



Event Report

EPPA Regional Workshop on Managing Marine Litter

29 – 30 September 2020

Live video conference



This Project is funded by the European Union

NIRAS **umweltbundesamt^U**

The project implemented by the Consortium of NIRAS (lead)
and Umweltbundesamt GmbH

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- Annex 3: Presentations (provided as a separate document)



1 Introduction

The regional workshop

The regional workshop on “Managing Marine Litter” took place on September 29-30, 2020, via live video conference. The workshop was organized in cooperation with TAIEX, and under the EPPA project work programme, namely activity 3.2 “Capacity building and technical assistance for managing marine litter and support to the implementation of the Marine Strategy Framework Directive”.

The participants of the workshop came from the relevant authorities of the EPPA beneficiaries involved in marine litter issues. They represented the Ministries with the environment portfolio and the water portfolio, in addition to water management institutions, and river basin management authorities of all beneficiaries: Albania, Bosnia and Herzegovina, Kosovo*, Montenegro, North Macedonia, Serbia, and Turkey. Details are available in the list of participants.

Civil society was represented by NGOs from the beneficiaries, namely: Co-PLAN, Institute for Habitat Development (Albania), Center for Climate Change – Gevgelija (North Macedonia), and FORS (Montenegro).

EU Delegations’ and Office representatives of EPPA beneficiaries were present, except EUD Montenegro. The speakers represented EU Member States’ and EU institutions’ experience. There were experts from the national authorities of Croatia, Greece, Romania and Slovenia, and DG ENV. Moreover, the workshop brought in the experience of the European Environmental Agency, a Horizon 2020 project on marine litter, the EPPA project experts on waste and water, and the experience of the beneficiaries. Details are available in the agenda.

The presentations can be downloaded in both the TAIEX website and in the EPPA project website.

Marine litter

Marine ecosystems face increasing pressure from human activities both on land and at sea, through marine litter which is widely recognized as a significant threat to the marine environment, causing environmental, economic, health and aesthetic problems. It is estimated that more than 150 million tons of plastics have accumulated in the world's oceans, with a rapid dissemination.

There are many initiatives at the EU level. The Marine Strategy Framework Directive (MSFD) requires EU Member States to ensure that, by 2020, "properties and quantities of marine litter (Descriptor 10) do not cause harm to the coastal and marine environment". A Guidance on Monitoring of Marine Litter in the European Seas (2013), and more recently, thematic reports on sources of litter, on riverine litter monitoring and on harm from marine litter have been produced to support the Member States in reaching Good Environmental Status (GES) for marine litter. Most of the proposed actions of the Strategy for Plastics, adopted by the Commission on 16th January 2018, as part of Europe's transition towards a circular economy, are related to marine litter, including its international dimension, which is relevant for EPPA countries. Further, actions on plastics were identified as priority in the Circular Economy Action Plan, which offers the most appropriate approach to the marine litter problem considering preventing/reducing of waste, recycling and reuse of materials.

Other directions of approaching the marine litter problems are offered through the policy and regulatory framework of Barcelona Convention which aims to protect the Mediterranean marine and coastal environment while boosting the implementation of regional and national plans to achieve sustainable development.

2 Objectives of the training and expected results

The objective was to provide advice and guidance to strengthen national capacities of the EPPA beneficiaries to effectively address the large number of implementation challenges regarding prevention, mitigation, and remediation measures regarding marine litter. These will be explained in the context of achieving a circular economy in synergy with the process of reaching the objectives of the Single Use Plastic Strategy (SUP), the Marine Strategy Framework Directive (MSFD), the Water Framework Directive (WFD), and the 2020 international goals of the Barcelona Convention for Biological Diversity.

Concretely, the workshop sought to:



- Examine the content and implications in terms of national strategic documents of the requirements of implementing EU Directives, such as the SUP and MSFD
- Present and discuss various tools – such as new policy instruments and action plans - required for implementing the EU directives and strategies and Circular Economy Action Plan
- Present the latest developments connected with the EC Green Deal
- Provide information about the latest marine litter funded projects relevant for Adriatic and Ionic Seas
- Present and discuss a set of proposed recommendations by participants welcoming regional actions and cooperation in tackling marine litter and transboundary management of the Adriatic and Ionic Sea.
- Brainstorm any national obstacles (involvement and commitment, data and methodologies, coordination and cooperation, capacity building needs) towards the implementation of the EC policies, strategies, and directives
- Discuss the needs of the countries and possible options of support through the activities of EPPA project, including training needs
- Facilitate dialogue among the countries on specific concepts, initiatives and regional actions that are needed to ensure transboundary cooperation.

3 Highlights from the workshop

3.1 Opening remarks and introduction

Mr. Mihail Dimovski delivered the opening comments contextualizing the workshop in EPPA's plan of activities, as well as its scope and expected results. He stressed the workshop's goal to reinforce the beneficiaries' capacities to deal with the EU acquis dealing with water management, marine environment management and waste management. In this context, he also called to attention the synergies needed between maritime and landlock countries and highlighted the need for regional cooperation to address the challenges of marine litter.

Ms. Mihaela Popovici led a round of introduction, where the participants had the chance to present themselves, their institutions and their work related to marine litter. She then explained the agenda's rationale and its integration in EPPA's Activity 3.2: "Capacity building and technical assistance for managing marine litter and support to the implementation of the Marine Strategy Framework Directive". Ms. Mihaela Popovici set the scene for the workshop by providing an overview on marine litter and the current policy responses at the EU level. 150 million metric tons of plastic have accumulated in the world's oceans while 4.6 to 12.7 million tonnes are added every year (Jambeck et.al). It is estimated that between 80 and 95% of waste that enters the rivers, estuaries and seas come from land. In the Mediterranean area most of the marine litter is indeed from land-based sources, resulting from poorly managed municipal dumping sites and uncontrolled direct dumping of construction waste. However, the sea-based sources also play role through marine traffic, and fisheries and aquaculture.

The MSFD is an ambitious EU policy to counter those tendencies and to achieve good environmental status of marine waters. The Directive is built around eleven descriptors of environmental status, it mandates harmonized monitoring and programmes of measures. One of its concrete objectives is to halt marine litter. Member States are required to identify the sources of littering and create national plans on six-year cycles to fight littering. Producers are to contribute financially to the reduction of littering.

The European Strategy for Plastics in a Circular Economy is the first-ever European Strategy for Plastics. It was adopted in January 2018. The strategy is part of Europe's transition towards a circular economy, and it will contribute to reaching the Sustainable Development Goals, the global climate commitments, and the EU's industrial policy objectives. This strategy will help protect our environment, reduce marine litter, greenhouse gas emissions, and it will support more sustainable and safer consumption and production patterns for plastics.

Furthermore, in May 2018, the EU MS approved a set of ambitious measures as part of the EU's wider circular economy policy. The recycling targets for municipal waste were set at 55% until 2025, 60% until



2030, and 65% until 2035. Specific targets were also set for different types of packaging waste. Overall, the EU is seeking a recycling target of 65% until 2025, and 70% until 2030, for all packaging waste

3.2 Intervention on marine litter (European Commission updates)

Mr. Michail Papadoyannakis presented the EU actions against marine litter. The current toolbox to address the problem is centred on the MSFD, but it also relies on other policies and initiatives. They are: waste legislation (SUP Directive, Packaging and Packaging Waste Directive, WSR, etc.), strategy for plastics, adequate port reception facilities for delivery of waste from ships, regional and international cooperation, and funding mechanisms. The actions against marine litter are now framed by the wider EU Green Deal.

The EU's new waste legislation (2018) requires the Member States to identify the sources of littering, top draw up 6 years national plans to fight littering coherent with the programmes of measures under the MSFD and requires producers to financially contribute to reduce littering.

The most found marine litter items on European beaches are single use plastics (50%), fishing related (27%), non-plastic (16%), and other plastics (7%). The top 10 single use plastics contribute 43% of all litter. Therefore, the single use plastics directive (Directive (EU) 2019/904 on the reduction of certain plastic products on the environment of 5 June 2019), covering 70% of all marine litter (top 10 SUP and fishing gear) seeks to:

- Prevent and reduce the impact of certain plastic products on the environment, in particular the aquatic environment and on human health
- Promote the transition to a circular economy with innovative and sustainable business models, products and materials
- Contributing to the efficient functioning of the internal market

Member States have deadline until July 2021 to bring into force the directive in their national legal systems.

The Commission is providing support to the Directive's implementation by developing two sets of guidelines (SUP guidelines and extended producer responsibility guidelines), two standardization requests for tethered caps and lids and circularity of fishing gear, and nine implementation acts divided in three waves:

- First wave (2020): marking, separate collection (calculation and reporting), reporting of (waste) fishing gear
- Second wave (2021): measuring consumption reduction, reporting consumption reduction
- Third wave (2022): measuring and reporting on recycled content, reporting of post consumption waste tobacco products

In practice, the Directive mandates bans on plastic cutlery, plates, straws; on cups, food containers in expanded polystyrene; on oxo-degradable plastics; and on cotton buds sticks made of plastic, balloon sticks. Consumption reduction is imposed on plastic food containers and plastic cups through targets. Separate collection and product design are mandated on plastic bottles: 90% separate collection by 2029, and production made with 30% recycled content by 2030. Tethered caps and lids will be a design requirement.

Moreover, certain products (wet wipes, cups, cigarette filters) will have additional marking. In terms of extended producer responsibility, the costs of waste management, awareness raising, data gathering and clean up (food and beverage containers incl. bottles, cups, packets and wrappers, plastic bags, tobacco products with filters) will be reflected on the producers. The fishing gears will have to account for the costs of collection based on national targets and respect EU standards for design.

Biodegradable/ bio-based plastic SUP are considered 'plastic' and are covered by the Directive. By July 2027 COM will evaluate the technical progress concerning criteria/standard for biodegradability in the marine environment. The correct info and disposal are challenging for consumers because of the risk of being littered and cross-contamination of waste streams. Under the Packaging and Packaging Waste Directive (PPWD) there was a study finalised on compostable plastics. More studies to come on biodegradable plastics in the open environment and agricultural plastics (both conventional and biodegradable), namely EGD and new CEAP: a policy framework on the use of bio-based, biodegradable



and compostable plastics with clear environmental benefits, and developing acceptable criteria for marine biodegradability.

In terms of plastic gear used in fishing and aquaculture, extended producer responsibility will be established by December 2024. Member States will be expected to establish national minimum annual collection rates of waste fishing gear containing recyclable plastic. There is also specific monitoring and reporting of fishing gear containing plastic and placed on the Member States markets, and plastic content in collected waste. The first reporting to the EC will be in 2022. Standards will be developed for the circular design of fishing gear to encourage re-use and to improve recyclability and the end of product life.

The Circular Economy Action Plan is another tool. In addition to reducing plastic litter, it addresses microplastics by:

- restricting intentionally added microplastics and tackling pellets (with European Chemicals Agency)
- developing labelling, standardisation, certification and regulatory measures on unintentional release of microplastics, including measures to increase the capture of microplastics at all relevant stages of products' lifecycle
- further developing and harmonising methods for measuring unintentionally released microplastics, especially from tyres and textiles, and delivering harmonised data on microplastics concentrations in seawater
- closing the gaps on scientific knowledge related to the risk and occurrence of microplastics in the environment, drinking water and foods

The EC is also studying the possibility of creating a restriction on intentionally used microplastics. It may include a prohibition of placing them on the market where their leakage into the environment is inevitable, but with some derogated uses. The derogated plastics will be under the obligation to provide mandatory safe use information (minimization of leakage) and reporting (identity, uses, tonnage, releases). However, as microplastics span several industries, the future approach will be divided by sector, as shown in the figure below.

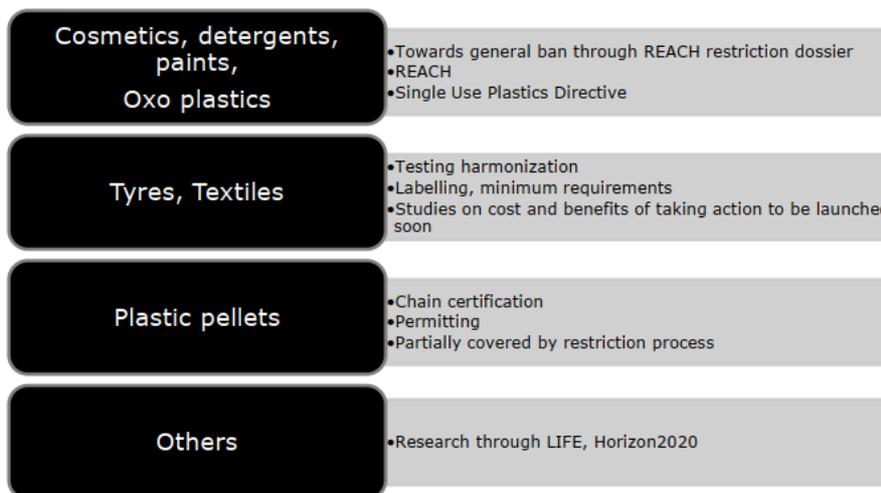


Figure 1 - Legislative and other work per source (microplastics)

The Port Reception Facilities (PRF) Directive - (EU) 2019/883 aims to :

- Align with MARPOL (Annexes I, II, IV, V and VI)
- Enhance the availability and use of port reception waste facilities
- Reduce of waste from ships at sea, through a mix of incentive and enforcement measures:
 - All ships must deliver their waste before departure, including fishing vessels and recreational craft;
 - Cost Recovery system based on the 100% Indirect Fee for Annex V waste;
 - Scope covers also fishing gear and passively fished waste.



- Improve the management of waste from ships in ports: adequate PRF to provide for separate collection, waste reception and handling plans, electronic reporting and exchange of information.
- EPR schemes for fishing gear included in the SUP directive should support the proposed 100% indirect fee system and help to avoid any increase in the fee and ensure a right of delivery.

The EU is also promoting regional and international activities to curb marine plastic pollution. There have been Regional Action Plans against marine litter in all seas around Europe, developed and implemented with EU support. It has advocated in the G7 and G20 for action plans against marine litter. It supported the IMO (International Maritime Organisation) Action Plan to address marine plastic litter from ships, adopted in October 2018 and UNEA-4 (March 2019) resolutions on plastic litter and microplastics, single-use plastic products, sustainable consumption, and production. However, the EU is seeking to do even more by leading efforts at international level to reach a global agreement on plastics and promote the uptake of the EU's circular economy approach on plastics.

3.3 Marine Litter Thematic Assessment Report

Mr. Mustafa Aydin presented the EEA Marine Litter Watch Assessment and the European Marine Litter Assessment Report. The European Environment Agency seeks to provide valuable data and information for EU marine litter policies and to provide marine litter assessments with an ecosystem-based approach. The MLW Initiative puts the litter problem and its environmental effects on the spotlight. It consists of a dataset with more than 2.000.000 litter items, quality checked and shared with EMODnet. The dataset uses the EU TGML joint list. In 2013 there were 6 communities involved, whereas in 2020 that grew to 40 communities. The initiative benefited from the added value of NGO experience (e.g: fresh water, terrestrial monitoring) and contributed to develop a network of NGO efforts, evolving through organised and systematic beach surveys.

Mr. Mustafa Aydin explained how the Marine Litter Watch works: the communities carry out surveys and upload the results through the dedicated portal. The results are aggregated in the MLW webpage and available to use and share. The Marine LitterWatch (MLW) data viewer¹ provides a map of beach litter data collection events organised by MLW communities. It also provides overview graphs and tables of both the data collected and community engagement.

The analysis of the database will result in the 2nd MLW assessment: "MLW European Beach Litter Assessment", which will be final in October 2020. Four main questions were answered:

- Does MLW data provide indications on beach litter trends from the European seas? MLW data reflects that sea-beach litter appeared to increase steadily over the years. However, when data from the Black Sea excluded, litter pollution increased until 2017, with a steady decrease afterwards. Excluding 2014 data, the share of plastics in total litter abundance demonstrated a gradual decrease.
- Are there differences in the amount and composition of beach litter among the regional seas? Among the four EU regional seas, the Black Sea appeared as the most littered beach (652 items/100m) and the Baltic Sea the least polluted (78 items/100m). The share of plastics was relatively low for Baltic Sea beaches (about 61%) compared to other seas (80-88%). The Black Sea revealed the highest rate of SUP (66.1%), followed by the Mediterranean Sea (40%). Fishery-related litter was highest in the north-east Atlantic.
- Are there differences in litter composition from lakes, rivers and sea beaches? The median averages from lake and river beaches (35 and 67 items/100m, respectively) were lower than that obtained from the sea (379 items/100m). Therefore, MLW data suggests that rivers serve as a pathway in particular for plastic litter transport from land to sea, making sea-beaches one of the sink areas for anthropogenic litter.

¹<https://www.eea.europa.eu/themes/water/europes-seas-and-coasts/assessments/marine-litterwatch/data-and-results/marine-litterwatch-data-viewer>



- Does MLW ‘monitoring’ data give more reliable results than clean-up data? MLW ‘monitoring’ data displayed more accurate results compared to clean-up data in regard to survey lengths and litter categories.

The European Marine Litter Thematic Assessment represents a source-to-sea approach. MSFD and SUPs Directive require information on ML sources and pathways, where possible. The 1st stage is the ML Indicators Scoping report (2019): The EEA prepared a Marine Litter Indicators Scoping study in 2019, that identified the most relevant plastic waste indicators, across the DPSIR spectrum. The 2nd stage will define the methodology (2020): The methodology for waste leakage estimations and multi indicator based marine litter assessment tool. The 3rd stage will be the full European ML assessment report (2021). The objectives of the EU ML assessment report are to assess the state of ML and compare it with the waste management performances and thus assess the sources and pathways of ML; to prepare an EU-Wide Assessment from EEA on ML with an ecosystem based approach – to inform policy not only on the state of the environment but also on how EU is preventing ML at source and reducing pressures that lead to ML; to provide possible solutions for sustainable transitions.

3.4 Key components of an integrated waste management system

Mr. Wim Van Breusegem made the case for Integrated Waste Management Systems. Targeted measures to improve plastic waste management, cannot be fully effective, if the overall waste management system is not improved. What does it take to improve the overall waste management system?

Sustainable waste management requires the establishment of an adequate Integrated Waste Management System (IWMS), within which specific PWM measures can be taken. Sustainable waste management means waste management in a sustainable manner in appropriate facilities, either in the country or abroad (for specific and/or hazardous waste), i.e. licensed and of an adequate standard of technology and pollution control. It also entails compliance with the Waste Hierarchy (moving WM away from sole reliance on final disposal and up the hierarchy, to a situation where waste is collected separately and recycled) and with other applicable regulations. Furthermore, it should be operated in a cost-efficient manner.

The benefits of sustainable waste management are an improved quality of life for the population, protection of the environment, increased economic activity, if waste is seen as a resource that can be recycled and reintegrated to achieve a Circular Economy, giving full effect to the Waste Hierarchy.

Waste systems, in addition to being sustainable, also need to be integrated. Integrated” refers to the strategic approach to sustainable WM, covering all sources and all operations (generation, separation, transfer, sorting, treatment, recovery and disposal) in an integrated manner. An IWMS has two components (and sub-components):

- Good governance (refers to how public institutions conduct public affairs, and manage public resources and guarantee the citizens a clean and safe environment)
 - Responsible, capable institutions
 - Policy framework
 - Enabling legislation
 - Sustainable financing
 - Stakeholder inclusivity and awareness
 - Information and knowledge
- Operations and infrastructure
 - Collection
 - Environmentally sound treatment:
 - material recycling,
 - organic recycling,
 - incineration with energy recovery
 - sanitary landfills.



3.5 Issues faced on marine litter, planned efforts and regional cooperation initiatives in the EPPA beneficiaries

The representatives of the EPPA sea-based beneficiaries presented their status of alignment with the SUP Directive, and other marine litter management issues.

Bosnia and Herzegovina

Ms. Sabina Hadziahmetovic started by explaining the governmental structures of Bosnia and Herzegovina, and the hydrographic characteristics of the country. Solid waste management is regulated by the Entity's laws. The requirements of the Waste Framework Directive have been transposed by both entities. In 2015-2019, the country reduced the amount of waste generated, per capita, but the total amount of waste disposed in landfills increased. Recycling rates remain low and below the set targets, showing that landfills are still the preferred waste management option. Waste collection services cover about 90% of urban areas and 40% of rural areas. Separate collection of waste, for recycling purposes, is only 5% of the total waste generated (3% from industries and commerce, 2% from households).

The single use plastic bags are a problem in Bosnia and Herzegovina. Both entities have a regulation regarding the use of plastic bags (up to 20 microns in thickness) requiring operators to pay a fee for their introduction. Around 28 million plastic bags were introduced into the market in the first half of 2014 alone, but only about 6 million were below 20microns and thus subject to the fee. Bosnia has a large number of plastics bags not subject to the fee. The consequences are that the regulation does not meet its goals of use reduction and it deprives the state of a significant amount of revenue. Possible revisions of the regulation will include all plastic bags up to 50 microns thickness.

Ms. Sabina Hadziahmetovic concluded with information about a marine litter project implemented between 2017-2019. The project (UNEP) assisted the country to monitor marine litter in Neum Municipality. The monitoring revealed the problems associated with single use plastics in Bosnia and Herzegovina and its impacts on the coastal zone and marine environment.

Montenegro

Mr. Igor Jovanovic informed the meeting that waste legislation is significantly harmonized with the EU acquis. Infrastructure developments have been made largely in accordance to the existing planning documents. The main challenge is infrastructure development in the north of Montenegro, but the country expects visible progress in that area within two years.

A new waste management law was scheduled for 2020. It is now expected to be adopted in 2021. The law also addresses the single use plastics issue. The new draft law includes, in line with the SUP Directive, EPR provisions, and the banning of certain plastic products. The remaining provisions will be transposed in later by-laws (probably in 2022).

The existing national waste management plan will be replaced by a new plan in 2022, prepared with the support of IPA funds. Special attention will be placed on monitoring and inspection. Data from the implementation of the current plan shows that around 10% of municipal waste is prepared for reuse or recycling.

Turkey

Ms. Özlem Özer offer a description of Turkey's geographic, economic, populational and institutional characteristics relevant to marine litter management. Ms. Özlem Özer noted an increase of SUP use during the pandemic, associated with the need to provide sanitary options to the population. Although legislation provides a comprehensive framework for marine litter reduction and clean up, the presence of multiple stakeholders has been found to hinder implementation. The Ministry put into force the requirement to develop local and regional marine litter action plans, which forces the stakeholders to come together. The Ministry also created a technical committee to support the dialogue and the development of the action plans for all 28 coastal regions.

Some of the measures included in the plans include eliminating deficiencies in the waste management systems, increase control of ports and tourist areas, placing of filters at rivers, monitoring and assessment



tools, etc. The regions had freedom to decide on what measures to privilege, considering local drivers of marine litter.

Turkey has 600 stations monitoring marine pollution. They can also track marine litter, but with limitations.

The country is applying for an IPA III project on plastic marine litter. The national budget is financing other projects about micro-plastics, micro-pollutants to assess coastline pressures. Turkey remains committed to regional coordination and cooperation on the matter of marine litter.

Ms. Nazlı Yenal provided information on waste management. Turkey is seeking top transition to an integrated waste management model to respond to increasing waste generation. It initiated a zero-waste programme in 2017. The project introduced the concept of circular economy in Turkish waste management. Household waste is targeted to be recovered by 35% until 2023. The Ministry also prepared guidelines to help waste management stakeholders across the country to achieve such targets.

The national waste management plan is another key policy for sustainable development (2016-2023). The plan will undergo a revision for the next period, aiming to maximize its impact and reach a zero-waste situation, with high rates of separate collection, recycling, and reuse. Turkey already established an EPR system for several waste streams and is in the process of implementing a deposit refund system. It is expected to collect waste packaging more efficiently and to increase recycling rates.

Plastic bags use was drastically reduced (by 80%) since Turkey implemented a small fee paid the consumer.

3.6 Croatian recent developments on Marine Litter and Single Use Plastic issues - Cooperation with the neighbouring Mediterranean countries in the region

Ms. Anita Pokrovac Patekar presented the recent developments regarding marine and single use plastics in Croatia. She started by providing the institutional and legal framework and the sources of marine litter².

Croatia performed the updating the documents of the marine and coastal zone management strategy on the basis of obligations in acc. with art. 8, 9 and 10 of MSFD. However, at this moment it is impossible to set specific objectives regarding indicators and criteria for a marine litter due to uncertainty in the impact assessment and the lack of reliable baseline data. Therefore, there is a strong need to develop indicators for monitoring, which should improve the understanding of trends and define goals for the future. Furthermore, these indicators would allow the acquisition of more detailed data regarding quantity and trends in marine litter accumulation. Current knowledge on the influence of macrolitter and microlitter (e.g. microplastic) on the sea environment must be improved. Knowledge on the state, quantity, and other properties of marine litter is insufficient, hence it was not possible at this moment to define quantitative goals to achieve good environmental status (GES).

Croatia still has to adopt the SUP Directive into national waste management legislation. The legal process is ongoing. She quoted a letter from NGOs to the Ministry: "Since December 2018, the Ministry of Economy and Sustainable Development (MESD) has been passively waiting for the deadline for the transposition of SUP Directive while the problems have been escalating. It is obvious that the plastic industry's lobby is behind this delay" (June 2020).

Ms. Anita Pokrovac Patekar then focused on the sources of pollution. Ship sources require preventive actions such as the installation of waste treatment devices on ships, proper waste management in ports and appropriate inspection control of ships at port. Croatia has ratified MARPOL Conv. incl. all the Annexes and has substantially incorporated the Conv. into national legislation. The responsible authority for enforcement is the Ministry of the Sea, Transport and Infrastructure, and the Inspectors of the Port Authority.

Another source of pollution is land based. In Croatia, one of the major problems is the devastation of the maritime domain and coastal line by illegal dumping of construction waste or excavated material (stones, soil).

² For details consult the presentation.



Marine litter affects the Croatian coast severely. Since 2010 there is an increased problem of marine litter at the Adriatic coast. The most affected is Dubrovnik-Neretva County – south Adriatic area. During the wintertime, due to strong wind and heavy rains, the sea and the coast are covered with a huge amount of marine litter. Marine litter at the Adriatic coast is mostly of transboundary origin and it indicates the problems of poor waste management in the neighbouring countries. In November and December 2010 several massive pollution events took place in Dubrovnik-Neretva County. The litter consisted of all kind of organic and inorganic materials, such as plastic bottles, bags, wraps, rubber, styrofoam, medical waste, carcasses of goats, sheep, dogs, pigs, sea turtles, even dolphins. The results of investigation showed that the origin of the litter was mostly from Albania, but also from Italy, Greece and Montenegro. Following the situation, Croatia and Albania signed an agreement to fight marine pollution. However, the challenges Albania is facing with waste management makes it difficult to achieve positive outcomes. In addition, from the Croatian side, the generated waste quantities are not exactly known. The waste management system of marine litter and waste ships needs to be improved. The measures for implementation of WMP (2017-2022) are prescribed / adopted, but not implemented. Croatia also has overlapping of the responsibilities and competencies, and lack of available financial resources. In general, there is a lack of cooperation with neighbouring countries.

However, there have been useful regional projects like the DeFishGear (Derelict Fishing Gear Management System in the Adriatic region, 2013-2016) and the ML-REPAIR (REducing and Preventing, an integrated Approach to Marine Litter Management in the Adriatic Sea, 2017-2019). Another project is MARLESS “MARine Litter cross-border awareNESS and innovation actions” where scientists are developing an autonomous mobile network for floating waste collection. As many as thirteen partners from several regions of the northern and southern Adriatic are participating in the project worth a massive 4 244 726 euros. The main partner is the Regional Agency for Environmental Protection and Prevention of Veneto, and the project involves the regions of Veneto, Friuli Venezia Giulia, Apulia and Emilia-Romagna, the University of Bologna and the Cetacea Foundation from Italy, while the Croatian team consists of the Ministry of Economy and Sustainable Development, the Centre for Marine Research of the Ruđer Boskovic Institute, the University of Dubrovnik, the Regional Development Agency of the Dubrovnik-Neretva County, the Istrian Regional Energy Agency and Istria County. The project began back in June 2020.

The plastic busters project will, over a 4-year period, enable to assess the amount, sources, pathways, distribution convergence areas and effects of marine litter on biota as well as mitigate and reduce the impact of marine litter in the Mediterranean Sea. The nature and effects of plastic litter on the marine food chain, fisheries, and fishing activities, as well as human health are still largely unknown and are important issues to be investigated within this project.

She concluded with reference to other projects, such as marine litter EU funded projects for Adriatic and Ionic Sea, and other regional projects with neighbouring Mediterranean countries – MareLitt, MarGnet, etc.

3.7 Marine litter and Single Use Plastic Directive - Current developments, best practices in Danube Black Sea Region

Mr. Gheorghe Constantin presented the current developments and best practices in Danube Black Sea Region regarding marine litter and SUP directive. He started with a definition of marine litter: it is any persistent, manufactured or processed solid material discarded, disposed of or abandoned in the marine and coastal environment. Marine litter is a threat to wildlife and ecosystems: litter items kill or cause suffering to marine mammals, reptiles, fish and seabirds that are trapped in them or mistake them for food; it is a threat to human health and livelihood: litter in the sea and on beaches can cause, among others serious injuries and damages; it can cause bio-accumulation of pollutants and toxins; it is long lived: a plastic bottle poses threats to sea life and people for hundreds of years; it is difficult to track: it is almost impossible to follow the route and fate of a litter item.

The impacts of plastic litter, especially of single-use and disposable items are growing as each year more plastic waste accumulates in our water and seas. Plastics account for 85% of marine litter. Plastic is a persistent material, and often contains toxic chemicals. The most visible pollution takes place in river



floodplains and in reservoirs. Plastic pollution has impacts on biodiversity, tourism, public safety, and human health.

In the Danube River basin there are several instruments to tackle litter. The Convention for the protection of the Danube River, of which one objective is to protect the Black Sea, and to develop the Danube River Basin Management Plan. There is nevertheless a need to include plastic pollution in the third River Basin Management Plan, to increase the monitoring capacity for plastic, microplastic and nanoplastic and to develop specific projects. The Danube is the largest tributary to the Black Sea considering its water discharge. It collects the waters from 18 countries with different waste management systems. The estimated contribution of the Danube River is about 4 tones/day of litter.

The SUP Directive was initially proposed to tackle the single-use plastic items that are most frequently found on beaches, as well as lost and abandoned fishing gear. Single-use plastic items are products made wholly or partially from plastic, and which are primarily conceived to be used only once (or a few times) before they are thrown away. The SUP Directive establishes different measures that apply to different product categories, depending on various factors, such as the availability of alternatives to these products.

The categories are:

- Products with alternatives readily available (cotton bud sticks, cutlery (forks, knives, spoons, and chopsticks), beverage stirrers, straws, plates (including paper plates with plastic lining), sticks for balloons, expanded polystyrene food containers, beverage containers and cups, oxo-degradable plastics)
- Products with currently less widely available alternatives (food containers, cups for beverages (including their covers and lids))
- Products already covered by existing EU legislation (beverage containers with a capacity of up to three litres, packets and wrappers, food containers, lightweight plastic carrier bags, fishing gear)
- Other single-use plastic products (balloons, tobacco products, wet wipes, sanitary towels)

The measures include bans to reducing consumption of key single-use plastic items, and Extended Producer Responsibility schemes (EPR). The measures are specific for each type of product: market restriction, product design, marking/labelling requirements, awareness raising measures, EPR schemes, and separate collection.

Regarding the Black Sea, it has the largest river basin in the European Union: 10 large rivers discharge their waters into the Black Sea. It has a very limited connection with the Planetary Ocean through the Bosphorus straight. Marine litter is affecting the Black Sea environment particularly due to plastic pollution and fishing gears. There is a need for coordinated actions at the Black Sea level to tackle the marine litter and particularly plastic pollution. The SUP Directive implementation will contribute to the reduction of the marine litter in the Black Sea.

The Black Sea has a marine litter regional action programme developed under the Memorandum of Understanding between the United Nations Environmental Programme, on behalf of the Coordinating Unit for the Mediterranean Action Plan/Secretariat of the Barcelona Convention (UNEP/MAP Barcelona Convention) and the Permanent Secretariat of the Commission on the Protection of the Black Sea Against Pollution. The area of application is the territorial seas and exclusive economic zones of each Contracting Party with the southern limit constituted for the purposes of this Convention by the line joining Capes Kelagra and Dalyan. It includes land-based sources on Contracting Party territories such as rivers, canals, coastal establishments, other artificial structures, outfalls or run-off, or emanating from any other land-based source and any operational discharge from ships, platforms and other man-made structures at the Black Sea. The overall objective of the Black Sea Marine Litter Regional Action Plan is to consolidate, harmonize and implement necessary environmental policies, strategies and measures for sustainable integrated management of marine litter issues in the Black Sea region. Specifically, the Action programme seeks to:

- Prevent and reduce to the minimum marine litter pollution in the Black Sea and its impact on ecosystem services, habitats, species, in particular the endangered species, public health and safety



- Remove to the extent possible already existent marine litter by using environmentally respectful methods
- Enhance knowledge on marine litter
- Achieve that the management of marine litter in the Black Sea is performed in accordance with accepted international and regional standards and approaches
- Contribute to the full implementation of the Joint Work Plan on Marine Litter between UNEP/MAP and the BSC PS in order to achieve synergistic effects through coordinating activities
- Contribute to the full implementation of the Memorandum of Understanding between the UNEP/MAP-Barcelona Convention and the BSC PS

The intervention is guided by the following principles:

- Integration principle - marine litter management shall be an integral part of solid waste management
- Prevention principle - addressing the prevention of marine litter generation at the source
- Precautionary principle - lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation
- Polluter-pays principle measures are to be borne by the polluter, with due regard to the public interest
- Ecosystem-based approach - cumulative effects of marine litter on marine and coastal ecosystem, habitats and species with other contaminants and substances that are present in the marine environment should be fully taken into account
- Public participation and stakeholder involvement
- Sustainable Consumption and Production principle - current unsustainable patterns of consumption and production must be transformed to sustainable ones that decouple human development from environmental degradation

The programme requires the development of national action plans. These national plans should contribute to the development and implementation of appropriate policy, legal instruments and institutional arrangements, including adequate management plans for solid waste, which incorporate marine litter prevention and reduction measures. Likewise, monitoring programmes for the assessment of the current status of marine environment with respect to marine litter are necessary. The plans should list the measures to prevent and reduce marine litter, programmes of removal and environmentally sound disposal of existing marine litter according to the national legislation, and awareness raising and education programmes and campaigns.

The implementation of the regional action plan is in progress with the development of the institutional arrangements at the national and regional level; coordination of the monitoring and reporting at the regional level; development of a joint project at the Black Sea regional level; exchange of good practices with other marine regions and conventions, particularly with the Barcelona Convention; and participation in European projects dedicated to the SUP Directive implementation.

Mr. Gheorghe Constantin concluded with the key ideas. Plastic pollution is a significant pressure on the water status within the Danube River Basin and it contributes to the Black Sea marine environment pollution. The Single Use Plastic Directive implementation will contribute to the reduction of the marine litter. In parallel, there is a need for strengthening the cooperation between ICPDR and the Black Sea Commission, to increase the efforts for the implementation of the Black Sea Marine Litter Regional Action Plan, and to deploy more actions at the national level for integrated waste management

3.8 Marine litter and inappropriate waste management solutions

Ms. Lidija Runko Luttenberger presented the connection between inappropriate waste management solutions and marine litter. She started with a definition of marine litter³. Marine litter is mainly the result of inappropriate waste management on the land. It is a sign of alarm that measures must finally be implemented in all countries whose shores are washed by the Adriatic to handle waste in a way which does not make the sea its destination - avoiding the damage to marine ecosystems, public health,

³ See other speakers for the definition or consult the presentation.



standard of living and tourism. Marine litter is one of the clearest symbols of a resource inefficient economy.

The bulk of marine litter in the Adriatic originates from land (almost 80%), and only a lesser part is generated at the sea itself. It results from uncontrolled or poorly managed communal landfills along the sea or riverbanks, illegal dumping and mishandled waste on land, drainage and sewerage, river discharges, rain washouts and blowout from coasts during storms, tourist activities. In addition, it includes waste of all types and designated purposes which falls from ships. The waste delivered from the increasing number of passenger ships and yachts visiting Adriatic coasts additionally aggravates the problem. Most of the litter items are artificial polymer materials. The quantity and presence of plastic waste at the bottom of the Adriatic Sea is among the highest in Europe.

Considering the international dimension of marine litter, initiatives have been launched at international for a:

- 1973/78 MARPOL Convention - Annex V covers garbage that may become marine litter.
- 1972 London Convention and the 1996 London Protocol - legal instruments which regulate activities that might become litter at the sea.
- 1976 Barcelona Convention - 1980 Protocol for the Protection of the Mediterranean Sea against Pollution from Land-Based Sources.
- Marine Strategy Framework Directive - MSFD sets the framework for Member States to achieve by 2020 Good Environmental Status (GES) for their marine waters, considering 11 descriptors. Descriptor 10 focuses on marine litter, stating that GES is achieved only when properties and quantities of marine litter do not cause harm to the coastal and marine environment.

Despite the international efforts and related regulations, legal setting and implementations deficiencies remain, such as the lack of an integrated legal framework. For instance, the MARPOL Convention Annex V deals only with garbage from ships. Not all countries undertake comprehensive action to address marine litter issues resulting in shortages in implementation and enforcement of existing international, regional, national regulations and standards. Furthermore, there is a lack of awareness among main stakeholders and the public.

After setting the scene, Ms. Lidija Runko Luttenberger then proceeded to the case of Croatia and its management of marine litter. Marine litter in the Adriatic Sea presents a significant problem for Croatia. Croatia is, with its long coast, more affected by the problem, but it also contributes to its generation.

Despite this, Croatia is in chronic delay in producing its marine strategy and is passive with regard to national marine policy and protection of its sea. The 2017-2022 waste management plan admits that the system of marine litter management has not been established and that currently there are neither official data nor appropriate assessment regarding the quantity of marine waste in the Republic of Croatia.

The Marine Strategy Framework Directive lays down the obligation of the Member State to adopt a marine strategy, which Croatia has not yet fulfilled. In the draft Strategic Framework on Marine Environment and Coastal Area Management 2017-2023 marine litter is mentioned once as priority target, but not elaborated at all.

The quantity of mixed municipal waste landfilled annually in the Republic of Croatia is still far from set targets and obligations concerning Landfill Directive, WFD and Accession Treaty. It is necessary to increase separate collection and capacities for separating waste – sorting plants (for dry fraction and where appropriate mixed waste) and the capacities for treating biodegradable waste (composting plants, biogas plants). Croatia is not proactive with regard to sustainable packaging, being concerned mainly with end-of-pipe solutions, however inefficiently. Prevention, as the top priority measure in waste hierarchy is not tackled at all.

Croatia is therefore not compliant with the Waste Framework Directive; the compulsory targets are not achieved. New landfills keep being created and valuable resources are irreversibly lost. The strategies and waste management plans to date have only been realized partially, are too expensive, missed the targets, and were insufficient to ensure collection and processing of mixed waste, created RDF without consumers, and continued and relying on landfills.

The existing waste management centres also have operational problems. For nearby communities they create odours, and concentration of hazardous gases. There has been no response to these issues both



at national and EU level. Furthermore, unlawful municipal ordinances, contrary to Waste Management Act and WFD, favour collecting unsorted waste to feed new waste management centres using obsolete technology. Environmental impact assessments and environmental permits fail in their implementation. The gate fee that is now skyrocketing and will burden the population as service users, with municipalities unprepared for providing sustainable and cheaper alternatives. All these have created a negative public opinion on waste management and its financing institutions.

Ms. Lidija Runko Luttenberger highlighted recommendations from the EC in 2016 that are still valid:

- Further updates to the National Waste Management Plan, including
 - A clearer specification of what is required in respect of separate collection at the local level
 - A clear strategy for the management of municipal waste in the future, taking into account future higher targets
 - A consideration of approaches to collecting food waste
 - The introduction of a plan to extend the roll out of door to door collection systems
- Ensure a clear devolution of responsibilities down to the local level, including the establishment of a framework for monitoring performance
- Reform of funding mechanisms, including consideration of the introduction of a residual waste tax
- Activities to support waste prevention and re-use
- Roll out of PAYT systems
- Programme to support municipalities and educate householders
- Improvements in data quality and transparency.

In parallel, Croatia should adopt other measures like increasing public procurement of recycled materials, changing the commerce model to a neighbourhood centred consumption (avoiding excess packaging and transport), promoting access to tap water (less packaging for bottled water). Cooperation among stakeholders is essential too: innovations required for the transition are driven collaboratively across industry, cities, governments, and non-governmental organizations (NGOs). Collaboration would be required to overcome fragmentation, the chronic lack of alignment between innovation in design and after-use, and lack of standards.

In conclusion, marine litter in the Adriatic Sea presents a significant problem for all countries washed by the Adriatic. Marine litter mirrors waste management problem on the land. Croatia is the example of a country where substantial public money has been invested in an inefficient waste management system in spite of EU legal framework it has to comply with. Implementation proved to be the problem. The overcapacity in planned MBT plants for mixed waste is obvious given the obligations with regard to separation and processing. There is a lack of implementation of the waste hierarchy with over-emphasis on residual waste treatment. Also, roles and responsibilities among authorities at different levels are often not matching each other. The waste management centres in operation in Croatia are not equipped with the best available technology and actually place heavy financial burden, both in terms of investment, operation and maintenance on taxpayers, service users, and municipalities. Simple and inexpensive home composting and municipal composting schemes, aerobic and anaerobic, for separately collected biowaste is particularly suitable for Croatia, a country of numerous dispersed communities and few larger cities.

3.9 MSFD implementation on marine litters in Slovenia

Ms. Manca Kovac Virsek presented the experience of Slovenia with the implementation of the MSFD. She gave a brief overview of the directive, marine litter sources, its transport and accumulation. She then contextualized the marine environment of the Adriatic Sea with relevance to Slovenia: it is a small, shallow, semi enclosed basin, 1/3 of the annual mean of all rivers discharges into the Mediterranean, it is an important fishing area, it is a significant transport route with 19 seaports, and more than 1 million tons of cargo per year. The Slovenian coast lies in the North Adriatic Sea and is 43 km long.

Slovenia organized pilot monitoring activities for macro-litter and micro-litter on the sea surface, sea floor, beaches, rivers and marine biota.



The macro-litter observation on the sea surface was done with visual inspection and net fishing from boats. Each transects was observed for 30 min from the boat at a speed 2 – 3 knots. Simultaneously, sampling of micro-litter is done four times per year with 5 transects per sampling, harmonized with water bodies. On the sea floor, there is a bottom trawl survey 4 times a year. There are 3 transects per sampling on the open sea. It is done simultaneously with MEDITS program, where monitoring of bentos biota is carried out. In beaches, 4 areas are selected with transects 100m by 10m. The sampling is done seasonally. On riverbanks and floor, samples are taken 4 times a year from 3 by 100m transects close to the river spring, near urban areas and close to river outflow. River flow is monitored with a net set in place for 24h.

The micro litter on the sea surface is observed through sampling by towing the manta net along the side of the vessel for 30 min with speed 2 – 3 knots. The sampling is done on 5 transects, harmonized by water bodies, 4 times per year. On the sea floor it is sampled using the Van Veen grab, 4 times per year, simultaneously with sampling micro-litter on the sea surface. There are 6 sampling locations, 3 samples per location. The microplastics are separated by density separation method using saturated NaCl solution, followed by visual identification using stereomicroscope and chemical identification with FTIR spectroscopy. Laboratory analysis based on BASEMAN protocol. In beach sediments, sampling is done on 2 beaches in 3 linear transects, with 3 samples per transect and 0.5 kg of sediment per sample. Sampling is seasonal. The analysis of sediments is done by density separation method with saturated NaCl solution, followed by stereomicroscopy and FTIR analysis. Methodology based on BASEMAN protocol. The sampling in biota is done in fish and mussels with 50 individuals per species. The analysis is done by degradation of tissue by 10% KOH and filtration followed by stereomicroscopy and FTIR spectroscopy. In rivers, the sampling is done with water pump and filtration through the sieve 100 um from the bridge or riverbank. 3 samples of one cubic meter of water. Seasonal sampling. Laboratory analysis of samples without pre-treatment, using stereomicroscope and FTIR analysis.

Ms. Manca Kovac Virsek concluded that differences in methodologies among studies makes it difficult to compare the results with other studies from the Mediterranean region. In the future, the standardization of all methodologies and its implementation in monitoring programs of each EU country is crucial. Only on the basis of regular measurements of marine litter with the same methodology can there be conclusions on which seas or regions are more or less contaminated by marine litter and observe trends.

3.10 The Impact of Marine Litter in Marine Protected Areas (MPAs) in the Mediterranean Sea

Mr. Vangelis Papathanassiou presented the impact of marine litter in marine protected areas in the Mediterranean and reviewed specific projects for its positive outcomes. The situation in the Mediterranean is as follows:

- First tourist destination in the world (av: 320M visitors/y); receives waste from coastal zones, many large rivers flowing from largely urbanized cities contributing with >200t of plastic into the sea/year.
- >20% of the global maritime traffic passes through the Mediterranean Sea.
- Studies on marine litter mainly through projects, since the 90's, but more attention was given to the issue after 2010 when attempts were made to assess trends
- Some of the largest amounts (208 – 760 kg/year) of municipal solid waste (MSW), generated annually per person occur in the Mediterranean Sea
- Particles: 5 trillion are found afloat in the world ocean; 250 billion in the Mediterranean;
- Floating litter: in the Levantine Sea one finds the largest amount of floating litter (up to 64 million items/km²) (plastics is up to 95-100% of the total)
- Seabed: 0.5 billion items with densities sometimes >100,000 items/km²; (plastics >50 %)
- Microplastics: occurred at all seasons with patchy distribution; at the surface of the Med Sea >100 000 items/km² and maxima reach more than 64 million floating particles/km² (Van Der Hal et al., 2017).
- A Regional Plan on Marine Litter Management in the Mediterranean exists (UNEP/MAP); most countries have established national monitoring programmes for marine litter, which will deliver necessary data in line with the Integrated Med Monitoring and Assessment Programme (IMAP)



- The Regional Plan is implemented in synergy and in conjunction with the EU Plastic Strategy, Circular Economy Action Plan and the EU Directive for the reduction of the impact of certain plastic products on the environment

The first project/initiative Mr. Vangelis Papathanassiou noted was the Regional Plan on Marine Litter Management in the Mediterranean (UN Environment):

- Development and Implementation of National Monitoring Programmes (Albania, Algeria, Bosnia and Herzegovina, Egypt, Lebanon, Libya, Montenegro, Morocco, Tunisia)
- 19 National Action Plans/Programmes of Measures addressing marine litter;
- Banning of single-use plastic bags in 17 Mediterranean Countries (Regulations/National Laws including total and partial bans, taxes/levies);
- 8 Mediterranean Countries – Legislations and Policies for Recycling;
- More than 20 Marine Litter Pilots in 9 Countries;
- Civil Society & NGO Involvement

Nevertheless, problems remain to be solved:

- Long-term information on marine litter and its impacts on biodiversity, human activities and well-being is missing
- Need of harmonised monitoring protocols
- Empower local managers, especially in Marine Protected Areas (MPAs), with the necessary tools and knowledge to tackle marine litter
- Clearly defined baselines and reduction targets to measure trends and progress are missing
- Ensure effective cross-border cooperation and coordination, especially with non-EU countries, in the implementation of existing policies (UNEP/MAP role very important)

Also important is the ACT4LITTER (2016-2020), an Interreg Med funded project, aimed to facilitate efforts for tackling marine litter in MPAs through effective and targeted measures towards reaching their conservation targets. The project developed action plans to curb marine litter in 9 MPAs throughout the Mediterranean and a list of priority actions to curb marine litter in Mediterranean MPAs.

The third project mentioned was AMARe, that aims to develop shared methodologies and geospatial tools for multiple stressors assessment, coordinated environmental monitoring, multi-criteria analyses and stakeholders' engagements. The final aim is to scale up strategies and recommendations at transnational level adopting an ecosystem-based approach considering the goals of the Marine Strategy Framework Directive (MSFD) across MPAs (also for biodiversity monitoring).

The fourth project is Plastic Busters MPAs: Preserving biodiversity from plastics in Mediterranean Marine Protected Areas (2018-2022). It seeks to maintain biodiversity and preserve natural ecosystems in pelagic and coastal MPAs, by defining and implementing a harmonized approach against ML. In the project, EU and IPA countries for the first time join forces to i) diagnose ML impacts on biodiversity in MPAs, including the identification of "ML hotspots", ii) define and test tailor-made ML surveillance, prevention and mitigation measures in MPAs; iii) develop a common framework of ML actions for Interreg Med regions towards the conservation of biodiversity in Med MPAs.

The fifth project is the CLAIME-H2020 which seeks to advance knowledge on the current status of marine plastic pollution, provide innovative technologies able to reduce the amount and impact of plastic pollution on the ecosystem based services of the Mediterranean and Baltic Seas, set the basis for operational forecasting of the impacts of marine plastic litter pollution on ecosystem services, provide advice for management decision making, including fostering social acceptance and assessment of economic impacts.

Mr. Vangelis Papathanassiou finished with a warning by quoting from the EEA report "Towards a cleaner Mediterranean (July 2020)": "Recent efforts to curtail some single-use plastic items are likely to have some positive impact on inputs of plastic into the environment. However, these might be insufficient to compensate for the increase in plastic-waste generation resulting from the drivers of population, tourism and consumption. In addition, there are other sources of marine litter. Overall plastic tends to accumulate in the environment if both prevention and remediation measures are not implemented."



3.11 AQUA-LIT Project: Working with the Aquaculture sector to improve Marine Litter management"

Ms. Mariana Mata Lara presented the AQUA-LIT project. AQUA-LIT aims at increasing the understanding, awareness and availability of solutions that tackle marine littering, so the increase on aquaculture production does not imply an increase on marine littering. The project focuses on the Mediterranean Sea, the Baltic Sea and the North Sea, with the expectation that results can also be applied to the Canary Islands and the Azores archipelago.

The project prepared a Marine Litter inventory (knowledge base on marine litter from aquaculture activities. This database includes information on the main types of debris as well as the quantities in which they occur in the marine environment, identifying specific sources of marine littering coming from aquaculture activities), a regional maps on aquaculture litter (Sea basin maps generated for visualising information on the geographic position of aquaculture facilities, in combination with the quantitative data of aquaculture related litter), and a list of available policy tools and measures (overview of the global, regional, European and national action plans and documents that contain measures to reduce or avoid marine litter from the aquaculture sector).

It has done this through learning labs (workshops) and is now seeking to create a toolbox against marine litter addressing prevention and reduction, monitoring and quantification and removal and recycling. The toolbox will be available in December 2020.

As a follow up, the project hopes to provide foundations for marine litter policy, encourage funding, transfer results to other areas and exploit its own results for further activities.

3.12 Coordinated approach for tackling sources of litter that cause specific problems in MPAs. Recommendations based on Greece's experience

Mr. Vangelis Papathanassiou presented recommendations based on Greek experience to tackle sources of marine litter. There have been no specific actions/projects in MPAs in Greece. However, there have been studies and projects that have specific targets on Marine Litter (some including MPAs). Mr. Vangelis Papathanassiou gave some data on marine litter in Greece: spatial distribution of macro litter on the sea floor, beach litter, spatial distribution of floating microplastics, impact on sea turtles (72% ingested plastic, 50% of items were macroplastic (>25 mm)), showing the prevalence of pollution in Greek waters, just like in the rest of the Mediterranean.

Mr. Vangelis Papathanassiou then presented the MELTEMI Interreg project, an Innovative Approach for the Mitigation of Marine Litter. The project aims to create a common transnational action plan proposal, create national action plans proposals, review existing tools and best practices, assess marine litter in beach and sea through a transnational network (Albania, Greece, Cyprus, Bulgaria), and educate stakeholders.

Another project that might hold relevant lessons is LIFE DEBAG. The project developed and implemented a campaign at both national and local level to prevent and reduce plastic bag pollution in the marine environment. The dissemination and the results of the Project had a positive impact at a national level, the basic "pilot" of the implementation's actions is the island of Syros. Why Syros? It is the capital of the Cyclades, a touristic hub, has an engaged population and a very supportive mayor. The project had door-to-door campaigns and distributed over 10 000 cotton bags with the project's logo and motto: "Leave plastic bags in the past... and not in our seas". It was the first time an intensive marine litter awareness and information campaign has been systematically monitored for its impact (e.g. surveys of supermarket customers, monitoring the plastic bags through beach clean-up campaigns, airborne drone and underwater camera surveys). 200 shop owners signed a voluntary agreement to reduce the use of single-use plastic bags. Three 'plastic bag free weeks' were held on the island, with concerts, events, workshops, information kiosks.

The project also submitted recommendations on measures to be taken in order to reduce plastic bag consumption to a special hearing dedicated to single use plastic carrier bags of the Hellenic Parliament's special Committee for the Environment, which later resulted in Joint Ministerial Decision 180036/952 / 08.10.2017. The project also served a seed for similar other projects throughout the country.

As a result of all the above efforts, Greece developed a marine litter monitoring schedule:



- Macro-litter on the coast: monitoring will be carried out seasonally near the six main cities of Greece, i.e. Piraeus, Thessaloniki, Patras, Volos, Heraklion, and Alexandroupolis
- Macro-litter on the seafloor: monitoring will be based on the data collected in the Data Collection Framework (DCF) network. The monitoring of the litter accumulated due to hydrodynamics in canyons descending from the continental slope and in the bathyal plain (depths more than 500 m) will be carried out in one representative site every six years
- Micro-litter floating on the sea surface: The monitoring of floating micro-plastics will be carried out, within the DCF network
- Micro-litter in fish species: the samples of fish will be collected in the DCF network

3.13 Raising Awareness in Combating Marine Litter: existing policies, including the Extended Producer Responsibility provisions of the recent Single Use Plastics Directive

Mr. Wim Van Breusegem presented the Extended Producer Responsibility provisions of the Single Use Plastics Directive. In May 2018, the EC put forward a legislative proposal seeking to address the issue of marine plastic litter. The proposal built on the 7th EAP (adopted by the EU in 2013), which sets out the need for reducing. The 2015 CE Action Plan, which announced action to significantly reducing marine litter. The Strategy for plastics in a circular economy (Jan. 2018), which states that the steady increase in plastic waste generation and the leakage of plastic waste into the environment must be tackled, in particular into the marine environment. The final act was signed (by the presidents of the European Parliament and Council) on 5 June 2019.

Its objective is to prevent and reduce the impact on the (aquatic) environment of certain SUP products, products made from oxo-degradable plastic, and fishing gear containing plastic. It also seeks to promote a transition to a circular economy, that gives priority to sustainable and non-toxic re-usable products and re-use systems rather than to SUP products, and to reduce the quantity of waste generated.

The approach contains measures tailored to the products covered, for instance, the availability of suitable and more sustainable alternatives, the feasibility of changing consumption patterns, and the extent to which they are already covered by existing EU legislation. The SUP Directive supplements existing legislation by providing specific objectives and measures to tackle the most littered SUP and FG, thus filling the identified gaps in the existing actions and legislation.

The most relevant existing legislation is the Waste Framework Directive. The WFD dictates that MS must identify products that are the main sources of littering and take measures to halt the generation of marine litter.

All waste should be subject to collection and proper treatment. The Municipal waste recycling targets (by weight): at least 55% by 2025, 60% by 2030 and 65% by 2035 will increase the capture of plastic waste, but MS cannot reach these targets without enhanced efforts on littering. The WFD has effects mainly on increasing recycling, with less impact on littering and leaves the choice of measures to the MS. The SUP Directive introduces upstream measures aiming to reduce consumption, which is more efficient. It also prescribes targeted measures to tackle SUP.

The WFD, is supplemented by the SUP Directive, in establishing EPR schemes to cover the costs of prevention of littering, cleaning up, transporting and treating litter resulting from the SUP products, in addition to the financial responsibility defined in the EPR provisions of the WFD.

The Directive on Packaging and Packaging Waste is another piece of relevant legislation. It establishes that all EU MS must implement EPR schemes for all packaging by 2025 and achieve a recycling target of 50% for plastic packaging by 2025, and of 55% by 2030. The Plastic Bag Directive, amending the PPWD, lays down consumption reduction objectives for lightweight plastic carrier bags. The SUP Directive provides for complementary EPR (covering clean-up) and awareness raising measures.

Continuing with the Marine Strategy Framework Directive, it requires MS to establish Programmes of Measures to ensure that the quantities and composition of marine litter do not cause harm to the marine or coastal environment as part of the overall objective to reach 'good environmental status' of marine waters by 2020. For specific items, the SUP Directive goes further than the MFSD requirements by regulating individual sources of pollution (thanks to the identification of drivers and pathways of marine plastic pollution).



Another directive is the Urban Wastewater Treatment Directive. It provides requirements for collection and treatment of waste water and quality criteria treatment and it allows capturing a significant part of the pollution emitted, but is not sufficiently effective for storm water overflows capture and treatment, some flushed items (such as plastic cotton bud sticks and sanitary applications), which are not well captured in the existing facilities (and thus become marine litter). The SUPD complements the Directive by providing to act upstream of wastewater treatment, to prevent flushing of SUP items, through awareness raising, extended producer responsibility, and labelling requirements.

The Port Reception Facilities Directive aims to reduce discharges of ship-generated waste and cargo residues into the sea. It requires EU MS to implement a 100% indirect fee system for MARPOL Annex V waste (other than cargo residues) in order to ensure a right of delivery without any additional charges based on the volume of waste delivered. Individual fishermen are thus not penalised for bringing waste, including derelict FG, ashore. However, port fees will increase if more waste is brought ashore and waste handling facilities need to be upgraded, especially in the small fishing ports that many vessels use. The EPR scheme of the SUP Directive strengthens the management of FG waste once landed in port. It ensures that producers of FG take over the costs of managing the waste stream and it contributes to easing cost burdens for small scale ports and/or fishing operators who may face higher costs linked to increased collection and treatment of waste FG once delivered in ports.

The Fisheries Control Regulation requires to carry retrieval equipment on board, to retrieve lost gear or to report its loss in case it cannot be retrieved. But there is no particular incentive for fishers to increase the quantity of gear they do not report as lost and bring back to shore. The EPR scheme of the SUP Directive improves the management (recycling) of waste FG returned to shore and ensures its financing. In terms of the provisions of the directive, the SUP bans products for which there are suitable and affordable alternatives such as cotton bud sticks, cutlery, straws, etc. For the products for which there is no suitable alternative it prescribes reduction measures. The MS can decide on the measures, but the SUP Directive gives preferred measures. They must incorporate the measures in their national prevention/waste management plans and they must monitor consumption and measures taken and report progress to the European Commission.

The SUP requires separate collection for plastic bottles with a target of 90% by 2029. The measures are to be decided on by the MS, but the Directive gives preferred policy measures like setting separate collection targets for relevant existing EPR systems and setting up deposit-refund systems.

In terms of design requirements, the SUP establishes mandatory recycled plastic content of at least 25% by 2025 (for PET bottles) and 30% by 2030 (for all bottles), tethered caps and lids (which remain firmly attached to the bottle once it is opened and also during use) for bottles and composite packaging.

Certain products are required to have markings. The following products, or their packaging, must be labelled: sanitary items, wet wipes, tobacco products with filters, cups for beverages. The labels must inform consumers about appropriate waste management options for the product or about types of waste disposal to be avoided, the presence of plastics in the product as well as the negative environmental impact of littering.

In terms of awareness raising measures, consumers must be informed. Consumers of SUP products and users of FG gear containing plastic must be made aware of the availability of re-usable alternatives, re-use systems, the most appropriate waste management options available and/or which waste disposal options are to be avoided, best practices with regard to sound waste management, the environmental impact of littering and other inappropriate waste disposal, the impact of inappropriate waste SUP disposal on the sewer network. Producers of SUP products and FG containing plastic should cover the costs of the awareness raising measures as part of their EPR obligations.

The Extended Producer Responsibility (EPR) provisions put an obligation on producers to take operational or financial responsibility for the end-of-life phase of their products, which should stimulate better design to reduce such costs. EPR schemes form an essential part of Integrated Waste Management Systems. MS must ensure that the producers of SUP products cover the costs pursuant to the EPR provisions in the WFD and the PPW Directives. The producers must, insofar as not already included following both Directives, cover the costs of collection, including the infrastructure and its operation, transport and treatment of the waste that is discarded in public collection systems, cleaning up, transporting and



treating litter resulting from the SUP products, data gathering and reporting, awareness raising measures. MS must define in a clear way the roles and responsibilities of all relevant actors involved. (for packaging, in line with the PPW Directive). The costs that the producers cover must not exceed the costs that are necessary to provide the services in a cost-efficient way. The costs of cleaning up litter must be limited to activities undertaken by public authorities or on their behalf and must be calculated in a way that allows them to be established in a proportionate way.

The MS must transpose the SUP Directive into their national law by 03/07/2021. However, the SUP Directive has differentiated dates for transposition concerning certain measures:

- The bans and the marking obligations: implementation by 03/07/2021
- The product requirement regarding tethered caps and lids (that are to remain attached for all beverage containers up to 3 liters): implementation by 03/07/2024.
- The additional obligations for EPR:
 - Implementation by 31/12/2024.
 - Except for tobacco products: implementation by 05/01/2023.

3.14 Regional cooperation initiatives in the EPPA beneficiaries (landlocked)

The representatives of the landlocked EPPA beneficiaries presented their initiatives and actions contributing to marine litter management issues.

Kosovo*

Ms. Manduha Gojani informed the participants about Kosovo*'s water management. The Water Framework Directive is transposed and under implementation, including the development of river basin management plans. Kosovo* does not have any laws addressing marine litter directly. However, the river basin water authority identified waste management as a contributor to downstream marine litter. Therefore, Kosovo* expects to contribute to the reduction of marine litter through its river basin management and waste management policy, including local plans.

Kosovo* is also amending legislative tools to better regulate waste packaging and single use plastic bags. There are also plans for a deposit refund scheme, including a fee for plastic bags and waste packaging. The amendments will partially align Kosovo* with the SUP Directive.

North Macedonia

Ms. Ana Karanfilova Maznevska updated the participants on a new law on waste management being adopted in North Macedonia (by the end of 2020). It presents a coordinated, national approach of waste management, with the definition of targets. The law seeks to introduce a preventive attitude to the country's waste management. In parallel, the country is also preparing a waste prevention plan, based on which follow up national policies and activities are being built. Those include awareness raising, effective use of recycling facilities, opportunities for re-use. EPR is already introduced in North Macedonia, with a law on packaging waste in 2010, and other regulations on waste streams, adopted recently.

3.15 Transposition and alignment with Marine Strategy Framework Directive in new MS - Republic of Croatia

Ms. Anita Pokrovac Patekar presented the transposition and alignment process with the Marine Strategy Framework Directive in Croatia. The Ministry of Environment and Energy (now Ministry of Economy and Sustainable Development – MESD) has a long history related to marine protection. Since 1970, the Marine Protection Service is established in Rijeka. Several projects related to maritime protection (1972 – UNDP project related to Mediterranean and Adriatic zone / sub region protection, etc.) have been implemented. The environmental management of coastal zone inc. spatial planning was introduced in 1972. Croatia member of Barcelona Conv. since 1991. Croatian legislation has confirmed to MSFD since 2017, however Croatia still has to ensure timely reporting of the different elements under the MSFD.



Implementation of MSFD is a collective process that requires cooperation, participation and an active role of all stakeholders - relevant ministries, scientific institutions, county and local institutions, civil society. The implementation started in Croatia in 2012 incl. cooperation between MESD, UNEP/MAP PAP/RAC and GEF MedPartnership Project. The Marine Strategy and Integrated Coastal Zone Management regulation was adopted in 2014, amm. in 2017 and 2018.

The implementation cycle in Croatia proceeded as follows:

- In 2012, the initial assessment of the current environmental status of national marine waters and the environmental impact and socio-economic analysis of human activities in these waters
- In 2012, the determination of what GES means for national marine waters
- In 2012, the establishment of environmental targets and associated indicators to achieve GES by 2020
- In 2014, the establishment of a monitoring programme for the ongoing assessment and the regular update of targets
- In 2015, the development of a programme of measures designed to achieve or maintain GES by 2020

Regarding the implementation of MSFD monitoring, in December 2014 Croatia adopted the Decision of Action Programme for the Strategy of the management on marine env. and coastal area - Monitoring and observation system for assessment of Adriatic Sea state according to MSFD (OG 153/2014). The yearly costs of monitoring according to MSFD for Croatia (OG 153/2014) were estimated to 12.028,362,00 kunas (no VAT). The MESD - Institute for Env. and Nature Protection – is in charge of implementation of the Monitoring Programme since 2016. The implementation of Monitoring Programme 2014-2020 also includes monitoring according to the Water Framework Directive, the Habitat and Bird Directive and the Common Fishery Policy.

The national reference marine center (2018 - 2024) systematically monitors and evaluates the state of the marine environment, fisheries and mariculture, and the sea for bathing under monitoring programmes carried out by competent authorities and institutions under special regulations and international contracts. The Institute of Oceanography and Fisheries, Split, Croatia is in consortium with the Rudjer Bosković Institute, Zagreb, Croatia. In particular, they:

- perform physics, chemical oceanography and sedimentology, plankton and shellfish toxicity, microbiology, ichthyology, fisheries biology, benthos and Aquaculture laboratory
- conduct research in the field of biological, chemical and physical oceanography, sedimentology and fisheries biology and mariculture
- involved in international and national scientific, technical and data management projects and in implementation of IMAP, WFD and MSFD through conduction of Croatian monitoring programs

Data are collected for the assessment of the condition by means of eight descriptors:

- D1 – biodiversity
- D2 – non-species
- D4 – nutrition networks
- D5 – eutrophication
- D7 – permanent changes in hydrographic conditions
- D8 – pollutant concentrations
- D10 – marine litter
- D11 – underwater noise

All information is available in the portal MORE, an integrated web platform for all databases related to maritime environment and national monitoring of maritime environment:

<http://baltazar.izor.hr/portal/pocetna>

Since 2013, the EC launched a new joint initiative on integrated coastal management and maritime spatial planning. EU MS are to establish a framework for maritime spatial planning and integrated coastal management. It promotes the sustainable growth of maritime and coastal activities and the sustainable use of coastal and marine resources. Maritime spatial planning and integrated coastal management will help EU MS in the implementation of several other EU policies relevant for marine and coastal areas:



- MSFD
- WFD
- Natura and Habitats Directives
- Biodiversity Strategy
- Integrated Maritime Policy
- Strategy on Climate Change Adaptation
- Renewable Energy Directive
- Motorways of the Sea Initiative
- Common Fishery Policy

MS will be required to establish and implement maritime spatial plans and integrated coastal management strategies. Maritime spatial plans should at least map the actual and potential spatial and temporal distribution of maritime activities in marine waters. Integrated coastal management strategies should at least contain an inventory of existing measure applied in coastal zones and an analysis of the need for additional action for the appropriate management of activities in coastal zones. The plans and strategies will need to be mutually coordinated, provided they are not integrated, and be reviewed at least every 6 years.

Croatia had its first experience with ICZM in the County Sibenik-Knin. The plan was financed by GEF under UNEP and by World Bank. It involves several cooperating institutions - PAP/RAC, Ministry of Environment, The County Sibenik – Knin administration, PB/RAC. THE plan is based on THE signed Protocol on ICZM in the Mediterranean Sea. It is in the conformity with the Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean and its Protocol. The main aim of the adopted Plan is the improvement of management in marine environment and coastal zone in the County Sibenik – Knin. However, the adopted plan does not have legal power. The Mediterranean Climate change Adaptation Awards 2018-2019, in its category "Methods and Tools for Public Policy Design", was awarded to the County of Šibenik-Knin for its Coastal Plan taking into account the variability of climate change. The participative planning approach taken, initiated in 2014, already bears some fruits. Officially adopted by the authorities, it guides urban development projects and investments of the targeted municipalities. The latter is also the Overall Winner to encourage the dissemination of this planning process.

3.16 Challenges and Opportunities for SUP Directive implementation in Romania

Mr. Gheorghe Constantin presented the challenges and Opportunities for SUP Directive implementation in Romania.

Romania is in process of transposition of SUP Directive. National authorities involved in the transposition and implementation have been identified. Working Group for transposition has been established, work on the identification of the extent of SUP problem is in progress and the authorities are facilitating public information and participation.

Taking into account the impact that the implementation of the normative act will have on the social, economic and environmental capital of Romania, and taking into account the diversity of areas for which each Member State must establish compliance measures, the central authority for environmental protection proposed an approach corresponding to the titles of the articles in the Directive, namely:

- reduction of consumption;
- restrictions on placing on the market;
- product requirements;
- marking requirements;
- extended producer responsibility;
- separate collection;
- awareness measures;
- information and reporting systems;
- sanctions.

The authorities involved are:

- Ministry of Environment, Waters and Forests



- Ministry of Agriculture and Rural Development
- Ministry of Education and Research
- Ministry of Economy, Energy and Business Environment
- Ministry of Public Works, Development and Administration
- Ministry of Health
- Ministry of Transport, Infrastructure and Communications

The working group for transposition is composed of National authorities, National Agencies (National Agency for Fishery and Aquaculture, National Environmental Agency, Romanian Naval Authority, National Environmental Guard, Danube Delta Biosphere Administration, National Authority for Consumers Protection, National Institute for Public Health), Research institutes (National Institute for Environmental Protection), the Romanian Accreditation Association, and the Romanian Standardization Association.

In order to identify the extent of the problem, research is being done by the county environmental protection agencies / Bucharest environmental protection agency. The research includes those operators which are carrying out single-use plastic production activities (in Romania) from the category of those listed in the Directive. The activity has so far resulted in an inventory of producers in Romania. There are 102 economic operators that make products from the category of those listed in part A and part B of the Annex to the directive, 43 economic operators making products from the category listed in Part A and Part B of the Annex to the Directive, from materials other than plastic, intended for multiple uses / having a reusable / recyclable character, and 204 manufacturers of plastic from recycled waste plastics.

In terms of public information and awareness, an information brochure for the general public (RO and EN) was developed and it is available on MEWF website. It was followed by a document entitled "Questions and Answers" on Directive 904/2019 and posted on the MEWF website. The information was brought to the attention of the factors directly interested in the effects of the subsequent implementation of the provisions of Directive 904/2019 (the Ministry of Economy, the environmental authorities in RO).

In order to obtain information with reference to legal provisions provided by Directive no. 904/2019 which are already included in other national normative acts, and in order to avoid legislative overlaps and to make the legislative connections that will be mentioned in the transposition act, the country is running a questionnaire on SUP among different institutions. In addition, there is an interinstitutional dialogue process regarding SUP responsibilities. This has included:

- Informing the authorities with responsibilities in the field of fisheries (Romanian Naval Authority, National Agency for Fisheries and Aquaculture) of the results of studies carried out by the consortium led by Ramboll on fishing gear.
- As waste and products are regulated separately in the European Union, the Ministry of Environment, Waters and Forests has collaborated and will continue to work with the Ministry of Economy, Energy and Business Environment to make the best decisions to reduce the impact of products from plastic on the environment and the reorientation of production markets towards other types of products compatible with the recycling / recovery industry, as well as the promotion of consumption patterns without affecting the support capacity of the components of natural capital.
- Informing the Consumer Protection Authority on the consumer related articles of Directive 904/2019.

3.17 Exceptional value of Adriatic karst

Ms. Lidija Runko Luttenberger presented the natural value of the Adriatic karst. Karst denominates a terrain with specific hydrogeological and geomorphological features which emanate in soluble rocks. It represents a resource of global-level significance owing to exceptional geodiversity and biodiversity abundance and the water it holds. The Dinaric system (Dinarides) represents a geologically heterogeneous, south European orogenic belt of the Alpine mountain chain (Alpides). The main orientation of the Dinaric system is NW-SE, parallel to the Adriatic Sea. It is a long mountainous structure with numerous intermountain depressions including large karst poljes and valleys created by perennial or sinking streams. Dinaric karst or carso or kras or krš is a geoecological complex which extends from



Udine in Italy to Skadar lake and encompasses half of the Adriatic subsea. It includes lesser part of Slovenia, about one third of Bosnia and Herzegovina, half of Croatia and more than 60% of Montenegro. In Croatia karst is divided in Adriatic area (islands and coastal belt), high karst and inner shallow karst. The coast of the Adriatic owes its aspect and characteristics to karst processes in carbonate rocks - the length of as much as 5835 km (about 74 %) to numerous islands, peninsulas and bays and it is one of the most indented worldwide. Dinaric karst is one of the most precious karst phenomena in global terms, and at the same time the greatest continuous karst area in Europe. Modern holistic science of karst perceives it as one of the most complex ecological systems, and Dinaric karst as one of the most valuable examples worldwide.

Karst usually occupies much larger space than bare rocks that distinctly mark the landscape. It may be covered by pastures or forests, but porous features of its carbonate rocks can easily be recognized by caves, sinkholes or scarce river network. The characteristic of Dinaric karst is exceptional thickness of the rocks which naturally reach 8 km, and somewhere, due to tectonics even twice that value.

Dinaric Karst region of Croatia is an area where some of the crucial Croatian ground water resources are situated. Due to the extensive secondary porosity of the limestone which predominates, almost whole area is composed of highly permeable rocks, while flysch and dolomite layers and zones commonly have function of groundwater barriers. Water reserves within the carbonate aquifers of Croatia are estimated to be 6470 million m³/year and represent the bulk of Croatian strategic water reserves. These reserves are however more difficult to estimate and utilize when compared to aquifers with intragranular porosity in continental part of Croatia. Karst underground holds 90 pct of Croatian water resources, of which 99 pct are in underground cracks - aquifers such as Ombla discharge water from cave passages in few days, but water is discharged for further 15 months from cracks.

Dinaric karst is not only the area of geodiversity, but an exceptional biological diversity. The countries with their territory on Dinaric karst are the richest in Europe based on criteria of the number of flora species per unit area. Variation between bottom and top level of underground waters in karst – ecotone - in Dinaric karst may fluctuate to 300 metres and constitute the most valuable feature of underground habitats and are generators of species - endemic underground fauna and underground habitats made of infinite network of minute cracks in carbonate rocks. Dinaric karst is one of the two most valuable karst phenomena on the globe – is home of at least twice the global average of underground species number (at least 1240 different species living in eternal darkness of underground cavities – 450 aquatic and more than 790 terrestrial. Some of those species are extremely vulnerable.

Real problems arise from the fact that Croatian public generally does not perceive karst as relevant – there is a need for novel ecological and culturological education. Denuding of karst is the result of existential pressures of inhabitants whose numbers were booming – they ravaged vegetation cover in concentric rings around towns and villages. Karst presently does not fare well under the pressures of construction of mega-infrastructure, storage reservoirs, apartment building mania along the coast, etc. It is a cheap raw material whose value is manifested through modest concession fee amounts.

In karst regions the unity of biotic and abiotic nature is manifested in unprecedented way through complex relationship between structure, hydrology and hydrogeology of carbonate rocks, and numerous associated threatened species and habitats. Unique karst phenomena such as sinking rivers, surface and underground water bodies, as well as caves and multiple smaller voids represent an ecological niche for variety of organisms protected on the national and EU level. One of the main provisions of EU nature legislation is European ecological network Natura 2000 that aims to conserve selected threatened habitats and species of the EU importance. Natura 2000 covers 48% of the karst area of Croatia.

The Dinaric area contains large portion of Croatian crushed stone and dimension stone reserves. The simple GIS analysis shows that 70% (176) out of 253 of the dimension stone and crushed stone exploitation fields in Croatia are located within the Dinaric Karst region. Approximately 1/3 of these quarries are located within the Natura 2000 proposed SCI sites. Dimension stone exploitation includes activities that may adversely impact the ground and surface water (fuel and oil spills, unintentional release of various hydrocarbon based lubricants, untreated waste waters, dust loaded surface run off and other) as well as disturbance related to truck transport.



In conclusion, there is an insufficient level of awareness of the specific features and susceptibility of karst in the Republic of Croatia. Karst is not just tourist attraction and expenditure in terms of monitoring, but the heritage and long-term economic resource. Availability of data and comprehensible indicators would ensure sound public participation and consultation in deciding on land use. It is necessary to devise the methods of developing sufficiently responsible relationship of the public towards karst, and of decision makers, with the aim of achieving proper valuation and preservation of that national resource. Appropriate protection of Dinaric karst should protect it from overdevelopment, overexploitation, and destruction of the natural capital it constitutes.

4 Conclusions

The workshop brought together the sea-based and landlocked beneficiaries of the EPPA project to discuss marine litter prevention and management strategies, in the context of the EU's related policies, regional cooperation and national efforts. The EC provided an overview of the marine litter situation in Europe and its tools to fight it. The European Environment Agency presented its Marine Litter Watch Assessment initiative, based on beach collection of waste and the forthcoming assessment report. The report will provide a source-to-sea evaluation of marine litter.

Recognizing the importance of land-based pollution in the build up of marine litter, the participants discussed the importance of establishing an integrated waste management system, as part of a circular economy approach to sustainable development. Attention was given to the impact of inappropriate waste management solutions to the production of marine litter using Croatia's example. There was also a detailed discussion of the content, aims and prescriptions of the Single Use Plastics Directive, which most beneficiaries are transposing or preparing to transpose.

Concrete examples of the MSFD and SUP Directive implementation by Member States were provided (Croatia, Romania, and Slovenia). In relation to MSFD and Mediterranean marine protected areas, the participants were presented with best practices on the monitoring, prevention, and removal of marine litter of several projects, including those implemented by Greece.

The beneficiaries reported on recent developments of their legislative frameworks and strategic planning to tackle marine litter. Two perspectives were offered: those of the sea-based countries and those of landlocked countries. It was concluded that both must cooperate at regional level to ensure the prevention of further littering of the Adriatic and Ionian Seas. The workshop was closed with an awareness raising presentation on the exceptional value of the Adriatic Karst as an ecosystem's platform, that can be mobilized to preserve both marine and land biodiversity.

Workshop outputs

The workshop's main outputs were:

- Strengthened capacity to address the implementation challenges of preventing and managing marine litter.
- Raised awareness on the latest policy developments and tools related to marine litter at EU level.
- Raised awareness of the cross-sectoral nature of marine litter: connection to SUP, MSFD, Circular Economy Action Plan, as well as the broader context of the EU Green Deal.
- Exchanged experiences in the prevention and management of marine litter between EU Member States and the EPPA beneficiaries.
- Raised awareness on the latest marine litter funded projects relevant for Adriatic and Ionic Seas
- Increased regional dialogue on marine litter prevention and management.
- Identification of national obstacles (involvement and commitment, data and methodologies, coordination and cooperation, capacity building needs) towards the implementation of the EC policies, strategies, and directives.
- Discussion on the needs of the countries and possible options of support through the activities of EPPA project, including training needs.



5 Evaluation

The participants were asked to evaluate the workshop by TAIEX using an online survey after the event. The evaluation results are presented below in a summary table.



				No. Responses	Expert Score	Yes / Excellent	No / Good	Partially / Satisfactory
80101	Workshop - participant - A. Questions	1	Was the workshop carried out according to the agenda?	17	-	15 (88%)	-	2 (12%)
		2	Was the programme well structured?	17	-	16 (94%)	-	1 (6%)
		3	Were the key issues related to the topics addressed?	17	-	17 (100%)	-	-
		4	Did the workshop enable you to improve your knowledge?	17	-	17 (100%)	-	-
		5	Was enough time allowed for questions and discussions?	17	-	12 (71%)	1 (6%)	4 (24%)
		7	Do you expect any follow-up based on the results of the workshop (new legislation, new administrative approach, etc.)?	17	-	14 (82%)	3 (18%)	-
		8	Do you think that further TAIEX - %pr_c_abbreviation% assistance is needed (workshop, expert mission, study visit, assessment mission) on the topic of this workshop?	17	-	15 (88%)	2 (12%)	-
		Workshop - participant - B. Expert ratings	-	Mr. Constantin, Gheorghe - Speaker MS	17	92.64%	12 (71%)	5 (29%)
	-		Mr. Dimovski, Mihail - Other speakers	17	91.17%	11 (65%)	6 (35%)	-
	-		Ms. Pokrovac Patekar, Anita - Speaker MS	17	91.17%	11 (65%)	6 (35%)	-
	-		Ms. Popovici, Mihaela - Other speakers	17	95.58%	14 (82%)	3 (18%)	-
	-		Mr. Dedej, Zamir - Speaker CC	17	70.58%	7 (41%)	4 (24%)	2 (12%)
	-		Mr. Papathanasiou, Evangelos - Speaker PP	17	89.7%	10 (59%)	7 (41%)	-
	-		Mr. Kupusović, Tarik - Speaker CC	17	79.41%	9 (53%)	4 (24%)	2 (12%)
	-		Mr. Jansen, Bert - Speaker EU	17	70.58%	7 (41%)	4 (24%)	2 (12%)
	-		Mr. Jovanović, Igor - Speaker CC	17	73.52%	8 (47%)	3 (18%)	3 (18%)
	-		Mr. Papadoyannakis, Michail - Speaker EU	17	85.29%	10 (59%)	5 (29%)	1 (6%)
	-		Mr. Van Breusegem, Wim - Other speakers	17	94.11%	14 (82%)	2 (12%)	1 (6%)
	-		Ms. Kovac Virsek, Manca - Speaker MS	17	94.11%	13 (76%)	4 (24%)	-
-	Ms. Mata Lara, Mariana - Speaker PP		17	94.11%	13 (76%)	4 (24%)	-	
-	Ms. Runko Luttenberger, Lidija - Speaker MS	17	89.7%	12 (71%)	4 (24%)	-		
Workshop - participant - C. Logistic	1	Conference venue	9	-	5 (56%)	2 (22%)	2 (22%)	



				No. Responses	Expert Score	Yes / Excellent	No / Good	Partially / Satisfactory
80101	Workshop - participant - D.	-	Due to restrictions on coronavirus-related contacts, this time it was online. We hope to hold the next meetings as before, before the virus appears. holding the workshop all together in a workshop space and exchanging information and experiences during the holidays. It is a real experience	-	-	-	-	-
		-	It was a great workshop. I would really like to be part of other similar activities especially if they will be organized with real meetings. Mihaela was a super great host and also Camille was really helpful during all the workshop.	-	-	-	-	-
		-	web meeting	-	-	-	-	-
	Workshop - speaker - A. Questions	1	Did you receive all the information necessary for the preparation of your contribution?	7	-	7 (100%)	-	-
		2	Has the overall aim of the workshop been achieved?	7	-	7 (100%)	-	-
		3	Was the agenda well structured?	7	-	7 (100%)	-	-
		4	Were the participants present throughout the scheduled workshop?	7	-	7 (100%)	-	-
		5	Was the beneficiary represented by the appropriate participants?	7	-	7 (100%)	-	-
		6	Did the participants actively take part in the discussions?	7	-	5 (71%)	-	2 (29%)
		7	Do you expect that the beneficiary will undertake follow-up based on the results of the workshop (new legislation, new administrative approach etc.)	7	-	5 (71%)	-	-
		8	Do you think that the beneficiary needs further TAIEX - %pr_c_abbreviation% assistance (workshop, expert mission, study visit, assessment mission) on the topic of this workshop?	7	-	7 (100%)	-	-
		9	Would you be ready to participate in future TAIEX - %pr_c_abbreviation% workshops?	7	-	7 (100%)	-	-
	Workshop - speaker - C. Logistic	1	Conference venue	3	-	2 (67%)	1 (33%)	-
		2	Interpretation	3	-	2 (67%)	1 (33%)	-
		3	Hotel	3	-	2 (67%)	1 (33%)	-
		4	Flight	3	-	2 (67%)	1 (33%)	-
		5	Catering	3	-	2 (67%)	1 (33%)	-
	Workshop - speaker - D. Comments	-	It was an online meeting	-	-	-	-	-
		-	It was online conference, no hotel, flight, catering etc	-	-	-	-	-
		-	The meeting was virtual. Everything was very well organised!	-	-	-	-	-

Endnotes

* This designation is without prejudice to positions on status, and is in line with UNSC 1244 and the ICJ Opinion on the Kosovo Declaration of Independence.



This Project is funded by the European Union



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The project implemented by the Consortium of NIRAS (lead) and Umweltbundesamt GmbH



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