Sivri, and Luis A. Espinola, “Freshwater plastic pollution: Recognizing research biases and identifying knowledge gaps,” *Water Research* 143 (2018): 416-424. <https://doi.org/10.1016/j.watres.2018.06.015>;
- Borrelle, Stephanie, Jeremy Ringma, Kara Lavender Law, Cole C. Monnahan, Laurent Lebreton, Alexis McGivern, Susannah L. Scott, and Sangwon Suh, “Predicted growth in plastic waste exceeds efforts to mitigate plastic pollution,” *Science* 369, no. 6510 (2020): 1515-1518. <https://doi.org/10.1126/science.aba3656>;
- Brennholt, Nicole, Maren Heß, and Georg Reifferscheid, “Freshwater Microplastics: Challenges for Regulation and Management”, in *Freshwater Microplastics. Emerging Environmental Contaminants?*, ed. Martin Wagner and Scott Lambert, The Handbook of Environmental Chemistry, vol. 58, eds. Damia Barcelo and Andrey G. Kostianoy (Springer Open, 2018), 239-272. <https://link.springer.com/content/pdf/10.1007%2F978-3-319-61615-5.pdf>;
- Chamas, Ali, Hyunjin Moon, Jiajia Zheng, Yang Qiu, Tarnuma Tabassum, Jun Hee Jang, Mahdi Abu-Omar, Susannah L. Scott, and Sangwon Suh, “Degradation Rates of Plastics in the Environment,” *ACS Sustainable Chem Eng* 8 (2020): 3494–3511. <https://dx.doi.org/10.1021/acssuschemeng.9b06635>;
- 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;
- 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;
- Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives;
- Dogaru, Lucreția. *Dreptul mediului*, 2nd ed. Bucharest: Pro Universitaria, 2020;
- Eerkes-Medrano, Dafne, Richard C. Thompson, and David C. Aldridge, “Microplastics in freshwater systems: A review of the emerging threats, identification of knowledge gaps and prioritisation of research needs,” *Water Research* 75 (2015): 63-82. <http://dx.doi.org/10.1016/j.watres.2015.02.012>;
- European Commission, “Commission Staff Working Document. The EU Environmental Implementation Review 2019. Country Report – ROMANIA,” Brussels, 4.4.2019, SWD(2019) 130 final. [https://ec.europa.eu/environment/eir/pdf/report\\_ro\\_en.pdf](https://ec.europa.eu/environment/eir/pdf/report_ro_en.pdf);
- Geyer, Roland, Jenna R. Jambeck, and Kara Lavender Law, “Production, use, and fate of all plastics ever made,” *Sciences Advanced* 3 (7), e1700782 (July 2017): 1-5. <https://doi.org/10.1126/sciadv.1700782>;

<sup>43</sup> Roland Geyer, Jenna R. Jambeck, and Kara Lavender Law, “Production, use, and fate of all plastics ever made,” *Sciences Advanced* 3 (7), e1700782 (July 2017): 3, <https://doi.org/10.1126/sciadv.1700782>.

<sup>44</sup> Lucreția Dogaru, *Dreptul mediului*, 2nd ed. (Bucharest: Pro Universitaria, 2020), 238.

<sup>45</sup> European Commission, “Commission Staff Working Document. The EU Environmental Implementation Review 2019. Country Report – ROMANIA,” Brussels, 4.4.2019, SWD(2019) 130 final: 4, [https://ec.europa.eu/environment/eir/pdf/report\\_ro\\_en.pdf](https://ec.europa.eu/environment/eir/pdf/report_ro_en.pdf).

- Government Emergency Ordinance no. 195/2005 on environment protection, as subsequently amended and supplemented, published in the Romanian Official Gazette no. 1196 of 30 December 2005;
- Helinski, Olivia K., Cara J. Poor, and Jordyn M. Wolfand, "Ridding our rivers of plastic: A framework for plastic pollution capture device selection," *Marine Pollution Bulletin* 165, no. 112095 (2021): 1-13. <https://doi.org/10.1016/j.marpolbul.2021.112095>;
- Ioniță, Sorin, Otilia Nuțu, and Ilie Brie, "Celelalte crize ale României. Ce învățăm din proasta gestionare a gunoaielor și calității aerului după aderarea la UE" (English "The other crises of Romania. What do we learn from the bad management of litter and air quality after the admission to the EU"), May 2020. <https://expertforum.ro/wp-content/uploads/2020/05/Raport-EFOR-Deseuri-2020.pdf>;
- Jambeck, Jenna R., Roland Geyer, Chris Wilcox, Theodore R. Siegler *et al.*, "Plastic waste inputs from land into the ocean," *Science* 347, no. 6223 (February 2015): 768-771. <https://doi.org/10.1126/science.1260352>;
- Lau, Winnie W. Y., Yonathan Shiran, Richard M. Bailey, Ed Cook *et al.*, "Evaluating scenarios toward zero plastic pollution," *Science* 369 (2020): 1455-1461. <https://doi.org/10.1126/science.aba9475>;
- Lebreton, Laurent C.M., Joost van der Zwet, Jan-Willem Damsteeg, Boyan Slat *et al.*, "River plastic emissions to the world's oceans," *Nat Commun* 8, no. 15611 (2017): 1-10. <https://doi.org/10.1038/ncomms15611>;
- Li, Chaoran, Rosa Busquets, and Luiza C. Campos, "Assessment of microplastics in freshwater systems: A review", *Science of the Total Environment* 707, no. 135578 (2020): 1-12. <https://doi.org/10.1016/j.scitotenv.2019.135578>;
- Marinescu, Daniela and Maria-Cristina Petre. *Tratat de Dreptul mediului*. 5<sup>th</sup> ed. Bucharest: Editura Universitara, 2014;
- Raubenheimer, Karen, and Niko Urho. *Possible elements of a new global agreement to prevent plastic pollution*. Copenhagen: Nordic Council of Ministers, 2020. <https://norden.diva-portal.org/smash/get/diva2:1477124/FULLTEXT02.pdf>;
- "Recycling rates for plastic packaging waste (online data code: TEN00063)," Source of data: Eurostat, available at [https://ec.europa.eu/eurostat/databrowser/view/cei\\_wm020/default/table?lang=en](https://ec.europa.eu/eurostat/databrowser/view/cei_wm020/default/table?lang=en);
- "Recycling rate of municipal waste (online data code: SDG\_11\_60)," Source of data: Eurostat, available at [https://ec.europa.eu/eurostat/databrowser/view/sdg\\_11\\_60/default/table?lang=en](https://ec.europa.eu/eurostat/databrowser/view/sdg_11_60/default/table?lang=en);
- Romanian Court of Accounts, "Sinteza raportului de audit al performanței. Analiză și diagnoză în gestionarea deșeurilor menajere" (English: "Synthesis of the performance audit report. Analysis and diagnose of the management of municipal waste"), 16 March 2021, [http://www.curteadeconturi.ro/Publicatii/Sinteza\\_deseuri\\_16032021.pdf](http://www.curteadeconturi.ro/Publicatii/Sinteza_deseuri_16032021.pdf);
- Romanian Law no. 211/2011 on wastes' regime, as subsequently amended and supplemented, republished in the Romanian Official Gazette no. 220 dated 28 March 2014;
- Romanian Water Law no. 107/1996, as subsequently amended and supplemented, published in the Romanian Official Gazette no. 244 dated 8 October 1996;
- Schmidt, Christian, Tobias Krauth, and Stephan Wagner, "Export of Plastic Debris by Rivers into the Sea," *Environ Sci Technol* 51 (2017): 12246-12253. <https://doi.org/10.1021/acs.est.7b02368>;
- Sheavly, S. B., and K. M. Register, "Marine Debris & Plastics: Environmental Concerns, Sources, Impacts and Solutions," *J Polym Environ* 15 (2007): 301-305. <https://doi.org/10.1007/s10924-007-0074-3>;
- Van der Wal, Maarten, Myra van der Meulen, Gijsbert Tweehuijsen, Monika Peterlin, Andreja Palatinus, Manca Kovač Viršek, Lucia Coscia, and Andrej Kržan, "SFRA0025: Identification and Assessment of Riverine Input of (Marine) Litter. Final Report for the European Commission DG Environment under Framework Contract No ENV.D.2/FRA/2012/0025" (2015). <https://ec.europa.eu/environment/marine/good-environmental-status/descriptor-10/pdf/iasFinal%20Report.pdf>;
- Wagner, Martin, Christian Scherer, Diana Alvarez-Muñoz, Nicole Brennholt, Xavier Bourrain, Sebastian Buchinger, Elke Fries, Cécile Grosbois, Jörg Klasmeier, Teresa Marti *et al.*, "Microplastics in freshwater ecosystems: what we know and what we need to know," *Environmental Sciences Europe* 26 (2014). <http://www.enveurope.com/content/26/1/12>;
- Wesch, Charlotte, Aleke Stöfen, Roland Klein, and Martin Paulus, "Microplastics in Freshwater Environments. A Need for Scientific Research and Legal Regulation in the Context of the European Water Framework Directive," *Zeitschrift für Europäisches Umwelt- und Planungsrecht* 4 (2014): 275-278. <https://www.researchgate.net/publication/269572531>.