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PLASTIC POLLUTION IN THE ISHËM RIVER BASIN

INSIGHTS FROM MARINE LITTER
MONITORING AND POLICY
RECOMMENDATIONS

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Prepared by	ESDO - Environmental and Sustainable Development Office
Authors	Ornela Shoshi - Senior Environmental Expert Emanuela Arifi - Environmental Expert Greta Malaj - Environmental Specialist
Contributors	Arion Sauku - Project Manager Valbona Mazreku - Senior Environmental Expert Kledisa Çela - Project Coordinator Mevis Struga - Stakeholder and PR Expert

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Table of Contents

1. Introduction	5
1.1 Purpose of the Policy Paper	5
1.2 Ishëm River Basin and marine litter	5
1.3 Data sources and monitoring approach	7
2. Key marine litter findings in the Ishëm River Basin	8
2.1 Monitoring sites and campaigns	8
2.1.1 Cape of Rodon (Ishëm Basin)	8
2.1.2 Hamallaj beach (Ishëm Basin)	11
2.2 Dominant litter categories	14
2.3 Sources of plastic pollution	14
2.3.1 Pathways of plastic waste	14
2.3.2 Tourism and coastal recreation	15
2.3.3 Urban waste leakage and surface runoff	15
2.3.4 Waste management gaps	15
3. Waste management policy framework in Albania and relevance for the Ishëm River Basin	15
3.1 National legal framework for waste management	15
3.2 Strategic policy framework	16
3.3 Institutional responsibilities for waste management	17
3.4 Key implementation gaps in the Ishëm River Basin	18
4. Policy recommendations	19
4.1 Priority actions for reducing plastic pollution in the Ishëm River Basin	21
4.2 Implementation priorities	25
4.3 Stakeholder engagement mechanisms	25
5. Conclusions	27

List of Figures

Figure 1. Monitoring results in Cape of Rodon	10
Figure 2. Monitoring results in Hamallaj beach	13

List of Tables

Table 1. Water quality of basins during 2018 - 2024	6
Table 2. Summary of the monitoring data in the Cape of Rodon	10
Table 3. Summary of the monitoring data in Hamallaj beach	12

Abbreviations

AKEM - National Waste Economy Agency

AMORE-AL - Assessment of Pollutant Emissions to support River Basin Management in Albania

DCM - Decision of the Council of Ministers

DRS - Deposit Return System

EC - European Community

EPR - Extended Producer Responsibility

EU - European Union

HORECA - Hotels, Restaurants and Cafes/Catering sector

INSTAT - Institute of Statistics

NEA - National Environment Agency

NIWMS - Integrated Waste Management Strategic Policy Document and National Plan

OECD - Organisation for Economic Co-operation and Development

UNECE - United Nations Economic Commission for Europe

1. Introduction

1.1 Purpose of the Policy Paper

This policy paper aims to assess the implementation level of waste management policies through evidence-based information. It translates marine litter monitoring data collected from the ground under the RiverClean project into policy-relevant recommendations for improving the waste management performance at national and local level. Additionally, the paper aims to propose a series of measures which can be proposed and implemented from the municipalities and relevant institutions. The level of such measures/policies will be further monitored through beach litter monitoring evidences.

The paper focuses on reducing the most prevalent categories of plastic litter identified in monitoring campaigns and improving the effectiveness of existing waste management policies and instruments in Albania. By linking observed litter patterns to policy implementation gaps, the analysis provides evidence-based recommendations to strengthen plastic waste prevention, collection and recycling systems within the Ishëm River Basin.

At national level, 2023 INSTAT data show that 9.27% of municipal waste generated in Albania was plastic. Of the total municipal waste managed, 76.49% was landfilled, 18.81% was recycled and 4.5% was used for energy recovery. In addition, part of the population still remains outside regular waste collection services, which increases the risk that waste is dumped or leaked into the environment and water bodies.

1.2 Ishëm River Basin and marine litter

The Ishëm River Basin covers a significant part of central Albania and includes the municipalities of Tirana, Kamëz, Vorë, Krujë, Kurbin, and parts of Durrës. Waste management performance in these municipalities has a direct influence on the quantity of plastic waste entering the river system and, ultimately to the Adriatic Sea.

The basin combines highly urbanised areas¹ with rapidly expanding peri-urban settlements, particularly in the Tirana metropolitan area. As it includes the capital city and surrounding municipalities, the basin supports a comparatively large population relative to other Albanian river basins. This concentration of population generates substantial volumes of municipal waste and increases the risk of plastic leakage into the environment where waste management systems are incomplete or ineffective.

Waste generation in the basin is driven not only by resident population levels, but also by rapid urban expansion, commercial activity, and tourism activity growth mainly in the coastal areas during summer time. These dynamics contribute to rising volumes of packaging waste, single-use plastic products, and other plastic materials within municipal waste streams.

For this reason, waste management systems operating across the basin are a key determinant of the quantity of plastic waste that may enter waterways and be transported towards coastal areas.

Table 1 below shows the water quality status of Albania's river basins during 2018–2024.

¹ <https://www.instat.gov.al/sq/temat/treguesit-demografike-dhe-sociale/popullsia/>

The data are drawn from the National Environmental Agency's report on the state of the environment in Albania, 2024. Among the pressures affecting water quality, plastic pollution is an important contributing factor, as it degrades aquatic ecosystems and negatively influences the overall environmental condition of surface waters.

Table 1 - Water quality for Basins during 2018 - 2024 (NEA report on the state of the environment in Albania, 2024)

Year	Drin Buna River Basin	Ishëm Erzen River Basin	Shkumbin River Basin	Seman River Basin	Vjosa River Basin	Mat River Basin
2018	Class III	Class V	Class IV	Class V	Class II	Class III
2019	Class IV	Class V	Class III	Class V	Class III	Class II
2020	Class IV	Class V	Class III	Class V	Class II	Class III
2021	Class IV	Class V	Class II	Class V	Class II	Class III
2022	Class III	Class V	Class III	Class V	Class II	Class II
2023	Class IV	Class V	Class III	Class IV	Class II	Class II
2024	Class III	Class V	Class II	Class IV	Class II	Class II

Water quality classes indicate the overall environmental condition of river waters, with Class II reflecting good quality, Class III moderate quality, Class IV poor quality and Class V very poor quality, meaning that higher class numbers correspond to worse water quality and greater pollution pressure.

Waste management practices implemented within these municipalities therefore play a critical role in determining the volume of plastic waste that may enter the river system and be transported toward coastal areas.

The Report on the State of the Environment provides information on river water quality, but it does not yet include a dedicated assessment of riverine and coastal litter accumulation. As a result, evidence on the quantity and composition of plastic waste that reaches rivers and adjacent coastal areas remains limited, which increases the value of the RiverClean monitoring data for basin-level analysis.

At national level, approximately 870,883.59 tons of waste were managed in Albania in 2024, compared with 820,322 tons in 2023.

Waste collection services have expanded in recent years mainly in the urban areas, but important challenges still remain. The collection coverage is generally higher in urban municipalities such as Tirana and Kamëz, while peri-urban and rural areas may still experience service gaps. These gaps increase the likelihood that unmanaged waste is discarded into the environment and enters rivers, streams, and drainage channels. Recycling performance also remains limited. Albania's municipal waste recycling rate is estimated at around 18–19%,² meaning that the majority of waste continues to be disposed

²<https://www.eea.europa.eu/en/europe-environment-2025/countries/albania/waste-generation>

of in landfill sites rather than recovered as recyclable material.

Municipal waste separation remains a challenge in Albania. Municipal waste separation at source and relevant infrastructure is almost non-existent, despite a legal obligation. The main method of managing municipal waste was disposal to landfill in 2023 (over 70%), significantly above the share in the European Union (23%).³ A few pilot projects are, nevertheless, underway to introduce separate collection in some Albanian cities (in particular for paper and cardboard, aluminium, plastics, and bio-waste).⁴

Plastic waste constitute an important share of municipal waste, particularly through presence of food and beverage packaging, consumer goods packaging, and plastic carrier bags. The limited source separation, insufficient recycling capacity, and illegal dumping practices increase the probability that plastic waste escapes formal management systems and enters the natural environment.

Within the Ishëm River Basin, plastic pollution is primarily associated with three main sources:

- household and consumer waste, including packaging, bottles, and plastic bags;
- waste leakage from densely populated urban municipalities;
- inadequate collection and disposal practices in peri-urban and rural areas.

Once released, lightweight plastic materials can be transported by surface runoff, wind and river flows. In this context, the Ishëm River functions as a major pathway for land based waste, conveying plastic debris from inland settlements to the Adriatic coast, where it accumulates in coastal and beach environments.

Monitoring of marine litter along the Adriatic coastline is therefore important not only for identifying the scale and composition of pollution, but also for informing upstream policy responses and assessing the effectiveness of waste management measures implemented within the Ishëm River Basin.

1.3 Data sources and monitoring approach

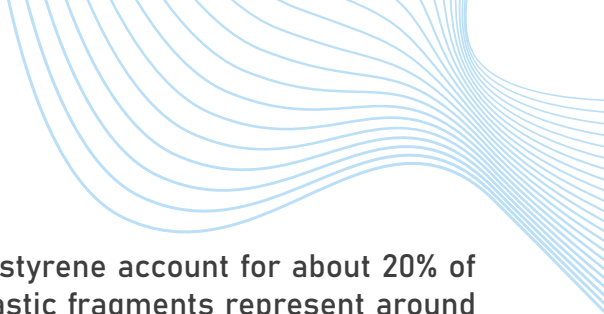
The policy analysis is based primarily on marine litter monitoring campaigns conducted by the RiverClean project staff at Cape of Rodon and Hamallaj beaches in 2025. The monitoring followed standardized beach litter survey methodologies and recorded the abundance and composition of litter items across defined shoreline sections.

The monitoring results indicate that single-use plastic consumer products and packaging materials dominate the recorded litter composition across both monitoring sites. The most frequently observed categories include:

- **Plastic beverage-related items**, which represent a major share of the litter stream. At Cape of Rodon, plastic drink bottles and caps/lids account for around 59% of all recorded items, while at Hamallaj Beach the same categories make up about 39%.
- **Plastic fragments**, including foamed and non-foamed plastic materials, are also highly

³ https://ec.europa.eu/eurostat/databrowser/view/env_wasmun__custom_20727021/default/table

⁴ https://www.oecd.org/content/dam/oecd/en/publications/reports/2024/03/a-roadmap-towards-circular-economy-of-albania_0fd9c3a4/8c970fdc-en.pdf



significant. At Cape of Rodon, fragments of foamed polystyrene account for about 20% of recorded litter, while at Hamallaj Beach non-foamed plastic fragments represent around 22.2% and foamed polystyrene a further 12.2%.

- **Plastic food packaging**, such as crisps packets and sweets wrappers, is another recurrent category, representing about 3.9% of total litter at Cape of Rodon and 9.5% at Hamallaj Beach.
- **Plastic shopping and carrier bags** are particularly important in the Vjosa Basin monitoring sites, where they appear among the most visible single-use plastic items, while in the Ishëm Basin sites beverage packaging and fragmented plastics are the dominant categories.

The repeated presence of these categories across monitoring campaigns is one of the report's main findings because it indicates continuous inputs of plastic waste into the coastal environment rather than isolated littering events. This evidence is particularly important for identifying priority waste streams and for assessing how far existing waste management measures are preventing leakage in the Ishëm River Basin.

2. Key marine litter findings in the Ishëm River Basin

2.1 Monitoring sites and campaigns

Marine litter monitoring was conducted by the RiverClean project staff at two coastal sites within the Ishmi River Basin:

- Cape of Rodon
- Hamallaj Beach

Each monitoring campaign recorded the number and type of litter items found along a 100-meter shoreline segment. The results reveal consistent patterns in litter composition across both locations.

2.1.1 Cape of Rodon (Ishëm Basin)

Monitoring at Cape of Rodon in July and December 2025 shows that marine litter is dominated by single-use beverage-related plastics, especially drink caps/lids (420), small plastic bottles (408), polystyrene fragments (373), and large plastic bottles (272). The significant presence of drink cans (177) and food wrappers (73) further confirms the importance of everyday consumer packaging as a major source of pollution.

Higher counts recorded in December suggest continued accumulation and transport of lightweight waste through the Ishëm River and coastal currents. These findings highlight the need for stronger upstream waste management, improved collection coverage and targeted measures to reduce leakage of plastic packaging into the river and coastal environment.

**Monitoring locations
in Ishëm basin**

**Cape of Rodon
Ishëm basin**

**Hamallaj
Ishëm basin**

Ishëm

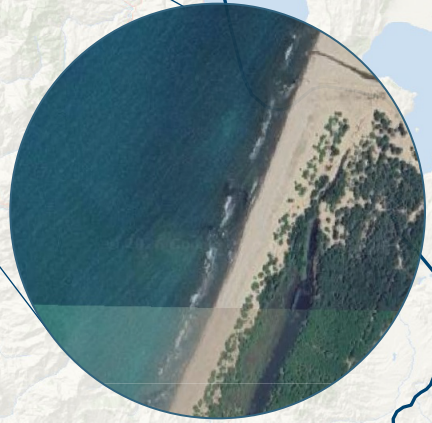
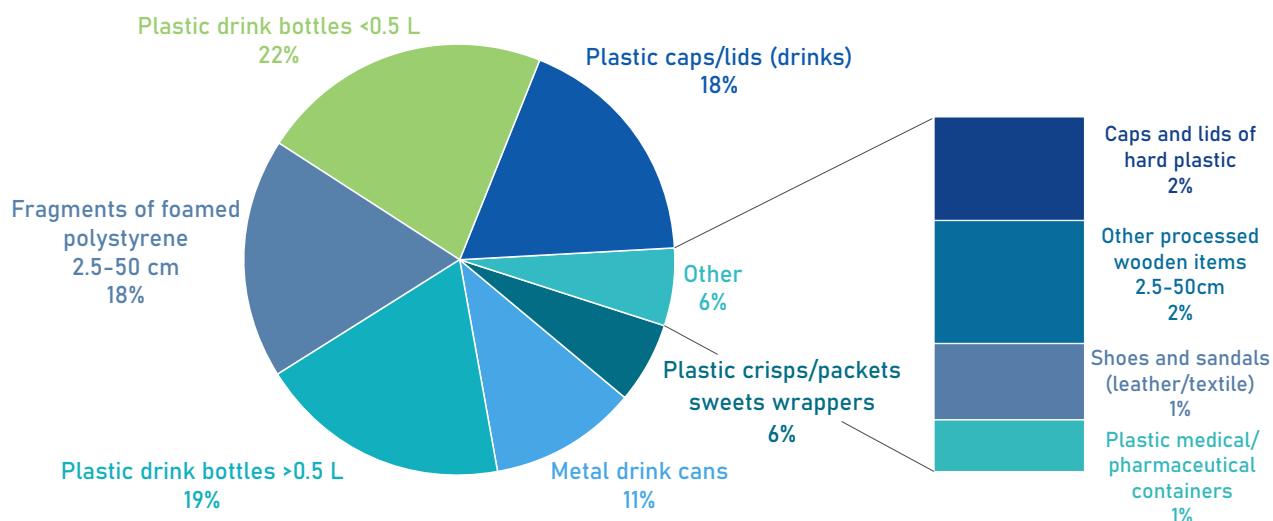


Table 2. Summary of the monitoring data in the Cape of Rodon (data collection from monitoring activities by ETMI)

Litter item category	28/07/2025	19/12/2025	Total (both dates)
Plastic caps/lids (drinks)	122	298	420
Plastic drink bottles ≤0.5 L	153	255	408
Fragments of foamed polystyrene 2.5–50 cm	124	249	373
Plastic drink bottles >0.5 L	132	140	272
Metal drink cans	72	105	177
Plastic crisps packets / sweets wrappers	38	35	73
Cups and lids of hard plastic	11	28	39
Other processed wooden items 2.5–50 cm	15	20	35
Shoes & sandals (leather/textile)	8	25	33
Plastic medical/pharmaceutical containers	5	27	32

Figure 1. Monitoring results in Cape of Rodon (data collection from monitoring activities by ETMI)



Drink-related litter clearly dominates the Cape of Rodon site, with plastic caps/lids, small plastic bottles and large plastic bottles together accounting for nearly 59% of all recorded items. Foamed polystyrene fragments also represent a substantial share (20.0%), pointing to the ongoing fragmentation and persistence of packaging-related waste in the coastal environment.

2.1.2 Hamallaj beach (Ishëm Basin)

The combined results from the 8 monitoring campaigns carried out at Hamallaj Beach between March 2024 and November 2025 reveal a consistent and well-defined pattern in the composition of coastal litter, strongly dominated by plastic materials associated with everyday consumer use. The data indicate that Hamallaj functions as a high-pressure recreational coastal area, where litter accumulation is largely driven by land-based sources and repeated seasonal inputs.

- Across the entire monitoring period, fragments of non-foamed plastic (2.5–50 cm) represent the most abundant category, with a total of 740 items recorded. This category usually includes broken pieces of rigid and soft plastic products such as bottles, containers, packaging parts, household plastic items and other degraded consumer plastics. Their persistent presence throughout all surveys suggests long term accumulation and progressive fragmentation of larger plastic objects already present in the coastal environment.
- Beverage-related waste constitutes the second major pollution component. Small plastic drink bottles (≤ 0.5 L) account for 522 items, while larger bottles (>0.5 L) reach 288 items.
- In addition, plastic caps and lids from drinks total 497 items, confirming the strong impact of single-use consumption patterns.
- Fragments of foamed polystyrene (2.5–50 cm) are also highly represented with 407 items recorded. These materials are typically associated with packaging and insulation and tend to break into smaller pieces under environmental exposure, contributing to the continuous accumulation of lightweight debris along the shoreline.
- Food-related packaging, particularly crisps and sweets wrappers, shows a significant presence with a total of 315 items.
- Similarly, cups and lids of hard plastic (235 items) point to on-site consumption as a major driver of waste generation.
- Other notable categories include plastic caps and lids from chemical and detergent containers (192 items), plastic bottles and containers of cleaning products (89 items) and tobacco-related waste such as cigarette butts (132 items).

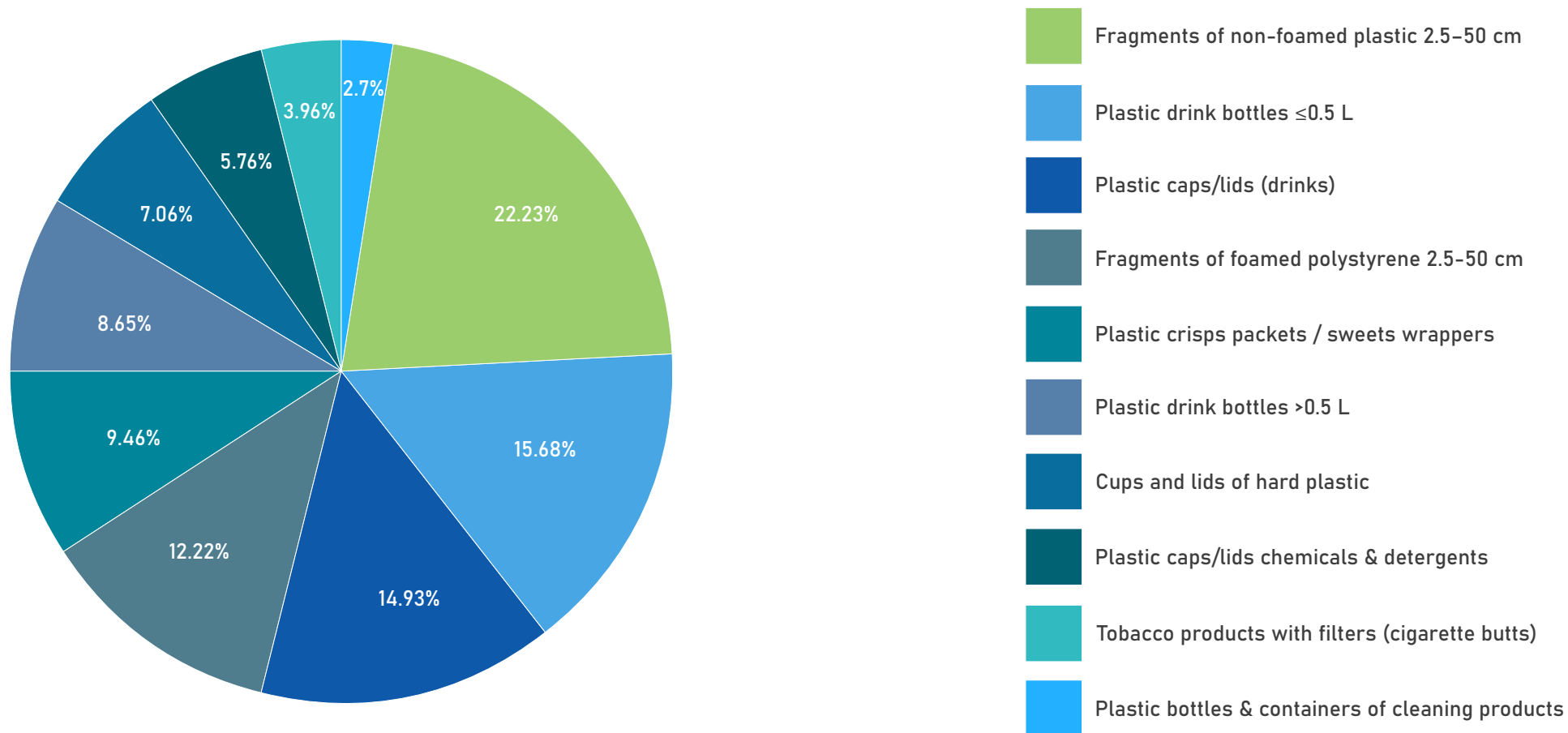
The results demonstrate that Hamallaj Beach is characterized by a persistent dominance of consumer plastic waste, especially drink-related packaging and fragmented materials. The consistency of these categories across multiple monitoring periods suggests continuous input and limited natural removal, leading to long-term accumulation.

Table 3. Summary of the monitoring data in Hamallaj beach (data collection from monitoring activities by ETMI for REMEDIES Project)⁵

Litter item category	17/03/2024	26/04/2024	26/07/2024	27/10/2024	26/01/2025	14/05/2025	25/07/2025	16/11/2025	Cumulative total across 8 campaigns
Fragments of non-foamed plastic 2.5–50 cm	181	182	35	126	73	56	40	47	740
Plastic drink bottles ≤0.5 L	134	45	56	79	40	68	27	73	522
Plastic caps/lids (drinks)	100	51	42	100	55	30	51	68	497
Fragments of foamed polystyrene 2.5–50 cm	102	46	73	39	54	32	23	38	407
Plastic crisps packets / sweets wrappers	27	31	58	44	9	24	85	37	315
Plastic drink bottles >0.5 L	96	23	41	31	18	24	21	34	288
Cups and lids of hard plastic	11	14	54	34	9	14	42	57	235
Plastic caps/lids chemicals & detergents	9	32	6	87	11	15	15	17	192
Tobacco products with filters (cigarette butts)	8	1	43	28	5	2	38	7	132
Plastic bottles & containers of cleaning products	38	8	5	12	9	11	-	6	89

⁵<https://remedies-for-ocean.eu/>

Figure 2. Monitoring results in Hamallaj beach (data collection from monitoring activities by ETMI for REMEDIES Project)





2.2 Dominant litter categories

The monitoring results from Cape of Rodon and Hamallaj Beach show a clear predominance of plastic-based litter, with the highest concentrations found in categories linked to single-use consumer products. The most significant items recorded across both sites include drink bottles, caps and lids, food packaging, and plastic fragments, indicating that consumer packaging remains the principal component of coastal litter in areas influenced by the Ishëm River Basin.

A substantial share of recorded waste consists of beverage-related items, which points to the strong influence of on-the-go consumption, recreational use, and inadequate disposal practices. At the same time, the widespread presence of plastic fragments and foamed polystyrene suggests the ongoing breakdown of larger waste items already present in the environment. This fragmentation process increases the persistence of litter in coastal areas and contributes to the generation of smaller plastic particles over time.

The repeated occurrence of food wrappers, cups, lids, and other lightweight packaging materials further indicates that coastal litter is closely linked to everyday consumption patterns and insufficient waste containment. In addition, the presence of selected household-related and miscellaneous items suggests that part of the litter load may also originate from inland settlements and be transported through drainage systems and river flows.

The evidence confirms that marine litter in the Ishëm Basin is characterised by a narrow but persistent group of high-frequency plastic items, dominated by packaging waste. This pattern highlights the need for targeted prevention measures focusing on the most common litter categories and the main pathways through which they reach the coastal environment.

2.3 Sources of plastic pollution

The composition of litter recorded during the monitoring campaigns at Cape of Rodon and Hamallaj Beach indicates that plastic pollution in the coastal areas influenced by the Ishëm River Basin originates from several interconnected land-based sources. These sources are primarily related to urban waste generation, recreational coastal activities and structural gaps in waste management systems.

2.3.1 Pathways of plastic waste

During periods of heavy rainfall or increased river discharge, accumulated waste from inland settlements may be mobilized and transported downstream toward the Adriatic Sea. Lightweight plastic items such as bags, packaging materials and bottles are particularly susceptible to long-distance transport through river systems. As a result, coastal areas near the Ishëm River mouth and surrounding beaches can act as accumulation zones where transported debris settles under the influence of river flow and coastal currents.

2.3.2 Tourism and coastal recreation

Beaches such as Hamallaj are subject to strong seasonal recreational pressure, especially during the summer months, due to their accessibility from the Tirana –Durrës metropolitan area and the concentration of day visitors and coastal leisure activities. If adequate waste collection infrastructure is not available or if visitors do not properly dispose of their waste, these materials can remain on beaches and surrounding coastal areas. Wind, waves and tidal movements can subsequently transport litter into the marine environment, where it may accumulate along the shoreline or break down into smaller fragments.

2.3.3 Urban waste leakage and surface runoff

Urban drainage networks and stormwater runoff can carry lightweight waste from streets, construction areas and open dumping sites into nearby streams and tributaries that feed the Ishëm River. Over time, these materials are transported downstream and eventually reach coastal zones.

2.3.4 Waste management gaps


Despite improvements in Albania's waste management framework in recent years, structural challenges remain in the collection, separation and recycling of municipal waste. Limited recycling infrastructure, incomplete waste collection coverage in some areas and insufficient enforcement of environmental regulations increase the likelihood that plastic waste escapes into the environment.

Together, these factors create a pathway through which plastic waste generated within the Ishëm River Basin is transported from inland settlements to the Adriatic Sea, contributing to the accumulation of marine litter along Albania's coastline.

3. Waste management policy framework in Albania and relevance for the Ishëm River Basin

3.1 National legal framework for waste management

Albania has strengthened its legal framework for waste management as part of its alignment with the EU acquis and its transition towards a more circular and resource efficient economy. The main legal basis is Law No. 57/2025 "On Integrated Waste Management", which sets out the core principles for waste prevention, separate collection, treatment, recovery, disposal, planning, monitoring and control. The law is intended to align the national framework with the EU Waste Framework Directive 2008/98/EC and is based on the waste hierarchy, which prioritises prevention, reuse and recycling over recovery and landfill disposal.



A key recent addition is Law No. 74/2025, dated 4 December 2025, “On the Extended Responsibilities of Producers of Products that Generate Waste”, which establishes the legal basis for Extended Producer Responsibility (EPR) in Albania. The law introduces producer responsibility for the post-consumer phase of relevant waste streams and is intended to support collection, take-back, treatment, reporting and financing arrangements for products that become waste, including packaging. In policy terms, this is a significant step because it shifts part of the financial and organisational burden of waste management from municipalities to producers and importers.


This framework is complemented by a number of secondary acts that regulate specific aspects of implementation. In addition, a draft National Waste Prevention Plan has been published for public consultation and is relevant in this context because it treats waste prevention, including plastic waste prevention, as a policy priority and identifies measures that can support implementation at national and local level.

The framework is also supported by the National Programme for Waste Prevention, which was also opened for public consultation and reinforces the emphasis on reducing waste generation at source while highlighting priority waste streams such as plastics and packaging. The programme is particularly relevant because it outlines measures that can support implementation at both national and local level, including actions to promote reuse, repair, sustainable consumption and broader waste prevention practices.

- DCM No. 232, dated 26.04.2018, which amended Council of Ministers Decision No. 177, dated 06.03.2012, “On packaging and their waste”, strengthened the regulatory basis for packaging waste management.
- Decision No. 319, dated 31.05.2018, “On the adoption of measures for the costs of integrated waste management”, established measures relating to the financing and cost coverage of integrated waste management services.
- In addition, DCM No. 687, dated 29.07.2015, “On the approval of the rules for the maintenance, updating and publication of statistics on waste”, provides the framework for waste data collection, updating and publication, thereby supporting monitoring, reporting and evidence-based policy implementation.

3.2 Strategic policy framework

In 2020, Albania adopted two major strategic documents to guide its integrated waste management efforts. These include the “Integrated Waste Management Strategic Policy Document and National Plan (NIWMS)” for the period 2020–2035, and the “National Sectoral Plan for Waste Management (Masterplan)”. These documents outline the country’s long-term vision and specific actions to enhance waste management infrastructure and practices, ensuring alignment with EU policies and promoting sustainable waste management solutions.



The strategy was approved by DCM no. 418/2020 and implementation began in 2021. It provides the long-term direction for improving waste collection, treatment, recovery and prevention and serves as the main planning instrument for sector reform.

The strategy sets national targets for:

- expanding municipal waste collection coverage;
- increasing recycling and material recovery rates;
- reducing dependence on landfill disposal;
- strengthening institutional capacity and coordination in the waste management sector.

The NIWMS and Masterplan have envisioned the division of the entire territory of Albania into 10 waste management zones, which are the base units for integrated waste management planning. These zones serve as the fundamental units for integrated waste management planning, facilitating more efficient and localized management of waste across the country.

Referring to the Masterplan, Ishmi River Basin is included into the Tirana - Durrës Waste Zone.


The implementation of the NIWMS and the Masterplan requires the drafting of Plans for each Waste Zone defined in the country, including their treatment and destination of waste in accordance with EU Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives. This directive establishes a framework for sustainable waste management, ensuring that Albania's waste management practices align with EU standards, focusing on the reduction, recycling, and safe disposal of waste.

Albania has also incorporated circular economy objectives into its waste policy framework. The OECD Circular Economy Roadmap for Albania identifies plastics, marine litter, municipal waste, economic instruments and inter-institutional coordination as priority areas for reform. The roadmap also notes that Albania amended its waste framework in 2022 to ban certain categories of plastic bags, but that alignment with the EU rules on single-use plastics remains partial and requires further approximation.

3.3 Institutional responsibilities for waste management

Waste management in Albania involves a multi-level governance structure that includes both national and local institutions.

- At the central level, the **Ministry of Environment** is responsible for developing national policies and legislation related to waste management and environmental protection. The Ministry also coordinates the implementation of environmental strategies and ensures alignment with European Union standards.

- 
- The National Agency of Waste Economy (AKEM) plays an important coordinating and monitoring role in integrated waste management. Established in 2024, the agency supports planning, data management, inter-institutional coordination and the implementation of the waste hierarchy in cooperation with local government units. In this policy context, AKEM should be understood primarily as a public coordination and oversight body rather than as the direct operator of waste treatment services in each basin.
 - The National Environment Agency (NEA) is responsible for collecting environmental data, managing environmental information systems and supporting environmental monitoring and reporting processes.
 - At the local level, municipalities are the key actors responsible for implementing waste management policies. Their responsibilities include organizing municipal waste collection services, developing municipal waste management plans, managing local waste infrastructure and ensuring compliance with environmental regulations.

3.4 Key implementation gaps in the Ishëm River Basin

Despite the existence of a national legal and strategic framework on waste management and plastic pollution, monitoring evidence shows that significant volumes of plastic waste continue to reach the marine environment from the Ishëm River Basin. The persistent dominance of consumer packaging and beverage-related litter at coastal sites indicates that existing policy measures have not yet been translated into sufficiently effective implementation outcomes.

- A key gap concerns the **uneven coverage and reliability of municipal waste collection services**, particularly in peri-urban and rapidly expanding settlements. Where collection systems and related infrastructure remain insufficient, waste is more likely to be discarded in open areas, drainage channels and near waterways, increasing the probability of downstream transport towards coastal areas.
- A second weakness is the **limited development of separate collection and recycling systems**. In many municipalities, recyclable materials continue to be managed within mixed waste streams, reducing recovery rates and increasing the risk that plastic packaging escapes into the environment.
- A further implementation gap relates to **plastic packaging control measures**, including plastic bag restrictions, extended producer responsibility (EPR) and other recovery mechanisms. Although Albania has established the relevant legal basis, implementation remains incomplete, and common litter items such as beverage containers and lightweight packaging are still not being effectively captured through existing systems.
- Seasonal **recreational pressure in coastal areas** adds to this challenge, particularly where waste bins, collection services and public awareness measures are insufficient during peak tourism periods. This increases the likelihood of direct littering and the accumulation of disposable packaging in beach environments.

- At the same time, several **cross-cutting constraints** continue to limit policy effectiveness. These include weak inspection capacity at municipal level, limited monitoring of leakage hotspots and informal disposal practices, and low public awareness of the environmental impacts of littering. Together, these factors reduce the practical effectiveness of existing measures.
- There is also a broader **governance gap between waste management and river basin management**. In the Ishëm context, plastic pollution is not only a municipal waste issue but also a river system issue, as waterways act as a major pathway through which land-based waste reaches the coast. However, this upstream downstream linkage is still insufficiently reflected in policy implementation and institutional coordination.

In conclusion, the principal challenge in the Ishëm River Basin is not the lack of legislation, but the limited effectiveness of implementation. Policy efforts should therefore focus on improving collection coverage in peri-urban areas, strengthening separate collection and packaging recovery systems, reinforcing enforcement and monitoring capacity, improving the evidence base on basin specific waste management performance, and integrating waste management more effectively into river basin and coastal pollution responses.

4. Policy recommendations

The current situation in the Ishëm River Basin is characterised by high environmental pressure, driven by the concentration of population and economic activity in the Tirana Durrës corridor, combined with persistent weaknesses in wastewater and waste-related infrastructure. According to the 2023 Census, approximately 31.6%⁶ of Albania's population lives in Tirana prefecture, while Durrës prefecture has a population density of 296.2 inhabitants/km²⁷, indicating a strong urban and peri-urban pressure base within the basin. At the same time, the National Environment Agency classifies the Ishëm–Erzen basin in Class V in the 2024 State of the Environment Report,⁸ indicating very poor water quality. The River Basin Management Plan for the Ishëm Basin⁹ identifies the main pressures as point-source pollution from urban wastewater, diffuse pollution linked to agriculture, hydromorphological alteration of water bodies, and groundwater abstraction. The plan also notes significant infrastructure gaps in the basin, including settlements where wastewater is discharged without treatment and combined sewer systems that mix urban wastewater with stormwater, increasing the transport of pollutants toward rivers. In this context, plastic waste leakage should be understood as part of a broader cumulative pressure pattern, in which dense settlement, inadequate service coverage, stormwater pathways and river transport all contribute to the movement of waste from inland areas to the coast.

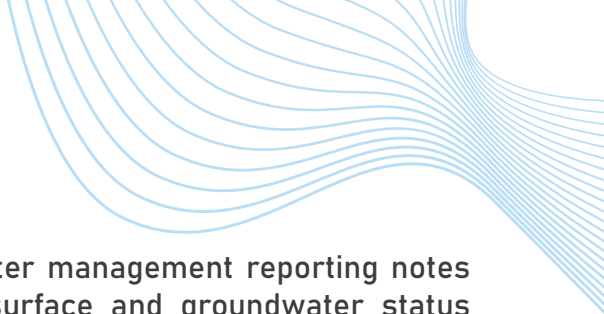
Additional evidence from recent international and project-based sources also points to

⁶ <https://www.instat.gov.al/media/13626/cens-2023-census-botim.pdf>

⁷ <https://www.instat.gov.al/media/14330/cens-2023-durresi.pdf>

⁸ https://akm.gov.al/ova_doc/raporti-per-gjendjen-e-mjedisit-2024/

⁹ https://konsultimipublik.gov.al/documents/RENJK_606_PMBU_Ishem.pdf



structural pressure on the Ishëm River Basin. UNECE water management reporting notes that Albania still faces important monitoring gaps for surface and groundwater status assessment, while wastewater infrastructure remains insufficient, with only 10 wastewater treatment plants in operation nationally and 114 planned by 2050,¹⁰ requiring investments of around €2.3 billion. In parallel, the AMORE-AL¹¹ project (Assessment of Pollutant Emissions to support River Basin Management in Albania according to the EU Water Framework Directive | AMORE-AL A partnership between Austria and Albania), selected the Ishëm basin as its pilot area and identifies it as a heavily polluted basin where both point and diffuse emission pathways require better assessment. Together, these findings suggest that the current situation in the Ishëm basin is shaped not only by solid waste leakage, but also by wider infrastructure, monitoring and pollutant-management deficits that reinforce cumulative environmental pressure.

The policy recommendations below respond directly to the current pressure profile of the Ishëm River Basin. The priority measures below are based on three considerations: the dominant litter categories identified through monitoring, the main leakage pathways from inland settlements to the coast, and the feasibility of action within the current legal and institutional framework. Priority should be given to measures that can reduce leakage in the short term, while also supporting longer-term structural improvements in packaging recovery, recycling and governance.

¹⁰ https://unece.org/sites/default/files/2025-10/Albania_summary_report_6th_cycle_7Apr25_ENG.pdf

¹¹ https://oead.at/fileadmin/Dokumente/appear.at/projects/fact_sheets/APPEAR_Project320_fact_sheet_web.pdf

4.1 Priority actions for reducing plastic pollution in the Ishëm River Basin

Priority measure	Relevant law/article	Main litter category addressed	Lead stakeholders	Key implementation measures	Expected impact
Strengthen enforcement of plastic bag and single-use plastic restrictions	Law No. 57/2025; Law No. 74/2025; relevant by-laws on plastic bags and packaging waste	Plastic carrier bags and other lightweight plastic items	Ministry of Environment; NEA, Environmental Inspectorate (Regional Environmental Agency); Market Surveillance Authority; municipalities in the Ishëm River Basin; River Basin Agency/Council	<ol style="list-style-type: none"> 1. Increase inspections of retailers, wholesalers and distributors, especially in urban markets, coastal areas and high-footfall commercial zones. 2. Strengthen controls on imports and domestic production of restricted plastic items. 3. Improve coordination between inspectorates, customs, municipalities and basin-level institutions to identify areas where lightweight plastics are most likely to enter drainage channels and waterways. 4. Promote reusable alternatives through awareness campaigns, municipal outreach and cooperation with businesses. 	Reduced leakage of plastic bags and similar lightweight plastics into drainage systems, tributaries and waterways
Establish a national deposit return system for beverage containers	Law No. 74/2025 on Extended Producer Responsibility; implementing by laws for beverage packaging recovery	Plastic bottles, caps and metal drink cans	Ministry of Environment; AKEM; beverage producers; retailers; municipalities; River Basin Agency/Council	<ol style="list-style-type: none"> 1. Introduce a national deposit-return scheme covering plastic bottles, metal cans and other priority beverage containers. 2. Install return points in supermarkets, retail outlets, public service areas and other high-consumption locations. 3. Ensure the system is linked to sorting, transport and recycling infrastructure. 4. In basin-relevant municipalities, prioritize return points near river adjacent settlements and coastal hotspots where beverage litter is most frequently recorded. 	Lower beverage container litter and higher return, collection and recycling rates

Priority measure	Relevant law/article	Main litter category addressed	Lead stakeholders	Key implementation measures	Expected impact
Operationalise EPR for packaging waste	Law No. 74/2025; relevant implementing by laws on packaging waste and producer responsibility schemes	Food packaging, plastic containers and mixed consumer packaging	Ministry of Environment; AKEM; producers and importers; producer responsibility organisations; municipalities; River Basin Agency/Council	<ol style="list-style-type: none"> 1. Adopt detailed operational rules for EPR implementation. 2. Establish producer responsibility organisations and define clear recovery and recycling targets for packaging waste. 3. Ensure producer financing supports collection, sorting and treatment systems. 4. Introduce coordination mechanisms so that municipalities and basin institutions can identify packaging leakage hotspots and channel evidence from monitoring into implementation. 	Improved packaging recovery and reduced leakage of consumer packaging into the environment
Expand waste collection services in peri-urban and fast-growing settlements	Law No. 57/2025; national and local waste management planning instruments	Mixed plastic waste and household packaging	Municipalities in the Ishëm River Basin; waste operators; AKEM; River Basin Agency/Council	<ol style="list-style-type: none"> 1. Extend regular waste collection services to newly urbanised, periurban and underserved settlements, particularly those located near tributaries, riverbanks and drainage corridors. 2. Improve the number, location and maintenance of collection points and waste containers. Identify and close informal dumping sites that pose a direct risk to waterways. 3. Basin-level institutions can help map areas where unmanaged waste is most likely to be mobilised by rainfall and runoff. 	Reduced leakage of waste into tributaries, drainage channels and riverbanks

Priority measure	Relevant law/article	Main litter category addressed	Lead stakeholders	Key implementation measures	Expected impact
Strengthen separate collection and recycling systems	Law No. 57/2025; Law No. 74/2025; secondary legislation on separate collection and packaging waste	Plastic packaging, bottles and containers	Municipalities; recycling companies; national waste authorities; AKEM; River Basin Agency/Council	<ol style="list-style-type: none"> 1. Introduce or expand separate collection systems for recyclables, starting with high-volume plastic waste streams such as bottles, containers and food packaging. 2. Improve sorting infrastructure and support local material recovery and recycling markets. 3. Use local monitoring data to prioritise areas where recyclable plastic waste is most frequently escaping into the environment. 4. Strengthen coordination between municipalities and basin institutions so that prevention and recovery measures reflect basin-specific leakage pathways. 	Higher recycling performance and lower risk of plastic leakage from mixed waste streams
Strengthen stormwater and drainage capture measures	Law No. 57/2025; water management and drainage legislation; local infrastructure and maintenance regulations	Urban plastic litter and lightweight packaging	Municipalities; water utilities; Ministry of Infrastructure and Energy; Ministry of Environment; River Basin Agency/Council; drainage authorities	<ol style="list-style-type: none"> 1. Install litter traps, retention grids or similar capture devices in drainage channels, stormwater outlets and selected tributaries. 2. Improve routine maintenance and cleaning of stormwater systems, especially before and during high rainfall periods. 3. Identify priority leakage points near waterways, bridges, culverts and urban drainage outlets. 4. Basin and water institutions should support the identification of intervention points where waste is regularly transported downstream. 	Reduced transport of plastic waste from urban areas into rivers

Priority measure	Relevant law/article	Main litter category addressed	Lead stakeholders	Key implementation measures	Expected impact
Reduce litter leakage from coastal recreational areas	Law No. 57/2025; tourism and local public service regulations; relevant municipal acts	Beverage containers, food wrappers, cups and other on-site consumption waste	Municipalities; tourism businesses; Ministry of Tourism; Ministry of Environment; civil society organisations; River Basin Agency/Council	<ol style="list-style-type: none"> 1. Install adequate waste and recycling bins in beaches, promenades and other recreational areas. Improve the frequency of collection services during the tourism season to prevent overflow and litter dispersion. 2. Promote reusable alternatives in beach bars, restaurants and tourism facilities. 3. Implement targeted awareness campaigns for visitors and businesses. 4. Basin institutions can help connect coastal litter findings with upstream measures and seasonal basin-wide coordination. 	Reduced littering and lower accumulation of disposable packaging in beach areas
Strengthen monitoring, reporting and citizen participation	Law No. 57/2025; DCM No. 687/2015 on waste statistics; environmental monitoring and reporting framework	All major litter categories	NEA; municipalities; universities; civil society organisations; River Basin Agency/Council; water utilities	<ol style="list-style-type: none"> 1. Expand monitoring coverage in riverbanks, tributaries, drainage channels and coastal accumulation areas. 2. Map leakage hotspots and integrate local findings into municipal, basinlevel and national reporting systems. 3. Support citizen science, clean-up activities and awareness campaigns linked to evidence collection. 4. Encourage regular data exchange between municipalities, basin institutions and environmental authorities so that policy measures can be better targeted and tracked over time. 	Better evidence for reinforcement and more targeted prevention measures

4.2 Implementation priorities

- **In the short term**, the most effective actions are likely to be those that directly reduce leakage from inland settlements to waterways and from recreational areas to the coast. These include expanding waste collection in peri-urban areas, strengthening stormwater and drainage capture measures, improving beach waste infrastructure during peak tourism periods, and reinforcing enforcement of restrictions on plastic bags and similar items.
- **In the medium term**, structural reforms are needed to address the packaging waste streams most frequently identified through monitoring. In particular, the operationalisation of EPR for packaging and the establishment of a deposit return system for beverage containers would help capture high-volume items such as bottles, caps and other consumer packaging before they enter the environment.

Reducing plastic leakage in the Ishëm River Basin will depend less on introducing new legislation than on improving the practical implementation of existing instruments. **The central policy objective should therefore be to convert the current legal and strategic framework into measurable reductions in plastic waste leakage from inland settlements to the Adriatic coast.**


4.3 Stakeholder engagement mechanisms

Identified stakeholders for the implementation of the policy recommendations in the Ishëm River Basin are listed below:

- **Ministry of Environment** – responsible for national policy direction, legal framework, inter-institutional coordination and oversight of implementation.
- **National Environment Agency (NEA)** – responsible for environmental monitoring, data collection, reporting and support to evidence-based implementation.
- **Environmental Inspectorate / Regional Environmental Agency** – responsible for inspections, enforcement and control of compliance with environmental legislation.
- **National Agency of Waste Economy (AKEM)** – responsible for coordination, monitoring and support for the implementation of integrated waste management policies and systems.
- **River Basin Agency / River Basin Council** – responsible for basin-level coordination, integration of waste-related measures into river basin management, and identification of pollution and leakage hotspots along waterways.
- **Municipalities in the Ishëm River Basin** – responsible for local waste collection services, municipal waste planning, local infrastructure, public awareness and implementation of local prevention measures.

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- **Water utilities and drainage authorities/operators** – responsible for stormwater systems, drainage infrastructure and intervention points where waste may be transported into rivers.
 - **Ministry of Infrastructure and Energy** – relevant for drainage, water infrastructure and coordination of measures linked to urban runoff and stormwater systems.
 - **Ministry of Tourism** – relevant for reducing litter leakage from beaches, recreational areas and tourism-related activities.
 - **Market Surveillance Authority and customs authorities** – responsible for monitoring restricted plastic products, imports and compliance with product related obligations.
 - **Producers, importers and producer responsibility organisations** – responsible for implementation of EPR, packaging recovery obligations and financing of collection and treatment systems.
 - **Beverage producers, retailers and commercial operators** – key actors for deposit return systems, packaging recovery and reduction of beverage-related litter.
 - **Waste operators and recycling companies** – responsible for collection, transport, sorting, recycling and recovery of waste materials.
 - **Tourism businesses, including hotels, restaurants, bars and beach operators** – relevant for reducing single-use plastics and improving on-site waste management in coastal areas.
 - **Universities and research institutions** – important for data generation, monitoring support, analysis of pollution pathways and technical input for implementation.
 - **Civil society organisations and community groups** – important for awareness raising, citizen science, community monitoring, clean-up actions and public accountability.
 - **Citizens and local communities** – essential stakeholders for source separation, responsible disposal practices and participation in prevention and monitoring efforts.

Efficient implementation of the proposed measures will require structured engagement between public institutions, municipalities, private sector actors, civil society and local communities. **In the Ishëm River Basin, stakeholder engagement is particularly important because plastic leakage occurs across multiple points in the system, from urban waste generation and collection to river transport and coastal accumulation.**

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- A first mechanism should be a basin-level coordination platform built around the existing river basin governance architecture, bringing together the municipalities of Tirana, Kamëz, Vorë, Krujë, Kurbin and Durrës, the relevant basin authorities and agencies, the ministry responsible for environment, AKEM, the NEA, water and drainage authorities, and relevant coastal institutions. This platform could support joint planning, exchange of data, identification of leakage hotspots and coordination of priority actions across the basin.
 - A second mechanism should focus on the private sector, particularly producers, importers, retailers, beverage companies, tourism businesses including the HORECA sector and waste operators. Their engagement is essential for the implementation of EPR, packaging recovery measures, deposit-return systems and the reduction of single-use plastics in commercial and recreational settings. Regular consultation with these actors can also help identify operational barriers and improve compliance.
 - A third mechanism should involve civil society organizations, universities and community groups in monitoring, awareness raising and local prevention actions. Citizen science initiatives, beach clean-up programmes, school campaigns and community reporting of dumping hotspots can improve data availability while also strengthening public ownership of anti-litter measures.
 - A fourth mechanism should target coastal tourism stakeholders, including beach operators, hotels, restaurants and local tourism associations. Seasonal cooperation agreements can help ensure the provision of waste bins, separate collection infrastructure, awareness materials and litter prevention measures during peak visitor periods.
 - Finally, stakeholder engagement should be supported through regular information-sharing and reporting mechanisms, including public dissemination of monitoring results, municipal progress updates and periodic multi-stakeholder review meetings. This would improve transparency, strengthen accountability and help ensure that policy measures are adjusted in response to implementation results.

5. Conclusions

By translating monitoring results into practical policy actions, this policy paper provides evidence-based recommendations for reducing plastic pollution and improving waste management performance in central Albania. Strengthening the implementation of existing policies and enhancing cooperation among stakeholders will be essential for protecting the ecological integrity of the Ishëm River and the Adriatic coastal ecosystems.

To effectively reduce plastic pollution in the Ishëm River Basin and prevent further leakage of waste into the Adriatic Sea, the following priority actions should be considered by national and local authorities:

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- **Strengthen enforcement of plastic bag restrictions**
Ensure consistent implementation of existing regulations by increasing inspections of retailers and distributors and improving coordination between environmental inspectorates, market surveillance authorities and customs services.
 - **Improve waste collection coverage in peri-urban settlements**
Expand municipal waste collection services to rapidly growing urban and peri-urban areas within the Ishëm River Basin, particularly in municipalities such as Tirana, Kamëz, Vorë and Krujë, where waste generation is highest.
 - **Accelerate the implementation of Extended Producer Responsibility (EPR) for packaging waste**
Operationalize EPR systems and establish producer responsibility organizations that finance the collection and recycling of packaging materials.
 - **Introduce a national Deposit Return System (DRS) for beverage containers**
Implement deposit-return mechanisms for plastic bottles and beverage containers to significantly increase collection rates and reduce litter in rivers and coastal areas.
 - **Improve management of urban drainage and riverbank waste leakage**
Introduce litter traps and waste interception systems in drainage channels and tributaries connected to the Ishëm River to prevent plastic waste from reaching the marine environment.
 - **Promote plastic reduction measures in coastal recreational areas**
Encourage municipalities and tourism businesses to reduce single-use plastics, introduce reusable alternatives and improve waste collection infrastructure in beaches such as Hamallaj and the Cape of Rodon area.