EUROSAI
Working Group on Environmental Auditing

Original photo by: Troy Mayne/WWW, ***What do sea turtles eat? Unfortunately, plastic bags***

EUROSAI WORKING GROUP ON ENVIRONMENTAL AUDITING

Joint Report on Management of Plastic Waste in Europe

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Prepared by

the Supreme Audit Office of Poland

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ABBREVIATIONS AND ACRONYMS

Basel Convention	UN Basel Convention on the Control of Transboundary Movements of Hazardous Wastes, adopted on 22 March 1989
CE	Circular Economy
DRS	Deposit-Return Scheme
EPR	Extended Producer Responsibility
EC	European Commission
ECA	European Court of Auditors
EEA	European Environment Agency
EU	European Union
EUR	Euros
EUROSAI WGEA	European Organisation of Supreme Audit Institutions – Working Group on Environmental Auditing
EUROSTAT	Statistical Office of the EU
MS	Member State
N/A	Not applicable
PET	Polyethylene terephthalate
PVC	Polyvinyl chloride
SAI	Supreme Audit Institution
SUP	Single-Use Plastic Product
WFD	Waste Framework Directive
WMP	Waste Management Plan
WPP	Waste Prevention Programme
UN	United Nations

GLOSSARY

Circular economy model	A model where the value of products, materials and resources is maintained in the economy for as long as possible, and the generation of waste minimised[1].
Deposit-Return Scheme	A surcharge on a product when purchased and a rebate when it is returned. The scheme aims to limit pollution of various types by creating an incentive to return a product[2].
Disposal	Any operation which is not recovery even where the operation has as a secondary consequence the reclamation of substances or energy [Article 3(19) of the WFD].
Extended Producer Responsibility	A set of measures taken by Member States to ensure that producers of products bear financial responsibility or financial and organisational responsibility for the management of the waste stage of a product's life cycle [Article 3(21) of the WFD].
Municipal waste	a) mixed waste and separately collected waste from households, including paper and cardboard, glass, metals, plastics, bio-waste, wood, textiles, packaging, waste electrical and electronic equipment, waste batteries and accumulators, and bulky waste, including mattresses and furniture, b) mixed waste and separately collected waste from other sources, where such waste is similar in nature and composition to waste from households. Municipal waste does not include waste from production, agriculture, forestry, fishing, septic tanks and sewage network and treatment, including sewage sludge, end-of-life vehicles or construction and demolition waste [Article 3(2b) of the WFD].
Packaging waste	Any packaging or packaging material covered by the definition of waste laid down in Article 3 of the WFD [Article 3(2) of the Directive 94/62/EC].
Plastics	A wide range of synthetic or semi-synthetic organic compounds that are malleable and so can be molded into solid objects. Plastics are typically organic polymers of high molecular mass and often contain other substances (additives). They are usually synthetic, most commonly derived from petrochemicals, however, an array of variants are made from renewable materials such as polylactic acid from corn or cellulosics from cotton linters[3].
Polymer	A substance consisting of molecules characterised by the sequence of one or more types of monomer units. Such molecules must be distributed over a range of molecular weights wherein differences in the molecular weight are primarily attributable to differences in the number of monomer units[4].
Polyethylene terephthalate	The most common thermoplastic polymer resin of the polyester family and is used in fibres for clothing, containers for liquids and foods,

1 European Commission, ***Closing the loop – An EU action plan for the Circular Economy*** (p. 2), COM(2015) 614 final, 2 December 2015.

2 European Court of Auditors, ***Review No 04 EU action to tackle the issue of plastic waste***, 2020.

3 Ibidem.

4 Article 3(5) of the Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC (OJ L 396, 30/12/2006, p.1, as amended).

	and thermoforming for manufacturing, and in combination with glass fibre for engineering resins[5].
Polyvinyl chloride	The world's third-most widely produced synthetic plastic polymer (after polyethylene and polypropylene). About 40 million tonnes of PVC are produced each year[6].
Preparing for re-use	Preparing for re-use means checking, cleaning or repairing recovery operations, by which products or components of products that have become waste are prepared so that they can be re-used without any other pre-processing [Article 3(16) of the WFD].
Prevention	Measures taken before a substance, material or product has become waste, that reduce: a) the quantity of waste, including through the re-use of products or the extension of the life span of products, b) the adverse impacts of the generated waste on the environment and human health, or c) the content of hazardous substances in materials and products [Article 3(12) of the WFD].
Separate collection	Collection where a waste stream is kept separately by type and nature so as to facilitate a specific treatment [Article 3(11) of the WFD].
Single-Use Plastic Product	A product that is made wholly or partly from plastic and that is not conceived, designed or placed on the market to accomplish, within its life span, multiple trips or rotations by being returned to a producer for refill or re-used for the same purpose for which it was conceived [Article 3(2) of the Directive (EU) 2019/904].
Recovery	Any operation the principal result of which is waste serving a useful purpose by replacing other materials which would otherwise have been used to fulfil a particular function, or waste being prepared to fulfil that function, in the plant or in the wider economy [Article 3(15) of the WFD].
Recycling	Any recovery operation by which waste materials are reprocessed into products, materials or substances whether for the original or other purposes. It includes the reprocessing of organic material but does not include energy recovery and the reprocessing into materials that are to be used as fuels or for backfilling operations [Article 3(17) of the WFD].
Treatment	Recovery or disposal operations, including preparation prior to recovery or disposal [Article 3(14) of the WFD].
Waste	Any substance or object which the holder discards or intends or is required to discard [Article 3(1) of the WFD].
Waste Framework Directive	Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directive (OJ L 312, 22/11/2008 p. 3 , as amended).
Waste hierarchy	A priority order in waste prevention and management legislation and policy: a) prevention, b) preparing for re-use, c) recycling, d) other recovery, e.g. energy recovery; and e) disposal [Article 4 of the WFD].
Waste management	The collection, transport, recovery (including sorting), and disposal of waste, including the supervision of such operations and the after-care of disposal sites, and including actions taken as a dealer or broker [Article 3(9) of the WFD].

5 Source: **Wikipedia – *Polyethylene terephthalate***.
6 Source: **Wikipedia – *Polyvinyl chloride***.

KEY FACTS

14,680,000 tonnes

of plastic waste enter the oceans every year

= **over 1,800,000** rubbish trucks*

450 years

are needed to decompose a plastic bottle

most plastic products are not biodegradable = the plastic waste generated will be a problem for the next generations

2,412,151 cigarette butts

were collected during ***2017 International Coastal Cleanup*** initiative

it is enough to line the distance of

5 marathons *5 x 42 km*

** For trucks with a load capacity not exceeding 8 tonnes.*

No country *(OUT OF 12 AUDITED)*	has implemented binding standards for the eco-design of plastic packaging and only five countries have references to the eco-design in legislative and policy documents.
No country	has implemented a Deposit-Return Scheme, and 6 were in the process of such implementation.
11 countries	adopted EPR schemes in national legislation, but problems with operation of such schemes have been identified in 9 countries.
11 countries	have adopted separate waste collection, but 5 audit participants mentioned problems with its organisation or insufficient effectiveness.
11 SAIs	expressed rather critical opinion on their national waste management systems (legislation and organisational arrangements).
11 SAIs	indicated that municipal waste/plastic municipal waste was treated in less desirable way in the context of waste hierarchy.
10 countries	have not mentioned in their strategic documents separate targets for plastic waste in addition to the (target) recycling rates for plastic packaging waste.
10 SAIs	assessed the adopted policies (in order to implement proper plastic waste management) in critical terms.
9 SAIs	pointed out that the data reporting system was not working properly/did not provide adequate data for the assessment of plastic waste management.
7 SAIs	specified that some obligatory targets on waste management/plastic waste management were not achieved.

SUMMARY

Main Problem in Terms of Plastic Waste Pollution

I Dynamically growing production of plastics since the 1950s and growing scale of application of plastic products have led to increased quantities of plastic waste. This has increased the risks of mismanagement of plastic waste and its adverse environmental impacts – especially that, relative to other waste streams, recycling rates for plastic waste remain low. For instance, slightly more than 30% of such waste is collected in the EU for recycling, and a significant proportion of that percentage is exported from EU territory for further processing to third countries which have often adopted different environmental standards.

II The available estimates show that between 6 and almost 15 million tonnes of plastic waste end up in the oceans each year. In addition, new sources of plastic leakage to the environment are investigated that might pose threats to both the environment and human health. Microplastics – tiny fragments of plastic (less than 5 mm) have been accumulating in the seas, and their small size makes them easy for marine life to ingest. Recent observations also indicate the presence of microplastics in the ambient air, rainwater, drinking water and some foods, although the consequences of this for human health have not been precisely identified yet. It is also worthwhile to note that plastic waste decomposes very slowly (up to several hundreds of years), which with the passage of time exacerbates the scale of the problem of generation of and environmental pollution with such waste.

III Due to the risks mentioned above, plastic waste management is currently one of the biggest environmental and economic challenges globally. The closing of the Chinese market to the importation of many types of waste (including plastic waste) brought in sharp focus the problems of the European waste management sector. However, such situation might have been an incentive to change the present approach to this area and lead to new developments. Hence, it is crucial to take action – strongly emphasised in EU environmental policies – to bring about significant change in waste management, i.e., more efficient use of resources, and ultimately to implement the principles of Circular Economy. This concept provides that materials and resources should be kept circulating in the economy as long as possible, with minimum waste rates. This needs a comprehensive approach that involves stages from design and production of the product to consumption, repair and remanufacturing, waste management, and secondary raw materials that are recirculated in the economy. To implement effective action for improved plastic waste management appropriate incentives and solutions will be required to stimulate next stages of product life cycle.

Audit Scope and Approach

IV Supreme Audit Institutions (**SAIs**) are important actors overseeing the national implementation of environmental policies by conducting independent audits of government activities. The European association of SAIs is called EUROSAI. One of its working groups is the EUROSAI Working Group on Environmental Auditing (EUROSAI WGEA), whose aim is to enhance the capacity of SAIs for auditing government environmental policies, to promote cooperation and to exchange knowledge and experiences on the subject among SAIs.

V This joint report is a comprehensive summary of audits on plastic waste performed by 12 SAIs in following countries: Republic of Albania, Republic of Bulgaria, Hungary, Republic of Malta, Republic of Moldova, Republic of North Macedonia, Republic of Poland, Portuguese Republic, Romania, Republic of Serbia, Slovak Republic and Republic of Turkey[7] (see Figure 1). These 12 national SAIs are members of the EUROSAI WGEA. This audit on plastic waste was coordinated by the SAI of Poland – **NIK**, in line with the INTOSAI Framework of Professional Pronouncements ***GUID 9000 Cooperative Audits between SAIs*** (see Appendix One).[8]

Figure 1. Participants in the coordinated audit on plastic waste

Source: NIK.

7 Further in the text: Albania, Bulgaria, Hungary, Malta, Moldova, North Macedonia, Poland, Portugal, Romania, Serbia, Slovakia and Turkey.

8 Further in the text: the coordinated audit.

VI In order to collect and assess comparable information on national government actions, the 12 SAIs prepared a common audit framework (see Appendix Two) containing the main audit question, three audit aspects and a number of sub-questions to be addressed by the national audits. The main audit question was: *Have the relevant public authorities developed policies and implemented measures aimed at achieving goals (adopted in in such policies) regarding generation and management of plastic waste?* This report is based on summaries of the 12 national reports (see Appendix Seven), external materials (see Appendix Ten) and Eurostat waste databases.[9] In majority of cases, period of time covered by the coordinated audit was 2017-2019.

VII The aim of this coordinated audit has been to assess how plastic waste policies and actions are implemented in the countries covered by the audit and to generate joint conclusions and recommendations. Since plastic waste pollution is a global problem, governments need not only to tackle this issue in their own countries, but also to work together to find a common solution to counteract growing plastic waste pollution in the world. We hope that this joint report will spur national governments to take preventive and corrective action and raise public awareness of plastic waste pollution.

Key Findings and Joint Conclusions

VIII *There is only one planet Earth, yet by 2050, the world will be consuming as if there were three*. This is the first sentence from the European Commission's 2020 document: ***A new Circular Economy Action Plan for a cleaner and more competitive Europe***. Confronted with projections that annual waste generation will increase by 70% by 2050, the ambitious objectives of that document are not surprising: *the need to accelerate the transition towards a regenerative growth model that gives back to the planet more than it takes*, *advance towards keeping resource consumption within planetary boundaries, and therefore strive to reduce consumption footprint and double its circular material use rate in the coming decade*. The report also notes that Europe will not achieve transformative change by acting alone, and EU's ambition is to lead the way to a **Circular Economy** at the global level.

IX Since the above-mentioned EC's document is another plan on Circular Economy (following the 2015 document[10]), it is worthwhile to ask the question of the progress achieved by Europe. Obviously, the outcomes of this coordinated audit will provide only a partial answer to the question due to the fact that only 12 European countries have been covered. Nevertheless, despite major differences in the circumstances and progress in carrying out waste management measures – some common problems and barriers have been identified.

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[9] ***https://ec.europa.eu/eurostat/web/main/data/database***, catalogues: *Environment and energy → Environment (t_env) → Waste (t_env_was)*.

[10] European Commission, ***Closing the loop – An EU action plan for the Circular Economy***, COM(2015) 614 final, 2 December 2015.

X Waste management systems in the countries covered by the coordinated audit on plastic waste vary widely, making it difficult to find a common denominator for and compare the countries. All the SAIs, except one, expressed rather critical opinions on their national waste management systems. Some of the participants indicated that their legal frameworks were not fully compliant with EU legislation (mostly non-EU countries but also those EU countries which were delayed in transposition of European regulations). The countries have to deal with problems concerning plastic waste management of various scale and diversity, ranging from the most fundamental ones, such as lack of proper infrastructure for separate collection of municipal waste to shortcomings in the operation of EPR schemes. Diversity of the participants is reflected also in the SAIs' assessment of policies to implement proper plastic waste management.

XI A common conclusion has been that existing legislation and organisational arrangements were insufficient to reduce the generation of plastic waste and ensure its proper treatment. All countries covered by the coordinated audit adopted the **waste hierarchy** in their national legal frameworks. A Waste Management Plan (**WMP**) as a tool of waste management policy was applied in 11 countries based on their national regulations. Nine out of eleven countries implemented national WMPs at the central level. In general, the WMPs did not provide for separate targets to be achieved for plastic, except for regulations on minimum recycling rates of plastic packaging waste resulting directly from the European Parliament and Council **Directive 94/62/EC** of 20 December 1994 on packaging and packaging waste. The WMPs of all countries covered by the coordinated audit included a waste treatment problem analysis, presenting their specific national circumstances. The analyses contained information about the present state and projected types, quantities and sources of waste generated in the country, and sometimes information on cross-border transport of waste. Three out of five non-EU countries covered by the coordinated audit have not adopted minimum recycling rates for municipal waste for 2020. The two remaining countries adopted recycling rates at 50% and 30%, respectively. One country set a target to achieve 35% of the recovery rate of municipal waste by 2023. On the other hand, the EU countries have adopted regulations consistent with the relevant provisions of the **Waste Framework Directive** (**WFD**).

XII Waste management systems in the countries covered by the coordinated audit could be described as complex ones and involving many actors, both public and private, at the central, regional and local levels. The effectiveness of plastic waste management depends significantly on the collaboration between various stakeholders. The countries were undertaking a wide range of measures aimed at proper management of waste, resulting from specificities of each country. The most common measures addressed separate collection of waste, including plastics, and implementing Extended Producer Responsibility schemes (**EPR**). A majority of the SAIs, i.e., ten out of twelve, have concluded that the adopted measures were implemented only partially. Measures taken by relevant authorities were insufficient to reduce plastic waste generation

and its proper treatment. It was up to national authorities, however, to intensify the process of necessary policy reforms and step up action on the ground. Additionally, three SAIs pointed to financial issues adversely affecting plastic waste management.

XIII The **EPR** schemes implemented in the countries covered by the coordinated audit share certain similarities but also some important differences. Every country had an EPR scheme provided for in national legislation for plastic packaging waste in order to collect and manage plastic packaging waste to reduce the amounts sent to landfills. In most of the countries, i.e., in eight out of twelve, the EPR schemes took the form of various types of fees. Seven out of twelve SAIs participating in the coordinated audit collected data on nationwide payments of fees implemented under the EPR schemes for plastic products. Problems in operation of the EPR schemes were diagnosed in 9 countries. Additionally, no country covered by the coordinated audit has already established a **Deposit-Return Scheme (DRS)**. DRSs were at the implementation stage in six out of twelve countries.

XIV Audit results show that the eco-design of plastic packaging was a poorly developed area. Five countries have references to eco-design in legislative and policy documents.

XV Every SAI participating in the coordinated audit found that educational and informative activities on proper waste management were performed. They took the following forms: organising ecological events, running educational workshops dedicated to children at schools and kindergartens, distributing leaflets, posters, films and other educational and informative materials or publishing information on rules of separate collection on websites and social network sites. Five SAIs expressed critical remarks regarding the educational and informative activities on plastic waste. Eight SAIs identified good practices during their audits. The identified good practices concerned mostly actions encouraging citizens to gather plastic products.

XVI A key determinant of effective and correct development of policies and setting up programmes for waste management is an appropriate system for data collection and evaluation of outcomes. Monitoring of the sources, quantities of waste and its treatment should underlie an effective waste management system. Meanwhile, the results of our coordinated audit have found huge problems with it – as many as 9 SAIs identified problems with incorrectly or insufficiently operating waste reporting systems.

XVII One pillar of Circular Economy is waste hierarchy which defines prevention as its top item. Therefore, measures taken by countries should lead to reduced quantities of waste, especially from the municipal sector, where consumer attitudes have major impact on the quantities and types of generated waste, including plastic waste. The findings of our coordinated audit indicate, however, that not all countries developed/implemented Waste Prevention Programmes (this applies to 4 countries), and a vast majority of them (10) failed to reduce the quantities of municipal waste generated in 2016-2019. This trend also applied to plastic waste, although the reliability of data in this respect was significantly lower.

XVIII In 2017-2019, municipal waste in 9 countries covered by the coordinated audit was treated predominantly otherwise than by recycling. It means that they used processes (operations) lower in the hierarchy of preferred methods of waste treatment. This problem applied to plastic waste too. However, data collection and reporting limitations could contribute to imperfect reflection how that waste was actually treated.

XIX The countries covered by the coordinated audit – including on the EU level – used various methods to calculate achieved recycling rates for municipal waste. This makes it harder to precisely measure and compare the results between particular countries, and, more importantly, can undermine the validity of the reported recycling rates in the waste management process, since the presented data would not fully reflect the actual treatment of waste.

XX Most of the countries covered by the coordinated audit achieved established recycling rates for plastic packaging waste. Nevertheless, to actually implement the principles of Circular Economy, despite marked disproportions between the results, plastic packaging waste must be treated much better in the future. It can be, however, difficult, since none of the countries covered by the coordinated audit adopted standards for eco-design of plastic packaging (to ensure better recycling capacities), and only 5 countries mentioned such need in their strategy documents. Meanwhile, Circular Economy starts at the very beginning of a product's life – both the design phase and production processes have an impact on sourcing, resource use and waste generation throughout a product's life[11] and decisions made on the design phase are responsible for up to 80% of environmental impacts of the product.[12]

XXI Various solutions adopted by the EU contribute to better plastic packaging waste treatment, including higher minimum recycling rates for plastic packaging waste (50% to 2025 and 55% to 2030) and the quantitative levy on non-recycled plastic packaging waste effective from 2021. For the purpose of this coordinated audit, potential amount of such levy have been estimated (based on 2018 plastic packaging waste treatment), by comparing the obtained results with payments on plastic products under EPR schemes in operation. Assuming that the amount of such EU levy establishes to some extent the limit of economic efficiency in the management of plastic packaging waste, the outcomes of that analysis are expanded to include non-EU countries. It shows that for seven countries covered by the coordinated audit for which comparative data were collected, the conclusion cannot be that they conducted effective treatment of plastic packaging waste.

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[11] European Commission, ***Closing the loop – An EU action plan for the Circular Economy*** (p. 3), COM(2015) 614 final, 2 December 2015.

[12] European Commission, ***A new Circular Economy Action Plan for a cleaner and more competitive Europe*** (p. 3), COM/2020/98 final, 11 March 2020.

XXII Data on transboundary movements of plastic waste between the countries covered by the coordinated audit have shown that the destination for plastic waste in European countries was sought on two levels, i.e., local level – as evidenced by mutual exchange of plastic waste between neighbouring countries, and global level – where in particular the biggest plastics converters made efforts to find new sales markets for the plastic waste they generated, both in the EU and beyond, from where the waste was to be further transferred, e.g. to Asian countries.

XXIII Until 2017 China was the main destination of exports of plastic waste from the EU.[13] However, China's ban on importation of plastic and other waste since 2018 highlighted problems of the European waste management sector (e.g., limited processing capacities of plastic waste recyclers). On the other hand, this situation could also provide an incentive to change the existing approach and bring about new developments in this area. Unfortunately, the information gathered in the process of this coordinated audit rather points to strengthened existing (unfavourable) practices of movement of significant amounts of waste to other countries also outside Europe, accompanied by the replacement of the existing destination for plastic waste exports from one Asian country to several others.

XXIV The scheme of action described in the foregoing paragraph does not show signs of measures that would bring about significant change in waste management, i.e., more efficient use of resources, and ultimately to implement the principles of Circular Economy. Obviously, such outcomes of transboundary movement of plastic waste are not tantamount to saying that the waste is improperly treated. Nevertheless, in times of EU's promotion of Circular Economy, the fact that the biggest plastics converters in Europe failed to create in their home countries conditions favourable for the treatment of plastic waste they produced but instead send some of this waste to other countries with often significantly lower economic and technology potential is puzzling. Such conduct also insufficiently responds to the assumptions of **Waste Framework Directive** which states, among other things, that EU's objective is to become self-sufficient in disposing of and recovering municipal waste.

XXV Even more restrictive, indirect and direct, requirements for plastic waste management, including recent amendments to the Basel Convention[14] – combined with insufficient processing capacity of such waste in the EU and lack of strict controls of plastic waste imported to a given country and its final treatment – will additionally increase the risk of their illegal treatment both in the EU and by moving to third countries. This is well illustrated by the case of one of the country covered by this coordinated audit, described in detail in Appendix Six to this joint Report.

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[13] European Court of Auditors, ***Review No 04 EU action to tackle the issue of plastic waste*** (p. 39), 2020.

[14] By the end of 2020 most plastic packaging waste was considered non-hazardous for shipment purposes and was therefore 'green-listed' under the EU waste shipment regulation. Changes to the Basel Convention have resulted that from the beginning of 2021 only shipments of pre-sorted, uncontaminated recyclable plastics that are free from all nonrecyclable material and have been prepared for immediate environmentally sound recycling are considered as green-listed (non-hazardous waste).

XXVI The findings of national audits conducted by most participants revealed no information about crimes or events that posed a threat to the environment due to inadequate treatment of plastic waste. However, based on the analysis of third-party studies (***Waste Crime Alerts*** published by WasteForce), it can be concluded that cases of illegal shipment of waste (including plastic waste) or its inappropriate treatment were disclosed in 8 out of 12 countries covered by the coordinated audit, and almost every report (7 out of 8) indicates cases involving Poland. There is also information about the existence of illegal landfills or inadequately secured landfills and incineration of waste by citizens, resulting in air pollution and posing hazards to human health (3 countries). In addition, findings of the national audit in Poland show that the competent public entities did not investigate the composition and calorific value of landfilled waste in the audited municipalities and communes, but the NIK estimates that substantial quantities of plastic waste were landfilled. The SAI of Poland concluded that lack of control within the above scope did not contribute to eliminating the risks associated with irregular landfilling of waste. This conclusion was supported in particular by constantly growing number of fires of landfills in Poland between 2012 (75 fires) and 2018 (243 fires).

XXVII In addition to the already mentioned problems related to improperly or inadequately functioning data reporting systems on waste (9 countries) and treatment of most municipal waste not in line with the waste hierarchy, i.e., in other processes than recycling and preparation for re-use (11 countries), the following barriers to improved efficiency of plastic waste management were also identified:

- insufficient monitoring/supervision by public authorities of the results achieved in plastic waste management (8 countries),
- failure to achieve all targets provided for in adopted policies (7 countries),
- insufficient framework/conditions (including legal framework, organisational arrangements, implemented measures) for transition to the Circular Economy model (7 countries).

XXVIII The findings of this coordinated audit show that, for the time being, Circular Economy is more prominent as theoretical concept rather than practical action taken by in particular countries covered by the audit. Obviously, different countries covered by this audit have different levels of systemic preparedness and progress achieved in the implementation of waste management measures. Some of them are on a very early stage of evolution of the waste management system, coping with such problems as lack of basic strategic documents or outdated plans, absence of current and credible data on waste treatment, lack or very low level of separate collection of waste. However, notwithstanding current results in particular cases, a substantial change will be needed in the waste management system to fully embrace the Circular Economy model. Most of all, however, there is no comprehensive approach to waste management (including plastic waste) to involve all stages from design and production of the product

through consumption and waste management, to secondary raw materials that are recirculated in the economy. In addition, more intensive measures will be required to encourage and persuade citizens to change their consumption patterns so that to reduce the use of plastic products and thus scale down the quantity of waste generated, and to re-use plastic products as far as possible, since such measures occupy the top rank in the waste hierarchy being one of the pillars of Circular Economy.

Joint Recommendations

XXIX Based on the findings and conclusions of this coordinated audit, the following is recommended to improve plastic waste management:

1. Review the opportunities to put in place solutions to ensure better plastic product recycling capacity, in particular, adopt binding standards for **eco-design** of plastic packaging.
2. Make efforts to establish **EPR** schemes or improve the existing solutions in this regard, including by more adequate coverage of the costs of plastic packaging waste management by manufacturers.
3. Make efforts to perform a feasibility study for establishing a **Deposit-Return Scheme** for packaging, including for plastic packaging in countries which have not taken measures in this regard so far.
4. Implement solutions to ensure better organised or more effective **separate collection**, especially for the stream of municipal waste.
5. Implement solutions to ensure better operation of waste **data reporting systems**, including to improve their credibility and completeness so that they can be used for effective and correct shaping of policies and preparation of waste management programmes, and for the assessment of the outcomes of the implemented measures.
6. Aim at standardised **recycling rate of municipal waste** calculation methodology, in particular in EU countries, but also wider in the European continent.
7. Intensify efforts of public authorities to **monitor the outcomes** of the management of waste, in particular plastic waste.
8. Improve the effectiveness of the **management of municipal waste** that includes plastic waste, in particular by more emphasis on measures to prevent generation of waste, and then measures leading to the treating of the generated waste in processes being the top priority in the waste hierarchy adopted in the Circular Economy model.
9. Aim at the development of European market for processing capacities (recovery and disposal) of plastic waste, accompanied by more stringent rules for its **transboundary movements** and stricter controls of plastic waste imported to and exported from a given country.

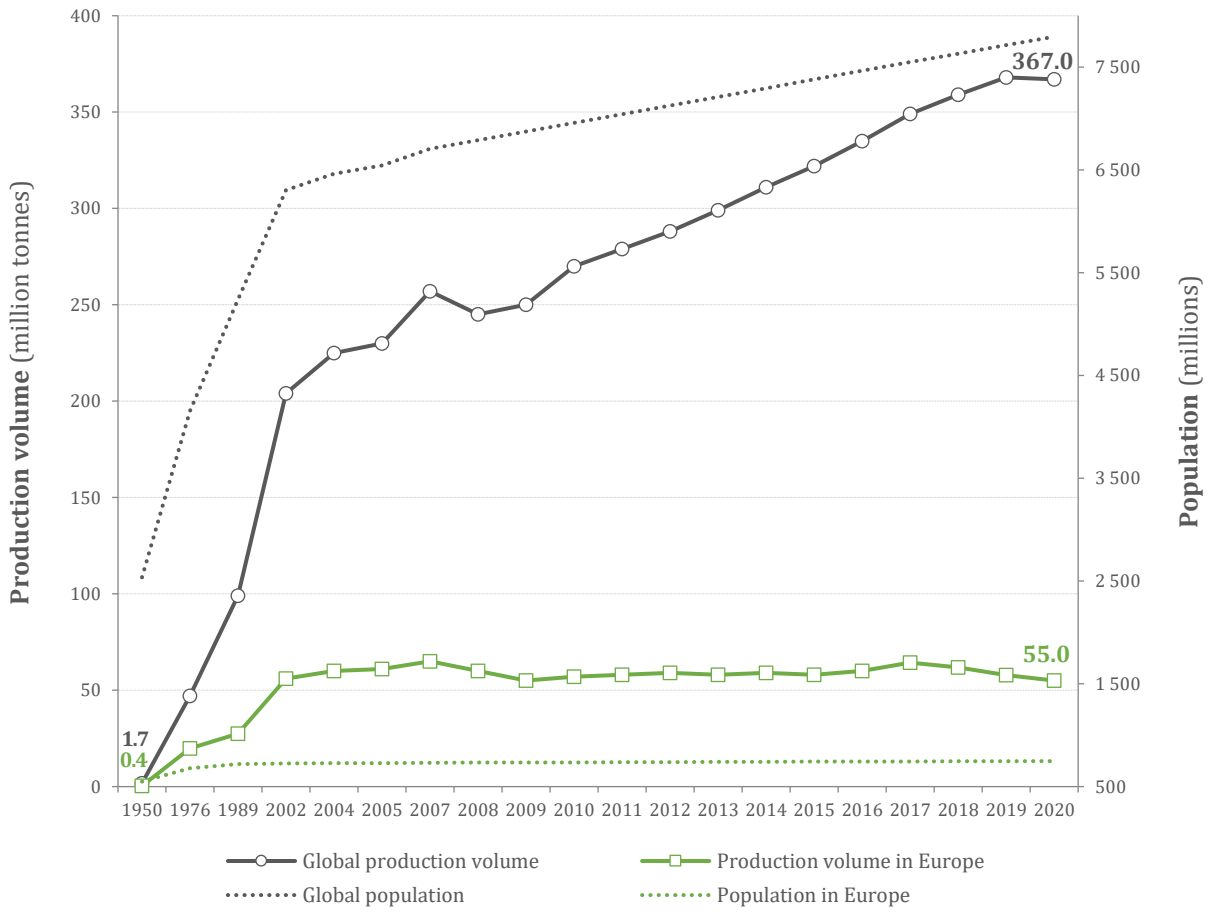
10. Intensify measures aimed at improved **management of plastic packaging waste**, especially in the context of more stringent future targets in this regard for EU countries, and inadequate payments within EPR schemes in the context of the contribution placed on non-recycled plastic packaging waste effective from 2021.
11. Intensify the activity of public actors for **educational and informative measures** addressed to wider society.

INTRODUCTION

Growth in Global Plastics Production

1 The first fully synthetic plastic (Bakelite) was produced in 1907. However, rapid growth in global plastics production started only in the 1950s.[15]. Over the following 70 years, annual production of plastics has increased more than two hundred times globally, and more than one hundred times in Europe (sees Figure 2).

Figure 2. Volumes of global and European plastics production from 1950 to 2020



Source: NIK's own analysis based on: the Plastics Europe Association of Plastics Manufacturers annual studies, ***Plastics – the Facts from 2013 to 2021*** (production volume) and the **United Nations** data (population).

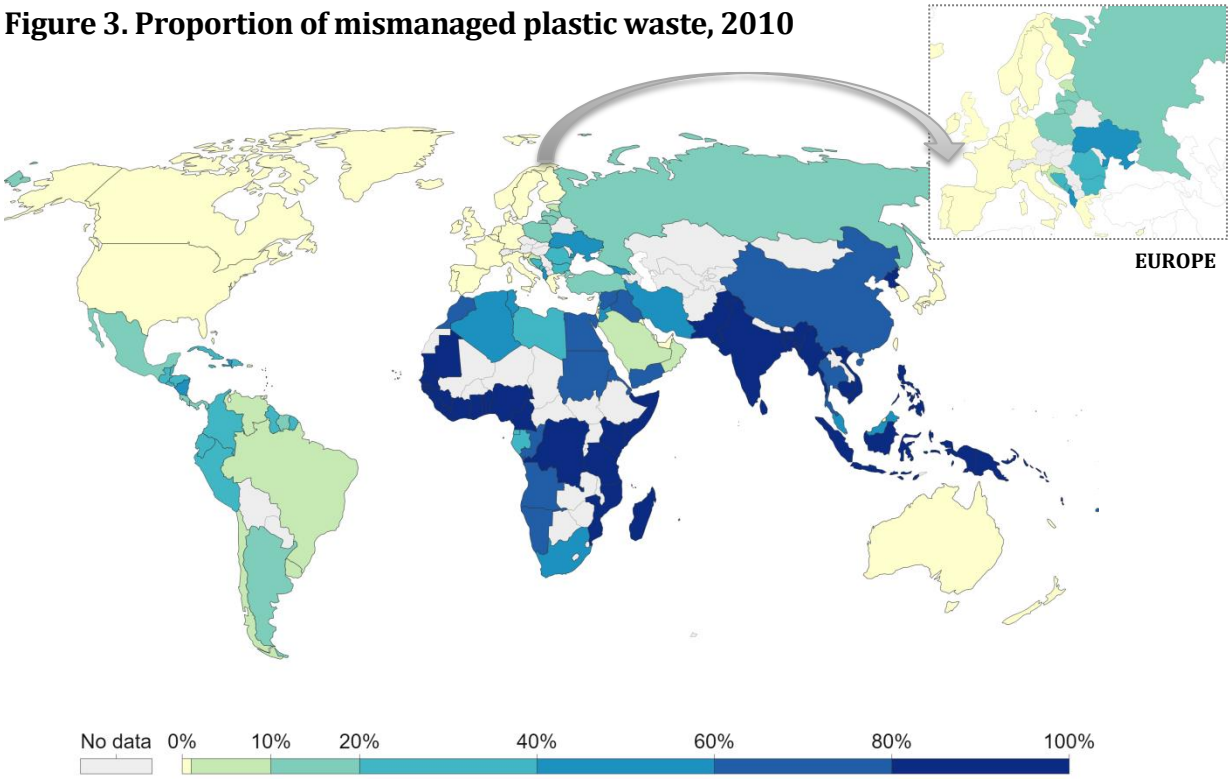
[15] Developed based on the following sources:

- Science History Institute, ***History and Future of Plastics***,
- Hannah Ritchie and Max Roser, ***Plastic Pollution***, Our World in Data, September 2018.

Mismanagement of Plastic Waste

2 The dynamic growth in global plastics production in the last few decades and growing consumption of plastics have led to increased amounts of plastic waste generated each year. As a consequence, the risk of mismanagement of plastic waste and its adverse environmental impacts has increased. Mismanaged waste (as the sum of material which is either littered or inadequately disposed of) has a high risk of leakage and transport to the natural environment and oceans via waterways, winds and tides. However, there are very large differences in the effectiveness of waste management across the world[16] (see Figure 3).

Figure 3. Proportion of mismanaged plastic waste, 2010



Source: Hannah Ritchie and Max Roser, ***Plastic Pollution***, Our World in Data, September 2018 (data taken by the authors of the publication from the following source: Jambeck et al., ***Plastic waste inputs from land into the ocean***, Science, vol. 347, no. 6223, pp. 768-771, 13 February 2015).

3 Although the problem of mismanagement of plastic waste in Europe seems to be occurring on a smaller scale than in Africa or Asia, attention must be paid to the issue of transboundary shipment of waste. Half of the plastic collected for recycling was exported to be treated in countries outside the EU. Reasons for export include the lack of capacity, technology or financial resources to treat the waste locally. However, plastic waste exports from the EU have decreased by 39% from 2016 to 2018. Previously, a significant proportion of the exported plastic waste was shipped to China, but restrictions on the importation

[16] Hannah Ritchie and Max Roser, ***Plastic Pollution***, Our World in Data, September 2018.

of plastic waste in China (introduced in 2018) is likely to further bring down EU exports. This poses the risk of increased incineration and landfilling of plastic waste in Europe. In 2018, in Europe (EU 28 + Norway and Switzerland), energy recovery was the primary method of treatment of plastic waste (42.6%), followed by recycling (32.5%). The rest of all the generated plastic waste was landfilled (24.9%).[17]

Plastic Litter

4 Very large quantities of plastic waste leak to the environment (see Figure 4 – for an example) from sources both on land and at sea, generating significant economic and environmental damage. Globally, 1.5% to 4.0% of total volume of plastics production end up in the oceans every year.[18] Given the above-mentioned indicators and global production volume of plastics in 2020 (367,000,000 tonnes), **5,505,000 to 14,680,000 tonnes of plastic waste are estimated to end up in the oceans annually**.

Figure 4. Plastic pollution covering Accra beach in Ghana, 2018

Source: Wikimedia Commons, ***Plastic Pollution in Ghana***, photo by Muntaka Chasant, 3 October 2018.

5 Plastic litter has effects both on terrestrial and in the marine environment. While plastic pollution in the marine environment has been causing damage to wildlife (see Figure 5) and ecosystems, the impacts from plastic litter on land are due mainly to the disamenity effects in the local environment.[19] Plastic in oceans can arise from both land-based

[17] European Parliament, ***Plastic waste and recycling in the EU: facts and figures***, 19 December 2018, updated 30 June 2021 and Plastics Europe, ***Plastics – the Facts 2020***, 2020.

[18] European Commission, ***A European Strategy for Plastics in a Circular Economy***, COM(2018) 28 final, 16 January 2018 and Hannah Ritchie and Max Roser, ***Plastic Pollution***, Our World in Data, September 2018.

[19] European Commission, Directorate-General for Environment, ***Plastics: reuse, recycling and marine litter: final report***, Publications Office, 30 May 2018. The report has been prepared for the EC by ICF in association with Eunomia and partners.

and marine sources. At the global level, estimates suggest that approximately 80% of ocean plastics come from land-based sources, and the remaining 20% from marine sources. Plastics pollution from marine sources is caused by fishing fleets that leave behind fishing nets, lines, ropes, and sometimes abandoned vessels. Regarding land-based sources, the main contributor is larger plastic litter, including everyday items such as drinks bottles and other types of plastic packaging.[20]

Figure 5. Sea turtle mistakenly eating plastic bag confuses with jellyfish

Photo by: Troy Mayne/WWF, ***What do sea turtles eat? Unfortunately, plastic bags***.

6 New sources of plastic leakage into the environment are also on the rise, posing additional potential threats to both the environment and human health. **Microplastics**, tiny fragments of plastic less than 5 mm in size, accumulate in the seas, and their small size makes them easy for marine life to ingest. They can also enter the food chain. Recent studies also found microplastics in the ambient air, drinking water and foods like salt or honey, with yet unknown impacts on human health.[21] The understanding of the importance of primary microplastic emissions has been growing. Microplastics are not just an ocean problem, but rather a global problem, affecting freshwater and even land-based ecosystems. Scientists have found large amounts of microplastics in rivers;

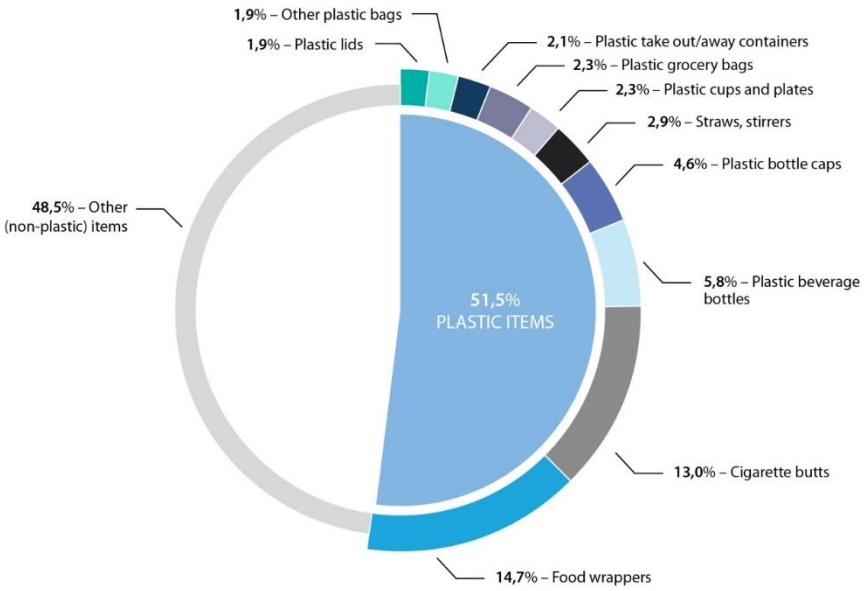
[20] Hannah Ritchie and Max Roser, ***Plastic Pollution***, Our World in Data, September 2018 and Eunomia, ***Plastics in the Marine Environment***, 1 June 2016.

[21] European Commission, ***A European Strategy for Plastics in a Circular Economy***, COM(2018) 28 final, 16 January 2018.

as well as in soils, spread through household and industrial composting. Plastic pollution does more than choke or entangle sea life. Scientists have found evidence that ocean plastic is linked to disease on coral reefs. Meanwhile, exposure to microplastics was shown to decrease the reproduction and population growth rate in zooplankton – animals that form the base of the ocean food chain.[22]

7 In 2017 – as part of an annual initiative to clean up coasts, oceans and waterways (*International Coastal Cleanup*) – nearly 800,000 volunteers in more than 100 countries collected approximately 9,286 tonnes of trash (over 20 million items), much of it Single-Use disposable plastic. In fact, it marked the first year in the Cleanup's 30-plus year history that all ten of the top-ten items collected by volunteers were made of plastic (or contain plastic). It is also significant that during the initiative enough cigarette butts[23] were collected to line the distance of 5 marathons.[24] The results of this action in 2019 (almost 950,000 volunteers from 116 countries around the world, 9,422 tonnes of collected rubbish and 32,485,488 collected items) show that plastic waste was still in the top ten most collected trash. In total, it accounted for over half of the amount (51.5%) of all collected items[25] (see Figure 6).

Figure 6. Top 10 items collected in 2019 during the *International Coastal Cleanup* initiative



Source: NIK's own analysis based on ***2019 International Coastal Cleanup report***, Ocean Conservancy, 2020.

22 Ocean Conservancy, ***Building a clean swell – 2018 Report***, 2018.

23 A typical cigarette butt is largely made of cellulose acetate fibers (plastic) which decompose very slowly, so huge amounts of thrown-away butts have contributed to the problem of environmental pollution with plastic waste.

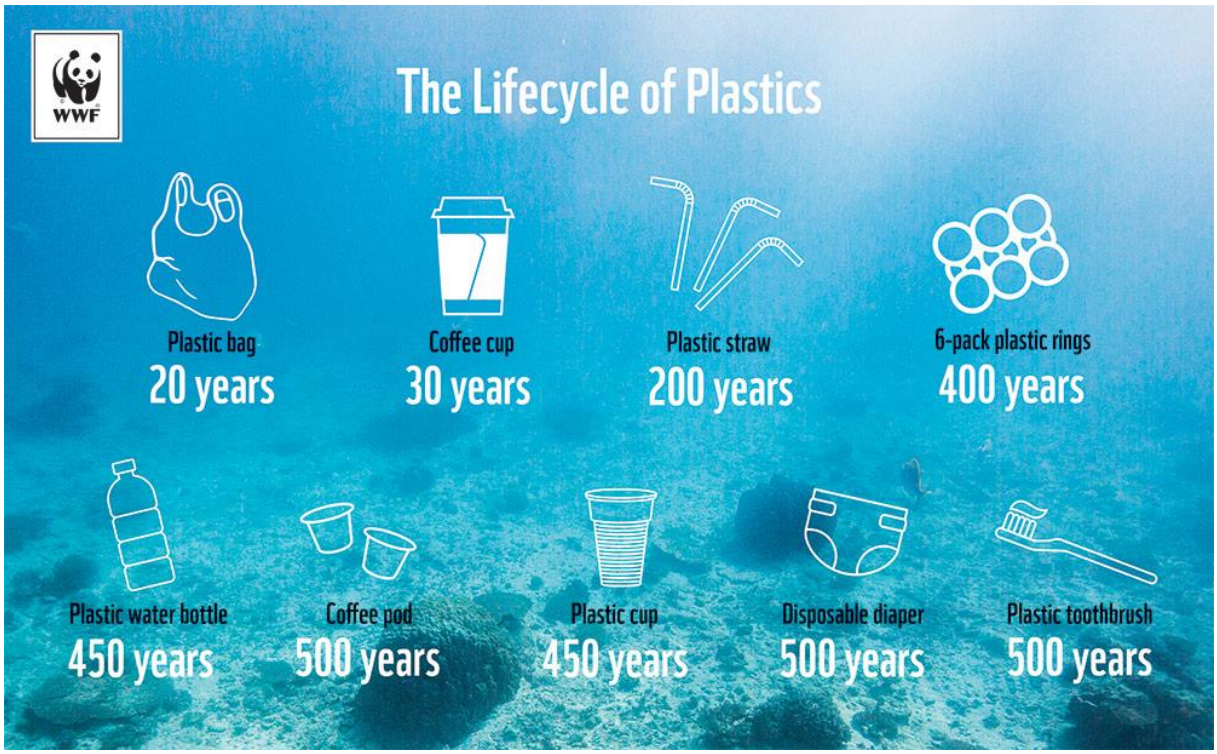
24 Based on the results of the ***2017 International Coastal Cleanup*** (see also full report: Ocean Conservancy, ***Building a clean swell – 2018 Report***, 2018) and the article: Jennifer Nini, ***Top 10 Items Collected at Ocean Conservancy's International Coastal Cleanup All Made of Plastic***, September 2018.

25 Based on the results of the ***2019 International Coastal Cleanup***.

Plastic is (Almost) Forever

8 Plastic decomposes very slowly – it lasts up to 500 years for some products (see Figure 7). Therefore, given that mass production of plastics began in the 1950s, the vast majority of all plastics that have ever been produced and have ended up in the environment is still present there in some form.

Figure 7. Decomposition time of plastic waste



Source: WWF, ***The lifecycle of plastics***, 2 July 2021.

9 Plastic waste pollution is exacerbated by increasing amounts of plastic waste generated each year and is also fuelled by the growing consumption of Single-Use Plastic Product (i.e., packaging or other consumer products that are thrown away after one brief use, are rarely recycled and prone to being littered). These include small packaging, bags, disposable cups, lids, straws and cutlery, for the production of which plastic is widely used due to its light weight, low cost, and practical features.[26] All these factors have led to increasing accumulation of plastic waste in the natural environment.

[26] European Commission, ***A European Strategy for Plastics in a Circular Economy***, COM(2018) 28 final, 16 January 2018.

The Need for Transition to Circular Economy

10 Due to the previously indicated threats and forecasts, the management of plastic waste is currently one of the most serious environmental and economic challenges globally. There is only one planet Earth, yet by 2050, the world will be consuming as if there were three. Global consumption of materials such as biomass, fossil fuels, metals and minerals is expected to double in the next forty years, while annual waste generation is projected to increase by 70% by 2050.[27] That is why it is so important to take actions – strongly emphasised in the current EU environmental policy – that will lead to significant changes in waste management. Its goal is to improve the efficiency of resource use and ensure that waste is valued as a resource, and facilitate the transition to a Circular Economy model.[28] In this model, the value of products, materials and resources is maintained in the economy for as long as possible, and the generation of waste is minimised. This needs a comprehensive approach that involves stages from design and production of the product to consumption, repair and remanufacturing, waste management, and secondary raw materials that are fed back into the economy.[29] To implement effective action for improved plastic waste management appropriate incentives and solutions will be required to stimulate next stages of product life cycle.

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[27] European Commission, ***A new Circular Economy Action Plan For a cleaner and more competitive Europe***, COM/2020/98 final, 11 March 2020.

[28] This resulted, among others, in the **Amendments to the EU regulations on waste** – Official Journal of the European Union, L 150 volume 61, 14 June 2018 and the adoption of the **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.

[29] European Commission, ***Closing the loop - An EU action plan for the Circular Economy***, COM(2015) 614 final, 2 December 2015.

MAIN FINDINGS

Legislation and Organizational Arrangements Concerning Plastic Waste Management

11 The first chapter of the *Main Findings* presents the most important legal regulations and organizational arrangements concerning plastic waste treatment, adopted in the countries covered by the coordinated audit on plastic waste. It is intended to present differences and similarities on such topics as: application of the waste hierarchy principle, adoption of plans and programmes on waste management, separate collection of waste and targets set, extended producer responsibility, division of tasks in national waste management systems, eco-design of plastic packaging, Single-Use Plastics and other important and particular findings. The above topics are illustrated and accompanied by examples.

12 Membership in the structures of the European Union has a great impact on the legislations. The EU countries are obliged to ensure compliance of national waste management regulations with the EU law. Three out of seven EU SAIs participating in the coordinated audit (Malta, Poland, Romania) found that their national legislation was not fully compliant with the European law. The Maltese audit found non-compliance with the EU's reporting obligations.[30] At the time, Maltese authorities were deviating from the 18-month period stipulated in EU Directives to submit data and referring data after its due date. The Polish audit found a lack of transposition into the national law by the required deadline (by 5 July 2020) of the provisions resulting from the Directive 2018/852 of the European Parliament and of the Council of 30 May 2018 amending Directive 94/62/EC on packaging and packaging waste. The Romanian SAI discovered that the country had not fully transposed the European provisions in the field of the extended producer responsibility. SAIs from other EU countries confirmed compliance of their national legislation with the EU law. However, the Bulgarian audit found some delays in transposition of the provisions resulting from the Directive 2018/852. The transposition was completed in March 2021 instead of July 2020.

13 SAIs in non-EU countries covered by the coordinated audit found that their national legislations are partially compliant with the acquis communautaire in the field of waste management. The Serbian SAI estimated the compliance of national waste management arrangements with the European regulations at 70%. The differences will be presented in the following parts of this chapter.

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[30] Article 12 of **Directive (EU) 2018/852**, amending Directive 94/62/EC on Packaging and Packaging Waste, stipulates that Member States shall report data electronically within 18 months of the end of the reporting year for which the data are collected. Similarly, Article 37 of the Waste Framework Directive establishes an 18 month period for the competent authorities to report the data. However, the Maltese Enviromenntal and Resources Authority was not adhering to this timeframe – point 2.5.7 of the report: ***Performance Audit: The effectiveness of plastic waste management in Malta***, February 2021, National Audit Office Malta.

Crucial State Regulations

14 The waste hierarchy and the Polluter Pays Principle are key waste management concepts. The waste hierarchy, defined in Article 4(1) of the **Directive 94/62/EC** of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives,[31] establishes the following priority order: prevention, preparation for reuse, recycling, energy recovery and disposal, such as landfilling, in order to promote the options that deliver the best overall environmental outcome. According to the above, the waste prevention has the highest priority, followed by preparing for reuse, recycling and other recovery, and finally disposal as the least preferred operation.

15 All countries covered by the coordinated audit incorporated the waste hierarchy into their national legal frameworks (in forms such as: act, law, decree-law, by-law, strategy). However, SAIs of Malta, North Macedonia, Poland and Serbia admitted that the waste hierarchy was not properly implemented.

16 The Member States' authorities are obliged to establish in accordance with Articles 1 (Subject matter and scope), 4 (Waste hierarchy), 13 (Protection of human health and the environment) and 16 (Principles of self-sufficiency and proximity) of the **Waste Framework Directive** one or more waste management plans (**WMPs**). Article 28 of the WFD defines both the mandatory and optional requirements and the content of the WMP.

17 Under Article 28(1) and (2) of the WFD, Member States shall ensure that their competent authorities establish one or more WMPs. Those plans shall, alone or in combination, cover the entire geographical territory of the Member State concerned. The WMPs shall include an analysis of the current waste management situation in the geographical entity concerned, as well as the measures to be taken to improve environmentally sound preparing for re-use, recycling, recovery and disposal of waste and an evaluation of how the plan will support the implementation of the objectives and provisions of the Directive.

18 The WMPs as a tool of waste management policy was applied in 11 countries on the basis of their national regulations. Nine out of eleven countries implemented national WMP at the central level. Generally, the WMPs did not include separate targets to be achieved for the plastic waste although the document: *Closing the loop – An EU action plan for the Circular Economy*[32] indicated plastic as one of the five priority areas, and it is also noted that increasing plastic recycling is essential for the transition to the Circular Economy (in point 5.1).

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[31] OJ L 312, 22/11/2008 p. 3, as amended, further in the text: **Waste Framework Directive**, **WFD**.

[32] European Commission, ***Closing the loop – An EU action plan for the Circular Economy***, COM(2015) 614 final, 2 December 2015.

19 The exceptions were the provisions on minimum recycling rate of plastic packaging waste resulting directly from the **Directive 94/62/EC** of the European Parliament and the Council of 20 December 1994 on packaging and packaging waste,[33] adopted in majority of the countries covered by the coordinated audit. According to Article 6(1)(e) and (f) of the Directive 94/62/EC, in order to comply with the objectives of the Directive, Member States shall take the necessary measures to attain the following targets covering the whole of their territory: (e) no later than 31 December 2008 the following minimum recycling targets for materials contained in packaging waste will be attained: (iv) 22.5% by weight for plastics, counting exclusively material that is recycled back into plastics; (f) no later than 31 December 2025 a minimum of 65% by weight of all packaging waste will be recycled.

20 On average, 32 kg of plastic packaging waste is produced per person per year in the EU, compared to 45 kg per person per year in the US, 5 kg in India and 33 kg in Japan. Plastic packaging waste is the largest single plastic waste stream (61% of all plastic waste) and is subject to ambitious EU plastic recycling targets.[34]

21 The majority of the countries covered by the coordinated audit adopted minimal recycling rate of plastic packaging waste at 22.5%. Different recycling rate targets of plastic packaging waste were adopted in: Moldova (20%), Malta (22.9%), Poland (23.5%), Slovakia (45%) and Turkey (54%). The rates in Serbia increased gradually from 19% in 2017 to 22.5% in 2019.

22 Two countries (Moldova, North Macedonia) did not adopt national WMP despite that the legislation in force required them to do so. In the case of Moldova, the National Programme on Waste Management was to be developed as early as 2016, but despite the several years' delays, it was expected to be completed by the end of 2021. In 2013, the Moldavian government adopted the National Waste Management Strategy of the Republic of Moldova 2013-2027. In the case of North Macedonia, the government adopted the Waste Management Strategy 2008-2020. In order to implement the Strategy, the National Waste Management Plan 2009-2015 was adopted. The plan was still in use during the period covered by the audit. The new Plan for the period 2020-2030 was prepared by the Ministry of Environment and Physical Planning but it has not been adopted yet. The country decided to have regional and local approach to waste management by establishing regional WMPs (at a regional level) and adopting WMPs by municipalities (44 municipalities out of 77, it means 57% prepared waste management plans for the whole period or a part of the period 2017-2019).

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[33] OJ L 365, 31/12/1994 p. 10 with amendements.

[34] European Court of Auditors, ***Review No 04 EU action to tackle the issue of plastic waste***, 6 October 2020.

23 Ten out of twelve countries adopted regional or local WMPs. Two countries (Hungary, Malta[35]) did not choose such solution. For example, in Slovakia waste management plans are prepared by district offices in regional capitals. Before 27 December 2019, there was also a requirement to adopt waste management plans for municipalities with up to 2.000 inhabitants. After the date, the requirement was lifted.

24 In the case of Serbia, Article 28 of the WFD was implemented through the Law on Waste Management. According to Article 9 of the Law on Waste Management, the following planning documents shall be adopted for the purpose of waste management planning in the Republic of Serbia, among others: a waste management strategy, a regional waste management plan and a local waste management plan. During the audited period, the Waste Management Strategy 2010-2019 was in force. The National Waste Management Plan for the period 2015-2019 was not adopted. As for the regional WMPs, 46% of regions did not have one. 10% of local self-governments did not adopt local WMPs.

25 Plastic waste and, in particular, its prevention has become an important policy issue and highlights the growing role of waste prevention in the transition towards a Circular Economy. Currently, slightly more than 30% of plastic waste is collected for recycling.[36] The objective of waste prevention programmes is to present a coordinated national approach to waste prevention, delineating targets and policies, and aiming to decouple economic growth from the environmental impacts of waste generation.[37]

26 According to Article 29(1) and (2) of the **Waste Framework Directive**, Member States shall establish waste prevention programmes (**WPPs**) setting out at least the waste prevention measures as laid down in Article 9(1) in accordance with Articles 1 (Subject Matter and Scope) and 4 (Waste Hierarchy), such as for example: encourage the design, manufacturing and use of products that are resource-efficient, durable (in terms of life span and absence of planned obsolescence), repairable, re-usable and upgradable. Such programmes shall be integrated either into the waste management plans required under Article 28 or into other environmental policy programmes, as appropriate, or shall function as separate programmes.

27 Eight countries out of twelve adopted WPPs with national coverage, as an integral part of an another document (mostly WMPs) or as a separate document (Poland and Slovakia). For example, in Poland, the National Waste Prevention Programme was developed in 2014 at the request of the General Director for Environmental Protection (an authority reporting to the Minister of Climate). Some of the actions from the Programme were included in the regional waste management plans. Four countries: Albania, Moldova, North Macedonia and Serbia have not adopted their WPPs.

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35 To this end, Malta adopted this approach as a regional WMP would not be applicable or feasible to the small size of the Maltese Island.

36 European Environment Agency, ***Report No 2/2019 Preventing plastic waste in Europe***, 2019.

37 Eunomia, ***Final Implementation Report for Directive 2008/98/EC on Waste: 2013 – 2015***, 8 June 2018.

28 Authorities in North Macedonia adopted a solution addressed to legal persons which created more than 150 tonnes of non-hazardous waste per year. They were obliged to prepare waste management programmes. Producers of packaging and producers who annually produced or used packaging above 30 tonnes were obliged to prepare packaging waste prevention programmes. However, the SAI of North Macedonia assessed that the Ministry of Environment and Physical Planning did not have figures on the total number of legal persons meeting the above conditions, therefore, it was not possible to confirm how many of such legal persons complied with the legal obligation to prepare the programmes. Such programmes were intended to contribute to the delivery of WMPs.

Extended Producer Responsibility

29 The Polluter Pays Principle, established in Article 14 of the **Waste Framework Directive**, states that the costs of waste management, including the necessary infrastructure and its operation, shall be borne by the original waste producer or by the current or previous waste holders. Member States decide whether the costs of waste management are to be borne by the end user (e.g., the consumer disposing of the waste) or partly or wholly by the producer of the product that has become waste. This is termed Extended Producer Responsibility, one of the ways to implement the Polluter Pays Principle. EPR schemes make producers responsible for managing their products once they become waste. EPR schemes are mandatory for certain waste streams, such as electrical and electronic waste, batteries, accumulators and vehicles, and will be required for all packaging waste, Single-Use Plastic and fishing gear by 2024.[38]

30 According to Article 8(1) of the **Waste Framework Directive**, in order to strengthen the re-use and the prevention, recycling and other recovery of waste, Member States may take legislative or non-legislative measures to ensure that any natural or legal person who professionally develops, manufactures, processes, treats, sells or imports products (producer of the product) has extended producer responsibility. Such measures may include an acceptance of returned products and of the waste that remains after those products have been used, as well as the subsequent management of the waste and financial responsibility for such activities. These measures may include the obligation to provide publicly available information as to the extent to which the product is re-usable and recyclable. Where such measures include the establishment of extended producer responsibility schemes, the general minimum requirements laid down in Article 8a shall apply.

[38] European Court of Auditors, ***Special Report 12/2021: The Polluter Pays Principle: Inconsistent application across EU environmental policies and actions*** (p. 30), 5 July 2021.

31 Regarding packaging waste, EPR is mandatory based on Article 7 of the **Directive 94/62/EC**, Member States shall ensure that, by 31 December of 2024, Extended Producer Responsibility schemes are established for all packaging in accordance with Articles 8 and 8a of **Directive 2008/98/EC**.

32 The implementation of the EPR schemes is one of the methods to reach the Circular Economy. EPR legislation, in principle, shifts the responsibility for, and costs of, negative environmental externalities of products from taxpayers to producers, consistent with the Polluter Pays Principle. There are various types of EPR schemes, both mandatory and voluntary, imposing physical, organisational, financial or informative responsibility on producers. The approach is implemented through a range of different administrative, economic and informative instruments, such as regulatory take-back requirements or market-based deposit refund systems.[39] Some experts believe that there is no fully satisfactory EPR scheme in the whole of Europe and even the German schemes, which used to pass for a golden standard in EPR scheme, have some flaws in the context of the constantly changing economy.[40]

33 The EPR schemes implemented in countries covered by the coordinated audit share certain similarities but also some important differences. Every country had an EPR scheme provided for in national legislation for plastic packaging waste in order to collect and manage plastic packaging waste to reduce the amounts sent to landfills. The Slovakian EPR scheme encompassed also non-packaging products.[41] EPR schemes in some countries covered also other types of waste such as waste electrical and electronic equipment, end-of-use vehicles, construction and demolition waste.

34 In the case of Moldova, the EPR scheme came into force in August 2021 and is expected to be functional after 2024, after registration of all producers with the Environment Agency. Despite that the EPR scheme was established in all national legislations, one country did not implement it. Competent Albanian authorities have not drafted and approved a regulation on the EPR according to Article 67 of Act No. 10463 of 22 September 2011 on Integrated Waste Management.

35 In most of the countries, i.e., in eight out of twelve, the EPR schemes took the form of various types of fees, such as for example:

a) product fees for plastic packaging and plastic shopping bags (Bulgaria),

b) gatefees paid by Packaging Waste Recovery Schemes (Malta),

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39 E. Watkins, S. Gionfra, J-P. Schweitzer, M. Pantzar, C. Janssens and P. ten Brink, Institute for European Environmental Policy, ***EPR in the EU Plastics Strategy and the Circular Economy: A focus on plastic packaging***, 9 November 2017.

40 **An interview with Przemysław Kuna** Managing Director of INTERSEROH Advisory Sp. z o.o.

41 Among others: articles of plastics consisting of polyethylene terephthalate, except raw materials, preforms and fibres intended for industrial use, and articles of plastics consisting of polyethylene, polypropylene, polystyrene, polyvinyl chloride or polyamide except raw materials, fibres and products intended for industrial use – based on the Act of 17 March 2015 on waste and on amendments to certain acts.

c) product fees paid by entrepreneurs who have not achieved the required recovery or recycling rate for plastic packaging waste and recycling fees for plastic shopping bags (Poland),
d) product fees paid by the producers for plastic packaging to the specific waste stream management systems – ecovalue (Portugal),
e) product fees and recycling fees (Romania),
f) recycling fees paid by entrepreneurs who transferred their obligation to manage packaging waste to an operator on a contract-basis and product fees, paid by entrepreneurs who have not transferred their obligation to manage packaging waste to an operator (Serbia),
g) product life cycle fees, calculated among all producers of products according to their market share (Slovakia),
h) recycling fees for shopping bags from 2019 and recovery contribution fees for plastic packaging from 2020 (Turkey).

36 Two SAIs identified exceptions in their national EPR schemes which could impact on the delivery of their EPR schemes. In the case of Malta, small scale producers, who introduced less than 100 kilograms of packaging waste to the market in a given year, were exempt from EPR obligations under the Packaging Waste Regulations. As a result, online customers who imported less than 100 kilograms of packaging into Malta, were exempt from any EPR obligations. Similarly, in Turkey, the annual 1,000.0 kilograms exemption limit implemented until 2020 considerably scaled down the applicability of the EPR scheme. Thus, the fees paid under the EPR scheme covered only the small part of the costs of packaging waste management. Those who marketed packaged product could meet their EPR obligations individually or by becoming a member of an authorized body (AB). Four institutions were designated as ABs. These institutions had only a total of 7,385 members even though the number of businesses marketing packaged products exceeds 1 million.

37 Early warning reports, prepared for EU countries, indicated among others that EPR schemes in Bulgaria, Portugal, Romania and Slovakia did not fully cover the costs of separate collection of waste. The EPR schemes in Malta, Poland and Romania did not operate efficiently.[42] For example in Bulgaria, a product fee for plastic packaging amounted to 1.19 EUR per kilogram and a product fee for plastic shopping bag amounted to 0.28 EUR. Additionally, the Slovakian SAI has identified some other problems that prevented the EPR scheme from being functional and efficient, such as: *freeriding*, underestimated data reported by producers and competition among the EPR

[42] 1) ***The early warning report for Bulgaria***, EC, 24 September 2018, SWD/2018/413 final; 2) ***The early warning report for Hungary***, EC, 24 September 2018, SWD/2018/419 final; 3) ***The early warning report for Malta***, EC 24 September 2018, SWD/2018/421 final; 4) ***The early warning report for Poland***, EC, 24 September 2018, SWD/2018/426 final; 5) ***The early warning report for Portugal***, EC, 24 September 2018, SWD/2018/422 final; 6) ***The early warning report for Romania***, EC, 24 September 2018, SWD/2018/423 final; 7) ***The early warning report for Slovakia***, EC, 24 September 2018, SWD/2018/424 final.

organisations. In the case of Portugal, the producer's responsibility might be performed by the producer itself, might be transferred to a waste management entity (upon the payment of a management fee – ecovalue) or might be implemented through voluntary agreements between the producer and the Portuguese Environment Agency. All three solutions were applied, however, the most common was to pay to a waste management body, as it concerned municipal waste (urban waste). Management fees paid by producers for plastic packaging were not related to packaging types or components of the packaging. The fee was equal for all plastic packaging and different for each specific waste stream management operator, namely 0.2239 EUR per kilogram (Ponto Verde), 0.2620 EUR per kilogram (Novo Verde) and 0.35507 EUR per kilogram (Electrão). The operator Ponto Verde charged 10% more for PET bottles with PVC cap and label.

38 The SAIs of non-EU countries, North Macedonia, Serbia and Turkey, were also critical about the efficiency of their national EPR schemes. Additionally, the SAI of North Macedonia concluded that the EPR scheme needed to be changed and formulated some recommendations, such as: establishing complete register of producers/importers who have obligation to manage the waste they generate and to pay fee for that and determining the actual amount of total generated packaging waste per one year.

Division of Tasks in the Waste Management System

39 Waste management systems in the countries covered by the coordinated audit on plastic waste could be described as complex ones and involving many actors, both public and private, at the central, regional and local levels. The effectiveness of plastic waste management depends significantly on the collaboration of various stakeholders (see Table 1).

Table 1. Division of tasks in the countries covered by the coordinated audit

Country	Central level	Regional level	Local level
Albania	1. Ministry of Tourism and Environment. 2. National Environmental Agency.	Regional Government Units (Counties)	Local Government Units (Municipalities)
Bulgaria	1. Ministry of Environment and Water. 2. Executive Agency on Environment. 3. Enterprise for Management of Environmental Protection Activities.	Regional Inspectorates of Environment and Water – 16 units	Municipalities – 265
Hungary	1. Ministry for Innovation and Technology. 2. National Coordination of Waste Management and Asset Management Plc.	Public waste management companies	Local Governments

Country	Central level	Regional level	Local level
Malta	1. Ministry for Environment, Climate Change and Planning. 2. The Environment and Resources Authority. 3. WasteServ (Government-owned waste treatment company).	N/A	1. Local Councils. 2. Packaging Waste Recovery Schemes (appointed by Local Councils). 3. Packaging Producers. 4. Private Waste Operators (to collect Mixed Municipal Solid Waste).
Moldova	1. Ministry of Agriculture, Regional Development and Environment. 2. Ministry of Environment (after reorganisation in 2021). 3. .Environmental Protection Inspectorate.	N/A	1. Local Public Authorities. 2. Economic Operators.
North Macedonia	1. Ministry of Environment and Physical Planning. 2. Collective Packaging Waste Handlers. 3. Waste Processor (recyclers and those performing treatment). 4. State Environmental Inspectorate.	Regional Waste Management Centers (planned)	1. Municipalities. 2. Public Utility Companies and Legal Entities.
Poland	1. Ministry of Climate. 2. Ministry of Economic Development. 3. Chief Inspectorate of Environmental Protection.	1. Marshal Offices (16). 2. Voivodship Inspectorates of Environmental Protection (16).	1. Municipal and Communal Offices. 2. Entrepreneurs (launching products and packaging into the market). 3. Packaging Recovery Organizations. 4. Other entrepreneurs.
Portugal	1. Ministry of Environment and Climate Action. 2. Portuguese Environment Agency.	N/A	1. Municipalities. 2. Waste Management entities.
Romania	Ministry of Environment and Climate Change	1. Ministry of Public Works, Development and Administration. 2. FADI – Federaţia Asociatiilor de Dezvoltare Intercomunitara. 3. County Councils.	Municipal and Communal Offices
Serbia	1. Ministry of Environmental Protection. 2. State Environmental Protection Agency.	Autonomous Province of Vojvodina, Provincial Secretariat for Environmental Protection.	Local self-governments (cities and municipalities)
Slovakia	1. Ministry of Environment. 2. Other Ministries (Ministry of Economy). 3. Slovak Environmental Inspectorate. 4. Statistical Office.	District Offices (Department of the Environment)	1. Municipalities. 2. EPR Organisations (Producers). 3. Coordination Centers. 4. Other Stakeholders (Recycling Companies, Waste Transporters).

Country	Central level	Regional level	Local level
Turkey	Ministry of Environment, Urbanization and Climate Change	N/A	1. Municipalities. 2. Provincial Organisation of MEU. 3. Entrepreneurs (launching product and packaging into the market). 4. Packaging Recovery Organizations. 5. Authorized Organisations (2011-2019)
Source: NIK's own analysis based on data received from the participants of the audit.			

40 The following are examples of organisational arrangement adopted in two countries: Poland and North Macedonia. The Polish waste management system involved many actors on different levels. The Ministry of Climate (previously the Ministry of Environment) was responsible for preparation of crucial legislation governing the waste management system and aimed at ensuring the adequate waste management method, including preparation of the National WMP and the National WPP. On the other hand, the Ministry of Economic Development was required to prepare the strategic document, titled: *the Roadmap for Transformation towards a Circular Economy*. Marshal Offices were responsible for preparation of regional WMPs, registration of entities placing products on the market and managing waste, verification of waste management reports submitted by individual entities (communes, businesses) and preparation of summary reporting submitted to the Ministry of Climate, verification of correct calculation and payment of product and recycling fees by businesses and verification of correct conduct of educational campaigns by businesses. Voivodship Inspectorates of Environmental Protection performed inspections of entities required to comply with environmental protection regulations, including if they meet their waste management obligations. Municipal and Communal Offices were responsible for the implementation of measures provided for in the regional WMPs, coverage of all property owners with the municipal waste management system, achieving the required recycling rate of municipal waste and conducting educational and informative activities on proper waste management. Businesses placing products and packaging on the market and Packaging Recovery Organisations were responsible for achieving the required recycling rate of packaging waste, calculating and paying product and recycling fees and conducting educational campaigns. Other businesses, such as mechanical-biological waste treatment plants, landfills, waste incineration plants and waste recyclers performed tasks according to their responsibilities.

41 In the case of North Macedonia, many actors were also involved in the national waste management system on different levels. The Ministry of Environment and Physical Planning was responsible for preparing legal solutions, monitoring the state of the environment, undertaking measures and activities related to protection

from harmful impacts of waste, proposing measures for solid waste treatment, issuing permits and performing supervision in its jurisdiction. Collective Packaging Waste Handlers (CPWH) were legal persons and they occupied a central place in the plastic waste management system. They provided a link that connected the producers/importers (who were the first to place products and packaging on the market) to legal persons and individuals who collected and transported plastic waste. Operating based on a license from the Ministry, they were required to ensure the processing or disposal of collected amounts of plastic waste. They operated as associations of producers. Producers, as waste generators, paid a fee to the CPWH and then the realized profit should be used to accomplish the national goals, as well as to perform the obligations for collection, processing or disposal of the collected and received amounts of waste. Obligations for waste management were assumed based an agreement between the CPWH and producers. CPWH were established by producers to pay less for the waste they generated. If producers did not join CPWH, they had to pay more to the state. However, there was no mechanism to monitor whether all producers/importers who were the first to generate packaging waste in the market had concluded agreements with the CPWH. The number of producers/importers who had concluded agreements with CPWH was very small – 1,500 producers on average in 2017-2019. There was no common methodology for all CPWH to calculate the amount of fees for the management of packaging waste, so, to attract as many producers as possible, they competed with each other and reduced the price. Waste Processors (recyclers and treatment plants) were legal persons and individuals who processed waste, regardless of whether they generated waste themselves or performed processing for third parties. They needed a license to perform waste processing. The State Environmental Inspectorate performed inspection and supervision of compliance with legislation and other regulations through state environmental inspectors. Municipalities were obliged to manage municipal and other non-hazardous waste generated in their territory. They were required to take care of public cleanliness and abandoned waste, responsible for the organisation of the selection, collection, transportation and supervision of waste, carrying out projects and investment interventions to improve the general condition of waste management and to act in accordance with the general rules for dealing with municipal and other types of waste. Public Utility Companies (PUCs) are established by the municipalities to perform communal activities. Legal Persons entrusted to perform communal activities were service providers for collection, transportation and/or treatment of communal waste and other types of non-hazardous waste. For that purpose, they had to obtain a license for performing their activity as well.

Measures Encouraging the Design of Products towards Recyclability

42 Better design can make products more durable or easier to repair, upgrade or remanufacture. It can help recyclers to disassemble products in order to recover valuable materials and components. Overall, it can help to save precious resources.[43] It is estimated that over 80% of all product-related environmental impacts are determined during the design phase of a product.[44]

43 According to Article 8(2) of the **Waste Framework Directive**, Member States may take appropriate measures to encourage the design of products and components of products in order to reduce their environmental impact and the generation of waste in the course of the production and subsequent use of products, and in order to ensure that the recovery and disposal of products that have become waste take place. Such measures may encourage, inter alia, the development, production and marketing of products and components of products that are suitable for multiple use, that contain recycled materials, that are technically durable and easily repairable and that are, after having become waste, suitable for preparing for re-use and recycling in order to facilitate proper implementation of the waste hierarchy. The measures shall take into account the impact of products throughout their life cycle, the waste hierarchy and, where appropriate, the potential for multiple recycling.

44 Audit results show that the eco-design of plastic packaging was a poorly developed area.[45] Five countries have references to the eco-design in legislative and policy documents (Bulgaria, Malta, Portugal[46], Romania and Slovakia). For Slovakia, the audit found that the adopted eco-design law[47] was ineffective. Manufacturers paid the same fees regardless of the composition of the product. The audit concluded that absence of eco-modulation did not motivate entrepreneurs to produce better recyclable plastic.

45 In Poland, despite taking some steps to prepare recommendations for eco-design of packaging (better product design makes plastics recycling easier), the Minister of Climate has not yet developed solutions in that area. The findings of the audit showed that these preparations were at a very early stage. The Polish SAI indicated that it may result in failure to meet the constantly growing waste management requirements. Information from the third-party sources, obtained during the audit shows that approximately 70% of plastic packaging on the Polish market was difficult to recycle (among others due to combination of various materials).

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43 European Commission, ***Closing the loop – An EU action plan for the Circular Economy*** (p. 3), COM(2015) 614 final, 2 December 2015.

44 European Commission, ***Staff Working Document Accompanying a European Strategy for Plastics in a Circular Economy*** (p. 22), SWD(2018) 16 final, 16 January 2018.

45 No data from SAI of Hungary.

46 In Portugal, through voluntary agreements established with the government, important associations of producers (sectors of beverages, hotels and restaurants, agri-food and distribution) have committed to replace materials in packages by others that are recyclable or have less environmental impact and to eliminate single use plastics products (replacing them by others made from sugar cane bagasse, paper and wood). Ambitious targets are established to be reached until 2025.

47 Act No. 529/2010 Coll. on Environmental Design and Use of Products.

Separate Collection of Waste

46 Separate collection means collection where a waste stream is kept separately by type and nature so as to facilitate a specific treatment (Article 3(11) of the WFD). The **Waste Framework Directive** requires Member States to establish, subject to Article 10(2) and (3) of the WFD, separate collection at least for paper, metal, plastic and glass (Article 11(1)). Separate collection serves to facilitate or improve preparing for re-use, recycling and other recovery operations of waste.

47 According to the provisions of the **Waste Framework Directive**, in order to comply with the objectives of the Directive, and move to the European Circular Economy with a high level of resource efficiency, Member States shall take the necessary measures designed to achieve the following targets 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. Relevant targets for 2025, 2030 and 2035 amount to 55%, 60% and 65% by weight respectively (Article 11(2)(a) and (c) to (e) of the WFD).

48 According to third-party sources, there were insufficiencies in the EU in collection systems, with low rates of plastic waste collected. In addition, once collected, the complexity of the separation process makes waste recycling quite challenging. Also, there is less recycling capacity today in the EU than the amount of plastic waste sent to recycling. This under-capacity in recycling represents around 50% of the total plastic waste generated in the EU, while the remaining 50% is exported for recycling overseas.[48]

49 Municipal waste represents only around 10% of the total waste generated in the EU, but it is one of the most complex streams to manage due to its diverse composition, large number of producers and fragmentation of responsibilities. Based on an in-depth review of Member States' recycling performance and waste policies, 14 Member States have been identified as being at risk of missing the 2020 target of 50%. These included countries who participated in this coordinated audit, namely, Bulgaria, Hungary, Malta, Poland, Portugal, Romania and Slovakia.[49]

50 Three out of five the non-EU countries covered by the coordinated audit on plastic waste, did not adopt minimal recycling rate of municipal waste for 2020 (see Table 2). Only Albania and North Macedonia were an exception with recycling rates of 50% and 30% respectively. Turkey has set a target to achieve 35% of the recovery rate of municipal waste by 2023. On the other hand, the EU countries have their regulations consistent with the relevant provisions of the **Waste Framework Directive**.

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[48] European Commission, ***Staff Working Document Accompanying a European Strategy for Plastics in a Circular Economy*** (p. 45), SWD(2018) 16 final, 16 January 2018.

[49] European Commission, ***Report on the implementation of EU waste legislation, including the early warning report for Member States at risk of missing the 2020 preparation for reuse/recycling target on municipal waste***, COM(2018) 656 final, 24 September 2018.

Table 2. Recycling rate of municipal waste

Country	Required (minimum) recycling rate of municipal waste				Required (minimum) recycling rate only for plastic waste from municipal sector			
	2017	2018	2019	2020	2017	2018	2019	2020
Albania	N/A	N/A	N/A	50%	N/A	N/A	N/A	N/A
Bulgaria	25%	40%	40%	50%	N/A	N/A	N/A	N/A
Hungary	No data			50%	No data			
Malta	50%	50%	50%	50%	N/A	N/A	N/A	N/A
Moldova	N/A	N/A	N/A	30%	N/A	N/A	N/A	N/A
North Macedonia	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Poland	20%	30%	40%	50%	N/A	N/A	N/A	N/A
Portugal	N/A	N/A	N/A	50%	N/A	N/A	N/A	N/A
Romania	N/A	N/A	N/A	50%	N/A	N/A	N/A	N/A
Serbia	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Slovakia	20%	30%	40%	50%	N/A	N/A	N/A	N/A
Turkey	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Source: NIK's own analysis based on data received from the participants of the audit.

51 All but one[50] countries covered by the coordinated audit on plastic waste adopted separate collection of municipal waste, including plastic waste. One country, i.e. Turkey, has implemented the separate collection of packaging waste at source. Results are presented in the Table 3.

Table 3. Separate collection of municipal waste

Country	Separate collection	Paper	Metal	Plastic	Glass	Others
Albania	No	No	No	No	No	No
Bulgaria	Yes	Yes	Yes*	Yes	Yes	Mixed waste Bio-waste
Hungary	Yes	Yes	Yes	Yes	Yes	Green waste
Malta	Yes	Yes	Yes	Yes	Yes	Co-mingled collection Organic waste
Moldova	Yes	Yes	Yes	Yes	Yes	Mixed waste
North Macedonia	Yes	Yes	Yes	Yes	Yes	Mixed waste

[50] Albania.

Country	Separate collection	Paper	Metal	Plastic	Glass	Others
Poland	Yes	Yes	Yes*	Yes	Yes	Bio-waste Mixed waste
Portugal	Yes	Yes	Yes*	Yes	Yes	Used cooking oil Mixed waste Bio-waste (from 2024) Textile (from 2025) Furniture and other bulky waste (from 2025)
Romania	Yes	Yes	Yes*	Yes	Yes	Bio-waste Mixed waste
Serbia	Yes	Yes	Yes	Yes	Yes	Mixed waste
Slovakia	Yes	Yes	Yes	Yes	Yes	Multilayer composite materials based on cardboard Bio-waste Mixed waste Others (non-compulsory): textiles
Turkey	Yes**	Yes	Yes*	Yes	Yes	Mixed waste
* Together with plastic. ** Packaging waste.						
Source: NIK's own analysis based on data received from the participants of the audit.						

52 In Albania, the Decision No 418 of 25 June 2014, approved by the Council of Ministers, required separate collection of waste for three groups of waste: a) dry recyclable waste, b) wet recyclable waste and c) non-recyclable waste. According to the Decision, the main municipalities (first category) had to build infrastructure for separate collection of waste by the end of 2016 and all other municipalities – by the end of 2018. None of the municipalities have yet built a separate collection infrastructure.

53 In Malta, *The early warning report* concluded that Malta still faced serious difficulties in its implementation of the EU waste law, mainly due to lack of infrastructure and collection systems for recyclables and bio-waste.[51] The audit found that the collection of Municipal Solid Waste (MSW) fell under the responsibility of Local Councils. Local Councils appointed one of the two Packaging Waste Recovery Schemes to collect the recyclable material. The Schemes operated on behalf of the packaging producers. On the other hand, Local Councils contracted private waste operators to collect the Mixed Municipal Solid Waste (non-recyclable waste from households). Local Councils were responsible for the setting up a separate collection system (including co-mingled collection) of dry recyclables by 2013. Co-mingled collection of dry recyclables impaired the quality of potentially recyclable plastic as it became contaminated with other waste streams particularly wherein correctly disposed of in the recyclable (grey/green) bag.

[51] European Commission, ***The early warning report for Malta***, 24 September 2018, SWD/2018/421 final. Since the publication of the report and the national audit, Maltese auditories have committed to upgrade the waste management infrastructure. To this end, the Maltese Government has made available around 1 billion EUR.

Consequently, the level of rejects from waste management operations was higher than it would have been had the material been collected separately. Waste collected was disposed of at WasteServ, a Government-owned company and the largest waste facility in Malta. Households could also dispose of plastic waste in Bring in Sites, which are the responsibility of the Packaging Waste Recovery Schemes. On the other hand, a small amount of plastic waste was also recovered in the Civic Amenity Sites, which were run by WasteServ Malta Limited.

54 In Moldova, audit findings showed that although the Law on Waste No 209/2016, based on the provisions of the **Waste Framework Directive**, set the objective of introducing by 2018 a separate collection systems for paper, glass, metals and plastics throughout the country, there was no detailed mechanism in place for implementing separate collection of such waste, and the role of local public authorities was reduced only to the right to ensure the creation of an efficient system of integrated municipal waste management. Currently, the low level of separate collection and sorting also generated a small percentage of plastic recycling. According to estimates, about 90% of municipal wastes were disposed of in landfills.

55 In North Macedonia, the audit found that there was a low level of waste selection, which adversely affected the management and handling of plastic waste. The established waste selection system was dysfunctional and did not provide effective primary and secondary selection, and thus further processing of plastic waste was not possible. Insufficient financial liquidity of public utility companies did not allow them to invest in adequate infrastructure for waste selection and treatment, so mixed waste primarily collected was subsequently deposited of in municipal landfills. The amounts of selected plastic waste were symbolic and mostly as a result of the activities undertaken by legal entities responsible for handling packaging waste and the informal sector that collects plastic waste (street collectors).

56 According to *The early warning report*, separate collection of recyclables in Poland is not yet effective.[52] The audit found that Polish legislation required that at least the following waste fractions be collected separately: paper, metal, plastic, glass and composite packaging as well as biodegradable municipal waste, including biodegradable packaging waste. Separate collection of waste has been implemented in Poland in line with Article 10(2) of the WFD. According to national regulations each municipality collects the following types of waste: (1) paper and cardboard, (2) metals and plastics, (3) glass, (4) bio-waste and (5) mixed waste. However, it should be emphasised that the majority of municipal waste in Poland in 2016-2018 was collected as mixed waste (68%, 65% and 62%, respectively).

[52] European Commission, ***The early warning report for Poland***, 24 September 2018, SWD/2018/426 final.

57 The Romanian SAI found that the country was quite a long way from achieving the target of connecting 100% of the population to separate waste collection services. One year after the deadline set by the National Waste Management Plan (2019) for the 100% implementation of separate collection, the percentage was 87% on a national level, with significant differences in the degree of connection to the urban sanitation service compared to the same indicator calculated for the rural population. One year before the deadline for achieving 50% of collected municipal waste prepared for reuse/recycling (2020), Romania achieved the level of 26% (based on information from approximately 90% of the total territorial administrative units on the national level).

58 In the Republic of Serbia in 2017-2019, a total of 897,000.0 tonnes of plastic waste was produced, 831,000.0 tonnes of which is municipal plastic waste. According to the audit findings, there was no systemic organized separate waste collection in place, as 2% of municipal plastic waste (14,000.0 tonnes) was separately collected and recycled. As for the local governments, 43% have established separate collection.

59 The **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[53] should have been transposed to the national legal framework by 3 July 2021. Its aim is to, among others, restrict significant negative environmental, health and economic impacts of certain plastic products. The Directive addresses Single-Use Plastic Products (**SUP**). Single-Use Plastic Products are typically intended to be used just once or for a short period of time before being disposed of, such as: wet wipes for personal care and domestic use, fast-food containers or boxes with cold or hot food, or food containers of fresh or processed food that does not need further preparation, beverage bottles, cups and lids for beverages, tobacco product filters, sanitary towels, cotton buds sticks, straws and beverage stirrers.

60 According to Article 9(1) of the SUP Directive, the Member States are required to ensure separate collection of Single-Use Plastic beverage bottles of up to 3 litres to attain recycling targets of 77% by 2025, and 90% by 2029.

61 In general, European countries can be divided into three groups. The first group includes countries which have already transposed the SUP Directive's regulations into their national legal systems and those are: Sweden, Greece, Great Britain, France, Ireland and Estonia. The second and at the same time the largest group are countries which have transposed the SUP regulations partially with various progress. The last group includes countries, which have yet to start transposing the SUP Directive, such as Poland.[54]

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53 OJ L 155, 12/6/2019, p. 1.

54 ***SUP in Poland – in earnest or with a grain of salt? Business awaits for legal framework***, an interview with Anna Grom, Board Chairwomam of Interseroh in Poland and Head of Interseroh Zero Waste Solutions International.

62 Deposit-return schemes (**DRS**) can be part of EPR schemes or complement them. They can be a useful tool to help to achieve the SUP targets. The SUP Directive does not impose the use of DRS to attain the objective regarding beverage bottle collection for recycling, but it recommends it as one of the options that may be used. DRS can increase the quantity and quality of plastic waste collected and reduce litter. Therefore, the European Commission recommends Member States to introduce DRS for waste types that have either a high polluting potential (e.g., fishing gear and agricultural plastics) or are managed in a sub-optimal way (low separate collection rates), which does not allow exploiting the recycling potential of that waste (e.g., plastic packaging in some Member States).[55]

63 According to data from the Polish Zero Waste Association, 11 European countries decided to start DRS.[56] It means that around 148 million of people have access to the solution.[57]

64 No participating country has established a DRS yet. Deposit-return schemes are at the implementation stage in six out of twelve countries (Bulgaria, Malta, Portugal, Romania, Slovakia and Turkey). In Malta, the Beverage Container Refund Scheme is currently being set up. The Turkish DRS for reusable beverage packaging is planned to be mandatory in 2022.

65 The European Commission suggested in *The early warning reports* that some Member States (Malta, Portugal and Romania) should consider introducing the DRS as a possible solution to the risk of missing the 2020 target of 50% preparation for re-use/recycling of municipal waste.[58]

66 The Polish Minister of Climate carried out a study of the legitimacy and possibility of introducing the DRS for packaging in Poland. Relevant studies on the subject, including plastic packaging, were obtained in December 2017. The Minister has not decided on the final shape of this system and the implementation of appropriate measures so far.

67 It is worth mentioning that one country, Malta, has adopted the *Single-Use Plastic Products Strategy for Malta 2021-2030 Rethink Plastic* in September 2021. It contains 24 measures that aim at reducing the consumption of certain single-use plastic products, and increasing the quality and quantities of plastic waste collected for recycling. The implementation of these measures will further assist Malta to move towards a more circular model, in line with the European Union's and national principles, as well as to protect the environment and human health from plastic pollution.[59]

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55 European Commission, ***Staff Working Document Accompanying a European Strategy for Plastics in a Circular Economy***, SWD(2018) 16 final, 16 January 2018.
56 Source: **Polish Zero Waste Association**.
57 Number of populutaion from the website**: www.populationof.net**.
58 The early warning reports for: ***Malta***, ***Portugal*** and ***Romania***.
59 Information from **The Environment and Resources Authority** website.

68 Portugal has implemented some of the SUP provisions into the national legal framework. Laws 76/2019 and 77/2019 of 2 September 2019 and 88/2019 of 3 September 2019 introduced restrictive measures on the use of plastic in packaging and disposable products such as the ban on Single-Use Plastic tableware (establishing transitional arrangements for adapting: one year for restaurants, two years for street vending and collective transport vehicles and three years for retail), the obligation to provide consumers with alternatives to the distribution of ultralight plastic bags and plastic cuvettes at the points of sale of bread, fruits and vegetables (the ban from 1 June 2023) and the ban on disposal of cigarette butts in public places. Law 78/2021 of 24 September 2021 established definitive prohibitions in these areas. The Portuguese SAI highlighted the effectiveness of the policies introduced to reduce the use of plastic bags. The consumption of these bags was very high (more than 500 bags year per inhabitant) before taxes on plastic bags were introduced in 2015. Consumption has very quickly reduced to 7,5 bag year per inhabitant in 2019 (EU target for that year was 90 bags year per inhabitant).

Additional Findings

69 Some of the SAIs participating in the coordinated audit on plastic waste made interesting findings on legal regulations and organizational arrangements concerning plastic waste treatment.

70 The Maltese SAI found areas where neither the national nor European legislation was sufficiently broad to enable a more comprehensive and effective regulation of plastic waste. Particularly, the main legislative instrument that regulated plastic waste focused on one type of plastic waste, i.e., plastic packaging waste. The definition of packaging waste omitted references to online purchases and shopping from abroad. In line with EU harmonised procedures, the Maltese Customs Department only registered goods if excise duty was paid. It was not obliged to register the packaging of products as it only registered the primary product shipped from/to non-EU countries. Consequently, the actual yearly amount of plastic placed on the market was not known and was assumed to be equivalent to the amount of waste collected. This could be detrimental to management information, decision-making and enforcement. It also deviates from the Circular Economy principles. Plastic packaging constitutes one type of plastic waste. In fact, a study carried out in 2015 by the European Commission established that almost 60% of all plastic waste originates from the packaging waste stream. The remaining 40% is non-packaging plastic waste. Looking at the results of a characterisation survey carried out by WasteServ, it was established that packaging waste constituted almost 40% of the content disposed of in the recyclable bag.

71 One of the measures used in Moldova to promote and implement the principle of prevention of waste generation, was to ban in 2019 the sale of disposable plastic bags and utensils to reduce their environmental impacts. However, during 2019-2020, no sanctions were established in the legislation for illicit trade, which led to the loss of revenue in the budget,

due to the non-application of fines. Thus, the audit found an increase in plastic bags imports by 500 tonnes. To help promote investment in mechanisms to sustainably reduce the consumption of thin plastic shopping bags, the Government has not identified a financial opportunity to collect a green tax on the sale of plastic bags. In the period 2018-2019, bags with biodegradable and compostable markings began to be introduced on the market. The quantities of these bags have been increasing and they have been replacing the plastic ones, but their placement on the market was in the absence of an accredited national certification laboratory, which would test the quality of such bags according to national standards on requirements for packaging and packaging waste. Purchasing these *BIO* bags at a higher price than the plastic ones, creates an illusion for the citizen that they contribute to reducing environmental impact. Economic operators treating waste do not have the financial means to implement and develop the correct treatment methods for waste from compostable and biodegradable bags (composting, fermentation, biodegradation methods require substantial investments). In such circumstances, the impact and burden on the environment is amplified by dumping bags in landfills.

72 The SAI of North Macedonia has found, that in order to monitor the situation of packaging waste management in the country, the Government set up Commission for packaging waste management, chaired by the Minister of Environment and Physical Planning. This Commission, among other things, should review and communicate opinions on: national targets for processing packaging waste; packaging waste management programme; situation of packaging waste management; and propose measures to prevent and reduce the amount of packaging waste, encourage collection, processing and disposal of packaging waste. However, the Commission has not been active for a long time. The last session of the Commission was held in December 2014. In May 2019, a new Commission was formed, which has not held a single session until the reporting period.

73 The Polish SAI has found that the Minister of Climate did not possess detailed information on the current realities of the market regarding the production of packaging, as well as the possibility of their recycling, which was an obstacle to designing and implementing new measures in this area. For example, the audit's findings proved that the Ministry of Climate did not have data for the period 2017-2019 on: production costs of plastics in Poland from primary raw materials and secondary raw materials; functioning of the market for packaging materials, and in particular what percentage of packaging was made of materials difficult to recycle or not suitable for further processing at all and how many plastic recyclers operated in the Polish market and what total processing capacity they had.

Conclusion (SAIs Assessment)

74 It is important to bear in mind that waste management systems in the countries covered by the coordinated audit on plastic waste are extremely difficult to compare despite of a common denominator in the form of the European regulations applied to different degrees in the countries.

75 All the SAIs, except one (i.e., SAI of Hungary) expressed rather critical opinions on their national waste management systems. Some of the participants indicated that their legal framework was not fully compliant with the EU legislation (mostly non-EU countries but also those EU countries which were delayed in transposition of the European regulations). Common assessment was that existing legal regulations and organizational arrangements were insufficient to reduce the generation of plastic waste and ensure its proper treatment. Some SAIs, such as Slovakian and Portuguese SAI, assessed that despite proper transposition of the provisions of the Directives, their application encountered some difficulties, what contributed to ineffectiveness of plastic waste reduction measures and proper treatment. More details on the SAI assessment are presented in the Appendix Seven to the report.

Applied Policies (Plans, Strategies) in Order to Implement Proper Plastic Waste Management

76 The second chapter of the *Main Findings* is dedicated to a presentation of policies applied in the countries covered by the coordinated audit on plastic waste. It is important to note that participating countries face various problems concerning plastic waste management. These problems vary in scale as well as nature and range from fundamental issues such as lack of proper infrastructure to separate collection of municipal waste to deficiencies related to the functioning of EPR schemes. In this regard this chapter discusses: measures aimed at the proper management of plastic waste, adopted and implemented, problem analysis on plastic waste treatment, the EPR schemes, educational and informative activities, good practices and other important issues related to plastic waste management. The above issues are illustrated and accompanied by examples.

Strategic Documents on Plastic Waste Management

77 As previously mentioned, strategic documents, including national and regional WMPs and various kind of documents such as strategies and plans,[60] generally did not include separate targets to be achieved for plastic waste. Adopted targets concerned wider groups of waste, such as: municipal waste, packaging waste, waste of electrical and electronic equipment, hazardous waste, demolition and construction waste, medical waste, end-of-use vehicles. The exceptions were the provisions relating to the minimum recycling rate of plastic packaging waste resulting from the **Directive 94/62/EC** (Point No 19 of the Report). Strategic documents included a description of waste policies, describing targets, key objectives and key features of the national waste management systems, as well as information on municipal waste/packaging waste and existing waste collections schemes.

78 For example, the Waste Management Strategy for the period 2013-2027 of North Macedonia established an ambitious goal to develop and implement an integrated and efficient waste management system from social, economic and conservational points of view. The Strategy provided for territorial division of the country into 8 waste management regions with distribution of investments in these regions in order to develop the infrastructure to ensure a proportionate quality management of all waste. Although in 2014-2020, the regional WMPs were prepared and adopted, the SAI assessed that they were not properly implemented because no regional waste management centres had been established.

[60] For example, such as: *National Environmetal Policy*, *Green Public Procurement National Action Plan* (Malta), *Waste Management Strategy for the period 2013-2027* (Moldova), *Waste Management Strategy 2008-2020* (Macedonia), *Roadmap for Transformation towards the Circular Economy* (Poland), *Action Plan for Circular Economy in Portugal: 2017-2020* (Portugal), *National Waste Management Strategy 2014-2020* (Romania).

79 On the other hand, the Hungarian National WMP for the period 2014-2020 contained the definition of comprehensive objectives regarding waste management for the whole territory of the country, such as: 1) increase utilisation ratios, 2) reduce waste production, 3) set up and develop selective collection and 4) separate, repair and reuse reusable components of products that became waste.

80 Another example, i.e., the national strategy aimed at directing Poland's development towards the Circular Economy, titled: *Roadmap for Transformation towards the Circular Economy*, was prepared by an inter-ministerial team, established by the Minister of Economic Development, and adopted by the Council of Ministers on 10 September 2019. The *Roadmap* comprehensively presented an economic model based on maximum use of existing resources and indicated actions for a reduction of consumption of natural resources. Thus, the document could have constituted one of the key elements leading to reduction of waste generation, including plastic waste, which due to their widespread use, played an important role in the *Roadmap*. However, the SAI highlighted that the vast majority of measures indicated in the Roadmap was conceptual, including guidelines or proposals for legal solutions. Therefore, even full implementation of the planned actions would not automatically improve the efficiency of the waste management system in Poland. Moreover, during the SAI's audit, the majority of the tasks planned in the *Roadmap* were still at the preparation stage and the Minister of Economic Development did not complete the methodology for the evaluation of implemented projects, which represented a significant challenge to assessing a method and a degree of their delivery.

81 However, there were two exceptions identified concerning setting separate targets for plastic waste. The first exception was the Hungarian *National Waste Management Plan 2014-2020*, which included *comprehensive and strategic targets for plastic waste*. It also assigned an indicator and a target value to the objective set for the utilisation of municipal plastic waste. The second exception was the Waste Management Plan of the Slovak Republic 2016-2020. According to the document the target for plastic waste was to achieve 55% material recovery and reduce the landfill of plastic waste to 5% by 2020.

82 The Serbian audit concentrated on performing goals and measures established in the local waste management plans for the cities Belgrade and Novi Sad. Out of nine goals set for Belgrade, three were completed[61] two not initiated.[62] The remaining targets were implemented partially. Out of eight goals established for Novi Sad two were achieved,[63] one was not achieved,[64] the rest being in the process of implementing.

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[61] 1. Collecting accurate data on waste quantities, 2. Installation of 240 l bins for the collection of recyclable waste, 3. Developing awareness of the need for proper waste management, especially among children.

[62] 1. Provision of industrial capacities for reuse of recyclable waste, 2. Establishment of a system of separate collection of hazardous waste from households.

[63] 1. Construction and instalation of underground containers, 2. Provision of the space for temporary storage of recyclable materials.

[64] Establishment of a system of separate collection of hazardous waste from households.

83 According to Article 28(2) of the **Waste Framework Directive**, the waste management plans shall set out, among others, an analysis of the current waste management situation in the geographical entity concerned.

84 The WMPs of all countries covered by the coordinated audit included a problem analysis on waste treatment, presenting their specific national circumstances. The analyses contained information about the present state and a forecast about the types, quantities and sources of waste generated in the country, as well as sometimes information on cross-border transport of waste.

85 For example, the Bulgarian *National WMP 2014-2020* contained an analysis of the current state of waste management in the Republic of Bulgaria, which was based on data up to 2012. In general, plastic waste was considered a part of the mass disseminated waste and municipal waste. Measures were identified to improve the effectiveness of the Extended Producer Responsibility scheme for 6 groups of mass disseminated waste, including packaging waste. The plan included an analysis of imported and exported packaging waste as a specific waste stream.

86 Similarly, the objectives of the Romanian National WMP's directly related to the characterization of the situation at the time of its adoption in the field (quantities of waste generated and managed, existing installations), the identification of the problems that caused inefficient waste management, the setting of targets and objectives based of the legal framework and strategic objects, as well as identifying investment needs. Data on quantities of waste generated and management for the period 2010-2014 were used to describe the situation at the time of the development of the National WMP. The analysis of the situation in the field of waste management at the time of the development of NWMPs revealed a number of shortcomings, among other in the case of municipal waste. It also included an analysis of alternatives for municipal waste (plastic waste being considered part of it together with paper and cardboard, metals, glass, bio-waste, wood, textiles, bulky waste, other waste).

87 Two SAIs performed their own problem analysis on plastic waste treatment. The SAI of North Macedonia analysed reasons why the recycling rate of packaging was so low – below 1% on the national level. The situation resulted from: lack of integrated waste management system, performing only treatment instead of recycling plastic waste due to a lack of sufficient financial resources and infrastructure facilities, unprofitability of plastic recycling requiring expensive processing installations and the global situation, meaning a global drop in oil prices, what resulted in reduction of prices of new plastic products and reducing demand for recycled plastic.

88 On the other hand, the Maltese audit identified two main problems. The first one concerned data lacunas. Data on waste was fragmented and unreliable because of three issues: 1) the actual annual amount of plastic placed on the market was not known and it was assumed to be equivalent to the amount of waste collected;

2) official data on plastic waste management were available two years in arrears and 3) characterisation surveys to determine the composition of recyclable plastics within municipal solid waste were not regularly undertaken. The second problem concerned critical gaps in Malta's waste infrastructure. In 2017, fire destroyed Malta's only material recovery facility (sorting facility). This led to infrastructural modifications. Following the fire incident, for a number of months, Malta's infrastructural set-up to treat recyclable waste was limited to a small plant in Gozo, as the main plant in Malta was solely processing Mixed Municipal Solid Waste collected from households. As a temporary measure, the main plant operations changed to the processing of the recyclable bags. These arrangements remained in place until mid-2020, when a new temporary rudimentary line catering for the sorting of dry recyclables from households became operational.

Implementation of Measures Aimed at the Proper Management of Plastic Waste

89 The countries covered by the coordinated audit were undertaking a wide range of measures aimed at proper management of waste, including plastic waste. The Table 4 shows the main waste management measures adopted by each country.

Table 4. Measures aimed at management of waste, including plastic waste

Country	Measures aimed at management of plastic waste	Remarks
Albania	Separate collection of municipal waste – building proper infrastructure.	Measures assessed as unsuccessful on the example of three municipalities (Tirana, Vlora and Elbasan).
Bulgaria	1. Closing municipal waste landfills that do not meet European requirements. 2. Separate collection of municipal waste – building proper infrastructure. 3. EPR (fees).	Measures focused on the waste hierarchy but still waste disposal is the most common method of municipal waste treatment.
Hungary	Separate collection and utilisation of plastic packaging waste – setting a quantitative target.	N/A
Malta	1. Waste prevention. 2. Collection reforms. 3. Waste treatment options. 4. Infrastructure. 5. EPR (fees). 6. Enforcement. 7. Education. 8. Waste streams. 9. Ban on importation, production and sale of certain SUP.	87 out of the 151 measures identified in various strategic documents were implemented. Number of implementation problems were identified during the audit.
Moldova	Separate collection– performed by a municipal enterprise, which collects about 50% of the total amount of municipal waste in the country.	Separate collection assessed as ineffective.
North Macedonia	Separate collection of municipal waste.	Separate collection assessed as ineffective.

Country	Measures aimed at management of plastic waste	Remarks
Poland	1. Separate collection of municipal waste, including establishing of relevant infrastructure. 2. Ordering a survey on morphology of municipal waste. 3. Establishing networks of repair and reuse. 4. Establishing local platforms for waste prevention. 5. EPR (fees).	Not all measures were undertaken by the auditees.
Portugal	1. Separate collection of plastic packaging. 2. EPR (fees).	N/A
Romania	1. Ban on lightweight, very lightweight plastic carrier bags with handle. 2. EPR (fees).	N/A
Serbia	1. Separate collection of municipal waste. 2. EPR (fees).	43% of local governments have established a separate collection.
Slovakia	1. Separate collection 2. Restriction to landfill sorted plastic waste 3. Ban on the charge free use of plastic bags 4. EPR (fees)	Estimation of the Ministry was that 30% of sorted plastic was landfilled.
Turkey	1. Separate collection of packaging waste. 2. EPR (fees), since 2020 – Recovery Contribution Fees.	N/A
Source: NIK's own analysis based on data received from the participants of the audit.		

90 The SAIs adopted various audit approaches to assess crucial measures contributing to the proper management of plastic waste in their countries. Some of the countries, i.e., Albania, North Macedonia, Moldova and Serbia concentrated mostly on implementing the separate collection of municipal waste, which was found dysfunctional or ineffective. The main reason, indicated by the SAIs, was a lack of a proper infrastructure for selection of collected municipal waste, manifesting itself in shortages of: separate-collection containers, infrastructure to treat/recover collected mixed municipal waste and financial resources for technical equipment (for example: vehicles).

91 Other implementation problems were found by the SAI of Malta. The auditors identified:

a) 135 measures on plastic waste management in the WMP 2014-2020, out of which just over 50% were implemented,

b) 5 measures set in the Green Public Procurement National Action Plan 2012-2014, which were all implemented,

c) 11 budgetary measures, out of which 8 (73%) were implemented.[65]

The SAI concluded, that implementing the measures required the Ministry to carry out feasibility studies and other preparatory work. Due to their nature, these processes were lengthy and thus influencing the degree to which the Ministry could expediently implement the measures relating to waste management. The adoption and revision

[65] They pertained to infrastructure and the ban on the importation, production and sale of certain SUP.

of national strategies and plans, which requires consulting stakeholders for their feedback was in some instances delayed due to changes on the matter at EU level. However, in such circumstances, it may become more problematic for national entities to secure resources and commence the implementation of measures to the detriment of existing EU and national targets. Finally, securing human and financial resources is being prolonged as national entities are awaiting the conclusion of the administrative process concerning EU funding.

92 Seven out of twelve SAIs participating in the coordinated audit gathered data on nationwide payments of fees implemented under the EPR schemes for plastic products. These were: Bulgaria, Malta, Poland, Portugal, Romania, Serbia and Turkey.[66] Data are presented in Table 5.

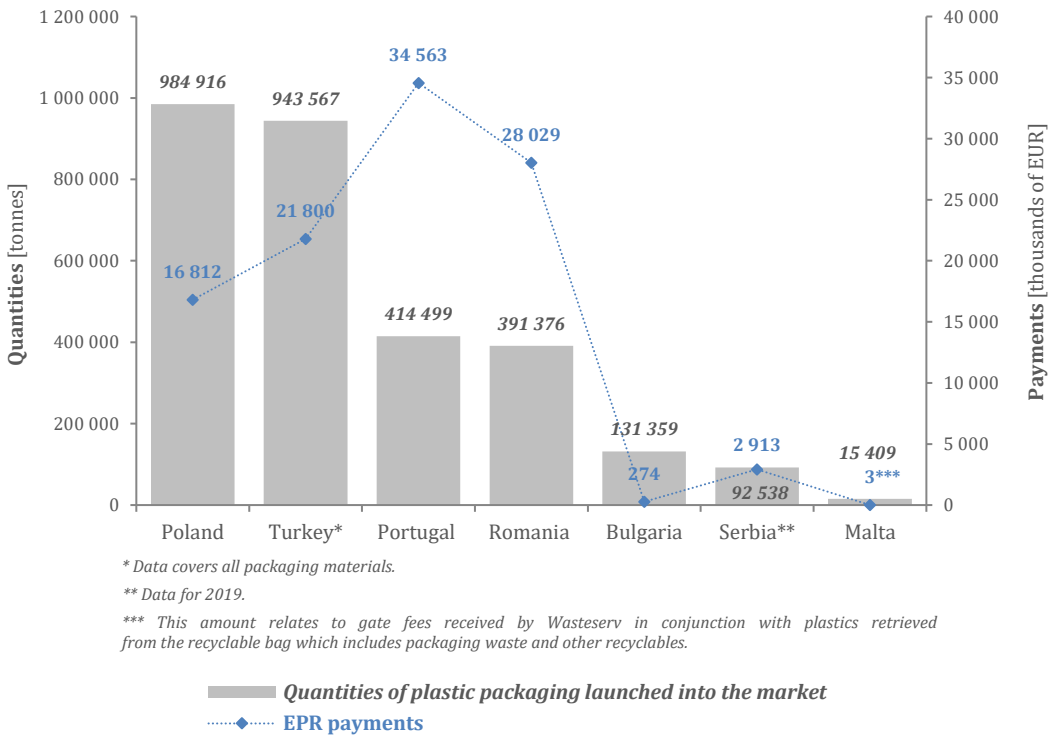
Table 5.The EPR nationwide payments in particular countries in 2017-2019

Country	EPR payments [in thousands of EUR]				Comment
	2017	2018	2019	Total	
Bulgaria	254.2	274.3	290.3	**818.8**	Product fees on plastic packaging under the Waste Management Act.
Malta	2.6	3.1	4.0	**9.7**	Income received by WasteServ in a form of gatefees (includes some non-packaging plastic). Gatefees were never revised since 2012 (0.5 EUR per tonne).
Poland	13.9	16,812.3	no data	**16,826.2**	Figures include product fee for plastic packaging for 2017-2018 and recycling fee for 2018. The amount of recycling fee was estimated based on figures from five audited marshal offices and proportionally to the share of inhabitants of audited regions in total population of the country in 2018.
Portugal	36,040.0	34,563.0	34,639.0	**105,242.0**	Ecovalue fees on plastic packaging waste.
Romania	20,651.1	28,028.5	26,207.7	**74,887.2**	Product fees and recycling fees on plastic products.
Serbia	no data	no data	2,913.0	**2,913.0**	Product fees and recycling fees on plastic products.
Turkey	27,600.0	21,800.0	20,162.8	**69,562.8**	Membership fees – figures covers all packaging materials.
Source: NIK's own analysis based on data received from participants of the audit.					

[66] Data covers all packaging materials.

93 Major variation of fees can be observed between the countries. This results from a number of diverse factors such as: size of the country, structure and the amount of fees, number of businesses obliged to pay, irregularities in functioning of the EPR schemes and quality of reported data. Nationwide payments from fees under the EPR schemes for plastic products in particular countries in 2018, compared to the quantities of plastic packaging placed on the market in 2018 are presented in the Figure 8.

Figure 8. The EPR payments in 2018



Source: NIK's own study based on data received from participants of the audit (EPR payments) and Eurostat data (quantities of plastic packaging – database: ENV_WASPAC).

94 Some of the SAIs, such as Maltese, Polish, Serbian and Turkish ones, diagnosed some problems in the functioning of EPR schemes. On the other hand, the Bulgarian SAI found the national EPR scheme to be effective.

95 The Serbian SAI found that only 9% of the total fee for plastic packaging, paid by the producers under the EPR schemes was invested in the separate waste collection system. For that reason, the local self-government units, as founders of public utility companies, participated in the development of the primary separation system through subsidies.

96 The Maltese SAI concluded that Packaging Waste Recovery Schemes, which had a legal responsibility to collect and treat packaging waste, paid a gatefee of 0.5 EUR per tonne for recyclable material – for depositing recyclable waste at WasteServ's facilities, and were

charged 20.0 EUR per tonne for rejects. As the gatefees were never revised since 2012, it can be argued that Government would be shouldering the costs for the treatment and attainment of packaging waste targets, including plastics, in the event that revenue generated through the sale of recyclables does not offset the cost of treating waste. Moreover, the SAI of Malta identified that the two schemes are not solely collecting packaging waste within the recyclable bag (packaging amount to around 39%). The Ministry contended that the compensating fees agreed with the packaging waste producers consider these issues.

97 The Polish SAI concluded that the fees paid under the EPR (product fees and recycling fees) covered only a small proportion of the costs of packaging waste management, including plastic waste. In *The early warning report*, the European Commission recommended improvements to the EPR system for packaging and alignment with the general minimum requirements in the revised **Waste Framework Directive**, while ensuring, in particular that producers provided better cost coverage, including the cost of dealing with unrecycled packaging disposed of by households as residual waste.[67]

98 As already mentioned, the Turkish SAI found, that the fees paid under the EPR scheme covered only a small proportion of the costs of packaging waste management. Those who marketed packaged product could fulfil their EPR obligations individually or by becoming a member of an authorized body (AB). Four institutions have been determined as ABs. These institutions had only a total of 7,385 members even though the number of businesses marketing packaged products was more than 1 million.

Educational and Informative Activities

99 According to Article 9(1)(m) of the **Waste Framework Directive**, Member States shall take measures to prevent waste generation. Those measures shall at least develop and support information campaigns to raise awareness about waste prevention and littering. Additionally, the use of awareness campaigns and information provisions addressed to the general public or a specific consumers group are one of the measures that can affect the consumption and use phase (Annex IV Examples of Waste Prevention Measures Referred to in Article 29 to the WFD).

100 Every SAI participating in the coordinated audit[68] found that educational and informative activities on proper waste management were performed. They took the following forms: organising ecological events, running educational workshops dedicated to children, distributing leaflets, posters, films and other educational and informative materials or publishing information on rules of separate collection on websites and social network sites.

101 In most cases, an obligation to conduct educational and informative actions was provided for in national legal framework of countries covered by the coordinated audit, such as: WMPs, strategies, plans and other regulations. For example, in Bulgaria,

[67] European Commission, ***The early warning report for Poland***, 24 September 2018, SWD/2018/426 final.
[68] Except for the Hungarian SAI, which did not cover the topic by the audit.

the NWMP 2014-2020 included a programme to improve the awareness and participation of the population and businesses in waste management activities and provided for appropriate measures by 2020 to achieve one of the strategic objectives of the NWMP – making the public a key factor in implementing the waste management hierarchy.

102 The implementation of the EPR schemes implicated an obligation to finance education and campaigns, for instance in North Macedonia, Romania, Poland, Portugal and Slovakia. In Portugal, licenses granted to the waste management entities required the preparation and implementation of an Awareness, Communication and Education Plan for the period of validity of the license, in line with the National Strategy for the Environmental Education. Recent licenses established that annual expenses of executing these plans should not be less than 5.0% of the estimated annual ecovalue income in the first year of the license, 6.5%in the second year and 7.5% in the following years.

103 Five SAIs (Albania, North Macedonia, Poland, Serbia and Slovakia) expressed critical remarks regarding the educational and informative activities. The Albanian SAI found that there were very few education campaigns concerning plastic waste carried out by competent authorities. The findings were confirmed by the online questionnaire conducted by the auditors.[69] For example, 84% of respondents did not separate waste according to current regulations and 75% of them had never been advised by their municipality or other institutions on how to dispose waste into containers. The Serbian SAI arrived at similar conclusions. Most of the informative activities in 2019 took place in Belgrade. Results of a questionnaire conducted by the auditors, showed that 89% of citizens believed that more informative and educational activities relating to recycling were needed. The Polish SAI highlighted that the majority of the actions concerned the separate waste collection instead of waste prevention. The Slovakian SAI found that some activities performed by the state authorities and supported by EU funding, but also by the EPR organisations and non-profit organisations ,were insufficient. They depended mostly on EU funding, with no solid systemic foundation. A new informational web portal on waste was to start in 2018 but it has not so far.

104 Two SAIs gathered data on costs of educational and informative activities. Malta expended 6.2 million EUR on educational campaigns. However, the SAI highlighted that national authorities did not determine the effectiveness of the campaigns associated with separation-at-the-source by households, including the impact on waste management and treatment. The Portuguese SAI found that the entities managing waste streams spent 4.8 million EUR, 6.1 million EUR and 9.3 million EUR in 2017, 2018 and 2019 on awareness and communication activities.

[69] The purpose of the questionnaire was to find out to what extent citizens were aware of waste management by competent authorities and health effect caused by plastic.

Good Practices

105 Eight SAIs identified good practices during their audits. The identified good practices concerned:

a) actions encouraging citizens to collect plastic products such as for example: Bulgarian initiative *Caps for the Future* (collecting plastic caps in order to raise funds to provide incubators for new-borns), *Warsaw Month of Recycling* (installing reverse vending machines for bottles) in Poland, installing reverse vending machines in Skopje, where people might return cans and plastic bottles in exchange for *green points*, that could be used when shopping or simply when paying bills and public services (North Macedonia),
b) introduction of the organic waste stream, which has had a positive impact on the collection of dry recyclables (Malta),
c) implementing measures to reduce the consumption of plastic products in public sector (a Turkish *Zero Waste Project*, a Polish project *Krakow without Plastic*, a ban on purchasing and using SUP in the Portuguese administration),
d) voluntary agreements signed between the Portuguese Environment Agency and five business associations, committing to achieve a 90% collection rate for PET bottles and rate of incorporation of 25% of recycled PET in new bottles, by 2025,
e) functioning of Zero Waste Romania – a non-profit apolitical independent organisation that offered free advice and support to local communities in the transition to better waste management,
f) granting a status of *Zero Waste Pre-certified Community* to the city of Sălacea, located in the north-west of Romania, which managed to quickly rise from almost no waste recycling to 40% in 3 months, but also reduced their overall waste generation by 55%.

Additional Findings

106 Three SAIs participating in the coordinated audit on plastic waste identified interesting, additional findings, having impact on the functioning of the waste management systems in their countries. The SAIs of Albania, North Macedonia and Serbia found existence of an informal sector. The informal sector included a social group of citizens, including children, who collected and valued waste as spontaneous activity that was not officially supported. The Albanian SAI described the activity of the informal sector as an illegal activity and assessed it as a problem, which should be solved. The Serbian SAI found that the estimated rate of recyclable waste alienated by informal collectors in Belgrade and Novi Sad was 50%. The auditors concluded that the informal collectors should be included in the existing waste collection system. On the other hand, the SAI of North Macedonia assessed that in the current system the informal waste collectors were more active and efficient in collecting, sorting and utilising waste as a resource, compared to the formal sector. The audit showed that it had more benefits than costs for the society. The benefits would be greater if the sector were formalised and integrated into the overall waste management system.

107 The audit performed by the SAI of North Macedonia found also weaknesses and omissions in the procedures for issuing some of the permits relating to the waste management, which might result in obtaining permits by legal entities and individuals who did not fully meet the conditions. In the opinion of the auditors, that could further lead to improper waste management, endangering environmental safety and increasing pollution.

Conclusion (SAIs Assessment)

108 The countries covered by the coordinated audit have to deal with problems concerning plastic waste management of various scale and diversity, ranging from the most essential ones, such as a lack of proper infrastructure to separate collection of municipal waste to shortages in functioning of EPR schemes. For that very reason, it is difficult to find a common denominator and make comparisons between the countries. Diversification between the participants is reflected also in the SAIs assessment of applied policies in order to implement proper plastic waste management.

109 The majority of the SAIs, i.e., ten out of twelve, assessed the area in the critical terms. In general, the auditors concluded that the adopted measures were implemented only partially. Measures taken by relevant authorities were insufficient to reduce plastic waste generation and its proper treatment. It was up to national authorities, however, to intensify the process of necessary policy reforms and step up action on the ground. The results presented in the third part of the *Main Findings* support this conclusion. Additionally, three SAIs pointed to financial problems of plastic waste management. The SAI of Malta concluded that financial costs of plastic waste management were high, and landfilling was the most expensive treatment operation, yet the preferred one. The SAI of North Macedonia found that, with the exception of the Instrument for Pre-Accession Assistance I, other financial resources did not enable sustainability of the waste management system, including plastic waste. The Portuguese SAI formulated a conclusion that the funding model of the urban waste management system did not sufficiently cover costs of waste collection and provided no incentive to citizens to separate plastic waste or other materials.

110 Two SAIs (Bulgarian and Hungarian) have expressed positive assessment of policies employed to implement proper plastic waste management. The Hungarian SAI assessed that the organisation of the waste management public service at national level was successful in 2019.[70] The conclusion was supported by the survey conducted among the population, with 78% of those surveyed being satisfied with the waste management public services. On the other hand, the Bulgarian SAI found, among others, that a result of the implementation of adopted measures contributed to positive outcomes for overall national targets for recycling and recovery of packaging waste, as well as the recycling targets for packaging waste by materials. More details on the SAI assessment are presented in the Appendix Seven to the report.

[70] Period of time covered by the Hungarian audit: 2019.

Data on Plastic Waste

111 An appropriate system for data collection and defining target indicators along with the methodology for their calculation are the key determinants of effective and correct development of policies and programmes for waste management, and evaluation of the outcomes of the adopted measures in this regard. Therefore, monitoring of the sources, quantities of waste and its treatment should underline a well-functioning and effective waste management system. This obviously applies to the total amount of waste and particular waste types, including plastic waste.

112 Meanwhile, the results of the coordinated audit show huge problems with it even on the national scale (as many as 9 SAIs identified problems with incorrectly or insufficiently operating waste reporting systems – see Table 8). The situation gets even more complex if analysis of data on a group of countries is attempted, which is due to varying data collection methods for national and international reporting, or different methodologies for calculation of recycling rates (e.g., EU regulations give the possibility to Member States to choose one of four methods to calculate the recycling rate). Due to that – where possible – uniformed databases made available by Eurostat were used for the purposes of this report.

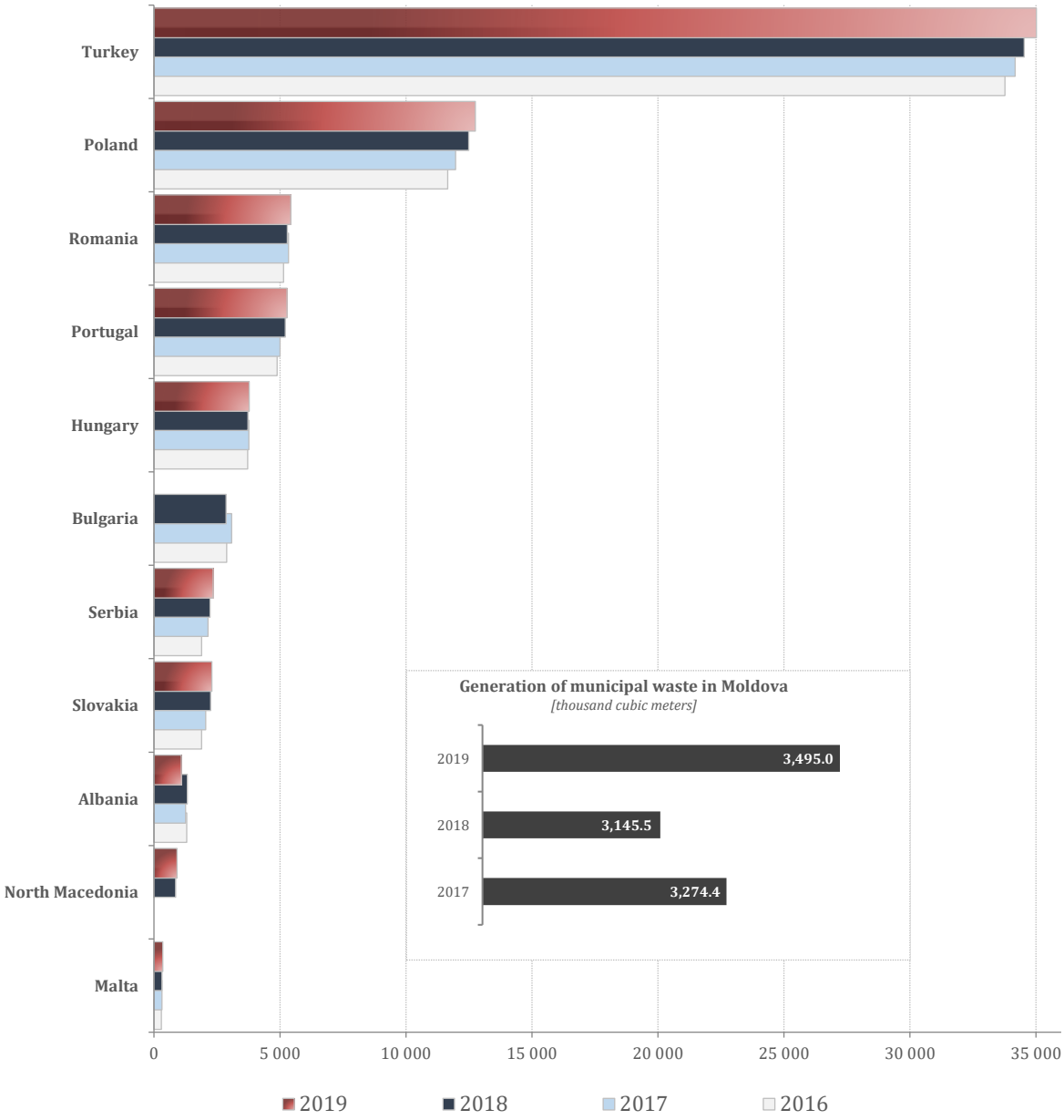
Generation of Municipal Waste

113 A common package of legal amendments (**The European Circular Economy Package**) to implement the Circular Economy (**CE**) applies to EU countries only. Nevertheless, in current circumstances, CE is a model to be taken into account in every country that wants to improve the efficiency of using available resources (raw materials, products) and keep them in the economy as long as possible, while limiting generation of waste to the minimum. One pillar of Circular Economy is a waste hierarchy which defines prevention as its top item. Therefore, measures taken by countries should lead to reduced quantities of waste, especially from the municipal sector, where consumer attitudes have major impact on the quantities and types of generated waste, including plastic waste.

114 **However, not all countries developed/implemented Waste Prevention Programmes[71], and a vast majority of them (10) failed to reduce the quantities of municipal waste generated in 2016-2019[72].** Only Albania and Bulgaria saw decreased amounts of waste in the last year for which data were available. However, due to relatively short period under analysis, it is difficult to say if there is a trend to these changes or rather a fluctuation due to particular externalities. In other countries covered by this audit, the amounts of generated municipal waste increased, which indicates, in particular, insufficient conditions for transition to the CE model.

[71] See Point 27 of this Report.
[72] See Figure 9 and Appendix Three.

Figure 9. Generation of municipal waste in 2016-2019 (thousand tonnes)



Source: NIK's own analysis based on Eurostat dataset: *Municipal waste by waste management operations* (ENV_WASMUN), as at 21 October 2021 and for Moldova – data received from the audit participant.

115 It is also worth noting that whereas Eurostat has used internally coherent datasets on waste, particular countries are responsible for data collection and sharing. But the coordinated audit found that one of the most prevalent problems was inadequate/insufficient waste reporting system (this applied to 9 out of 12 countries covered by this audit – see Table 8). The issues in this respect identified by the audit participants applied to various topics, the most important of which are presented in Table 6.

Table 6. Crucial issues with the data reporting systems

Country	Description of the problem (as assessed by SAI)
Albania	**The reporting system is not in place and the data reported, collected and analysed are not complete and reliable.** The audit team concluded that the data available from the National Environment Agency (NEA) and published in annual National Environment Reports, regarding total amounts of plastic waste produced in Albania, are not accurate and complete because not all municipalities have reported annually and not all private entities that generate plastic waste have reported regularly. Failure of all municipalities to report to the NEA regarding the amounts of plastic waste generated in their territories, leads to NEA not collecting all plastic waste statistics at the national level. As a result, the Ministry of Tourism and Environment does not have complete and accurate data on the amount of waste generated and managed on the national level, including plastic waste.
Malta	**Data limitations led to national authorities missing out on waste management reporting deadlines. The various data gaps that existed prohibited national authorities from maintaining timely and comprehensive management information.** Cooperation and coordination between national authorities and private stakeholders is not at the level permitting the use of operational data maintained to enable ongoing evaluation of the waste management system. National competent authorities do not maintain actual data pertaining to all stages of the plastic waste management process. Actual yearly amounts of plastic packaging placed on the market are not known. The Regulator encounters problems retrieving all relevant data regarding plastic packaging placed on the market.
Moldova	**Environmental decision-makers have not been sufficiently concerned with the organisation of waste records to ensure complete statistics on the quantities of waste managed and the successful evaluation of the outcomes of the measures implemented on plastic waste treatment and the effects obtained in this field.** At present, the Republic of Moldova does not have a high-performance automated system to keep track of waste generated, disposed of, exported, so that citizens would have confidence in the data generated and access to them, as provided by the concept of the Automated Information System 'Waste Management' (AIS WM). The Ministry of Agriculture, Regional Development and Environment did not allocate financial resources for its development. Data are incomplete due to low responsiveness of the economic operators and the lack of legal levers that would permit the control body to hold accountable the non-compliant economic operators. According to the Environment Agency (EA), which manages AIS WM, the reluctance of economic operators to report in the system is low, due to the complexity of the reporting procedure and system imperfections. According to EA's data, in 2019 not even half of the reporting economic operators reported within the AIS WM.
North Macedonia	**The established way of recording and informing does not enable complete, up-to-date and objective presentation of the waste situation, including plastic waste, as well as their availability to stakeholders and timely undertaking of measures and activities to improve the general waste-management situation.** Data submitted to the Ministry of Environment are incomplete and unreliable and do not show the real picture of plastic waste. The officers of the Ministry pointed out that the data available to the State Statistical Office are more reliable, they are collected and processed according to the accepted methodology of Eurostat. The Ministry does not have data on waste generators, types and quantities of waste generated, as well as the ways of storage, treatment, processing and waste disposal. The Waste Register is not well structured and understandable. Some of the records

Country	Description of the problem (as assessed by SAI)
	of the legal entities that submit data are not in accordance with the adopted Rulebook, so there are missing data in the established records, and it is not possible to see the real picture of waste management. The established registers for issued licenses are not complete and up to date. Also, there are manufacturers/importers who do not respect the legal obligation to conclude an agreement with the Collective packaging waste handlers, nor independently fulfil their obligations to the state, due to which the presented data are not complete or reliable.
Poland	**The reporting system did not make it possible to determine directly, among others: quantities of generated plastic waste and identification of a definitive way of treatment of plastic waste (understood not only as recycling but also as other treatment operations).** For example, reports on municipal waste (for 2017 and 2018) contained data on the amount of plastic waste generated, but the data were limited to the quantities of municipal waste collected in a separate manner and did not include considerable quantities of plastic waste contained in mixed waste. In addition, for a vast majority of collected municipal waste, including plastic waste, other recovery processes were indicated as a treatment method, in which the dominant role was played by a transitional process which is not the final targeted waste treatment method, i.e., the process coded R12 (*Exchange of wastes for submission to any of the operations numbered R1 to R11*). In this process, waste was usually sorted in appropriate facilities, and then transferred to other treatment operations. Unfortunately, the reporting data failed to provide information which would enable to determine further (and final) way of treatment of waste transferred to the R12 operation. Unfortunately, the reporting data failed to provide information which would enable to determine further (and final) way of treatment of waste transferred to the R12 operation. The audited public entities, especially at the central level, did not undertake sufficient actions to perform an integral and complex analysis on plastic waste treatment and identify problems connected with the issue. Data presented in the Waste Management Plans did not reflect the actual state of plastic waste management. In the majority of cases, information contained in the National and Regional Waste Management Plans did not allow to establish the total quantity of plastic waste generated in different regions (voivodships) covered by the national audit taking into account the morphology of municipal waste.
Portugal	**The IT system for waste is extensive and crucial for the planning, monitoring and assessment of waste management policies.** The main weaknesses identified relate with the data recorded by packers and service packaging suppliers, which is not controlled enough.
Romania	**There are significant differences between the data held by the two entities (National Environmental Protection Agency and Administration of the Environmental Fund) and there is a scope for underreporting the quantities of packaging. In the same context, different amounts of recycled/recovered packaging waste can be reported.** The Romanian waste generation index is below the European level (half of the European average). This may be due to significant underreporting of the amounts of waste by the sanitation operators (also taking into account the fact that non-compliant deposits still exist in Romania where the quantities of waste stored are not weighed), or to the underreporting of the estimated amount of waste generated and not collected, corresponding to the population not served by sanitation services, or both. Romania does not have a complete waste traceability system in place and the data needed for strategic decisions are obtained with a very long delay, preceded by extensive processing and validation, which entails slow implementation of environmental policies and major risks in terms of border controls and illicit waste practices.

Country	Description of the problem (as assessed by SAI)
	Lack of accurate quantitative determinations, the lack of control of the data reported by operators and even lack of reporting may lead to the conclusion that the nationally reported data (further reported by Romania to EUROSTAT) may have considerable margins of error. Although the reporting source is the same (those directly responsible for reporting: economic operators, local public authorities, organisations implementing extended producer responsibility), the data reported to the responsible entities vary significantly. Thus, there is the possibility of underreporting the quantities of packaging placed on the market, and there may also be the possibility of reporting different amounts of recycled/recovered packaging waste from actual ones. In 2020, the Ministry of Environment, Water and Forests received technical assistance in the field of waste management, approved by the European Commission through the Structural Reform support Programme and implemented with the support of the European Investment Bank – JASPERS. The subsequently prepared report revealed significant differences between the two national data sources analysed, namely the National Environment Protection Agency (ANPM) transferring the data to EUROSTAT and the Environmental Fund Administration (AFM), in data on the quantities of packaging and packaging waste managed. The data collected by the AFM on plastic packaging and plastic packaging waste treatment was higher than the ANPM's data by: 44,041.0 tonnes for total plastic packaging quantities, 68,975.0 tonnes for recycled quantities, and 12,995.0 tonnes for energy-recovered quantities.
Serbia	**There are no accurate and reliable records on the production and management of municipal waste, which may lead to misguided strategic decisions when selecting waste management methods.** The data on generated municipal waste are not submitted by 35% of local governments, while 68% of local governments that submit data perform no measurements, but submit estimates. The data on the morphological composition of waste is not submitted by 38% of the local governments, and 2% of the local governments submitted the data on the share of all types of municipal waste with the total above 100%. In 2017 and 2018, the State Environmental Protection Agency and the Ministry for Environmental Protection did not control the submission of data and the accuracy of the submitted data. There is a risk that data on the rate of recycling of municipal waste are not reliable because no rules on calculation methods have been established. Due to the fact that 35% of local governments do not submit data on generated municipal waste and that only 37 utility companies submitted data on the amounts of municipal waste delivered to some type of re-use operation, there is a risk that the published official data on municipal waste recycling rates based on estimates are not reliable.
Slovakia	**The audit pointed out that there were significant problems with the correctness of the reported data regarding generated plastic waste and its treatment. For this reason, the results of the audit cannot answer the question how close the Slovak Republic is to meeting the EU targets for plastic waste. However, we can certainly conclude that the Slovak Republic significantly overestimated the monitored indicators.** State statistics on plastic waste (but also on waste in general) include significant errors and the reported indicators have little informative value. Due to the above-mentioned problem with the reliability of data, the audit was not able to evaluate the actual status of plastic waste management. Despite the fact that the current incorrect statistics show a chance of meeting the targets by Slovakia, there are 2 risks for the future: 1) After revising of data (national but also by the EU through the new methodology) there is a big risk of failing to achieve goals due to the current significant overestimation of waste statistics; 2) If the goals are achieved, it will be only because of incorrect reporting of data resulting from inability to verify waste data from many stakeholders.
Turkey	**Reporting systems do not reveal the amount of plastic waste generated and the way of treatment of plastic waste in a comprehensive and detailed manner. There is no data on mixed plastic waste collected in the municipal waste collection system. The data used in the calculation of the packaging recovery rate do not fully reflect the amount of plastic packaging waste generated.**

Country	Description of the problem (as assessed by SAI)
	The Ministry holds no data on plastic waste co-mingled with municipal waste collected. For this reason, published data on plastic packaging are not fully explanatory. There is a need for control mechanisms that will ensure the accuracy of the information entered into the system. The audit findings show that the adopted reporting system did not make it possible to determine directly, among others: quantities of generated plastic waste and identification of how plastic waste was finally treated. The Waste Management Application does not make it possible to determine the method by which waste is recycled. Mainly the R12 code is used. The recovery rates of packaging wastes are calculated by dividing the recovered amount by the amount of packaging released on the market. The amount of recovery is based on the data entered by facilities into the packaging information system. The amount of packaging placed on the market reflects only the data entered by users who log in to the system. However, there are many users who do not log into the system. For this reason, the calculated recovery rate does not fully reflect the actual situation.

Source: NIK's own analysis based on data received from the audit participants.

116 It should be noted that figures on municipal waste transferred to Eurostat could originate from a different source than the figures collected for the purpose of national waste management system. Information received from 9 SAIs on the subject show that the figures on municipal waste were identical to Eurostat's in only four cases (Bulgaria, North Macedonia, Romania, Serbia), and in the remaining five cases the information varied somewhat relative to those transferred to Eurostat[73] (Albania, Poland, Portugal, Slovakia, Turkey). For example, for 2018, these variations (in absolute figures) relative to the figures available through Eurostat were in the range between 2.8% and 13.6%. One of the biggest quantitative divergencies in the figures (1,281,000 tonnes) applied to Poland, whose case is presented in detail below to illustrate potential differences in how data on waste are collected.

117 In the audited period (2017-2019), there were two systems of reporting on waste management in Poland:

- **First system – established by the ministry responsible for the environment:** A reporting system developed based on several statutes and implementing regulations governing municipal waste and packaging waste management, and covering businesses active in waste management. These figures provided, in particular, basis for monitoring by the competent ministers of the status of municipal waste management nationwide, including assessment of how the goals of the *National Waste Management Plan 2022* have been delivered;
- **Second system – established by the Statistics Poland (GUS); Eurostat reporting is based on this:** This institution collected data on waste reported by responsible entities in dedicated reports, i.e., M-09 – *Transport and treatment of municipal waste* and OS-6 – *Report on waste* (waste other than municipal waste). However, these figures failed to fully represent the quantity of waste generated and how plastic waste was treated. For instance, the figures collected in Form OS-6

[73] Such problem was not identified for figures on plastic packaging waste.

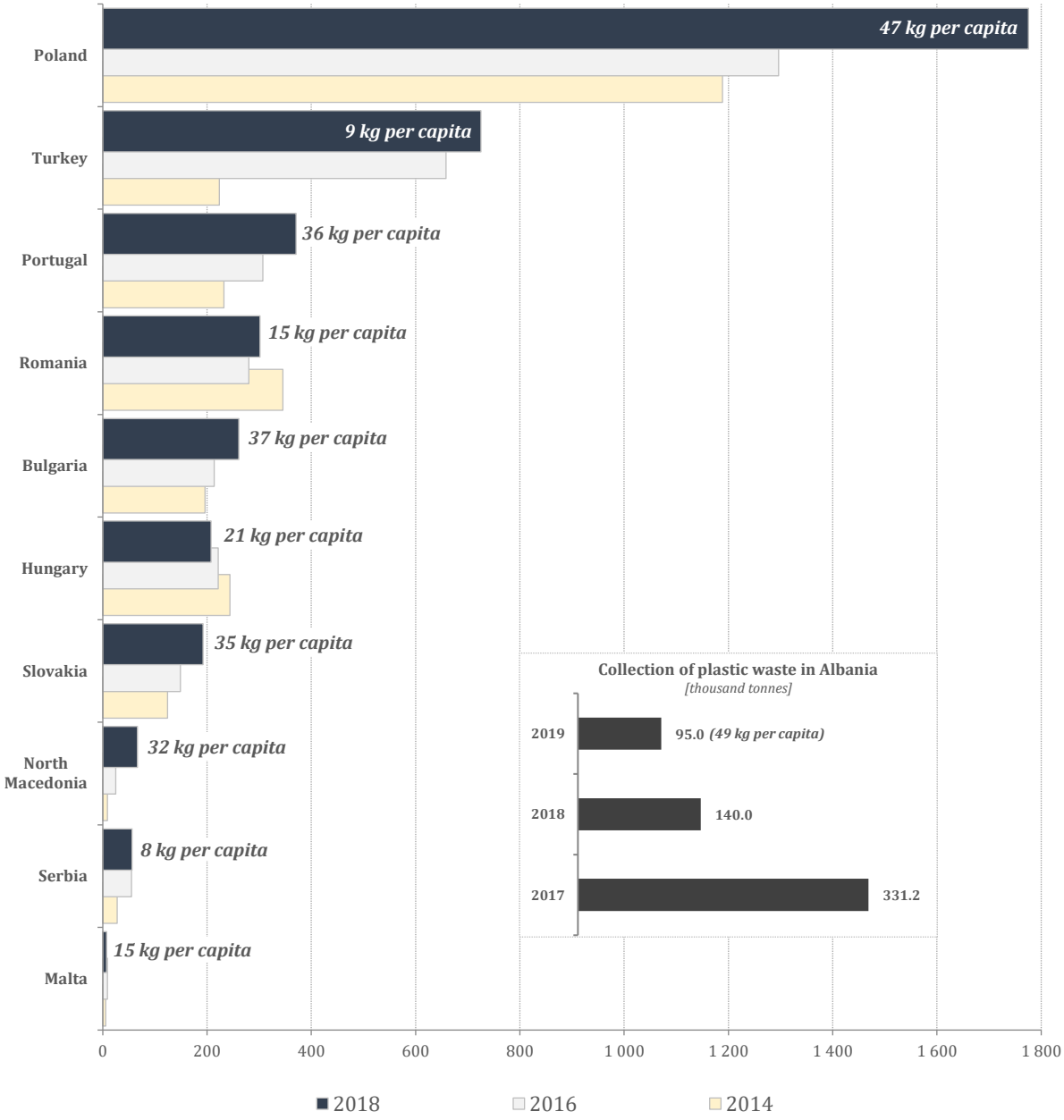
failed to encompass all waste producers, but only those facilities which met the reporting standard, i.e., facilities producing a total of more than 1,000 tonnes of hazardous and other waste, excluding municipal waste, or holding 1 million or more deposited waste. Consequently, figures on plastic waste failed to fully reflect the scale of the operations. Secondly, Form M-09 did not collect information on mixed waste subjected to transformation into fractions, thus, it is not possible to provide comprehensive figures on plastic waste transferred to landfills, but only in the part concerning waste collected separately. In addition, with regard to those reports, data were not verified in accordance with national legislation on waste (in particular in the Act on Waste). These data were only examined by the GUS for internal coherence and correctness.

These two systems were not fully comparable. NIK established that the data on municipal waste gathered by the Statistics Poland varied from the data collected by the ministry responsible for the environment. For example, the total volume of generated municipal waste – according to data collected by the Statistics Poland[74] – was 4.5% in 2016 (546,000 tonnes), 7.0% in 2017 (900,000 tonnes) and 9.3% in 2018 (1,281,000 tonnes) less than based on the data gathered by the Ministry.[75]

118 The figures made available by Eurostat (ENV_WASMUN dataset) make it possible to determine the total amount of municipal waste generated, and even methods of its treatment, including the recycling rate (which will be presented further in this Report). However, information on the quantities and treatment methods of **plastic municipal waste** cannot be extracted from this dataset. The quantities of the plastic waste (from all sources, including households) can be established based on a different Eurostat dataset (ENV_WASGEN), which contained information on the 10 countries covered by the audit[76] (see Figure 10 and Appendix Four). Like for municipal waste, total quantities of collected plastic waste showed a growing trend in most of the countries covered by this audit.[77]

[74] 11,654,000 tonnes in 2016, 11,969,000 tonnes in 2017, and 12,485,000 tonnes in 2018.
[75] 12,200,000 tonnes in 2016, 12,869,000 tonnes in 2017, and 13,766,000 tonnes in 2018.
[76] Except Albania and Moldova.
[77] No data for Moldova.

Figure 10. Collection of (non-hazardous) plastic waste in 2014, 2016, 2018



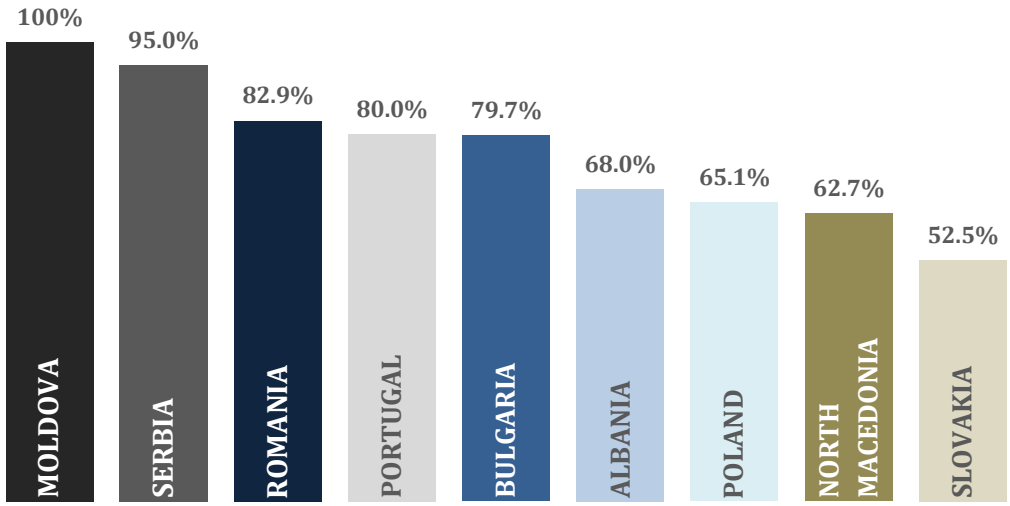
Data in thousands of tonnes. Data for 2018 also include the amount of waste per capita (in kilograms).

Source: NIK's own analysis based on Eurostat dataset: *Generation of waste by waste category* (ENV_WASGEN), all NACE activities plus households, as at 26 October 2021 and for Albania – data received from the audit participant.

119 However, the information on this chart should be interpreted with caution. Certainly, such big differences in the quantities of plastic waste per resident of the country – these figures varied between 8 kg and 49 kg in 2018 – are puzzling. In addition to the already mentioned differences in how data on waste are collected and reservations of the majority of participants to the reporting systems operating in individual countries,

one should bear in mind that the quantities of plastic waste generated are usually based on the quantities of waste collected separately, and significant amounts of plastic waste can be contained in mixed waste. Therefore, the effectiveness of separate collection of waste (including sorting in appropriate facilities) will be key for the reported quantities. Meanwhile, some participants of the audit reported problems with the organisation of the system for separate collection of waste in individual countries (Albania, Moldova, North Macedonia, Romania, Serbia and Turkey[78]). In addition, 9 audit participants reported that most or even all of municipal waste in 2018 was collected nationwide as mixed waste (see Figure 11).

Figure 11. Percentage of waste collected as mixed waste in the total stream of municipal waste generated in 2018



Source: NIK's own analysis based on data received from the audit participants.

120 The arguments for the above above-mentioned propositions can be also found when making a comparison of data from the same Eurostat dataset (ENV_WASGEN) on the quantities of plastic waste collected from households to the overall quantity of waste generated by these households (see Table 7).

[78] In the case of separate collection of waste generated in households.

Table 7. Share of collected (non-hazardous waste) plastic waste from households of the total volume of generated household waste in 2018

Country	Total waste /thousand tonnes/	Plastic waste /thousand tonnes/	Share (%)	
Serbia	1,863.0	3.2	0.2%	< 1%
Malta	169.6	0.6	0.4%	
Hungary	2,718.5	15.0	0.6%	
North Macedonia**	855.0	8.5	1.0%	≥ 1% < 2%
Turkey	28,087.0	405.3	1.4%	
Romania	4,122.4	70.6	1.7%	
Portugal	5,213.1	91.4	1.8%	
Slovakia	2,239.5	49.8	2.2%	≥ 2% < 4%
Poland*	9,533.5	271.7	2.8%	
Albania**	1,165.1	50.9	4.4%	≥ 4% < 6%
Bulgaria	3,027.0	175.2	5.8%	

* For Poland, the table above shows 2016 figures. In Eurostat (dataset: ENV_WASGEN), the following quantities of plastic waste collected from households are presented: 273,846.0 tonnes in 2014, 271,680.0 tonnes in 2016, and 331.0 tonnes in 2018. Data for 2018 are clearly incorrect and also are not reflected in the findings of the country audit conducted by the SAI of Poland.

** Data received from the audit participant.

Source: NIK's own analysis based on Eurostat dataset: *Generation of waste by waste category* (ENV_WASGEN), non-hazardous, households, as at 26 October 2021 and – for Albania and North Macedonia – data received from the audit participants.

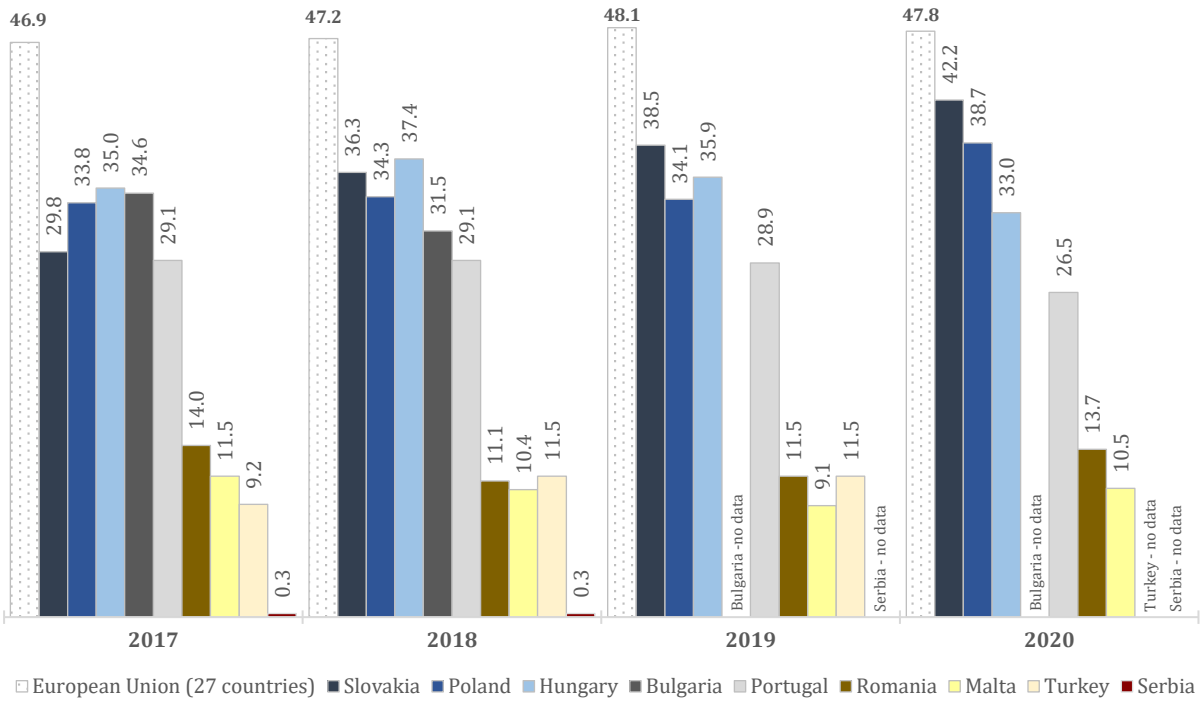
121 Clear differences in the proportion of plastic waste collected from households to the total quantity of waste generated by these households can indicate varied effectiveness of separate collection in the countries under the audit. The higher the effectiveness of this process, the more plastic waste is collected, but it is still unknown how much plastic waste there is in the entire municipal waste stream (taking into account the amount of plastic waste contained in mixed waste). Such information can be established only based on the morphological composition of municipal waste generated. However, only four audit participants (see Figure 13) provided information on how plastic waste from the municipal sector was treated to the level of detail taking into account the morphological composition of waste.

Municipal Waste Treatment

122 Most of the coordinated audit participants did not collect data fully describing plastic waste treatment. In general, the available data related to separately determined recycling rates of municipal waste and for plastic packaging waste. However, in all but one cases (Albania), the national reporting system did not calculate a separate recycling rate for plastic municipal waste (see Appendix Five). This rate was usually calculated taking into account different types of waste (e.g., paper, glass, metal and plastic).

123 The figures in chart below show that, in 2017-2020, in 9 countries covered by the audit, municipal waste that included plastic waste was treated predominantly otherwise than by recycling (see Figure 12). It means that they used processes lower in the hierarchy of preferred methods of treatment of waste. This problem was noted by 11 participants[79] of the coordinated audit (see Table 8).

Figure 12. Recycling rates of municipal waste (%)



Source: NIK's own analysis based on Eurostat dataset: *Municipal waste by waste management operations* (ENV_WASMUN), as at 21 March 2022.

[79] SAI of Hungary did not address this issue.

124 Recycling rates of municipal waste of three countries covered by the audit (Albania, Moldova, North Macedonia) were not available in Eurostat. The information provided by audit participants show that:

- **[Albania]** The target to recycle 22.5% of **plastic waste** generated was not achieved both by the 3 audited municipalities and on the national level. This conclusion is based on the recycling rate for all municipal waste, i.e., 17.4% in 2017, 18.5% in 2018 and 18.7% in 2019. National Institute of Statistics and National Environment Agency (NEA) did not know what the plastic waste recycling rate was. NEA collects data from municipalities only for total amounts of plastic waste generated and does not collect data on recycling rates. The lack of basic infrastructure for separate collection of waste was the main reason for failures to achieve the recycling target;
- **[Moldova]** About 90% of the generated waste was landfilled. The main challenges for plastic waste management are poor quality of sorting and the lack of potential to turn it into usable material. The Ministry of Agriculture, Regional Development and Environment did not elaborate a methodology for calculating the recycling rate. The Ministry considers that each economic agent will calculate its own recycling rate, which – in the opinion of the audit team – can generate different reported recycling rates;
- **[North Macedonia]** The recycling rate of municipal waste was at a low level, i.e., 0.6% in 2017, 0.5% in 2018, 0.3% in 2019, and 0.2% in 2020.

125 Given potential methodological differences in the calculation of recycling rates, various levels of progress in waste management can be discerned in particular countries:

- **[preparatory/conceptual stage]** – countries which recycled a very small proportion of municipal waste (North Macedonia, Serbia),
- **[early stage]** – countries which recycled municipal waste at a rate of 9%-19% (Albania, Malta, Moldova, Romania, Turkey),
- **[medium stage]** – countries which recycled a significant proportion of municipal waste (recycling rate at 27%-42%), but still most of them were managed by different processes (Bulgaria, Hungary, Poland, Portugal, Slovakia).

Due to the above, although the problems identified during country audits are many times described in this report as common ones, they should be considered on country basis only, taking into account the level of systemic preparedness and progress in the uptake of waste management measures.

Calculation of Recycling Rates of Municipal Waste

126 Recycling rates of municipal waste presented by Eurostat were calculated in the same way.[80] However, for the purposes of verifying compliance with the target on municipal waste set out in Article 11(2)(a) of **Directive 2008/98/EC**, EU countries may apply one out of four methods to calculate recycling rates.[81] The participants of this coordinated audit from EU Member States reported that their countries selected different methods for the calculation of recycling rates defined by the EC. For the remaining countries covered by the audit, the situation in this regard was still not standardised. Serbia used one of the methods defined by the EC, North Macedonia (recycling rate) and Turkey (recovery rate) calculated the rates for municipal waste based on selected types of waste. Albania had a specific minimum level separately for plastic waste from municipal sector, and Moldova did not define the method to calculate the recycling rate (see Appendix Five).

127 Using diverse calculation methods of recycling rates can lead to a situation where the provided data do not reflect how waste is actually treated. This conclusion is supported by the results of the 2015 study prepared by Social, Environmental & Economic Solutions (SOENECS) Ltd[82]. The study examined, in particular, the impact that different recycling rate calculation methods have on final recycling figures:

The report highlights the different outcomes that result from the four recycling calculation methods used across Europe as set out by the European Commission. The four methods were applied to data for nine municipalities. The results showed an average variance of 8.6% between the highest and lowest recycling rates calculated for individual municipalities, with the highest variance being 14.9% and the lowest 5.9% (…)

Overall, the research shows that the different data parameters, definitions, interpretations and methodologies presently being employed limit the potential for accurate recording and comparison of Member States' recycling performance. ***Unresolved, this issue undermines the validity of all recycling rates reported****.*

128 The problem discussed above can be additionally exacerbated by national legislation that specifies the scope of data necessary for the calculation of recycling rates for municipal waste under one of the four methods defined by the EC and selected by the Member State. This is well illustrated by the findings of the national audit conducted by the SAI of Poland, which examined, based on 15 municipalities, the effect of application of various parameters – accepted by national regulations – on the final recycling rate for municipal waste. Based on these analyses, the NIK found that – due to the method adopted for the calculation of recycling rate on the self-government

[80] Based on the data on the quantities of waste provided by particular countries, whereas, as mentioned earlier in this Report, these data could be different from the data used for the purpose of national waste management system.

[81] Article 3 and Annex I of **Commission Decision of 18 November 2011**establishing rules and calculation methods for verifying compliance with the targets established in Article 11 (2) of Directive 2008/98/EC.

[82] Social, Environmental & Economic Solutions (SOENECS) Ltd, ***Report for the Chartered Institution of Wastes Management (CIWM)***, EU Recycling rate harmonisation project, National Definitions and Accounting Methods, October 2015.

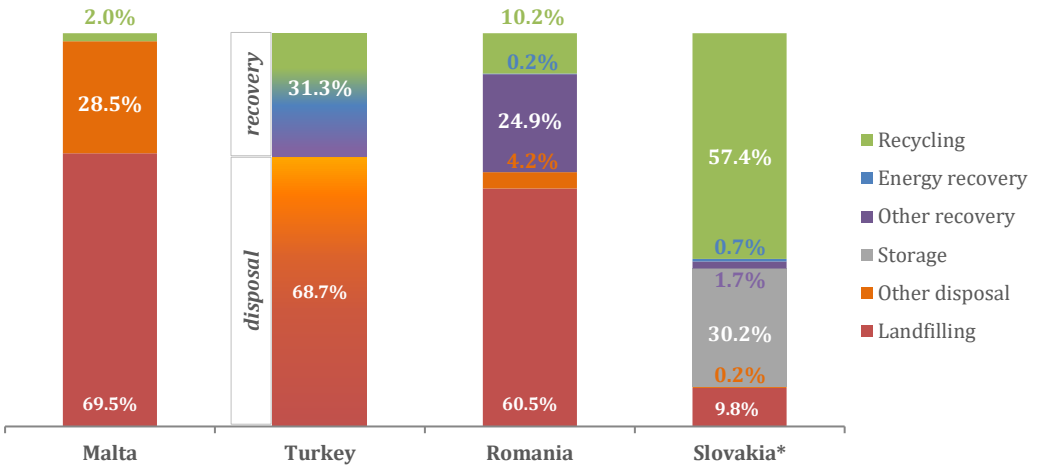
(municipal) level appliable in the audited period, the figures on this – despite being correctly calculated – could fail to reflect the actual state of municipal waste treatment in the part involving paper, metal, glass and plastic waste. According to the prepared reports on municipal waste, 13 out of 15 audited municipalities achieved the rate of recycling or preparation for re-use of municipal waste required for 2018 (30%). Nevertheless, if other parameters allowed by national regulations were applied, it could be possible that only six of the audited municipalities would achieve the required 2018 rate.

Treatment of Municipal Plastic Waste

129 A total of eight participants provided information (on the national scale) on how plastic waste from the municipal sector was treated (see Figure 13), whereas four participants provided plastic waste treatment data by morphological composition of waste, i.e., the quantities of plastic waste contained in mixed waste were taken into account (Malta, Romania, Slovakia, Turkey), and in four other cases, the provided data did not cover the quantities of plastic waste contained in mixed waste (Bulgaria, Moldova, North Macedonia, Portugal).

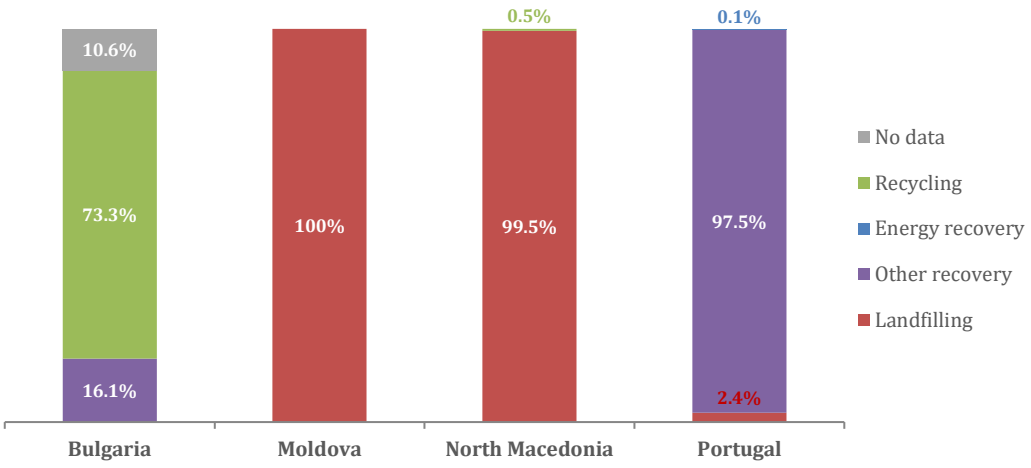
Figure 13. Municipal plastic waste treatment in 2018

methods of treatment, including data on the morphological composition of municipal waste



** Storage = other treatment (mainly gathering of waste waiting for treatment)*

*methods of treatment, **excluding** data on the morphological composition of municipal waste*



Source NIK's own analysis based on data received from the audit participants.

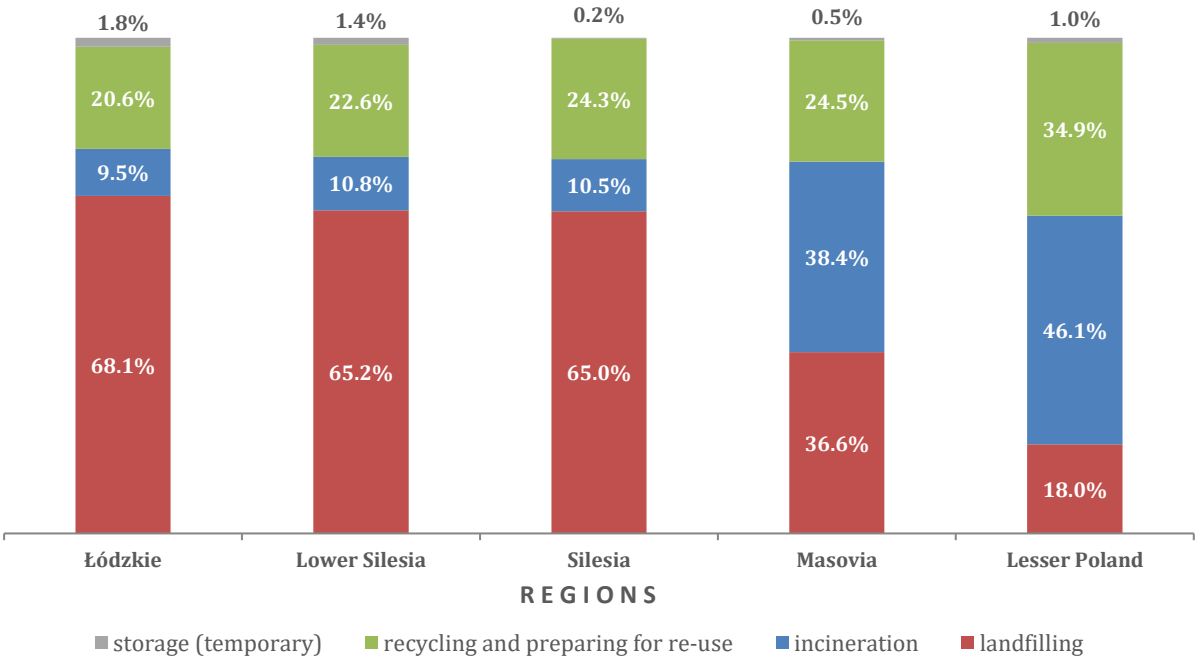
130 The figures in the chart above show that, in 2018, only Slovakia and Bulgaria treated municipal plastic waste largely by recycling it, whereas for Bulgaria the rates did not reflect the quantities of plastic waste contained in mixed waste, and almost 80% of municipal waste in 2018 in that country was collected as mixed waste. In five countries (Malta, Moldova, North Macedonia, Romania and Turkey) the predominant methods of treatment of municipal waste were disposal processes, with dominant role of landfilling. Thus, the management of plastic waste did not reflect the waste hierarchy which should be foundation of Circular Economy. Meanwhile, the information on municipal plastic waste treatment for Portugal did not allow to determine how this waste was finally treated (97.5% applied to other recovery processes). A similar problem was identified in the data reporting system in Poland (the process coded R12[83] – this topic is described in detail in Table 6).

131 During the coordinated audit, no data were acquired to allow us to determine how municipal plastic waste was managed in four countries (Albania, Hungary, Poland, Serbia). For Poland, the finding of the country audit provide data on municipal plastic waste treatment only for selected regions, covered by the county audit (see Figure 14). The national data reporting system on municipal waste in Poland did not allow to directly determine the total amount of generated plastic waste, nor the exact and final method of its treatment (including information regarding the morphological composition

[83] According to the **Directive 2008/98/EC** of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives, the recovery operation described with the **R12** code means **exchange of waste for submission to any of the operations numbered R1 to R11**. If there is no other R code appropriate, this can include preliminary operations prior to recovery including pre-processing such as, inter alia, dismantling, sorting, crushing, compacting, pelletising, drying, shredding, conditioning, repackaging, separating, blending or mixing prior to submission to any of the operations numbered R1 to R11.

of municipal waste). For this reason, during the country audit, NIK conducted an analysis – using estimation methods – which suggests that the treatment of municipal plastic waste in 2017-2018 did not correspond to the EU waste hierarchy in 5 audited voivodships (out of 16 in the country). The main method of plastic waste treatment in 2018 was to deposit it in landfills in three voivodships (from 65% to 68% of total generated plastic waste) and incineration in two voivodships (from 38% to 46%). Furthermore, the analysis showed that plastic waste was more difficult to treat than other types of waste (paper, metal, glass).

Figure 14. SAI's of Poland's estimated methods of treatment of municipal plastic waste in 2018



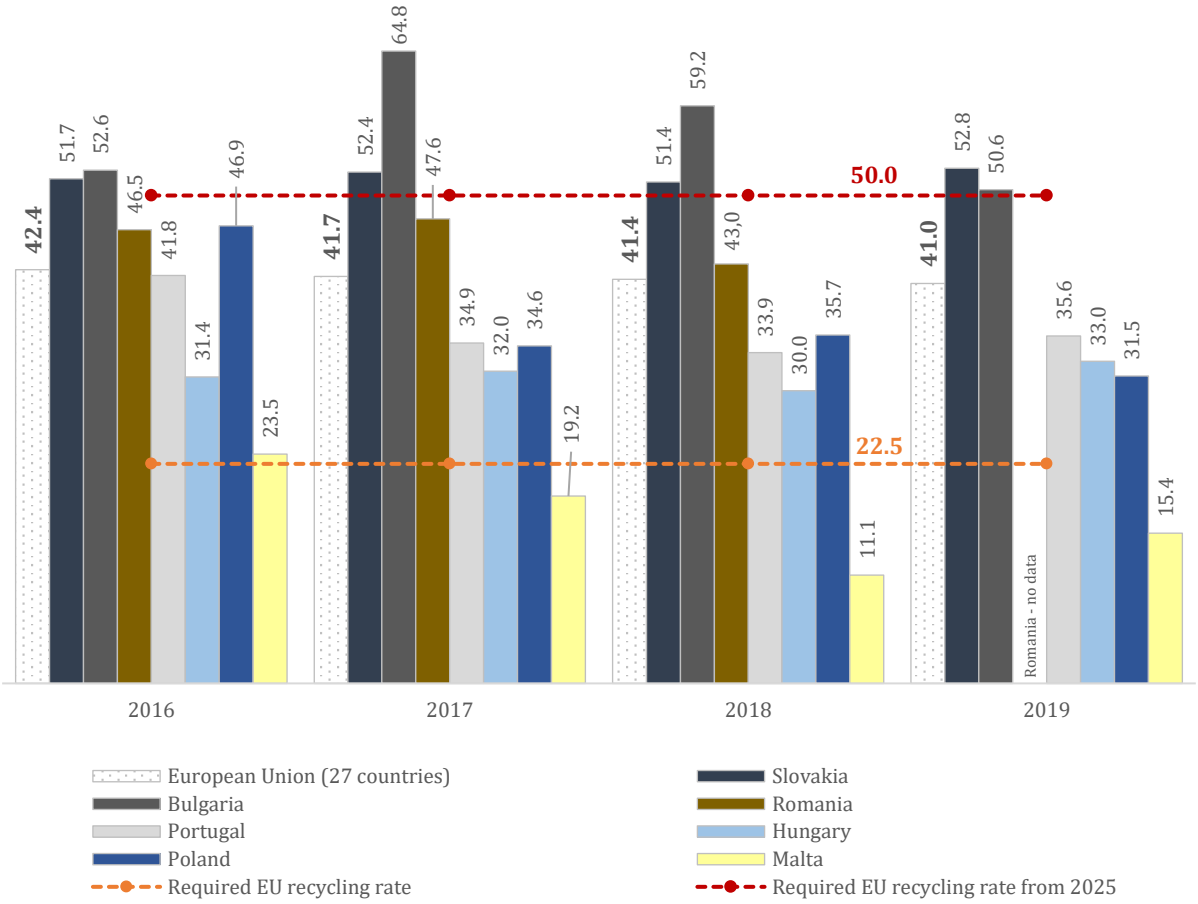
Source NIK's own analysis (estimation) based on data collected during country audit on plastic waste.

Plastic Packaging Waste Treatment

132 Packaging waste, including plastic waste, is usually a separate group of waste, for which target treatment indicators are established. For EU Member States, the management of such waste, including minimum recycling rates, is determined by **Directive 94/62/EC** on packaging and packaging waste, as amended, in particular Directive (EU) 2018/852 of the European Parliament and of the Council of 30 May 2018 laying down, inter alia, higher recycling rates for packaging waste in 2025 and 2030.

133 Out of seven EU Member States covered by the coordinated audit, only Malta failed to achieve the target (minimum) recycling rate for plastic packaging waste set at 22.5%. However, from 2025, this minimum rate would increase two-fold, i.e., to 50%. This level was already achieved in 2016-2019 by two countries (Bulgaria and Slovakia). For other EU countries covered by this audit – except Malta[84] – the recycling rate for plastic packaging waste in 2018 was at 30%-43% (see Figure 15).

Figure 15. Recycling rates (%) for plastic packaging waste in 2016-2019

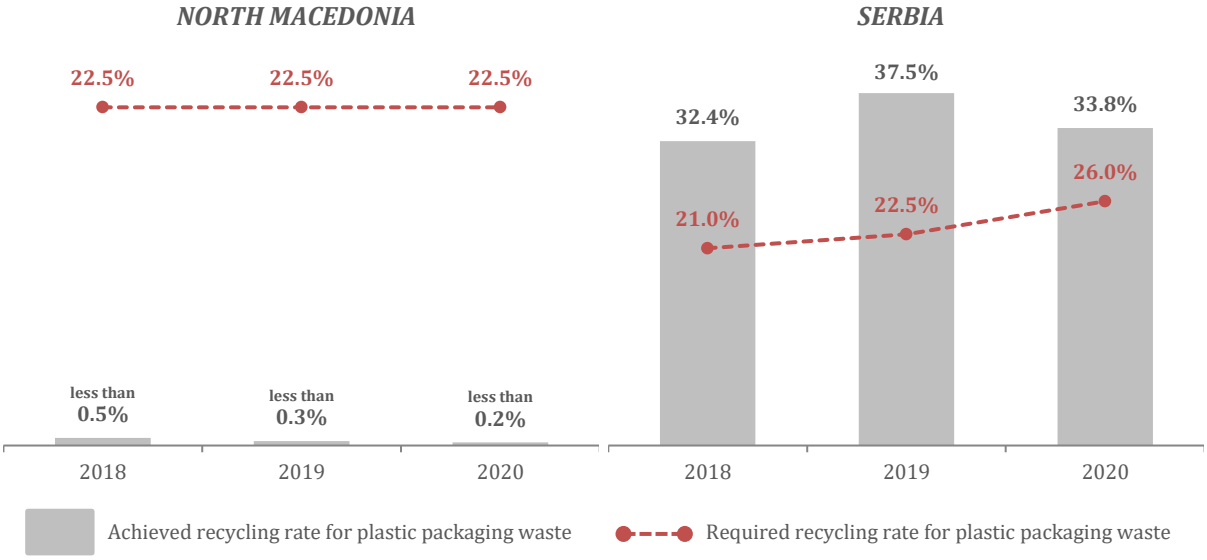


Source: NIK's own analysis based on Eurostat dataset: *Recycling rates for packaging waste* (ENV_WASPACR), plastic packaging, as at 21 March 2022.

134 For the remaining five countries covered by this audit (non-EU), in two cases (Albania, Moldova) data on recycling rates for plastic packaging waste were not available, Serbia achieved in 2018-2020 rates at 32.4%-37.5%, and in North Macedonia the recycling rate in the period did not exceed 1% (see Figure 16).

[84] Malta's recycling rate decrease is mainly attributable to the fire that destroyed Malta's only recycling plant at the time.

Figure 16. Recycling rates (%) for plastic packaging waste in North Macedonia and Serbia



Source: NIK's own analysis based on data received from the audit participants.

135 For Turkey, the recovery rate for plastic packaging waste (the recycling rate for that waste was not measured) was found to be 62.6% in 2018 and 56.6% in 2019.[85] It should be noted, however, that recovery operations include a process coded R12 which does not allow to directly determine how the waste was finally treated (this problem is presented in Table 6 where the reporting system in Poland is described, and supplemented with information contained in Point 130 of this Report). Moreover, the SAI of Turkey pointed out the problems with the data reporting system, concerning, inter alia, data used for the calculation of the packaging recovery rate that did not fully reflect the amount of plastic packaging waste generated (see Table 6).

136 Like for municipal waste, review of the treatment of plastic packaging waste in the countries covered by this audit has demonstrated huge variety of results. Nevertheless, to actually implement the principles of Circular Economy, plastic packaging waste must be treated much better in the future. It can be, however, difficult, since none of the countries covered by the coordinated audit adopted standards for eco-design of plastic packaging (to ensure better recycling capacities), and only 5 countries mentioned such need in their strategy documents (see Point 44 of this Report). Meanwhile: *A Circular Economy starts at the very beginning of a product's life. Both the design phase and production processes have an impact on sourcing, resource use and waste generation throughout a product's life*[86] and *up to 80% of products' environmental impacts are determined at the design phase.*[87]

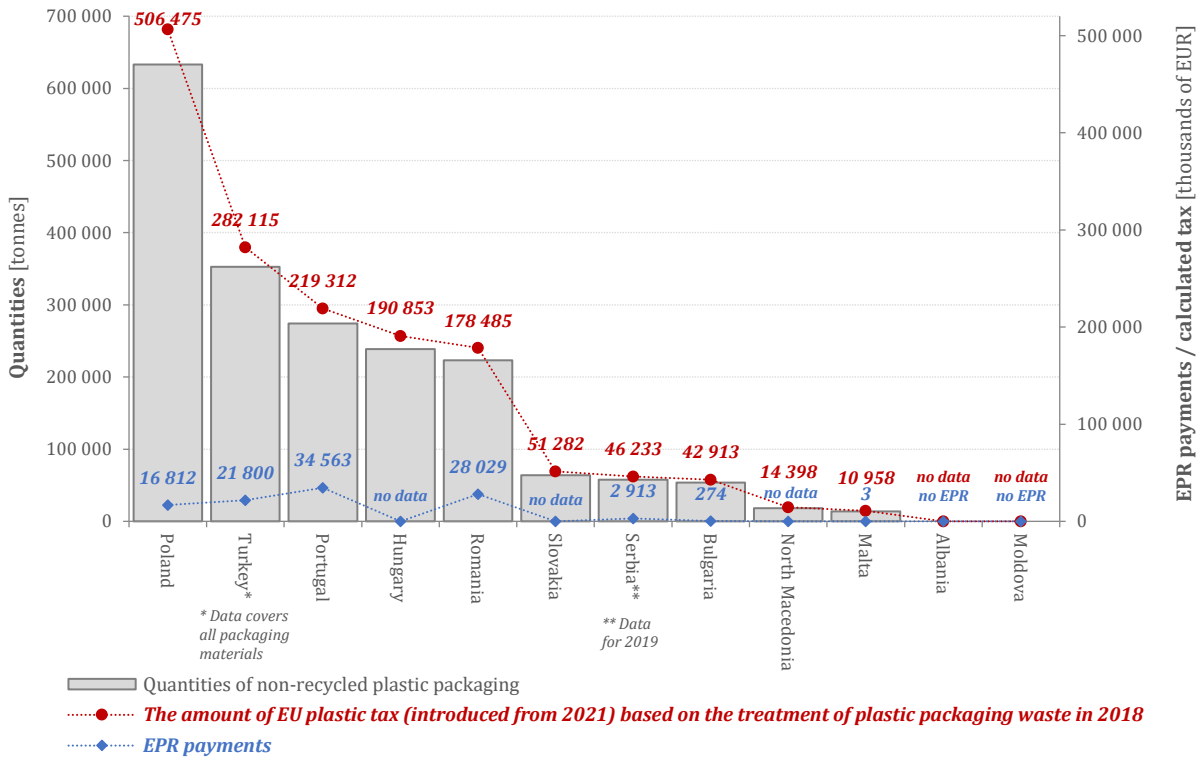
[85] No minimum recovery rate was established for plastic packaging waste. But the required (minimum) recovery rate for all types of packaging waste was 54% in 2018 and 55% in 2019-2020.

[86] According to 2015 EU document: ***Closing the loop – An EU action plan for the Circular Economy*** (p. 3).

[87] According to 2020 EU document: ***A new Circular Economy Action Plan for a cleaner and more competitive Europe*** (p. 3).

137 In addition, various solutions adopted by the EU, including higher minimum recycling rates for plastic packaging waste (50% to 2025 and 55% to 2030) and the quantitative levy on non-recycled plastic packaging waste effective from 2021,[88] contribute to better treatment of plastic packaging waste. It is worthwhile to look at potential amount of that levy,[89] especially in the context of payments on plastic products under EPR schemes in operation (see Figure 17). Obviously, in non-EU countries, such comparison could have illustrative values only, since these regulations are not binding in their territories. Nevertheless, assuming that the amount of such EU levy establishes to some extent the limit of economic efficiency in the management of plastic packaging waste, slightly broader perspective on the topic can be applied.

Figure 17. EPR payments in 2018 compared to the amount of *EU plastic tax*, estimated based on the treatment of plastic packaging waste in 2018



Source: NIK's own study based on data received from the audit participants (EPR payments and quantities of non-recycled plastic packaging in North Macedonia, Serbia, Turkey) and Eurostat data (quantities of non-recycled plastic packaging in EU countries, calculated as a difference between the quantities of plastic packaging launched into the market /waste generated/ and the quantities of recycled plastic packaging – database: ENV_WASPAC).

88 As of 1 January 2021, a contribution based on the non-recycled plastic packaging waste was introduced as a new revenue source to the 2021-2027 EU budget. A uniform call rate of 0.80 EUR per kilogram will be applied to the weight of plastic packaging waste that is not recycled, with a mechanism to avoid excessive contributions from less wealthy Member States (based on the EC article: ***Plastics own resource***). This new contribution is informally called **EU plastic tax**.

89 Calculations for particular countries have been conducted based on the quantity of non-recycled plastic packaging placed on the market in 2018 and based on the (basic) EU plastic tax rate at EUR 0.80 per 1 kg.

138 The chart above shows that for seven countries for which comparative data were collected, the conclusion cannot be that they conducted effective treatment of plastic packaging waste. For North Macedonia, Slovakia and Hungary, the audit did not collect figures on EPR payments, so comparisons cannot be made. For Albania and Moldova, it is difficult to draw any conclusion at all on how plastic packaging waste was treated (no figures on recycling rates or quantities of non-recycled packaging waste, lack of EPR system in Albania, with EPR system being rolled out in Moldova from 2021).

Transboundary Movement of Plastic Waste

139 A significant proportion of plastic waste generated in Europe leaves the EU to be treated in third countries, where different environmental standards may apply.[90] The available data also indicate that in 2018 in Europe (EU 28 + Norway and Switzerland), 32.5% of collected plastic post-consumer waste was recycled, of which 81% inside the EU and 19% outside of the EU.[91] Although exports of plastic waste from the EU decreased after the ban introduced by China as of 2018, special attention should still be paid to transboundary movement of plastic waste.

140 A vast majority of the countries covered by this audit held data on transboundary movement of plastic waste (9 countries[92]). Only Poland and Slovakia lacked detailed information in this regard. Two audit participants reported that their countries banned importation of plastic waste (Malta, Moldova), and another participant mentioned that its country banned imports of mixed plastic waste and non-recyclable plastic waste for disposal (Turkey).

141 The main paths of transboundary movements of plastic waste in 2018-2019 in the countries covered by the audit show clearly that is it a very complex process (see Figure 18). The information received shows that in 2019 the countries covered by the audit imported at least 693,000.0 tonnes of plastic waste, at the same time sent abroad (export) at least 100,000.0 tonnes of such waste. Therefore, to strictly control how plastic waste is treated, a standardised and coherent system for the monitoring of movements not only in the EU, but also globally, would be necessary. Notably, some participants of the audit raised doubts about the reliability of the reported data on the quantities of exported plastic waste (Moldova[93]) or indicated commonly known cases of illegal importation of waste (Bulgaria[94]).

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[90] According to 2018 European Commission document: ***A European Strategy for Plastics in a Circular Economy*** (p. 16), about half of the plastic collected in the EU is sent abroad (outside the EU), where uncertainty remains over its treatment.

[91] According to Plastics Europe Association of Plastics Manufacturers studies: ***Plastics – the Facts 2019*** and ***Plastics – the Facts 2020***.

[92] Audit performed by the SAI of Hungary did not cover the issue of transboundary shipment of plastic waste.

[93] The SAI of Moldova stated that the data provided by the Customs Service indicate that some business operators did not export the declared quantities of waste – in this context, the status of more than 6,000.0 tonnes of plastic waste is unknown.

[94] The SAI of Bulgaria indicated that illegal shipments of plastic waste mainly resulted from incorrect classification, in which mixed waste was presented as plastic, and some of these cases were under investigation by the Prosecutor's Office of the Republic of Bulgaria.

142 To obtain a full picture and conduct an in-depth analysis of plastic waste transboundary movements, detailed information on the quantities of plastic waste imported to and exported from particular countries should be considered, especially taking into account data from the biggest plastics converters in the EU. These include Germany, Italy, France, Spain, United Kingdom and Poland, where the plastics demand exceeds 3 million tonnes annually.[95] Unfortunately, from this group, only Poland has been covered by this audit, which did not hold information on transboundary movements of plastic waste in its territory. Nevertheless, based on the information collected under this coordinated audit, it should be noted that, due to limited processing capacities of plastic waste recyclers in individual countries (or absence of such market) and the Chinese ban on the importation of plastic waste, **a destination for plastic waste in European countries was sought at two levels** (see Figure 18):

- **Local level** – evidenced by mutual exchanges of plastic waste (importation/exportation), e.g., between:
  - Portugal and Spain – according to the SAI of Portugal, in 2018-2019 Portugal imported 21,790.8 tonnes of plastic waste from Spain, at the same time exporting 61,658.4 tonnes of such waste to Spain,
  - Bulgaria and Romania – according to the SAI of Bulgaria, in 2018-2019 Bulgaria imported 8,125.0 tonnes of plastic waste from Romania, at the same time exporting 8,704.0 tonnes of such waste to Romania. In the same time, the information provided by the SAI of North Macedonia and the SAI of Serbia shows that, in 2018-2019, 15,200.0 tonnes of plastic waste was imported to Romania from North Macedonia and 895.3 tonnes of such waste from Serbia,[96]
  - Serbia and Croatia – according to the SAI of Serbia, in 2018-2019 Serbia imported 5,963.0 tonnes of plastic waste from Croatia, at the same time exporting 5,677.0 tonnes of such waste to Croatia;
- **Global level** – where in particular the biggest plastics converters made efforts to find new sales markets for the plastic waste they generated, both in the EU and beyond, from where the waste was to be further transferred, e.g., to Asian countries; in particular – it should be noted that:
  - in 2018-2019, four out of six biggest European plastics converters, i.e., Germany, France, Spain and the United Kingdom placed 87,706.6 tonnes

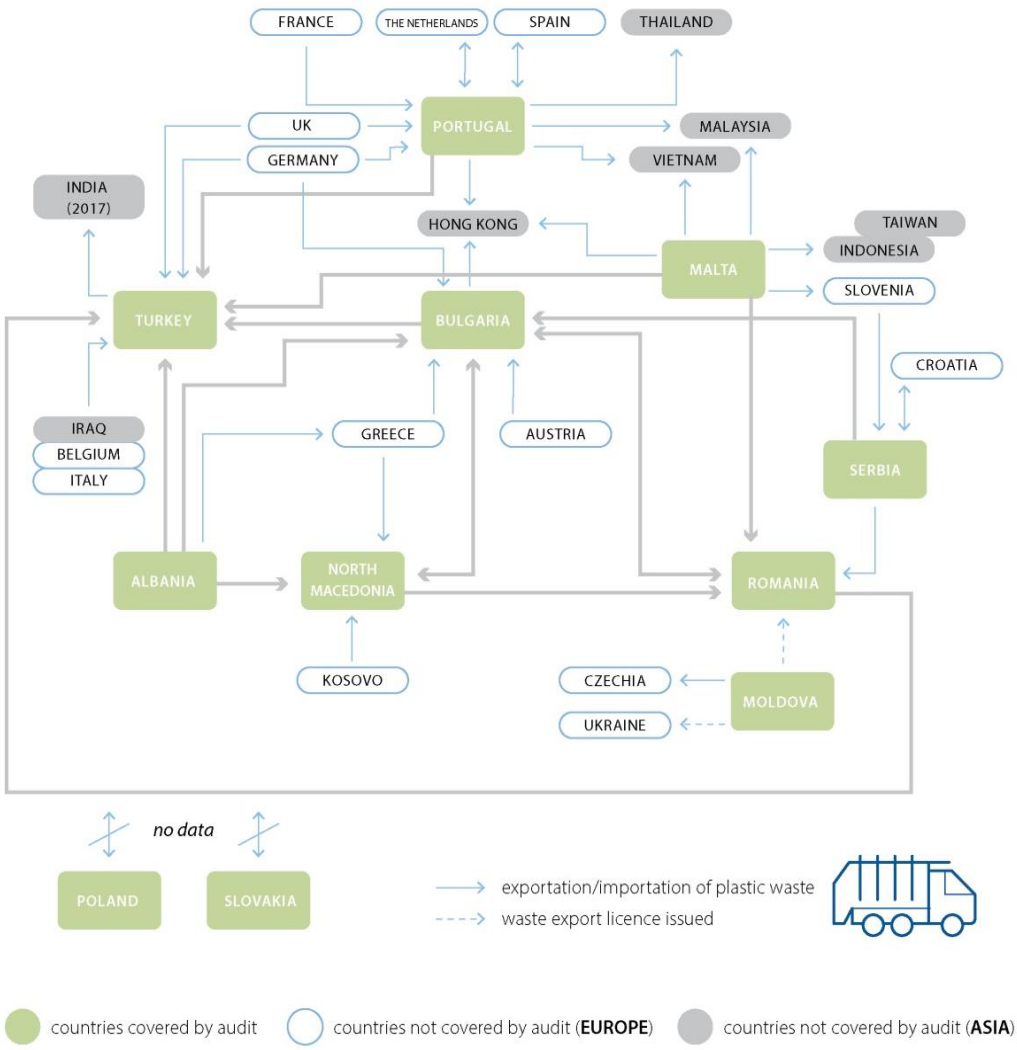
[95] According to Plastics Europe Association of Plastics Manufacturers study: ***Plastics – the Facts 2020***.

[96] The SAI of Romania indicated that the National Environment Protection Agency in Romania did not have information on the quantities of plastic waste imported for the period 2016-2018, because this monitoring by the competent authority was not required under legal provisions. During the period of time covered by the audit performed by the SAI of Romania, the quantities of plastic waste imported by Romania were not subject to reporting and monitoring by the competent authority. So the information provided did not exclude the existence of such plastic waste imported by Romania during the audit period, but couldn't confirm it, due to the fact that there was no information available about this data. Additionally the SAI of Romania highlighted that a government decision was adopted in December 2021, under which provisions, there were specific authorities designated to control, monitor and manage the data on such imports.

of plastic waste on the Portuguese market, and at the same time Portugal exported to Hong Kong, Malaysia, Thailand, Vietnam a total of 18,639.5 tonnes of plastic waste and 6,255.5 tonnes of such waste to Turkey,

- in 2018-2019, the biggest plastics converter in Europe, i.e., Germany, placed a total of 180,431.0 tonnes of plastic waste in four other European countries (Bulgaria, Portugal, Serbia, Turkey),
- in 2018-2019, one of the biggest plastics converter in Europe, i.e., the United Kingdom, exported a total of 249,957.0 tonnes of plastic waste to two other European countries (Portugal, Turkey),
- the SAI of Turkey stated that: *After China's restriction on waste imports, plastic waste imports have doubled compared to before*.

Figure 18. Main paths of transboundary movement of plastic waste in 2018-2019 in the countries covered by the audit



Source: NIK's own analysis based on data received from the audit participants.

143 Obviously, such outcomes of transboundary movement of plastic waste are not tantamount to saying that the waste is improperly treated. Nevertheless, in times of EU's promotion of Circular Economy, the fact that the biggest plastics converters in Europe failed to create in their countries conditions for the treatment of plastic waste they produced but instead send some of this waste to other countries with often significantly lower economic and technological capacity is puzzling. Such performance also does not sufficiently correspond to the **Waste Framework Directive**, which states that it is the EU's goal to become self-sufficient in disposing of and recovering municipal waste.

144 Similar problems with the shipment of plastic waste generated in the EU are described in the European Court of Auditors' 2020 study (*Review*).[97] The Review indicates in particular that: ***The China ban on imports of plastic waste led to changes in the destination of exports from EU Member States****. China (including Hong Kong) was the main destination for the export of EU plastic waste before 2018, accounting for 77% (2.4 million tonnes) of total EU exported plastic waste in 2016. In July 2017, China announced a ban on imports of plastic waste, taking effect at the beginning 2018. Following this ban, exports to China decreased rapidly and the portfolio of destination countries for EU plastic waste diversified. Other Asian countries experienced significant increases in imports of EU plastic waste between 2016 and 2018: Thailand an eightfold increase, Turkey a sevenfold increase, Taiwan a fivefold increase, Indonesia a threefold increase. As a result, more countries also imposed plastic waste import restrictions. Data for 2019 shows Turkey and Malaysia as the main Asian destinations for plastic packaging waste exports.*

At the same time, the ECA Review states that: *Plastic packaging waste can be shipped outside the EU for recycling purposes. Exporters are required to demonstrate that the waste is treated under similar conditions to those in the EU.*[98] *Member States have used this option to ship significant amounts of plastic waste overseas and in particular to Asia. In 2018, according to data from Plastics Europe, the EU shipped 6.5% of all plastic waste collected overseas. This is equivalent to 20.2% of the plastic waste sent to recycling facilities.* ***Shipments for recycling outside the EU account for 27% to 30% of reported plastic packaging waste recycling over the 2012-2017 period.***[99] ***This shows that shipping for recycling outside the EU plays a significant role in achieving the plastic packaging recycling targets****. EU operators must receive documentation attesting that the treatment (including recycling) of plastic packaging waste in a third country is done under broadly equivalent standards to those in the EU. Nevertheless, the European Environment Agency notes that treatment in non-EU countries often causes higher environmental pressure in terms of pollution, CO_2 emissions and plastic leakage into the environment, than treatment or recycling in the EU. Verification of compliance with EU plastic waste treatment standards in third countries is often insufficient to ensure respect of EU standards.*[100]

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[97] European Court of Auditors, ***Review No 04 EU action to tackle the issue of plastic waste***, 6 October 2020.
[98] Waste Framework Directive.
[99] Based on Eurostat data.
[100] European Environment Agency, ***Plastic waste trade and the environment***, October 2019.

Member State national authorities have no control powers in third countries and extended producer responsibility organisations, which are responsible for plastic packaging waste management, rarely perform on-the-spot checks. This translates into a low assurance relating to recycling outside the EU and significant risk of illegal activities.

145 Until 2017 China was the main destination of exports of plastic waste from the EU, but China's ban on importation of plastic and other waste since 2018 highlighted problems of the European waste management sector, but could also provide an incentive to change the existing approach and bring about new developments in this area. Unfortunately, the information gathered in the process of this coordinated audit and information presented in the cited ECA study rather point to strengthened existing (unfavourable) practices of movement of significant amounts of waste to other countries also outside Europe, accompanied by the replacement of the existing destination for plastic waste exports from one Asian country to several others. **Such scheme of action does not show any sign of measures to be taken to bring about significant change in waste management, i.e., more efficient use of resources, and ultimately to implement the principles of Circular Economy.**

146 It is also worthwhile to analyse the case of one of the country covered by this audit. It shows that due to more restrictive requirements on plastic waste, accompanied by lack of strict controls of plastic waste brought to the country and how it is finally treated, non-compliant/illegal practices related to the treatment of such waste may exacerbate also in the EU territory. Poland holds no official information (from national public institutions) on the quantities of plastic waste imported to or exported from the country for recovery, including recycling or preparation for re-use. Nevertheless – despite the absence of data on transboundary movements of plastic waste in Poland – external reports indicate that such practices took place, and on a significant scale (see Appendix Six).

147 ECA Review concludes that most plastic packaging waste was considered non-hazardous for shipment purposes for the time being. Recent changes to the Basel Convention mean that from 2021 most current plastic packaging waste shipments would be considered hazardous waste. It will therefore be subject to export ban to non-OECD countries. This, combined with the lack of capacity to treat plastic packaging waste within the EU, increases the risk that it is disposed of illegally both within the EU's borders and when shipped to third countries.

148 **In examining the above considerations in a broader context – to limit the risk of noncompliant management of plastic waste and its adverse environmental and health impacts – we should aim at the development of European market for processing capacities (recovery and disposal) of plastic waste, accompanied by more stringent rules for its transboundary movements and stricter controls of plastic waste imported to and exported from a given country.**

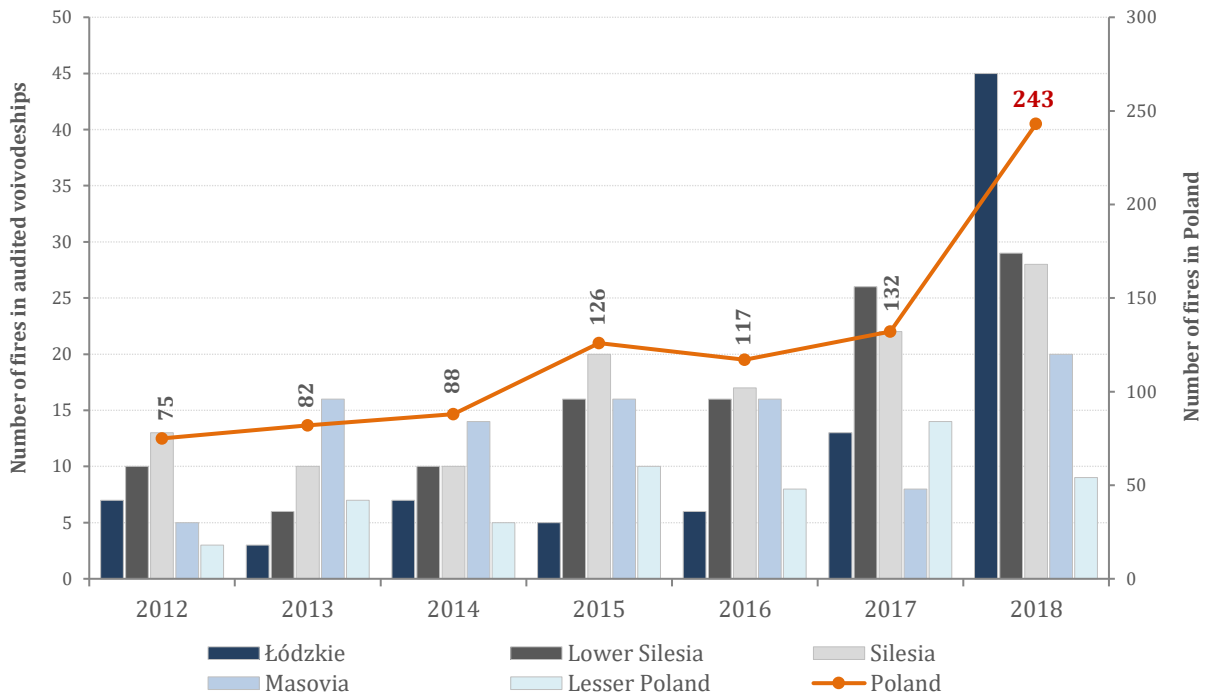
Events that Posed a Threat to the Environment Related to Improper Treatment of Plastic Waste

149 **The findings of national audits conducted by most participants revealed no information about crimes or events that posed a threat to the environment due to inadequate treatment of plastic waste.** According to the gathered information, cases of illegal shipment of plastic waste were certainly recorded in two countries (Bulgaria and Poland). However, based on the analysis of ***Waste Crime Alerts*** published by WasteForce,[101] it can be concluded that cases of illegal shipment of waste[102] (including plastic waste) or its inadequate treatment were disclosed in 8 out of 12 countries covered by the coordinated audit,[103] and almost every report (7 out of 8) mentions cases involving Poland. In addition to the above cases, there is also information about the existence of illegal landfills or inadequately secured landfills and incineration of waste by citizens, resulting in air pollution and posing hazards to human health (Bulgaria, North Macedonia, Poland). Additionally, the SAI of Portugal stated that some infringement situations concern plastic waste found in illegal waste deposits mixed up with other waste. Elimination of waste, including plastics, using open fire, especially those related to agricultural activity, has also been identified. SAI of Malta indicated that in 2017, a fire destroyed Malta's only Material Recovery Facility (sorting facility). This led to infrastructural modifications. Following the fire incident, for a number of months, Malta's infrastructural set-up to treat recyclable waste was limited to a small plant in Gozo, as the main plant in Malta was solely processing Mixed Municipal Solid Waste collected from households. As a temporary measure, the main plant operations changed to the processing of recyclable bags. These arrangements remained in place until mid-2020, when a new temporary rudimentary line catering for the sorting of dry recyclables from households became operational.

150 Findings of the national audit in Poland show that the competent public entities (Regional Inspectorates of Environmental Protection) did not investigate the composition and calorific value of landfilled waste in the audited municipalities and communes. According to NIK's estimates, substantial quantities of plastic waste were landfilled. It should not have taken place due to the ban on landfilling of high caloric waste (above 6 MJ/kg), established by national regulations. Plastic waste is characterised by a much higher calorific value than that resulting from the applicable regulations. The SAI of Poland concluded that lack of control within the above scope could result in a risk of landfilling of plastic waste contrary to the waste hierarchy and it did not contribute to eliminating the risks associated with irregular landfilling of waste. This conclusion was confirmed particularly by the growing number of fires of landfills in Poland (see Figure 19).

[101] WasteForce, ***Waste Crime Alerts***, from number #1 (February 2019) to #8 (December 2020).
[102] Directly (as a final waste destination) or indirectly (transfer routes).
[103] This applied to: Albania, Bulgaria, Hungary, Malta, Poland, Portugal, Romania and Turkey.

Figure 19. Number of fires of landfills in Poland in 2012-2018



Source: NIK's own analysis based on data from the National Headquarters of the State Fire Service of Poland, presented in the study of the Statistics of Poland: *Environment protection 2019*.

General Conclusions on Monitoring of the Implemented Measures and Achieved Results – SAIs Assessment

151 Due to varied conditions relating to waste management in individual countries and various levels of progress in the implementation of measures, comparing the results achieved in the audited area is not fully feasible. Nevertheless, the data provided by the coordinated audit participants, in particular their assessments of the outcomes of implemented measures concerning waste treatment, including plastic waste, allows us to identify several common problems/barriers that countries are facing in attempts to improve the efficiency in managing plastic waste.

152 It should be, however, noted that the barriers identified by the participants are based on evidence gathered as part of national audits and were obviously constrained by auditing mandates of each SAI, adopted scope of the national audit, and apply to the situation and status of the waste management system in a given country at the time. In fact, the data collected as part of this coordinated audit do not allow for the conclusion that even one of the countries covered by the audit fully embrace Circular Economy model in waste management. However, direct references to this model of waste management have been made only in some cases. Note also that the concept of Circular Economy has been literally incorporated into legal frameworks of EU countries. Also, insufficient

progress in implementing of measures on waste management (e.g., lack of basic strategic documents or outdated plans, absence of current and credible data on the status of waste management, lack or very low level of separate collection of waste) focused the assessment of individual SAIs on these issues in the first place.

153 Among the most common problems related to the activities striving for improvement of the efficiency of plastic waste management, the following issues were identified (for more information also see Table 8):

- municipal waste/plastic municipal waste was treated in less desirable way in the context of waste hierarchy (11 countries),
- data reporting system was not working properly/did not provide adequate data for the assessment of plastic waste management (9 countries),
- insufficient monitoring/supervision by public authorities of the results achieved in the field of plastic waste management (8 countries),
- some obligatory targets were not achieved (7 countries),
- insufficient framework/conditions (including legal framework, organisational arrangements, implemented measures) for the transition to the Circular Economy model (7 countries).

Table 8. Crucial identified problems/barriers to improved efficiency in managing plastic waste faced by countries covered by the audit

No.	Description of the problem	Country												Σ
		ALB	BUL	HUN	MAL	MOL	N. MAC	POL	POR	ROM	SER	SLO	TUR	
1	Municipal waste/plastic municipal waste was treated in less desirable way in the context of waste hierarchy	X	X		X	X	X	X	X	X	X	X	X	**11**
2	Data reporting system was not working properly/ did not provide adequate data for the assessment of plastic waste management	X			X	X	X	X		X	X	X	X	**9**
3	Insufficient monitoring/supervision by public authorities of the results achieved in the field of plastic waste management	X				X	X	X		X	X	X	X	**8**
4	Some obligatory targets were not achieved	X	X		X		X	X	X		X			**7**
5	Insufficient framework/conditions for the transition to the Circular Economy model		X		X	X	X	X			X		X	**7**
6	Significant risk of failing to meet future targets without fundamental changes in waste management system							X	X	X			X	**4**
7	Insufficient coordination between various actors participating in the waste management system				X	X					X			**3**
8	Lack of a comprehensive approach to waste management (including plastic waste)		X				X							**2**

Source: NIK's own analysis based on data received from the audit participants.

APPENDICES

Appendix One: Audit Organisation and Approach

The coordinated project was initiated by the Supreme Audit Office of Poland which invited representatives of several SAIs and the European Court of Auditors for a *kick-off meeting* in Krakow (Poland) in December 2019. The meeting included, among others, brainstorming sessions and plenary discussions. The main goal was to prepare a common audit framework for a coordinated audit on Management of Plastic Waste in Europe and to discuss project management topics. Finally, 12 SAIs decided to join the coordinated audit. The Supreme Audit Office of Poland took over the duties of a coordinator of the project.

The participants decided to work with an audit framework (see Appendix Two) consisting of one main audit question, three audit aspects and numerous sub-questions. The main audit question was: *Have the relevant public authorities (state and/or self-government administration) developed policies (plans, strategies) and implemented measures aimed at achieving goals (adopted in such policies) regarding generation and management of plastic waste?* The three audit aspects were:

1. Adopted legislation and organisational arrangements concerning plastic waste management.
2. Applied policies (plans, strategies) in order to implement proper plastic waste management.
3. Results of implemented measures concerning plastic waste treatment.

The participants signed the Memorandum of Understanding on the framework for the coordinated performance audit on Management of Plastic Waste in Europe, in line with the INTOSAI Framework of Professional Pronouncements (***GUID 9000 Cooperative Audits between SAIs***).

Since national audits could not address all the issues covered by all the audit questions, the individual SAIs answered those questions that were relevant to their own national context. It means that each individual SAI decided to audit a selection of questions. As a result, some of the data and findings reported here do not represent all the 12countries covered by the coordinated audit.

The overall findings, conclusions and recommendations are based on an analysis of the SAIs' answers to the audit questions, and on the summaries of the national audits (see Appendix Seven), external materials (see Appendix Ten), Eurostat waste databases. The participating SAIs verified the references made in this joint report to their own audits.

Appendix Two: Management of Plastic Waste in Europe Framework

Main audit question

Have the relevant public authorities (state and/or self-government administration) developed policies (plans, strategies) and implemented measures aimed at achieving goals (adopted in such policies) regarding generation and management of plastic waste?

Audit aspects and audit sub-questions:

1. **Has the country adopted legislation and organizational arrangements concerning plastic waste management?**

   1.1a. Do the most significant national regulations comply with EU law? *[EU countries]*
   1.1b. What are the main differences between national and EU regulations? *[non-EU countries]*
   1.2. Have legislative or non-legislative measures establishing EPR concerning plastic products and waste been adopted and what do they consist of?
   1.3. Which entities (and at which administrative level) are responsible for preparation and implementation of policy regarding waste management and plastic waste management in particular?
   1.4. Have the measures encouraging the design of products adopted in order to reduce their environmental impacts and the generation of waste in the course of the production and subsequent use of products, and in order to ensure proper plastic waste treatment been introduced?
   1.5. Has a country adopted separate collection of waste and what does it consist of?
   1.6. According to the SAI, are the applicable legislation and organisational arrangements in the country sufficient to provide proper plastic waste management (effective in the context of planned goals)?

2. **Has any policy (plans, strategies) been applied in order to implement proper plastic waste management and improve the efficiency of using existing materials and products (according to assumptions of Circular Economy)?**

   2.1. Has national or regional/local policy (plans, strategies) regarding plastic waste management (or general policy concerning all types of waste) been adopted, and what goals and measures have been established therein?
   2.2. Do the strategic documents (mentioned in Question No 2.1.) contain problem analysis on waste management, including plastic waste and what are their most important findings?
   2.3. Has the total costs of waste management system been calculated as part of the adopted policy and does this analysis include the costs of plastic waste management?

2.4. What measures have been actually introduced to ensure proper plastic waste treatment and did they relate to EPR in particular?
2.5. Was the coordination among various actors of waste management system (including plastic waste) assured and how was this process organized?
2.6. What kind of educational and informative activities encouraging plastic waste prevention in the first place, and then their proper treatment have been taken?
2.7. Can good practices be identified among the actions taken to ensure proper plastic waste treatment and what do they consist of?
2.8. According to the SAI, do the implemented measures ensure proper plastic waste management (also in the context of the global scale of the environmental problem), and can they be considered to be adequate according to the waste hierarchy in force in the EU?

3. Are the results of implemented measures concerning plastic waste treatment monitored and what effects have been achieved in the context of established goals in that field?

3.1. Do the public authorities (at state or regional/local level) have data concerning: quantities, sources (including both municipal and non-municipal waste) and treatment of plastic waste (including particular operations applied to collected waste)?
3.2. Do the public authorities (at state or regional/local level) have data on the quantities of plastic waste imported to the country and exported to other countries?
3.3. Can these data (mentioned in Questions No 3.1. and 3.2.) be considered reliable and reflect the actual state, and in particular, was the information on the quantities of plastic waste being recycled (or collected in order to be recycled) verified in the manner that minimises the risk of manipulation or fraud in this regard?
3.4. Were there any crimes or events that posed a threat to the environment (e.g. landfill fires) related to improper treatment of plastic waste, and what were the most common cases?
3.5. Is there a central database on waste in the country (in an electronic form) and what scope of data on plastic waste is available in this database?
3.6. What results in plastic waste treatment have been achieved (including recycling rates) and have these results been sufficient to achieve the goals planned in adopted policy?
3.7. How is the recycling rate of municipal/plastic municipal waste calculated?
3.8. Are there differences between the nationwide data on the levels of plastic waste recycling and the data sent to Eurostat, and if so what is the reason for these discrepancies?
3.9. According to the SAI, is there a justified risk of not achieving the goals planned in the policy (indicators related to plastic waste treatment in particular) in the designated time perspective?

Appendix Three: Generation of Municipal Waste in 2016-2019

Country	2016	2017	2018	2019
		/thousand tonnes/		
Malta	292	312	321	350
North Macedonia	no data	no data	855	916
Albania	1,300	1,254	1,325	1,087
Slovakia	1,890	2,058	2,254	2,299
Serbia	1,890	2,150	2,230	2,350
Bulgaria	2,881	3,080	2,862	no data
Hungary	3,721	3,768	3,729	3,780
Portugal	4,891	5,007	5,213	5,281
Romania	5,143	5,333	5,296	5,430
Poland	11,654	11,969	12,485	12,753
Turkey	33,763	34,173	34,533	35,017

Source: Eurostat, dataset: *Municipal waste by waste management operations* (ENV_WASMUN), as at 21 October 2021.

Appendix Four: Generation of (Non-hazardous) Plastic Waste in 2014, 2016 and 2018

Country	2014	2016 /thousand tonnes/	2018
Malta	5.7	8.7	7.2
Serbia	27.6	55.1	56.2
North Macedonia	8.8	24.6	66.7
Slovakia	124.3	148.7	192.2
Hungary	243.6	221.3	207.6
Bulgaria	196.1	213.4	260.9
Romania	345.6	280.2	301.4
Portugal	232.2	307.2	370.4
Turkey	223.4	658.2	725.3
Poland	1,188.5	1,296.3	1,775.7

Source: Eurostat, dataset: *Generation of waste by waste category* (ENV_WASGEN), all NACE activities plus households, as at 26 October 2021.

Appendix Five: Adopted Method of Calculating the Recycling Rate of Municipal Waste

Country	Selected method of calculating the recycling rate* *[EU countries]*	Types of waste taken into account in the calculation of the recycling rate *[EU and non-EU countries]*
Albania	N/A	municipalities have to recycle 22.5% of the **plastic** waste generated
Bulgaria	Article 3 (1) point (d)	all types of waste
Hungary	Article 3 (1) point (b)	paper, metal, glass, **plastic**
Malta	Article 3 (1) point (a)	paper, metal, glass, **plastic**
Moldova	N/A	the calculation method of the recycling rate has not been established
North Macedonia	N/A	paper, metal, glass, **plastic**, organic waste, rubber,
Poland**	Article 3 (1) point (b)	paper, metal, glass, **plastic**
Portugal	Article 3 (1) point (b)	paper, metal, glass, **plastic**
Romania	Article 3 (1) point (d)	all types of waste
Serbia	N/A *[Article 3 (1) point (d)]*	all types of waste
Slovakia	Article 3 (1) point (d)	all types of waste
Turkey***	N/A	paper, metal, glass, **plastic**

* Commission Decision of 18th November 2011 establishing rules and calculation methods for verifying compliance with the targets established in Article 11 (Paragraph 2) of Directive 2008/98/EC.

** Poland used the indicated method until the end of 2020. For 2021, the recycling rate will be calculated based on all types of municipal waste prepared for reuse and recycled.

*** Recovery rate.

Source: NIK's own analysis based on data received from the audit participants.

Appendix Six: Transboundary Movement of Plastic Waste in Poland

It is worthwhile to study an interesting case of the transboundary movement of plastic waste in the territory of Poland. The competent authority of that country (the Chief Inspector of Environmental Protection) holds no information on the quantities of plastic waste imported to or exported from the country for recovery, including recycling or preparation for re-use. It was due to the fact that no prior notification was required for movements of waste from the *green list*[104] (which includes plastic waste) to recovery process and therefore there was data on such movements of plastic waste. The only case in which the procedure of notification of transboundary movements of waste (regardless of type) was applied were movements of waste for disposal processes. However, according to the figures of the Chief Inspectorate of Environmental Protection, no **legal** importation to Poland or exportation from Poland of plastic waste for disposal took place in 2017-2019. **Therefore, Poland held no information on the quantities of plastic waste imported to and exported from the country.** At the same time, the national audit found that some of the operators involved in waste management in Poland indicated insufficient number and capacity of plastic waste recycling facilities, especially in the context of ever-growing quantities of waste.

Against this backdrop, the findings of a report by the National Audit Office[105] (SAI of the UK) seem interesting. They show, in particular, that in 2017 China was the biggest oversees destination of plastic packaging waste from the United Kingdom (25% of the quantity of exported waste). The second most important *customers* were **Poland**, Malaysia and Turkey, each of which held 11% share of the overall exports of the above-mentioned waste from the United Kingdom in 2017. However, since 2018, when China banned importation of some types of waste, the share of that country of the plastic packaging waste from the United Kingdom dropped significantly. The comparison of figures for Q1 2017 and the same period of the next year shows that China's share of the above-mentioned waste exports fell from 40% to only 3%. At the same time, in Q1 2018, the following countries have become the biggest overseas markets for plastic packaging waste from the United Kingdom: Malaysia (17% of total exports), Turkey (16%), **Poland (12%)** and Indonesia (11%).[106] In addition, the NAO report points out that: ***Poland imports waste from a number of countries, including the UK, for recycling. Recently, Polish Ministers have raised concerns that some of this***

[104] According to 2020 ECA ***Review No 04 EU action to tackle the issue of plastic waste*** (point 55): *When not treated in the EU, plastic packaging waste can be shipped for recycling to third countries, with stricter rules being applied for hazardous waste as provided in the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal. Most plastic packaging waste was considered non-hazardous for shipment purposes until now and was therefore 'green-listed' under the EU waste shipment regulation. In May 2019, the parties to the Basel Convention agreed that only shipments of pre-sorted, uncontaminated recyclable plastics that are free from all nonrecyclable material and have been prepared for immediate environmentally sound recycling are considered as green-listed (non-hazardous). This change will come into effect on 1st January 2021.*

[105] National Audit Office, ***The packaging recycling obligations***, 23 July 2018.

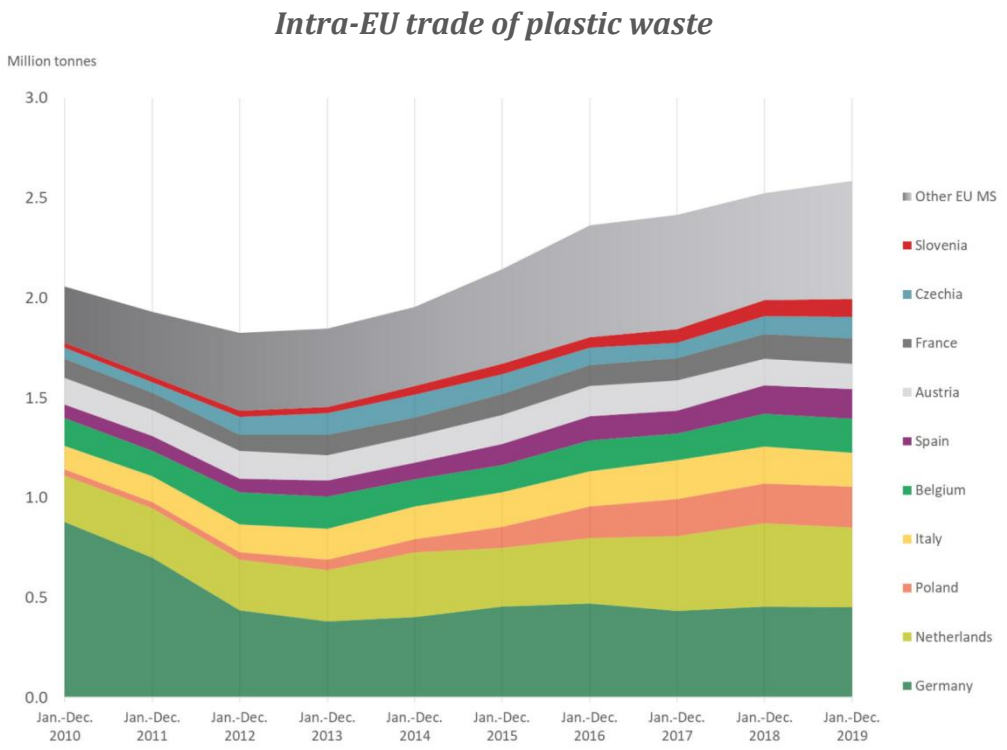
[106] Data presented in Chart 18, p. 46 of the 2018 National Audit Office's report: ***The packaging recycling obligations***.

waste is being dumped or illegally burnt due to stockpiles increasing beyond the capacity of its reprocessing sites.[107]

Additionally, the ECA study shows that (EU) Member States have seen significant increases in plastic waste imports between 2016 and 2019. Slovenia saw a 68% increase, **Poland 30%**, Czechia 26%, Spain 25% and the Netherlands and France around 20% (see Figure 20). However, importing Member States may also just be transit points. At the same time, the ECA report states that, apart from the group of the three largest exporters of plastic waste outside the EU (Germany, United Kingdom, Belgium), six other countries played a significant part in this process: France, Italy, the Netherlands, **Poland**, Slovenia and Spain (see Figure 20).

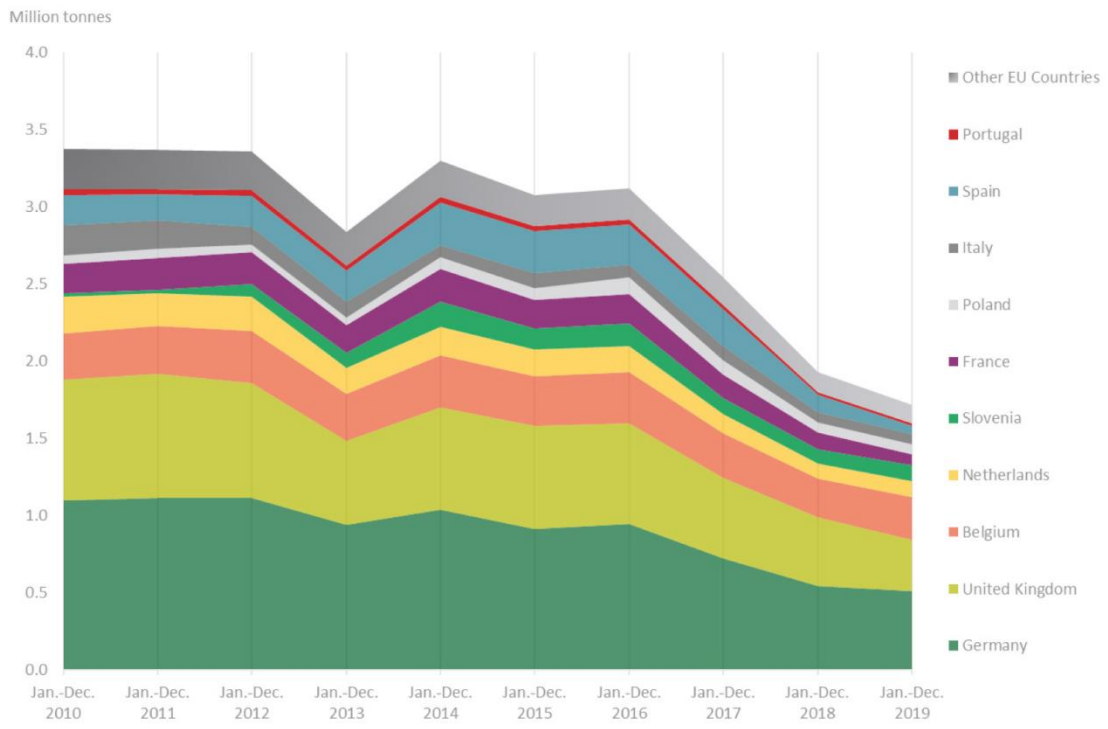
Thus – despite the absence of official figures (from national public institutions) on transboundary movements or plastic waste in Poland – external reports indicate that such practices took place, and on a significant scale.

Figure 20. Main destination countries for intra-EU trade of plastic waste and exporting plastic waste outside EU



[107] Information in Section 3.11, p. 45 of the 2018 National Audit Office's report: ***The packaging recycling obligations***.

Export of plastic waste outside EU



Source: ECA, ***Review No 04 EU action to tackle the issue of plastic waste*** (Figures 13, 17), 6 October 2020.

Another important item affecting the possibility of monitoring the compliance of waste treatment is the actual control of transboundary movements of waste. Here, it is worth mentioning that the result of another NIK's audit[108] showed that **Poland did not implement the regulations of the Basel Convention,[109] concerning an efficient control system of transboundary movements of waste**. In addition, Poland did not comply with the obligations of Article 50 of the **Regulation (EC) No 1013/2006** of the European Parliament and of the Council of 14 June 2006 on shipments of waste.[110] The auditees responsible for transboundary movement of waste failed to provide efficient control of waste crossing the border between Poland and Ukraine. Polish legal framework did not impose on any service or inspection authority an obligation to control every transport of waste crossing the border with Ukraine. **Border checks consisted mainly in verifying shipping documents of waste crossing the border with Ukraine, without verifying compliance of quality and/or quantity of every waste transport with the shipping documents.** Moreover, the NIK highlighted that the rules concerning

[108] Supreme Audit Office Poland, ***Report P/19/100 The transboundary movements of wastes among Poland, Ukraine and Slovakia***, 20 July 2020 (only Polish version).

[109] **Council Decision of 1 February 1993** on the conclusion, on behalf of the Community, of the Convention on the control of transboundary movements of hazardous wastes and their disposal – Basel Convention (OJ L 39, 16/02/1993 p. 3, as amended).

[110] OJ L 190, 12/07/2006 p. 1, as amended.

documentation of movement of green-listed waste[111] created a serious risk that this waste, especially in transit from Ukraine through Poland to other EU countries, could remain in the territory of Poland illegally. Pursuant to Polish regulations, **none of the competent entities had an obligation to monitor shipping through the territory of Poland. None of the responsible entities recorded if waste left the territory of the country.**

The issue of transboundary shipments of waste was also the subject of a cooperative audit carried out by the SAIs of Poland, Slovakia and Ukraine. The joint report on that audit[112] indicated, inter alia, that:

- Poland, Slovakia and Ukraine still lack a properly functioning and effective system for controlling the international movement of waste.
- The control of wastes at border crossings between these three countries was formal one: it consisted mainly in the verification whether waste was accompanied by appropriate documents, rather than in physical inspection of its compliance with the types and quantities stated in those documents.
- The equipment held by the services at border crossings did not allow them to identify the transported waste and exactly determine its quantities.
- The system for controlling transboundary movements of wastes between Ukraine, Slovakia and Poland requires undertaking necessary coordinated actions to improve its effectiveness at border crossings and to eliminate the possibility of uncontrolled dumping of wastes in the territory of the country through which the international transit movement of wastes takes place.

In the context of the above-mentioned information, it should be concluded that the risk of non-compliant treatment of plastic waste, including illegal practises under the applicable regulations, was high in Poland.

Such conclusion is supported by the 2017 Block Waste study.[113] Block Waste estimated that, on average, 13% of the generated non-hazardous waste disappears from the EU legal waste market each year. The report also identified illicit waste trafficking routes, inter alia, through Germany, and estimated quantity of waste illegally exported from this country to the major trafficking destination countries based on the detected illegal shipments. One of the main destinations of detected illegal waste exports leaving Germany was **Poland** (see Figure 21), **with estimated quantity of waste illegally shipped to that country between 1,329,566 and 3,988,698 tonnes.**[114]

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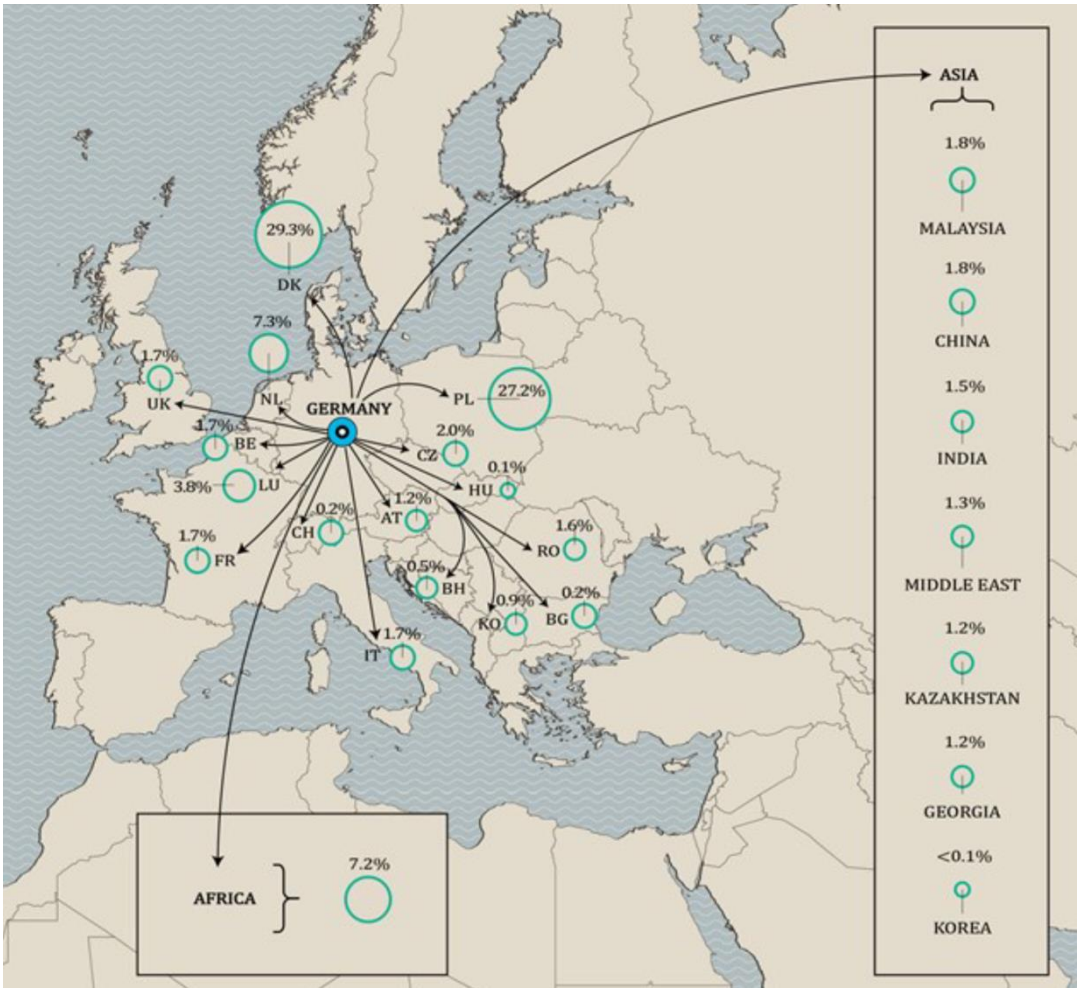
[111] Green-listed waste – waste listed in the Annex III of the Regulation No 1013/2006 – the list B of the Basel Convention (Annex IX) plus 13 types of waste from the old classification of OECD, not included in the list B. These are non-hazardous wastes such as: **plastic waste**, scrap paper, scrap metal, glass cullet.

[112] Supreme Audit Institutions of Poland, Slovakia and Ukraine, ***Joint report on transboundary movements of wastes in the light of the Basel Convention provisions***, 2021.

[113] Block Waste project: ***An exploratory estimate of the extent of illicit waste trafficking in the EU***, 31 October 2017. Project co-funded by the European Union.

[114] Depending on the adopted scenarios: 25%, 50% or 75% of the waste disappearing from the legal market was assumed to be illegally trafficked abroad.

Figure 21. Destination of detected illegal waste exports leaving Germany



Notes: percentages were computed on 118 recorded illegal shipments in 2012-2015 (total kg illegally shipped: 1,296,172). Source: German Environment Agency data.

Source: Block Waste, ***An exploratory estimate of the extent of illicit waste trafficking in the EU***, 2017.

Another case of illegal waste shipment was mentioned in 2020 WasteForce report.[115] More than 220 tonnes of sorted waste from the UK (including plastic waste) have been found dumped in a warehouse in Poland, Bogaczew – 72 miles from the seaport city of Gdansk (see Figure 22). Additionally, the previous WasteForce study[116] stated that the UK annually sends **to Poland 12,000.0 tonnes of 'recyclable' plastic** waste, however, in April 2019, investigators revealed 2,452.0 tonnes of illegally stored plastic waste in Poland originating from the UK, the disposal cost of which they said could amount to almost 8 million zlotys (€1.9 million, $2.2 million).

[115] WasteForce, ***Waste Crime Alert #5 December- February 2020***, 28 February 2020.
[116] WasteForce, ***Waste Crime Alert #3 June 2019 – August 2019***, 31 August 2019.

Figure 22. Waste illegally exported from the United Kingdom to Poland

Source: WasteForce, ***Waste Crime Alert #5 December- February 2020***, 28 February 2020.

Appendix Seven: Summaries of National Audits on Plastic Waste

A L B A N I A

/SAI logo/	*Kontrolli i Lartë i Shtetit* /original name of SAI/	*SAI of*	*Albania* /country/

The title of the audit:	**PLASTIC WASTE**
Period of time covered by audit:	**2017-2019**
Main audit question:	Have the relevant public authorities (state and/or self-government administration) developed policies (plans, strategies) and implemented measures aimed at achieving goals (adopted in such policies) regarding generation and management of plastic waste?
Answer:	The Ministry of Tourism and Environment (MTE) and local bodies (the municipalities of Tirana, Vlora and Elbasan) have not effectively managed plastic waste during the period 2017-2020. Significant shortcomings have been noted in drafting and approving the legal and regulatory framework needed for plastic waste management. MTE has not drafted Waste Prevention Programs and has never reported to the Council of Ministers on the implementation of the National Waste Management Plan. The municipalities of Tirana and Vlora have not drafted and approved Local Waste Management Plans. None of the municipalities have built the system for separate collection of waste. The main objective of recycling 22.5% of plastic waste generated from each municipality is not met and all the deadlines to meet the targets have expired. The three audited municipalities do not have an information and education program for plastic waste nor for waste. There are very few local campaigns on plastic waste abatement, which haven't been successful. The Ministry of Tourism and Environment and National Environment Agency do not have complete and accurate data at the national level on the amount of plastic waste generated and recycled in Albania. Data on the amount of plastic waste generated and managed will continue to be a problem until local bodies manage to ensure the separate collection of waste.
MAIN FINDINGS OF THE NATIONAL AUDIT ON PLASTIC WASTE	
Audit aspect No 1	**Has the country adopted legislation and organizational arrangements concerning plastic waste management?**
Compliance of the most important national regulations with the EU legislation	Albania continues to align its legislation to EU requirements in the area of waste management. The legal framework for waste management has been drafted in line with EU policies and specifically with the EU Waste Framework Directive 2008/98 / EC. The only exception is the deadline for reviewing and evaluating the Waste Prevention Programs which in Act no. 10463, 22 September 2011, on "Integrated waste management" is not defined, unlike the EU Directive 2008/98 / EC which states that these programs must be reviewed at least every 6 years. Compared to the EU, Albania has not adopted a policy document (strategies or plans) dedicated specifically to plastic waste. Lack of such policy documents affects and does not guarantee the achievement of national objectives related to plastic waste management.
Preparation and implementation of policy on waste management in Albania took place at different administrative levels	National Waste Management Strategy (NWMS) and National Waste Management Plan (NWMP) are the main documents at national level on waste management. The drafting of the National Waste Management Plan is an obligation of the Ministry of Tourism and Environment, meanwhile municipalities have the obligation to draft and approve Local Waste Management Plans (LWMP) based on the NWMP. The municipalities of Tirana and Vlora have not drafted and approved the Local Waste Management Plans in violation of Article 12 of Act no. 10463, 22 September 2011, on "Integrated waste management". The NWMS set as one of its targets that by 2020 there will be an increase in the amount of waste that goes for reuse and recycling with a minimum of 50% of the total waste generated in 2014. The main target of Decision of Council of Ministers no. 418, 25 June 2014, on "Separate collection of waste", that aims to recycle 22.5% of plastic waste has not been achieved by any municipality of the country.
Separate collection of waste in Albania	Separate collection of waste in Albania is one of the goals of the National Waste Management Strategy since January 2011. It is also defined in the Act no. 10463, 22 September 2011, on "Integrated Waste Management". Later in 2014 the Council of Ministers approved the Decision no. 418, 25 June 2014 on "Separate Collection of Waste" which requires "The main municipalities (first category) have to build the infrastructure for separate collection of waste by December 31, 2016 and all other municipalities have to build this infrastructure by December 31, 2018". None

	of the municipalities in Albania have built a separate collection system.
Extended Producer Responsibility system was ineffective	The Act no.10463, 22 September 2011, on "Integrated Waste Management" requires the Ministry of Tourism and Environment and the Council of Ministers to draft and approve a specific regulation or law on Extended Producer Responsibility. This regulation is not approved yet.
Lack of Waste Prevention Programs	Lack of Waste Prevention Programs has affected the implementation of Act no. 10463, 22 September 2011, on "Integrated waste management". These programs should have been a part of the National Integrated Waste Management Plan and should have been adopted until 1 January 2017.
Conclusion	**Albania does not have a complete specific legal framework on plastic waste management. Plastic waste is managed as all other types of waste generated and under the general requirements of the national legal framework on waste management.**
Audit aspect No 2	**Has any policy (plans, strategies) been applied in order to implement proper plastic waste management and improve the efficiency of using existing materials and products (according to assumptions of Circular Economy)?**
Strategic documents on waste management generally did not include separate targets to be achieved for plastic waste	Separate collection of waste is defined in the National Strategy for Waste Management and the National Waste Management Plan approved by DCM no. 175, 19 January 2011, in Act no. 10463, 22 September 2011 on "Integrated waste management" and later by DCM no. 418, 25 June 2014 on "Separate collection of waste". The municipality of Tirana has made efforts to build the infrastructure for separate collection of waste but it was not successful. In Tirana there are five zones for waste management and there are 5 different companies responsible for the separate collection of waste. We found that in the first zone – city centre, the infrastructure for separate collection of waste is built with two different containers, one for organic waste and the other one for recycling waste (plastic, glass, paper etc). All types of waste are disposed of in both containers despite the fact that they are different. In all four other zones there also have to be two different containers but often the two containers are the same colour or are not easy to identify as they are not marked and labelled. The other municipalities have not set up and haven't done any efforts to build the infrastructure for separate collection of waste. The cleaning and waste collections contracts that municipalities have with private companies are not drafted refer to Waste Management Act requirements. Although, the municipality of Tirana has included the requirement of Act no. 10463, 22 September 2011, on "Integrated waste management" while drafting the cleaning and waste collection contracts, it still has not provided any obligation for private companies for the location of containers that enable separate collection of waste. The audit team found that it is crucial for municipalities to draft the contracts based on legal framework requirements and define the company's obligations to build the system for separate collection of waste. Another fact observed by the audit team is that, in all the municipalities there are thousands of people that illegally collect plastic waste from containers and sell it to plastic collectors. All the municipalities know this fact and haven't developed any plan to address this problem. The target to recycle 22.5% of plastic waste generated in the country is not achieved by any of the three municipalities nor is achieved at national level. The lack of basic infrastructure for separate collection of waste is the main reason which affects the recycling targets.
Educational and informative activities	Regarding public education, waste and plastic waste in particular is paid very little attention by the responsible institutions (MTE, Municipalities of Tirana, Vlora and Elbasan). There are very few education campaigns which include plastic waste especially on Earth Day, World Environment Day and the beginning of tourist season. Public education is the key to fulfill the legal obligations related to waste separation at source, separate collection of waste and waste management according to the waste management hierarchy. In the municipalities of Vlora and Elbasan, there has been a complete lack of information, awareness and education initiatives of the public regarding plastic waste and their reduction. These initiatives should have been part of the Public Education Programs that in these municipalities were not implemented by the contracting companies. In the terms of the contract with the companies that cover the cleaning service in these two cities, the article on Public Education Programs does not provide education on the importance of preventing the production of waste as a whole, including plastic waste. We emphasize that educating the public on reducing the use of plastic waste is the most effective way to mitigate the damage that plastic brings to the environment and human health. Although the Decision of Council of Ministers no. 177, 6 March 2012, on "Packaging Waste Management" has been approved nine years ago, the audit team found that the municipalities of Tirana, Vlora and Elbasan have not provided any information to packaging users on the role and importance they have in the process of separate collection of packaging waste, reduction, reuse and recycling.

Online questionnaire regarding plastic waste management and their health impacts	To address this audit question, the audit team developed a questionnaire for the general public, which was distributed online over a 10-day period. The purpose of this questionnaire was to see how much the citizens are aware of the institutions that have legal obligations to manage urban waste, which includes plastic waste, to see how satisfied citizens are with waste management as well as to see how aware and informed they are about the health effects that plastic waste can cause. The questionnaire was constructed with questions of socio-economic and health character. The sample size was 1,051 responses, which then were analyzed by the audit team. The result of the survey was: - 84% of respondents do not separate waste according to currents normative; - 61% of respondents do not have knowledge that urban waste should be separated at source according to Albanian legislation; - 67 % of respondents did not have accurate knowledge of the institutions responsible for urban waste management; - 19% of respondents had never heard of the waste hierarchy management; - 75% of respondents have never been advised by their municipality or other institutions on how to dispose waste into containers; - 85% of respondents stated that they do not have different containers for various type of waste; - 33% of respondents testified that they knew which institution was responsible for urban waste management; - 9% of respondents have defined the "Municipality" as an institution responsible for urban waste management, while the rest did not have full knowledge of the institution responsible for their management; - 97% of respondents answered that plastic harms human health as a whole and can cause various diseases.
Conclusion	**Albania has a strategy and regulations for waste management that include plastic waste management. These policies and regulations are not fully implemented. Plastic waste is not managed based on waste hierarchy management.**
Audit aspect No 3	**Are the results of implemented measures concerning plastic waste treatment monitored and what effects have been achieved in the context of established goals in that field?**
Sources of plastic waste generation, its quantities and way of management were not reliably monitored	The audit team concluded that the data available from National Environment Agency (NEA) and published in annual National Environment Reports, regarding the total amount of plastic waste produced in Albania, are not accurate and complete because not all municipalities have reported annually and not all private entities that generate plastic waste have reported regularly. Failure of all municipalities to report to the NEA regarding the amount of plastic waste generated in their territory, leads to NEA not collecting all plastic waste statistics at the national level. As a result, the Ministry of Tourism and Environment does not have complete and accurate data on the amount of waste generated and managed at the national level, including plastic waste. The accuracy and completeness of the data is important because based on them MTE should develop policies at the central level for the management of plastic waste. Inaccurate and incomplete data may result in incorrect policy formulation or failure to design policies to benefit from effective waste management at the national level. Another important reason is that NEA has data related to the generation of plastic waste only by companies that are provided with a unique code according to DCM no. 229, 23 April 2014, on "The approval of the rules for the transfer of non-hazardous waste ...". It turns out that by the end of 2020, 171 private entities out of 286 in total have been provided with a unique code. Thus, the lack of a unique code for all entities operating today in the Albanian market leads to shortcomings in reporting the data that these entities send to the NEA.
Data in the waste management plans did not reflect actual state of plastic waste management	NEA does not have accurate data on plastic waste recycled. There is no data published in annual National Environment Reports on the amount of plastic waste recycled. The main reason for not having data on the amount of plastic waste recycled and not publishing them in National Environment Reports, is that, all municipalities have never reported on the total amount of plastic waste recycled and there are shortcomings in the implementation of environmental permit conditions related to self-monitoring reports which must have data on the amount of plastic waste recycled. From the review of the documentation made by the audit team to some of the private entities that have environmental permits for plastic processing / recycling, it resulted that some of them do not respect the conditions and criteria set in the relevant environmental permits by not sending self-monitoring reports to NEA. Failure to send self-monitoring reports by all entities that have an environmental permit for plastic processing / recycling of plastic-related data, affects the accuracy of the data that NEA publishes in its official reports.
Insufficient monitoring from the authorities on	The main authorities which monitor the implementation of the legal framework on waste management in Albania are the MTE and the National Committee on Waste Management. The MTE:

the implementation of legal framework requirements	- Has to publish an annual report on the implementation of National Waste Management Strategy; - Has to report annually at the Council of Ministers on the implementation of the National Waste Management Plan; - Has to publish a report every three years on the implementation of the Waste Management Law requirements; - Has to publish a report (or a specific chapter in the report on the implementation of Waste Management Law requirements) on meeting the targets on separate collection of waste; The National Committee on Waste Management has to present an annual report at the Council of Ministers on Waste Management. We found that the MTE: - Has not published any report on the implementation of National Waste Management Strategy; - Has not published any report on the implementation of Waste Management Law requirements; - Has not published any report on achieving the targets for separate collection of waste; The National Committee on Waste Management has not presented any report at the Council of Ministers on Waste Management.
Conclusion	**The reporting system is not in place and the data reported, collected and analysed is not complete and reliable. The national authorities have not monitored the implementation of the National Waste Management Strategy and national legal framework.**
Overall conclusions (from the national report)	
	The most important conclusion of the audit for the Ministry of Tourism and Environment and the municipalities are: 1. Draft and approve Waste Prevention Programs including plastic waste; 2. Draft and approve Local Waste Management Plans, in order to treat waste in line with the waste hierarchy; 3. Update the Decision of Council of Ministers on separate collection of waste (all the deadlines to meet the targets have expired and none of the targets of these document was met); 4. Building the infrastructure for separate collection of waste; 5. Take concrete action to draft and approve national regulations resulting from of EU Directive concerning the EPR; 6. Develop and implement education programs on plastic waste and waste management hierarchy (prevention/reduce-reuse-recycle); 7. Set up a data collection and data reporting system; 8. Monitor the implementation of the National Waste Management Strategy and national legal framework.
Ermira VOJKA	*/signature of an authorised person/*

B U L G A R I A

СМЕТНА ПАЛАТА	*Сметна палата на Република България*	*SAI of*	*Bulgaria*
The title of the audit:	*PLASTIC WASTE*		
Period of time covered by audit:			
Main audit question:	***Have the relevant public authorities (state and/or self-government administration) developed policy (plans, strategies) and implemented measures aiming at achieving goals (adopted in this policy) regarding generation and management of plastic waste?***		
Answer:	The policy implemented by national and local authorities is in line with European waste legislation to achieve the targets set by 2020. Additional efforts are needed by the Ministry of Environment and Water for the achievement of the long-term goals set by the EU with a horizon of 2035, mainly with respect to plastic waste. The measures and activities implemented are aimed at the waste generated in the phase of its disposal and less at reducing and preventing its formation, which reduces the effectiveness in the implementation of the policy. Policies have been formulated at national level and strategic documents have been adopted at national and local level with objectives and measures in line with European waste targets and legislation, including with regard to specific waste streams. The National Waste Management Plan and Waste Prevention Programme, an integral part of the plan, lay down the key objectives for the waste sector of the Republic of Bulgaria by individual waste streams, for the achievement of which dedicated programmes have been developed with envisaged measures in line with the waste management hierarchy. Plastic waste is not considered as a standalone stream, but as an accompanying part of each specific waste stream and accordingly its management is carried out depending on which waste stream contains significant amounts of plastic – municipal, construction, industrial or mass disseminated waste. Various bodies and institutions receive and collect information in order to fulfil their responsibilities and powers and the information available in one institution is not accessible or difficult to use by other institutions concerned and by all persons who will subsequently use it to carry out the functions assigned to them. All recovery organisations report overachievement of the statutory recycling targets for plastic packaging waste. The increased total volume of the containers for separate waste collection is a prerequisite for increasing the quantities of collected waste, including plastic waste and is an indicator of the effective implementation of waste treatment measures. The National Waste Information System (NWIS) has not been fully built and does not comprise the whole available information. The results achieved are due to actions directed at treating the waste generated in the phase of disposal and less due to actions to reduce and prevent its generation, or to waste management throughout the product lifecycle. The waste generated is still not being recovered sufficiently and activities are in practice which do not provide for its subsequent treatment, which creates risks of harming natural ecosystems and human health. For 2017 and 2018, a recovery rate has been reported, including recycling of plastic packaging waste of 65 per cent at a target of 22.5 per cent. The national target of 40 per cent for the recycling of municipal waste involving waste plastics set for 2018 has not been reached.		
MAIN FINDINGS OF THE NATIONAL AUDIT ON PLASTIC WASTE			
Audit aspect No 1	***Has the country adopted legislations and organizational arrangements concerning plastic waste treatment?***		
Compliance of the most important national regulations with the EU legislation (EU Countries)	The main requirements and norms of EU legislation set out in waste management directives, including plastic waste, have been transposed into national law through the 2003 (repealed) and 2012 Waste Management Acts. The specific requirements of EU directives about specific waste streams have been transposed through adopted ordinances, issued on the basis of the Waste Management Act. The requirements of national legislation have been harmonised with the requirements of EU waste management legislation, however the requirements of the Waste Framework Directive have been introduced with a two year and seven months' delay. The process of introducing the requirements of the directives[1] amending the Framework Waste Directive, Directive on the Landfill of waste and the Packaging and Packaging Waste Directive was completed with a delay in March 2021 instead of on 5 July 2020. The time limit for harmonising the requirements of the new waste directives in national legislation has not been met.		
Adoption of the Extended Producer Responsibility system concerning	The guiding principle at European and international level known as "the polluter pays" has been statutorily introduced as a fundamental principle in environmental protection. With the adoption of the Waste Management Act, extended producer responsibility has been introduced as one of the means to support the design and production of goods, which takes into account and facilitates the efficient use of resources throughout their life cycle, including after		

[1]Directive (EU) 2018/851; Directive (EU) 2018/850 и Directive (EU) 2018/852

plastic products and waste	decommissioning, so that instead of generating waste, they are used as a resource. In accordance with the 'polluter pays' principle, the costs of waste management are borne by the original producer of the waste or by the current or previous holders of the waste: - a product fee for plastic packaging of BGN 2.33 /kg. or 1.19 euros - a product fee for plastic shopping bags of BGN 0.55 / EUR 0.28. The procedure and the way of calculating the amount of the product fee, incl. for plastic packaging and plastic shopping bags are laid down in the Ordinance for determining the procedure and amount for payment of product fee.
Preparation of policy on waste management and responsible entities	The current legal framework clearly designates the competent environmental management authorities at national, regional and local level, whereas their specific responsibilities in relation to waste management are regulated in the Waste Management Act and the normative acts under it. Responsibilities for waste management , including plastic waste, are defined in the acts governing the management of each of the specific waste streams. Responsibilities at central level have the following: - Ministry of Environment and Water – for implementation of the overall waste management policy; - Executive Agency for the Environment – to collect information and provide data and analyses on waste management - Enterprise for Management of Environmental Activities – for the amounts received from product fees. In the administration of the Ministry of Environment and Water there is a specialized directorate "Waste management and soil protection", which is a prerequisite for effective implementation of the statutory responsibilities of the Minister in connection with the development and implementation of waste management policy, including plastic waste. Adequate responsibilities have been defined at operational level, with all the directorate's established functions allocated and detailed through department functionalities and relevant job descriptions for the different levels of expertise, ensuring the informed and effective management of plastic waste in all waste streams. At regional level, 16 regional environmental and water inspections under the Ministry of Environment and Water are responsible for conducting waste management policy at regional level. In order to implement the waste management policy at local level, the mayors of the municipalities are obliged to develop long-term programs tailored to the adopted National Waste Management Plan, with 265 municipalities responsible for the existence of waste management programmes.
Measures encouraging the design of products in order to reduce the generation of waste (incl. eco-design of plastic packaging)	Conditions have been introduced and legislative measures have been adopted to ensure proper and better management of waste, regulating the requirements for products after the use of which mass disseminated waste is generated and determining the bearing of extended producer responsibility in compliance with the priority order for their management. The Environmental Protection Act obliges persons whose activity is related to the generation and/or treatment of waste to ensure the processing, recycling and disposal of waste in a way that does not endanger human health, and to use methods and modern technologies that do not result in damage or risk to the components of the environment and do not cause additional environmental burdens related to noise, vibration and odours. Product fees payable by manufacturers for placing products and packaging on the market and mandatory extended producer responsibility schemes are laid down to promote the design of products and their components that are more environmentally friendly. Specific requirements have been introduced for products and packaging placed on the market, their marking and labelling, the conditions for liability throughout the product chain. Manufacturers undertake to take specific measures so as not to prevent re-use and recycling, reduce harmful and dangerous substances and limit the negative environmental impact. National legislation has adopted regulations that include the essential requirements and norms of European waste legislation, which is a prerequisite for achieving effective waste management aimed at preventing or reducing waste generation and its harmful effects on the environment and human health. At national level, as part of the adopted waste management policy, the National Waste Management Plan 2014-2020 was adopted, based on the country's statutory key waste targets. The plan contains an estimate of the financial means for the implementation of the investment and non-investment measures envisaged in order to achieve the objectives set. The main part of the projected expenditure – 1.3 billion BGN relate to investments for the municipal waste management system, respectively support environmentally sound waste management, including plastic waste. And the envisaged investment measures are aimed at ensuring that the objectives set, including the statutory ones, are achieved in compliance with the waste management hierarchy.
Separate collection of waste	In 2012, with the Waste Management Act obligations were established for separate collection of waste and for the introduction of separate waste collection schemes, at least for waste paper, metal, plastic and glass products. A legal requirement has been introduced for administrative, business, educational, commercial and other similar sites that generate municipal waste, to separately collect paper and cardboard waste, plastic, glass and metal and to conclude contracts for their transmission to companies and organizations authorized for such activity. Persons placing on the market products after the use of which mass disseminated waste is produced are responsible for its separate collection and treatment and for achieving the relevant separate collection objectives. Recovery organizations and persons who perform their duties individually must establish systems for separate collection of the respective type of mass disseminated waste on the territory of the country.

Conclusion	**National legislation lays down legal provisions which include the basic requirements and norms of EU waste legislation, which is a prerequisite for achieving effective waste management aimed at preventing or reducing waste generation and its harmful effects on the environment and human health.** **As at 31 December 2020, the process of introducing the requirements of the waste legislation in the Circular Economy package of the European Commission was not yet completed. The adoption of Council of Ministers Decree No 420 of 31.12.2020 for amendment of the Ordinance on Packaging and Packaging Waste (Prom. in SG 2/01/2021) and of the Law Amending and Supplementing the Waste Management Act adopted by the National Assembly (Prom. in SG 19/03/2021) completes the process of transposition of Directive (EU) 2018/850, Directive (EU) 2018/851 and Directive (EU) 2018/852.** **The national legislation governing public relations related to waste management has been harmonized with the EU legislation adopted before 2017.** **The lack of timely action to start the introduction of the new requirements of the directives related to waste leads to non-compliance with the deadlines for transposition of European legislation into national one, which creates a risk of delaying the planning of specific goals and measures in the transition to a circular economy.**
Audit aspect No 2	***Has any policy (plans, strategies) been applied in order to implement proper plastic waste management and improve the efficiency of using existing materials and products (according to assumptions of circular economy)?***
Strategic documents on plastic waste management and adopted goals	National strategic documents with objectives and measures set by 2020 have been adopted in line with European waste targets and legislation. Waste management goes through almost all policies and is present as an area of impact. Strategic objectives, areas and impact mechanisms are set at the highest national level to achieve effective waste management. Common waste management policies have been formulated, including specific policies to waste streams that contain plastic and require specific management. The general policy guidelines and impact areas focus on more efficient waste management, including plastic waste. Measurable targets and target impact groups have also been set. The Waste Management Act introduces a mandatory requirement for the preparation of a National Waste Management Plan and a Waste Prevention Programme, an integral part of the plan, setting certain objectives for which 9 programmes with a direct or indirect relevance to the management of plastic waste have been developed. There are key objectives set for each the stream and all of the streams of waste contain plastic. The development of the National Waste Prevention Programme under the National Waste Management Plan 2014-2020 is part of the mechanisms put in place to impact resource efficiency in the regions by optimising waste collection and the deployment of advanced technologies for separate collection, recycling and environmentally friendly disposal. In connection with the new programming period from 2021, a National Waste Management Plan has been developed in the Republic of Bulgaria for the period 2021-2028,which is at the stage of public discussion and adoption. A draft National Strategy and a Plan for the Transition to Circular economy 2021-2027 have been developed, which set out a transition from green waste management as a key factor for the protection of the environment and human health, to a policy of preventing waste formation and its inclusion in the economic cycle based on a "circular economy". The undertaking by the Ministry of Environment and Water of actions towards development of a national circular economy strategy two years after the adoption of the European one2018) calls for stepping up the efforts, including concerning plastic waste, as one of the priority areas in the transition to circular economy. Long-term programmes are being developed by the mayors of municipalities to implement waste management policy at local level. Methodological guidance has been issued for their development by the Minister of Environment and Water in order to ensure compliance with the National Waste Management Plan, as well as to rely on analyses to identify the actions and measures appropriate to be included in the municipality's waste management programmes. Waste management programmes are published on the websites of 257 municipalities or 97 per cent of all 265 municipalities of the Republic of Bulgaria. The programmes contain objectives and measures corresponding to the National Waste Management Plan. The high relative share of implementation of the regulatory requirements by the local authorities for the existence of waste management programs gives confidence for the implementation of an effective local management policy in the Waste Sector.
Problem analysis on plastic waste treatment	The National Waste Management Plan 2014-2020 contains an analysis of the current state of waste management in the Republic of Bulgaria, which is based on data up to 2012. Plastic waste was considered in general as part of the mass disseminated waste and municipal waste. Measures have been identified that are meant to improve the effectiveness of the Extended Producer Responsibility scheme for 6 groups of mass disseminated waste, including packaging waste. The plan includes an analysis of imported and exported packaging waste as a specific waste stream. The analyses contain information about the present state and a forecast about the type, quantities and sources of waste generated on the territory of the country, as well as the waste subject to cross-border transport and are published on the website of the Ministry of Environment and Water. The existence in the National Waste Management Plan of a monitoring and control system also creates prerequisites for ongoing monitoring and analysis of the implementation of long-term measures to achieve the objectives and take corrective action as necessary.
Implementation of the most important actions aimed at the	The measures focused on the waste management hierarchy are aimed at promoting the options that ensure the most environmentally friendly outcomes and the investments are aimed at delivering the first levels of the

proper management of plastic waste

waste hierarchy. Priority actions have been taken with regard to ending the operation of landfills that do not meet European requirements, implemented are measures to prevent waste generation and promote recycling.

The activities carried out and the reached quantities regarding municipal waste and construction waste in 2016 and 2017 show that the recovery rate of waste is increasing and the share of landfilled waste is reduced:

Activities	2016	2017
Treated municipal waste (t)	***2 877 000***	***2 935 000***
Landfilled municipal waste %	64,34	60,14
Energy recovery of municipal waste, %	2, 79	3,51
Material recycling of municipal waste, %	22, 73	28,25
Composting of municipal waste, %	9,14	8,11
Recovery rate of construction and demolition waste, %	73,7	78,7

It is evident from the data that there has been progress with regard to the overall landfill reduction target as a waste disposal method, but it still has the highest relative share in the treatment of municipal waste.

For the period 2017-2019, the measures put in place for implementing the waste management hierarchy are consistent with its lowest levels - disposal and recovery. The measures are mainly aimed at financing projects for implementing activities for closing and recultivation of municipal landfills for household waste on the territory of the Republic of Bulgaria, as well as for the construction of separation plants.

Producers are financially or organisationally responsible for waste management at every stage of the product's life cycle. The extended producer responsibility scheme is successfully applied to all groups of mass disseminated waste containing plastic: packaging; discarded electrical and electronic equipment, unusable batteries and end-of-life motor vehicles.

Revenue per year (EUR)	2017 г.	2018 г.	2019 г.
Product fees under the WMA, including:	**1 922 217**	**2 413 864**	**2 039 373**
- from packages	***254 233***	***274 259***	***290 284***
- from motor vehicles	1 590 508	2 061 948	1 618 568
- from batteries and accumulators	18 977	4 527	9 677
- of electrical and electronic equipment	40 299	64 879	104 313

There has been an increase in fee revenues under the Waste Management Act, which shows that the payment of product fees by types of mass disseminated waste has been carried out by the liable persons under the extended producer responsibility schemes.

Collective systems for the performance of obligations are preferred for the implementation of extended producer responsibility measures. For the period 2017 to 2019 there has been no permits issued to persons for individual performance of the obligations by the Minister of Environment and Water.

The recovery organisations have achieved the recovery/recycling targets set for specific waste streams. All recovery organisations report overachievement of the statutory recycling targets for plastic packaging waste.

With the introduction of extended producer responsibility, a high level of recycling and recovery of mass disseminated waste has been reached, leading to the implementation of the specific objectives set in the programmes of the National Waste Management Plan 2014-2020.

Under OP Environment 2014-2020, contracts have been signed for the construction of 19 pretreatment plants related to separation of waste by individual fractions, including plastic for 43 municipalities. After the implementation of the regional systems projects and their construction and commissioning, 45 regional pre-treatment facilities must operate in the country by 2021.

Coordination among various actors of waste management system

Publicly known cases of illegal import of waste, presence of unregulated landfills, signals for unregulated incineration of waste indicate that there are gaps and impaired effectiveness of interconnections and coordination in the actions of the responsible authorities, as a result not preventing illegal shipments of waste, including plastic waste.

By signing instructions for interaction and the existence of internal rules and guidelines, conditions have been created for the organization of proper implementation of the activities related to different stages of the waste management process, as well as the procedure for exchange of information and coordination of actions has been regulated.

The Ministry of Environment and Water has taken action to improve the interaction and exchange of information by establishing a Directorate "National Coordination Centre", whose remit includes functions relating to waste, including plastic waste, as one of the factors polluting and damaging the environment.

Educational and informative activities

Raising public awareness and culture is important for preventing or reducing the harmful effects of waste on human health and the environment, which is also the objective of waste management policy. The planning and implementation of measures for carrying out informative and educational campaigns, and the provision of information targeted at the general public or specific groups of users is regulated in the WMA and regulations.

The National Waste Management Plan 2014-2020 includes a Programme to improve the awareness and participation of the population and businesses in waste management activities and provides for appropriate measures by 2020 to achieve one of the strategic objectives of the National Waste Management Plan – making the public a key factor in implementing the waste management hierarchy.

B U L G A R I A

State authorities carry out educational and information activities related to reducing pollution by waste and activities with a specific focus on plastic waste, as one of the important elements of the waste management policy aimed at preventing or reducing the harmful effects of waste on human health and the environment.

Initiatives have been carried out to support the formation of a conscientious and responsible attitude of different community groups towards environmental protection, including towards separate collection of waste, respectively for a higher level of recycling of waste materials, as well as for a change in consumer behaviour regarding the use of plastic products.

Raising public awareness and culture in environmental protection is among the annual objectives of the Ministry of Environment and Water in the period 2017-2019:

Programme No 5 "Information, public participation in decision-making and implementation of control mechanisms"		**2017[2]**		**2018[3]**		**2019[4]**	
Programme No 5 "Information, public participation in decision-making and implementation of control mechanisms"	**measure unit**	**target value**	**report**	**target value**	**report**	**target value**	**report**
Discussions held with the participation of the public, training seminars, round tables, conferences, public events (competitions, exhibitions, open lessons, lectures, talks, forums) for students, teachers, business, non-governmental organizations, for employees of the municipal and public administration from the Ministry of Environment and Water and its services.	number	520	964	540	1102	500	845
National campaigns carried out to mark the international dates of the ecological calendar	number	11	11	11	11	11	11
Schools and kindergartens covered in information and educational initiatives organised by the Ministry of Environment and Water and Its services	number	120	800	460	691	480	770
Children and students covered in information and educational initiatives by the Ministry of Environment and Water and Its services	number	8 000	36 400	19 000	360 762	19 500	33 138
Released information and educational materials by the Ministry of Environment and Water and Its services (without issuing circulation)	number	70	109	70	104	70	77

Special initiatives have been carried out by the Ministry of Environment and Water to work with children in kindergartens and schools aimed at preventing/reducing waste generation, including plastic waste, as well as its proper management, which is a prerequisite for creating in the growing generation sustainable attitudes and behavior towards waste.

Good practices

A good practice for reducing plastic waste is the citizens' initiative "Caps for the Future" organised by a charity which carries out campaigns for collecting plastic caps. The funds raised are used for providing incubators for newborn babies and support environmental protection. For six years, 70 tons of plastic caps have been collected and 22 incubators have been provided for maternity wards in the country. From the beginning of 2020, actions for collecting plastic bottles are to be organized.[5]

Conclusion

National strategic documents with objectives and measures in the field of waste have been adopted. Strategic objectives, areas and impact mechanisms are set at the highest national level to achieve effective waste management and, through sectoral and regional strategies, the priorities find their specific expression. Waste management goes through almost all policies and is present as an area of impact. The development of the National Waste Prevention Programme under the National Waste Management Plan 2014-2020 is part of the mechanisms put in place to impact resource efficiency in the regions by optimising waste collection and the

[2] Report on the level of implementation of the approved policies and programs of the Ministry of Environment and Development as at 31.12.2017 - p. 1. 117
[3] Report on the implementation of the moEW programming budget as at 31.12.2018 - p. 1. 88
[4] Report on the implementation of the moEW programming budget as at 31.12.2019 - p. 1. 90-91
[5] https://www.google.com/search?rlz=1C1GCEU_enBG861BG861&ei=UYlfYKeBIb-Ci-gP0f2B0Ag&q=%D0%BA%D0%B0%D0%BC%D0%BF%D0%B0%D0%BD%D0%B8%D1%8F+%D0%B7%D0%B0+%D1%81%D1%8A%D0%B1%D0%B8%D1%80%D0%B0%D0%BD%D0%B5+%D0%BD%D0%B0+%D0%BA%D0%B0%D0%BF%D0%B0%D1%87%D0%BA%D0%B8+2020&oq=%D0%BA%D0%B0%D0%BC%D0%BF%D0%B0%D0%BD%D0%B8&gs_lcp=CgZwc3ktYWlQARgBMgIIADIECAAQQzICCAAyAggAMgIIADICCAAyAggAMgIIADICCAAyAggu0g4IABCxAxCDARDHARCjAjoICAAQsQMQgwE6CAguELEDEIMBOgUIABCxAzoFCC4QsQM6CwguELEDEIMBEJMCOggIABDHARCvAVCvVFjGYWCGgQFoAHACeACAAV2IAbAFkgEBOIgBAKABAaoBB2d3cy13aXrAAQE&sclient=psy-ab

	deployment of advanced technologies for separate collection, recycling and environmentally friendly disposal. **The policy implemented to ensure proper waste management is aimed at achieving the targets set by 2020, in line with European waste legislation. A regulatory framework has been established for the implementation of measures related to the treatment of waste, which is consistent with the hierarchy for waste management and care for human health and the environment.** **The measures implemented are consistent with the waste management hierarchy. As a result of their implementation, there has been significant progress and the data show positive results with regard to the overall national targets for recycling and recovery of packaging waste, as well as the recycling targets for packaging waste by materials. There is a positive trend and progress in the management of specific streams of mass disseminated waste, construction waste and municipal waste. The mass disseminated waste targets are being met and overachieved, which shows that the extended producer responsibility schemes in place are effective.**
Audit aspect No 3	***Are the results of implemented measures concerning plastic waste treatment monitored and what effects have been achieved in the context of established goals in that field?***
Data concerning: quantities of plastic waste (incl. import and export), its sources and treatment	A National Waste Information System is in operation, but it is not fully constructed. Actions have been taken to improve the waste information system by implementing a public procurement to upgrade the system. After the complete upgrade and functioning of the waste related data collection system, the quality and completeness of the data and information on environmentally sound waste management will be improved, which will also facilitate the engagement of the staff entering the data manually. The keeping of public registers of data relating to waste, including plastic waste, which are available on the websites of the Ministry of Environment and Water and the Executive Environment Agency, ensures publicity and transparency of information.
Reliability data on plastic waste	Procedures and responsibilities have been established for the provision, collection and aggregation of data on the management of waste in the different streams, including plastic waste. The specialised administration of the Executive Environment Agency has designated a structural unit with responsibilities relating to the provision, collection and aggregation of data on the management of waste from different streams, including plastic waste. The scope of the data in the documents for provision of information on waste activities has been defined, which is a prerequisite for the availability of completeness of the data and information. Due to a not fully built and functioning National Waste Information System, the regulated automatic verification of the entered data is not carried out, creating a risk to the completeness and reliability of the data.
Events that posed a threat to the environment related to improper treatment of plastic waste	For the period 01.01.2017 – 31.12.2019, no cases of crimes or events directly related to the mistreatment of plastic waste, which represent a hazard to the environment, have been identified by the Ministry of Environment and Water. Various violations in waste management, including plastic waste, have been found by the staff of the ministry and its regional services to be related to waste incineration in non-compliance with technological requirements, as well as illegal shipments of waste as a result of cross-border shipments. The illegal shipments related to plastic waste are mainly the result of incorrect classification, in which mixed waste is presented as plastic, and some of them are under investigation by the Prosecutor's Office of the Republic of Bulgaria.
Databases on waste in the country	The regulated statutory requirements for reporting waste activities create conditions for collecting data, which are the basis for obtaining information in the field of waste. Various authorities and institutions receive and collect information in order to fulfil their responsibilities and powers. The information available in one institution is not available or difficult to use by other institutions concerned, and the information received in the various units of the responsible institutions is not available to all persons who will subsequently use it to carry out the functions assigned to them. The national waste information system does not cover all the available information. The responsible authorities have data on treated waste, including plastic, and data on the quantities imported into the country and exported to other countries, including plastic. The difficulties in using the available information by the stakeholders hinders the effective management and control of waste and is a prerequisite for failing to undertake corrective action with regard to the national waste policy. Information reporting on the activities of obliged persons placing products on the market after the use of which mass disseminated waste is generated is available on the website of the Executive Environment Agency.
Achieved results in plastic waste treatment	The state waste management policy focuses on the treatment of generated waste with activities carried out for recycling and landfilling of waste, including those of plastic. The results achieved by the measures implemented for the treatment of waste, including plastic, are based on actions aimed at the waste generated in the phase of disposal and less on actions to reduce and prevent its formation, as well as on the management of waste throughout the product lifecycle. The waste is still not sufficiently recovered and activities are implemented that do not provide for its further treatment. In 2018, 497 thousand tons of packaging waste were generated in the country, of which 131 359 t are plastic packaging waste, and in 2017, 453 thousand tons were generated, of which 119 962 t are plastic packaging waste. In 2017 and 2018, the country achieved the targets for recovery and material recycling of packaging waste, whereas for

plastic the achieved recovery rate, including recycling, is 65 per cent[6] compared tob the normative target of 22.5 per cent as shown in the table below:

Plastic packaging waste	2017.	%	2018	%
Generated packaging waste in tons,	453 194		497 493	
of which: plastic packaging waste	119 962	26,47	131 359	26,40
Statutory targets for recycling plastic packaging waste	22,50%			
Recovery rate achieved, incl. recycling of plastic packaging waste	65 %		59,2 %	

For 2017 and 2018, the national target of 40 per cent for recycling municipal waste set out in the legislation to be achieved by 01 January 2018 has not been reached. According to Eurostat data, there was a 3 per cent reduction in the recycling rate of municipal waste of 34.50 per cent in 2017 to 31.50 per cent in 2018 as shown in the table below. The country's municipal waste recycling rate remains significantly lower than the EU average of 46 per cent, which makes meeting the recycling target of 50 per cent of municipal waste by 2020 a challenge.

YEAR/ target	until 01.01.2016	until 01.01.2018	until 01.01.2020
The statutory objectives for preparing for the re-use and recycling of waste materials including paper and cardboard, metal, plastic and glass from households and similar waste from other sources	at least 25 % of their total weight	at least 40 % of their total weight	at least 50 % of their total weight
National recycling target for municipal waste achieved	for 2016 31,8 %	for 2017 34,6 %	for 2018. 31,5 %

The objectives set out in the legislation for preparing for the re-use and recycling of municipal waste, including plastic, have not been achieved within the statutory deadlines.

Methodology of calculating the recycling rate of plastic waste

Based on a Council of Ministers ordinance method 4 is introduced and applied for calculating the share of recycled waste, including plastic waste, as determined by the Commission Decision of 18 November 2011., i.e. the recycling rate of municipal waste is calculated as a ratio of the total amount of waste delivered for recycling and the total amount of waste generated by households and similar sources.

At national level, the National Statistical Institute publishes and reports to the European institutions data on waste generated and treated, including plastic waste as part of municipal waste. The information is public and is published on the website of the National Statistical Institute in the section "Environment".[7]

Nationally disseminated data on recycled waste, including plastic waste, as part of the waste stream of municipal waste correspond to those presented by Eurostat.[8]

Conclusion

The results achieved by the waste treatment measures implemented, including plastic waste, are based on actions aimed at the waste generated during the phase of disposal and less on actions to reduce and prevent their formation, as well as on the management of waste throughout the product life cycle. Improving waste treatment practices and making waste a resource is a prerequisite for society to move towards a circular economy model, resource efficiency, reducing waste generated and increasing recycled waste.

Waste is not yet sufficiently recovered and activities are carried out which do not provide for its subsequent treatment, which risks damaging ecosystems in nature and human health. The implementation of waste treatment activities such as reuse and recycling are environmentally friendly and lead to the diversion of waste from landfills. Increasing the quantities of recycled and recovered waste and increasing the importance of waste recycling and recovery activities would focus efforts on creating a "recycling society" and a life-cycle approach for products and materials.

Overall conclusions (from the national report)

RECOMMENDATIONS to the Minister of Environment and Water:

1. Take appropriate action to prepare and make public detailed, systematic, aggregated and analytical information on the measures implemented and results achieved at national level for the management of packaging waste, including plastic waste, presented in a clear and comprehensible manner to the general public in the annual reports submitted by the Executive Environment Agency under Art. 53 of the Ordinance on Packaging and Packaging Waste.

2. Take action to ensure effective interaction, exchange of information and coordination between all responsible authorities with control powers with regard to waste management activities, including plastic waste.

[6] https://eea-government-bg.translate.goog/bg/soer/2018/waste/obrazuvani-i-retsiklirani-otpadatsi-ot-opakovki?_x_tr_sl=auto&_x_tr_tl=en&_x_tr_hl=en&_x_tr_pto=ajax&_x_tr_sch=http
[7] https://www.nsi.bg/en/content/5094/municipal-waste-total
[8] http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=env_wasmun&lang=en

	3. Take action to speed up the process for the full commissioning and operation of the National Waste Information System, including a system for verifying waste data, including plastic waste.
Tzvetan Tzvetkov ***Prasident of Bulgarian National Audit Office***	*/signature of an authorised person/*

8

H U N G A R Y

ÁSZ ÁLLAMI SZÁMVEVŐSZÉK State Audit Office of Hungary	**State Audit Office of Hungary**	SAI of	Hungary
The title of the audit:	***PLASTIC WASTE MANAGEMENT***		
Period of time covered by audit:	**2019.**		
Main audit question:	*Have the relevant public authorities (state and/or self-government administration) developed policies (plans, strategies) and implemented measures aimed at achieving goals (adopted in such policies) regarding generation and management of plastic waste?*		
Answer:	In the framework of organising the waste management public service at national level, public service tasks have been unified by determining the minimum public service tasks to be carried out in a given area. The national organisation of waste management and the establishment of the regulatory and organisational system of the management and utilisation of plastic packaging waste ensured the successful completion of the public task, and contributed to the reduction of waste, its proper treatment and transformation into resources.		
/findings in support of the answer to the main question/	For the treatment and utilisation of plastic waste, including plastic packaging waste, valid targets were defined by legal regulations and waste management plan documents for 2019, too, and indicators and target values were assigned to these The competent ministry and the Coordinating Organisation collected data on the meeting of the plastic packaging waste objectives in 2019, and the data was analysed and evaluated The management of plastic packaging waste was successful in 2019, the volume of packaging waste collected selectively significantly exceeded the target value (4 kg / person/ year), and reached 172 %. According to the survey conducted among the population within this audit, 78% of people asked were satisfied with the waste management public services.		
MAIN FINDINGS OF THE NATIONAL AUDIT ON PLASTIC WASTE			
Audit aspect No 1	***Has the country adopted legislation and organizational arrangements concerning plastic waste treatment?***		
Compliance of the most important national regulations with the EU legislation (EU Countries) *The main differences between state and EU regulations (non-EU countries)* ***[questions 1.1a]***	Hungarian regulations stipulated in the relevant EU policies have been produced. They contain the clauses that certify harmonisation with EU law. However, its review does not belong to the scope of responsibilities of the State Audit Office, and another organisation will evaluate the harmony between EU and Hungarian regulations.		
Adoption of the Extended Producer Responsibility system concerning plastic products and waste ***[question 1.2.]***	Act CLXXXV of 2012 on waste (hereinafter as: Waste Act). came into force in Hungary on 1 January 2013. The Waste Act stipulates that based on manufacturers' extended responsibility, the manufacturer is responsible for the management of returned goods, for taking the goods back, taking over and collecting any waste originating from the product, and for the performance of other waste management activities defined in Act LXXXV of 2011 on environmental protection product charges.		
Preparation of policy on waste	The Waste Act calls for the production of a National Waste Management Plan (hereinafter as: NWMP) to achieve the aims and strategic objectives in waste management and to enforce the basic waste management principles. For the successful achievement of the national objectives set in the		

management and responsible entities **[question 1.3.]**	NWMP, the State works out the National Waste Management Public Service Plan (hereinafter as: NWMPSP). The amendment of the Waste Act in 2015 defined waste management as a public service ('a service that is mandatory to use and that ensures the acceptance, collection, removal and treatment of waste belonging to the scope of public service, and the maintenance, operation and asset management of waste management facilities affected by the waste management public service, as well as the organisation of the waste management public service at a national level"), and the law stipulates that local governments are responsible for performing waste management as a public service obligation. The law regulates the contents of the waste management public service obligation of local governments and the boundaries of the public service area in line with the contents of the NWMPSP.
Measures encouraging the design of products in order to reduce the generation of waste (incl. eco-design of plastic packaging) **[question 1.4.]**	Government Decree 442/2012. (XII. 29.) on packaging and waste management activities related to packaging waste defines a utilisation and reprocessing ratio for plastic packaging waste to be observed by manufacturers. According to that, based on the obligation to take over and take back packaging, in the case of plastic packaging that has become waste, the utilisation ratio should reach 22.5% of the total mass of the material type, taking into consideration only those materials that are processed into plastic again.
Separate collection of waste **[question 1.5.]**	The Waste Act calls for the establishment of a separate waste collection system by 2015 for the treatment and utilisation of plastic waste. The Waste Act stipulates that the total ratio of household plastic waste prepared for reusing and actually reprocessed - compared to the produced quantity - should be increased to at lest 50% at national level by 31 December 2020. The public service provider shall organise the selective waste collection system in a way that at least the municipal plastic waste could be collected separately, or the door-to-door collection should be provided for as many types of municipal waste as possible.
Other **/if needed/**	The Waste Act determines the waste hierarchy that sets the priority order among waste treatment actions. Prevention (1) as the sustainable and most efficient way of using the resources takes the first place. This is followed by the preparation of the waste for recycling (2), the reprocessing of the waste (3), other utilisation of the waste, in particular for energy purposes (4), and the elimination of the waste.
Conclusion **[question 1.6.]**	The organisation of waste management at national level and the establishment of the regulatory and organisational systems of plastic packaging waste treatment and utilisation created the conditions of the successful management of plastic waste.
Audit aspect No 2	*Has any policy (plans, strategies) been applied in order to implement proper plastic waste management and improve the efficiency of using existing materials and products (according to assumptions of Circular Economy)?*
Strategic documents on plastic waste management and adopted goals **[question 2.1.]**	The Government approved the NWMP with Government Resolution 2055/2013. (XII. 31.) on the National Waste Management Plan for the period of 2014-2020. The Plan contains the definition of comprehensive objectives regarding waste management for the period of 2014-2020 for the whole territory of the country. The comprehensive objectives are: • increase utilisation ratios • reduce waste production • set up and develop selective collection • separate, repair and reuse reusable components of products that became waste. In addition, the Plan contains the strategic objectives defined for the treatment and utilisation of plastic waste, too: • Increase utilisation ratios • Set up and develop selective collection • Reduce waste production • Increase reuse • The utilisation of municipal waste shall be increased to 50% by 2020 (from the earlier 22.5%) • Increase the collection ratio of packaging materials polluted with pesticides

	In order to successfully achieve the national targets set in the NWMP, the Government accepted the NWMPSP in 2017. This Plan defines among others the optimal boundaries of public service areas, as well as the minimum public service tasks to be performed in the given area. The NWMPSP evaluates the results of waste management affecting domestic public services, identifies policy objectives in public service and the measures that need to be taken to achieve the professional objectives. Among the basic objectives of operating the waste management public service system, the NWMPSP lists the promotion of the utilisation of plastic waste that forms part of municipal waste, in order to meet the the specified utilisation rates. It is specified as a minimum public service criteria of the management and utilisation of plastic waste that this kind of waste should be collected separately or with door-to-door selective collection. In the case of plastic and its composite packagings belonging to the scope of packaging waste collected separately and to the scope of the public service, the separated packaging waste collection system set up in the public service area can be considered satisfactory if at least 4 kg/person/year packaging waste projected on the total number of the population is collected/utilised in minimum 90% every year. The National Collection and Utilisation Plan (hereinafter as: NCUP) is closely related to the NWMP. The NCUP is worked out for the performance of tasks regarding the monitoring of the quantities of waste created from products subject to product charges, for their collection, transportation and utilisation. The NCUP for 2019 defined quantity target values (kg) for plastic packaging waste subject to product charges. The defined target values refer to plastic waste collected from multiple sources (municipal, industry, individual, independent) and utilised in their material.
Problem analysis on plastic waste treatment ***[questions 2.2. and 2.3.]***	*The NWMPSP analyses the problems to be solved about the treatment of plastic waste in detail. It defines that public service as a minimum should meet the following criteria in the area of selective waste collection:* *1) It is necessary to collect at least the paper, plastic, glass and metal fractions, tyres, green waste, batteries, electronic waste and other hazardous waste in a selective way.* *2) Door-to-door collection should be used at least for the paper, metal and plastic waste flows.* *3) Selective collection - at least in the case of the paper, metal and plastic fractions - should be implemented in 100% of the area served by the public service (in the ratio of the users of properties).* *4) In order to inform the public at large about selective collection, to encourage selective collection and to improve its efficiency, the public service provider shall provide the user of the property with proper and continuous information.*
Implementation of the most important actions aimed at the proper management of plastic waste ***[question 2.4.]***	The relevant legal regulations and planning documents for plastic waste management and utilisation have defined the objectives and the organisations responsible for their implementation. Regarding the management and utilisation of plastic waste, the Waste Act. has set targets for the separate collection system and for preparation for re-use and recycling. For plastic packaging waste, the Government Decree set utilisational and recycling rates for producers. The NWMP 2014-2020 included comprehensive and strategic targets for plastic waste. It also assigned an indicator and a target value to the objective set for the utilization of municipal plastic waste. The NWMPSP in force in 2019 sets an indicator and an objective for the collection and utilisation of separately collected plastic packaging waste. While the National Collection and Utilization Plan set a quantitative target for the utilisation of the collected plasitcpackaging waste in its materialfor which a product fee is due.
Coordination among various actors of waste management system ***[question 2.5.]***	The public control over the waste management sector in Hungary is the responsibility of the Minister for Innovation and Technology. For the performance of tasks related to waste management, pursuant to the provisions of the Waste Act, the State has established a coordinating organisation called the Nemzeti Hulladékgazdálkodási Koordináló és Vagyonkezelő Zrt. (National Coordination of Waste Management and Asset Management Plc, hereinafter as: NHKV Zrt.). The competent ministry, the Ministry of Innovation and Technology (hereinafter as: ITM) and the NHKV Zrt. collect and analyse actual data regarding the collection and utilisation of plastic packaging waste. Regarding the treatment and utilisation of plastic packaging waste subject to product charge, the ITM checks and summarises the quantity values of 2019 in connection with the quantity targets defined in the NCUP. The NHKV Zrt., based on the selective collection and utilisation data received from public service providers for 2019, produces reports and analyses regarding the plastic packaging wastes and in general the paper, plastic, metal and glass waste fractions.

Educational and informative activities **[question 2.6.]**	This is not covered by the audit.
Good practices **[question 2.7.]**	In the transformation of the waste management public service, one of the key objectives was to define the optimal areas for this public service, as opposed to the previous, extremely uneven situation. For the actual implementation, when defining the optimal areas of the public service, the OHKT intended to set up 25 pieces of waste management regions, and for this purpose defined the following service numbers from national economy aspect: minimum 50,000 people, optimally over 200,000 people. For the cost-efficient operation of the assets of local governments and associations set up for waste management, the target set by the OHKT is one public service provider in each region. There were 25 pieces of waste management regions in 2019. The minimum value of 50,000 people - defined from the aspect of economies of scale - was exceeded by each waste management region, while the optimal limit of 200,000 people was exceeded by 17 regions. In 2019, 27 public service providers operated in the 25 regions. In 92% of the regions, public service providers have been concentrated, there were only two regions in which two public service providers operated.
Other **/if needed/**	Under the audit, the SAO conducted a survey among the population, too. The evaluation of the answers received showed that 42% of the people asked were fully satisfied, and 36% were rather satisfied with the waste management public service they used in 2019. The average of the evaluations was 4.14. 88% of people asked collect waste in selective way, and the public service provider provided a collecting container or bag to 85% of people asked. According to 94% of respondents, mixed waste was always removed on the assigned days in 2019, and this ratio is 91% for selective waste and 70% for junk removal. However, 23% thought that the public service provider did not organise junk removal. A high ratio of respondents, 72% saw illegally deposited waste in his/her direct environment in 2019.
Conclusion **[question 2.8.]**	The organisation of the waste management public service at national level was successful in 2019.
Audit aspect No 3	*Are the results of implemented measures concerning plastic waste treatment monitored and what effects have been achieved in the context of established goals in that field?*
Data concerning: quantities of plastic waste (incl. import and export), its sources and treatment **[questions 3.1. and 3.2.]**	This audit does not cover the checking of the export and import of plastic waste, as this issue had been evaluated by the SAO earlier, in an independent audit.
Reliability data on plastic waste **[question 3.3.]**	The Coordinating Organisation monitored the selective collection and utilisation data of public service providers for 2019, and produced a number of reports and analysis about the plastic fraction[1], too. Data items were checked and validated in the course of on-site audits. Under the treatment and utilisation of plastic packaging waste subject to product fee, the competent ministry monitored and checked the quantities collected, treated and utilised by the contracted partners. At the same time, the realisation of the plastic packaging waste utilisation objective set by the NCUP for 2019 has not been evaluated. If the actual and the planned results are significantly different, correction steps need to be introduced, but in the lack of comparison, there is no information for that. Therefore the efficiency of the public service related to plastic packaging waste subject to product fee cold be further improved by the regular evaluation of the achievement of the objectives.
Events that posed a threat to the environment related to improper	The audit did not find such cases.

treatment of plastic waste **[question 3.4.]**	
Databases on waste in the country **[question 3.5.]**	Their identification was not in the scope of the audit.
Achieved results in plastic waste treatment **[question 3.6.]**	The volume of selectively collected plastic packaging waste was 6.9 kg/person in 2019, which was 72% higher than the target value of 4 kg / person / year set in the OHKT, while the utilisation ratio of the collected waste was lower than the desired 90%. The quantity of plastic packaging waste delivered for utilisation was 3.5 kg/ person, which was 87.5% compared to the target value of 4 kg / person, and 50.7% compared to the actually collected quantity.
Methodology of calculating the recycling rate of plastic waste **[questions 3.7. and 3.8.]**	The audit did not evaluate that.
Other **/if needed/**	
Conclusion [question 3.9.]	The management of plastic packaging waste was successful in 2019.
Overall conclusions (from the national report)	
	1. In the framework of organising the waste management public service at national level, public service tasks have been unified by determining the minimum public service tasks to be carried out in a given area. In order to optimize the waste management public service areas, the waste management plan documents defined targets, related indicators and target values, measures and the persons responsible for them. 2. The national organisation of waste management and the establishment of the regulatory and organisational system of the management and utilisation of plastic packaging waste ensured the successful completion of the public task, and contributed to the reduction of waste, its proper treatment and transformation into resources. 3. The management of plastic packaging waste was successful in 2019.
Information on the impact of audit results and the implementation of post-audit conclusions	
	During the audit, the legal regulations were amended, which eliminated the previous regulatory shortcomings identified by the audit. Based on the findings of the audit, the audited organizations prepared action plans that were suitable to address the identified deficiencies.

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M A L T A

1997 2022 NATIONAL AUDIT OFFICE MALTA	National Audit Office Malta	SAI of	Malta
The title of the audit:	The effectiveness of plastic waste management in Malta		
Period of time covered by the audit:	Reflects the situation up to the first quarter of 2020		
Main audit question:	*Have the relevant public authorities (state and/or self-government administration) developed policies (plans, strategies) and implemented measures aimed at achieving goals (adopted in such policies) regarding generation and management of plastic waste?*		
Answer	The report concludes that Malta is lagging behind in attaining national and European Union (EU) waste management targets, including those related to plastic waste. Inadequate waste separation at source practices result in potentially recyclable waste being landfilled, which is by far the most expensive solution in financial and environmental terms. Contrary to the polluter pays principle advocated in the waste management regulatory framework, in practice Government is shouldering the lion's share of waste management related costs. Government is allocating a yearly subvention to WasteServ, which in 2019, amounted to €33 million. This includes the financing of compensation agreements between WasteServ and the two local Packaging Waste Recovery Schemes, which do not reflect the actual plastic packaging waste treatment costs and the cost to derive and export Refuse-Derived Fuel. Moreover, landfilling gate fees, whereby WasteServ (the national entity responsible for waste management) charges €20 per tonne, do not reflect the actual costs, which are estimated at €74 per tonne. National authorities contend that the deviation from the polluter pays principle is due to socio-economic circumstances. Government acknowledges concerns in the area of waste management and there has been a strong political commitment to allocate around €500 million to extend and upgrade Malta's waste treatment facilities. Such an investment, however, will not deliver its full potential unless it is complemented with the increased adoption of circular economy principles, which in turn will facilitate the attainment of Sustainable Development Goals targets. The health and environmental risks of plastic can only be mitigated through a consorted effort by all stakeholders, including political, administrative, the industry and consumers, as well as an effort to reduce its production at the outset.		

M A L T A

MAIN FINDINGS OF THE NATIONAL AUDIT ON PLASTIC WASTE	
Audit Aspect No. 1	*Has the country adopted legislation and organizational arrangements concerning plastic waste management?*
Malta's legislation reflects the European framework on the subject matter	National legislation on waste mirrors European legislation. All EU Directives on waste were transposed into Maltese legislation. National legislation is subdivided into three main categories: framework legislation (the overarching legislation), waste treatment operations (such as incineration or landfilling), and waste streams (such as packaging waste or ELVs). The EU Directives on waste were recently updated, which amendments are currently being transposed into Maltese legislation. Transposition deadline is July 2021.
Responsibilities	Plastic waste management in Malta falls within the remit of the Ministry for the Environment, Climate Change and Planning. The Ministry is responsible for providing the strategic direction in the sector. The Environment and Resources Authority – ERA – is the environmental regulator in Malta. ERA is responsible for issuing permits to waste brokers, ensuring compliance with legislation as well as collecting data to ascertain that Malta reaches the targets. Households and private stakeholders are responsible for adhering to proper waste separation. The cleaner the plastic, the higher the probability that it can be recycled and the higher the economic return earned. At the moment, paper, plastic and metal are disposed of in the same recycling bag. The collection of Municipal Solid Waste (MSW) falls under the responsibility of Local Councils. Local Councils appoint one of the two Packaging Waste Recovery Schemes to collect the recyclable material. The Schemes operate on behalf of the packaging producers. On the other hand, Local Councils contract private waste operators to collect the Mixed Municipal Solid Waste (non-recyclable waste from households). Waste collected is disposed of at WasteServ, a Government-owned company and largest waste facility in Malta.
The strategic framework reflects the legislative provisions and responsibilities	The National Environmental Policy is the main overarching national strategy on waste. There are other waste-specific strategies which complement the National Environmental Policy. These waste-specific strategies emanate from the Waste Management Plan for the Maltese Islands (2014 – 2020), updated before the end of 2020, and the draft strategy relating to single-use plastics, still being finalised. Complementary to the Waste Management Plan is the Green Public Procurement National Action Plan. Government expands on these plans by including additional measures on a needs-basis as well as allocates the necessary funds through the annual budget.
The national and EU legislative frameworks are not broad enough to effectively manage plastic waste	This audit identified areas where neither the national nor European legislation is appropriately broad to enable a more comprehensive and effective regulation of plastic waste. The main legislative instrument that regulates plastic waste focuses on one type of plastic waste that is, plastic packaging waste; and the definition of packaging waste omits references to online purchases and shopping from abroad. Consequently, the actual yearly amount of

	plastic placed on the market is not known and is assumed to be equivalent to the amount of waste collected. This could be detrimental to management information, decision-making and enforcement. It also deviates from the circular economy principles.
Legally established gate fees encourage landfilling	The Waste Management (Landfill) Regulations, provide that gate fees should reflect all the costs involved from establishing the landfill, operating it, closing the area and taking care of the site after closing the landfill. On the other hand, the Deposit of Waste and Rubble (Fees), outlines that contractors are to be charged €20 per tonne for Mixed Municipal Solid Waste (non-recyclable) and €0.50 per tonne for dry waste separated at source as well as for bulky (dry) waste segregated at source. The latter was last updated in 2011. Consequently, the fees indicated therein do not reflect the cost of living and inflationary adjustments. As indicated by the rate of landfilling in recent years, it is clear that the current fees are not acting as a deterrent to reduce the amount of waste generated and, as far as possible, to incentivise the re-use of products. The current level of chargeable fees does not reflect that landfilling is the last option in the waste management hierarchy.
Malta has not yet attained a number of legally binding plastic waste targets	Official statistics show that Malta in 2017 was not always reaching waste recycling targets, including those related to plastic waste. The exception relates to plastic packaging where Malta nearly attained this target.
Audit Aspect No. 2	*Has any policy (plans, strategies) been applied in order to implement proper plastic waste management and improve the efficiency of using existing materials and products (according to assumptions of Circular Economy)?*
Operational changes and new separation-at-source initiatives mitigated the impact of the loss of the Material Recovery Facility (MRF) at Sant' Antnin Waste Treatment Plant (SAWTP)	Competent authorities are fully aware that Malta's waste management infrastructure is subject to a number of critical gaps. Infrastructural gaps coupled with the loss of MRF resulted in a higher percentage of plastic waste being categorised as rejects and subsequently landfilled. Following the SAWTP incident, for a number of months, Malta's infrastructural set-up to treat recyclable waste was limited to Gozo's Tal-Kus plant, as the Malta North plant was solely processing Mixed Municipal Solid Waste (black bag) collected from households. As a temporary measure, the Malta North plant operations changed to the processing of the recyclable bag (green / grey bag). These arrangements remained in place until mid-2020, when the new temporary rudimentary line catering for the sorting of dry recyclables from households at SAWTP became operative.
Separation-at-source opportunities are not being fully exploited	Despite the recently introduced separation-at-source initiatives, namely relating to the separate collection of organic waste, which in turn, enhanced the quality and quantity of plastic waste collected through the recyclable bag (green / grey bag), a significant amount of potentially recyclable or reusable plastic waste is still being landfilled. This occurs as recyclable plastic waste, when disposed of, is contaminated when mixed with other nonrecyclable Municipal Solid Waste.
A number of strategic measures are still to be implemented	Recycling performance is also dependent on the completion of a number of measures listed in the national strategic documents. For the purpose of this audit, the NAO reviewed the progress registered regarding the measures listed in:

	a. the Waste Management Plan for the Maltese Islands (WMP) (2014 – 2020); b. the Green Public Procurement Action Plans; and c. the Annual National Budget for the period 2017 to 2020. This Office identified that 87 out of 151 measures proposed in these strategic documents were fully implemented. The non-implementation of key measures listed within the three main documents generally involved common factors, relating to preparatory work required, adoption of strategies as well as the allocation of human and financial resources.
Government is shouldering most of the costs involved in plastic waste management	Despite the intention that Government's role in waste management would be that of an operator of last resort, in practice market conditions constrain Government in assuming responsibility for most of the waste management operations related to Municipal Solid Waste. The main exception to this relates to the collection of packaging waste which is legally the responsibility of producers in terms of the packaging waste regulations.
Government is also shouldering significant costs associated with the treatment of packaging waste	The current situation, whereby Government is shouldering significant costs goes counter to the provisions outlined in the Waste Management Plan (2014 -2020). Therein it is acknowledged that Malta must ultimately aim towards ensuring full cost recovery of all its existing and new waste management facilities without causing any significant social or economic disturbances. WasteServ Malta Limited was created with the main objective of providing waste management facilities and services. The foregoing implies that Malta is still a long way from balancing its waste management costs with socio-economic interests.
Audit Aspect Number 3	*Are the results of implemented measures concerning plastic waste treatment monitored and what effects have been achieved in the context of established goals in that field?*
Data lacunas, timeliness and cooperation issues weaken the plastic waste management information system	ERA, as the national regulator, is responsible for the collection of waste data from operators, facilities and brokers on annual basis. This responsibility facilitates the monitoring and the obligatory EU reporting functions. On the other hand, waste operators – including collectors, brokers and exporters, among others - are responsible for furnishing ERA with data management information. These obligations are highlighted within the terms and conditions of their respective operational permits issued by ERA. The EU and national legal frameworks define the data that national entities are obliged to collate and maintain. Generally, this performance audit found that national entities fulfil these requirements. In turn, the collation of this data lends itself to be utilised by national entities as management information, which in turn facilitates planning and monitoring of waste management operations at the strategic and micro levels. Nonetheless, this review noted three key issues which directly influence the reliability of this data when utilised as management information. The following refers: • The actual yearly amount of plastic placed on the market is not known and is assumed to be equivalent to the amount of waste collected; • Official data on plastic waste management are available two years in arrears; and • Characterisation surveys to determine the composition of recyclable plastics within Municipal Solid Waste are not regularly undertaken.

The actual yearly amount of plastic placed on the market is not known and is assumed to be equivalent to the amount of waste collected	For the amount of packaging waste generated, national legislation (S.L. 549.43) outlines that *"packaging waste generated in Malta may be deemed to be equal to the amount of packaging or packaging material put on the market in the same calendar year (i.e. from 1 January to 31 December) within the territory of Malta by each producer"*.19 Such an assumption can be applied in view of the short shelf life and ease of consumption of plastic packaging. However, for plastic products or items that contain plastics apart from plastic packaging there is a significant difference between the number of plastic products placed on the market and when they are actually disposed of. Such a situation materialises in view of the long shelf life associated with these products. Thus, the assumption made with respect to plastic packaging cannot be extrapolated to other products which contain plastic. The aforementioned situation shows that data gaps relating to the amount of plastic which is placed on the market remain. This is detrimental to management information, decision making and enforcement. It also deviates from the circular economy principles. The risks associated with this situation could be mitigated through studies and surveys relating to plastics placed on the market. Despite these material costs associated with such an approach, the opportunity cost arising through more comprehensive data would reap financial savings from waste management processes and be conducive to more sustainable decision-making.
Official data on plastic waste management are available two years in arrears	Article 12 of Directive (EU) 2018/852, amending Directive 94/62/EC on Packaging and Packaging Waste, stipulates that Member States shall report data electronically within 18 months of the end of the reporting year for which the data are collected. Similarly, Article 37 of the Waste Framework Directive establishes an 18-month period for the competent authorities to report the data. However, ERA is not adhering to this timeframe.
Characterisation surveys to determine the composition of recyclable plastics within Municipal Solid Waste are not regularly undertaken	ERA, Wasteserv and the National Statistics Office have been carrying out characterisation surveys since at least 2002. The last of these studies was undertaken by Wasteserv in 2017. These surveys elicited information on the behavioural shifts by households towards separation of waste at source. However, since this last survey, national entities have not carried out statistical representative surveys to evaluate the shift in the composition of Municipal Solid Waste collections from households. Consequently, national authorities, do not have available reliable information regarding waste management shifts since the introduction of the organic bag in October 2018.
Enforcement actions undertaken by the Regulator is generally reactive	ERA is the national Regulator entrusted with the enforcement function on waste management. ERA has a dedicated unit responsible for environmental enforcement, including waste management. The very broad scope and mandate of this section, however, limit enforcement capabilities from the personnel deployed therein. While acknowledging the administrative capacity limitations, environmental enforcement action is either through proactive inspections planned and executed to ensure adherence to permit conditions or when cases are flagged by the enforcement section itself, or generally reactive to reports on irregularities received by this Unit.

Progress registered following the publication of the Audit	
	As SAI Malta was carrying the audit, Government launched a significant investment in waste infrastructure. This long-term investment, the publishing of the new Waste Management Plan and the ongoing work are considered critical so that Malta promotes a circular economy that creates resources from waste and is no longer dependent on landfills. These factors, especially the ongoing efforts through the starting of operations in July 2020 of the Material Recovery Facility – Rudimental Sorting Line at St Antnin Waste Facility[1], has led WasteServ to increase its recycling capabilities. In this regard, during 2021 around 19,000 tonnes of good quality recyclable material were processed by WasteServ and returned to the economy in 2021.[2] Progress was also registered in the amount of plastic packaging recycled. Data maintained by the national regulator, show an increase from 11.1% percent in 2018 to 15% in 2019. Moreover, preliminary analysis shows that the amount of plastic packing recycled will increase in view of the progress registered in WasteServ operations. The increase in recyclable material implies that Malta had a better performance over recent years. To this end, using WasteServ figures implies that the increase in recycling rates shows that Malta is now very close to surpassing EU average and related targets.

Mr. Charles Deguara
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National Audit Office

29 March 2022

[1] https://www.wsm.com.mt/en/article?id=3b4ba2f4-c939-4b85-a9d8-a67b5f763a4a as at 23 March 2022
[2] https://www.wsm.com.mt/en/article?id=e5349951-1bea-41d6-8f62-11cdb64e5bd4 as at 23 March 2022

M O L D O V A

/SAI logo/	Court of Accounts /original name of SAI/	SAI of	Republic of Moldova /country/

The title of the audit:	*PLASTIC WASTE*
Period of time covered by audit:	2018-2020
Main audit question:	***Have the relevant public authorities (state and/or self-government administration) developed policy (plans, strategies) and implemented measures aimed at achieving goals (adopted in such policy) regarding generation and management of plastic waste?***
Answer: *Findings in support of the answer to the main question*	***The authorities responsible for the governance of plastic waste do not demonstrate the appropriate responsibility for the effective implementation of policies and the management of the area. The shortcomings of the legal framework and the lack of inter-institutional collaboration are delaying the development of an integrated plastic waste management system.*** The main challenges facing the Republic of Moldova in terms of plastic waste management are related to the poor quality sorting of this waste and the lack of potential to turn it into raw material. Therefore, there is an unsatisfactory cooperation between two strategic areas: environment and economy, which prevents the solution of problems in the field, the achievement of objectives, and the launch of innovative processes that add value to both the environment and the economy. The lack of coherence of activities to implement strategic priorities and ensure the sustainability of investments in the field, jeopardizes the process of proper waste management, including plastic. Under these conditions, the hypothesis of a circular economy cannot be developed. The most important problems identified in the management of plastic waste are the total lack of an overview and collaboration between central public authorities directly responsible or with activities related to the field, lack of cooperation with local public authorities, lack of a national waste management program, which would include the necessary measures for qualitative waste management, as well as an analysis of the current situation in the country, lack of institutional capacity in local public authorities to develop local programs linked to national objectives, unavailability of high-performance and expensive equipment for the private sector for the qualitative treatment of plastic waste. These findings confirm that plastic waste is difficult to treat, which maintains the tendency of disposal of mixed waste in landfills.
MAIN FINDINGS OF THE NATIONAL AUDIT ON PLASTIC WASTE	
Audit aspect No 1	***Has the country adopted legislation and organizational arrangements concerning plastic waste management?***
Compliance of the most important national regulations with the EU legislation (EU Countries) *The main differences between state and EU regulations (non-EU countries)*	Introduction of separate collection systems for paper, glass, metals and plastics were established according to the National Law concerning waste from 2016. Because it was published late (the Association Agreement concluded between the EU and the Republic of Moldova provided for the reference year -2015), the elaboration and approval of the mechanisms for its implementation failed. Likewise, the Regulation on the management of packaging waste was approved late (in 2018 instead of 2016), and the effects of its implementation will be felt only after a2023, when the producers within the system of the extended liability of the manufacturer will be established. In the waste recycling segment, the national law has set targets, which differ from those set out in Directive 2008/98 / EC, namely: - introduction of separate collection systems for paper, glass, metals and plastics were established by 2018 (2015 EU) – by 2020, the preparing for re-use and the recycling of waste materials such as at least paper, metal, plastic and glass ..., shall be increased to a minimum of overall 30% (50% in UE) by weight; – by 2020 - the preparing for re-use and other material recovery operations, including backfilling operations using waste to substitute other materials, ..., shall be increased to a minimum of 55% (70% in EU) by weight. The audit found that although these objectives had lower values for our country, no action was taken to achieve them. For the following years, the objectives need to be revised. Also, the targets of valorification and recicling packaging waste, to be achieved gradually not later then 2029. The start of the implementation is 2023. The plastic recycling rate starts at 10% and is going to reach in 2029 – 20% (by weight it is easy), slightly lower rate to the one established within the Directive 2008/98/CE. Unlike EU countries, since 2016-2017, the elaboration and approval of mechanisms governing the sanitation sector at national level, as well as the qualitative management of landfills (which must transpose the Directive 1999/31/EC) is delayed.

	Although the EU's Directive 94/62/EC provides for compliance with standards containing essential requirements for packaging, the National Regulation does not promote compliance of manufacturers/importers of different types of packaging, including biodegradable and compostable, with the standards valid on the territory of the Republic of Moldova.
Adoption of the Extended Producer Responsibility system concerning plastic products and waste	The Republic of Moldova, through the new regulations, approved in 2020, with a delay of 5 years (it had to be approved in 2015) the mechanism for managing packaging and packaging waste, including plastic, by imposing liability on the packaging manufacturer under the "Extended Producer Responsibility" (EPR) system. Although such a mechanism is intended to support the reduction of the destructive burden on the environment, it is expected to be functional after 2024, after registration of all producers that will be part of the EPR, which postpones the applicability of the legal mechanism and the negative effect on the environment. The Packaging and Packaging Waste Regulation sets out priority measures to reduce their final disposal through reuse, recycling and recovery. Thus, the producer of goods (including the importer) of plastics will be obliged to assume, independently or through collective schemes, financial responsibility for waste management activities resulting from the traded products. The recovery of expenses will take place through the revenues from the sale of packaging, and the state will come with financial support by subsidizing the system, to ensure its functionality. In this context, the audit reveals that once the subsidy of the packaging waste management process was foreseen, the economic instruments and eligibility criteria for potential beneficiaries were not developed, and the impediments created can affect the continuity of processes in quality waste management.
Preparation of policy on waste management and responsible entities	The Republic of Moldova has not yet developed a National Program on Waste Management. It was to be developed as early as 2016, but despite the delays of several years, it was planned for the end of 2021. Moreover, although some regions on the territory of the Republic of Moldova, since 2011-2014, have developed Regional Development Programs, they do not derive from a National Program, which makes difficult the continuity and functionality of the actions provided in these. The lack of constructive cooperation between the Ministry of Agriculture, Regional Development and Environment (MARDE) and the local public authorities makes it difficult to coordinate the actions taken by the LPA and jeopardizes the timely elaboration of regional programs.. At present, the lack of local Waste Management and Prevention Programs does not condition local public administration authorities to implement mandatory actions at local level, including on plastic waste. Under these conditions, at the level of administrative-territorial units there is no contribution to the establishment of an integrated waste management system. Similarly, the LPAAs have not set priorities for the level of recycling of municipal waste, which is growing every year.
Measures encouraging the design of products in order to reduce the generation of waste (incl. eco-design of plastic packaging)	One of the measures used in the Republic of Moldova to promote and implement the principle of "prevention" of waste generation in the pyramid of the Waste Hierarchy, was to ban in 2019 the sale of disposable plastic bags and utensils to reduce their burden on the environment. However, during 2019-2020, no sanctions were established in the legislation for illicit trade, which led to the loss of revenue in the budget, due to the non-application of fines. Thus, during 2018-2020 the audit found an increase in the value of imported plastic bags by 500.0 tons. To help promote investment in mechanisms to sustainably reduce the consumption of thin plastic shopping bags, the Government has not identified a financial opportunity to collect a "green tax" on the sale of plastic bags. In the period 2018-2019, bags with "biodegradable" and "compostable" markings began to be introduced on the RM's market. The audited tests show that the quantities of these bags are increasing and they replace the plastic ones, but their placement on the market takes place in the absence of an accredited national certification laboratory, which would test the quality of such bags according to national standards on requirements for packaging and packaging waste. At the same time, these bags are produced on the territory of the Republic of Moldova in the absence of such an economic activity of production of "bio" bags, which was to be introduced in the Classifier of Activities in the Economy of Moldova (CAEM). According to the National Bureau of Statistics, CAEM is developed in accordance with the Nomenclature of Economic Activities of the European Community (NEAEC Rev. 2), and the Republic of Moldova cannot introduce new activities, which are not found in NEAEC. Purchasing these "BIO" bags at a higher price than the plastic ones, creates an illusion for the citizen, as he contributes to reducing the impact on the environment. Economic operators treating waste do not have the financial means to implement and develop the correct treatment methods for waste from compostable and biodegradable bags (composting, fermentation, biodegradation methods require substantial investments). Under these conditions, the impact and burden on the environment is amplified by throwing bags in landfills.
Separate collection of waste in Moldova	Although the Law on Waste No. 209/2016, based on the provisions of Directive 2008/98/EC, sets the objective of introducing, by 2018 throughout the country, separate collection systems for paper, glass, metals and plastics, there is no elaborate mechanism for implementing the separate collection of such waste, and the role of local public authorities is reduced only to the "right" to ensure the creation of an efficient system of integrated municipal waste management.Actualmente, nivelul mic de colectare și sortare separată generează și un procent mic de reciclare a plasticului. In the following figure it can be seen that about 90% of the quantities produced by waste are disposed of in landfills. The lack of a qualitative record of waste according to their classification, did not allow the audit to assess the quantitative assessment of plastic

waste among those collected separately and disposed of in landfills, but being bulky waste, it occupies about 40% of total waste disposed of.

	municipal waste colected	municipal waste disposed	non-municipal waste generated	non-municipal waste disposed
2016	940	865	1610	1165,1
2017	982,2	925	1605	3475,9
2018	943,5	890	1597	1004,7
2019	1045,5		1222	3338

Source: NS Bureau reports, Environmental Quality Report of the Environment Agency.

According to questionnaires submitted in 32 districts, the audit noted the intention and interest of some LPAs to move things for the better. Thus, several local authorities have been involved since 2011 in regional cooperation, the creation of associations, the application for project financing of regional management systems (although without results) and the promotion of the separate collection of solid household waste. However, the main impediment to achieving the proposed objectives is the lack of funding.

Conclusion	***Taking into account the overall findings of the audit, ISA Moldova concluded that the existing legal regulations and organizational arrangements in Moldova were insufficient to reduce the generation of plastic waste and ensure its proper treatment.***
Audit aspect No 2	***Has any policy (plans, strategies) been applied in order to implement proper plastic waste management and improve the efficiency of using existing materials and products (according to assumptions of circular economy)?***
Strategic documents on plastic waste management and adopted goals	In 2013, the Government of the Republic of Moldova approved the Waste Management Strategy for the period 2013-2027, which established an ambitious goal to develop and implement an integrated and efficient waste management system from a social, economic and protection of the environment point of view. The strategy provided for the territorial division of the country into 8 waste management regions with the dispersion of investments in these regions, so that the developed infrastructure to ensure a proportionate quality management of all waste. The audit shows that the Waste Strategy has not been adapted to the new national rigors, retaining the old references to the Law on production and household waste approved in 1997. Under these conditions, the Waste Strategy does not include all types of plastic waste that are produced, as well as the methods of their treatment. Currently, only one type of plastic waste is regulated, which is among the packaging waste to be managed under the extended producer responsibility system.
Problem analysis on plastic waste treatment and total costs of waste management in Moldova	According to the Waste Strategy, since 2013 the introduction of new packaging, especially plastic, was a concern for the Republic of Moldova that generated a significant impact on the environment. Packaging made of polyethylene terephthalate has replaced glass packaging in recent years, and polyethylene bags, bags or boxes - on paper, influencing the quantities and composition of the generated waste. Therefore, a series of actions have been established within the Plan in order to achieve the strategic objectives, which generate costs and are to be implemented to develop a quality waste management system, through institutional/administrative reforms, modernization of the infrastructure for separate waste collection, the construction of transfer stations, closure and recultivation of old landfills, construction of regional landfills, mechanical-biological treatment plants, collection, treatment or recycling of various waste streams. At the same time, the audit found that for the planned actions, the implementation costs have not been updated so far. They remained at an estimated value of 148.0 million EUR in 2012, although, taking into account the inflation rate, they increased for 10 years by at least 22%. The lack of cost adjustments in this regard risks ensuring financial sustainability, which would create difficulties in the process of implementing the strategic objectives.
Implementation of the most important actions aimed at the proper management of plastic waste	The audit verified the waste management of a municipal enterprise, which collects about 50% of the total amount of municipal waste generated in the country and found that it has taken some measures to select mandatory waste (plastic, metal, glass, paper), by working with an economic agent, which took over the mixed waste, selected the recyclable ones (15% of the total), and the others (about 85%) were disposed of in the landfill. The lack of a modern waste treatment/recovery infrastructure allowed the selection in the period 2017-2020 of only 15% of the mixed waste collected. At the same time, the quantities of plastic that were part of them were not reported separately. The pandemic situation, in which the demand for recycled plastic decreased, left its mark on the continuity of the sorting process by the economic agent, because he was not able to bear the salary expenses of the employees sorting the waste, and the refusal of the public authorities to the financial support/subsidy of the economic agent stopped the cooperation between the public and the private part, which stopped the selection of municipal waste by it and generated their mixed disposal in landfills.
coordination among various actors of waste management system	Based on the above, the audit highlights the lack of important legislative instruments in the field of waste, which would promote integrated waste management as a whole system. This would involve the best combination of the responsibilities of central and local authorities, economic operators, and, last but not least, the population, so that, in order to efficiently manage waste, the public partner ensures the continuity of the separate collection process and the private one ensures the measures to reduce the burden on the environment.
Educational and informative activities	The promotion of separate plastic collection, as well as the prevention of plastic waste generation takes place largely through non-governmental organizations and the media, which through social networks inform the population about the importance of separate

	waste collection and its impact on both the environment and the environment and health. Although in small quantities, but through social networks, the associations collect the plastic separately from the population, which is then either sold to recyclers, or reused.
Conclusion	***The major constraints caused by the lack of coherence of activities to implement strategic priorities and ensure the sustainability of investments in the field, jeopardize the process of proper waste management, including plastic. Under these conditions, the hypothesis of a circular economy cannot be developed.***
Audit aspect No 3	***Are the results of implemented measures concerning plastic waste treatment monitored and what effects have been achieved in the context of established goals in that field?***
Databases on waste in the country	Regarding the development of an automated system, the audit highlights that, although one of the objectives set out in the Strategic Action Plan is to improve the Automated Information System "Waste Management" (AIS WM) for collection, processing and analysis of data and information on waste management, MARDE did not allocate financial means for its development. The data are incomplete due to the low receptivity of the economic agents and the lack of legal levers to involve the control body for the accountability of the non-compliant economic agents. The access to AIS WM was not granted to all users, which creates impediments to data access and affects their transparency. According to the Environment Agency (EA), which manages AIS WM, the receptivity of economic agents to report in the system is low, conditioned by the complexity of the reporting procedure and the imperfection of the given system. According to the EA's data, in 2019 not even half of the reporting economic agents reported within the AIS WM. In this context, the audit noted that in this respect there are no constraints on economic operators by the Inspectorate for Environmental Protection for non-compliance with the legal framework.
Reliability data on plastic waste	At present, the Republic of Moldova does not have a high-performance automated system to keep track of waste generated, disposed of, exported, so that citizens have confidence in the data generated and access to them, as provided by the concept of the AIS WM.
Data concerning: quantities of plastic waste exported	According to the national provisions, the import of waste is prohibited and the export of waste is carried out only with the approval of the notification for export or transit by the competent authorities designated by the importing country. The notifications for the export or transit of plastic waste are granted by the EA, and their record is made through AIS WM. It is mentioned that the national provisions do not indicate the person responsible for recording and monitoring the quantities of exported waste, which puts at risk the possession of relevant data on their circulation. The audit notes that at present the EA does not have internal regulations on the export of waste, including plastic, with a comprehensive description of the processes of requesting/granting notification, reporting, record of notifications and exported quantities, monitoring, etc., both for rapporteurs and those responsible for validating the reported data. The contrast of the data from the notifications granted by EA with the de facto exported quantities, offered by the Customs Service, reveals the essential divergences between them during 2019-2020. Thus, the data provided by the Customs Service indicate that some economic agents, although requesting notifications, did not export the declared quantities of waste, in this case not being clear the situation of over 6.0 thousand tons of plastic waste.
Events that posed a threat to the environment related to improper treatment of plastic waste	Given that the Republic of Moldova is an exporting country, the disposal of plastic waste in this way is an opportunity for our country to reduce the harmful burden on the environment. However, this is a challenge for the government, as the Republic of Moldova is not prepared with an appropriate infrastructure to treat plastics if countries refuse to import plastics.
Methodology of calculating the recycling rate of plastic waste	The RM does not apply the recycling rate of municipal waste as established by the Commission in 2011. MARDE considers that each economic agent will calculate its recycling rate, which in the opinion of the audit can generate different results of the amount of the recycling rate. Thus, MARDE did not elaborate a methodoly for calculating the recycling rate. At the same time, according to MARDE, these calculations are premature, because the extended manufacturer's liability system is not developed. A follow-up audit (over 3-4 years after the EPR system starts operating) will assess what progress was made in this regard and whether a single formula for calculating the recycling rate at national level has been established.
Conclusion	***Environmental decision-makers have not been sufficiently concerned with the organization of waste records to ensure complete statistics on the quantities of waste managed and the successful evaluation of the results of measures implemented on plastic waste treatment and the effects obtained in this field. This requires the auditor to conclude that there is a major risk that the level of recycling that the government has proposed in its policies will not be achieved.***
Overall conclusions (from the national report)	
	The Republic of Moldova is making efforts to introduce new actions in waste and packaging management, which will move things for the better. However, the state policy and the national law are not in harmony, thus identifying reservations that require increased attention and immediate action by decision-makers and stakeholders. **Although the signing of the Association Agreement has prompted the development of a legal concept of efficient management of plastic waste, for several years it has been at the level of an illusion.** **1. Governance authorities in the field of plastic waste do not demonstrate adequate responsibility for the effective implementation of policies and the management of the field, and the reforms carried out on paper face difficulties in the implementation process.** **2. Gaps in the legal framework and lack of interinstitutional cooperation delay the development of an integrated plastic waste management system, where plastic as waste has its place and its important role as a resource, whose economic value could be recovered. Thus, the main challenges facing the Republic of Moldova are the low-quality sorting of plastic waste and the lack of potential to turn waste into raw material.** **3. The development of the waste-to-raw materials segment requires close cooperation between two strategic areas: environment and economy. However, at the moment, this development is identified as weak in order to solve the problems**

in the field, to achieve the objectives set, as well as to set in motion innovative processes that add value to both the environment and the economy.

4. Although legal levers have generated budgetary accumulations, the non-prioritization of financing the plastic waste sector has generated a lack of innovation and a harmful impact on the environment.

5. The disregard of the role and the low level of assumption of responsibilities by the local public authorities, maintain at an insufficient level the awareness capacity of the population, regarding the separate collection of plastic waste, do not develop a qualitative waste treatment process and a healthy competitiveness in terms of collection. separate and increase the volumes of recovered waste. Thus, the end of plastic waste, which reflects the awareness of the actors involved in its management, in most cases, is unauthorized waste.

6. The lack of promotional actions by those responsible as a regulatory, supervisory and control body has eluded some instruments, without which it is difficult to put into place the eligible placing on the market of plastic substitutes, promoting an environment cleaner, accountability of waste producers, as well as qualitative reporting of quantities of waste generated and exported.

The field of environmental policies in the Republic of Moldova, in addition to not being able to strengthen the principles of ensuring a clean environment, does not provide security to the health of the citizen.

Terrible is the fact that pollution with plastic waste is a visible problem, but the consequences of inadequate management are invisible and disastrous for the health and comfort of the people and ecosystems around us.

Marian LUPU, President of the Court of Accounts	/signature of an authorised person/

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N O R T H M A C E D O N I A

ДЗР	Државен завод за ревизија	*SAI of*	*Republic of North Macedonia*

The title of the audit:	*PLASTIC WASTE*
Period of time covered by audit:	2017-2019 (although certain areas, issues and events covered the period before 2017 until the reporting date of the audit)
Main audit question:	***-Have the relevant public authorities (state and/or self-government administration) developed policy (plans, strategies) and implemented measures aiming at achieving goals (adopted in this policy) regarding generation and management of plastic waste?*** ***-SAO MK main audit question: „Is plastic waste managed in a way to enable its reduction and to achieve the state's goals?"***
Answer:	***The policies, measures and activities taken by the competent institutions for setting up an integrated plastic waste management system are NOT effective and do not facilitate prevention and reduction of the volume of generated plastic waste, efficient utilization of usable waste materials and full compliance with waste management principles.*** The legislation envisages adoption of a number of strategic, planning and program documents at central, local and regional level and the auditors found out that some of these documents are not adopted and some are outdated. This points to problems in setting up an integrated waste management system. Although certain activities have been initiated, regional waste management is not in place and there are no basic conditions for prevention of waste generation and processing. The current way of dealing with plastic waste marginalizes importance of waste selection. Without selection, efficient treatment and processing od waste, and thus proper application of the principles of "management hierarchy" and "sustainable development" are not possible. The collected volume of selected plastic waste in the country is minimal - it represents about 1.4% of the total collected waste in one year, and it is mostly the result of actions taken by collective packaging waste handlers and the informal sector (individual collectors). In such conditions, the legal entities that perform treatment and processing (recycling installations) should import waste to ensure efficient operation for their installations. The current situation in the plastic waste processing industry is further deteriorating due to the fall in the price of the so-called new plastics and reduced demand for recycled plastics on the international market, as well as the high purchase price of plastic waste on the national market. Data from competent institutions indicate that less than 1% of the total collected waste in RNM is recycled. In addition, no initiatives and activities are taken for reuse of plastic waste. Manufacturers do not take significant measures to change the design and raw material composition of products to extend their life cycle and generate less waste - a "product life cycle assessment" principle. This is compounded by the lack of public awareness of the need for plastic waste selection, its recognition as a potential resource and the damage caused to the environment and human health by improper waste management. With the exception of IPA 1 funds, which have been used to develop Regional Waste Management Plans, other funding does not enable sustainability of the system by waste generators, which also affects plastic waste management, and impedes consistent application of the "polluter pays" principle. The principle of "producer responsibility" is represented through the collective packaging waste handlers, and we have determined that it is necessary to change the way they operate. The established system of records and information does not provide complete, accurate and up-to-date information related to the issued permits, collected, processed and deposited plastic waste. There is a lack of activities for monitoring the waste management at national and local level, and the supervisory activities by the competent institutions are insufficiently represented.

MAIN FINDINGS OF THE NATIONAL AUDIT ON PLASTIC WASTE	
Audit aspect No 1	*Has the country adopted legal regulations and organizational arrangements concerning plastic waste treatment?*
The main differences between state and EU regulations (non-EU countries)	The **Law on Waste Management** was adopted in 2004, and its provisions implement the European Waste Directives 75/442 / EEC from 15.07.1975 (out of force), and for landfills 1999/31 / EC from 26.04.1999. In 2006 and 2008, amendments to the Waste Directive were adopted, but they were not introduced in the legal provisions. Having in mind the importance and the need to improve the existing Law on Waste Management and its harmonization with the

	European Directives, the Ministry of Environment and Physical Planning prepared new law, which is partially harmonized with the latest amendments to the Directive 2008/98 / EC of 19.11.2008 and is awaiting its enactment. **Regarding the Law on Management of Packaging and Packaging Waste**, it is harmonized with the European Directive on Packaging and Packaging Waste 94/62 / EC of 20.12.1994. This Directive has been amended several times. With the adoption of the new Directive 2018/852 from 30.05.2018, there was a need to prepare new Law on Packaging and Packaging Waste, which has not yet been adopted. Conclusion: The laws are harmonized with the initial provisions of the European directives, except for the last one.
Adoption of the Extended Producer Responsibility system concerning plastic products and waste	The legal principle "producer responsibility" is represented through the **Collective packaging waste handlers**, and the audit determined that changes were needed in their operation. We concluded that the following changes on the Extended Producer Responsibility system are needed: ➢ Establishing complete register of producers / importers who have obligation to manage the waste they generate and to pay fee for that; ➢ Establishing greater control over transport forms (document issued when the waste is handed over for transport*); ➢ Determining the factual amount of total generated packaging waste for one year. Accurate and correct determination of the total amount of packaging waste generated is of great importance, because this data acts as a criterion for assessing whether the conditions for issuing permits for handling packaging waste are met, as well as the approval / disapproval process of the annual reports of the Collective packaging waste handlers; ➢ Objective planning of the annual national goals and greater control over the Collective packaging waste handlers in meeting these objectives; ➢ Introduction of limitations in the costs of the Collective packaging waste handlers and earmarked distribution of realized income; and ➢ Greater financial accountability of Collective packaging waste handlers and greater responsibility in the manner of performing its activity. * The transport forms for the Collective packaging waste handlers are documents confirming the collected amount of packaging waste (plastic waste), that prove compliance with the legal objectives for recycling, thus enabling them to keep the permit for handling packaging waste.
Preparation of policy on waste management and responsible entities	The legislation that regulates management of waste and packaging waste, envisages adoption of a strategy and several planning and program documents at national, regional and local level. In order to build integrated, interconnected waste management system, these documents should be harmonized with the goals and activities set out in the strategy, planning and programming documents at national level, as well as with each other. The audit found that the following national documents were not adopted: ➢ **National Environmental Action Plan** - covering general, medium and long-term measures for protection and management of the environment and human health, waste management guidelines, public awareness activities and other measures and activities (adopted by the Government at the proposal of the Ministry). ➢ **Waste Management Plan of RNM** - which ensures implementation of the Waste Management Strategy of RNM. The last adopted National Waste Management Plan referred to the period 2006-2015. The competent employees in the Ministry informed that new National Waste Management Plan 2020 - 2030 has been prepared, but it is still not adopted (adopted by the Ministry). ➢ **Waste Management Program of RNM** - which determines specific measures and activities for implementation of the Waste Management Plan of RNM (adopted by the Ministry). ➢ **Packaging Waste Management Program -** which ensures achievement of national waste packaging management goals (adopted by the Ministry). ➢ By the end of 2020, the validity of the Waste Management Strategy 2008-2020 has expired and new one has not been adopted (adopted by the Government at the proposal of the Ministry) Regarding adopted planning and program documents at local level, we found that out of 71 municipalities, 30 have prepared **Plan for Waste Management**, 27 municipalities have not prepared plan for the period 2017-2019, while 14 municipalities have a plan, but not for the whole period 2017-2019. The activities in the waste management plans of the municipalities have been prepared in accordance with the latest National Waste Management Plan of RNM 2006-2015, which is out of force. Some of the audited municipalities have not adopted other documents that are important for plastic waste management such as: ➢ Waste management programs; ➢ Acts that should prescribe special rules for handling municipal and other non-hazardous waste (including plastic waste) on the territory under their jurisdiction; and

	➢ Acts to regulate selection, collection and transportation of municipal waste. RNM has decided to have regional approach to waste management, at the level of planning regions, and their formation and development are at a very early stage. Although in the period 2014-2020 the **Regional Waste Management Plans** were prepared and adopted, they were not properly implemented. The plans are full of useful information, but have not been implemented because no regional waste management centers have been established.
Measures encouraging the design of products in order to reduce the generation of waste (incl. eco-design of plastic packaging)	Although the legislation prescribes requirements that products and packaging must comply with, in terms of their production and composition in order to be reused and recycled, the number of measures taken is small, primarily due to financial unprofitability. The requirements refer to the volume, weight, raw material composition, design, method of production, in order to maintain safety, hygiene and environmentally sustainable treatment, reduction of energy used for their production and minimal negative impact on the environment during its processing. Manufacturers do not take significant measures to change the design and raw material composition of products to extend the life cycle of the product and to create a smaller amount of waste - a principle - assessment of the product life cycle.
Separate collection of waste	In RNM, there is a low level of waste selection, which adversely affects the management and handling of plastic waste. The established waste selection system is non-functional and does not provide effective primary and secondary selection and thus further processing of plastic waste is not possible. Insufficient liquidity of public utility companies does not allow investments in adequate infrastructure for waste selection and treatment, so mixed waste is collected primarily, which is deposited in municipal landfills. The amount of selected plastic waste is symbolic and mostly as a result of the activities undertaken by legal entities for handling packaging waste (Collective packaging waste handlers) and the informal sector that collects plastic waste (street collectors).
Other *Commission for packaging waste management*	In order to monitor the situation of packaging waste management in the country, the Government of RNM set up **Commission for packaging waste management**, chaired by the Minister of Environment and Physical Planning. This Commission, among other things, should review and give opinion on: - National targets for processing packaging waste; - Packaging waste management program; - The situation of packaging waste management; and - Proposes measures to prevent and reduce the amount of packaging waste, encourage collection, processing and disposal of packaging waste. With the audit, we found that the Commission has not been active for a long time. The last session of the Commission was held in December 2014. In May 2019 new Commission was formed, which did not hold a single session until the reporting period.
Conclusion	The legal framework for plastic waste management is determined by the provisions in the Law on Waste Management and the Law on Management of Packaging and Packaging Waste, which are harmonized with the initial provisions of the European Directives. The competent institutions at national and local level have not adopted significant planning documents and other documents that regulate the area as a basis for setting up integrated, effective, efficient and sustainable plastic waste management system. The Commission for packaging waste management does not function and regional waste management is not established, thus the basic conditions for prevention of plastic waste generation and processing thereof are not provided. Activities are underway for adoption of new legal provisions aimed at significant changes in the current waste management system, as well as approximation and harmonization with current European Directives.
Audit aspect No 2	*Has any policy (plans, strategies) been applied in order to implement proper plastic waste management and improve the efficiency of using existing materials and products (according to assumptions of circular economy)?*
Strategic documents on waste management generally did not include separate targets to be achieved for plastic waste. *The separate targets are designed in The Law on Management of packaging and waste packaging (LMPWP)*	With the audit we ascertained that, except for the Waste Management Strategy 2008-2020 and Regional Waste Management Plans, no planning and program documents have been adopted at national level. By the end of 2020, the validity of the Waste Management Strategy 2008-2020, adopted by the Government of RNM, expired, and new one has not been adopted yet. The above documents do not include separate targets for plastic waste. Adopted targets concern wider groups of waste, such as: municipal waste, medical, construction waste, industrial hazardous and non-hazardous waste, mining waste, agricultural waste, old vehicles, etc. Concerning municipal waste, adopted targets concern: reduction of quantity of generated waste, separate collection of municipal waste flows, recycling of municipal waste and special waste streams, as a substitute for natural waste resources, facilities for treatment and disposal of municipal waste and closure and revitalization of illegal landfills for municipal waste. The provisions of the LMPWP establish National Purpose Waste Treatment Packages: a) by the end of 2020, a minimum of 60% of the weight of packaging waste generated on the territory of RNM should be processed by renewal operations or by energy processing operations; b) by the end of 2020, a minimum of 55% and a maximum of 80% of the weight of packaging waste generated on the territory of RNM should be recycled; c) by the end of 2020, the following quantities of packaging materials should be recycled:

	- 60% glass, - 60% paper and cardboard, - 50% metals, and - 15% wood, and **by the end of 2018 - 22.5% plastic, taking into account only the materials that are recycled in plastic.** The obligation to meet national targets applies to municipalities, producers / importers and Collective packaging waste handlers, through the collection and processing of packaging waste. This objective is also harmonized with the European directive on packaging and packaging waste management 94/62 / EC of 20.12.1994.
Problem analysis on plastic waste treatment	With the audit, we analyzed reasons why the **recycling rate of packaging waste is so low**, below 1% at national level. The situation with plastic waste treatment and processing in the country is as follows: - Lack of integrated waste management system, created according to the European and international technical regulations and standards, which would be accessible to all settlements and users. Building such system requires significant financial resources. The costs are especially high at the initial stage of its establishing. Although strategic documents provide incentives for waste processing, there is no state nor local government support for subsidizing this type of activities. - PUCs perform only treatment, but not recycling of plastic waste because they do not have sufficient financial resources and infrastructure facilities. Only private entities such as waste recyclers, who have limited capacity, perform plastic waste recycling. - Due to lack of functional system for selection and return process of plastic waste, the amount of plastic waste collected in our country is very small. Considering that recycling is an expensive process, and requires expensive processing installations, the amount of waste collected does not allow efficient processing. Thus, waste recyclers are forced to import plastic waste. - The Law on packaging and packaging waste management prescribes specific requirements[1] for products and packaging in terms of production method and the ingredients used, so that they can be reused or recycled, but due to financial unprofitability the number of measures taken into this consideration is limited. We discovered one more reason for the low rate of recycling. During the audit period, the financial stability of plastic waste recyclers was further affected by the fall in the price of non-recycled or new plastic, which was caused by the global drop in oil price[2]. This was followed by reduced activities in many areas around the world, due to the pandemic caused by the COVID-19 virus. This resulted in reduction of prices of new plastic products, which negatively affects the recycling. Producers find it more profitable to buy new plastics, which reduces the demand for recycled plastic, and thus recycling as an activity becomes unprofitable. In such circumstances and lack of interest, plastic materials are left in the landfill. This situation has an adverse effect on the achievement of national goals related to recycling and the circular economy in general. The situation with plastic waste in the country is worsening, because recyclers create internal market for purchasing plastic waste, and by competing, they increase the price of plastic waste. It results in expensive plastic waste in the country, while on the foreign market the price of raw materials from recycled plastic is falling. All of the above makes the recycling process unprofitable.
Implementation of the most important actions aimed at the proper management of plastic waste	**Selection of plastic waste** Plastic waste can be easily separated from mixed waste and is suitable for selection. Proper selection of plastic waste is the first step leading to establishment of integrated system for management, treatment and processing of plastic waste. Collection and selection of municipal waste is a public service that should be done by the **municipalities** through **public utility companies** (PUCs) established by the municipalities. These public companies, inter alia,, are obliged to set containers for selection of municipal waste, which should be in different colors and properly marked for different types of waste. The waste selection system also includes the **Collective packaging waste handlers** who have legal obligation to use the profit for regular selection and collection of packaging waste and to ensure its reuse, processing or disposal. Not only primary but also secondary selection is not functional, which adversely affects the management and treatment of plastic waste. Municipalities and PUCs do not have the infrastructure to enable selection of collected mixed municipal waste from the containers. In rare cases, when the packaging waste is collected, PUCs make secondary selection, which is usually done manually. We analyzed the situation and concluded that the main reasons for inefficient selection are: - Lack of an act for determining the number and type of necessary organizational and technical means, including containers for waste selection and specialized vehicles. Determining the number of containers depends on the number of inhabitants and the population density, waste generators, the average amount of waste generation in a certain area, geographical layout, conditions of the road network and similar parameters; - Sometimes there are problems with urban plans - no space is planned for installation of containers for

[1] The requirements refer to restrictions on the volume, weight, raw material composition, design, method of production, in order to maintain safety, hygiene and environmentally sustainable treatment, reduction of energy used for their production and minimal negative impact on the environment during its processing.
[2] Oil is the basic raw material for production of plastics.

	waste selection; - Lack of financial resources for technical equipment for organizing primary and secondary waste selection from the local government and the Collective packaging waste handlers. With the audit, we conclude that Waste selection is not an everyday habit and behavior of people in the country. There are people who want to participate in the selection of plastic waste, but the state has not taken enough measures and has not created opportunities for thereof. The number of set containers for waste selection by PUCs and Collective packaging waste handlers is insignificant in relation to the number of inhabitants and the index of generated waste. Most of the plastic waste ends up mixed with all the municipal waste and is disposed of in a landfill and further processing of plastic waste is not possible. **Collection and transportation** In RNM, collection and transportation of municipal waste is almost entirely performed by PUCs, which have obtained permit from the Ministry. The auditors found out that PUCs do not have sufficient number of special vehicles for collection and transportation of packaging waste (selected waste), and due to their financial situation, some of them are not able to procure new ones. With the audit we concluded that waste collection capacities are insufficient and inadequate, which contributes to inefficient management of plastic waste, does not allow achieving national targets for recycling and reducing the amount of waste generated. Therefore most of the waste - 99.7% ends up in landfills. **Waste processing** With the audit we determined the following conditions related to the processing of plastic waste in the country: 1. The government needs to set annual national goals as an organizational incentive to achieve gradually the national goal for plastic waste recycling. 2. Limited involvement of state institutions in plastic waste recycling activities. PUCs that hold appropriate license usually treat plastic waste and then they sell it to recyclers. 3. Recyclers are processing plastic waste. According to the State Statistical Office data and the Annual Reports of the Ministry of Environment and Physical Planning, insignificant amount of plastic waste is recycled in our country. Usually, transparent PET plastic (water bottles) are recycled, and some smaller facilities deal with plastic foil and crates. After treatment and processing most of the plastic waste is exported. 4. Very few producers in the country use recycled plastic in their production process. 5. We did not identify activities, measures and initiatives for reusing plastic waste.
Coordination among various actors of waste management system, with special reference to the collective packaging waste handlers	Collective packaging waste handlers are legal entities and they have a central place in the plastic waste management system. They are the string that connects the producers / importers (who are the first to put on the market products and packaging) with legal entities and individuals who collect and transport plastic waste. At the same time they are obliged to provide processing or disposal of collected amount of plastic waste. For their work, they have a license issued by the Ministry. They are formed like association of producers and they implement the principles - „producers responsibility" and „the polluter pays". Producers as waste generators, pay fee to Collective packaging waste handlers, and then the realized profit should be used to accomplish the national goals, as well as to perform the obligations for collection, processing or disposal of the taken and collected amount of waste. For all that, an agreement between Collective packaging waste handlers and producers is concluded to assume obligations for waste management. Collective packaging waste handlers are set up by producer in order to pay less for the waste they generate. If producers do not join collective handlers, in such case they have to pay larger amount of money to the state. The most significant findings related to the Collective packaging waste handlers are the following: - There is no mechanism in the country to monitor whether all producers / importers who are the first to generate packaging waste on the market in RNM have concluded agreements with Collective packaging waste handlers. Therefore, it is not possible to ascertain whether they are fulfilling their obligation "at their own expense, by collecting and processing packaging waste, to ensure that national goals are met". The number of producers / importers who have concluded agreements with Collective packaging waste handlers is very small. In the period 2017 - 2019, the average number is 1.500 producers. - There is a lack of methodology for calculating the amount of fee for packaging waste management among the Collective packaging waste handlers, so in the efforts to attract as many producers as possible, they compete with each other and reduce the price. This reduction affects the possibility of achieving greater profit, which will be used to achieve national goals. - The manner of spending realized income by the Collective packaging waste handlers is not prescribed, and there are no restrictions regarding the spending of the funds.
Educational and informative activities	Every year the Government adopts Annual Program for investment in environment (Annual Program). In the period 2017 - 2019, the Annual Program provided the same amount for each year - about 1.5 million euros, and it does not proportionally follow the trend of increasing the budget of the Ministry. The analyses indicated low presence of projects and activities related to waste in the Annual Program, approximately 4%, and the funds are mostly spent on raising public awareness, education and training in the field of waste, as well as to encourage educational, research and

	development studies. With the audit we found out that, although not allowed, significant portion of allocated money was spent on coordinators' fees. Producers as waste generators, pay fee to Collective packaging waste handlers, and then the realized profit should be used to accomplish national goals, as well as to perform the obligations for collection, processing or disposal of taken and collected amount of waste. The realized profit, among other things, is used for organizing actions for waste collection, as well as for organizing and supporting various events for raising environmental awareness among children and the other population.
Good practices	In November 2020, the municipality of the City of Skopje undertook activities for introduction of vending machines for converting plastic packaging and cans, on the principle of obtaining "green points". With the points, the citizens will be able to shop with discounts in the green network (markets, restaurants, cafes and boutiques) that have joined this project. The latest published information says that 27 machines are installed in the center of Skopje and there is a great interest from the legal entities to join the green network and provide discounts. This activity was also accepted by one Collective packaging waste handler and other municipalities plan to adopt this good practice too.
Other: *Informal sector*	Most of the collected plastic waste is a result of the activities undertaken by the Collective packaging waste handlers and the informal sector (street collectors).The informal waste collection sector in RNM is a social group of several thousand citizens, including children, who collect and value waste through activities that are not organized and supported. In the current system, informal waste collectors are more active and efficient in collecting, sorting and utilizing waste as a resource, compared to the formal sector. The study showed that the way informal action of waste collectors takes place it has more benefits than costs for our society. The conclusion of the study is that these benefits would be greater if the sector were formalized and integrated into the overall waste management system. The auditors found out that this informal sector is barely mentioned in the legislation, except in the part for their registration as operators of waste trade. The possibility for formalization and organization of this sector through a social enterprise or public-private partnership, which would provide them with stable income and legalize their activities, has not been considered.
Permits	The Ministry is responsible for issuing the following permits related to waste management: 1. Performing the activity for collection and transportation of municipal waste and other types of non-hazardous waste 2. Performing the activity of storage, treatment and / or processing of waste 3. Handling packaging waste 4. Import, export and transit of waste With the audit we concluded that there are weaknesses and omissions in the procedures for issuing some of the permits, which may contribute to legal entities and individuals who do not fully meet the conditions to obtain a permit. This can further lead to improper waste management, endangering environmental safety and increasing pollution.
Financial resources and their proper use	Waste management is funded from various sources and can be analyzed at national and local level: - Every year the Government adopts Annual Program for investing in the environment. - Packaging waste management fee paid by producers and importers who are the first to generate packaging waste on the market. - Financing through implementation of projects funded by the European Union within the Instruments for Pre-Accession Assistance of RNM. - At local level, there is a possibility for the municipalities to charge waste management fee. They can make a decision on determining waste management fee, as a percentage of the service charged by the citizens for the service provided by PUCs. The Final Report notes that fee revenues, whether paid to the State Budget or to Collective packaging waste handlers, are insufficient to encourage activities for collection, transport, processing and disposal of packaging waste. With the exception of IPA I funds, other financial resources do not enable sustainability of the waste management system by those who create it, which also affects the management of plastic waste. Therefore, the principles of "polluter pays" and "producer responsibility" are not applied.
Conclusion	The undertaken activities for plastic waste management do not enable avoidance and reduction of the amount of generated plastic waste and do not provide sustainable development through its processing.

Audit aspect No 3	*Are the results of implemented measures concerning plastic waste treatment monitored and what effects have been achieved in the context of established goals in that field?*
Sources of plastic waste generation, its quantities and way of management were not reliably monitored	Legal entities and individuals that perform activities of collection, transportation, storage, treatment, processing, disposal and circulation (import, export and transit) of waste are obliged to keep records and submit data and information to the municipalities and / or the Ministry of Environment and Physical Planning. Based on the submitted data, these institutions should prepare and publish several reports related to the implementation of planning and program documents for waste management, including plastic waste. To manage the data on the state of the environment on the territory of RNM, the Ministry establishes, develops, maintains and coordinates a National Environmental Information System, which is a comprehensive database and information about condition of the media and individual areas of the environment. The National Environmental Information System contains the Environmental Cadastre. Environmental Cadastre is a quantitative and qualitative record of polluters and sources of pollution that emit pollutants and substances in the environmental media, which includes the map of pollutants. Waste Generators Cadastre is an integral part of the Environmental Cadastre. Also, the Ministry of Environment and Physical Planning is obliged to establish a Waste Register for Legal entities and individuals that generate, collect, transport, process, store, dispose and trade waste, as well as to keep records of the issued licenses for performing the activity. For that purpose, the Minister has adopted Rulebook on the content and the manner of keeping and maintaining records in the waste register. Collective packaging waste handlers submit to the Ministry annual data on the total amount of generated and collected packaging waste (including plastic waste) from manufacturers / importers who first place products on the market and have concluded an agreement with the Collective packaging waste handlers. The State Statistical Office also has data on the total amount of imported and exported plastic waste. Data submitted to the Ministry of Environment are not complete and reliable and do not show the real situation with plastic waste. The employees of the Ministry pointed out that data available to the State Statistical Office are more reliable, they are collected and performed according to the accepted methodology of Eurostat. According to the methodology adopted in Eurostat, the recycling rate of municipal waste is calculated taking into account all types of municipal waste.
Events that posed a threat to the environment related to improper treatment of plastic waste	Most of the plastic waste is disposed of in landfills. An insignificant part of the municipal waste is recycled. No initiatives and activities are taken for reuse of plastic waste. The state does not have the capacity for incineration of plastic waste. However, having in mind that the landfills are not adequately secured, and the existence of illegal landfills, the waste is often burned by unscrupulous citizens, resulting in air pollution and endangering human lives.
Databases on waste in the country	With the audit we concluded that the following: The Waste Generators Cadastre has not been established, which should be integral part of the Environmental Cadastre*, due to which the Ministry does not have data on waste generators, types and quantities of waste generated, as well as the ways of storage, treatment, processing and waste disposal. The Waste Register is not well structured and understandable. Some of the records of the legal entities that submit data are not in accordance with the adopted Rulebook, so in the established records missing data and it is not possible to see the real picture of waste management. The established registers for issued licenses are not complete and up to date. Also, there are producers / importers who do not respect the legal obligation to conclude an agreement with the Collective packaging waste handlers, nor independently fulfill their obligations to the state, due to which the presented data are not complete and reliable. In other entities, in terms of established records, we determined the following conditions: ➢ Only one of the audited municipalities established Environmental Cadastre in which the generators of non-hazardous waste are registered, and several municipalities responded that they have established an Environmental Cadastre, but did not submit proof. ➢ Recyclers keep records that usually consist of collected transport forms, weighbridges and invoices for the purchase of plastic waste. There is no record of the origin of the received or delivered waste, and in some cases there is a lack of records of the individual collectors from whom they make the purchase. ➢ The Customs Administration does not submit certified identification and transport forms to the Ministry, which contributes to incomplete records of data related to waste exports. *Environmental Cadastre is a quantitative and qualitative record of polluters and sources of pollution that emit pollutants and substances in the environmental media, which includes the map of pollutants.

Achieved results in plastic waste treatment	The current way of dealing with plastic waste marginalizes the selection, and without that activity, it is not possible for the treatment and processing operations to function efficiently and for the proper application of the principles of "management hierarchy" and "sustainable development". According to the State Statistical Office data, the state has data on generated and collected municipal waste and collected plastic waste. The collected amount of selected plastic waste in the country is minimal and represents about 1.4% of the total collected waste in one year (2019) and is mostly the result of actions taken by Collective packaging waste handlers, and the informal sector (individual collectors). Most of the waste (99.7%) ends up in landfills, i.e. only 0.3% of the collected waste is recycled. No initiatives and activities are taken for the reuse of plastic waste.
Other *Absence of monitoring in waste management*	According to the Law on Waste Management, Environmental Monitoring is a systematic measurement, monitoring and control of the conditions, quality and changes of the media and areas of the environment. To monitor the environment on the territory of the country, the Government and the municipalities should establish national and local monitoring network, of which the waste management monitoring network is integral part. 1. Monitoring of hazardous waste on the territory of RNM should be performed at the state level by the Ministry of 2. Non-hazardous waste management monitoring, including plastic waste, should be developed and implemented at local level by municipalities. 3. Legal entities and individuals who have certain installations that generate, process and dispose of waste are obliged to monitor waste management in accordance with the conditions in the integrated environmental permits or work permits. With the audit, we concluded that competent institutions do not adopt Environmental Monitoring Strategy, Environmental Monitoring Program and Waste Management Monitoring Program, which are important for defining guidelines for establishment of waste management monitoring system. In addition, no network for environmental monitoring has been established at national and local level, nor assistance is requested from scientific and professional organizations that meet the requirements for environmental monitoring. Only legal entities and individuals who have certain installations that generate, process and dispose of waste perform monitoring in accordance with the conditions set out in the permits. The identified conditions result from lack of financial resources, human resources and equipment for performing the activities by the Ministry and the municipalities.
Insufficient representation of supervisory activities	The Ministry is competent to supervise the implementation of the laws and bylaws in the field of environment and waste management by the municipal authorities. For that purpose, at the beginning of each year, Plan for supervising the legality of the work of the municipalities is adopted. The plan lists those municipalities that will be subject to supervision. In the period 2017 - 2019, the Ministry conducted supervisory activities in 35 municipalities out of 80. The supervisory activities referred to the planning and program documents for waste management, the functioning of the Public utility companies on the territory of the municipality, the selection of waste and the establishment of illegal landfills, but not to the management of plastic waste. Inspection supervision over the implementation of the laws and bylaws in the field of environment and waste management is performed by the State Inspectorate of Environment through the state inspectors of environment. For the matters within the competence of the municipalities, it is performed by the authorized environmental inspectors of the municipalities. By analyzing documentation from state inspectors, we determined that there are inspection activities of legal entities and individuals that collect, transport, store, treat, process, dispose of and trade (import, export and transit) of waste in relation to: - checking for appropriate license to perform the activity, - fulfillment of conditions prescribed in the elaboration for environmental protection, - keeping records, - preparation of consolidated reports, and - waste export. An inspection was performed on one of four Collective packaging waste handlers in terms of whether it prepares and submits annual report on packaging waste management to the Ministry. For the identified irregularities with the performed inspection, the inspectors have issued appropriate decisions obliging the legal entities to eliminate irregularities or the reasons for the situation in given deadline. The number of supervisory activities on plastic waste management is insufficient, which affects the effectiveness and efficiency of measures for prevention of waste generation and its proper handling.
Conclusion	The established way of recording and informing does not enable complete, up-to-date and objective presentation of the waste situation, including plastic waste, as well as their availability to stakeholders and timely undertaking of measures and activities to improve the general situation with waste management.

N O R T H M A C E D O N I A

Overall conclusions (from the national report)	
	The most important conclusions to the relevant Ministers in the context of the cooperative audit concerned the following issues: Acceleration of works on bringing the waste management system in RNM towards the circular economy model, in particular through: 1) Ministry of Environment and Physical Planning: a) Continuation of the started activities for adoption of new laws, for greater approximation to the European Directives until full harmonization. b) Creating system for efficient primary and secondary waste selection (including plastic waste) and providing possibility for its treatment in accordance with the waste hierarchy. c) Introduction of incentive measures aimed at reducing the amount of waste generated through its processing and motivating producers to change the design or raw material composition of plastic packaging material. d) Introduction of changes in the EPR system, which enables coverage of the real costs for waste collection and treatment, as well as proper and purposeful spending of the realized profit from the Collective packaging waste handlers. 2) Municipalities, PUCs and Collective packaging waste handlers to establish better planning and implementation of activities to achieve an efficient system for collection, transportation, treatment and processing of plastic waste. For that purpose, it is necessary to provide more funds. 3) The Ministry of Environment and Physical Planning, the municipalities in cooperation with the legal entities and individuals involved in the plastic waste management system to undertake activities for comprehensive information at national, regional and local level on the situation, treatment of plastic waste and timely taking measures to improve the general state of the environment.
Audit team *Rosica Shalevikj – Hristovska* *Albane Cupi* *Julija Takovska*	/signature of an authorised person/

POLAND

/SAI logo/	*Najwyższa Izba Kontroli* /original name of SAI/	*SAI of*	*Poland* /country/

The title of the audit:	ACTIONS TO REDUCE THE GENERATION OF PLASTIC WASTE AND ITS EFFECTIVE MANAGEMENT IN POLAND
Period of time covered by audit:	2017-2019
Main audit question:	***Have the relevant public authorities (state and/or self-government administration) developed policies (plans, strategies) and implemented measures aimed at achieving goals (adopted in such policies) regarding generation and management of plastic waste?***
Answer:	***The actions of the Minister of Climate as the central actor responsible for waste management policy in Poland and other auditees (5 marshal offices at the regional level and 15 municipal and communal offices at the local level) were insufficient to reduce the generation of plastic waste and ensure its proper treatment. Additionally, a low advancement of conceptual and legislative work of relevant ministers (the Minister of Climate and the Minister of Economic Development) do not allow to count on quick implementation of the Circular Economy model.*** In general, the waste management plans (developed at the central and regional level) did not include targets to be achieved for plastic, although *An EU action plan for the Circular Economy* mentions plastics as one of the five priority areas, and it is also noted that increased plastic recycling is essential for the transition to the Circular Economy. The exceptions were the provisions of these plans related to the minimum recycling rate of plastic packaging waste resulting directly from Directive 94/62/EC on packaging and packaging waste. Despite an increase in recycling rates and quantities of municipal waste (including plastic waste), collected in separate manner, they were collected and treated in a way not allowing achieving established targets. In 2016-2018, the total amount of collected municipal waste was increasing by an average of 4.3% per year, whereas one of the main targets established in the *National Waste Management Plan 2022* was to reduce quantities of generation of waste and the waste prevention occupies the first place in the waste hierarchy (set out in Article 4 of Directive 2008/98/EC on waste). Additionally, the recycling rate of municipal waste was increasing by 2.75 percentage points per annum, on average. Assuming this pace of increase, one may arrive at the conclusion that Poland will achieve a 42% recycling rate in 2020 whereas the minimum rate to be achieved is 50%. The national data reporting system on waste did not allow to directly determine the total amount of plastic waste generated and its final treatment (including information regarding the morphological composition of municipal waste). For this reason, during the country audit, NIK conducted an analysis – using estimation methods – which suggests that the treatment of municipal plastic waste in 2017-2018 did not correspond to the EU waste hierarchy in 5 audited voivodships (out of 16 in the country). For packaging plastic waste, the required annual recycling rate (23.5%) was achieved in 2016-2018. However, the achieved recycling rate of packaging plastic waste has been visibly lower than the recycling rate for all packaging waste. This finding confirms that plastic packaging waste is more difficult to treat. It also means that there is a necessity to improve considerably the effectiveness of treatment of plastic packaging waste in the context of the growing minimal level of recycling for this type of waste (50% to 2025 and 55% to 2030). From 2021, the EU adopted the quantitative levy (contribution) based on non-recycled plastic packaging waste. Given the plastic packaging waste treatment in 2018, Poland would be obliged to pay approximately EUR 0.5 billion a year. NIK has found that audited public entities did not deliver effectively the measures established in the *National Waste Prevention Programme* and regional programmes (as a part of regional management plans) concerning the development and promotion of the eco-design of packaging, as well as educational and informative campaigns on proper waste treatment. The findings of the audit showed that relevant ministries did not develop sufficient solutions in that area. The majority of the educational and informative actions concerned the separate collection of waste instead of prevention. However, waste prevention is the most desirable action according to the waste hierarchy.

POLAND

MAIN FINDINGS OF THE NATIONAL AUDIT ON PLASTIC WASTE	
Audit aspect No 1	**Has the country adopted legislation and organizational arrangements concerning plastic waste management?**
Compliance of crucial national regulations with EU legislation, except for Directive 2018/852, which was not fully transposed	The most important national regulations concerning waste, including plastic waste, were consistent with the European legislation set out in Directive 2008/98/EC on waste and Directive 94/62/EC on packaging and packaging waste, except that some regulations of Directive 2018/852 of the European Parliament and of the Council of 30 May 2018 amending Directive 94/62/EC on packaging and packaging waste were not transposed by due time – 5 July 2020. The most important amendments under Directive 2018/852 concerned: higher rates of recycling for packaging waste in the coming years [Art. 1(5)] and return, collection and recovery systems for packaging waste by 31 December 2024 at the latest [Art. 1(8)]. In the meantime, the project of amendments to national regulations concerning packaging waste started only on 21 July 2020. Additionally, the contemplated amendments had a very general nature and did not contain a developed conception of Extended Producer Responsibility. Until the end of the audit in June 2020, the Minister of Climate did not prepare draft amendments addressing the topics governed by 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. The transposition due date was 3 July 2021. A relevant draft piece of legislation was prepared in Q1 2021.
Policies on waste management in Poland were prepared and implemented at different administrative levels	Waste management plans, as a tool of waste management policy under Article 28 of Directive 2008/98/EC, were adopted both at the central (by the Council of Ministers) and regional levels (by voivodship assemblies). At the same time, a National Waste Prevention Programme was established in 2014 at the request of the General Director for Environmental Protection (a body reporting to the Minister of Climate) based on Article 29 of Directive 2008/98/EC. Some of the activities under the Programme were included in regional waste management plans. Additionally, in 2016, the Minister of Economic Development established an inter-ministerial team whose goal was to prepare a national strategy aimed at directing Poland's development towards the Circular Economy. At the regional level, information was verified concerning recovery and recycling rates for municipal waste achieved by the audited municipalities and communes and recycling rates for packaging waste achieved by the businesses bringing packaged products to the market. According to national regulations, each municipality is obliged to cover all property owners with the municipal waste management system, as well as to achieve minimal re-use and recycling rates for municipal waste (20% in 2017, 30% in 2018, 40% in 2019 and 50% in 2020).
Separate collection of waste in Poland	Separate collection of waste has been implemented in Poland in line with Article 10(2) of Directive 2008/98/EC. For example, according to national regulations, each municipality collects the following types of waste: (1) paper and cardboard, (2) metals and plastics, (3) glass, (4) bio-waste and (5) mixed waste. However, it should be emphasised that the majority of municipal waste in Poland in 2016-2018 was collected as mixed waste (68%, 65% and 62% respectively).
Extended Producer Responsibility scheme was ineffective	Despite recommendation of the European Commission,[1] the Extended Producer Responsibility scheme for packaging in Poland has not been improved yet in a way that would ensure better cost coverage by producers. The Polish EPR scheme functions as product fees (paid by businesses which have not achieved the required recovery or recycling rate of packaging waste, including plastics packaging) and recycling fees since 1 January 2018 (paid by businesses which offered plastic shopping bags intended as packaging for products). The audit showed that the fees paid under the EPR covered only a small part of the costs of packaging waste management, including plastic waste.
Lack of solutions on eco-design of plastic packaging	According to the Article 8(2) of Directive 2008/98/EC, Member States may take appropriate measures to encourage the design of products in order to reduce their environmental impacts and the generation of waste in the course of the production and subsequent use of products, and in order to ensure that the recovery and disposal of products that have become waste take place in accordance with waste hierarchy and protection of human health and the environment. Despite taking some steps to prepare recommendations in the field of eco-design of packaging (better product design makes plastics recycling easier), the Minister of Climate has not yet developed solutions in that area. The findings of the audit show that these preparations were at a very early stage. NIK indicated that it may result in failure to meet the constantly growing waste management requirements. Information from external sources obtained by the NIK during the audit shows that approximately 70% of plastic packaging on the Polish market is difficult to recycle (among others due to the combination of various materials).

[1] European Commission, *The early warning report for Poland*, 24 September 2018, SWD/2018/426 final.

Minister of Climate has not implemented the Deposit-Return Scheme for packaging	NIK assessed positively the analysis undertaken by the Minister of Climate of the feasibility and possibility of introducing a Deposit-Return Scheme for packaging in Poland. Relevant studies on the subject, including plastic packaging, were obtained in December 2017. However, it is necessary to emphasise that the Minister of Climate has not decided on the final shape of this system and the implementation of appropriate measures so far.
Minister of Climate did not have detailed information on the current realities of the market	The Minister of Climate did not have detailed information on the current realities of the market regarding the production of packaging, as well as the capacities for its recycling, which was, in NIK's opinion, an obstacle to designing and implementing new measures in this area. For example, the audit's findings proved that the Ministry of Climate did not have data for the period 2017-2019 on: – production costs of plastics in Poland from primary raw materials and secondary raw materials, – functioning of the market for packaging materials, and in particular what percentage of packaging was made of materials difficult to recycle or not suitable for further processing at all, – how many plastic recyclers operated in the Polish market and what total processing capacity they had.
Conclusion	**Taking into account the overall findings of the audit, NIK concluded that the existing legal regulations and organisational arrangements in Poland were insufficient to reduce the generation of plastic waste and ensure its proper treatment, especially in the context of challenges arising from the need to implement the Circular Economy model.**
Audit aspect No 2	**Has any policy (plans, strategies) been applied in order to implement proper plastic waste management and improve the efficiency of using existing materials and products (according to assumptions of the Circular Economy)?**
Strategic documents on waste management generally did not include separate targets to be achieved for plastic	As previously mentioned, the national and regional waste management plans in Poland generally did not include separate targets to be achieved for plastic waste. The adopted targets concerned wider groups of waste, such as: municipal waste, waste of electrical and electronic equipment or hazardous waste. For municipal waste, targets were adopted on, among others: a reduction of quantity of generated waste, enhancing of public awareness on proper waste treatment, incorporation of the waste hierarchy into waste management systems by achieving the required recovery or recycling rate of different types of waste: paper, metal, plastic, glass household waste of at least 50% in 2020. The exceptions were the provisions of these plans related to the minimum recycling rate of plastic packaging waste, but the indicators in this regard resulted directly from Directive 94/62/EC. The waste management plans included information specified in Article 28(2) of Directive 2008/98/EC, which is an analysis of the current waste management situation in the geographical entity concerned. The findings of the audit show that information presented in the waste management plans did not make it possible to establish precisely how plastic waste, generated from both municipal and non-municipal sources, was actually treated. Neither did they contain a calculation of overall costs of the plastic waste management system in Poland. The national strategy aimed at bringing Poland's development towards the Circular Economy, titled *Roadmap for Transformation towards the Circular Economy* (the *Roadmap*) was prepared by an inter-ministerial team, established by the Minister of Economic Development, and adopted by the Council of Ministers on 10 September 2019. The *Roadmap* comprehensively presented an economic model based on maximum use of existing resources and defined measures to reduce the comsumption of natural resources. Thus, the document could lead to reduction of waste generation, including plastic waste, which in view of common use of plastics, played an important role in the *Roadmap*. However, NIK highlighted that the vast majority of measures planned in the Roadmap were conceptual, including guidelines or proposals for legal solutions. Therefore, even full implementation of the planned measures would not automatically improve the efficiency of the waste management system in Poland. Moreover, during NIK's audit, a majority of planned tasks in the *Roadmap* were still at the preparation stage and the Minister of Economic Development did not complete the preparation of methodology for the evaluation of implemented projects, which represented a significant challenge to assessing how and to what extent they have been delivered.
The most important actions aiming at proper plastic waste management were implemented at the local level	Pursuant to Polish national regulations, each municipality is obliged to cover all property owners with the municipal waste management system, as well as to achieve a minimum level of preparation for re-use and recycling of municipal waste (20% in 2017, 30% in 2018, 40% in 2019 and 50% in 2020). Therefore, in the audited municipalities and communes, the relevant infrastructure was in place, including among others: municipal installations for treatment of mixed waste, places of separate waste collection and in some municipalities – incineration

	facilities (for example in Krakow, about 50% of collected mixed waste was incinerated with energy recovery). Inhabitants of municipalities and communes were obliged to collect waste in a separate manner in the case of the following types of waste: (1) paper and cardboard, (2) metals and plastics, (3) glass, (4) bio-waste and (5) mixed waste. Both municipalities and businesses handling waste operations, especially recovery and disposal of waste, were obliged to report on waste management on special reporting forms. However, the audit in communes and municipalities showed that only a part of auditees fulfilled their obligations and recommendations established in the *National Waste Management Plan 2022* and in regional waste management plans. Only 4 out of 15 auditees (27%) commissioned a survey on the morphological composition of municipal waste, a third out of 15 supported and promoted the establishment of networks of repair and re-use, and less than a half (6 auditees) created local platforms for waste prevention. As mentioned above, the EPR scheme applied to packaging and operated as product fees and recycling fees. Additionally, the businesses which placed packaging on the market were obliged to conduct educational campaigns aim at improving public environmental awareness. It consisted in, among others: informing about proper packaging waste management, a potential impact of packaging waste on the environment and human health as well as return, collection and recovery systems.
Educational and informative activities	The Polish legal framework stipulates that communes and municipalities are obliged to conduct educational and informative activities on proper waste management. NIK assessed positively educational and informative activities undertaken by all auditees. In particular, they consisted in: (1) posting the rules of separate collection of waste on their websites or social network sites, (2) running educational workshops, (3) holding numerous competitions on waste management, (4) sharing educational materials with schools to conduct lessons on separate collection of waste, (5) distributing leaflets, posters, films and other educational and informative materials to inhabitants (6) holding ecological events. However, the NIK highlighted that the majority of these activities addressed separate collection of waste instead of waste prevention. The educational and informative activities were conducted also on the national and regional levels (marshal offices). For example, the Minister of Climate prepared and ensured the streaming of 48 educational radio broadcasts, concerning among others waste management and the Circular Economy model, as well as 9 TV shows on waste management and separate collection.
Good practices	During the audit, the NIK found good practices in the municipalities aimed at improving the effectiveness of waste management, including plastic waste, as well as creating good habits among inhabitants. Examples of good practices are the following: 1. On 10 April 2019, the Krakow City Council adopted a resolution on launching a campaign called *Krakow without plastic*. It consisted in removing plastic items like cups, boxes, disposable cutlery from the City Hall and all subordinate units and replacing them with multi-use items made of glass or metal. 2. In 2019, Warsaw held a *Warsaw Month of Recycling* and promoted the 3-Rs approach: REDUCE-REUSE-RECYCLE. Several recycling machines were installed for plastic and glass bottles in different parts of the city.
Conclusion	**The adopted policy and activities implemented by all auditees, both at central, regional and local level were insufficient in order to reduce plastic waste generation and its proper treatment. Furthermore, low progress in work by the Minister of Climate and the Minister of Economic Development does not give much hope for prompt implementation of the Circular Economy model. This conclusion is supported by the results presented in the third part of this summary.**
Audit aspect No 3	**Are the results of implemented measures concerning plastic waste treatment monitored and what effects have been achieved in the context of established goals in that field?**
Sources of plastic waste, its quantities and methods of treatment were not reliably monitored	The problems of plastic waste management were significantly bigger than accessible reporting data suggested in the audited period. It should be emphasised that the adopted reporting system did not allow to determine directly, among others: quantities of generated plastic waste and identify how plastic waste was finally treated (not only recycled but also otherwise treated). NIK assessed that the activities of the auditees, especially at the national level, that is, competent ministries, were insufficient to perform an integrated and comprehensive analysis on plastic waste treatment and to identify problems involved in the topic. It should be mentioned that the recycling rate of municipal waste adopted in Poland was calculated in relation to the following processes: preparation for re-use and recycling of paper,

	metal, plastic, glass household waste and other single types of household waste or of similar waste from other origins.[2] That is the reason why the achieved outcomes did not fully reflect problems of plastic waste management. Data presented in Eurostat did not allow to determine how municipal plastic waste was treated as well. Moreover, according to the methodology adopted in Eurostat, the recycling rate of municipal waste was calculated taking into account all types of this waste, that is, differently from the national system.
Information in the waste management plans did not reflect actual status of plastic waste management	In a majority of cases, information contained in the national and in regional waste management plans did not allow to establish the total quantity of plastic waste generated in different regions (voivodships) taking into account the morphological composition of municipal waste. Data were limited to quantities of municipal waste collected in a separate manner and ignored considerable quantities of plastic waste from mixed waste. The plans also did not include data allowing to establish total quantities of plastic waste from non-municipal sources. The available data concerned only packaging waste generated from different sources such as municipal sector, commercial activity or industry. Finally, data and information contained in the plans did not allow to establish precisely how plastic waste generated from both municipal and non-municipal sources was actually treated. That is the reason why NIK held that the analysis of the waste management presented in the *National Waste Management Plan 2022* did not reflect the actual status of management of generated waste, including plastic waste from both municipal and non-municipal sources.
Inadequate treatment of plastic municipal waste	The estimates performed by the NIK show that the main method of the plastic waste treatment in 2018 was landfilling in three audited voivodeships (from 65% to 68% of total generated plastic waste) and incineration in two other voivodeships (from 38% to 46%). It means that plastic waste was treated in a less desirable way in the context of waste hierarchy established in the European law, according to which recycling and preparation for re-use were given higher priority. Additionally, plastic waste was more difficult to treat than other types of waste.
High risk of failing to meet targets of preparation for re-use/recycling of municipal waste without significant changes in waste management system	Despite increasing national recycling rates in 2016-2018 (27.9%, 29.1%, 36.2% respectively) and growing quantities of municipal waste collected separately (32%, 35%, 38% respectively), municipal waste was managed in a way which did not assure achieving the expected results. According to the NIK, there is a high risk of failing to meet the targets of recycling and preparation for re-use of municipal waste (40% in 2019, 50% in 2020-2024, 55% in 2025-2029 and ultimately 65% in 2035 and later) without significant changes in the waste management system. Moreover, the system to monitor the efficiency of municipal waste management, established by the Minister of Environment (later the Minister of Climate), based on recycling and preparation for re-use rates from all communes and municipalities, did not fully reflect the actual state of the waste management system and problems with treatment of different types of waste, especially including plastic waste.
Insufficient development of databases concerning waste management	The *Regional Waste System* database furnished by the Ministry of Environment, used in all marshal offices, did not allow to fully identify how waste, including plastic waste, was treated. A big part of waste was submitted to other recovery operations, mostly to a preliminary operation, covered by R12 code (*Exchange of waste for submission to any of the operations numbered R1 to R11*). For example, in the Małopolskie Voivedeship, the amount of plastic waste submitted to the R12 operation constituted between 31% and 42% of total generated plastic waste in 2015-2018. In addition, the database did not allow to determine (both at the regional and national levels) the quantities and methods of plastic waste treatment in 2017-2018 from non-municipal sources. This resulted mainly from the fact that some amounts of plastic waste both from municipal and non-municipal sources was collected under the same code. It concerned mostly plastic packaging (code 15 01 02 – *Plastic packaging*). There was a separate reporting system on municipal waste in Poland. A majority of the audited marshal offices used an external software for preparing reports on municipal waste for 2017 and 2018, allowing them to significantly automate the process. On the other hand, the Ministry of Climate applied only Microsoft Office tools for an aggregation and analysis of reported data from the whole country. The NIK assessed that this tool was an ineffective and inadequate solution for up-to-date and systematic analysis of data on municipal waste from the whole country. It required a large amount of work and created a high risk of mistakes. That is the reason why the scope of the analysis performed by the Ministry of Climate was very limited. A possible solution to the problem would be full implementation of a new IT system, that is, a database on products, packaging and waste management. The reporting function of the database did not start till the end of the audit (mid-2020).

[2] For the purpose of calculating the recycling rate of municipal waste, Poland has adopted the second method established in Article 3 [Paragraph 1(b)] of Commission Decision of 18 November 2011 establishing rules and calculation methods for verifying compliance with the targets established in Article 11 (Paragraph 2) of the Directive 2008/98/EC (OJ L 310, 25/11/2011 p. 11).

	The NIK assessed that the Minister of Environment and subsequently the Minister of Climate did not assure proper technical solutions for effective gathering, aggregation and analysis of data on municipal waste on the national scale.
National reporting system did not provide data on transboundary movement of plastic waste	The audited public entities at the central level did not have knowledge about the transboundary movement of plastic waste, inside and outside of Poland.[3] According to NAO Report,[4] in 2017, China was the most significant overseas customer for the UK's plastic packaging waste, receiving 25% of exports. Second most significant customers were Malaysia, Poland and Turkey, each receiving 11% of exports in 2017. At the same time, after China announced a ban on imports of plastic waste, effective at the beginning 2018, China's share of the market dropped as a result of its new restrictions on the quality of waste exported. In Q1 2017, it received 40% of the UK's plastic exports, whereas in the same time period of 2018 it received only 3%. The largest foreign markets for plastic packaging waste in Q1 2018 were: Malaysia (17%), Turkey (16%), Poland (12%) and Indonesia (11%). It is worth mentioning that the results of another NIK's audit[5] show that Poland did not implement the regulations of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal,[6] concerning an efficient control system of transboundary movement of waste. In addition, Poland did not fulfil the obligations established in Article 50 of Regulation (EC) No 1013/2006 Regulation (EC) No 1013/2006 of the European Parliament and of the Council of 14 June 2006 on shipments of waste. The auditees responsible for transboundary movement of waste did not secure efficient controls of waste crossing the border between Poland and Ukraine. Polish legal framework did not impose on any service or inspection authority an obligation to control every transport of waste crossing the border with Ukraine. Border checks consisted mainly in verifying shipping documents for waste crossing the border with Ukraine, without verifying compliance of quality and/or quantity of every waste transport with the shipping documents. Moreover, the NIK highlighted that the rules concerning documentation of movement of *green-listed* waste[7] created a serious risk that this waste, especially in transit from Ukraine through Poland to other EU countries, could partially remain in the territory of Poland illegally. Pursuant to Polish regulations, none of the competent entities had not an obligation to monitor shipping through the territory of Poland. None of the responsible entities registered if waste left the territory of the country.
Necessity to improve considerably the effectiveness of treatment of plastic packaging waste **Figure 1**	In 2016-2018, Poland achieved the target recycling rate of packaging plastic waste (23.5%). However, it was visibly lower than the recycling rate for all packaging waste. This finding confirms that plastic packaging waste is more difficult to treat than other solid waste (paper, glass, metal). It also means that there is a necessity to improve considerably the effectiveness of treatment of plastic packaging waste due to the growing minimum level of recycling for this type of waste (50% in 2025). In addition, from 2021, the European Union adopted a contribution on non-recycled plastic packaging waste. Given the plastic packaging waste treatment in 2018, Poland would be obliged to pay approximately EUR 0.5 billion a year. **Recycling rate of packaging waste in 2016-2018 in Poland**

[3] Except waste submitted to disposal operation, although according to official data, there was no legal export or import of plastic waste for this purpose in 2017-2019.
[4] The National Audit Office (UK), *The packaging recycling obligations*, 23 July 2018.
[5] Supreme Audit Office Poland, *Report P/19/100 The transboundary movements of wastes among Poland, Ukraine and Slovakia*, 20 July 2020.
[6] The Council Decision of 1st February 1993 on the conclusion, on behalf of the Community, of the Convention on the control of transboundary movements of hazardous wastes and their disposal – Basel Convention (OJ L 39, 16/02/1993 p. 3, as amended).
[7] *Green-listed waste* – waste listed in Annex III of Regulation No 1013/2006 –List B of the Basel Convention (Annex IX) plus 13 types of waste from the old classification of OECD, not included in List B. These are non-hazardous waste such as: plastic waste, scrap paper, scrap metal, glass cullet.

Insufficient supervision and control of types and methods of landfilling of waste, including plastic waste	Findings of the audit showed that the competent public entities (Inspectorate of Environmental Protection) did not control the morphological composition and caloric value of landfilled waste in the audited municipalities and communes. According to NIK's estimates, substantial quantities of plastic waste were landfilled. It should not have taken place due to the ban on landfilling of high caloric waste (above 6 MJ/kg), established in the national regulations. Plastic waste has higher calorific value than other waste. Lack of control within the above scope did not contribute to eliminating the risks associated with irregular landfilling of waste. This conclusion was supported in particular by constantly growing number of fires of landfills in Poland between 2012 (75 fires) and 2018 (243 fires).
Conclusion	**The reporting system did not allow to determine directly, among others: quantities of generated plastic waste and identification of a final method of its treatment (not only recycled but also other treatment operations). The audited public entities, especially at the central level, did not undertake sufficient measures to perform an integrated and comprehensive analysis on plastic waste treatment and identify problems with the topic. Plastic waste was treated in less desirable way in the context of waste hierarchy (it means it was treated by means of other processes than recycling and preparation for re-use). There is a high risk of failing to meet the targets on recycling and preparation for re-use of municipal waste (50% in 2020-2024, 55% in 2025-2029 and ultimately 65% in 2035 and later) without significant changes in the waste management system.**
Overall conclusions (of the national report)	
	The most important recommendations addressed to the relevant Ministers in the context of the coordinated audit were as follows: **Minister of Climate and Environment:** 1. Accelerate work on bringing the waste management system in Poland towards the Circular Economy model, in particular through: a) adoption of standards for the support of eco-design of plastic packaging, b) adoption of solutions for improved efficiency of separate collection of waste (including plastic waste) and ensuring the possibility of its treatment in line with the waste hierarchy, c) development of an EPR scheme so that to cover real costs of collection and treatment of waste, including plastic waste, d) taking final decision on the feasibility and possibility of introducing a Deposit-Return Scheme for packaging in Poland. 2. Conduct systematic analysis of quantities of generated solid waste in the municipal sector and its full an final treatment, and implement a data reporting system which would enable such analysis in an automatic way both nation-wide and in each municipality and commune. 3. Take resolute action needed for proper implementation of the provisions resulting from Directive (EU) 2018/852 of the European Parliament and of the Council of 30 May 2018 amending Directive 94/62/EC of 20 December 1994 on packaging and packaging waste [the Article 7(2) concerning the EPR scheme]. **Minister of Economic Development, Labour and Technology** Cooperate closely with the Minister of Climate and Environment in order to implement the Circular Economy model with particular emphasis on plastic waste management.
	Marian Banaś *President of the Supreme Audit Office of Poland*

P O R T U G A L

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The title of the audit:	*PLASTIC WASTE*
Period of time covered by audit:	2017 to 2020
Main audit question:	*Have the relevant public authorities (state and/or self-government administration) developed policy (plans, strategies) and implemented measures aiming at achieving goals (adopted in this policy) regarding generation and management of plastic waste?* The Portuguese State transposed, albeit belatedly, the Waste Framework Directive, the Packaging Waste Directive and the Landfill Directive. It implemented a network of waste management operators to provide a convenient collection of urban waste at the municipal level and set targets for the activity of these operators to ensure achievement of the objectives and target set in the Directives. Portugal adopted policies related to waste management, such as the National Waste Management Plan for the 2014-2020 horizon and the Strategic Plan for Urban Waste 2020 (PERSU 2020/2020+), consistent with the objectives and targets set in the EU Directives and covering all phases of waste management, from collection of waste and sorting to treatment for recovery or to its final destination. Portugal did not set specific targets for plastic waste, but set a 22.5% target for recycling plastic packaging according to Directive 2004/12/EC transposed by Decree-Law 92/2006. Plastic waste originated in electric and electronic equipment and cars have specific policies. The audit focused only on urban plastic waste. Nevertheless, the policies adopted were not effective as to ensure that general urban waste management goals were achieved. None of the targets set for 2020 were met, although the Covid 19 pandemic negatively influenced that result. On the contrary, the specific targets for valuing and recycling plastic packages, including the plastic ones, were met. For the near future, targets are much more ambitious and new policies and approaches are needed.

MAIN FINDINGS OF THE NATIONAL AUDIT ON PLASTIC WASTE

Audit aspect No 1	*Has the country adopted legal regulations and organizational arrangements concerning plastic waste treatment?*
Compliance of the most important national regulations with the EU legislation (EU Countries)	The legal framework applicable to waste management, including plastic waste, is extensive and complex. It is grounded in the applicable EU Directives and Regulations, fully complying with them. Decree-Law No. 178/2006 established the general regime applicable to the prevention, production and management of waste ("General Waste Management Regime"), transposing Directives 91/689/EEC ("Dangerous Waste Directive"), and 2006/12/EC ("Waste Directive"). This Decree-Law was subject to several amendments, the last of which introduced by Decree-Law No. 73/2011, transposing Directive 2008/98/CE, of November 19 ("Framework Waste Directive"). The Decree-Law 152-D/2017 consolidated in a single piece of law ("Unified Regime of Specific Waste Flows") the legal regime related to packaging and packaging waste and the former five regimes that regulated specific waste flows. It fully complies with the EU Packaging Directive. The Decree-Law 102-D/2020 published at the end of 2020: • Approved a new *General Regime for Waste Management*, replacing Decree-Law 178/2006; • Approved a new Legal Regime for *Waste Disposal in Landfill*, revoking Decree-Law 183/2009; • Amended Decree-Law 152-D/2017, on the management of specific waste streams, transposing Directives (EU) 2018/849 (which amended Directives 2000/53/EC on end-of-life vehicles, 2006/66/EC on batteries and accumulators and their waste, and 2012/19/EU on waste electrical and electronic equipment), 2018/850 ("Landfills"), 2018/851 ("Waste") and 2018/852 ("Packaging"). Directive (EU) 2019/904 ("SUP Directive - Single-Use Plastic"), established measures to reduce the impact of single-use plastic products on the environment, imposing restrictions on their placing on the market. Part of these measures are provided for in Laws 76/2019 and 77/2019, of September 2, and 88/2019, of September 3, which introduced restrictive measures on the use of plastic in packaging and disposable products, such as the prohibition of tableware of disposable plastic, the obligation to provide consumers with alternatives to the distribution of ultra-light plastic bags and plastic corvettes at points of sale for bread, fruits and vegetables (ban as of June 1, 2023) and the prohibition on the disposal of cigarette butts in public places.

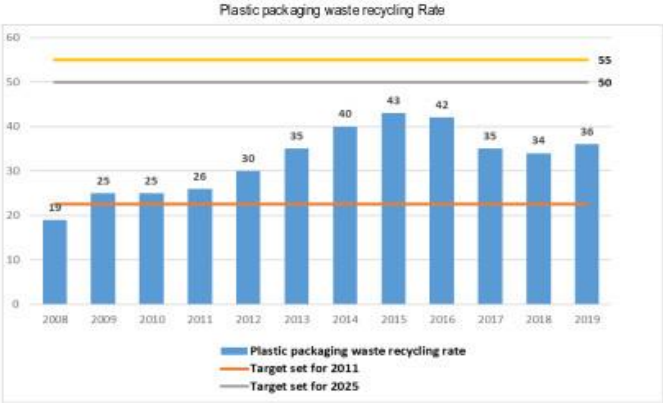
	Decree-Law 78/2021, of September 24, establishes measures to prevent and reduce the impact of certain single-use and oxodegradable plastic products. All this legislation stresses EU grounded principles of: • Preserving natural resources • Preventing and reducing waste production, according to the top of the waste hierarchy • Mitigating waste impacts on the environment and human health • Recovering the economic value of waste as a source of raw materials and energy • Reusing packaging • Valuing and recycling packaging waste • Ensuring the principle of extended producer responsibility • Preparing and implementing waste prevention programs
Adoption of the Extended Producer Responsibility system concerning plastic products and waste	The principle of Extended Producer Responsibility is established in the *General Waste Management Regime* (Decree-Law 178/2006, amended by Decree-Law 73/2011, in force during the audit period, and meanwhile replaced by Decree-Law 102- D/2020, with effect from 1 July 2021). The law establishes that producers are fully responsible for the environmental impacts of their products and for the waste generated in the manufacturing process and subsequent use and disposal of the products, meaning that they have to manage the waste and/or pay for the related activities. The producer's responsibility may be performed by the producer itself, may be transferred to a waste management entity (upon the payment of a management fee (*ecovalue*)) or may be implemented through voluntary agreements between the producer and the Portuguese Environment Agency. In the portuguese system all three solutions are being applied. The most common one in what relates to urban waste is to pay to a waste management body. These waste management entities set up selective waste collection networks, fund the costs of sorting, storage, transport, treatment and recovery of waste deposited in selective collection networks and have to comply with collection targets and minimum recovery targets per material (specific targets for plastic recovery and recycling are set in the contracts).
Preparation of policy on waste management and responsible entities	The definition of the waste policy, including plastic waste, is the responsibility of the Ministry of Environment and Climate Action, with the support and under proposals of the Portuguese Environment Agency and other administrative entities with competence in the matter. It is based on extensive assessment reports and is subject to public discussion and experts' opinions. The Strategic Plan for Urban Waste 2020 (PERSU 2020) followed a detailed analysis of the performance of the 23 Urban Waste Management Systems (SGRU) on the Mainland, which assessed the effectiveness of the selective collection processes, the efficiency of technological processes for processing waste and the treatment infrastructure implemented or predicted. Currently, a new Plan is being developed, and the public hearings and consultations have just been completed. The General Waste Management Regime recommends that the fundamental guidelines of the national scope of waste policy are included in the National Waste Management Plan, in specific waste management plans and in the multi-municipal, inter-municipal and municipal action plans. It also establishes that the waste management plans must comply with the planning requirements regarding the management of specific waste streams, namely those established in the legal regime for the management of packaging and packaging waste. A specific policy for the management of plastic waste has not been established, although there are some scattered legal measures aimed specifically at some types of plastic waste or at the production of the kinds of waste where plastics constitute an essential fraction of the majority.
Measures encouraging the design of products in order to reduce the generation of waste (incl. eco-design of plastic packaging)	Both the *General Waste Management Regime* and the *Circular Economy Action Plan* share the objectives of *"designing products, services, and business models that prevent the production of waste and pollution of the natural system"*. They: • Require the preparation of waste prevention programs, including measures such as the promotion of ecological product design, the dissemination of technical information on waste prevention and the carrying out of awareness campaigns • Envisage voluntary agreements with producers to adapt the ecodesign of products • Establish that changes in the design of a product can be imposed in order to reduce the waste produced and to ensure its proper treatment • Consider that fees to be paid by producers to the waste management entities may be different according to the level of environmental impacts and waste management costs of each type of product The *National Strategy for Environmental Education* includes *"Making the economy circular"* as one of the three thematic axes. This theme approaches subjects such as *"Design of products and efficient use of resources"* and *"Valuation of waste"*. This program supports training for company projects, municipalities, schools and environmental non-governmental organizations (NGOs). In 2018 and 2019, within the scope of the *Action Plan for the Circular Economy*, agreements for the efficient use of plastic were signed between the Portuguese Environment Agency and five sector associations representing beverages, hotels, restaurants, mineral water, agrifood and distribution. The actions taken include the ecodesign of

	packaging, with the elimination of unnecessary materials, replacement of types of plastic by others with a higher recyclability rate or replacement with other materials with less environmental impact, weight reduction and incorporation of recycled material in packaging. Some barriers will need to be overcome, such as the need to invest in manufacturing equipment to adapt to new materials, the difficulties of recycling composite or mixed material packaging, the consumers' lack of awareness and the reduced national expression of the recycled plastics market.
Separate collection of waste	The management of urban waste in mainland Portugal is organized according to two distinct but complementary categories, according to the activities carried out: the "low" (retail) activities, which include the collection of urban waste, and the "high" activities (wholesalers), which include waste sorting, treatment and recovery, and final destination. Low and high activities are, in most municipalities, carried out by systems managed by different entities. Management entities are of different types and may be owned by the state, municipal, private or mixed, with different governance models. The "high" management currently includes 23 multi-municipal and intermunicipal systems on the mainland, and "low" management, with responsibility for collecting urban waste, is carried out by 253 entities, which are mostly services of the municipalities themselves. Waste management systems encompass two major flows depending on the type of collection carried out: undifferentiated collection, practised in many municipalities, and selective collection. The selective collection is, in most municipalities, the responsibility of the "high" service, often multi-municipal concessionaire companies or municipal or inter-municipal companies. In any case, despite the selective collection of waste that has been implemented in Portugal for several years, most urban solid waste is still collected in an undifferentiated manner (79% in 2020).
Conclusion	**In Portugal, policies relating to waste result mainly from European policies, directives, and regulations. However, a policy specifically addressed to the management of plastic waste has not been established, although measures and actions aimed at this type of waste are included in the general policy guidelines in this field. The legal diplomas in force and the plans approved, particularly the Strategic Plan for Urban Waste, are sufficient and adequate as the framework for urban plastic waste management. Yet, measures have not provided the expected results, as mentioned below.**
Audit aspect No 2	***Has any policy (plans, strategies) been applied in order to implement proper plastic waste management and improve the efficiency of using existing materials and products (according to assumptions of circular economy)?***
Strategic documents on plastic waste management and adopted goals	The main strategic documents on waste management, including plastic waste, are: • National Waste Management Plan for the 2014-2020 horizon • Strategic Plan for Urban Waste 2020 (PERSU 2020/2020+) • Circular Economy Action Plan PERSU 2020 defined several goals/targets: • Reduction of per capita production of waste • Reduction of waste landfill disposal • Increase of separate collection of waste • Increase of the recycling rate • Specific targets for each of the 23 waste management systems to allow national compliance with EU targets. The evaluations of the execution of PERSU 2020 evidenced a poor approximation to the established goals and the need to adapt the measures foreseen therein, with a need to change the national strategy for urban waste. On the other hand, the challenges of the new European strategy for plastics in the circular economy, and the changes introduced in the Landfill, Waste and Packaging Directives by Directives (EU) 2018/850, 2018/851, and 2018/852, made it necessary to take measures to realign PERSU 2020 with the new European objectives established in these Directives. PERSU 2020 was amended for adjustments in the measures because they were assessed as non-sufficient to achieve targets in 2020 and because of the new EU Directives challenges. The PERSU 2020+ is the new version, putting a priority in the recycling of packaging and initiating measures to implement deposit systems, the increase of separate packaging collection, the promotion of voluntary agreements, improvements in sorting, evaluation of incentives for the incorporation of secondary raw materials and communication and awareness actions. Legal provisions were added aiming at the prevention and preparation for the reuse and recycling of plastic waste. They included the taxation of light plastic bags (Law 82-D/2014), measures to encourage the return of non-reusable beverage packaging (Law 69/2018), measures to promote the sustainable use of plastic and the adoption of circular solutions in the Public Administration. The parliament recommended implementing a waste tariff system based on the PAYT economic instrument (Pay As You Throw).
Problem analysis on plastic waste treatment	PERSU 2020 was based on a solid analysis of the urban waste problems, notably: • Predominant use of landfill over separate selective collection of waste

	• Uncertainty in the disposal of recyclable materials, because of reduced number of recycling industries and dependence on global markets • Difficulty in the disposal of some products, namely fuels derived from waste, organic compost and plastic packaging waste; • Low citizens' knowledge of urban waste management systems and poor perception of their environmental and economic value; • Insufficient intervention capacity of entities with supervisory, inspection and monitoring powers. Total costs of the urban solid waste management system were not estimated. The management costs of specific waste streams are estimated and assessed in the licensing process of waste managing entities. Each one must demonstrate the economic and financial viability and balance of the systems' operation, considering the values of the financial instalments charged to those responsible for the waste. The coverage of costs by income in the service on "high" is considered as good (101%), but in the service on "low", the coverage of expenses is considered as unsatisfactory (83%). These costs do not reflect the costs of recycling the waste itself, which takes place downstream of the operation of this system. Plastic waste is sold by the entities managing the specific waste streams to recycling operators.
Implementation of the most important actions aimed at the proper management of plastic waste	The plastic packaging waste is collected in several ways: • Some producers take care of recovering their packaging themselves for reuse or recycling • Separate collection containers are available for households and businesses to dispose their plastic waste • Municipalities or waste management companies collect separate plastic waste and/or undifferentiated waste • If they are not the waste management entity, they "sell" the separate plastic waste and the indiferenciated waste to waste management entities, which prepare it for recycling, valuation or lanfill Producers pay fees to the waste management entities according to the packaging they produce. These fees may be different according to the impact and recyclability of products. Citizens pay taxes to the waste collectors. Waste collectors also receive a price for the waste they sell to waste management entities. Waste management entities sell the plastic waste to recycling companies, incinerate it or send it to landfills.
Coordination among various actors of waste management system	Coordination is regulated by established responsabilities, either in law, regulations or contracts. The rights and obligations of the waste managing entities are established in the respective concession contracts with the State, and the relationships with their customer systems (municipality/municipal companies) are established in waste delivery and reception contracts between the concessionaires and each of the managing entities of the municipalities covered. These entities are required to deliver to the concessionaire all-urban waste collected in the area under their responsibility. The supervision of compliance with the *General Waste Management Regime*, the *Unified Regime for Specific Waste Flows*, the *Legal Regime for Landfill Waste* and the transboundary movement of waste, is the responsibility of the *General Inspectorate for the Environment and Spatial Planning*, the *Regional Development and Coordination Commissions* and the police authorities and, as appropriate, the municipalities, the *Tax and Customs Authority*, the *Food Safety Authority* and the *Portuguese Environment Agency*. Although many entities are involved, no coordination problems or overlaps were identified. However, some gaps seem to exist in the control over some of the bodies, e.g. the producers.
Educational and informative activities	The Portuguese Environment Agency and the Directorate-General for Education articulate, promote and supervise a National Strategy for Environmental Education. Educational and informative activities aimed at reducing use, separate waste collection and other environmental issues are financed by national and EU funds. The Portuguese Environment Agency, NGOs, municipalities and other entities organize awareness and training actions about waste for various target groups. Likewise, licenses granted to the waste management entities require the preparation and implementation of an Awareness, Communication and Education Plan for the period of validity of the license, in line with the National Strategy for the Environmental Education. Recent licenses establish that the annual expenses of executing these plans should not be less than 5% of the estimated annual ecovalue income in the first year of the license, 6.5% in the second year and 7.5% in the following years. The amount invested by the management entities of waste streams in awareness and communication totalled 4,8 M€, 6,1 M € and 9,3 M€ in 2017, 2018 and 2019.
Good practices	A Green Taxation Law introduced a contribution to lightweight plastic bags. Portugal was a country where too many plastic bags were used, with an estimated consumption of over 500 bags/inhabitant per year, the vast majority of which were single-use. The tax was introduced in 2014, and its effect far exceeded expectations. There was a huge retraction in the consumption of single-use plastic bags, with consumers being induced to give preference to reusable bags and other more environmentally sustainable solutions. Consumption stood at 10.7 bags/inhabitant in the first year of application of the contribution (2015), 7.5 bags/inhabitant in 2019, after having registered a minimum of 5.9

	bags/inhabitant in 2018. These values are much lower than the EU target of 90 bags/inhabitant until December 31, 2019, and 40 bags/inhabitant until December 31, 2025. Measures taken to reduce the consumption of plastic products in the Public Administration - The Government forbid public administration to purchase and use single-use or disposable plastic products, including bottles of water and established the preference for products identified with the EU Eco Label or other relevant environmental certifications, as well as the promotion of training and awareness actions. Deposit system for the return of non-reusable plastic beverage packaging – being implemented in large supermarkets and malls and mandatory from January 1, 2022. Equipment will pay for the return of the packaging. It aims at ensuring that the packaging is directly sent to recycling. Voluntary agreements signed between the Portuguese Environment Agency and five business associations, committing to reach, by 2025, a collection rate for PET bottles of 90%, surpassing the EU target (50%), and rate incorporation of 25% of recycled PET in new bottles. Estimated annual savings of more than 8.303 tonnes of plastic are expected, making it possible to avoid an amount of around half a million plastic disposables. Portuguese Plastic Pact - launched in 2020, bringing together the most prominent players in the value chain (manufacturers, waste management entities, municipalities, distributiers and services, universities, the Portuguese Environment Agency and other official bodies - more than 100 participants). The pact aims at increasing the use, reuse and recycling of plastic packaging. It includes targets to define, by 2020, a list of single-use plastics considered problematic or unnecessary and design measures for their elimination, through redesign, innovation or alternative delivery models, ensure that 100% of plastic packaging is reusable, recyclable or compostable, ensure that 70% or more of plastic packaging is effectively recycled, through increased collection and recycling, incorporate, on average, 30% recycled plastic in new plastic packaging and promote consumer awareness and education activities on the circular use of plastics. Targets should be met by 2025.
Conclusion	**Measures and good practices were adopted to manage urban plastic waste, in line with the principles of *"waste hierarchy"* and circular economy. Some of them are very recent and may be a significant contribution for complying with the recycling target established for 2025. Given the current drop in market prices, attention was drawn to the fact that it will be necessary to find solutions for the forwarding of waste and recycling products.**
Audit aspect No 3	***Are the results of implemented measures concerning plastic waste treatment monitored and what effects have been achieved in the context of established goals in that field?***
Data concerning: quantities of plastic waste (incl. import and export), its sources and treatment	There is an IT system on waste, managed by the Portuguese Environment Agency - the *Integrated Electronic Waste Recording System* (SIRER). This system records all the data needed by operators in the waste sector for planning and evaluating the outcome of policies, for statistics, for reporting to the EU and for the calculation of the Waste Management Fee applicable to producers. Packers and service packaging suppliers must record production information and the number of products placed on the market. SIRER's records are subject to consistency verification, and managing entities are required to carry out annual audits to verify the quality and veracity of the information recorded. The information about the packaging is not complete since some packers and service packaging suppliers do not record information on the Integrated Packaging Waste Management System (SIGRE) they choose, although measures have been taken to prevent that. There are system modules that allow the quantification of waste inputs and outputs in the different phases of urban waste management, but the quantification of packaging waste broken down by material presents some difficulties (non-disaggregation of codes). Portugal is a net importer of large amounts of waste, with imports and exports reaching 2,5 and 1,2 million tonnes, respectively, in 2018. The quantities of plastic waste entering Portugal amounted to 86,4 thousand tonnes in 2017, 68,2 thousand tonnes in 2018, 55,9 thousand tonnes in 2019, and 82,6 thousand tonnes in 2020. The total amounts of plastic waste exported in the same period were 60,6 thousand tonnes in 2017, 50,1 thousand tonnes in 2018, 58,3 thousand tonnes in 2019 (year in which Portugal was a net exporter of plastic waste), and 55,3 thousand tonnes in 2020.
Events that posed a threat to the environment related to improper treatment of plastic waste	Some infringement situations concern plastic waste found in illegal waste deposits mixed up with other waste. The elimination of waste, including plastics, using open burning, especially those related to agricultural activity, has also been identified. The non-compliance situations verified in the inspection actions carried out on plastic waste management operators were related to licensing issues and not with the conditions imposed in the permits or with the inappropriate treatment of plastic waste. The National Waste Authority has not established the requirements for packaging waste to be observed by the respective operators, preventing entities with inspection powers to apply controls. In waste handled across borders, the main illegalities detected were false declarations, inadequate conditions for packaging and transport, insufficient documentation and lack of communication to the competent authorities.

P O R T U G A L

Achieved results in plastic waste treatment	<u>Assessment of targets to be achieved by dec 2020.</u> **Reduction of *per capita* production of waste: not met** The target was a 10% decrease on the baseline of 456 kg/inhabitant.year (2012). In 2020 the waste production was 513 kg/inhabitant.year, above the EU average (502 kg/inhabitant year). In recent years, the amount of urban waste produced in Portugal has been increasing, instead of decreasing. **Reduction of waste landfill disposal: not met** The target was 35% or less of the landfill disposal of 1995 (in biowaste). In 2020 the landfill disposal was 53% of the baseline, far more than envisaged. The rate of landfill disposal has been stable over the last few years, above the target, although a significant increase happened in 2020 due to Covid-19 protection measures. **Increase of separate collection of waste: not met** The target was 52kg/inhabitant.year. The indicator has been improving and it was close to achievement. In 2020 the separate collection of waste was 50 kg/inhabitant.year. Nevertheless, in percentage the waste separate collection is not improving enough: it represents only 20% of the total waste. **Increase of recycling rate: not met** The target was 50% in 2020. The rate decreased in 2020 to 38%. It is far from achievement. **Recycling for packaging waste: met** The target was 55%. The indicator marks 57,6% **<u>Recycling for plastic waste: met</u>** In the case of plastic packaging, the recycling target has exceeded since 2009. However, after reaching a maximum of 43% in 2015, the percentage of waste sent for recycling has been decreasing, being only 36% in 2019.  Source: Prepared from the Annual Municipal Solid Waste Report 2020, APA.
Methodology of calculating the recycling rate of plastic waste	In Portugal, the recycling rate for plastic packaging waste is equal to (the plastic packaging waste collected separately plus the plastic packaging waste recovered in mechanical treatment and mechanical and biological treatment) / plastic packaging placed on the market, considering that the amount of packaging waste produced is equal to the amount of packaging placed on the market in the same year). The recycling rate for the purpose of the target set out in Directive 94/62/EC is defined by Decision 2005/270/EC as "*the total quantity of recycled packaging waste, divided by the total quantity of generated packaging waste.*" In the audit, no differences were found between national data and data sent to EUROSTAT on the levels of recycling of plastic waste (as for the municipal waste recycling rate, there are differences resulting from the application of different calculation methods).
Conclusion	**The policies on waste management have not been effective enough to achieve targets set for 2020, except on packaging and plastic waste recycling. Except for the separate collection of waste (where the indicator is improving), all the other indicators show either deterioration or stabilization of progress.** **The amendments to Landfill, Waste and Packaging Directives, operated by Directives (EU) 2018/850, 2018/851 and 2018/852, established new goals and targets for waste disposal in landfills and recycling and new rules for measuring compliance with these goals, more demanding than those previously considered. Current policies are not able to provide achievement of the new targets. The measures identified as good practices are at the beginning of implementation, but they may be insufficient.**

P O R T U G A L

Overall conclusions (from the national report)	
	The most important conclusions are as follows: • The legal framework and the strategies and policies for urban waste management are consistent with EU policies and regulations, are sufficient to frame waste management and were designed in an adequate way to problems identified and applicable principles. • The waste IT system is extensive and crucial for the planning, monitoring and assessment of the waste management policies, but there is evidence of weaknesses in what relates the amount and characteristics of packaging produced and gaps in the validation of data. • There is no policy or indicator to monitor the plastic waste in the sea. • The funding model of the urban waste management system does not sufficiently cover costs of waste collection and provides no incentive to citizens to separate plastic waste or other materials. • Measures to reduce the consumption of plastic bags were very effective, and other initiatives to reduce disposable plastics are promising. • Urban waste management targets for 2020 were not met: production of waste has increased, landfill disposal was not reduced, the separate waste collection has not improved enough, and the recycling rate is far from the target. Taxes over waste do not yet provide the right incentives. Covid-19 pandemic had a negative impact on the achievement of goals. • Recycling of plastic packaging met the targets but is not progressing enough. • The achievement of the demanding new targets for 2025, 2030 and 2025 needs new and stronger incentives and policies. • Educational and awareness raising activities are conducted at an appropriate level but may need to be intensified for the new measures. • Portugal is mainly an importer of plastic waste and, as recycling is intensified, solutions may be needed to place recycling products. • The monitoring and control of the compliance with rules and commitments as regard waste management is working, but some gaps must be addressed. No significant risks were identified as regards the adequate treatment of plastic waste. The most important recommendation addressed to the Minister of Environment and Climate Action: • Provide for the reinforcement of the mechanisms to prevent non-compliance in fulfilling the declarative and validation obligations of the data registered in the Integrated System of Electronic Registration of Waste. • Proceed with the approval of Strategic Plan for Urban Waste 2030, including appropriate measures to meet the goals for 2025, 2030 and 2035.

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R O M A N I A

ROMANIAN COURT OF ACCOUNTS	SUPREME AUDIT INSTITUTION	ROMANIA

The title of the audit:	*ASSESSMENT OF THE MANAGEMENT OF THE GENERATION OF PLASTIC WASTE*
Period of time covered by audit:	2017-2019
Main audit question:	*Have the relevant public authorities (state and/or self-government administration) developed policies (plans, strategies) and implemented measures aiming at achieving goals (adopted in this policy) regarding generation and management of plastic waste?*
Answer:	Romania has not fully transposed the European legal provisions on the general minimum conditions that extended producer responsibility schemes implemented at national level must fulfill. The central public authority in the field of environmental protection has not ensured full transposition of the provisions of European legislation, namely Directive 2008/98/EC on waste (as amended by Directive 851/2018/EC) and Directive 94/62/EC (as amended by Directive 852/2018/EC) regarding the full compliance with the principle of extended producer responsibility, given that at present this liability is transferred to and from WASTE MANAGEMENT ORGANISATIONS according to EPR scheme, to collectors/developers. Although the European Commission has warned Romania to speed up the process of developing and adopting the county waste management plans (CWMP) and updating them in line with the provisions of the national waste Management Plan (NWMP) (drawn up at the end of 2017), this process accrued delays and most were adopted in the course of 2021. After the endorsement of the NWMPs, the European Commission adopted a new Circular Economy Action Plan and a number of legislative amendments to Directive 2008/98/EC and Directive 94/62/EC, but no steps have been taken at a national level to update the previously adopted NWMPs.

MAIN FINDINGS OF THE NATIONAL AUDIT ON PLASTIC WASTE

Audit aspect No 1	*Has the country adopted legal regulations and organizational arrangements concerning plastic waste treatment?*
Compliance of the most important national regulations with the EU legislation (EU Countries) *The main differences between state and EU regulations (non-EU countries)*	The European waste legislation developed at strategic level through European directives has been transposed into national law through laws, government laws and ministerial orders. At a national level, the current legislative framework is not concerned with plastic waste specifically, as this is integrated with other types of waste. Although the deadline for transposition of Directive (EU) 2018/851 of the European Parliament and of the Council of 30 May 2018 for amending Directive 2008/98/EC on waste and that of Directive (EU) 2018/852 of the European Parliament and of the Council of 30 May 2018 amending Directive 94/62/EC on packaging and waste Packaging was 5 July 2020, the legislation adopted at a national level, namely the waste treatment Act (adopted in 2011) and the packaging and packaging waste Management Act (adopted in 2015), both with subsequent amendments and additions, have partially transposed these provisions. The waste regime Act (which, at the date of its entry into force, will repeal the provisions of the law adopted in 2011) and the draft legislative act amending Law No 249/2015 in order to fully transpose Directive 852/2018, are currently under preparation. Romania has not fully transposed the European legal provisions on the general minimum conditions that extended producer responsibility schemes implemented at national level have to fulfill.

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R O M A N I A

Adoption of the Extended Producer Responsibility system concerning plastic products and waste

Romania has imposed an obligation on economic operators to organize, recover and recycle packaging waste since 2002, thus gaining more than 17 years of experience in this matter.

The management of packaging and packaging waste is regulated at a national level by the packaging and packaging waste Management Act. One of the main issues covered by this legislation is that the responsibility for the management (and thus the financing of management) of packaging waste from products/materials placed on the market is incumbent on their producers (as defined by the above-mentioned law).

The law of managing of packaging and packaging waste (with subsequent amendments and additions) transposes the provisions of Directive 94/62 with subsequent amendments, except Directive 852/2018 where transposition is only partial to date.

In order to comply with the minimum requirements of the EPR scheme, substantial changes have been made to the law but only 4 of these have a full compliance status, and with 9 requirements to fulfil, the status of compliance is partial and in the case of 2 requirements the status is of non-compliance.

Details on the degree of compliance with the EPR scheme, between the Directive and national law, are:

The measure of compliance	Mandatory minimum requirement
Full compliance	Equal treatment of producers Financial or financial and organizational mechanisms for the fulfilmentf of obligations Self-control mechanism Constant dialogue between stakeholders
Partial compliance	Clear definition of the roles and responsibilities of all relevant actors Waste management objectives in line with the waste hierarchy Existing reporting system Information to waste holders Publicly available information Cost coverage Eco-modularity Independent supervision in the event of competition Monitoring and enforcement
Lack of conformation	Clearly defined domains of geographical area Appropriate availability of waste collection systems

Preparation of policy on waste management and responsible entities

As mentioned above, the current legislative framework does not treat plastic waste individually, which is why the responsibilities of the public authorities are detailed in Act No 211/2011.

The competent authority for decision and control in the field of waste management shall be the Ministry of Environment, water and forests (MMAP). According to the legal provisions, MMAP carries out policy at a national level in the fields of environmental protection, the green economy, biodiversity, protected natural areas, climate change, circular economy and waste management.

The institutions under the coordination of MAPAP, which are responsible for the waste sector, are:

• the national Environment Protection Agency (ANPM); ANPM has competence in the national implementation of policies, strategies and legislation in the field of environmental protection;

• national environmental Guard (NGG): The national environmental Guard is responsible for ensuring the control of the implementation of the Government's policy of the application of national legislation harmonized with Community legislation on environmental protection. The GNM is responsible for the implementation of the Government's policy on the prevention, detection and sanctioning of violations of legal provisions on the protection of the environment, including non-compliance with regulations laid down in the laws specific to industrial pollution control and risk management, dangerous substances and preparations, biodiversity and protected natural areas, the environmental fund and other areas covered by specific legislation in force.

• environmental Fund Administration (AFM): The unit responsible for managing the Environment Fund - the economic and financial instrument for supporting and implementing projects and programs for environmental protection and for achieving the European Union's environmental and climate change objectives, in accordance with the legal provisions in force.

Article 17 of the waste Management Act lays down the responsibilities of local public authorities with regard to separate collection and the way in which this activity is to be organized.

Other public authorities responsible for waste management are: The Ministry of Health, the Ministry of Agriculture and Rural Development, the Ministry of Labor and Social Justice, the Ministry of economy, Entrepreneurship and Tourism, the Ministry of Transport and infrastructure, the Ministry of Development, Public Works and Administration, the Public Order and National Safety institutions and the authorities of local public administration.

R O M A N I A

Measures encouraging the design of products in order to reduce the generation of waste (incl. eco-design of plastic packaging)	Romania has adopted a number of legislative measures that encourage the design, production, marketing and consumption of products in order to reduce the environmental impact and ensure adequate treatment of plastic waste, namely: • Measures to encourage an increase in the share of reusable packaging placed on the market and systems for packaging re-usage: Romania has set two important objectives for economic operators: marking as "reusable" of a minimum of 5% of packaging used in a year when their products are placed on the market, including packaging taken for hire, increasing this percentage by 5% annually by 2025 and a yearly recycling of 80% of these; • Specific measures for lightweight and ultra lightweight plastic and plastic carrier bags that are biodegradable and compostable: Under Directive (EU) 2015/720 of the European Parliament and of the Council of 29 April 2015 amending Directive 94/62/EC as regards the reduction of consumption of lightweight plastic carrier bags, the 'eco-tax' was introduced during 2018 (economic instrument applied to economic operators producing or placing on the national market bags and shopping bags, with integrated or applied handle, made from materials obtained from non-renewable resources). • In accordance with the provisions of Law No 249/2015 economic operators have responsibilities designed to ensure that only packaging that meets the essential requirements regarding the composition and recyclability and reusability of packaging is placed on the market: thus, the list of Romanian standards adopting harmonized European standards was adopted by order of the Minister of Environment; • In line with European strategies, the Green public procurement Act was adopted in Romania • Waste policy tools.
Separate collection of waste	The legal framework governing the separate collection of waste in Romania was adopted as early as 2010 by regulating the obligation of public institutions to organize separate collection of waste and continuing with the obligation of local administrative units to implement a separate waste collection system from 2012. However, the changes that occurred during 2018 (by means of GEO No 74/2018) introduced new elements, namely: The pay-as-you-throw principle, differentiated tariffs, the extended liability of the producer, all to facilitate and ensure the implementation of separate collection of municipal waste, have not had the desired effect. The coverage of separate collection services is 86%, which is the degree to which separate collection is provided for in the public health contracts but not the degree to which separate collection is carried out. • Romania is quite a long way from reaching the target of connecting 100% of the population to separate waste collection services. One year after the deadline set by the NWMPs (i.e. 2019) for the 100 % implementation of separate collection, at a national level, the percentage is 87% with significant differences in the degree of connection to the urban sanitation service compared to the same indicator calculated for the rural population. • one year before the deadline set by Directive 2008/98 to achieve a level of preparation for reuse/recycling of 50% of the municipal waste collected (2020) Romania meets this indicator at a level of 26% (calculated using information from approximately 90% of the total territorial administrative units existing at national level).
Other	There are still mismatches between the provisions of Law No 211/2011 and Law No 101/2006 in respect of municipal waste management, the two normative acts being issued by the central public authorities responsible for harmonizing the legislation, according to the provisions of the the National Waste Management Plan: Ministry of Environment, Water and Forests and Ministry of Development, Public Works and Administration both.
Conclusion	Central public authorities have developed strategies and plans for the management of waste in general, including plastic waste, thus providing the framework and regulations needed to achieve the objectives set, but the timing and intensity of the necessary legislative measures have led to long delays, both in adopting the legislative framework needed for the scope of work, in monitoring the results and in keeping with the planned timetable for the implementation of these plans. The provision of the necessary conditions for achieving the recycling targets for waste in general, and for plastic waste in particular, adopted under the specific European Directives, is lagging behind, and as a perspective we appreciate that the current rate of progress will not be sufficient to achieve the overall targets for phased waste management for 2020 and 2025.
Audit aspect No 2	***Has any policy (plans, strategies) been applied in order to implement proper plastic waste management and improve the efficiency of using existing materials and products (according to assumptions of circular economy)?***
Strategic documents on plastic waste management and adopted goals	Starting from 2008, Romania has implemented the National Strategy for Sustainable Development of Romania Horizons 2013–2020–2030. In this policy document, a reference is made to the objective of "promoting sustainable consumption and production practices". With regards to the integrated waste management, the target refers to the shift "from landfilling to the selective collection and recovery of recyclable waste, including through the transformation of organic waste into compost, and the exclusive use of environmentally-friendly repositories for the urban environment". • in 2013, the Romanian Government decided to approve the National Waste Management Strategy 2014-2020 (SNGD). SNGD set Romania's policy and strategic objectives in the field of waste management in the short (2015) and medium term (until 2020). For the short-term implementation of the SNGD, the national waste Management Plan (NWMP) was adopted in 2017. It should be noted that the NWMPs do not contain a separate section dedicated to plastic waste which is treated together with all other types of waste, but contains separate sections on municipal and packaging waste management.

	In order to achieve the objectives, the NWMPs outline measures, actions, with precise deadlines and responsibilities, as well as sets of indicators to monitor their achievement. Regarding the monitoring of measures for the implementation of the NWMPs, the degree of achievement of the monitoring indicators, it has been found that the entities responsible did not realize their role or act individually, nor together to ensure the best performance of the tasks set out in the NWMPs, so that this monitoring was not done on an annual basis, monitoring and reporting on the achievement of the measures and the achievement of the objectives as provided for in national law and the NWMPs themselves. Subsequently, the EC adopted a new Circular Economy Action Plan as well as a number of legislative amendments to Directive 2008/98/EC and Directive 94/62/EC, but no steps have been taken at national level to update the NWMP accordingly. • the implementation of the the County Waste Management Plan (CWMP) is an obligation that follows from the waste regime Act with subsequent amendments and supplements. According to this legislation, all 41 county waste management plans and the Bucharest municipal waste management plan were developed and approved, in collaboration with the county environmental protection agencies, on the basis of the principles and objectives of the NWMP. Both NWMP and the current legislation stipulates that producers must cover the net costs of managing packaging waste, without exceeding those necessary for an economic efficient management. Although ensuring the application of this measure is the responsibility of the central public authority in the field of environmental protection, failed in fulfilling its role.
Problem analysis on plastic waste treatment	The main objectives of the NWMPs were directly related to the characterization of the situation at the time of its adoption, in the field (quantities of waste generated and managed, existing installations) the identification of the problems that caused inefficient waste management, the setting of targets and objectives on the basis of the legal provisions and strategic objects established by the NSWM, as well as identifying investment needs. Data on quantities of waste generated and management for the period 2010-2014 were used to characterize the situation at the time of the development of the NWMPs. The analysis of the situation in the field of waste management at the time of the development of NWMPs revealed a number of shortcomings, the most important being the following: • in the case of municipal waste: 1. The separate collection system for municipal packaging waste is poorly developed at national level; 2. The entire amount of municipal waste generated is not collected; in 2014 at a national level only about 80% of the population benefitted from sanitation services; 3. The separate collection of recyclable waste at national level is extremely low, resulting in a low degree of material recycling (approx. 5%); 4. Insufficient national funding for the development of waste management systems. • with regards to packaging waste: 1. The recovery of waste by methods other than recycling is very low, despite the fact that there is a high authorized capacity for co-incineration of waste; 2. Non-correlation between the provisions of the sanitation and specific legislation for packaging and packaging waste. A separate section presents assumptions on waste planning, socio-economic projection and projection, analysis of waste management alternatives, governance measures on waste management and action plan for the waste management alternative selected to be implemented. The analysis of alternatives has, however, been presented only for municipal waste (plastic waste being considered part of it together with paper and cardboard, metals, glass, bio-waste, wood, textiles, bulky waste, other waste). The following steps have been taken in the financial modeling of the management alternatives analyzed: • determination of unit costs per ton of waste, both for investment and for operation and maintenance; • operating and maintenance costs for collection, transport and sorting activities; • determination of investment costs, allocation of these costs over the implementation period, in accordance with the assumptions set out below; • determination of the operating and maintenance costs of new investments according to the implementation schedule and the specific nature of each activity and the quantities entering each installation/station.
Implementation of the most important actions aimed at the proper management of plastic waste	Although with a delay in adoption of one year and a half, in order to comply with Directive (EU) 2015/720 of the European Parliament and of the Council of 29 April 2015 amending Directive 94/62/EC as regards the reduction of the consumption of lightweight plastic carrier bags, during 2018 the Law No 87 of 4 April 2018 was approved, to amend and supplement Act No 249/2015 on how to manage packaging and packaging waste. Law No 87/2018 thus provides for: -banning the placement on the national market of lightweight, very lightweight plastic carrier bags with handle as from 1 july 2018; -banning the marketing of lightweight, very lightweight plastic carrier bags with handle with effect from 1 january 2019; -the obligation of economic operators marketing plastic carrier bags to market only plastic carrier bags which comply with the essential requirements regarding the reusable character of a package, so that they correspond to multiple re-uses, with the exception of very lightweight plastic carrier bags;

	-the responsibility of economic operators who place biodegradable and compostable plastic carrier bags on the national market to label such packaging. As regards to the Regulation of extended producer responsibility on the special flow, the legislation on packaging management (including plastic packaging) has been substantially amended in order to (partially) transpose the provisions of Directive 852/2018. Thus: -The conditions for authorizing WMO have been modified; -The contributions paid by the actors of the waste management system have been introduced/modified, namely: Territorial administrative units, WMO, economic operators carrying out collection/recovery/disposal activities..
Coordination among various actors of waste management system	From the analysis of the legal framework governing the roles and responsibilities of producers results that even these have been established in line with European legislation, some clarification is needed on: -registration with the Environment Fund Administration by submitting the first declaration of obligations to the Environment Fund; -regulating the manner in which the transfer of responsibility is carried out and laying down the conditions under which it ceases; -establishing the task of producers who choose to fulfill their obligations regarding extended liability for products placed on the national market individually to carry out information and public education campaigns. • The net cost paid for both domestic packaging waste and industrial and commercial waste do not reflect the real cost of these categories of waste. • Important changes were made to order No 1362/2018, following the adoption of order No 1555/2020: -The addition of new activities which are permitted by the WMO, namely the possibility of WMO contracting directly with registered and/or authorized collectors at the territorial administrative unit in which they operate, taking packaging waste by purchase from the public, as well as authorized collectors taking packaging from the HORECA industry; -Adoption of an WMO qualification scale for the purpose of authorization, According to the provisions of Government Emergency Ordinance No 50 of 25 June 2019 to amend and supplement Government Emergency Ordinance No 196/2005 on the Environment Fund and to amend and supplement Act No 249/2015 on packaging and packaging waste management — OUG No. Article 50(2019). -Details of the minimum mandatory content of the WMO annual report. The mandatory minimum content of the WMO annual report is regulated in detail, but the Commission which is required to analyze its content is not established. -Existing changes to order No 1362/2018, with regards to the addition of new activities that WMO are allowed to partake in, may be in part beneficial to the waste management activity. However, the provisions on the assessment of the WMO exceed the upper legal framework, derogating from its provisions. They give an WMO the possibility to knowingly breach or fail to comply with one or more legal obligations without incurring the penalty regulated by Law No 249/2015 (withdrawal of license). The so-called sanction given to WMO, in these circumstances, is to place them on a lower level within a hierarchy based on the scores obtained according to the established grid. In other words, the operating conditions and evaluation of WMO's work for obtaining annual approval were relaxed, with the (actual) risk of not achieving the targets for packaging waste management and of not ensuring the continuity of the organization of packaging waste management services throughout the year. Although the legislation apparently contains relatively symmetric provisions whereby UAT and WMO can collaborate and conclude contracts for waste management, the current Regulation does not appear to be sufficient to ensure that these obligations are properly applied.
Educational and informative activities	The implementation of the extended producer responsibility (EPR) has enabled local authorities to cover part of the costs of the waste collection service and local education and information campaigns. However, this source of financing depends on the amounts of recyclable waste that they manage to collect. The system imposed by the amendment of Law No 211/2011 by Government Emergency Ordinance No 74/2018 to amend and supplement Act No 211/2011 on waste treatment, The environmental Fund Act No 249/2015 on packaging and packaging waste management and the Government Emergency Ordinance No 196/2005 on the "pay-as-you-throw" principle aimed precisely at increasing the collection rate of recyclable waste but its implementation is difficult to this date.
Good practices	The documentation carried out at the Inter-Community Development Associations, without being exhaustive, has produced examples of good practice implementation, including the Zero Waste Romania initiative, which is a non-profit, apolitical, independent organization promoting holistic solutions for resource conservation and campaigning for waste and waste disposal, no landfills or incinerators. **Zero Waste** Romania is a non-profit, apolitical, independent organization that promotes holistic solutions for preserving resources and advocates the disposal of waste and waste, without landfills or incinerators. Zero Waste Romania works with municipalities and communities in the country to develop and implement zero-waste strategies. Thus, there is a change in the transition to a clean Romania, as close as possible to zero waste. **The municipality of Salacea (Bihor county)** was granted the status of "Zero waste pre-certified Community" and was accepted in the European Network of cities and Communities Zero waste (rate of reduction of waste generated: Increased from 0% to 55%; separate collection rate: Increased from 1% to 61%; landfilling: waste treated by landfill has been reduced from 99% to 55%; citizen involvement: an increase from 8,4% to 97% was observed).

Conclusion	The legislation adopted in Romania was aimed at transposing European directives in this area. The measures adopted, however, do not sufficiently regulate the roles and responsibilities of the relevant actors involved, which could lead over time, if not properly amended/completed, to certain shortcomings and even to inadequate and/or even inconsistent management (example: unclear or uncorrelated regulation of alternative collection systems for used packaging and packaging waste qualifying as municipal waste; the existence of mismatches between the legislation on the municipal waste management system through the sanitation service and the special legislation on packaging waste management, which covers inadequate alternative systems with each other; Not to ensure geographical coverage at national level through further Regulation of contracting mechanisms between all IREPs and territorial administrative units; no complete and consistent legal framework for reporting, collection, centralization and processing of data on packaging and packaging waste; Partial transposition in line with the general minimum requirements applicable in the area of the REP scheme). Thus, it can be concluded that the implementation of the measures adopted is on the one hand incomplete and does not ensure adequate treatment of plastic waste in line with the waste hierarchy. The central public authority for environmental protection has not provided evidence of the effectiveness of the implementation of waste policy instruments, although at the time of the development of the NWMPs (2017) shortcomings in their implementation have been identified, an action plan to improve the effectiveness of existing waste policy instruments that have been developed it contains measures, deadlines and responsibilities.
Audit aspect No 3	***Are the results of implemented measures concerning plastic waste treatment monitored and what effects have been achieved in the context of established goals in that field?***
Data concerning: quantities of plastic waste (incl. import and export), its sources and treatment	The national primary waste management legislation adopted in Romania contains provisions on the obligation to ensure the chronological record of waste management (for each type of waste) and to make it available to the competent control authorities. With respect to reporting to date, an order by the head of the central public authority for environmental protection governing the procedure and format for reporting information has not been drawn up/approved, with reporting being carried out according to the internal procedures of the national environmental protection agency, an entity that is subordinate to the central environmental authority. This entity processes the data collected only for statistical purposes, within the deadline provided for by European legislation, and does not regulate the validation and processing of the data so that they are up-to-date and readily available for national waste policy decisions. With regards to packaging and packaging waste management, legislation has been adopted in Romania regulating the reporting obligations of the various actors of the packaging system to three entities, namely: Central environmental Authority (rapporteurs: WMTR), National Environment Protection Agency (reporters: Producers and importers of sales packaging, packaged products, package overpacks, economic operators collectors, recyclers, recyclers and retailers of packaging waste, territorial administrative units, environmental Fund Administration (same reporter, by submitting declarations of obligations to the environmental Fund). The analysis of the data collected by the three entities found that: - Although the legal framework is adopted as set out above, its provisions have not yet been implemented, so it does not yet have and processes information on the management of packaging and packaging waste; -The data collected by the two entities subordinate to the central environmental authority differ significantly although the data are collected from the same sources. The responsible authorities have data on treated waste, including plastic, and data on quantities imported into the country and exported to other countries, including plastic. According to data submitted by the national Environment Protection Agency Romania transferred out of the country in 2016 10.323 tonnes, in 2017 14.851 tonnes equivalent to 8,6% of the total recycled quantity and in 2018 11.522 tons, equivalent to 6,8% of the total amount of recycled as shown in the table below:

No.	Specification / category	Import			Export			
1	Total quantity of moved plastic waste [in tonnes]	2017	2018	2019	2016	2017	2018	2019*
		0	0	0	10323	14851	11522	
Top 5 countries participating in transboundary movement of plastic waste [quantity of imported/exported plastic waste in tonnes]								
2	ITALY	0	0	0	2453	2552	198	
3	BULGARIA	0	0	0	2234	4459	7182	
4	GREECE	0	0	0	1089	0	0	
5	GERMANY	0	0	0	1066	1301	887	
6	HUNGARY	0	0	0	977	2767	213	

Trading balance with China (tonnes)								
7	CHINA	0	0	0	389	421	0	

Reliability data on plastic waste

Between May and December 2020, the Ministry of Environment, Water and Forests (MMAP) received technical assistance in the field of waste management, approved by the European Commission through the Structural Reform support Program (SRSP) and implemented with the support of the European Investment Bank (EIB) – JASPERS. In the documents drawn up, concerned with the data on the quantities of packaging and packaging waste managed, the report drawn up under Task 2, revealed significant differences between the two national data sources analyzed, namely the ANPM transmitting the data to EUROSTAT and the AFM. Differences was revealed between data collected and managed by ANPM and AFM in tonnes:

TOTAL	Total packages for which management is required			Recycled quantities			Energy-recovered quantities		
	ANPM	AFM	ANPM-AFM DIFFERENCES	ANPM (quantities reported to EUROSTAT)	AFM	ANPM-AFM DIFFERENCES	ANPM (quantities reported to EUROSTAT)	AFM	ANPM-AFM DIFFERENCES
0	1	2	3=1-2	5	6	7=5-6	8	9	10=8-9
Glass	272,122,950	310,826,445	-38,703,495	166,377,000	191,395,346	-25,018,346	0	424,965	-424,965
Plastic	391,375,267	435,416,766	-44,041,499	168,270,000	237,244,856	-68,974,856	10,281,000	23,276,059	-12,995,059
Paper and paperboard	482,539,668	575,350,158	-92,810,490	429,037,000	447,674,667	-18,637,667	12,557,000	20,521,651	-7,964,651
Steel	77,913,259	84,762,769	-6,849,510	45,723,000	48,011,125	-2,288,125	0	642,622	-642,622
Wood	343,156,464	462,134,721	-118,978,257	97,420,000	314,115,792	-216,695,792	10,610,000	12,158,979	-1,548,979
Others	247	0	247		0				
TOTAL	1,567,107,855	1,868,490,859	-301,383,004	906,827,000	1,238,441,786	-331,614,786	33,448,000	57,024,276	-23,576,276

Databases on waste in the country

Under national law, two entities have databases on waste, namely: The National Environment Protection Agency and the Environmental Fund Administration (the central authority in the field does not yet collect data although the legal framework provides for this obligation).

In summary, the reporting obligations for waste, in accordance with the legal provisions in force mentioned above, shall be as follows:

Reporting entities to the who Authority	Reporting obligation	Authority receiving the reporting
Economic operators responsible for the management of packaging and packaging waste	Economic operators transferring responsibility to the WMTO-Waste Management Transfer Responsability Organisation - the quantities of total packaging and per type of material for which they have handed over responsibility for the fulfilment of the annual objectives by contract, The quantities of total packaging waste and of each type of material declared by the economic operator with which they have concluded the contract for the achievement of annual recovery or incineration objectives in incineration plants with energy recovery as recovered by recycling, recovered by other forms than recycling and incinerated in incineration plants with energy recovery	AFM
	Economic operators meeting their annual recovery targets individually - the quantities of packaging placed on the national market, the quantities of packaging waste recovered by recycling, other forms of recovery or incinerated in incineration plants with energy recovery, total and per type of material, as well as information on the economic operators that have carried out the recycling or recovery operation	
	Economic operators who individually meet their objectives and economic operators who transfer their obligations to the WMTR only for part of the quantity of packaging for which they are responsible or for only one period in a calendar year of the quantities of packages placed on the national market per type of packaging and the quantities of packaging managed.	APM/ANPM
	- Status of contracts concluded and/or terminated with economic operators who place goods in packages and sales packages on the national market	AFM
	- The quantities of total packaging and per type of material, the quantities of packaging waste of each type of material recovered or incinerated in incineration plants with energy recovery and the quantities of packaging waste of each type of material recovered by recycling	
	The total quantities of packages for which they have concluded contracts with the responsible economic operators,	ANPM
	The quantities of packaging waste managed,	

WMTO-Waste Management Transfer Responsability Organisation	State the quantities of packages for which they have taken responsibility from each economic operator	
	State the quantity of primary packaging, by type of material, and the quantity of secondary and transport packages, by type of material, for which it has taken on its obligations	The authorizing Commission
	The quantity of packaging waste from municipal waste, by type of material, collected by the sanitation services and/or the quantity of packaging waste from municipal waste taken at the request of the inter-community development associations or, where applicable, territorial-administrative units or territorial-administrative subdivisions of municipalities;	
	The total quantity by weight, and by type of material, of packaging that becomes waste in the municipal stream taken over by environmental authorized economic operators from the public;	
	The total quantity by weight, and by type of material, collected from commercial and industrial flux;	
	The total quantity by weight, and by type of material distinctly, the amount recovered by separate recycling for packaging waste from municipal waste, i.e. commercial and industrial packaging waste;	
Economic operators collectors, recyclers, recyclers and dealers of packaging waste	Salespeople/traders – quantity of waste collected by type of material, provenance and quantity of packaging waste sold/sent for recycling/recovery/exported	APM/ANPM
	Recyclers/recyclers – the amount of packaging waste taken back, the origin, the amount of recycled waste recovered, and the method of recycling/recovery	
Administrative units of the territory of the mayors	The quantity of packaging waste collected separately/sorted from municipal waste by the waste treatment system.	APM/ANPM
Economic operators waste collectors and waste disposal operators	Waste statistics - questionnaires	APM/ANPM
	CODCOLECTARE_TRATARE - completed by waste collectors	
	GD_MUN completed by the public-health operators	

Achieved results in plastic waste treatment

According to the national waste Management Plan (NWMP), when calculating the target for the target, method 2 of Annex I to Commission Decision 2011/753/EU for laying down rules and calculation methods for verifying compliance with the targets set out in Article 11(2) of Directive 2008/98/EC of the European Parliament and of the Council shall apply. Calculation of the percentage, the amount of waste prepared for reuse and recycling shall be related to the amount of paper, metal, plastic and glass waste from domestic and similar waste.

$$\text{Recycling rate of household and similar waste, expressed in \%} = \frac{\text{Recycled quantity of paper, metal, plastic and glass waste and other specific waste streams from households or similar waste}}{\text{Total quantity generated by paper, metal, plastic and glass waste and other specific waste streams from households or similar waste}}$$

Data provided by the national Environment Protection Agency show that Romania has a recycling rate of waste below 14% of the total amount of waste generated. For industrial waste, the recycling rate is much lower than for municipal waste and is less than 3.5 % of the total quantities generated. Moreover, of the total amount of plastic waste from municipal waste (collected separately and in a mixture) approx. 33% are subject to recovery operations, the difference being subject to disposal operations. In the case of plastic waste from industrial waste, almost the entire amount is recovered due to the way it is collected (separate collection), as set out below:

R O M A N I A

Category	Municipal waste			Other waste categories		
	2017	2018	2019	2017	2018	2019
2	3	4	5	6	7	8
The total amount of waste						
Waste generated including: *	**5,333**	**5,296**		**214,144**	**197,907**	
Wastes collected in the mixture	4,248	4,388		not applicable – waste generated from production activities are collected separately		
Recycling rate (planned)	no intermediate targets are set at national level			no targets are set in European and national legislation		
Recycling rate (achieved) **	**13.98**	**11.07**		**2.38**	**3.11**	
Plastic waste						
Total sum of plastic waste generated: ****	**600**	**646**		**204**	**216**	
Waste collected separately	94	86		**204**	**216**	
The share of plastic waste in the total amount of waste mixed collected***	11.89	12.77				
Waste treatment:******	**600**	**646**		**204**	**216**	
Preparation for reuse and recycling	60	66		163	154	
Energy recovery	1	1		25	14	
Other recoveries ***	142	161		10	43	
Landfill	348	391		1	1	
Other deductions ****	49	27		4	3	
Incineration				1	1	

* For municipal waste, the waste generated includes, in addition to the waste collected in the mixture and the waste collected separately, the amount of waste which is estimated to be generated and not collected, corresponding to the population not served by sanitation

** the achieved recycling rate is calculated by reporting the amount of recycled waste to total waste generated

*** is the proportion of plastic waste in the waste collected in the mixture (amount in point 1,1); it is calculated on the basis of data estimated and reported by the health operators

**** is waste subject to intermediate recovery/disposal operations

**** In the case of municipal waste, the total amount also includes plastic waste collected in mixtures with other waste, subsequently sorted and treated by different methods, which is virtually not found in the statistics as "plastic waste" (statistical code 07.4), which has different coding. This is why the values in columns 6 and 7 are lower than those in columns 3 and 4 - only plastic waste coded under code 07.4 is found in columns 6 and 7.

Methodology of calculating the recycling rate of plastic waste

During the audited period, Romania achieved its recovery/recycling targets for packaging waste as set out in the table below:

	2016		2017		2018		Legal goal level %
	Absolute val.	%	Absolute val.	%	Absolute val.	%	
Total packaging placed on the market, of which:	**1350168**		**1408810**		**1567108**		
• **plastic packaging**	348794		360463		391376		
Total recovered packaging waste of which:	**841184**	**62,30**	**885846**	**62,90**	**940275**	**60,00**	**60**
• **plastic packaging**	173972	49,90	186375	51,70	178551	45,62	
Recycled packaging waste, total, of which:	**815033**	**60,37**	**850620**	**60,40**	**906827**	**57,87**	**55**
• **plastic packaging**	162351	46,50	171603	47,60	168270	42,99	**22,5**

	It is noted that, in absolute terms, there is an increase in the quantity of packaging waste placed on the market, which is also the case for plastic packaging waste. This increase in quantities introduced on the market (16% more in 2018 compared to 2016) exceeded the increase in the quantities of packaging waste recovered (11% more in 2018 compared to 2016), the rate of recycling and recovery of plastic packaging waste has consequently decreased from 60,37% in 2016 to 57,87% in 2018.
Conclusion	For the years 2017 and 2018 (as information for the year 2019 was not provided) the total quantities of waste collected at a national level and the rate of the recycling plan, regarding collection and treatment of municipal waste and industrial waste, Romania is far from meeting its own targets in terms of waste management but also the targets set at European level. The quantities of household waste generated are determined by applying indicators of generation well below the European average, but also decreasing from 2010. This is not the same trend as the consumption of the population that is constantly increasing. On the other hand, for plastic waste, the quantities of plastic waste collected are reported by the sanitation operators and, in the absence of compositional determinations, the amounts of recyclable waste (of which plastic is also part) are considered to be 33%. The lack of accurate quantity determinations, the lack of control of data reported by operators and even lack of reporting may lead to the conclusion that the reported data (and further reported by Romania to EUROSTAT) may have considerable margin of error.
Overall conclusions (from the national report)	
	1. National legislation applicable to the waste sector is wide-ranging, but does not concern plastic waste individually, which is regulated in line with other types of waste. The legal framework pursued the transposition of European Waste Legislation, but in some situations excessive delays in adoption have been identified. However, transposition has proved to be partial. The adoption of the legal provisions was not preceded in all situations by the carrying out of relevant analyzes of the state of waste management in Romania, so in many cases the legal provisions adopted are not simple to understand and apply the fact also proved by the delay in their implementation. The lack of legal alignment is also noted at this stage, so that there are inconsistencies between the provisions of the primary legislation governing waste management, namely the waste regime Act, the municipal sanitation Act and the Community public utilities Act (the sanitation service covers the activities of collection, transport, sorting, sorting, treatment, landfilling of municipal, commercial waste from industry and institutions). The measures adopted on the management of packaging and packaging waste do not sufficiently regulate the roles and responsibilities of the relevant actors involved, which could lead over time, if the legislation is not properly amended/completed, to certain shortcomings and even to a non-uniform and/or even non-compliant management (example: to sufficiently unclear or uncorrelated regulate alternative collection systems for used packaging and packaging waste qualifying as municipal waste; the existence of a mismatch between the legislation on the municipal waste management system through the sanitation service and the special legislation on packaging waste management, which covers alternative systems that are insufficiently awarded between them; Not to ensure geographical coverage at national level through further Regulation of contracting mechanisms between all Waste Management Organisations and territorial administrative units; no complete and consistent legal framework for reporting, collection, centralization and processing of data on packaging and packaging waste; Partial transposition in line with the general minimum requirements applicable in the area of the EPR scheme). **2. The National Waste Management Plan (NWMP) was adopted at the end of 2017, 4 years after the adoption of the National Waste Management Strategy 2014-2020** (although considered necessary for the short-term implementation of the Strategy). The entities in charge of implementing the NWMPs did not realize their role and did not act, either individually or jointly, to ensure the optimal exercise of the tasks set out in the NWMPs so that annual monitoring and reporting of the achievement of the measures and the achievement of the objectives has not been carried out, as provided for by national law and NWMP itself. Thus, it can be concluded that the implementation of the measures adopted is on the one hand incomplete and on the other does not ensure adequate treatment of plastic waste according to the waste hierarchy. At the territorial level, for the period under audit, the lack of local, county, regional strategies (and/or the absence of updates) was found as monitoring documents and planning in support of national policies. **3. Separate collection of hazardous waste from municipal waste is not extended at national level, and the quantities collected are therefore extremely low.** The management of household and similar waste is carried out within the framework of integrated waste management systems (SMID). This regionalization model, adjusted at county level, although initially considered to create the conditions for reaching 100% of population connected to sanitation, has so far not proved itself to be effective. Thus, by the time the audit was carried out in Romania, 34 SMID projects (compared to 42 territorial administrative units – counties) were approved at various stages of operation, most in partial stages with direct consequences in the waste management activity. The level of coverage of separate collection services was 87% in 2018, which is the degree to which separate collection is foreseen in the public health contracts, but not the degree to which separate collection is actually carried out. The recycling rate achieved for municipal waste in 2018 was extremely low, far from national targets, i.e. 11,08% of the total amount of waste collected (73,51% of which was stored and 15,42% recovered or disposed of in forms other than landfilling).

	4. The national primary waste management legislation contains provisions on the obligation to ensure the time-record of waste management (for each type of waste) and to make it available to the competent authorities. With regards to their reporting, an order by the head of the central public authority for environmental protection regulating the procedure and format for reporting information has not been drawn up/approved so far, with the reporting being carried out in accordance with the internal procedures of the national environmental protection agency, entity subordinate to the central environmental authority. This entity processes the data collected only for statistical purposes, within the deadline provided for by European legislation, and does not regulate the validation and processing of the data so that they are up-to-date and readily available for national waste policy decisions. As for packaging and packaging waste management, the legislation framework has been adopted in Romania, stipulating the reporting obligations for the various actors of the packaging system. **Although the reporting source is the same (directly from those responsible for reporting: economic operators, local public authorities, organizations implementing extended producer responsibility), the data reported to the responsible entities differ significantly. Thus, there is the possibility of reporting undersized quantities of packaging placed on the market, and there may also be the possibility of reporting different amounts of recycled/recovered packaging waste from actual ones.**
Information on the impact of audit results and the implementation of post-audit conclusions	
Mihai Busuioc President of Romanian Court of Accounts	/signature of an authorised person/

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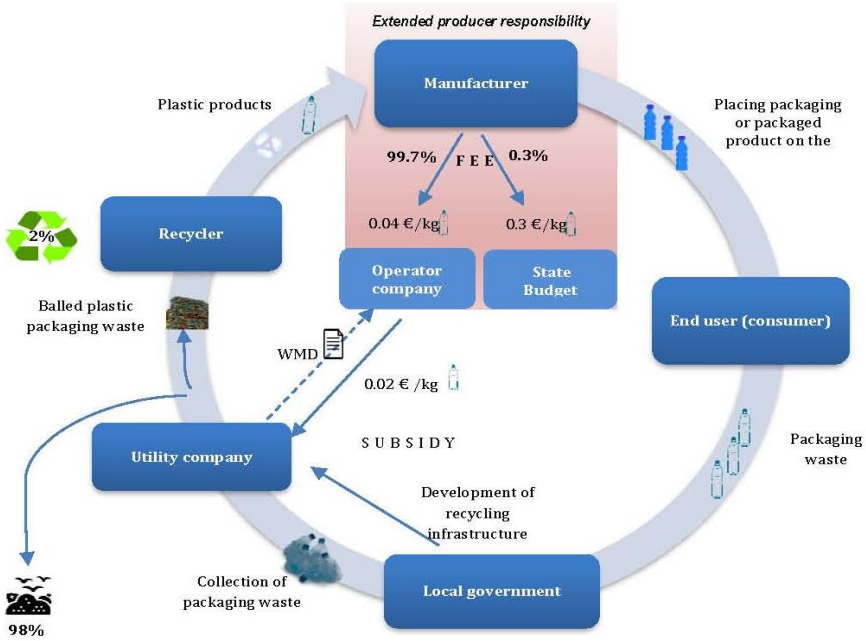
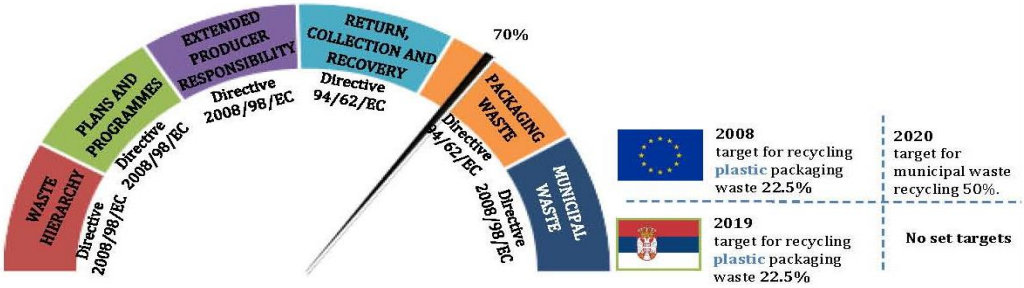
S E R B I A

Државна ревизорска институција	*Државна ревизорска институција*	*SAI*	*Serbia*

The title of the audit:	***PLASTIC WASTE***
Period of time covered by audit:	**2017-2019**
Main audit question:	***Have the relevant public authorities (state and/or self-government administration) developed policies (plans, strategies) and implemented measures aimed at achieving goals (adopted in such policies) regarding generation and management of plastic waste?***
Answer:	***In order to achieve a higher rate of recycling of plastic waste, it is necessary to improve the system of separate collection of municipal waste and the application of the principle of extended producer responsibility.*** *In the Republic of Serbia in the period 2017–2019, a total of 897 thousand tons of plastic waste was produced, 831 thousand tons of which account for municipal plastic waste. There is no systemic organized separate waste collection in place, as 2% of municipal plastic waste (14 thousand tons) was separately collected and recycled. No economic benefits are gained from the circular approach, as plastic is lost after it becomes waste, at the same time causing significant harm to the environment.* *Figure 1- Management of municipal plastic packaging waste in 2019*  *Adequate coordination between the entities of the packaging waste management system has not been established. Packaging producers insufficiently invest in the system of separate packaging waste collection, which results in low recycling rate of municipal packaging waste.* *Local self-governments have not fully: established the separate collection of municipal waste; organized educational and informational activities about the importance of recycling; undertaken measures to protect the property and include informal waste collectors in the existing waste collection system.* *There are no accurate and reliable records on the production and management of municipal waste, which may lead to unjustified strategic decisions when selecting the waste management methods.* *Ministry of Environmental Protection failed to perform the inspection control over the work of operator companies for management of packaging waste.*

S E R B I A

MAIN FINDINGS OF THE NATIONAL AUDIT ON PLASTIC WASTE

Audit aspect No 1	***1. Has the country adopted legislation and organizational arrangements concerning plastic waste management?***
The regulations of the Republic of Serbia in the field of waste management are mostly harmonized with the regulations of the European Union	The regulations of the Republic of Serbia in the field of waste management are in the most part harmonized with the regulations of the European Union, but no mechanisms have been created for their full implementation. Although the law recognizes the principle of waste management hierarchy, the majority of the municipal waste (98%) is disposed of in landfills instead of being reused or recycled. Figure 2 - Fulfilment and harmonization in the field of waste management with EU regulations 
Extended producer responsibility system was ineffective	The current way of applying the principle of the "extended producer responsibility" does not guarantee the sustainable use of resources and the protection of the environment. Due to the failure to define the competencies of the system entities and failure to set minimum requirements regarding the amount of treatment of municipal packaging waste, there is a risk that packaging waste is managed to achieve economic interests and not to preserve natural resources and protect the environment.
All goals defined by the strategic and planning framework have not been realized	The goals defined by the strategic and planning framework have not been realized. The National Waste Management Plan for the period 2015–2019 has not been adopted. The regional waste management is achieved through development and implementation of regional plans. As for the regional plans, 46% of them have not been adopted, which resulted in the establishment of 10 regional waste management centers instead of the planned 26. Instead of having the largest quantities of municipal waste recycled or treated in another way, they end up in landfills and unsanitary dumping grounds in most cases.
Conclusion	**The established legislative and planning framework does not provide for the management of plastic waste in accordance with the principles of the circular economy.**
Audit aspect No 2	***2. Has any policy (plans, strategies) been applied in order to implement proper plastic waste management and improve the efficiency of using existing materials and products (according to assumptions of Circular Economy)?***
The goals and measures determined by the local waste management plans for the cities of Belgrade and Novi Sad have been partially implemented.	The goals and measures determined by the local waste management plans for the cities of Belgrade and Novi Sad have been partially implemented, consequence of which is that an efficient waste management system has not been fully established. Table 1 - An overview of the realized goals in the field of improving the waste collection system, the system of separate waste collection and recycling and developing public awareness of the importance of waste management

	Goals – City of Belgrade	Status	Goals - City of Novi Sad	Status
1	Replacement of existing 1.1 m³ containers in the city center with underground containers	✓	Construction and installation of underground containers	✓
2	Collecting accurate data on waste quantities	✓	Development of a program for the collection of waste and hazardous waste from households	✓
3	Determination the locations for the installation of waste collection containers	✓	Provision of the bins for collecting "dry" waste components	✓
4	Installation of containers for selective collection of recyclable waste	✓	Installation of special containers for PET packaging 100% coverage, 1,000 pcs	✓
5	Installation of 240 liter bins for the collection of recyclable waste	✓	Provision of the space for temporary storage of recyclable materials	✓

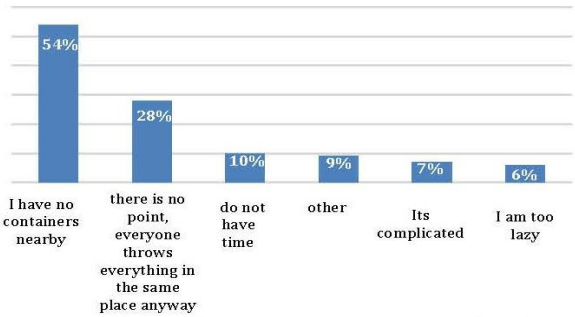
	6	Construction of 14 centers for separate collection of recyclable waste		Development of a project for the rehabilitation of the largest illegal landfills in the city
	7	Provision of industrial capacities for reuse of recyclable waste	#	Separate collection of hazardous household waste
	8	Establishment of a system of separate collection of hazardous waste from households	#	Activities on educating the population about recyclable materials
	9	Developing awareness of the need for proper waste management, especially among children		

There is no systemically organized separate waste collection in the Republic of Serbia.

In the Republic of Serbia, there is no systemically organized separate waste collection, which is why the quantities of waste available for recycling have been reduced. As for the local governments, 43% have established separate waste collection, while the share of separately collected waste in total municipal waste is 5%.

Chart 1 - % of local self-governments in the Republic of Serbia that have established separate waste collection

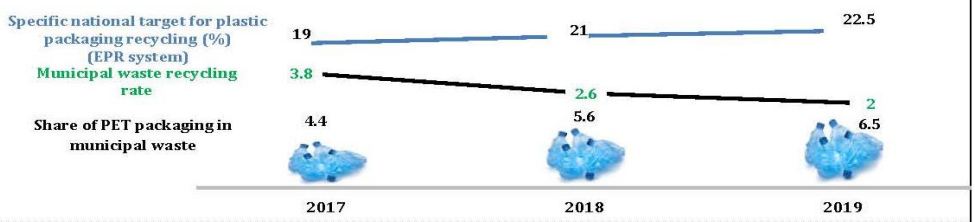
Figure 3 - Why citizens in the Republic of Serbia don't recycle (multiple answers)



The cities of Belgrade and Novi Sad have not established the necessary infrastructure for the introduction of primary separation at the level of the entire city, which results in only 28% of citizens regularly separating recyclable waste into appropriate containers.

Picture 1 - Geoview of recycling islands an underground container for disposal of recyclables placed on the territory of the City of Belgrade

Figure 4 - Ratio between the number of containers for recycling waste disposal and the quantities of generated municipal waste by Belgrade City Municipalities in 2019

Educational and informative activities	The authorities did not sufficiently recognize the importance of conducting educational and informational activities in order to reduce the generation of plastic waste. As many as 89% of citizens believe that more informative and educational activities related to recycling are needed. Most of the information activities taken by packaging waste management operators in 2019 took place in the City of Belgrade. No performance criteria and measures (benchmarks) have been set in the area of implementation of educational and information activities. In the cities of Belgrade and Novi Sad, a small percentage of the budget (less than 1%) is set aside for educational and information activities related to recycling and proper separation of plastic waste, resulting in a recycling rate of 2%.
Informal sector	In order to improve the recyclable waste collection system, it is necessary to include informal collectors in the existing waste collection system. Cities have not taken property protection measures. Also, importance and need to include the informal sector in the system has not been recognized. The estimated rate of recyclable waste collected by informal collectors in Belgrade and Novi Sad is 50%.
Lack of coordination between the entities of the waste management system	Adequate coordination between the entities of the waste management system has not been established resulting in insufficient investment in the system of separate waste collection. The extended producer responsibility system implies that the producer should cover the costs of organizing the collection, sorting and processing of separately collected waste. Only 9% of the total fee for plastic packaging paid by producers is invested in separate waste collection system. For that reason, the local self-government units, as founders of public utility companies, participate in the development of the primary separation (recycling) system through subsidies. As a result, the rate of recycling of municipal waste is getting lower every year, and in 2019 it stands at 2%. Also, the quantities of plastic packaging in municipal waste are increasing. Plastic packaging manufacturers, through operators (EPR system) meet the specific target of plastic packaging recycling, which are higher every year. Figure 5 - Overview of specific national targets for plastic packaging recycling, % of municipal waste recycling and the share of PET packaging in municipal waste in Belgrade and Novi Sad in the period 2017-2019 
Conclusion	**A plastic waste management system that would contribute to the efficient use of resources and reduce the negative impact of waste on the environment has not been established.**
Audit aspect No 3	***3. Are the results of implemented measures concerning plastic waste treatment monitored and what effects have been achieved in the context of established goals in that field?***
There are no accurate and reliable data on generated municipal waste	There are no accurate and reliable records on the production and management of municipal waste. The data on generated municipal waste is not submitted by 35% of local governments, while 68% of local governments that submit data do not perform measuring, but submit data based on estimates. The data on the morphological composition of waste is not submitted by 38% of the local governments, and 2% of the local governments submitted the data on the share of all types of municipal waste which in total amounts to more than 100%. In 2017 and 2018, the State Environmental Protection Agency and the Ministry for Environmental Protection did not control the submission of data and the accuracy of the submitted data. Determining accurate and reliable data on the amount of municipal waste, morphological composition and recycling rate is the basis for successful waste management planning.
Methodology for calculation of the total amount of municipal waste and recycling rate	There is a risk that data on the rate of recycling of municipal waste are not reliable because no rules on calculation methods have been established. Due to the fact that 35% of local self-government units do not submit data on generated municipal waste and that only 37 utility companies have submitted data on the amount of municipal waste transferred to some type of reusable activities, there is a risk that the published official data on municipal waste recycling rate, based on estimates, are not reliable.
Law enforcement	The competent authorities did not inspect the application of the Law on Packaging and Packaging Waste. Since there were no inspections – and thus no preventive actions taken– the conditions have not been created to ensure the legality and safety of operations and actions of the supervised entities.

S E R B I A

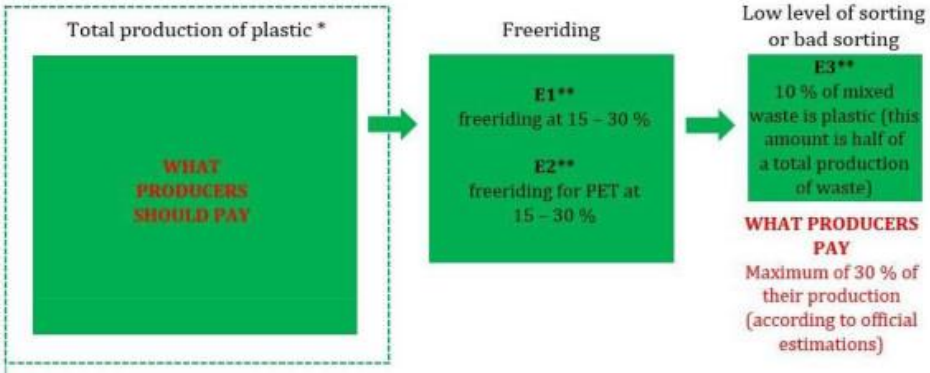
Conclusion	**The competent authorities have not sufficiently monitored the results of the implemented plastic waste management measures, which may lead to wrong waste management strategic decisions.**
Overall conclusions (from the national report)	
	Here are some of the recommendations issued by the State Audit Institution: **1. To the Ministry of Environmental Protection to:** a) continue with the harmonization of the Republic of Serbia regulations in the field of waste management with the EU regulations, in order to raise standards in the field of environmental protection; b) establish more efficient application of the principle of extended producer responsibility and the oversight over the work of operator companies for management of packaging waste; c) in the strategic waste management documents, set goals based on previous results and monitor their implementation; d) undertake measures for establishing separate waste collection on the entire territory of the Republic of Serbia; e) establish criteria and measures on how operator companies for management of packaging waste should inform end-users of the importance of reuse and recycling; f) define by strategic documents the manner of including informal collectors in the waste management system; g) prescribe the minimum quantities of municipal packaging waste that operators should get, in order to increase the recycling of municipal waste; h) perform inspection over the application of the Law on Packaging and Packaging Waste. **2. To the City of Belgrade and City of Novi Sad to:** a) adopt the plans for establishing the separate waste collection in their respective territories so that separate waste collection is accessible to all citizens; b) organize educational and informational activities aimed at reducing plastic waste; c) undertake measures for property protection and to define ways for inclusion of informal waste collectors; d) establish cooperation with packaging waste management operators so that they cover the cost of organizing the collection, sorting and processing of separately collected waste in the city. **3. To the Provincial Secretariat for Urbanism and Environmental Protection,** to perform inspection control over the application of the Law on Packaging and Packaging Waste. **4. To the State Environmental Protection Agency,** to: a) control the submitted data during the preparation of the annual report on waste management, and submit a report on the quality of the submitted data, with the annual report on waste management, as well as a description of the assessments performed; b) establish cooperation with the inspection department of the Ministry of Environmental Protection and inspection departments of the competent local self-government units in order to perform a comprehensive control of the submission of data on municipal and packaging waste; c) adopt a methodology for calculating the municipal waste recycling rate.
Information on the impact of audit results and the implementation of post-audit conclusions	
	1. The Ministry of Environmental Protection made a complete analysis of domestic legislation and a proposal for complete harmonization with the acquis communautaire in the field of packaging and packaging waste management, in order to achieve a high level of effective alignment of national legislation with the EU acquis and its implementation. 2. The State Environmental Protection Agency has developed a Methodology for the calculation of the total amount of municipal waste and the recycling rate in the Republic of Serbia. The methodology is in accordance with the implementation decision of the European Commission 2019/1004. 3. The City of Belgrade has adopted a plan to set up underground containers for waste selection and recycling in all city municipalities. 4. The City of Novi Sad has adopted the Project proposal of primary separation of municipal waste in Novi Sad, as well as the Strategy for the implementation of primary separation of municipal waste in the City of Novi Sad and suburbs.
	President *Dr. Duško Pejović*

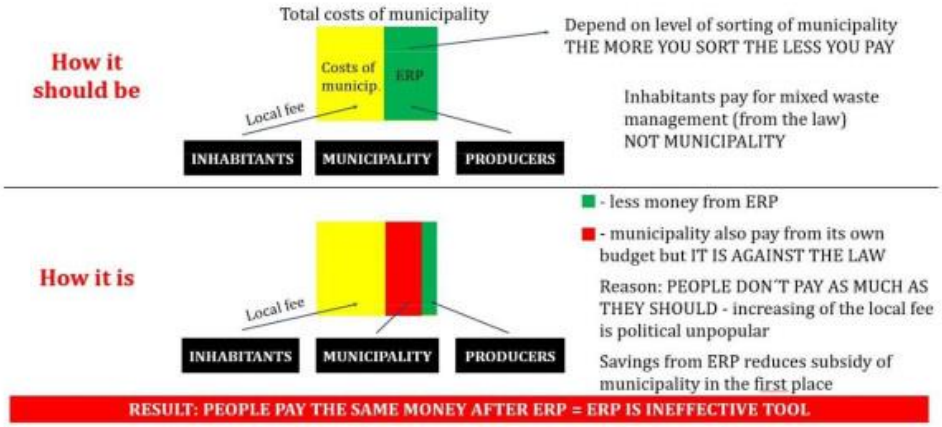
S L O V A K I A

	Supreme Audit Office of the Slovak Republic		***Slovak Republic***

The title of the audit:	***PLASTIC WASTE***
Period of time covered by audit:	**2017 - present**
Main audit question:	***Have the relevant public authorities (state and/or self-government administration) developed policies (plans, strategies) and implemented measures aimed at achieving goals (adopted in such policies) regarding generation and management of plastic waste?***
Answer:	***No shortcomings were found in the implementation of the Slovak Republic's obligations under EU legislation. However, the implementation of the commitments was rather formal and the audit highlighted a number of problems in their implementation.*** ***The audit identified a number of areas that prevent the Slovak Republic from better managing plastic waste and initiating positive changes that would enable the Slovak Republic to move closer to meeting EU targets.*** ***The audit also highlighted that there are significant problems in the accuracy of the reported data on plastic waste generated and its treatment. For this reason, the audit results cannot answer the question of how close the Slovak Republic is to meeting the EU plastic waste targets. However, we can state with certainty that the reported indicators are significantly overestimated.*** ***Although the reported figures for plastic waste are only estimates, we can also say that the amount of plastic waste is increasing significantly every year. However, according to the waste management hierarchy, it is the prevention of waste that is the main task of the government.*** ***A number of problems have been identified with the operation of extended producer responsibility. The system has been in place in the Slovak Republic since 2016, but in practice there have been a number of application issues that affect its functionality. The introduction of the system has not had an impact on the reduction of the local waste tax paid by citizens, which should be the main motivation for citizens to sort waste.*** ***Public information and education campaigns have also been a long-standing problem. This area has been assessed as insufficient, mainly because producers are responsible for this activity through their organisations. The audit asked the Ministry of Environment what is the motivation of private producers, who are financially responsible for each additional tonne of waste sorted, to raise awareness of the need to sort waste.*** ***The common denominator of these problems is the lack of state control. Even the Ministry of the Environment admits that the state's control activity is undersized.*** ***However, the most important challenge for the Slovak Republic should not be to try to adjust statistics in favour of achieving EU targets, but to apply the waste hierarchy more consistently in practice. It is therefore necessary to take measures that will prevent the increase in the amount of plastic waste and, at the same time, ensure the highest possible rate of recycling of the plastic waste generated and significantly reduce the amount of plastic waste that ends up in landfills.***

MAIN FINDINGS OF THE NATIONAL AUDIT ON PLASTIC WASTE	
Audit aspect No 1	***Has the country adopted legislation and organizational arrangements concerning plastic waste management?***
Compliance of the most important national	The audit did not identify a problem in the implementation of European legislation, but in the functioning of the instruments applied in practice. **Organizational arrangements**

regulations with the EU legislation	➢ Act no. 79/2015 on law; ➢ Waste prevention plan (2014-2018 and 2019-2025); ➢ Waste management plan (2016-2020 and 2021-2025). Each legal regulation of EU was adopted to one of these arrangements (or their combination).
Extended Producer Responsibility is not effective and fully functional	The EPR was incorporated into the Waste Act in 2016. Producers in the EPR system are responsible for 100% of their products. The EPR applies to producers of electrical equipment, batteries and accumulators, vehicles, tyres, packaging products, non-packaging products. The life-cycle costs of the previous year's products are calculated among all producers according to their market share (based on data on the quantity of products provided by each producer). Although the EPR has been in place since 2016, a number of issues have been identified in practice that hinder the functionality and efficiency of the system. **EPR – problems in reality** • Freeriding; • Low incomes to EPR system – cummulation of waste or even landfilling;  * problems not covered such as littering, underestimated data reported by producers, ... ** E = estimations of Ministry of Environment ➢ Calculating of costs earlier – data originate from the past. Targets to sort and recycle larger amount of plastic each year are not taken into account. There is no reserve for management with bigger amount of waste; ➢ Low level of sorting municipal waste and low level of people´s knowledge how to sort plastic waste in proper way; ➢ No eco-modulation; ➢ Littering; ➢ Market principle of EPR organization – competition among organizations, municipalities changes this organization, no state control; ➢ Low local fees.



No eco-design and no ecomodulation

Ecodesign in the Slovak republic does not work at all. Manufacturers pay the same fees regardless of the composition of the product. For this reason, manufacturers who produce well recyclable products are paying extra for others. The absence of eco-modulation does not motivate producers to produce better recyclable plastics.

On the contrary, if they produce a non-recyclable product that ends up in landfill, they are ultimately not financially responsible for it.

! **Reality**: Producer produces non-recyclable plastic → such plastic ends as mixed waste in landfill so it is not plastic waste → because it is not plastic waste there is no need to process it → no costs = such plastic is not included in the ERP system fee

RESULT: If you produce non-recyclable plastic you won´t pay

Although there is a law on ecodesign in the Slovak republic, no systematic approach is applied in practice.

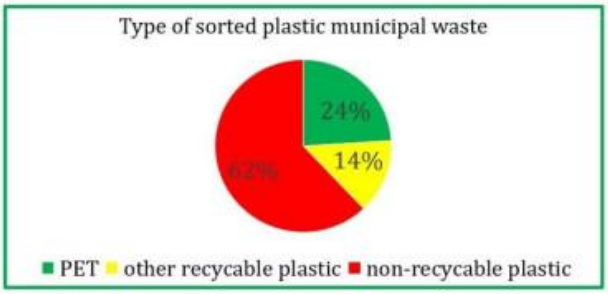
+ 50,27 %

Total generation of plastic waste (tons)	2017	2018	2019
	165 231	192 170	248 285

Act no. 529/2010 on eco - design

The producers are obliged to ensure the assessment of the conformity of the product properties with the technical requirements before placing the product on the market or before putting the product into operation. (Responsibilty: Ministry of Economy)

no results in fact



Separate collection of waste

The obligation to separate several types of waste arises from the Waste Act and applies to the following types of waste:

1) Paper 2)Plastic 3) Cardboard (multilayer composite materials based on cardboard)
4) Metal 5) Glass 6) BIO waste a) Kitchen waste b)Green waste c)Food fat and oil
Others: not compulsory (local collection) – f. a. textil

Sorting rate of municipal waste in %	2017	2018	2019
	19,23 %	24,37 %	24,61 %

Sorting of plastic municipal waste	2017	2018	2019	2019/2017
Total generation of plastic waste by producers (tons)	165 231	192 170	248 285	50,27 %
Sorted municipal plastic waste (tons)	44 386	49 795	57 923	30,50 % *
Sorted rate	26,86 %	25,91 % ↓	23,33 % ↓	

*Growth of sorted municipal plastic waste is lower than generated total plastic waste = **inefficient collection**

Interesting conclusions about municipal waste sorting (from previous audit in 2018)

- 90 % of municipalities didn´t sort kitchen waste
- 33 % of municipalities didn´t some type of compulsorily sorted waste
- 33 % of municipalities reported significant incorrect data

Conclusion

The SAO of the Slovak republic did not identify problems in the transposition of EU legislation, but its implementation is mostly formal.

The audit considers the fact that statistical data have no predictive value to be a serious problem.

In practice, a number of problems have been identified (especially in the EPR system) which hinder better management of plastic waste and better results.

Problems in practice are not being addressed, changes are difficult to implement due to pressure from various stakeholders (municipal associations, producers' associations, etc.).

Audit aspect No 2

Has any policy (plans, strategies) been applied in order to implement proper plastic waste management and improve the efficiency of using existing materials and products (according to assumptions of Circular Economy)?

Strategic documents on plastic waste management and adopted goals

In addition to the Waste Act (Act No. 79/2015), the main framework for waste management consists of two basic strategic documents:

- Waste prevention plan of the Slovak Republic (2014-2018 and 2019-2025);
- Waste management plan (2016-2020 and 2021-2025)
  - of the Slovak Republic,
  - of each region (8 regions),
  - of each municipalities (with more than 1 000 inhabitants) – abolished in 2019.

Responsibility for meeting goals on the municipal level went from municipalties to producers!!!

Waste prevention plan of the Slovak Republic (2019-2025)

Goals

- Reduce the use of non-recyclable single-use plastic packaging;
- Avoiding excessive packaging within a single product;
- Promoting the recyclability of plastic products and packaging (in line with the European strategy for plastics in a circular economy

Waste management plan of the Slovak Republic (2016-2020)

Goal

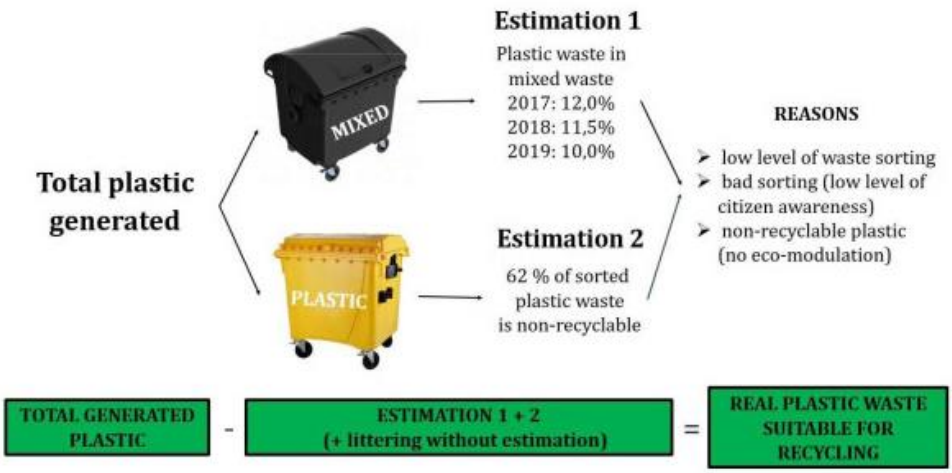
- The target for plastic waste is to achieve 55% material recovery and reduce landfilling of plastic waste to 5% by 2020.

These plans were not just formal documents. The audit identified a genuine effort to respond to real problems. Both plans were based on an analysis of previous documents.

The problem with both documents was the low level of achievement of the objectives, the low effectiveness of the measures taken and the lack of action taken by the State when problems related to the functioning of the instruments implemented were identified.

S L O V A K I A

The most important actions aimed at the proper management of plastic waste	The most important measures taken in the past to ensure proper management of plastic waste were: ➢ Obligation to sort plastic waste; ➢ Restriction to landfill sorted plastic waste (but it hapens – sorted plastic waste is sometimes prequalified by its holders)...**estimation of Ministry is that 30 % of sorted plastic waste is landfilled;** ➢ Ban on the charge free use of plastic bags; ➢ Procurement of PET bottle back up system (introduced in 2022); ➢ EPR system for plastic waste.
Educational and informative activities	During the audit period, some activities were performed by the state authorities. All performed activities were supported by EU funds (mainly spots in TV and so on). Except these state activities, there were initiated educational activities aimed at spreading awareness among the public performed by EPR organizations and also by nonprofit organizations. Nevertheless, this area was assessed as inadequate because: ➢ **Producers are responsible for educational activities on municipal level;** ➢ Educational and informative activities depend on EU funds (in 2018 there were no activities because of delaying funds from EU) – it is not a systematical activity; ➢ According to the statement, the Ministry of the Environment does not have funds in its budget for these activities; ➢ A new waste information portal to help spread awareness of the need to tackle plastic waste is still not operational, despite its planned launch in 2018.
Conclusion	**The Slovak republic has taken a number of measures that could ensure proper treatment of plastic waste. The main problem is the low effectiveness of measures to achieve national targets. Many measures are not being implemented for various reasons. The Ministry of the Environment is aware of many problems in practice. Despite this knowledge, the State is failing to implement and enforce changes that would increase the effectiveness of the measures.** **Another problem is that new measures take too long to implement. This is mainly due to the different expectations of stakeholders, especially producers and municipalities.**
Audit aspect No 3	***Are the results of implemented measures concerning plastic waste treatment monitored and what effects have been achieved in the context of established goals in that field?***
Problem with reliability and correctness of data	The State has an information system to collect all the waste data needed to evaluate the indicators monitored. Each municipality is obliged to report waste data (type of waste, method of waste management, etc.) on an annual basis. The audit was only able to verify data on municipal waste (in 2018). This audit highlighted a significant problem regarding the accuracy of the data. The Ministry of the Environment admits that the current information system is old, inadequate, contains errors, does not contain any internal control mechanism to verify the data, etc. A new IS is already under development. It is not expected to be fully computerised until 2026. **Significant mistakes identified by the audit** According to several official government estimates, the statistics on plastic waste are worthless. The main reasons are: ➢ Freeriding (about 30 %); ➢ Lack of state control of data; ➢ Old and insufficient IS; ➢ Next picture „How much plastic do we have for recycling in real"



These estimations were recalculated in the next table:

	2017 in tonnes	2018 in tonnes	2019 in tonnes
Total generated plastic	165 231	192 170	248 285
ESTIMATION 1 - Official estimation of Ministry of Environment Proportion of plastic waste in mixed waste: 2017: 12 %; 2018: 11,5 %; 2019: 10 % (converted to tonnes)	141 190	135 017	116 642
Remaining waste	24 041	57 153	131 643
ESTIMATION 2 - Official estimation of Ministry of Env. 62 % of sorted plastic waste is non-recyclable	16 867	18 922	22 010
Remaining waste Maximum possible recycling rate of plastic waste	7 175 4,34 %	38 230 19,89 %	109 633 44,16 %
Alleged amount of recycled plastic waste REPORTING recycling rate of plastic waste	101 496 61,43 %	110 329 57,41 %	115 333 46,45 %

* Littering is no including into this table

Why might these figures be even more incorrect? There is an incentive for stakeholders to manipulate the data because:

a) reported data about production of plastic by producers

producers want to pay less and achieve their targets = underestimation of data concerning amount of waste;

b) financial data reported by EPR organizations

producers want to pay less = underestimation of data concerning amount of waste;

c) reported data about recycled plastic provided by other private stakeholders

business with plastic waste is a serious crime in EU.

According to these data, we can say with certainty that government statistics on plastic waste (but also on waste in general) contain significant errors and the reported indicators are of little predictive value.

Failure in achieving results in plastic waste treatment in accordance with waste management hierarchy

Due to the aforementioned problem with the reliability of the data, the audit was not able to assess the actual situation of plastic waste management.

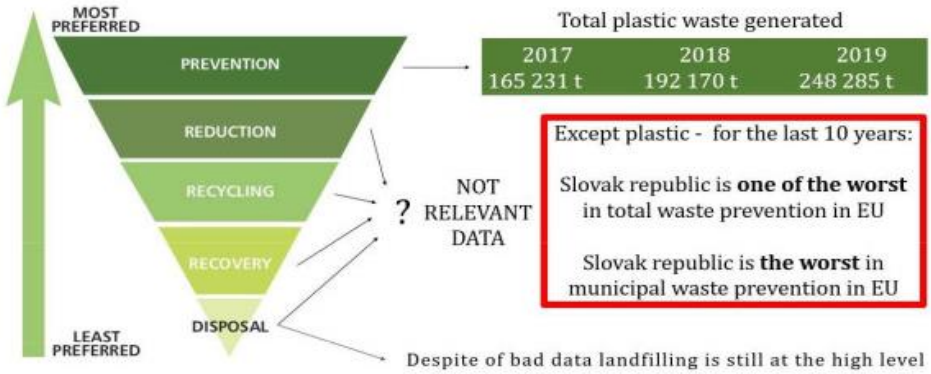
Neverthelles, here are presenting official uncorrect data:

S L O V A K I A

Total waste generated	165 231 t.	192 170 t.	248 285 t.
Waste treatment	**2017**	**2018**	**2019**
Reusing + Recycling (monitored together)	61,43%	57,41%	46,45%
Incineration with energy recovery	1,00%	0,67%	0,25%
Landfilling	5,93%	9,80%	3,75%
According to hierarchy	**68,36%**	**67,88%**	**50,45%**
Other ways of treatment			
Incineration without energy recovery	0,05%	0,01%	0,01%
Other recovery	6,82%	1,72%	6,28%
Other disposal	0,83%	0,21%	0,13%
Other treatment	23,94%	30,19%	43,13%
Other together	**31,64%**	**32,12%**	**49,55%**

Other treatment = accumulating of waste in municipalities

The Ministry of the Environment is not succeeding in its main task, which is to reduce the amount of plastic waste produced; on the contrary, this amount is increasing significantly every year.



Despite the incorrect figures, landfilling is still at a high level. An assessment of other ways of treating plastic waste would not be relevant because of the incorrect data.

Methodology of calculating the recycling rate of plastic waste

Slovak Republic uses **metodhology of calculating the recycling rate of plastic waste number 4.**

The audit found some differences between the Slovak Republic's data and those reported by the EU.

This is due to the fact that waste data from previous years were revised several times by the Slovak Ministry of the Environment after they were reported to the EU.

The auditors worked with different data during the audit (the Ministry of Environment of the Slovak Republic also changed the waste data during the audit).

Conclusion

Although the current indicators for the Slovak Republic seem optimistic in terms of the Slovak Republic meeting its targets, there are two risks for the future:

1) Following the revision of the data (both national and EU through the new methodology), there is a high risk of not reaching the targets due to the current significant overestimation of waste statistics;

2) If the targets are achieved, it will only be due to misreporting of data resulting from the inability to verify waste data from many stakeholders.

Overall conclusions (from the national report)

The most important conclusions for the Ministry of the Environment in the context of the cooperation audit concerned the following issues:

1. The statistical data reported by the State contained significant errors and were of little predictive value;

2. Waste management was not in line with the waste hierarchy. The amount of plastic waste generated has increased significantly year on year and landfilling is still at a high level;
3. The EPR system was not efficient enough. The system contained many application problems that hindered the proper functioning of the system. The introduction of this system in 2016 did not result in financial savings for citizens;
4. Information and education activities were insufficient;
5. The common denominator of all the above conclusions was the low level of state control related to undersized state control capacities.

Information on the impact of audit results and the implementation of post-audit conclusions

On the basis of a proposal by the Ministry of the Environment, an amendment to the Waste Act was approved, which also incorporated some provisions relating to measures aimed at reducing plastic waste. For example, the amendment banned the placing of single-use plastic products and non-packaging products made of oxo-degradable plastics on the market.

The Ministry of the Environment has decided to separate the part of the extended producer responsibility for packaging and non-packaging products from the Waste Act and to prepare a separate act in order to set up a new and more functional system of extended producer responsibility. This new system will also include a new set of information obligations and training activities.
However, on the basis of a change in the plan of legislative tasks of the Ministry of the Environment, the entry into force of new act was postponed from 01/2023 to 01/2024.

A national EU-funded project is also in the process of being implemented to raise awareness and providing advice on improving the quality of the environment, including waste management.

A pre-commissioning audit of the new waste management information system is currently in progress, which should include control mechanisms that will also focus on the accuracy of the waste data, which has been identified by the audit as one of the biggest problem.

signature of an authorised person

T U R K E Y

/SAI logo/	Turkish Court of Accounts /original name of SAI/	SAI of	Turkey /country/

The title of the audit:	**PLASTIC WASTE**
Period of time covered by audit:	**2017-2019**
Main audit question:	***Have the relevant public authorities (state and/or self-government administration) developed policies (plans, strategies) and implemented measures aimed at achieving goals (adopted in such policies) regarding generation and management of plastic waste?***
Answer:	***The actions of the Ministry of Environment, Urbanisation and Climate Change as the central actor responsible for waste management policy in Turkey and municipalities were insufficient to reduce the generation of plastic waste and ensure its proper treatment. Additionally, activities related to the implementation of the circular economy model are also limited.*** Although the measures taken by the Ministry and municipalities are compatible with the polluter pays and extended producer responsibility, the systems created for the separate collection of packaging waste at the source are insufficient for the separate collection of waste generated in houses. Financial resources created by those who launch packaging waste and authorized institutions representing them to cover the costs incurred within the scope of recycling obligations are very limited compared to the packaging waste generated. The reason for this is the exemption application brought by the Regulation and the lauchers who are not registered to the Packaging Information System. The number of launchers financing the system is very small compared to the number of operating. While 88.7% of the municipal wastes landfilled in 2014, it is aimed that 35% of the waste generated in 2023 will be recovered and 65% will be disposed of through landfill management. For this purpose, it is planned to increase the rate of packaging waste collected separately at the source, which was 5.3% in 2014, to 12% in 2023. However, according to 2018 data, disposal with regular and irregular storage method still has the largest share with 87 percent in waste management. In the data published every year by the Ministry of Environment, Urbanisation and Climate Change, it is reported that the plastic packaging released to the market was recovered 54 percent in 2017, 63 percent in 2018, and 57 percent in 2019. However, due to the fact that the total amount of plastic packaging produced is much higher than the amount of packaging stated to be put on the market, and there is no explanation for this part in the published statistics, the reported recovery rates could not be verified. According to the provisions of the current legislation, 1367 municipalities throughout the country should prepare a packaging waste management plan, while as of the end of 2019, the number of municipalities whose plans were approved by the ministry is 588. Since these plans have been implemented to a large extent in metropolitan cities where the majority of the country's population lives, it has been determined that approximately 80 percent of the population is within the scope of these plans. The national reporting system on waste did not allow to determine directly, among others: quantities of generated plastic waste and identification of definitive treatment methods of plastic waste.

MAIN FINDINGS OF THE NATIONAL AUDIT ON PLASTIC WASTE

Audit aspect No 1	**Has the country adopted legislation and organizational arrangements concerning plastic waste management?**
Compliance of the most important national regulations with the EU legislation	The legislation has been prepared in line with the requirements of the polluter pays principle, the waste management hierarchy and the expanded producer responsibility principle set in the directive 2008/98/WE of the European Parliament and of the Council of 19 November 2008 on waste. These principles are included in the Law on Environment and the regulations, and the systems and processes related to the management of packaging wastes are arranged accordingly. With the legislative change

(EU Countries) *The main differences between state and EU regulations* *(non-EU countries)* ***[questions 1.1a]***	made in June 2021, besides the recovery targets for packaging wastes, recycling targets have been determined over the years. In addition, the By-Law on Packaging Waste has been amended so that the extended producer responsibility can be applied more comprehensively for the launchers of packaged products.
Preparation and implementation of policy on waste management in Turkey took place at different administrative levels.	The waste management plans, as a tool of waste management policy on the basis of Art. 28 of the Directive 2008/98/WE, were adopted both at the central (by the Ministry of Environment, Urbanisation and Climate Change) and the regional level (by municipalities). Ministry of Environment, Urbanisation and Climate Change (MEU) is responsible for the preparation and implementation of the waste management policy in Turkey. In this context National Waste Management and Action Plan (NWMAP) (2016 – 2023) is prepared by MEU. It is the major policy document of Turkey on waste management. Plan has not included specific targets for plastic waste management. The national reporting system provides data on recovery rate for **plastic packaging waste** – this waste comes from both the municipal sector and non-municipal sources. The **"Zero Waste Project"**, which was implemented in 2018, included many public institutions and organizations, especially the Parliament, as well as municipalities and other institutions and organizations. The basic principle of the project is to increase the recycling rate by separating the wastes according to their types. The work that started as a project has gained a legal infrastructure with the Zero Waste Regulation issued in 2019.
Separate collection of waste in Turkey	It is the responsibility of the municipalities to establish the necessary systems for the separate collection of packaging waste at source. Costs for separate collection of packaging waste must be paid by the marketers. The vehicle capacity to be used for the collection of packaging waste should be at least 20 percent of that used in municipal waste. There is no data on the separate collection of municipal waste. However, the recovery rate of packaging waste is published by the ministry every year. Seperate collection of packaging waste is carried out within the framework of «packaging waste management plans» prepared by municipalities. The number of municipalities whose plans are approved by the MEU is currently 579. The number of municipalities responsible for preparing the plan is 1369.
Extended Producer Responsibility system concerning packaging, was ineffective.	In Turkey, there is the EPR SYSTEM (EPR) concerning packaging. There are obligatory recycling rates for those launching packaged products. Launchers of packaged products can fulfill their obligations by becoming a member of an authorized body (AB). The annual 1000 kg exemption limit considerably constricts the application scope of the system. Thus the fees paid under the EPR covered only the small part of the costs of packaging waste management. Regarding the management of packaging waste, four institutions have been determined as AB. These instutitions currently have a total of 7385 members even though the number of businesses marketing packaged products is more than 1 million. The deposit system for reusable beverage packaging will be mandatory in 2022. Environmental Agency responsible for setting up and operating the deposit management system was established on 30.12.2020.
Lack of solutions on eco-design of plastic packaging	According to the regulation on the control of packaging wastes, the packaging must be produced in a way that is suitable for recycling and least harmful to the environment. In packaging production, there is an obligation to use recycled raw materials at certain rates. For plastic packaging, this rate is 4 percent in 2018, 6 percent in 2019, and 8 percent after 2020. Despite these regulations in the legislation the mechanisms for supporting eco-design of packaging, including plastic packaging, had not been developed by MEU. Nearly 25 percent of the packaging put on the market in 2018 is plastics. There is no comprehensive data on the composition of plastic packaging waste.

Conclusion	**Existing legal regulations on plastic waste management in Turkey meet the conceptual requirements. However, these regulations and organizational arrangements were insufficient to reduce the generation of plastic waste and ensure its proper treatment, especially in the context of circular economy model.**
Audit aspect No 2	**Has any policy (plans, strategies) been applied in order to implement proper plastic waste management and improve the efficiency of using existing materials and products (according to assumptions of Circular Economy)?**
Strategic documents on waste management generally did not include separate targets to be achieved for plastic waste	The national waste management plan generally did not include separate targets to be achieved for plastic waste. The targets set for municipal waste in NWMAP are to reduce waste generation, increase the level of separate collection of municipal waste and achieve a higher recovery rate. It is aimed to raise the recovery rate of the municipal waste to 35% by 2023. Therefore, increasing the rate of packaging waste collected separately at the source to 12% in 2023 which was 5.3% in 2014 was also determined as a target on municipal waste. The only target determined specifically for plastic waste is the minimum recovery and recycling rate targets of plastic packaging waste. Accordingly, it is aimed to recycle plastic packaging waste by 55 percent in 2020. (By-Law on Packaging Waste Management)
Packaging Waste Management Plans implemented by the municipalities	Seperate collection of packaging waste is carried out within the framework of «packaging waste management plans» prepared by municipalities. The number of municipalities whose plans are approved by the MEU is currently 579. The number of municipalities responsible for preparing the plan is 1369.
Educational and informative activities	According to the Turkish legal system; MEU, municipalities and authorized institutions were obliged to conduct educational and informative activities on proper waste management. It was evaluated that educational and informative activities were carried out by these institutions. Some of the tools used within the scope of educational and informative activities are as follows: Workshops, brochures, informative publications, face-to-face education and briefings, public service announcements.
Good practices	Some good practice examples have been identified within the scope of the zero waste project. Two examples of good practices are the following: ✓ Public institutions that have established a zero waste system. Indeed, it has been observed that packaging waste generation is prevented in the buildings of public institutions that have established the zero waste system. (Union of Municipalities) ✓ Municipalities that adapt their waste management system to zero waste management. (Selçuklu Municipality) It is planned that all municipalities will adopt this system until the end of 2022 in line with the calendar in the zero waste regulation.
Conclusion	**The audit results reveal that the efforts have been insufficient in order to reduce plastic waste generation and its proper treatment. MEU has prepared a waste management strategy and action plan, however no planning has yet been made on waste prevention. Although there is an increase in the recycling rate of municipal waste, the targets set for 2023 are still far away. Lack of data on seperate collection of municipal waste makes it difficult to evaluate the effectiveness of policies and plans implemented.**
Audit aspect No 3	**Are the results of implemented measures concerning plastic waste treatment monitored and what effects have been achieved in the context of established goals in that field?**
Sources of plastic waste generation, its quantities and way of management were not reliably monitored	In the Ministry, there is no data on plastic wastes collected mixed with municipal wastes. For this reason, published data on plastic packaging are not fully explanatory. There is no monitoring for all targets determined in the National Waste Management and Action Plan regarding municipal waste. For example one of the targets determined for municipal waste in the NWMAP is to increase the separate collection rate of packaging waste from %5,3 to %12. However, no monitoring of this target has been made so far.

	Detailed problem analyses regarding the management of plastic waste have not been conducted, problem areas have not been identified, and studies have not been carried out to improve the system. Strategies related to plastic waste are evaluated within the framework of packaging waste. Although the information systems in use offer important advantages in monitoring waste management activities, there is a need for control mechanisms that will ensure the accuracy of the information entered into the system. Audit findings shows that the adopted reporting system did not allow to determine directly, among others: quantities of generated plastic waste and identification of definitive treatment methods of plastic waste. Since only the packaging quantities registered in the system are taken into account in the calculation of the recovery rate of packaging waste, this calculated rate does not fully reflect the actual situation. Therefore, the effectiveness of packaging waste management systems cannot be accurately evaluated.
Insufficient development of databases concerning waste management	Information systems used by the Ministry also have a reporting function. Packaging waste statistics and non-hazardous waste statistics published annually are made in line with the information contained in these systems. The Waste Management Application does not allow the determination of the method in which wastes are recycled. Mainly R12 code is used. The most important problem in the packaging information system is that the data recorded in the system does not fully reflect the total packaging waste actually produced. Because there are many businesses that do not enter data into the system due to the exemption application. Plastic packaging wastes from municipal and non-municipal sources was gathered under the same code (15 01 02).
The Ministry of Environment, Urbanisation and Climate Change and the Ministry of Trade have the data on the transboundary movement of plastic waste	Data on waste import and export are recorded by the Ministry of Environment, Urbanisation and Climate Change and the Ministry of Trade. After China's restriction on waste imports, plastic waste imports have doubled compared to before. Waste is imported by recovery facilities for only recovery, and the import of non-recyclable wastes and waste for disposal is prohibited. According to current regulations, it is forbidden to import mixed plastic waste.

Transboundary Movement of Plastic Waste (tonnes)					
2017		2018		2019	
Imports	Export	Imports	Export	Imports	Export
277.000	15.105	437.000	15.737	547.000	13.077

Calculation of the recovery rate of packaging plastic waste	The recycling rate is not calculated so far. The recovery rate is calculated to include preparation for reuse and recycling. The data that forms the basis of the calculation consists of the information entered into the packaging information system by recovery facilities and other users. The amount of recovery reported in the packaging information system is also used in calculating the recovery rate of municipal waste. This amount also includes packaging waste from non-municipal sources. The recovery rates of packaging wastes are calculated by proportioning the recovered amount to the amount of packaging released on the market. The amount of recovery is determined from the data entered by the facilities into the packaging information system. The amount of packaging placed on the market reflects only the data entered by users who log in to the system. However, there are many users who do not log into the system. For this reason, the calculated recovery rate does not fully and accurately reflect the actual situation.
Figure 1	**Recovery rate of plastic packaging waste in 2017-2019 in Turkey (Produced – Launched – Recovery)**

T U R K E Y

Source: MEU.

Conclusion	**Reporting systems do not reveal the amount of plastic waste generated and the way of treatment of plastic waste in a comprehensive and detailed manner. There is no data on mixed plastic waste collected in the municipal waste collection system. The recovery-focused reporting framework used is not compatible with the waste management hierarchy. A detailed analysis of plastic wastes has not been made by the Ministry and the problems in this area have not been identified. Although the reporting systems regarding municipal waste and packaging waste are suitable for following the determined targets, the data used in the calculation of the packaging recovery rate do not fully reflect the amount of plastic packaging waste generated. There is high risk of failing to meet the municipal waste recovery rate target of 35% for 2023.**
Overall conclusions (from the national report)	
	The most important conclusions to the Ministry of Environment, Urbanisation and Climate Change in the context of the cooperative audit concerned the following issues: 1) Making a detailed current situation analysis on plastic waste management and identifying problematic areas, 2) Taking additional steps to reduce plastic waste production by determining measures in accordance with the waste management hierarchy, 3) Elimination of problems in the financial and organizational aspects of packaging waste management, 4) Increasing the effectiveness of the planning studies and the separate collection systems in order to ensure that wastes are managed in accordance with the waste management hierarchy, 5) Reporting the activities carried out regarding the municipal and packaging waste management in a way that fully explains the current situation, 6) Monitoring the targets specified in the National Waste Management and Action Plan.

Uygundur
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