
International Conference « Global interferences of knowledge society »,
November 16-17th, 2018, Targoviste, Romania

Global Interferences of Knowledge Society

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<https://doi.org/10.18662/lumproc.146>

How to cite: Caprita, D., Necula, R., & Mihalcioiu, L. (2019). Producers Responsibility in a Circular Economy. In M. Negreponi Delivanis (ed.), *International Conference «Global interferences of knowledge society», November 16-17th, 2018, Targoviste, Romania* (pp. 306-321). Iasi, Romania: LUMEN Proceedings. <https://doi.org/10.18662/lumproc.146>



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Producers Responsibility in a Circular Economy

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Abstract

The implementation of sustainable development principles as well as the prioritization of the circular economy as a healthy alternative to economic growth will cause producers to change their vision of production by incorporating concrete and effective environmental protection measures. The European Union, through Directive 2004/35/EC, on the prevention and repair of the damages produced to natural resources, has introduced, since its implementation for the first time on 30 April 2004, the obligation to respect the 'polluter pays' principle, with clear rules for them. The transposition of the Directive became mandatory three years later in 2007 for all member states and European producers were therefore responsible for both the pollution prevention action and the repair of potential environmental damage, as well as for bearing the associated costs of the two types of measures from the financial point of view. Within this research we find the concrete results of the implementation of the Directive, following the evaluations carried out by the European Commission, through the two official reports drawn up in 2010 and 2016, and also the difficulties faced by all Member States, in fact by European producers, in complying with environmental standards regarding waste. At the same time, these issues will be exemplified by reference to Romania's concrete example, as a case study.

Keywords: *environment; producers; sustainable development; circular economy; “polluter pays principle”.*

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<https://doi.org/10.18662/lumproc.146>

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Selection and peer-review under responsibility of the Organizing Committee of the conference



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1. Introduction

The transposition of Directive 2004/35/EC on the prevention and repair of the damages produced to natural resources, into the national legislation of the Member States, has led European producers to assimilate new rules in order for them to meet the environmental standards. ELD is addressing significant environmental damage by introducing "polluter pays principle" (PPP), as mentioned in Article 191 of the "Treaty on the Functioning of the EU" [1]. According to it, European citizens do not have to bear the cost of significant environmental damage caused by industrial activity. The 'polluter pays' principle implies producer's concrete and continuous responsibility, namely their involvement in a European Sustainable Development mechanism, including in terms of financial costs. Originally introduced as a definition by the OECD, in 2001, the "polluter pays" principle has as its primary objective the internalization of the financial effort to protect the environment in the final price of the product, the shelf price. In other words, operators carrying out activities defined by law as dangerous (Annex III of the Directive) are responsible for protecting the environment and repairing damages without the need for prior proof of culpability (whether it is a deliberate or a negligent act). The rest of the operators will be responsible only on the basis of culpability [2]. After introducing this principle, the immediate effect was the higher sense of responsibility felt by all relevant actors, from manufacturers to the final consumer, including the importer of packaged products, recyclers, waste eco-makers and local authorities. For the targeted producers, the Directive established that the main objectives are "to prevent damage when there is an imminent danger and/or to repair them" when they have already occurred, with the full coverage of the costs generated by this two types of measures [1]. EU legislation clearly distinguishes damage depending on the polluted item: soil, water, air, protected natural habitats or protected species. Each of these specific types of damage is thoroughly dealt with and defined by the Commission, through specific directives developed over the years. For example, Directive 2000/60/EC which is "establishing a framework for Community action in the field of water policy and Directive 92/43/EC on the conservation of natural habitats and of wild fauna and flora" has important legislative provisions [3]. Also, the Directive 2001/18/EC regarding "deliberate release into the environment of genetically modified organisms" [9]. Environmental damage is still seriously affecting scarce resources, either as a results of major accidents, such as "Doñana/Spain, Baia Mare/Romania, Kolontár/Hungary, Moordijk/Netherlands" or big pollution events [1]. Since its introduction in 2004, the European

Environmental Liability Directive has been amended 3 times, precisely to extend the scope of application and to clarify situations relating to errors in the extraction and exploitation of natural resources natural or water activities.

2. Problem Statement

Directive 2004/35/EC on environment liability regarding prevention and remedying of environmental damage (further called ELD) precisely sets out the situations in which the manufacturer is responsible for the prevention and repair of the potential environmental damage caused by his production activities. Implemented since 2007, the Directive has been transposed at different levels and with very different results across Member States, and the documents of the European Commission (as the institution managing the centralization of national reports) reveal precisely those major gaps between the results [4]. The two European Commission evaluation reports, drawn up on the basis of member state's reports on ELD results at national level, published in 2010 (COM (2010) 581) and 2016 (COM(2016) 204) are relevant in this regard. Also, in evaluating the results of ELD a substantial contribution has the REFIT program (SWD(2016) 121), which was established to effectively implement all of the European directives, including ELD, by using an accurate measurement of the cost-benefit to the European citizens, including companies. Thus, the REFIT report is mandatory in understanding ELD implementation obstacles and also in the process of generating an effective strategy to improve the generated results. Moreover, the achievement of the multi-annual ELD action plan, by the European Commission, for the period 2017-2020, had as its starting point exactly the corroborated results of REFIT. As a basic document of the European Commission report to the Council and the European Parliament on the Directive regarding the prevention and repair of the damages produced to natural resources, REFIT is a legitimate source of relevant data for anyone wishing to identify ELD implementation problems, since the resource of this data is an online platform for corroborating the views of all relevant stakeholders, and also a concise summary of the conclusions formulated in numerous meetings and consultations with experts in the field [3]. Extended producer responsibility as an important component of the implementation of circular economy principles is also included in the Europe 2020 Strategy and European Innovation Partnerships (EIP). This paper aims to establish the progresses that Member States have made over time, starting 2007, in their attempts to achieve the objectives set by ELD

and what is the cost-benefit ratio associated with this process. At the same time, in order to recover the existing gaps between the results of the different member states, there will be proposed solutions and principles that can base the elaboration of efficient strategies.

3. Research Questions/Aims of the research

Given the importance of sustainable economic development by prioritizing the implementation of circular economy principles at European level, the producer's responsibility for the environmental effects is one of the pillars on which the success of this approach is grounded in the medium and long term. Effective implementation of the "polluter pays" principle is therefore one of the keys to sustainable development. However, this objective, as defined in the directive outlining the rules, faces obstacles to national implementation. Although the transposition of ELD has been achieved by 2010, when the last Member State has managed to align its national legislation with European rules, comparative results reveal structural problems in the implementation of the Directive. The REFIT report, based on data collected in 2010, shows that out of the 27 states that sent information to the European Commission, 11 did not identify any situation where the environment had been protected as a result of the prevention or intervention measures established by the Directive. So, despite the clear objectives, the directive fails to be rigorously applied and this must be urgently corrected. This paper aims to identify the problems that relevant actors encounter in practice and to propose solutions, starting from the example of Romania, as a state with great problems in achieving the environmental objectives. In this regard, we will refer to examples of good practices in the conduct of European producers as bodies obliged to comply with the new rules and responsibilities, practices that can be taken by the countries in difficulty from the Member States with better results in the management and implementation the "polluter pays" principle.

4. Research Methods

In conducting the research, in order to ensure the relevance of the data, we used and processed the official figures centralized at European level by the European Commission. The Member States reports, underlying the elaboration of the two EC reports, in 2010 and 2016, as well as the REFIT report on ELD implementation, based on the contributions of all relevant actors providing information on the online platform, are a legitimate source

for identifying issues and related solutions in terms of expanded producer responsibility [4]. Thus, the information introduced in the official report is partly collected directly from those responsible for complying with the rules and achieving the European objectives, which makes it even more relevant. The evaluation started in 2012, and was finished in January 2014, after all 27 Member States sent their country reports on their own experience gained in the application of ELD. In gathering the necessary data, although there was no 12 week online public consultation, the stakeholders had the opportunity to express themselves by participating in the two implementation studies of 2012 and 2013 and also for the three evaluation studies of 2013 and 2014.

In order to exemplify Romania's situation, the data used is provided by the relevant national authorities, including the National Environmental Protection Authority and the Ministry of Environment and Climate Change. Also, for identifying relevant environmental damage cases, we used the data from the Romania's Report regarding the results generated after implementing ELD [5]. Also, for a better understanding on the specific problems of the sector, we used the data from different national surveys on the subject, with stakeholders, from their relevant point of view in this matter [6]. The aim of the data processing research was to emphasize both the differences in results (compared to the European average) and the generating causes. The role of comparative statistics is precisely to provide rigorous radiography of current outcomes as a starting point for shaping a future strategy. The evaluation of the results achieved at European level envisages 5 performance criteria, respectively: "relevance, effectiveness, efficiency, coherence and EU added value" [3].

5. Findings

Implementing the Directive started in 2007 in all Member States, with the results reported for the first time in 2013. Implementation, by transposing the ELD provisions into national legislation, was gradually made over a period of 3 years, since the last Member State transposing the ELD Directive finished the legislative process in 2010. The centralization of these results was carried out by the European Commission, which, over time, has produced two activity reports on the subject. Thus, in 2010, the Commission published the report on environmental improvements (COM (2010) 581) and also on the financial aspects needed to be implemented in the Directive and, in 2016, the 2nd report was published, this time highlighting issues such as the efficiency of the program and the generated added value (COM(2016)204)

Also, in order to ensure an efficient management in implementing the directives, the European Commission has developed REFIT - a program designed to ensure that European regulation is both adequate and functional. The purpose of this program was to measure the extent to which the main objective of EU legislation is reached, namely maximum benefits for citizens (including businesses) at minimum costs. Basically, the evolution of each directive is analysed in terms of cost-benefit rationale. In fact, the drafting of the multi-annual ELD program is based on the remarks and criticisms of the REFIT report, which highlights on the still low level of effectiveness in implementing the Directive, well below the initial expectations and, more seriously, with major discrepancies between Member States: *"However, as the situation varies significantly between the individual Member States, it appears also difficult to find out general reasons for a diverging situation. This is an important issue to be further investigated on the basis of evidence provided by data which is at present available to a very limited and uneven extent"* [3]. The Refit report underscores an unpleasant reality: between 30th April 2007-30th April 2013, 11 MS out of the total of 27 (39.28%) reported no environmental damage that would have been prevented or resolved on the basis of the ELD regulations and protocols. For instance, there were 7 countries with no case of environmental damage to report: „Czech Republic, Denmark, France, Luxembourg, the Netherlands 48 , Slovenia and Slovakia” [1]. Also, there were other 4 countries (Austria, Bulgaria, Ireland and Malta) that have initiated procedures but the resolution of this cases was pending at the moment of the report. 1245 environmental damages were registered under ELD. As statistical data show, their distribution at EU level was completely uneven. 2 states have the absolute majority, totalizing 86% of the damages: Hungary (with 563 cases) and Poland (with 506 cases). The rest of 14 states reported between 1-60 cases of environmental damages. Without being an indicator of efficiency, the frequency of reporting varied significantly, as shown in Table 1:

Table 1: The distribution of environmental damages under the ELD

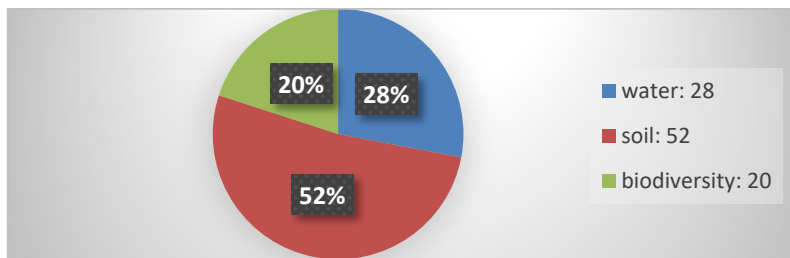
Member state	Confirmed environmental damages	Protected species and natural habitats	Water	Land
Austria	0	2	2	0
Belgium	1	0	1	0
Bulgaria	0	2	4	3
Cyprus	1	1	1	0
Czech Republic	0	0	0	0
Denmark	0	0	0	0

Estonia	2	2	0	2
Finland	2	1	1	0
France	0	0	0	0
Germany	60	27	42	10
Greece	40	7	29	47
Hungary	563	124	244	243
Ireland	0	8	2	0
Italy	17	6	8	7
Latvia	13	7	4	5
Lithuania	4	0	1	4
Luxembourg	0	0	0	0
Malta	0	2	0	0
The Netherlands	0	0	0	0
Poland	506	92	49	392
Portugal	2	0	6	7
Romania	4	0	1	4
Slovenia	0	0	0	0
Slovakia	0	0	0	0
Spain	11	0	11	11
Sweden	4	2	5	1
UK	13	7	2	11
TOTAL	1245	290	413	747

Source: European Commission [3]

Besides the confirmed damage cases, a total of 164 threat cases were reported, up to 133 of them being located in Italy. By taking into consideration both confirmed cases and imminent threats, both pending and dismissed cases, the European distribution continues to have an uneven structure.

Figure 1: Distribution of environmental damages according to natural resource



Source: European Commission [3]

Another important criteria in the distribution of damages at European level is their typology. If we sum up all the cases, the distribution of damages according to the typology of the affected natural resource reveals a preponderance of soil pollution, with 52%, as we can see the figure 1.

Despite the 11-year implementation of the Framework Directive to address environmental damage, the results are far below the expectations of European institutions. As a consequence of the unsatisfactory results, for accelerating ELD's results, the Commission has launched a multi-annual work program for the period 2017-2020. Starting from the problems identified, it is intended to develop solutions that will be implemented by 2020, this plan being also the starting point for the next assessment of the ELD implementation rate estimated for 2021-2022. As a result of analyzing the official documents and data reported at European level, the main problems that caused the poor effectiveness in enforcing ELD are:

5.1 Wrong data collection

Any process of diagnosing a problem, especially with regard to efficient waste management, starts from the statistical analysis of the data. Indeed, in the REFIT report evaluating the results of ELD implementation, Chapter 6 highlights the urgent need for efficient and accurate data collection as a key starting point in the joint assessment and centralization of Member States joint efforts [7]. Thus, it is formally admitted that there are problems of collecting and centralizing the data, which makes it difficult to conceive any common strategy that responds specifically to the existing problems.

In Romania, the latest centralized reporting dates back to 2014, but unfortunately it is not done in accordance with national law. Thus, PET-related reports are included in the generic "plastic" category, just as aluminum is embedded in the "metal" category, although national legislation provides individualized targets for the two categories of materials [6]. In Romania, data collection is rather cumbersome, sometimes inadequate, as the national reporting system is obsolete. The legislation governing this reporting system, namely Order 794/2012, is also not up-to-date because it does not contain the latest changes required by directives at European level. For example, subsequent packaging specific regulations are not included. Another issue of the reporting system is that it allows double or multiple reporting of collected waste, fakes made to improve the reported statistics. The solution to solving these problems is clear: removing non-conformities from the reporting system along the entire chain of packaging waste, from producer to recycler, transparency of information, using

integrated online data collection systems, reporting on all relevant market actors.

5.2 Lack of initiative by national authorities in taking good European practices

The different results recorded by the Member States are due to a differentiated approach of the legislator at the level of each Member State in the implementation of the Directive. Its transposition into national law is necessary but not sufficient because it's only by taking good practices and correlating with the rest of the legislation that will ensure the success of the implementation. For example, if we compare Romania's result with Bulgaria, we notice significant differences in the interpretation of ELD. Thus, in Romania, producers are allowed to implement the individual system to achieve the objectives, concomitantly with the contracting of an TRO (transfer of responsibility organization). In Bulgaria, the same producer can not decide to use a TRO for a part of the products in order to achieve the targets regarding packaging waste, while for the rest of the total volume to deal individually. Also, the Bulgarian manufacturer does not have the legal right to appeal to multiple TRO's at the same time. And according to these provisions, the penalties incurred by the producer in question are differentiated according to the typology of the materials and the ability to replicate them [6]. There are still member states where the implementation of the directive is not fully and properly made since there are regulations that have not been transposed into national legislation, as well as states that have fully taken the directive ad litteram through the classic copy-paste method. Unfortunately, this approach does not allow effective transposition as it does not correlate the provisions transposed with the rest of the legislation in force, and the result can't be satisfactory. At the same time, in the secondary report on the evolution of ELD transposition, it is noted that at the level of 7 Member States there are problems with late transposition and non-compliance [2].

5.3 Uniform definition of concepts

Lack of knowledge of terms as well as lack of practical experience co-operate with the lack of results in most member states. Among the concepts that require further clarification we find, according to the REFIT report, „the scope of strict liability, the scope of environmental damage, optional defenses and financial security” [3]. Also, in the European Commission's evaluation report it is mentioned the need to define in a unitary manner concepts, such as: „significance threshold, preventive action, and favourable conservation status” [7]. These concepts must be defined in a

unitary manner to allow the use of a common language in the transposition of legislation but also in subsequent reporting of results. This will facilitate the involvement of Member States in a common strategy, starting from the first rule: the use of a common language.

5.4 Corroborating legislation

Another impediment to the good implementation of Directive 2004/35/EC is national state's lack of interest in corroborating its provisions with other relevant European directives such as Directive 2008/99/EC regarding "the protection of the environment through criminal law (Environmental Crime Directive -ECD)" as well as other national legal provisions, and attempting to make use of the legislative void, both European and national, in order to circumvent the law [8]. Whenever an European Directive is transposed into national legislation this procedure must be done on the principle of good faith, by integrating into national legislation and by reference to other similar European directives. Simply translating without clarifying concepts and without adapting to current legislation, produces misunderstandings and misinterpretations, in other words, in other words, it does not comply with the provisions, in other words, it does not comply with the provisions, so the lack of results.

5.5 Financial security

One of the most important impediments to the Environmental Settlement Directive is the aspect of the financial liability of the polluter, namely ensuring its financial availability in order to fully cover the costs incurred in dealing with the generated damage. In other words, it is intended to facilitate the access of the responsible economic agents to adequate, sufficient financial instruments at reasonable costs. Basically, there are three criteria for ensuring financial resources: availability, sufficiency, security. In the first evaluation report drafted by the European Commission in 2010, it was debated for the first time about the possibility of introducing mandatory financial security instruments as a unitary financial instrument at European level. This option was embraced by Member States where such financial instruments have not developed well on the market, such as Romania, Slovakia, etc. The Alternative variant was the flexibility that allowed each state to adapt its financial security instruments to market requirements, for example, due to the good development of insurance policies for major environmental damage. Regarding the financial security instruments, Romania's Government, by The Ministry of Environment and Climate Change has launched a public tender procedure to conduct a study on the typology of non-financial financial instruments to ensure financial security

and availability for companies. Since no company participated to the auction, and also given the lack of expertise in the liability and financial sector, the development of the financial security instruments is uncertain [6].

6. Romania's experience in the application of PPP

Romania's results regarding the implementation of ELD, especially regarding the "polluter pays principle" have enrolled in the European average. As we know, at the end of the second report, in 2014, according to the national activity reports sent by the Member States to the European Commission, 11 states did not have any major environmental incidents, to be included in the scope of ELD. During this period, Romania reported 4 incidents, as shown in Table 2:

Table 2: Romania's reported environmental damages between April 2007 and April 2013

Environment Incident	Affected Area	Date of the incident	Remediation process	Total costs paid by Polluter
Pollution of surface waters of the OltetRiver with petroleum products	OLT county	30.05.2012	Entire area restored by 4.06.2012	469.78 euro without VTA CON PET SA
Soil pollution with oil, caused by a rail accident	LUJ county	21.09.2009	Entire damage resolved by 2012- the remediation process lasted almost 2 years	3822 EURO SC UNIFERTRANS SA
Soil pollution by nitric acid caused by road accident	LUJ county	10.11.2009	Remediation process lasted 5 months – until April 2010	14.000 EURO EUR OSPEDA SLOVACIA

“Soil pollution with oil caused by a railway accident”	S ALAJ county	2. 04.2008	Restorati on process and greening of the affected area lasted 3 months, until 30.06.2008	R SNCF
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Source: European Commission [3]

Beside the 4 confirmed damage cases, Romania also reported an important threat case in ILFOV County, where National Environmental Guard found an improper storage of waste, that could generate both soil and groundwater pollution, as a rainfall was imminent. The threat was efficiently resolved, by activating the ELD procedures. Thus, the company identified as guilty, Petromar Impex SRL, was summoned to relocate the waste. The operation lasted 2 month, between 30.12.2010 and 21.02.2011, including the entire range of operations: identification, labelling, securing the storage, transport and relocation, with total costs of 285.162 euros [3]. Therefore, the polluter pays principle was able to solve an imminent threat and protect the environment.

7. ELD’s effectiveness and efficiency

The cost benefit analysis highlights the effectiveness of the implementation of the Directive. In other words, by reference to the total value of the confirmed environmental damage, which has been repaired as a result of the legal framework required by the Directive on environmental liability, we can see the effectiveness of the European framework. In order to establish ELD’s efficiency, we need to include in the analysis 3 types of costs: administrative costs, repair costs and financial guarantee costs. Unfortunately, once again, the lack of data influences the result because not all member states have collected the necessary information for this type of evaluation. If the repair costs are paid by the polluter, with an average of 42.000 euros, the administrative ones are permanent costs paid by public authorities [5]. Also an important breakthrough in the development of the markets for financial instruments is “the increase in the value of environmental liability insurance purchased by European companies, with 13.6%” [3].

8. Duration and cost associated with environmental repair processes

Once the environmental damage was produced, the polluter pays principle is activated, thus starting the procedures for triggering the repair actions. Between April 2007 and April 2013, at European level a total of 1245 confirmed damage cases had a total cost of 180 mil. Euros. What should be mentioned is the fact that the vast majority of the expenditures were focused on repairing the environmental damages produced in 5 extremely serious cases (for example: Kolontár-Hungary and Moerdijk – The Low Countries). By eliminating them, the total spending is considerably reduced to almost 6 million euros [3]. There are still important difficulties in collecting the necessary data for elaborating a clear statistic regarding the average cost of a repair, the total administrative cost or even the costs associated with accessing the financial instruments for covering the liability. Thus, only 12 member states reported information about the total cost associated with the remediation actions, for 140 cases of which 98 come only from Hungary. The range of cost varies from a few hundred euros to millions of euros spent only for repairing the environment in one particular case. The huge differences in the spending associated with particular cases influences the average, which may be less relevant when we include the few exceptional cases. Therefore, for the sake of resemblance, the relevant average is obtained by removing the two important cases, which together have accumulated repair costs of 130 million euros, and other 3 cases with costs above 1 million euros.

Table 3: Different types of average remediation costs

	Total costs	Number of cases	Average costs
All cases including “Kolontár/Hungary, Moerdijk/Netherlands”	179,533,079	142	1,264,317
All cases “Kolontár/Hungary, Moerdijk/Netherlands”	49,533,079	140	353,807
Cases < 1 million euros	5,821,238	137	41,490 (most relevant)

Source: European Commission [3]

Regarding the average time needed for finishing the repair process, the available database, although insufficient, shows a 12 months period until full remediation. Although the missing data doesn't help us make a complete

analysis, using the reports provided buy a part of them, we can see the gaps between their results:

Table 4: Duration of the remediation process

Member State	Number of months
Bulgaria	7
Cyprus	12
Estonia	9
Germany	6
Greece	12
Hungary	16
Latvia	4
Lithuania	10
Malta	1
Poland	10
Portugal	18
Romania	9
Spain	10
Sweden	7

Source: European Commission [3]

9. Conclusions

Despite all the criticisms made by European bodies responsible for evaluating the results, Directive 2004/35 / EC is an effective instrument with a decisive role in stopping environmental degradation and protecting natural resources by making the polluter accountable. Significant progress has been made in raising awareness and strengthening preventive action. However, the results achieved through the implementation of ELD are still unsatisfactory in many EU countries, as the Commission's evaluation reports attests. Responsibility for failing to achieve the objectives belongs also to the national authorities who either don't know the real dimensions of the phenomenon by failing to comply with the national legislation, or do not react effectively by failing to solve the problems raised by the relevant stakeholders. It is therefore necessary to streamline the entire process, starting from the outline of the strategies as a result of the direct consultation of the relevant actors. One of the major objectives of the 2017-2020 multiannual program is the financial component, namely the provision of the necessary funds to cover a complex set of measures that would be required in exceptional circumstances such as large losses or insolvency of

some companies. At the same time, clarification of terminology or complete and accurate data collection regarding waste collection and recycling results, avoiding multiple reporting or fraud, are still topical issues across the Union, including Romania. Thus, as the REFIT evaluation report highlights, the solution is to build an online platform. Basically an integrated data collection system that centralizes all the information that has been transferred by the relevant actors (producers, authorized waste collection societies, sanitation companies, recycling companies) at the European level beyond the full transposition of the Directive, the correct collection of the data necessary for an effective evaluation, the use of a common language by clarifying the specialized terminology with unitary meaning, the correct application of the polluter pays principle. Starting from the correct diagnosis, as well as from translating into action the plan of measures identified in the potential solutions proposed by the EU institutions through the multiannual plan for 2017-2020 and also by taking over the good practices identified in leading states, the results could get better. For example, Romania can improve the result even by implementing a part of Bulgaria's best practice, given the similar economic context and a similar European path- both countries became EU members in 2007.

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