

DELIVERABLE D1.4

REPORT ON INITIATIVE FOR THE NATIONAL STRATEGY FOR REDUCING MICROPLASTICS IN THE REPUBLIC OF SERBIA

Project acronym:	GREENLand
Project full title:	TWINNING MICROPLASTIC - FREE ENVIRONMENT
Grant N°:	101079267
Type of action:	HORIZON - CSA
Project start date:	01.01.2023.
Project end date:	31.12.2025.
Cordis link:	https://cordis.europa.eu/project/id/101079267

Abstract of deliverable:	<p>The Initiative for the National Strategy for microplastics is a document that serves as a proposal for a multi-year roadmap for the Republic of Serbia in addressing and managing microplastics pollution. Multiple state organizations and external partners will work together to reduce the introduction of microplastics in the environment. Foundational to this Initiative for the National Strategy is a recognition that the state must take decisive, precautionary action to reduce microplastics pollution, while scientific knowledge and understanding of microplastics sources, impacts, and successful reduction measures continue to grow.</p> <p>The Initiative for the National Strategy for microplastics outlines a three-track approach to manage microplastics in the Republic of Serbia comprehensively. The first track outlines immediate, 'no regrets' actions and multi-benefit solutions to reduce and manage waste management and introduce the circular economy; the second track outlines a comprehensive research strategy to enhance the scientific foundation for microplastics monitoring, source identification, risk assessment,</p>
---------------------------------	--

	and development of management solutions; while the third track outlines strengthened capacities of institutions, improvement of financing system and harmonization with EU regulations, along with constant consumer education and awareness campaigns.
--	---

Deliverable information	
Title:	REPORT OF eLEARNING SYSTEM
Deliverable number:	D2.3
WP number:	2
Lead beneficiary:	Educons University (short name: EDU)
Contributing partners:	Educons University
Authors:	Aleksandra Rankov, Miloš Rajković, Suzana Kojić, Mark Healy, Liam Morrison
Type:	R – document, report
Dissemination level:	SEN - Sensitive
Delivery date:	31.12.2023.
Version:	V1.0

Table 1 List of abbreviations

AWI	Alfred Wegener Institute
CBS	Cloud-Based System
DMS	Document Management System
EDU	Educons University
ELS	eLearning System
ETF	School of Electrical Engineering, University of Belgrade (software supplier)
FIMES	Business Information System for Human Resources and Accounting
FIS	Information system for tracking and organizing the educational process
GSU	University's General Secretary
GWS	Google Workspace
REDUN	Educons University Institutional Repository
UG	University of Galway
UR	University Repository



GREENLand



Funded by
the European Union

CONTENT

1. INTRODUCTION	4
2. PLANNING AND REGULATORY FRAMEWORK	5
2.1. National Policy Framework	5
2.2. Legal Framework of the Republic of Serbia	7
2.3. Institutional Framework	8
3. GENERAL AND SPECIFIC OBJECTIVES	10
3.1. General objective	10
3.2. Specific objectives	10
3.3. SPECIFIC OBJECTIVES AND MEASURES FOR THE ACHIEVEMENT THEREOF	10
4. RISK ANALYSIS	27
5. ACTION PLAN	27

1. INTRODUCTION

The Initiative for the National Strategy for microplastics is a document that serves as a proposal for a multi-year roadmap for the Republic of Serbia in addressing and managing microplastics pollution. Multiple state organizations and external partners will work together to reduce the introduction of microplastics in the environment. Foundational to this Initiative for the National Strategy is a recognition that the state must take decisive, precautionary action to reduce microplastics pollution, while scientific knowledge and understanding of microplastics sources, impacts, and successful reduction measures continue to grow.

The Initiative for the National Strategy for microplastics outlines a three-track approach to manage microplastics in the Republic of Serbia comprehensively. The first track outlines immediate, ‘no regrets’ actions and multi-benefit solutions to reduce and manage waste management and introduce the circular economy; the second track outlines a comprehensive research strategy to enhance the scientific foundation for microplastics monitoring, source identification, risk assessment, and development of management solutions; while the third track outlines strengthened capacities of institutions, improvement of financing system and harmonization with EU regulations, along with constant consumer education and awareness campaigns.

The Initiative for the National Strategy for microplastics stems from policy documents primarily related to waste management and the advancement of a circular economy. The initiative integrates goals from the Green Agenda, as endorsed by the Republic of Serbia in the Sofia Declaration of November 2020, and aims to align with EU regulations and standards. With the European Green Deal (COM/2019/640), the EU committed itself to meeting the goals of the 2030 Agenda and the Paris Agreement. The Green Deal was announced as the most ambitious package of measures to make Europe the first climate-neutral continent by 2050. Achieving the goals of this Agreement implies a new industrial policy based on a circular economy. It is envisaged that industry will be modernized and new markets for climate-neutral and circular products will be developed. To secure necessary resources, the initiative seeks funding from EU funds and other international sources for infrastructure and environmental protection measures. The drafting of the Environmental Protection Strategy – Green Agenda for Serbia, as an umbrella document necessary for the green transition implementation, has been initiated.

The Initiative for the National Strategy for microplastics focuses on key areas to reduce microplastics:

1. Reduction of microplastics pollution through improved waste management, introduction of a circular economy, and identification and advancing product alternatives (Specific Objectives 1-3).
2. Development of a monitoring program for microplastics, risk management, determination of priority sources and pathways of pollution, and finding new solutions to mitigate microplastics contamination (Specific Objectives 4-7).
3. Improvement of the environmental protection financing system, strengthened capacities of institutions for reducing microplastics, harmonized regulations with those of the EU, and the creation of consumer education and awareness-raising campaigns (Specific Objectives 8-10).



To achieve specific objectives, measures from existing programs and strategies, such as the Waste Management Programme (2022-2031) and Circular Economy Development Programme (2022-2024), are incorporated. Other pertinent planning documents, including the Economic Reforms Programme for the period from 2024 to 2026, are also considered.

2. PLANNING AND REGULATORY FRAMEWORK

2.1. NATIONAL POLICY FRAMEWORK

The Initiative for the National Strategy for microplastics is connected to various public policy documents, including strategies and programs that have either been adopted or are currently in development.

The Republic of Serbia is in the process of joining the European Union and, to that end, the country is obliged to harmonize national strategic documents and legislation with European ones.

The Negotiating Position for Chapter 27 "Environment and climate change", cluster 4, prepared for the process of negotiations on the accession of the Republic of Serbia to the European Union, provides the basis for the preparation and adoption of policy documents in the field of environment. Among other things, it also defines necessary steps for harmonizing national policy and legislation with the new requirements introduced by the EU Circular Economy Package.

The Circular Economy Development Programme in the Republic of Serbia for the period 2022-2024 ("Official Gazette of the RS", No 137/22) is a public policy document aligned with the second pillar of the Green Agenda. Its overarching objective is to foster an enabling environment for circular economy advancement, thereby supporting the green transition within the Republic of Serbia.

The program addresses key areas crucial to the advancement of the circular economy, including waste management, water management, renewable energy sources, energy efficiency, chemical management, voluntary environmental protection instruments, economic policy, innovation and awareness raising.

Furthermore, the program features an Action Plan spanning three years, delineating the activities aimed at realizing the measures and objectives articulated within the program. This comprehensive framework underscores Serbia's commitment to sustainable development and environmental stewardship, outlining strategic pathways for integrating circular economy principles into various facets of national policy and practice.

The Waste Management Programme in the Republic of Serbia 2022-2031 ("Official Gazette of the RS", No. 12/22) defines strategic goals for the improvement of the waste management system and the basic principles that should guide all stakeholders in waste management to achieve those goals in the Republic of Serbia in the period 2022 - 2031. The implementation of this Programme, in addition to reducing harmful environmental impacts and



climate change, should enable implementation of prerequisites for the use of waste in a circular economy. The Waste Management Programme was preceded by the Waste Management Strategy 2010–2019 ("Official Gazette of the RS", No. 29/10), on which the conditions for the establishment and development of an integrated waste management system in the Republic of Serbia were set. Progress in the previous period was achieved in harmonising regulations in the field of waste management with the EU legislation, in institutional strengthening and reaching regional agreements for the establishment of joint waste management, as well as in the construction of several sanitary landfills. The goals set by the Waste Management Strategy have not been fully achieved, primarily in the scope of organized waste collection, level of primary waste separation and recycling, construction of infrastructure and the cessation of waste landfilling in dumpsites and other unsanitary landfills, application of economic instruments and the establishment of a sustainable waste management financing system. As the planned goals of the previous planning document were not fully achieved and as new EU goals in the field of waste management were set in the meantime as part of the "green transition" for the transition to a circular economy in the EU, new goals were set in the field of waste management in the Republic of Serbia.

The Economic Reform Programme for the period from 2024 to 2026 stands as a pivotal document in the economic dialogue between the Republic of Serbia and the European Union. The Programme encompasses a medium-term framework of macroeconomic, fiscal, and monetary policies, alongside a detailed description of structural reforms aimed at enhancing the competitiveness of the national economy, fostering economic growth and development, generating new employment opportunities, and creating improved living conditions for the citizens of the Republic of Serbia over the next three-year period (2024 - 2026). The Programme emphasizes that improving waste management and removal of unregulated landfills are key factors for preserving the environment. The circular economy is considered to be an important strategic concept for the green transition of the Republic of Serbia. This document describes the implementation of the circular economy in creating a favorable environment for the green transition (Structural Reform 12).

The Strategy for the Development of Education and Upbringing in the Republic of Serbia until 2030 ("Official Gazette of the RS", No 63/21) laid the foundations for the development of education related to increasing the quality, scope, relevance and efficiency of education, with the aim of creating conditions for personal and professional development of each individual, as well as for the development of a knowledge-based society and knowledge-based state. This planning document envisages a number of measures that will simultaneously strengthen institutions, researchers and research teams in the scientific research and innovation system.

The Strategy of scientific and technological development of the Republic of Serbia for the period 2021-2025. ("Official Gazette of the RS", No 10/21), with the motto "The power of knowledge", is a strategic instrument for improving the quality of life of the citizens of the Republic of Serbia by means of science and technological development. The strategy is based on the belief that the Republic of Serbia will be a strong, prosperous and respectable country in proportion to the knowledge it has as a community of thinking people.

The Public Health Strategy in the Republic of Serbia 2018-2026. ("Official Gazette of the RS", No 61/18) incorporates aspects of environmental enhancement as a critical

component. The foreseen measures and activities refer to monitoring, evaluation, and improvement of the environment and risk assessment for population health; improving the supply of healthy drinking water; improvement of the waste management system; improving the state of the environment and responding to climate change; improvement of educational activities in the field of preservation and improvement of the environment and human health.

2.2. LEGAL FRAMEWORK OF THE REPUBLIC OF SERBIA

Regulations from various fields are related to the management of microplastics, and are important for reducing pressure on the environment while simultaneously developing sustainability.

The Law on Environmental Protection ("Official Gazette of the RS", No. 135/04, 36/09-other law, 72/09-other law, 43/11 (CC), 14/16, 76/18 and 95/18-other law) provides the basis for an integrated environment protection system, including action plans, conditions and instruments for sustainable management and preservation of natural balance, integrity, diversity and quality of natural values and conditions for the survival of living beings; prevention, control, reduction and remediation of all forms of pollution; promotion and use of products, processes, technologies and practices that have a less harmful impact on the environment; application of special rules of conduct in waste management from waste generation to disposal, i.e. prevention or reduction of waste generation, reuse and recycling; separation of secondary raw materials and use of waste as fuel; import, export and transit of waste; competencies of the Environmental Protection Agency, training of staff to improve knowledge and raise awareness; and access to information and public participation in decision-making processes. In addition, the law provides for a rule of hierarchy in waste management, from generation to final disposal, including prevention, reuse and recycling, and transboundary movements of waste.

The adoption of the Law on Waste Management and the Law on Packaging and Packaging Waste set the conditions for the establishment and development of an integrated waste management system in the Republic of Serbia, in accordance with the standards of relevant EU legislation in this area. In addition, waste management is directly or indirectly regulated by other regulations that provide the legal framework for environmental protection and sustainable development in the Republic of Serbia.

The Law on Waste Management ("Official Gazette of the RS", No. 36/09, 88/10, 14/16 and 95/18-other law 35/23) sets the types of waste and its classification, waste management planning, stakeholders, obligations and responsibilities regarding waste management, management of special waste streams, permission requirements and procedures, cross-border movement of waste, reporting, financing of waste management, supervision and other relevant aspects of waste management. Waste management consists of a set of activities of common interest that include the implementation of prescribed action plans implemented in the processes of collection, transport, storage, treatment and disposal of waste, including supervision of these activities and responsibility for waste management facilities after their closure. Based on this law, a number of bylaws have been adopted that define in detail the framework of waste management, including the management of special waste streams. In addition, these bylaws further align national legislation with EU regulations in this area.



Amendments to this Law are being prepared in order to further harmonize with the EU Directives and the package related to the circular economy.

The Law on Packaging and Packaging Waste ("Official Gazette of the RS", No. 36/09 and 95/18-other law) sets the requirements in the field of environmental protection that relate to packaging and that it must be met in order to place packaging on the market; packaging and packaging waste management, reporting on packaging and packaging waste, economic instruments, as well as other relevant issues related to packaging and packaging waste management. The law also regulates imported and manufactured packaging, i.e., packaging placed on the market, as well as packaging waste generated in business activities on the territory of the Republic of Serbia, regardless of its origin and purpose, and used packaging material. Amendments to the law are being prepared for further harmonization with the EU directive. Based on this law, appropriate bylaws have been adopted in order to additionally regulate certain issues in the field of waste management. Amendments to this Law are being prepared in order to further harmonize with EU Directives.

The Law on Chemicals ("Official Gazette of the RS", No. 36/09, 88/10, 92/11, 93/12 and 25/15) regulates integrated management of chemicals, classification, packaging and labeling of chemicals, integrated register of chemicals placing on the market, restrictions and prohibitions on production, placing on the market and use of chemicals, import and export of certain dangerous chemicals, marketing authorizations and permits for the use of highly hazardous chemicals, the placing on the market of detergents, systematic monitoring of chemicals; availability of data, supervision and other issues relevant to the management of chemicals.

2.3. INSTITUTIONAL FRAMEWORK

The Ministry of Environmental Protection has the key institutional responsibility in the field of environmental protection. The Ministry, in accordance with the Law on Ministries, performs state administration tasks which, among other things, relate to:

- Horizontal environmental issues such as Environmental Impact Assessment (EIA), Strategic Environmental Assessment (SEA), public participation, etc.
- Air quality management
- Chemical management
- Climate change policies (excluding technical regulations for vehicles and fuel quality)
- Protection of the ozone layer
- Waste management (excluding radioactive waste)
- Prevention and response to major chemical accidents
- Industrial pollution control
- Nature conservation and biodiversity preservation
- Water quality protection (prevention of surface and groundwater pollution)
- Waste and wastewater infrastructure development
- Noise pollution control
- Facilitating planning and execution of environmental projects related to waste, wastewater, etc.
- Inspection and supervision in environmental protection matters.



In the area of waste management, the Ministry proposes to the Government a strategy and national waste management plans, coordinates and performs waste management activities of importance to the Republic, approves regional waste management plans, except for plans in the territory of the Autonomous Province, issues permits prescribed by law, supervises and controls the application of waste management measures and undertakes other measures and activities, in accordance with international treaties and agreements.

The Environmental Protection Agency, operating as an entity within the Ministry of Environmental Protection, functions as a legal body tasked with various professional duties, including:

- Developing, harmonizing, and managing the national environmental protection information system. This involves monitoring environmental factors through indicators, maintaining a register of polluting substances, etc.
- Conducting state monitoring of air and water quality, which includes implementing prescribed and agreed-upon programs for controlling air quality, surface water, underground water, and rainfall.
- Managing the National Laboratory.
- Collecting and consolidating environmental data, processing them, and preparing reports on the state of the environment and the implementation of environmental protection policies.
- Developing procedures for processing and assessing environmental data.
- Maintaining records of the best available techniques and practices, and promoting their application in environmental protection.
- Collaborating with the European Environment Agency (EEA) and the European Information and Observation Network (EIONET), as well as fulfilling other duties stipulated by law.

Other ministries in charge of certain plastic waste: Agricultural waste – Ministry of Agriculture, Forestry and Water Management.

The companies subject to inspection operate in all sectors, including the waste management sector.

At the provincial level, the key responsibility in the field of environmental protection lies with the Provincial Secretariat for Urbanism and Environmental Protection, based on the competencies transferred to AP Vojvodina by The Law Determining the Competences of the Autonomous Province of Vojvodina ("Official Gazette of RS", no. 99/2009, 67/2012 - US decision, 18/2020 - other law and 111/2021 - other law)

Local self-government units have competencies in the field of communal activities and are responsible for the strategic assessment of plans and programs, the assessment of the impact of projects on the environment and the issuance of integrated permits within their competence. Municipal waste management is the concern of local self-governments.

Professional organizations, producers or importers of different plastic products, and others from the public and private sectors. In addition, the involvement of the public sector is very important for the success of the implementation of the National Strategy for microplastics.



3. GENERAL AND SPECIFIC OBJECTIVES

3.1. GENERAL OBJECTIVE

To reduce microplastics pollution and enhance management capacity by improving knowledge and understanding of microplastics sources, their impacts, and developing effective solutions.

3.2. SPECIFIC OBJECTIVES

To accomplish the general objective, the following specific objectives are established:

Specific Objective 1: Pollution prevention through the improvement of a sustainable plastic waste management system and more efficient use of waste in the circular economy.

Specific Objective 2: Developing a circular economy based on industrial symbiosis and increasing resource efficiency.

Specific Objective 3: Identifying and advancing product alternatives.

Specific Objective 4: Develop a monitoring program for microplastics.

Specific Objective 5: Define risk thresholds and develop a risk assessment framework.

Specific Objective 6: Sources and pathways prioritization.

Specific Objective 7: Evaluating new solutions to mitigate microplastics contamination.

Specific Objective 8: Improvement of the environmental protection financing system.

Specific Objective 9: Strengthened capacities of institutions for reducing microplastics and harmonized regulations with EU regulations.

Specific Objective 10: Conduct consumer education and awareness-raising campaigns.

3.3. SPECIFIC OBJECTIVES AND MEASURES FOR THE ACHIEVEMENT THEREOF

Specific Objective 1: Pollution prevention through the improvement of a sustainable plastic waste management system and more efficient use of waste in the circular economy



Managing and preventing plastic pollution provides an important opportunity to prevent the proliferation of microplastics that fragment from larger plastics. microplastics are pervasive and persistent in the environment.

Reducing plastic production and waste has the additional benefit of supporting national climate goals, given greenhouse gas emissions from plastics production have quadrupled since 1995, in part due to plastic demand in the European Union and United States. Health impacts associated with the life cycle of plastics, including increased particulate matter pollution, are further recognized as a human rights issue that falls disproportionately on vulnerable communities.

The objectives that are defined in the existing planning documents in the Republic of Serbia include improved waste management and the introduction of a circular economy.

The implementation of this objective is founded on the provisions of various EU directives pertaining to waste management. These directives include:

- Directive 2018/851 EU amending Directive 2008/98/EC on waste
- Directive 2018/852 EU amending Directive 94/62/EC on packaging and packaging waste
- Directive 2018/850 EU amending Directive 1993/31/EC on landfills

Upon reviewing the economic sector, waste management systems, adoption of green public procurement and voluntary instruments, education and scientific advancements, local governance, and public awareness on sustainable development, circular economy, and environmental protection, it is evident that additional efforts are required to enhance these areas.

This Special Objective contributes to achieving SDG 12, which aims to establish sustainable consumption and production patterns, particularly through the realization of sub-goal 12.5, advocating for a significant reduction in waste generation via prevention, reduction, recycling, and reuse initiatives.

Measure 1.1. Improved municipal waste management system through increased recycling rates

The implementation of these measures is based on the provisions of the EU Waste Framework Directive 2008/98/EC as amended by Directive (EU) 2018/851, the EU Landfill Directive 1999/31/EC as amended by Directive (EU) 2018/850 and the EU Directive for Packaging and Packaging Waste 94/62 / EC as amended by Directive (EU) 2018/852.

This measure entails enhancing the municipal waste reuse system in line with circular economy principles. It includes:

- Implementing separate collection and recycling of municipal waste, involving the establishment of systems for paper, metal, plastic, glass, and textile collection.



- Establishing a primary waste separation system and improving secondary separation of recyclable materials through the construction of suitable lines for secondary separation. This ensures that separated fractions of recyclable waste are directed for further processing or recycling.
- Constructing facilities for the utilization of waste as fuel (Refuse-Derived Fuel - RDF) to increase the reuse of municipal waste.
- Reforming the tariff system to introduce the principles of pay-as-you-throw and cost recovery, considering affordability. Fees will be structured to incentivize waste prevention and reuse, with a focus on the quantity of waste generated. Tariffs for waste management services will be restructured based on the number of containers and emptying frequency, rather than using a flat rate (based on population or living space). Lower tariffs will be applied for separately collected recyclable components to encourage waste separation at the source.

These measures aim to establish an efficient municipal waste management system that promotes waste reduction, recycling, and reuse while aligning with circular economy principles.

Relevant institution: Ministry of Environmental Protection, local self-government units

Implementing partners: Autonomous Province, Ministry of Construction, Transport and Infrastructure, public utility companies, regional utility companies, private companies

Measure 1.2. Reducing the generation of waste from single-use plastic products

Directive (EU) 2019/904 of the European Parliament on the reduction of the impact of certain plastic products on the environment entered into force in 2019. The requirements and prescribed goals are aimed at establishing a circular economy model, as a concept for creating value for the economy and society as a whole, while reducing the use of resources and environmental impacts. The provisions of this Directive have not yet been transposed into the legislation of the Republic of Serbia and the implementation of the prescribed measures to reduce and ban the use of certain products as well as the goals to be achieved regarding the share of recycled plastic in beverage bottles placed on the market, which are made of polyethylene terephthalate as the main components (PET bottles) are not yet binding for our country. The requirements of the Directive are very clear, but it should be borne in mind that their implementation is complex. For this reason, it is necessary to implement preparatory activities that will contribute to the establishment of a circular model of single-use plastic product management and develop the use of more sustainable materials. The measure includes preparation of an analysis in order to assess the types and quantities of single-use plastic products placed on the market in the Republic of Serbia. Based on the results of the analysis, the measure will include the development of guidelines for the use of more sustainable materials for the mentioned products, including recommendations for gradually reaching the goals regarding the share of recycled plastic in beverage bottles made from polyethylene terephthalate as the main component. The measure helps the reduction of plastic waste

generation and encourages the use of reusable products, which, when they become waste, can be directed into recycling processes.

Implementation of the measure will be proven by the prepared documents, market analysis related to single-use plastics in the Republic of Serbia, and guidelines for the replacement of single-use plastics with more sustainable materials.

Relevant institution: Ministry of Environmental Protection

Implementing partners: Ministry of Finance, the Chamber of Commerce of Serbia and the Environmental Protection Agency

Specific Objective 2: Developing a circular economy based on industrial symbiosis and increasing resource efficiency

The implementation of this objective is grounded in the provisions outlined in EU Directive 2018/851, which amends Directive 2008/98/EC on waste management.

Innovations play a crucial role in advancing the circular economy. However, the research potential of the scientific community in the Republic of Serbia remains underutilized in contributing to industrial and economic development. Despite recognizing the significance of investing in research, development and innovation, the country lags behind the European average. Hence, enhancing collaboration between the scientific research sector and the economy is fundamental to fostering circularity.

Plastic waste holds significant potential for the circular economy. Therefore, conducting analyses and providing guidance on optimizing the management of these waste types is imperative.

Within the framework of harmonization with the legal acquis of the EU, the Republic of Serbia has committed to promoting green public procurement under Chapter 5, which pertains to public procurement. Green public procurement plays a pivotal role in advancing the goals of sustainable development and is recognized as a priority area in the EU's strategic documents for the circular economy. As part of the EU Green Deal, the European Commission plans to propose minimum mandatory criteria for green public procurement, set objectives in sectoral legislation, and introduce gradual mandatory reporting related to green public procurement in the upcoming period. Through this initiative, the development of green public procurement and the utilization of voluntary instruments in environmental protection (such as EMAS and Eco-label) will be supported.

Moreover, the Republic of Serbia is actively pursuing the maximization of benefits from digitalization, including its role in transitioning to a circular economy. To this end, events in the European Union should be closely monitored, and efforts made to align EU regulations with domestic needs and specificities. This alignment is crucial not only for the EU accession process, but also for facilitating successful trade exchanges and enhancing the performance of domestic companies operating within the single European market.

This Specific Objective contributes to the realization of SDG 12, which foresees the establishment of sustainable patterns of consumption and production, especially the realization

of sub-goal 12.2. which envisages sustainable management and efficient use of natural resources.

Measure 2.1. Integrating the safe management of chemicals into the concept of circular economy development

In the circular flow of materials, it is imperative to manage chemicals safely in compliance with regulations governing this domain. Safely managing chemicals within the circular flow of materials aligns with the development policy aimed at achieving a non-toxic environment within the framework of the circular economy.

As part of this initiative, a roadmap for the management of chemicals within the concept of circular economy development will be devised, along with the implementation of training programs for industry and recyclers. The planned roadmap will encompass:

- An overview of the current situation and national policies for managing the risks of chemicals within the circular flow of materials, including by-products and the status of ending waste as chemicals to enhance reuse value and increase commodity resources.
- Identification of priorities and sources of reuse value.
- A review of the regulatory, institutional, and strategic framework in line with chemicals and waste management policies at the UN, EU, and national levels.
- Definition of general and specific objectives of the roadmap, along with the creation of an implementation plan and monitoring mechanism.
- Application of principles such as chemical leasing, green chemistry, and green public procurement.
- Raising awareness and educating the chemical and recycling industry on the application of circular economy principles regarding chemical risk management and the reuse value of identified resources, involving all stakeholders.
- Identification of national capacities for analyzing hazardous chemicals and endocrine disruptors in recycled materials from the perspective of chemical safety.
- Development of educational and promotional materials targeting all relevant groups.

Relevant institution: Ministry of Environmental Protection

Implementing partners: Serbian Chamber of Commerce, chemical industry, recycling industry

Measure 2.2. Enhance the regulatory and planning framework and intersectoral coordination for the safe integrated management of chemicals and plastic waste throughout their entire lifecycle, in alignment with the agreed international strategic framework

In the analysis of the functioning of the chemicals management system in the Republic of Serbia, it was identified that certain planning documents, such as the National Implementation Plan for the Stockholm Convention and the National Profile of Chemicals Management, require updating. Therefore, this measure aims to update these documents and align strategic goals in chemicals and biocidal product management with new planning documents for sustainable chemical management in the EU. This alignment includes ensuring consistency with relevant decisions and goals from global strategies on integrated chemicals management and executive body decisions from international conventions and multilateral agreements.

Furthermore, to enhance the realization of this measure, a special planning document focusing on chemical management is proposed. This document aims to prepare competent state bodies, industry, the scientific and research sector, and other stakeholders for the full implementation of complex EU legislation on chemicals and biocidal products during the pre-accession period. Additionally, it aims to establish the Joint Body for Integrated Chemicals Management.

By updating planning documents and aligning strategic goals with EU standards and global strategies, Republic of Serbia aims to strengthen its chemicals management system and ensure compliance with international standards, thereby promoting environmental and public health protection.

Relevant institution: Ministry of Environmental Protection

Implementing partners: Serbian Chamber of Commerce, research and scientific organizations

Specific Objective 3: Identifying and Advancing Product Alternatives

Effective pollution prevention requires specific industries and diverse stakeholders to advance innovation, identify actions to advance alternative products, and pilot plastic waste reduction solutions. This Initiative for the National Strategy for microplastics calls for advancements in technology to identify alternative products, sourcing, design, and overall plastic reduction strategies that may be voluntarily taken up by targeted industries – and influence domestic and global markets with improved products, design, or materials.

Measure 3.1. The enhancement of government authorities' and industries' capacity to phase out hazardous chemicals and substitute them with safer alternatives

A significant share of Substances of Very High Concern ("The Official Gazette of the RS", No. 94/13, 101/16, 22/18, 86/21, and 83/23) present on the Serbian market belongs to various phthalates, amounting to 29% (Register of Chemicals for 2019, Ministry of Environmental Protection). These phthalates are commonly used as softeners in rigid plastics, particularly PVC-based materials. In response, activities under this measure focus on



enhancing the capacity of competent authorities and industry stakeholders, especially producers and importers of PVC products.

The key objectives of these activities include:

- **Increasing Awareness:** Educating relevant authorities and industry stakeholders about the availability of safer alternatives to phthalates in PVC-based products. This involves disseminating information about alternative softening agents and promoting their adoption to reduce reliance on phthalates.
- **Promoting Recycling:** Providing education and training to plastic waste recyclers on the proper separation and handling of plastic waste. Given that plastic waste often contains various pollutants, including phthalates and other substances like polybrominated diphenyl ethers and heavy metals, proper separation techniques are crucial for effective recycling and pollution reduction.
- **Facilitating Collaboration:** Encouraging collaboration and knowledge-sharing among government agencies, industry players, and waste management stakeholders to promote the adoption of safer alternatives and sustainable waste management practices. This collaborative approach can help streamline efforts and maximize impact across the value chain.

By focusing on these activities, the government and industry can work together to address concerns related to phthalates and other harmful substances in PVC products and plastic waste. This holistic approach supports the transition towards safer and more sustainable chemical management practices, while safeguarding environmental and public health interests.

Targeted, sector-specific workshops should be held to investigate, conduct an alternatives analysis, and identify sector-specific recommendations to reduce microplastics pollution from the following priority industries: (1) vehicle tires, (2) textiles, (3) single-use foodware and packaging, (4) agriculture, and (5) fisheries & aquaculture. Alternative materials and design of pre-production plastics, granules of plastic less than 5 mm in size, known as ‘nurdles,’ should also be explored. These workshops should result in explicit sector-specific recommendations and immediate actions to enact plastic pollution prevention strategies, based on the use, cost-effectiveness, and benefit of each product and product alternative, life cycle assessments that incorporate global climate, social, and food security impacts consistent with the SDGs, and chemical additive safety to avoid regrettable substitutions.

Relevant institution: Ministry of Environmental Protection

Implementing partners: Serbian Chamber of Commerce, research and scientific organizations, industry

Specific Objective 4: Develop a monitoring program for microplastics

Effective management of microplastics begins with understanding the extent of microplastics pollution. Priority research to advance microplastics monitoring include:

- (1) transitioning the foundational work into standardized methods;

(2) acquiring laboratory accreditation to ensure standardized monitoring methods are employed properly, and to confirm that data submitted are of acceptable quality and comparable; and

(3) creating a statewide monitoring network with willing partners to design, implement, and sustain long-term operations of the network.

Monitoring will provide crucial information regarding how much and what types of microplastics (e.g., particle sizes, morphologies, polymer types) are in the Republic of Serbia and it is the foundation for tracking future changes in response to management action. Monitoring information also provides context for exposure in various environmental matrices (e.g., water, air, sediment, biological tissue) and habitats (e.g., freshwater), to directly inform which areas are most contaminated and which organisms and biological communities may be at greatest risk from microplastics.

The Republic of Serbia has several existing monitoring programs that may incorporate microplastics sampling, including the Surface Water Monitoring Program. These programs, alongside representative sampling efforts and potential microplastics monitoring requirements in permits, can be leveraged to form the foundation of a statewide monitoring network. The Serbian Environmental Protection Agency is well positioned to engage these programs, as well as other willing partners, to develop an integrated monitoring network and monitoring plan, and determine the most appropriate means for collecting and sharing data from the monitoring network.

Measure 4.1. Establish standardized microplastics monitoring methods (sampling and analysis of environmental samples, including river, lakes, sediment, and fish tissue)

The objective of establishing standardized microplastics monitoring methods involves developing consistent and reliable techniques for detecting, quantifying, and analyzing microplastics in various environmental samples. These methods aim to provide a framework that ensures accuracy, comparability, and reproducibility across different studies and regions. Standardized protocols will help researchers, policymakers, and environmental agencies assess the extent of microplastics pollution, understand its impacts, and implement effective mitigation strategies.

Relevant institutions: Ministry of Environmental Protection, Environmental Protection Agency, Ministry of Agriculture, Forestry and Water Management

Implementing partners: Universities and other scientific and research organizations, authorized laboratories

Measure 4.2. Develop a model microplastics monitoring program and establish an ongoing integrated statewide ambient monitoring network to quantify microplastics occurrence and effectiveness of management actions for microplastics pollution

The objective of developing a model microplastics monitoring program entails creating a comprehensive framework for consistently tracking microplastics occurrence across diverse environments. This initiative involves establishing an integrated statewide ambient monitoring network aimed at quantifying the presence of microplastics and evaluating the efficacy of management interventions against microplastics pollution over time. By implementing standardized methodologies and robust data collection protocols, such a program will facilitate informed decision-making, assess the impact of various management strategies, and guide long-term efforts to mitigate microplastics pollution on a broader scale.

Relevant institutions: Ministry of Environmental Protection, Environmental Protection Agency, Ministry of Agriculture, Forestry and Water Management

Implementing partners: Universities and other scientific and research organizations, authorized laboratories

Measure 4.3. Implement a pilot monitoring program to evaluate microplastics in sludge from wastewater treatment plant

The Sludge Management Programme for 2023-2032 ("Official Gazette of the RS", No. 84/23) outlines guidelines for managing sludge generated during the wastewater treatment process.

The priority activity associated with the measure primarily involves the development and adoption of by-laws that delineate sludge quality standards and criteria for determining the utilization of sludge from wastewater treatment plants. The legal framework for enacting these regulations will be established through amendments to the Law on Waste Management, which must incorporate provisions concerning the management of sludge derived from wastewater treatment facilities.

This initiative underscores the importance of setting clear guidelines and standards to ensure the safe and environmentally sound handling of wastewater treatment by-products.

The establishment of sludge quality standards should be informed by the findings of a pilot project aimed at assessing the presence of microplastics in sludge derived from wastewater treatment plants. By conducting this pilot project, the Republic of Serbia can gather empirical data regarding the extent and nature of microplastics contamination in sludge, which will serve as a crucial basis for setting appropriate quality standards.

Integrating the assessment of microplastics into the determination of sludge quality standards reflects the commitment of the Republic of Serbia to addressing emerging environmental challenges and ensuring the efficacy of wastewater treatment processes.

Relevant institutions: Ministry of Environmental Protection, Environmental Protection Agency, Ministry of Agriculture, Forestry and Water Management

Implementing partners: Universities and other scientific and research organizations, authorized laboratories

Measure 4.4. Implement a pilot monitoring program to evaluate microplastics in agricultural soils

microplastics pollution in agricultural soils has attracted much attention. When microplastics enter soils, they can change soils' physical and chemical properties, such as soil structure, porosity, pH, and nutrient availability, and destroy the soil microbial community. There is a lack of systematic and comprehensive monitoring of microplastics in soils. It is necessary to clarify the sources and distribution of soil microplastics, propose effective detection techniques and implement monitoring programs to protect soil.

Relevant institutions: Ministry of Agriculture, Forestry and Water Management, Ministry of Environmental Protection, Environmental Protection Agency,

Implementing partners: Universities and other scientific and research organizations, authorized laboratories

Specific Objective 5: Define Risk Thresholds and Develop a Risk Assessment Framework

microplastics are ubiquitous, and determining the urgency for implementing specific management action requires a risk assessment to quantify the number and type of biota that are affected now, and are likely to be affected in the future, under different management scenarios.

Using updated and strengthened thresholds to quantify both existing and future risks from microplastics exposure, including whether risks would change under a range of management scenarios (e.g., pathway interventions, source control, and/or no action), will help the Republic of Serbia to identify the habitats and/or communities that may be most affected by plastic pollution, and provide insight as to which management actions are most needed to reduce microplastics exposure. Risk evaluations should address the probability of exposure, the magnitude, duration and frequency of exposure, and the magnitude of adverse impacts or consequences that could result from microplastics exposure to the environment and human health.

Risk evaluations for vulnerable communities, such as those underserved, historically excluded from decision-making processes, and disproportionately burdened by environmental injustice, should be prioritized, as these communities may be at greater risk from microplastics pollution due to disproportionate community exposure from a variety of possible pathways, such as inequitable distribution of plastic products, plastic manufacturing facilities, higher densities of trucks, other vehicles, and associated tire degradation particles and fibers, and emissions of plastics particles and fibers from fixed sources. Advancing and conducting risk assessments can evaluate the potential socioeconomic factors that magnify the risk of microplastics exposure and help identify future solutions to reduce the risk of exposure.

The Republic of Serbia can support comprehensive risk assessments and inform future regulatory action by: (1) identifying ambient exposure concentrations generated through the

statewide monitoring program, (2) applying risk thresholds and (3) developing the risk assessment framework.

Measure 5.1. Develop toxicological studies that provide greater certainty of microplastics risk thresholds for environment and human health, and determine recommended actions when thresholds are exceeded

The objective of developing toxicological studies for microplastics involves conducting comprehensive research to determine precise risk thresholds for both environmental ecosystems and human health. These studies aim to establish clear guidelines and recommendations for addressing microplastics pollution when thresholds are exceeded. By examining the impacts of microplastics on different organisms and ecosystems, as well as exploring potential pathways of human exposure and health effects, researchers will provide valuable insights into the risks associated with microplastics contamination. These findings enable policymakers, regulatory bodies, and stakeholders to implement targeted interventions and mitigation strategies to safeguard environmental and human health effectively.

Relevant institutions: Ministry of Health, Ministry of Environmental Protection

Implementing partners: Universities and other scientific and research organizations

Measure 5.2. Develop microplastics risk assessment framework and execute risk assessments that incorporate local environmental loads of microplastics and risk thresholds to quantify the risk of microplastics to the environment and human health

The objective of developing a microplastics risk assessment framework is to create a structured approach for evaluating the potential risks posed by microplastics to both the environment and human health. This framework involves integrating data on local environmental loads of microplastics with established risk thresholds to quantify the overall risk level. By executing risk assessments based on this framework, researchers will systematically analyze the impact of microplastics on ecosystems, wildlife, and human populations.

These assessments consider various factors such as the sources, distribution, and persistence of microplastics, as well as their potential to accumulate toxic substances and act as vectors for pollutants. By incorporating scientific evidence, modeling techniques, and stakeholder input, the risk assessment process provides valuable insights into the magnitude and scope of microplastics-related risks.

Ultimately, the outcomes of these assessments inform decision-making processes, enabling policymakers, regulators, and communities to prioritize actions aimed at mitigating microplastics pollution, protecting vulnerable ecosystems, and safeguarding human health.

Relevant institutions: Ministry of Environmental Protection, Ministry of Health

Implementing partners: Universities and other scientific and research organizations

Measure 5.3. Conduct a risk assessment of microplastics pollution exposure and impacts to inform and prioritize future solutions

Conducting a risk assessment of microplastics pollution exposure involves a systematic evaluation of the potential hazards posed by microplastics to the environment, wildlife, and human health. This assessment encompasses several key steps: identification of exposure pathways, characterization of microplastics, assessment of ecological and human health risks, quantification of exposure levels, integration of risk factors, identification of knowledge gaps, and prioritization of solutions.

By conducting a thorough risk assessment of microplastics pollution exposure and impacts, stakeholders can make informed decisions and take proactive measures to address this pressing environmental and public health challenge.

Relevant institutions: Ministry of Environmental Protection, Ministry of Health

Implementing partners: Universities and other scientific and research organizations

Specific Objective 6: Sources and Pathways Prioritization

To reduce microplastics pollution in the environment, management actions must target and prioritize the predominant sources and pathways by which microplastics accumulate and pose ecological and human health risks. Sources are the original products and manufacturing processes that can trigger the generation and initial release of microplastics; pathways are the transport mechanisms (e.g., runoff, air) through which microplastics reach the environment.

Future research priorities may include an assessment of windborne microplastics and the quantification of macro and microplastics contributions from agriculture to the environment, including monitoring microplastics in agricultural soils.

Measure 6.1. Quantify and characterize relative inputs from the primary pathways (e.g., urban stormwater, agricultural runoff, wastewater, aerial deposition) of microplastics statewide to the environment

For each pathway, particles should be characterized (according to size, morphology, polymer type) in addition to quantifying the total amount of microplastics present. Additionally, advancing source identification methods can provide insights to inform industry-specific source control measures. Preliminary priorities include identifying solutions and strategies to reduce microplastics discharges from tire and road wear, laundry and textiles, tobacco products, and agricultural runoff.



Relevant institution: Ministry of Environmental Protection

Implementing partners: Universities and other scientific and research organizations

Measure 6.2. Create a source emissions inventory to quantify the most prevalent specific sources (i.e., specific materials and products) contributing microplastics into the environment to inform future regulatory action

The Republic of Serbia should prioritize the development of a source emissions inventory, dependent on the availability of necessary data, to quantify the top sources that contribute to microplastics in the environment and to refine and inform future management actions. A key consideration of this work should include selecting sources that may disproportionately affect marginalized or frontline communities.

Relevant institution: Ministry of Environmental Protection

Implementing partners: Universities and other scientific and research organizations, Serbian Chamber of Commerce, industry

Specific Objective 7: Evaluating New Solutions to mitigate microplastics contamination

Once the occurrence, risks, priority sources and pathways associated with microplastics have been identified in specific localities in the Republic of Serbia, targeted solutions to mitigate microplastics contamination can be prioritized and implemented. Feasibility and efficacy studies, and future risk assessments, can inform future management actions as new innovations are identified and developed. Future management actions and solutions should include life cycle assessments that incorporate global climate, social, and food security impacts, evaluations of a range of possible alternatives, including an evaluation of no action, cost-effectiveness, and chemical additive safety to avoid regrettable solutions.

To implement the research priorities, evaluate the efficacy of early actions, and inform future solutions, the Republic of Serbia will collaborate with scientific experts across academic institutions, state agencies, and other organizations.

Measure 7.1. Encouraging cooperation between scientific and research organizations and companies in the field of innovations and production optimization

Bearing in mind that the transition to a circular economy model is closely related to the development and application of innovative solutions in production and business and therefore requires significant research and development activities, it is necessary to encourage cooperation between companies and scientific research organizations in achieving this goal. Accordingly, the measure envisages the establishment of a programme for the allocation of financial resources for the introduction of innovative and other technical solutions in



companies, with the aim of transitioning to a circular economy model. Funding programs should be implemented through specialized public calls that will support the cooperation of companies and scientific-research organizations on priority topics for the development of the national economy, such as, for example, development of smart packaging, development of new additives (fillers, pigments), digitalization of processes, etc.

Improving cooperation between scientific research organizations and economic operators and improving innovative performance affects all sectors of the economy and is a driver of economic growth and the basis of sustainable economic development.

It is necessary to share data and information via multi-stakeholder platforms, to support research and facilitate cross-industry collaboration.

Relevant institution: Ministry of Environmental Protection

Implementing partners: Universities and other scientific and research organizations

Measure 7.2. Provide additional policy recommendations

Through the evaluation and implementation of new solutions alongside existing policies and initiatives, we aim to provide additional policy recommendations. This approach enables policymakers and stakeholders to effectively mitigate microplastics contamination and progress towards a more sustainable, plastic-free future.

Relevant institutions: Universities and other scientific and research organizations, state agencies

Implementing partners: Ministry of Environmental Protection

Specific Objective 8: Improvement of the environmental protection financing system

This Specific Objective contributes to the realization of SDG 17, which envisages the strengthening of partnerships for sustainable development, as well as the realization of SDG 15, especially 15.a and 15.b.

Measure 8.1. Reforming of financial system for environmental protection

Placing environmental protection at the forefront of public policies necessitates a systemic shift in the framework for investment planning and execution. An analysis of sustainable financing instruments, including fees, is crucial to effectively implementing programs and projects in environmental protection and ensuring stable, long-term financing for environmental conservation efforts.

This measure entails defining and establishing an institutional, legal, and organizational framework for sustainable financing, as well as the dedicated allocation of funds collected from fees toward environmental protection initiatives. Plans include the establishment of a fully operational sustainable financing system in environmental protection through the introduction of "green" budgeting. This involves creating and implementing a binding methodology for earmarking green expenditures.

By adopting these strategies, governments can enhance their commitment to environmental stewardship while fostering financial mechanisms that support the preservation and sustainability of natural resources for future generations.

Relevant institution: Ministry of Finance

Implementing partners: Ministry of Environmental Protection, local self-government units

Measure 8.2. Establishing a mechanism for financial support for the green transformation of the economy and society

The measure entails identifying support models and mechanisms (including subsidies, financial instruments, and public-private partnership models), along with funding sources (national, bilateral, regional, EU, international) to bolster the green transformation of the Serbian economy. These models and potential financial sources must align with public policy documents. Additionally, it's important to recognize that the green transition introduces numerous socioeconomic and other challenges that warrant consideration. Exploring innovative financial assistance, such as green bonds, is advisable.

Creating financial mechanisms, capacity-building initiatives, and educational programs is necessary to facilitate the transition of workers from sectors experiencing reduced economic activity to those poised for growth. This holistic approach ensures that the workforce is equipped to adapt to evolving economic landscapes and contribute effectively to sustainable development initiatives.

Relevant institution: Ministry of Finance

Implementing partners: Ministry of Environmental Protection and other ministries

Specific Objective 9: Strengthened capacities of institutions for reducing microplastics and harmonized regulations with EU regulations

Measure 9.1. Continue to align the legal framework with the EU acquis

This measure aims to harmonize legislation in the Republic of Serbia and the *acquis Communautaire*. Directive (EU) 2019/904 of June 5, 2019, aimed at reducing the impact of specific plastic products on the environment, and has been partially incorporated into the

legislation of the Republic of Serbia. The transposition process is currently in its initial phase. However, it's noteworthy that the ban on single-use plastic bags has been included in the transposed legislation.

Moreover, the constant development of the legal framework to support the circular economy in the EU requires further adjustment of the legislation of the Republic of Serbia on plastic waste in the process of EU accession.

Concurrently, within the European Green Deal and the latest Circular Economy Action Plan, the European Commission has unveiled a new initiative to address the inadvertent release of microplastics into the environment.

The European Commission takes another major step to protect the environment by adopting measures that restrict microplastics intentionally added to products under the EU chemical legislation REACH. The new rules will prevent the release to the environment of about half a million tons of microplastics. They will prohibit the sale of microplastics, and of products to which microplastics have been added. When duly justified, derogations and transition periods for the affected parties to adjust to the new rules apply.

The adopted restriction uses a broad definition of microplastics – it covers all synthetic polymer particles below five millimeters that are organic, insoluble and resist degradation. The purpose is to reduce emissions of intentional microplastics from as many products as possible. Some examples of common products in the scope of the restriction are:

- The granular infill material used on artificial sport surfaces – the largest source of intentional microplastics in the environment;
- Cosmetics, where microplastics is used for multiple purposes, such as exfoliation (microbeads) or obtaining a specific texture, fragrance or color;
- Detergents, fabric softeners, glitter, fertilizers, plant protection products, toys, medicines and medical devices, just to name a few.

Products used at industrial sites or not releasing microplastics during use are derogated from the sale ban, but their manufacturers will have to provide instructions on how to use and dispose of the product to prevent microplastics emissions.

Relevant institution: Ministry of Environmental Protection, Autonomous Province.

Implementing partners: other ministries, Chamber of Commerce, operators, civil society organizations

Measure 9.2. Strengthening administrative and institutional capacities for reducing microplastics

It is necessary to strengthen the capacity of local self-government units, municipalities and cities, to reduce microplastics. Moreover, it is important to develop and implement training programs and technical and financial assistance to municipalities. In addition, strengthening administrative capacity by providing additional training at the state level and at the provincial level (Secretariat for Urbanism and Environmental Protection of the AP Vojvodina, relevant

departments) is imperative. There is a strong need to further strengthen inter-institutional cooperation and coordination of processes in this area. Human resources are needed to: develop and set environmental/technical standards and guidelines; develop microplastics management strategy and planning of implementation at central and local levels; and data collection, analysis, and reporting.

Relevant institution: Ministry of Environmental Protection, Autonomous Province, local self-government units

Implementing partners: Ministry of Finance, Ministry of Public Administration and Local Self-Government, other ministries, Chamber of Commerce, operators, civil society organizations

Specific Objective 10: Conduct consumer education and awareness-raising campaigns

Leveraging consumer education and awareness-raising initiatives is essential for influencing consumer behavior towards practices aligned with the sustainable use of products, including mitigating the emission of microplastics during product use.

Measure 10.1. Develop educational campaigns and raise awareness about the environmental impacts of microplastics

The measure includes the following activities:

- Develop educational campaigns that raise awareness about the environmental impacts of microplastics and the importance of sustainable consumption practices. These campaigns can be disseminated through various channels, including social media, websites, educational materials, and public events.
- Advocate for clear and transparent labeling of products to inform consumers about the presence of microplastics and their potential environmental consequences. Providing easily understandable information enables consumers to make informed choices for products that minimize microplastics emissions.
- Highlight alternative products and materials that are free from microplastics or have minimal environmental impact. Showcase eco-friendly alternatives in stores, online platforms, and consumer guides to encourage adoption and market demand for sustainable options.
- Collaborate with influencers, celebrities, environmental activists, and community leaders to amplify messaging on microplastics pollution and sustainable consumption. Engage key opinion leaders who can effectively reach and influence target audiences through their platforms and networks.
- Organize workshops, demonstrations, and interactive activities that educate consumers about practical strategies for reducing microplastics emissions in their daily lives. Provide guidance on eco-friendly product choices, proper waste management, and environmentally responsible behaviors.



- Integrate lessons on microplastics pollution and sustainable consumption into school curricula at various educational levels. Empower students with knowledge and skills to make environmentally conscious decisions and advocate for positive change within their communities.
- Establish channels for ongoing communication, feedback, and dialogue with consumers to foster a sense of ownership and involvement in microplastics mitigation efforts. Encourage active participation, solicit suggestions, and address concerns to build trust and credibility with consumers.

Relevant institutions: Ministry of Environmental Protection, Autonomous Province, local self-government units

Implementing partners: Ministry of Public Administration and Local Self-Government, Ministry of Health, Ministry of Interior and Foreign Trade, other ministries, Chamber of Commerce, operators, civil society organizations

4. RISK ANALYSIS

The risks to the implementation of the National Strategy for microplastics include:

- Lack of financial resources.
- Challenges in accessing assistance from EU IPA funds.
- Difficulties in obtaining loans from international financial institutions.
- Delays in harmonizing regulations with EU directives.
- Insufficient administrative capacities of ministries, Autonomous Provinces, and local self-governments for implementing measures.
- Inadequate institutional capacities for monitoring the implementation of measures.
- Limited public awareness.

These risks can be mitigated through regular monitoring of the strategy's implementation, timely response, and proactive measures.

5. ACTION PLAN

The Action Plan will foresee specific measures and activities that will be undertaken to ensure the conditions for the implementation of the National Strategy for microplastics objectives, identifying institutions responsible for and partners in the implementation of those measures and activities, as well as the time and financial resources required for the implementation of the activities.