



PLASTIC SMARTCITIES

Action Plan to Reduce Plastic Pollution in the City of Dubrovnik 2021 - 2026





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This Action Plan includes measures and activities to be implemented in order to achieve short- and long- term objectives with the purpose of limiting plastic leakage into the environment, as well as plastic pollution of the sea. Over time, plastic objects are reduced to tiny plastic particles smaller than five millimetres – microplastics, which when found in the sea or sediment, represent an almost invisible but dangerous form of pollution. Due to the mass use of plastics, microplastics have become ubiquitous part of the marine environment. Various toxic substances accumulate on its surface, while fish and other marine organisms, especially bivalve molluscs, can take it for food. Microplastics thus enter the food chain, that includes humans, too. Globally, the largest source of plastic that we bring into the body is water – both bottled and tapped. There are significant regional differences in the amount of microplastics present in the environment, with twice as many plastic particles found in water in the USA and India, then in Europe and Indonesia. Salt, beer and molluscs have been identified as foods that contain the highest amount of plastic particles. Research results show that the problem of plastic pollution is universal and directly affects people, which is why the City of Dubrovnik decided to introduce appropriate measures and activities to prevent plastics from entering the environment and the food chain.

In order to achieve the goals of this Action Plan, the City of Dubrovnik must fully embrace the models of circular economy. The Action Plan proposes measures and activities to reduce the use of unnecessary single-use plastics, promotes alternatives to plastic products, designs activities and ensures the implementation of improvements in plastic waste management processes.

The Action Plan consists of three thematic units:

a) Reducing the total amount of produced and disposed plastic waste, establishing a system that supports circular economy and remediation of existing pollution – prescribing the objectives and activities to be carried out at the City level in order to reduce waste volumes to minimum legally determined rates

b) Creating examples of good practice in reducing waste generation and its reuse – defining the goals and activities that need to be implemented within the City of Dubrovnik and its institutions to become fully *plastic free*, thus being an example of good practice not only in the Republic of Croatia, but also in a wider region

c) Education and communication with the public – an activity that fully supports the implementation of the previous two units, with the aim of increasing the environmental awareness of citizens and ensuring long-term support for the Action Plan to Reduce Plastic Pollution in the City of Dubrovnik 2021 – 2026.

The City of Dubrovnik is part of the WWF global initiative called Plastic Smart Cities which aims to prevent the flow of plastic into nature by 2030. The Action Plan was developed within the Plastic Smart Cities Croatia project, implemented by Association Sunce and WWF Mediterranean.

The entire Action Plan and its implementation should be transparent and accessible to the public.

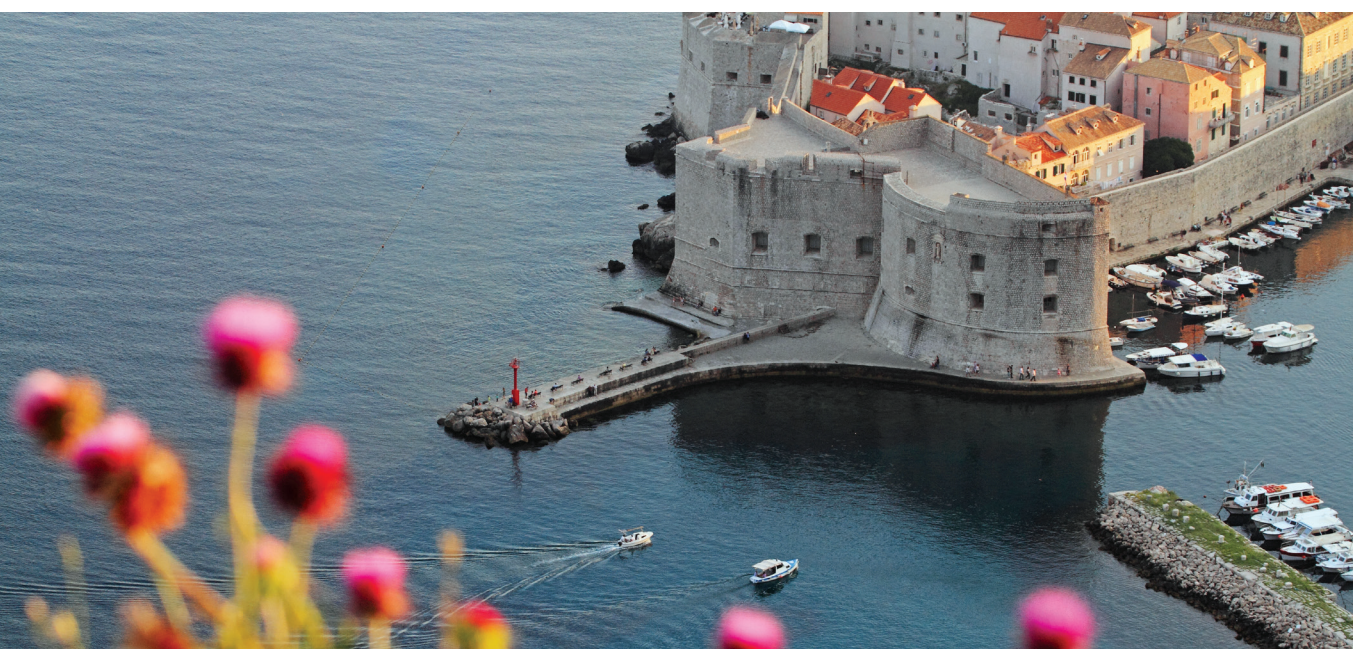
1. REDUCING THE TOTAL AMOUNT OF PRODUCED AND DISPOSED PLASTIC WASTE, ESTABLISHING A SYSTEM THAT SUPPORTS CIRCULAR ECONOMY AND REMEDIATION OF EXISTING POLLUTION

Measures and activities	Responsible Partner	Deadline	Results/Outputs
OBJECTIVE 1.1) Reduce the amount of disposed plastic waste by 10% at the level of the City, i.e., by 30% in the pilot project area within one year of the adoption of the Plan			
Act. 1.1.1) Implementation of waste collection and management system which provides the greatest impact in terms of quantities and quality of separately collected plastics	City of Dubrovnik and Čistoća d.o.o.	2022	New or updated Waste Management Plan and its implementation in accordance with the Waste Management Act, including the proper collection and management of all types of waste, as well as biodegradable plastics through the composting process
Act. 1.1.2) Providing special containers for plastics for each household	Čistoća d.o.o.	2022	Special containers for plastics purchased and distributed to all households in Dubrovnik
Act. 1.1.3) Implementation of a door-to-door pilot project for waste management and collection system in the City settlements of Zaton Veliki, Zaton Mali, Štikovica and Bosanka	Čistoća d.o.o.	2022	10% reduction in the amount of plastic waste disposed of at mixed municipal waste facilities on the City level, compared to the reference year 2019
			30% reduction in the amount of plastic waste disposed of at mixed municipal waste facilities in the pilot area, compared to the reference year 2019
Description: Aiming to develop a Waste Management Plan that can yield significant results within a shorter period of time, the implementation of a door-to-door pilot project for separate waste collection within the city settlements of Bosanka, Veliki Zaton, Mali Zaton and Štikovica, is envisaged. The pilot project consists of allocating special containers for plastic collection to all users of the waste collection service. Logistically, separate collection of waste will be organized by small vehicles alongside included re-collection of collected waste at the site to optimize the costs of collecting and transporting separately collected waste. In addition to the infrastructure and the organization of transportation, it is necessary to educate and inform the inhabitants of the settlements about the changes in the waste collection system, as well as to disseminate the waste collection schedule. It is recommended to monitor the amount of waste collected separately and delivered for recovery, in order to calculate the efficiency of the system itself. The Bosanka Settlement has been chosen as the location for the pilot project because a door-to-door waste collection system can be fully established in a relatively short period of time without difficulties. In other pilot project areas of Zaton Veliki, Zaton Mali and Štikovica, a door-to-door waste collection system will be in place as soon as the necessary preconditions are met. These locations are still dependent on street collection method and the organization of collection at these locations is more demanding. The characteristics of the system being introduced are described in the Analysis of the Current State of use of Disposable Plastics in the City of Dubrovnik. The implementation of the pilot projects will be monitored from the beginning by a municipal warden, acting preventively and educationally. If necessary, in case of frequent recurrence of irregularities the municipal warden can fine inappropriate disposal of waste. The results of the pilot project will be considered in modelling and designing of the waste management system as part of the New Waste Management Plan.			



Measures and activities	Responsible Partner	Deadline	Results/Outputs
OBJECTIVE 1.2) Reduce the amount of plastic in disposed municipal waste by 55% at the level of the City by 2025			
Act. 1.2.1) Comply with the requirements of Directive (EU) 2019/904 of the European Parliament and the Council from June 5th 2019 on reducing the environmental impact of certain plastic products	City of Dubrovnik (City Council)	2025	New or updated Waste Management Plan and its implementation in accordance with the Waste Management Act, including the proper collection and management of all types of waste, as well as biodegradable plastics by the composting process
Act. 1.2.2) Implementation of door-to-door waste collection system where possible with regard to urban characteristics and monitoring of implementation	Čistoća d.o.o.	2023	Report on the implementation of the Waste Management Plan
Act. 1.2.3) Continuous improvement of existing waste management models	Čistoća d.o.o.	2025	Report on the implementation of the Waste Management Plan and implementation of recommendations
Description: A new waste management system based on the Waste Management Plan, developed as part of target 1.1 will be introduced. The implementation of the Plan will be analysed on an annual basis and recommendations will be adopted for perfecting the model along with introducing all necessary amendments to the waste management system.			

Measures and activities	Responsible Partner	Deadline	Results/Outputs
OBJECTIVE 1.3) Ensure the conditions for the successful application of reuse priorities and sustainable management of alternative plastic substitutes (compostable and recyclable plastics)			
Act 1.3.1) Introduction of separate collection of bio-waste in the city of Dubrovnik and its composting, i.e., ensuring adequate system of collection and management of alternative materials (compostable and biodegradable plastics)	City of Dubrovnik and Čistoća d.o.o.	2023	New or updated Waste Management Plan and its implementation in accordance with the Waste Management Act, including the proper collection and management of all types of waste, as well as biodegradable plastics through the composting process
Act.1.3.2) Design, preparation for financing and development of the Reuse Centre, in cooperation with civil society organizations	Čistoća d.o.o., City of Dubrovnik - Administrative Department for Construction and Project Management, Cooperation with Civil Society	2024	Building design documentation and financing project prepared (feasibility study with option analysis); Centre developed
Act. 1.3.3) Developing a project for the promotion of stores without packaging and co-financing programs	Administrative Department for EU Funds, Regional and International Cooperation	2022	Strong co-financing program for projects to reduce packaging waste prepared
Description: Listed measures are being proposed in order to enable necessary infrastructure taking into account prohibition of certain plastic products within the European market, i.e., process of entrance of biodegradable plastic products on the Croatian market. Composting facility is being planned in order to properly manage biodegradable plastic, while the Reuse Centre and the promotion of the stores without packaging are being planned in order to mitigate plastic waste in general (measures for prevention of waste generation).			





Measures and activities	Responsible Partner	Deadline	Results/Outputs
OBJECTIVE 1.4) Reducing the amount of waste in the environment			
Act. 1.4.1) Organizing the identification, marking and mapping systems of illegal landfills	Administrative Department for Municipal Utilities and Local government	2022	All necessary work orders adopted within the Municipal Service
			Database created for all identified illegal landfills
Act. 1.4.2) Organizing a system for reporting illegal landfills by citizens	Administrative Department for Municipal Utilities and Local government	2022	System for reporting illegal landfill sites via computers and smartphones established and instructions for citizens published
Act. 1.4.3) Remediation of illegal landfills	Administrative Department for Construction and Project Management	Continuously	All identified illegal landfills remedied
Act. 1.4.4) Organization of an annual clean-up of the sea bed, beaches and/or terrestrial environment	Administrative Department for Municipal Utilities and Local government	Continuously	Clean-up action conducted on at least four locations and results of the action published on the official website of the City of Dubrovnik and in the media
			At least two press releases sent on an annual basis (action announcement and action results)
			At least one report of the actions published on the official website of the City of Dubrovnik
			At least one invitation for participation sent to citizens, associations and other relevant stakeholders
Act. 1.4.5) Ensuring control over locations where illegal waste disposal occurs systematically	Administrative Department for Municipal Utilities and Local government	Continuously	All necessary work orders for continuous monitoring of identified landfills issued (communal warden who will regularly visit the locations)
			Video surveillance set up, use of new technologies and technical solutions such as video-linking by unmanned aerial vehicle (drone and similar)
Act. 1.4.6) Application of technical and operational measures to reduce the amount of waste ending up in the environment	Čistoća d.o.o.	Continuously	Replacement of worn-out and damaged containers in the City (torn lids and similar)

Act. 1.4.7) Ensuring regular covering of the landfill with a purpose of reducing the spreading of plastic by wind, until its final closure	Čistoća d.o.o., Administrative Department for Construction and Project Management Administrative Department for Municipal Utilities and Local government	Continuously	Reducing the amount of waste in the environment around landfills
Act. 1.4.8) Encouraging and/or participating in research efforts related to microparticles and nanoparticles pollution	Administrative Department for Urbanism, Spatial Planning and Environment	2024	Data on environmental pollution with microparticles and nanoparticles of plastics collected and published
Description: Waste present in the environment (including plastic waste) is a result of intentional or unintentional actions, carried out by an individual, who discards waste directly into nature or disposes of waste into a waste management system with inadequate infrastructure which does not prevent waste to leak into the environment via atmospheric or weather conditions. In addition to implementing important measures with regard to identification, remediation and cleaning of illegal landfills and locations polluted by waste, the City of Dubrovnik will invest efforts for mitigation of illegal waste disposal and replacement of inadequate containers and coverage of landfills with the purpose of preventing waste leakage into the environment via wind and rain. In order to classify the effects of waste on the environment, data on microparticles and nanoparticles of plastics will be collected and published.			

Monitoring the implementation of the Plan and evaluating the results of the project	Association Sunce Split	2022	Continuous filling in of the monitoring protocol prepared and submitted to the City of Dubrovnik by Association Sunce Split, in accordance with the activities and deadlines specified in this Action Plan (minimum three completed protocols until the end of the project)
			Online evaluation workshop held at the very end of the project with key stakeholders (short narrative report with proposals for improving the implementation of the Action Plan prepared as a results of the workshop)





2. CREATING EXAMPLES OF GOOD PRACTICE IN REDUCING WASTE GENERATION AND REUSING IT

Measures and activities	Responsible Partner	Deadline	Results/Outputs
OBJECTIVE 2.1) Limit the use of single-use plastics only to essential and irreplaceable products within City of Dubrovnik and institutions and companies (co)owned by the city			
Act. 2.1.1) Preparation of internal Waste Management Plans	City of Dubrovnik in cooperation with institutions and companies (co) owned by the city	2022	Waste Management Plan and internal results on reducing mixed municipal waste quantities prepared
Act. 2.1.2) Prepare and adopt the Decision on Limiting the Use of Single-Use Plastics	City of Dubrovnik (Mayor or City Council)	2021	Decision on Limiting the Use of Single-Use Plastics
			All relevant stakeholders notified via official letter
Act. 2.1.3) Reject on use of all unnecessary disposable plastic products (plastic cups and disposable bags), the same applies to all City institutions and public companies	Administrative Department for Urbanism, Spatial Planning and Environment and Administrative Department for Mayor's Office	2023	Full implementation of the Decision on Limiting the Use of Single-Use Plastics
Act. 2.1.4) Creating a database of alternative and available solutions, i.e., active market research and publication of results	Administrative Department for Urbanism, Spatial Planning and Environment	2021	Database of available alternatives/ solutions created and published
			Continuous base replenishment mechanism provided
Description: The City of Dubrovnik will limit the use of disposable plastic only to essential and irreplaceable products and will encourage the use of alternative products for those products that are not necessarily prohibited (the prohibition on the placing in the market is not applicable to plastic cups and very lightweight plastic bags that preserve product hygiene) within its institutions and public companies.			

Measures and activities	Responsible Partner	Deadline	Results/Outputs
OBJECTIVE 2.2) Limit the use of single-use plastics only to essential and irreplaceable products for public events (co)organized or (co)financed by the City of Dubrovnik			
Act. 2.2.1) Prepare and adopt a Decision on Limiting the Use of Single-Use Plastics for Public Events (co) organized or (co)financed by the City of Dubrovnik	City of Dubrovnik (Mayor or City Council)	2021	Decision on Limiting the Use of Single-Use Plastics for Public Events (co) organized or (co)financed by the City of Dubrovnik adopted and published
			All relevant stakeholders notified via official letter
			Mechanism for the inclusion of the Decision in the procurement process, conclusion of new contracts, organization of events and other activities covered by the Decision provided

Description: The City of Dubrovnik will use products that can be used multiple times or made of paper or compostable plastic in all public events by the end of 2021. The same rules will apply to other events held in public areas and premises owned by the City of Dubrovnik.

3. EDUCATION AND COMMUNICATION WITH THE PUBLIC

Measures and activities	Responsible Partner	Deadline	Results/Outputs
OBJECTIVE 3.1) Raising citizens' awareness of the harmfulness of plastics in nature and the possibilities for reducing plastics in everyday use			
Act. 3.1.1) Development of a Communication Plan aimed at informing the public and key stakeholders about the project and post-project activities, i.e., the harmfulness of plastics in nature and the possibilities for reducing plastics in everyday use	Administrative Department for EU Funds Regional and International Cooperation, Association Sunce Split, Administrative Department for Urbanism, Spatial Planning and Environment and Čistoća d.o.o.	2021	Communication Plan for <i>Plastic Smart</i> Dubrovnik and the harmfulness of plastics in nature and possibilities for reducing plastics in everyday use for a period of 2 years following the adoption of the Action Plan
Act. 3.1.2) Cooperation with all involved public and private sector stakeholders	Administrative Department for Urbanism, Spatial Planning and Environment	Continuously	At least one annual meeting/conference on the implementation of the Action Plan and the topic of the harmfulness of plastics in nature and the possibilities of reducing plastics in everyday use organized
Act. 3.1.3) Informing the citizens about all key changes in waste management in the City of Dubrovnik with information on the harmfulness of plastics in nature and the possibilities of reducing plastics in everyday use included	Čistoća d.o.o. and the City of Dubrovnik	Continuously	At least once a month, for a period of two years following the adoption of the Action Plan, provide information to citizens about changes in the waste management system, on the proper classification of waste, the harmfulness of plastics for nature, the possibilities of reducing plastics in everyday use and all key project milestones (leaflets, radio advertisements, posters, websites, social networks, etc.)
Act. 3.1.4) Involvement of citizens, associations and other relevant stakeholders in clean-up actions of the seafloor, beaches and/or land environment	Administrative Department for Urbanism, Spatial Planning and Environment	Continuously	Invitations for participation to citizens, associations and other relevant stakeholders when organizing clean-up actions sent
<p>Description: This goal represents the involvement of the general public within the project. Systematic education, information and active involvement of the public in every step can achieve quality cooperation and better and more detailed implementation of the activities themselves. In this sense, it will be necessary to devise several educational packages specific for each step, which are interconnected and that can be used over a longer period of time.</p> <p>The target groups should include kindergartens, schools, higher education institutions, hospitality and tourism sectors, the economic sector, public authorities and utilities, and the general public.</p>			



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Mayor at City of Dubrovnik
Mato Franković

