RESISTANCE Project

WP3 – Act. 1
Exchange and exploitation of projects' results

Deliverable Number D.3.1.1

Exploitation Plan
summarizing results and tools developed by all the cluster projects

Final Version - 19/06/2023

Project Acronym	RESISTANCE
Project ID Number	10419754
Project Title	Raising Awareness of Maritime Spatial Planning Importance
Priority Axis	Environmental and cultural heritage
Specific objective	3.3
Work Package Number	3
Work Package Title	Clustering thematic activities
Activity Number	3.1
Activity Title	3.1 Exchange and exploitation of projects' results
Partner in Charge	University of Ferrara – PP4
Partners involved	All partners
Status	Final
Distribution	Public

Summary

Introduction

PP4 (UNIFE) with the contribution of all PPs has developed an Exploitation Plan (D.3.1.1) summarizing results and tools developed by all involved projects on various environmental fields (Marine Litter, microbiological pollution, dredging of contaminated sediments etc.), defining synergies and potential further developments.

The exploitation plan will be based on the main key exploitable results achieved by the PPs, focusing in particular on Pillar 3: environmental quality of the EUSAIR strategy, which specific objectives are:

- To ensure a good environmental and ecological status of the marine and coastal environment by 2020 in line with the relevant EU acquis and the ecosystem approach of the Barcelona Convention.
- To contribute to the goal of the EU Biodiversity Strategy to halt the loss of biodiversity and the degradation of ecosystem services in the EU by 2020, and restore them in so far as feasible, by addressing threats to marine and terrestrial biodiversity.
- To improve waste management by reducing waste flows to the sea and, to reduce nutrient flows and other pollutants to the rivers and the sea.

In addition, two topics are identified as pivotal in relation to environmental quality in the Adriatic-Ionian Region:

Topic 1 – The marine environment

Topic 2 – Transnational terrestrial habitats and biodiversity

Definition: Exploitation, in this context, refers to the action of making use of and benefiting from project results.

Therefore, exploitation means the utilisation of results in further research/territorial activities (…) or in developing, creating and marketing a product, process or service, or in standardisation activities. It consists of a set of activities to promote the use the different project results beyond

the life of the project. It should be outlined that at European level, it is recommended that measures shall be taken to increase the use of results by research community, industry, policy makers and society.
However, considering that RESISTANCE project is a capitalization project, the exploitation plan will only analyse the partners' results, and possible exploitable strategies

It should be noted that the management of IPR is strictly ruled by the Consortium Agreement (CA) which includes all provisions related to the management of IPR including ownership, protection and publication of knowledge, access rights to knowledge and pre-existing know-how as well as questions of confidentiality, liability and dispute settlement. As a consequence, IPR is not considered in the present deliverable.

The aim of this deliverable is to present potential exploitation strategies that identify relevant actors, markets, and sectors in the context of project results utilization, with the goal of increasing their usage among research communities, industries, policy makers, and society.

Methods

The EP requires to have a clear description of all outcomes, products, services, knowledge, results (…) obtained by the partners during their projects that could potentially be exploited:

- Products
- Services
- Prototypes
- Guidelines
- Software
- Methodology, etc…

The exploitation strategy aims to identify synergies and potential future developments according to the previous partners' experiences in relation to pillar 3 of the EUSAIR strategy. Its description is developed in the following sections:

- Partners' description
- Description of the project outputs and key exploitable results (KERs)
- Routes and exploitation strategy

It is important to note that the deliverables is closely related with the D.3.1.2 "Guidelines sharing best practices and protocols useful for Maritime Spatial Planning", D.3.2.2 – Project idea on "sustainable management for MSP in protected areas/ for biodiversity protection considering climate change impacts", D.3.2.3 - Project idea focusing on risk assessments for "Coastal and marine pollution related to fisheries, inland and maritime activities", and D.2.3.4- Project idea on "Resilience of small ports to possible hazards".

Description of the partners

The INTERREG RESISTANCE project is an example of cooperation of various experts, members of representatives of local, regional authorities, educational institutions, international environmental organizations, who will jointly evaluate their already developed good practices for a sustainable use of marine and coastal resources. Indeed, the goal of the RESISTANCE project is to share acquired knowledges and experiences about the sea environment protection by capitalizing the results of the Interreg projects ECOMAP, ECOSS, Net4mPLASTIC, SOUNDSCAPE, DORY, SASPAS and ML-REPAIR to develop guidelines for Maritime Spatial Planning. The consortium, described hereafter, is composed by 8 partners, 4 Italian and 4 Croatian.

LEAD PARTNER: MUNICIPALITY OF PODSTRANA HR

The Municipality of Podstrana is one of the most developed municipalities in Croatia, situated in the Split-Dalmatia County with 7km of marine coastal area and 9,192 inhabitants. The municipal administration consists of a mayor office and 4 administrative departments (Legal Affairs and Strategic Management Department; Public Procurement, Economy, Social services and EU Funds Department; Finance Department; Spatial Planning, Public Utilities and Environmental Protection Department).

Capitalized project: Ecomap

Municipality

PP1: ZDRAVI GRAD - HEALTHY CITY HR

Healthy City is non-profit organization, which according to the best Croatian and international practice, systematically gathers organizations that are willing to work together to improve the quality of life in Croatia and outside its borders. Since the establishment in 2000, we have successfully implemented several national and European projects. Our projects and programs are

on the trail of the promotion of innovative ideas, strengthening healthy, sustainable and integral development.

Capitalized project: Ecomap

Private, Other private body with legal personality

PP2: FONDAZIONE CETACEA ONLUS - CETACEA FOUNDATION IT

The Cetacea Foundation has worked on marine environment for 30 years; it manage important rescue center for sea turtles of the Adriatic Sea and it has twenty experiences also in cetaceans rescue. CF has relationships with university and scientific institution and its center is visited by thousand people every year. The CF works on research programs and educational projects on environmental marine conservation.

Capitalized project: SOUNDSCAPE

Private, Other private body with legal personality

PP3: UNIVERSITA' CA' FOSCARI VENEZIA - CA’ FOSCARI UNIVERSITY OF VENICE IT

Ca’ Foscari University of Venice, established in 1868 as a Royal Business College, is a middle-size public academic institution currently focusing on Economics, Humanities, Languages and Sciences. UNIVE Materials Characterization Laboratory (LCM), is involved since 2013 in National and European Projects related to the emerging problem of marine litter focusing the attention on spectroscopic studies on materials from environmental samples.

Capitalized project: ML-REPAIR

Public University

PP4: UNIVERSITA' DEGLI STUDI DI FERRARA – UNIVERSITY OF FERRARA IT

UNIFE is a public University with a national and international reputation for academic teaching and research, with the primary missions of improving education, research and development, and

ensures an excellent level of general education and specific professional profiles designed to operate in several contexts, public institutions, productive enterprises, non-profit and international organizations.

Capitalized project: NET4mPLASTIC

Public University

PP5: REGIONE EMILIA-ROMAGNA - EMILIA ROMAGNA REGION IT

Fishing Sub-Unit of Emilia-Romagna Region, manage the local Fishery and Aquaculture activities and act as a public body to contribute to the Project's general and specific targets. E-R has experience in cooperation projects with the aim of protecting the marine resources for a research-oriented fishery to build up the fish-stocks, to guarantee employment, a fair income for stakeholders, providing nurseries and protected areas, and carrying out new infrastructures and improving the ones existing.

Capitalized project: DORY

Public body, Region

PP6: PI SEA AND KARST HR

The public institution MORE I KRŠ performs the activity of protection, maintenance and promotion of protected areas of the Split-Dalmatia County in order to protect and preserve the originality of nature, ensure uninterrupted natural processes and sustainable use of natural resources, and supervises the implementation of nature protection conditions and measures.

Capitalized project: ECOSS

Public / Body governed by public law

PP7: JAVNA USTANOVA “NACIONALNI PARK KORNATI” - KORNATI NATIONAL PARK PUBLIC INSTITUTION HR

The Kornati islands are the densest group of islands in the Adriatic and are among the most numerous in the Mediterranean. Because of the exceptional beauty of their landscapes, fascinating geomorphology, a very indented coastline and the remarkably abundant biocenosis of the marine ecosystem, the larger part of the Kornati islands was declared a National Park in 1980.

Capitalized project: SASPAS.

Public / Body governed by public law – Park authority

Description of the project outputs and key exploitable results (KERs)

The first step for developing comprehensive Exploitable Plan is to identify the list of Exploitable Results (ERs) developed within the different capitalized projects. The following table summarizes the different KER obtained by the partners that will be successively described.

N	Exploitable results	thematic	target	Project and partner
KER1	Placement of environmentally friendly anchoring buoys	Preservation and protection of biodiversity - seagrass	Scientists and research institutions, environmental agencies, policy-making institutions	SASPAS "Safe Anchoring and Seagrass Protection in the Adriatic Sea" PP7 Public Institution Kornati National Park
KER2	Placement of environmentally friendly anchoring buoys	Preservation and protection of biodiversity - seagrass	Transplantations of *Posidonia oceanica*	SASPAS "Safe Anchoring and Seagrass Protection in the Adriatic Sea" PP7 Public Institution Kornati National Park
KER3	Ecological Observing System in the Adriatic Sea (ECOAdS)	Preservation of ecosystem and biodiversity in the Adriatic Sea	Scientists and research institutions, environmental agencies, policy-making institutions	ECOSS - Public Institution for the Management of Protected Areas in the County of Split and Dalmatia "Sea & Karst" Split, Croatia PP6

KER4	Educational materials such as videos, workbooks and quizzes	Preservation of ecosystem and biodiversity in the Adriatic Sea	Schools, universities, environmental agencies	ECOSS - Public Institution for the Management of Protected Areas in the County of Split and Dalmatia "Sea & Karst" Split, Croatia PP6
KER5	MSP tool: DISPLACE bio-economic model	Management of fishery	"policy-maker" (authority), fishermen, scientist	DORY – Emilia Romagna region PP5
KER6	webGIS Database and map	Harbour management	Port authority, local authorities, marina users, scientists, citizen	ECOMAP - Municipality of Podstrana LP, PP1 and UNIFE PP4
KER6	Monitoring networks	Harbour management	Port authority, local authorities and scientists	ECOMAP - Municipality of Podstrana LP, PP1 and UNIFE PP4
KER7	Advanced common strategy for port cities management	Harbour management	Marina management, policy makers, researches, civil society, public	ECOMAP - Municipality of Podstrana LP, PP1 and UNIFE PP4
KER8	New knowledge regarding Fishing for marine litter using nets of any kind, through cooperation with fishermen	Marine litter with fishermen involvement	Port authority, local authorities, fishermen and scientists	ML-REPAIR, University of Ca' Foscari Venezia PP5

KER9	Method fishing for marine litter using nets of any kind, through cooperation with fishermen KER9	Marine litter with fishermen involvement	Port authority, local authorities, fishermen and scientists	ML-REPAIR, University of Ca' Foscari Venezia PP5
KER10	Method ML-REPAIR APP	Marine litter with fishermen involvement	Port authority, local authorities, fishermen and scientists	ML-REPAIR, University of Ca' Foscari Venezia PP5
KER11	Sentinel del mare - network	Marine litter with sea-beach users' involvement	Port authority, local authorities, fishermen, environmental association and scientists	NET4mPLASTIC University of Ferrara – PP4
KER12	EWS	Microplastic issues	Port authority, local authorities, fishermen, environmental association and scientists	NET4mPLASTIC University of Ferrara – PP4
KER13	Microplastic in mussels	Microplastic issues	Scientists	NET4mPLASTIC University of Ferrara – PP4
KER14	Mussel clearance	Microplastic issues	Scientists, environmental association, fishermen, local authorities	NET4mPLASTIC University of Ferrara – PP4
KER15	Fate of microplastics within cells	Microplastic issues	Scientists	NET4mPLASTIC University of Ferrara – PP4
KER16	Measures to reduce underwater noise	Underwater Noise	Local authorities, policy makers,	SOUNDSCAPE – Fondazione

			environmental association, scientist	Cetacea Onlus PP2

Table 1: list of the different KERs obtained by the partners during their capitalized project

Biodiversity

Sea seagrass protection

Key Exploitable Results 1- Placement of environmentally friendly anchoring buoys

2- Transplantations of *Posidonia oceanica*

Since the seagrass and especially the *P. oceanica* beds do not know boundaries and are widespread in Italy and Croatia coastal areas, and also the problems with the conservation status are similar in Italy and Croatia, significant results could be reached only by setting up a good cross-border cooperation within Italian and Croatia key partners. Cross-border approach ensured coordinated joint activities and protection and the creation of proposals for an Integrated Marine Water Management Program with guidelines and regulations for management and the corrected attitude and behavior in protected areas with regard to marine seagrasses. Therefore, within the project SASPAS "Safe Anchoring and Seagrass Protection in the Adriatic Sea" (PP7), the common challenge was to preserve and improve the conservation status of biodiversity of the Adriatic Sea ecosystem in order to decrease its vulnerability.

Pilot transplantations of *P. oceanica* and establishment of an environmentally friendly anchoring system were carried out. The establishment of an environmentally friendly anchoring system aimed to solve "wild" anchoring in bays where anchoring is permitted, and prevent further damage to Posidonia meadow, while the pilot transplantation tried to restore damaged Posidonia meadows. The overall SASPAS objective was to improve seagrass preservation and restoration through: laying safe anchoring innovative systems, performing pilot transplantations,

carrying out monitoring activities and by defining an integrated management system for seagrasses in Adriatic area.

The main exploitable results of the project SASPAS were the placement of Environmentally friendly anchoring buoys and pilot transplantations of *P. oceanica.*

Environmentally friendly anchoring buoys to reduce the negative impact of anchoring on the habitats of seagrass Posidonia oceanica KER1 (new knowledge and method)

Environmentally friendly anchoring system, weren't placed in the usual way by tying to concrete blocks, but by using "Earth anchor" system – method of drilling thought sand and sea sediment into the rock surface where the anchors were shot directly into the seabed.

Environmentally friendly anchoring system are placed using the "Earth Anchor" system of drilling through sand and sediment into the rock surface where anchors are shot directly into the seabed. Each anchorage consists of a circular sea area with an anchor bolt in the center, as well as an anchor buoy with a final mooring loop of anchor rope next to it. The anchor mooring works in such a way that the vessel is moored to the anchor rope and depending on the influence of the wind on the vessel, it rotates around the anchor buoy.

During the installation, and later the exploitation of the anchorage, there is no contact with vegetation cover, which is extremely important for the preservation of seagrasses and why this anchor system is more environmentally friendly compared to the installation of concrete blocks

Pilot transplantation of P. oceanica KER2 (new knowledge and method)

New knowledge: Pilot transplantation of *P. oceanica* with innovative method of transplantation using biodegradable materials.

Methods and tools: Pilot transplantation of *P. oceanica* in bay Kravljačica using biodegradable supports consisting of a patented[1] star-shaped anchoring system with 5 arms to which fasten the seagrass rhizomes; Pilot transplantation of *P. oceanica* in bay Anica using wooden supports (to which fasten the seagrass rhizomes) heavy enough and of low degradability in order to resist on the sea floor at least for a couple of years

The innovative aspect of pilot transplantations of *P. oceanica*, which goes beyond the existing common practices, consists in the joint protection and restoring of biodiversity at transboundary level through the development of specifically- tailored innovative solutions, harmonized for the Adriatic area and applicable to other similar realities facing with the same biodiversity protection and restoration issues.

Technique 1

The rhizome transplantation method was carried out using an innovative patented (patents n. 0001400800/2010 and n. 102015000081824/2018) staple made up of a totally biodegradable polymer (Mater-Bi®; Biosurvey S.r.l. and IDEA S.r.l.), with an appearance similar to plastic. This biodegradable support consists of a purpose-designed star-shaped anchoring system with 5 arms to which fasten the seagrass rhizomes.

Technique 2

The rhizome transplantation method was carried out using an alternative test to the technique 1. Shoots were mounted on exotic wood supports, heavy enough and of low degradability to resist on the sea floor at least for a couple of years. The cuttings, each of which is formed of at least three shoots of leaves, were attached with biodegradable plastic ties to the wooden supports, and the wooden base was fixed on matte with iron pin

[1] (Patents n. 0001400800/2010 and n. 102015000081824/2018 – Mater-Bi®; Biosurvey S.r.l and IDEA S.r.l.)

Marine ecological observatories

Key Exploitable Results 3- Ecological Observing System in the Adriatic Sea (ECOAdS)

4- Educational materials such as videos, workbooks and quizzes

Scientifically obtained inter-disciplinary knowledge is a pillar of any conservation initiative. Although the research and monitoring on various components of the Adriatic Sea started over a century ago, these programs were either limited on spatial scale or focusing on single topic, preventing from obtaining the big picture. Thus, preservation of ecosystems and biodiversity of the Adriatic Sea requires not only cross-border cooperation, but also integration of ecological and oceanographic research with conservation programs, such as Natura 2000.

However, significant territorial challenges persist in developing the joint socio-ecological knowledge necessary to assess the on-going changes and their impact on the sustainable use of the Adriatic Sea and on the consequences for the protection strategies. This requires an innovative and joint integration of ecological and oceanographic research and conservation monitoring programmes, across a wide range of temporal and spatial scales, linking and integrating the coastal and the offshore areas. The integrative approach should encompass various disciplines and a wide range of temporal and spatial scales to include both coastal and off-shore areas. It further requires active involvement of all stakeholder groups, from scientists and conservation professionals, over businesses and decision-makers to local communities.

Ecological Observing System in the Adriatic Sea KER3 (ECOAdS)

Within this context, ECOSS overall aim was to establish an Ecological Observing System in the Adriatic Sea (**ECOAdS**, main outcome of the project), shared and harmonized between Italy and Croatia, able to Integrate ecological and oceanographic research and monitoring activities with Natura 2000 conservation strategies.

ECOSS created a Long-term strategy and roadmap of the Ecological Observing System in the Adriatic Sea that define the overall structure, purpose and long-term sustainability and maintenance of the ECOAdS among the involved countries and regions, in tight connection with the relevant stakeholders and evidencing the contribution to and synergies with EUSAIR, MSP and ICZM. In particular, the strategy is indirectly related to MSP by integrating and standardising ecological monitoring programmes and observational networks, harmonizing the implementation of the EU directives (at least at basin-level), in order to properly assess the level of the environmental status and its changes in time.

The main characteristics of the ECOAdS platform are:

- Integration of the ecological and oceanographic dimensions with the protection strategies of the Natura 2000 (N2K) marine sites, evidencing gaps and needs.
- Contribution to the harmonization of monitoring schemes, data acquisition and analysis at national and trans-regional levels, providing suggestions for a most effective and coordinated application of the EU directives (HBD, WFD, MSFD, MSPD)
- Supports the coherent management and monitoring plans of both existing and future marine N2K sites, thus potentially becoming a decision-support tool for governance and management.
- Availability of data and information, tools and facilities for local, regional and national public authorities, managers of protected areas and N2K sites, education and research organizations.

It should be outlined that the ECOAdS Data Portal is not intended to directly archive and manage time-series, geospatial datasets or other datasets of ecological interest but it's intended to mashup and facilitate access to external resources avoiding data duplication.

The main external data providers are:

- ECOAdS project partners: data and information on existing monitoring programs

- DEIMS-SDR (Dynamic Ecological Information Management System): information and metadata related to ecosystem resource sites for the Adriatic-Ionian region. https://deims.org
- Natura 2000 sites network: information on physical, chemical and biological parameters. https://natura2000.eea.europa.eu/
- Semantic Data Service of the European Environment Agency: https://semantic.eea.europa.eu/
- IOC - Sea Level Station Monitoring Facility: sea level time-series acquired by Italian and Croatian monitoring stations in the Adriatic Sea. http://www.ioc-sealevelmonitoring.org/
- CMEMS - Copernicus Marine Service - Mediterranean Sea Physics Reanalysis: provides free and open marine data. https://marine.copernicus.eu/
- EMODnet Bathymetry - European Marine Observation and Data Network: provides a service for viewing a harmonised Digital Terrain Model. https://www.emodnet-bathymetry.eu/
- CNR-ISMAR Tools4MSP: dynamic maps on anthropogenic uses and other Maritime Spatial Planning information in the Adriatic Sea http://data.tools4msp.eu/
- EcoNAOS Observatory: data and information on long term ecological marine database and timeseries. Data is published through the VESK infrastructure. http://vesk.ve.ismar.cnr.it/

All data are available through the ECOAdS on-line open science platform available through the following link https://ecoads.eu/

Fishing activities

Key Exploitable Results 5- Maritime Spatial Planning tool (DISPACE)

The Adriatic Sea is characterized by an invaluable richness of natural marine and fish resources, which is the basis for tourism, recreational and fishing activities, and contribute to Adriatic

cultural heritage. However, despite protections measures, the increased human use of marine and coastal space and resources in particular for fishing and aquaculture activities which are key sectors for Adriatic Regions, has intensified pressures on coastal and marine ecosystems threatening its vitality and the whole environmental quality of the sea. Moreover, MPAs in Adriatic-generally small and costal- suffer from inappropriate planning or management process and degradation of the unprotected surrounding ecosystem. Strengthened sustainable and science-based management of fisheries, improved sustainable practices and knowledge on technical solutions to reduce ecological impact of fisheries and aquaculture, improved integrated planning capabilities and ecosystem-based approach are common challenges for protection of marine habitat and species in Adriatic. The DORY project intends to promote the adoption of common management models for sustainable fisheries to reduce economic activities threats on Adriatic marine stocks, and knowledge-based tools to enhance biodiversity in terms of priority and essential fish habitats and to halt aquaculture ecological impact.

Key Exploitable Result: Maritime Spatial Planning tool KER5– DISPLACE model

The DISPLACE bio-economic model is an application used within the DORY project that allows to simulate the behaviour of fishermen (e.g., choice of fishing areas, capture of the various target species, management costs and earnings, etc.) and the effects of fishing on fish stocks.

DISPLACE is a simulation model based on agents, which in this context are individual fishing boats, and therefore manages to calculate the socio-economic and ecological effects on an individual scale.

The individual effects are then aggregated in order to highlight the global effects (e.g. the fishing fleet as a whole or other components of the marine ecosystem). The most important component of this model is the spatial one, in fact all the economic and biological information are georeferenced within GIS. In addition, all possible management measures may be accurately

tested through simulation scenarios (e.g., closure of certain marine areas to fishing, technical measures in specific areas, etc.) in GIS environment.

Within the Dory project, the consequences of five hypothetical spatial fisheries management scenarios and their potential medium-term effects on six fish stocks (hake, sole, red mullet, Norway lobster, mantis shrimp and cuttlefish) were simulated:

1- the status quo, which includes all restrictions on fishing activities currently in force in Italy, Croatia, and Slovenia;
2- the prohibition of trawling up to 4 nautical miles from the coast on the Italian side, which is supposed to reduce the fishing pressure in the first growth areas of many species exploited by fishing, in particular sole and cuttlefish
3- the prohibition of trawling up to 6 nautical miles from the coast, on the Italian side
4- the closure of an area known as the "sole sanctuary"
5- increase in the selectivity of gillnets by adopting a minimum mesh size (72mm stretched) and increase the minimum landing size of sole to 25 cm (currently 20 cm).

The model has therefore allowed to develop specific recommendations useful for the management of fisheries resources.

Management of small port

Key Exploitable Results 6- Monitoring networks and ECOMAP web map

7- Knew knowledge on advanced common strategy for port cities management

Monitoring networks and ECOMAP web map KER6ab

In the Programme area, most ports are small ports often combining shipping, fishing and leisure activities. Despite their small size, they have important economic, social and environmental links with their surroundings and a large cumulative impact. They face environmental challenges from

EU policy and legislation, and higher expectations from their users and local residents, but they usually lack the knowledge and tools to respond to these challenges. The project ECOMAP aimed to help smaller ports, the local authorities and organisations managing ports to address environmental issues. In addition, at Adriatic scale, the Project ECOMAP enabled stakeholders from Italy and Croatia to exchange knowledge and experiences, to develop and implement pilot actions, to propose new policies, products and services and to support investments in environment-friendly and sustainable operations of touristic and recreational ports at Adriatic coast.

Through the constitution of the ECOMAP Cluster of Smart port Cities (all partners signed the Memorandum of cooperation) "ECOMAP Cluster of Adriatic Regional Blue Technology Innovation Hubs" connected with an advanced common strategy for port cities' management characterized by an ECOMAP online platform to archive cross-border best practices and the BLUE WAY brand marketing campaign that engaged all stakeholders, ECOMAP has long-term and sustainable impact.

The main projects results are:

- Enhanced capacities of marinas for better environmental management
- Stakeholders at programmes area are educated and aware of importance of sea and coastal area protection
- Quality level of coastal bathing waters at project location is at least of good quality
- Management of dredging sediment in port areas to return hydraulic functionality (water recirculation) and the depths required to ensure access to boats. Identification of any pollutants and the treatments for decontamination by pollutants in order to ensure their re-use based on sedimentological, chemical and biological characteristics (absence of pollutants).

Also, some additional results were achieved:

- Introduced additional parameters to analyse at project sites in Croatia: faecal indicator bacteria in sediment, chlorophyll a and heterotrophic bacteria in seawater and microbial source tracking - MST (to identify the sources of faecal contamination)
- ECOMAP platform will lead to further experiences' exchange to new adherents and new methodologies, given the fact that it user-friendly and open to all interested people without any restricted requirements.

The exploitable results related to the Maritime Spatial Planning consists in:

- Monitoring networks to continuously monitor the marinas and understand the trend of physical/chemical parameters.
- ECOMAP web map showing the results of scientific research activities and the places where the studies were performed (sampling activities, geophysical surveys). It is available for PC, smartphones, and tablets and created using the ArcGis software, integrating the scientific information obtained during the activities of the ECOMAP project. Nevertheless, it is free of charge to all marina users.

The data gathered for the ECOMAP web map were obtained by different project activities that mainly concerned:

- Geophysical surveys
- Geochemical analysis of sediments
- Biological studies
- Analysis of the marine habitat
- Hydrodynamic investigation of ports in relation to sedimentation or erosion processes, chemical quality of sediments and biodiversity.

New knowledge on advanced common strategy for port cities management KER7

Within the Ecomap, addition KER was reached related to the management of port cities. This strategy consists in:

- Elaboration of analysis on smart waste management, realization and collection of best practices through the Forums and RWG meetings for a sustainable usage and exploitation of marine resources and better management of marina next to small port of Adriatic coasts have brought to an advanced common strategy for port cities management
- Composed by an adaptation to the expected goals of UN Agenda 2030 and European objectives in this field (Blue Growth and EU StarFish Mission) and with the filled surveys gathered by marinas on "Smart Waste Management of Small Ports" that collected relevant data for the state-of-the art of the current waste management system by each port area
- The strategy composes itself also of the BLUE WAY brand marketing campaign and the ECOMAP online platform as a all-major output
- Monitoring and assessment methodology used by the research project partners

Marine Litter

Human derived marine debris, which has adverse impacts on marine habitats and species, has potential human health implications and causes widespread social and economic problems, is by volume the greatest pollutant of the world's oceans. Marine spatial planning (MSP) has emerged as a new approach to holistically plan and manage ocean space and resources. It is a process that brings together multiple users of the ocean - including energy, industry, government, conservation and recreation - to make informed and coordinated decisions about how to use marine resources sustainably. MSP generally uses maps to create a more comprehensive picture of a marine area - identifying where and how an ocean area is being used and what natural resources and habitat exist.

Fishing for litter

Key Exploitable Results 8- New knowledge regarding Fishing for marine litter using nets of any kind

9- Method fishing for marine litter using nets of any kind

10- ML-Repair App

Marine Litter (ML) is a common problem for countries facing on the semi-enclosed Adriatic basin, due to geographical aspects and anthropic pressures. This issue requires a shared approach in the implementation of solutions to be proposed. In particular, the fishing sector has a potential in dealing with ML issue, for both preventions, by increasing awareness in a correct obsolete fishing gears disposal, and reduction

The approach used within the ML-REPAIR consisted in:

- Enhancement of environmental education of coastal population and tourists, with attention to new generations, and fishery communities
- Optimization of strategies for ML monitoring, management and scientific investigation that foresee an active and aware involvement of fishermen

KER regarded educating and raising awareness on marine litter problems and solutions within main target groups that are both sources of the problem and affected by the problem – local communities, tourists, fishermen. Specifically, three KER were obtained, one related to knew knowledge, and 2 regarding methods.

New knowledge regarding Fishing for marine litter using nets of any kind, through cooperation with fishermen KER8

Results from the FFLs operations help the scientists to better understand the fate of the marine litter, and its distribution. It also helps to elaborate new strategies for cleaning operations. Such activities also allow to decrease marine litter in the fishing areas where initiatives were carried

out. Other important impacts are improved fishing, better collaboration between fishermen and local associations dedicated to them.

Method fishing for marine litter using nets of any kind, through cooperation with fishermen KER9

The FFL scheme is a clean-up activity that aims to remove marine litter from the seafloor: fishing vessels collect marine litter caught in their nets during fishing activities and dispose of it on the quayside. Fishermen collected marine litter in special bags.

Method ML-REPAIR APP KER10

The ML-REPAIR APP was developed to ensure easy data collection onboard by fishermen of the marine litter accidentally caught in the nets and to provide the possibility to take georeferenced photographs of marine litter.

The App allows recording data on marine litter (where, when, type, quantity etc.) in an online database available to all.

Sea users observators

Key Exploitable Results 11- Sentinel del mare – fishermen network

Method Sentinel del mare KER11

It is known that plastic debris spreads over the surface of all the oceans, the beaches around the world, and on the ocean floor from the tropics to the poles. However, we do not know how plastic debris circulates and is accumulated in seas and oceans, and consequently data on marine litter presence are necessary. Within the project NET4mPLASTIC, a network of sea observators, called „sentinel del mare“, which is a fishermen network, was developed in order to localize floating marine litter. It meets the need of harmonizing and compiling the information generated by the numerous initiatives to characterize macro-litter over the world. The network relies on fishermen

(or sea users) as a major global force for litter monitoring using specific tool developed for mobile phones.

For such operation, two different apps were developed and proposed to the fishermen. The app allows the fishermen to take a photo of visible (floating) marine litter and successively send the photo to a server and added in a geodatabase (webmap), in order to elaborated comprehensive digital representation of the ocean litter pollution.

Within NET4mPLASTIC project, two different procedures, based on a common concept, have been developed and tested. The concept used was that the applications should be easy and fast in order to allow the fishermen to capture photo while working.

Microplastics

Key Exploitable Results 12 - Early Warning System

13 - Method to assess the presence of microplastic in mussels

14 - Fate of microplastics within cells

Method and new knowledge Early Warning System KER12

The main goal of the NET4mPLASTIC project is to achieve an efficient monitoring system for plastic and MP distribution along the Croatian and Italian coastal and marine areas in order to improve the environmental coastal and marine sea quality conditions.

The design implementation of the EWS - Early Warning System included:

- a control center, based on system hardware and network, and a EWS application integrated with the transport model and external systems (such as the oceanographic model;
- Integrated Marine Drone, for collection of MP - microplastic, and geolocalized water indicators on the route;

- Integrated Marine OBU, a unit to be installed on board of ships for improved MP collection with geolocalized water indicators on the route.

The required main software modules of the EWS platform were:

- MP Transport model, providing data with distribution and concentration,
- MP WebGIS platform, for: a) Display MP data (historical, actual forecast, 24-72h forecast) b) Early warning provision, based on the transport model c) Data entry, recording & replay MP DB, the DB for collecting data
- A mobile APP, for starting/closing the field activities and for data reporting
- Firmware for marine remote units - Integration with external system, for meteorological/other data

Mussel as bioindicators

Bivalve mollusks, as filter feeders, are one of the most susceptible species to microplastic ingestion and are considered useful bioindicators of microplastic contamination in the aquatic environment owing to their global distribution range, sessile behavior, vital ecological niches, ability to filter a large water volume, and close connection with predators and human health.

Method to assess the presence of microplastic in mussels KER13

Many different methods have been developed to monitor the presence of microplastics in mussels although the lack of standardisation limits comparability. Since it is important to carry out standardised monitoring to acquire a baseline understanding of microplastic contamination in the Adriatic environment, a common method has been developed within the project NET4mPLASTIC.

The method differentiates the sampling of natural banks and mussel farms, while the laboratory analysis is based on a digestion procedure using 30% H2O2 solution to degrade natural organic matter in order to facilitate detection of small microplastic particles. Finally, chemical analysis are performed using the DEFISGEAR protocol that suggest ATR-FTIR spectroscopy and Micro ATR-FTIR spectroscopy analysis.

Knew knowledge on mussel clearance KER14

Plastic pollution has become a growing environmental concern since more than 10 million tons of plastic waste enter the global ocean annually. In addition, since microplastics can reside in the marine environment for a long period of time, they are present in all compartments of marine ecosystems over the time. The ubiquity of microplastics in marine ecosystems enhanced their bioavailability to organisms.

Exposure experiments are regarded as effective methods to study the uptake, accumulation and toxicity of contaminants. New knowledge on mussel clearance has been acquired during NET4mPLASTIC. Indeed, during this project, three different shapes of microplastics were used to simulate the real environment.

In the exposure experiments, the accumulation of microplastics was observed in all mussels. The results have allowed to detect a considerable variability in terms of the presence of microplastics found in the soft tissue of mussels analyzed among the samples analyzed at time 0.

After 7 days of purification (experimental purification) it was possible to highlight a statistically significant decrease in the presence of the number of microplastic particles found per gram of soft tissue of the analyzed mussels, while two-days depuration time may be not enough to completely eliminate the microplastic particles or that MP could have been translocated to other tissues, or even to the circulatory system.

Results further indicate that longer purification times (7 days) are not enough to completely recover bivalves from MP exposition. Therefore, it is noteworthy that depuration can minimize the effects caused by MP contamination, even if it does not reach a 100% reduction

Microplastics that seems to be eliminated more effectively by mussels, both after 2 and 7 days of purification, are granules, followed by filaments and fragments.

Results also suggest the ability of bivalve mollusks to eliminate larger microplastic particles more easily and in a shorter time. Furthermore, smaller sizes of microplastics also show greater toxicity to organisms, and therefore, great attention should be paid to the size effects of microplastics ingested by mussels, especially for those microplastics in smaller size classes

The experiments have also highlighted changes in expression of genes associated with biotransformation in digestive gland of *M. galloprovincialis.*

In conclusion, the result of the study demonstrates that

a) the purification processes can significantly reduce MPs contamination in *M. galloprovincialis*, though longer depuration periods need to be tested, in order to assess the possibility of an even greater reduction in MPs contamination;
b) the use of qPCR technology and mRNA levels as early-warning biomarkers in marine monitoring programs are very useful and innovative.

New knowledge regarding the fate of microplastics within cells KER15

During the NET4mPLASTIC, experiments have been performed in order to investigate the internalization of PS-beads with different sizes by three human cell lines. In particular, the potential MPs uptake by HCT-116, A549 and Mahlavu cell lines (respectively colorectal, lung and hepatocellular carcinoma) has been analyzed in order to elucidate the fate of plastic particles within human body, that could be used to provide information regarding health issues.

Experiments have demonstrated that plastic particles can be internalized by living cells via both passive membrane penetration and active endocytosis as consequence of their dimensions. On the other hand, internalized plastics can be excreted from cells via energy-free penetration and energy-dependent lysosomal exocytosis.

The uptake of PSMPs was evaluated at single-cell level highlighting the internalization of beads by cells in a dose and time-dependent manner (especially for the 1 µm beads) but with differences among the three cell lines. Here, a major uptake of beads was identified for the hepatocellular carcinoma cells. Further studies will be necessary to clarify and complete the set of in vitro experiments useful to determine the potential internalization of all the dimensions of PS-MPs by the three cell lines.

Underwater Noise. List of possible measures to reduce underwater noise KER16

Key Exploitable Results 16 – Possible measures to reduce underwater noise

Underwater sound is a dominant feature of the underwater marine environment because of natural (biological sources, underwater earthquakes, wind) and human-made (anthropogenic) sound sources. Within the project SOUNDSCAPES, mitigation measures to reduce underwater have been classified in main measures and support measures (table 2, described in deliverables D.3.1.2).

Type of measure	**Code**	**Name**	**Short/Medium/ Long Term (S/M/L)**
Strategic	1a	Include specific noise mitigation objectives within maritime plans(*strategic*)	M
	1b	Coordinated port development plans in the whole area(*strategic*)	M/L
	1c	Dynamic Ocean Management of maritime traffic (*strategic*)	M
Spatial-Temporal	2a	Rerouting (*operational*)	S
	2b	Establish “Particularly Sensitive Sea Areas” (PSSAs) *(governance)*	S/M
	2c	Establish “Areas To Be Avoided” (ATBAs) *(governance)*	S/M

	2d	Limitations to recreational boating *(operational)*	S
Behavioral	3a	Speed reduction *(operational)*	S
	3b	Convoy *(operational)*	S
	3c	Using tugs *(operational)*	M
	3d	Optimize Ship Handling *(operational)*	S/M
	3e	Regular hull and propeller maintenance polishing *(operational)*	S
Technical/ Technological	4a	Install ducted propellers *(technical)*	M
	4b	Install skewed propellers *(technical)*	M
	4c	Reduction of propeller speed per Knot (TPK) *(technical)*	M
	4d	Install water jets or pump jets *(technical)*	M
	4e	Install CLT propellers *(technical)v*	M
	4f	Electric machinery *(technical)*	M/L
	4g	Machinery treatments *(technical)*	M
	4h	New hulls designs *(technical)*	L
Monitoring, control and surveillance	5a	Live mapping of underwater noise sources and intensity (*operational*)	S/M
	5b	Development of a pilot registration system through transparent management and live use of AIS data for all the vessels (including leisure boats). (*operational*)	S/M
	5c	Better knowledge Continuous mapping of the distribution of target species, their variability and their life cycle, and understanding of their responses to noise exposure (*operational*)	S/M
Economic, financial and other supporting measures	6a	Promote and finance innovative technologies geared to noise emission reduction (*strategic*)	S/M
	6b	Offer best practice training programs to shipping companies (*operational*)	S
	6c	Literacy and awareness raising (e.g. local communities, nautical sector, citizens)	S

Table 2: Synthesis of the possible mitigation measures for each category and typology (from deliverable D.5.4.1 SOUNDSCAPE project)

Routes - exploitation strategies (ES)

As indicated by European Commission, Exploitation refers to:

"*The utilization of results in further research activities other than those covered by the action concerned, or in developing, creating and marketing a product or process, or in creating and providing a service, or in standardization activities*."

Therefore, in the previous sections, KERs of the different capitalized projects have been identified, and consequently exploitation routes can be tailored to each (table 3). It should be mentioned that partners within their projects have defined different exploitation strategies, which can be classified in five categories:

- New research, when the results are intended to be used for publications and to be involved in new research projects and activities (ES1)
- Developing new services/products Policy maker strategy (ES2)
- Cooperation agreement/Joint Ventures (ES3)
- "Commercial exploitation", when the partner intends to use the result according to a market-oriented strategy, based on offering a new service or a new product on the market (ES4), including start-up.
- Standard setting, when the partner intends to propose the adoption of the result (including method) as a standard (ES5)

N	Exploitable results	Exploitable use	TRL
KER1	Placement of environmentally friendly anchoring buoys	**ES2, ES3 and ES5** The innovative aspect that goes beyond the existing practices consists of joint cross-border biodiversity protection and restoration through the development of specifically tailored innovative solutions. These are suitable	**6-7**

		for the typology of the sites studied but harmonized to a reasonable extent for the Adriatic area and then applicable to other similar realities facing the same biodiversity protection and restoration issues Expected results foresee the installation environmentally friendly anchoring system in areas who have anchoring and boating issues, especially during the summer touristic season, in order to lighten the impact of anchoring, and nautical tourism in general, on surrounding seagrass meadows. It should be highlighted that the use of ecological buoys could easily turn into a concrete and permanent action, once the guidelines could put this solution into a system. This action could be implemented at least in other Mediterranean coastal realties, even considering that the efficiency could be verified on different marine seagrass species (*P.oceanica, C.nodosa* and *Z.marina*), different substrates, depth, hydro-morphological conditions and especially different types of users. Transplanting techniques, in order to replenish endangered areas due to boat traffic and anchoring, could then become **permanent structural solutions** also in areas outside the Italy and Croatia costal area	
KER2	Placement of environmentally friendly anchoring buoys	**ES2, ES3 and ES5** *Long-term exploitation and actions*: transplantation can be further performed in different areas that fill specific criteria's (like the presence of a protected area (MPA, National or Regional Park) or a Natura 2000 site, the area's tourist vocation, especially in terms of boating and anchoring, the presence of marine phanerogams based on different sources of information, specified on a case-by-case basis for each potential area). The expected impacts of such actions, should be aimed at protection of climate change in coastal areas, protecting natural systems from the	7

		degradation and implementing the functionality of a natural area in relation to ecosystem services. The installation of the environmentally friendly anchoring buoys using the "Earth Anchor" system can contribute to the goal of the EU Biodiversity Strategy by 2020 by restoring *P. oceanica* meadows, and also to prevent further damage through defining the maximum number of vessels per day, improving the safety of navigation in the park area, etc..	
KER3	Ecological Observing System in the Adriatic Sea (ECOAdS)	**ES1, ES2, ES3 and ES5** As the EU directives require a wide approach in monitoring, there is a lack of observation and data for some group of parameters demanded by certain directives. It is also evidenced a lack of coordination among the directives in the Adriatic, in particular reflecting the differences in their implementations between Croatia and Italy. within this framework, the ECOAdS, as a monitoring platform, may respond and contribute to their requirements, boosting the synergies and overcoming the weaknesses. Such platform could be implemented in next years (3-5 years) using funding programmes and instruments like: National funding, Horizon Europe, Interreg programmes, Research Infrastructures Furthermore, ecological monitoring programmes and observational networks are exhibiting an obvious diversity in the Adriatic Sea, in its spatial and temporal coverage, choice of parameters to be sampled, data acquisition procedures, duration of observations, etc. This largely comes for different implementation in Italy and Croatia of the EU Directives relevant for marine ecological monitoring, like MFSD, WFD, MSPD, HB and BD. With such a diverse approach, it is quite hard to properly assess environmental changes on the long term. Therefore, these programmes	7-9

		and systems should be integrated and harmonised on the basin-level, in order to properly assess the level of the environmental status and its changes in time. • ECOAdS could serve as a coordinated and co-located platform serving different European Environmental Research Infrastructures, sustaining the components that are under development in the Adriatic area. • ECOAdS is in line with plans and strategies for the next decade, at the national, macro-regional (e.g. EUSAIR) European (e.g. EU Biodiversity Strategy for 2030, the European Green Deal) and global levels (e.g. the Global and European Ocean Observing Systems, the Ocean Decade) and might therefore contribute to their fulfilment. An integrated ECOlogical observing system in the Adriatic Sea (ECOAdS) allows creation of efficient collaborations, transparent data sharing, and maximum effort to minimize the duplication of activities, facilitating as such resources savings. Such scientifically obtained inter-disciplinary knowledge is a pillar of any conservation initiative at the Adriatic Basin level. The monitoring networks used technological systems already available and therefore the system can be considered as TRL7-9.	
KER4	Educational materials such as videos, workbooks and quizzes		
KER5	MSP tool: DISPLACE bio-economic model	**ES2, ES3** DORY results could be summed as: - Common management models for sustainable governance of Adriatic fisheries: a further implementation of the common cross-border model and co-management	5-6

		approaches for sustainable fisheries management capitalizing ECOSEA achievements and a multi-level working group approach under the best scientific guidance; - The **DISPLACE** model and the alternative management scenarios: a tool to set up spatial management scenarios supposed to help the sustainable exploitation of shared stock and supporting MSP approach evolution in the Adriatic Region, by an ecosystem-based resource management; - A set of DORY Pilot projects - sustainable practices for biodiversity restoration and aquaculture ecological impact reduction: pilot application of innovative techniques to enhance biodiversity in terms of priority and essential fish habitats and to halt aquaculture ecological impact. The exploitation strategy is to incorporate the results into a system. This "systematization" process is called "mainstreaming", consisting in two ways: - horizontally by fishermen through the incorporation of good practices and approaches into local organisations, thus "changing their behaviours"; and, - vertically by managers and political decision-makers through the incorporation of good practices, models and approaches - the most effective results of the DORY project - into their processes to define and implement local, national and Community policies and regulations, thus "changing the rules". The experiences made, good practices developed and skills acquired by DORY partners are a shared base of knowledge and expertise (know-how) that can be exploited to further improve the instruments to govern Adriatic marine resources and adopted in future EU policies. Table 4 (from DORY project) shows EMFF measures and procedures that can be used to "systematise" good practices	

		as well as the instruments developed by DORY in local partner systems and organisations.	
KER6a b	WebGIS Database and map Monitoring networks	**ES2, ES3** The monitoring networks used technological systems already available and therefore the system can be considered as TRL7-8. Similarly, the web map and related tools are already operative, and can be considered as a demonstrative system in operational environment. In addition, the data collected and inserted in the webmap have been added to the Resistance platform in order to ensure their post-project exploitation. • ECOMAP web map needs to be presented in a digestible format with simple and straightforward descriptions of the map and its components as well as reference to case studies/sample sites and examples to help the readers relate to the content • Dissemination outlet for the model through a common platform - ECOMAP web map available online • Available for PC, smartphones, and tablets • Free of charge to all marina users	6-8
KER7	Advanced common strategy for port cities management	ES3 KER7 Long-term exploitation and actions TRL not considered, it is not a technology but new knowledge Used as a theoretical framework to recommend actions and augment project activities that aimed to filling the gaps encountered in the literature review Research findings may be taken to optimise interdisciplinary collaboration and coordination between relevant stakeholders Resulting strategy may be used for the improvement in port management	
KER8	New knowledge regarding	**ES1**	

	Fishing for marine litter using nets of any kind, through cooperation with fishermen	FFLs will continue after the end of the project, allowing to obtain additional data on marine litter.	
KER9	Method fishing for marine litter using nets of any kind, through cooperation with fishermen KER9	**ES2, ES5** Long-term exploitation and actions: Continued fishing waste through FFL and facilitating the disposal of such waste brought ashore	7-8
KER10	Method ML-REPAIR APP	**ES2, ES5, ES4** Long-term exploitation and actions: marine litter detection database	7-9
KER11	Sentinel del mare - network	**ES1, ES2** The aim of this network is to send the information to local authorities to eventually proceed with cleaning/removal operations The possibility of implementing such mass-based measuring tool in mobile phones will give wide room for a more effective citizen participation in global monitoring as well as ease the flow and analysis of information through digital data sharing. A continuous service of updating and improving the database, which is compiled at different processing levels (from raw measurements and mass-converted data to top polluting items, maps and trends) in order to accommodate the needs of different stakeholders, from citizens to policy makers and researchers. Provide new data	5-6

<table>
<tr>
<td>KER12</td>
<td>EWS</td>
<td>ES1, ES2, ES4
Recommandations on future improvements
Based on the analysis in this document, considering the positive result of the project and the financial sustainability, with important savings, as future exploitation, main recommendation is to proceed asap with the implementation of the EWS based on national contribution from both countries. The implementation of the EWS solution allows in addition to reduce the CO2 emissions, with saving that amount to about 5212 kg in case of surveys every month per transept, and to 20850 kg, in case of surveys every week per transept.
<table>
<tr><th>Task</th><th>CO2 Produced [kg] per transept</th><th>total n. of surveys</th><th>Total CO2 Produced [kg]</th></tr>
<tr><td>Existing data colleciton</td><td>17,5</td><td>300</td><td>5250</td></tr>
<tr><td>using a drone</td><td>0,125</td><td>300</td><td>37,5</td></tr>
<tr><td>savings</td><td></td><td></td><td>5212,5</td></tr>
</table>
<table>
<tr><th>Task</th><th>CO2 Produced [kg] per transept</th><th>total n. of surveys</th><th>Total CO2 Produced [kg]</th></tr>
<tr><td>Existing data colleciton</td><td>17,5</td><td>1200</td><td>21000</td></tr>
<tr><td>using a drone</td><td>0,125</td><td>1200</td><td>150</td></tr>
<tr><td>savings</td><td></td><td></td><td>20850</td></tr>
</table>
The introduction of the solution allows in addition to process data within 1 day, instead that 30 days as it is now.
Other specific general comments from stakeholders about the solution were the following:
- the platform is an excellent tool that has the potential to evolve and as such be useful to many stakeholders. I think that only minor modifications and additions are needed to make the platform even more intuitive for all users, both those who will fill it with data and those who will use it later
- the EWS platform as an excellent starting point for such a diverse range of issues as microplastics. Certainly, through its longer use we will see all its advantages, as well as those things that will be possible to improve
- The EWS platform seems to be easy to use and very intuitive. As specified during the training needs more details such as:</td>
<td>5-6</td>
</tr>
</table>

		• the visualization near the maps of a legend that facilitates the understanding of the map itself (i.e. colors' gradation linked to values); • to specify the measurement units in graphs/tables showed. - There is a very interesting section related to sea's sentinels that obviously needs a greater dissemination not only between the stakeholders. - For section related to the manual uploading of lab analysis data, it would be useful to have a format that can be used by different users in order to have a uniformity in data collection. - In case of future exploitation, some improvements are required to allow a full exploitation.	
KER13	Microplastic in mussels	ES5 Method to analyse the presence of microplastic in mussel, which needs to be standardized	
KER14	Mussel clearance	ES1 Experiment that could be repeated in different environments, in different conditions or using different materials	1-3
KER15	Fate of microplastics within cells	ES1 Experiment that needs further research programs	1-3
KER16	Measures to reduce underwater noise	ES1, ES2, ES4 and ES5 Measures already applied Additional information are provided in deliverable D.3.1.2	

Table 3: Exploitation plan

DORY RESULT	HORIZONTAL MAINSTREAMNG	VERTICAL MAINSTREAMING	POLICY UP-TAKEE
Common management models for sustainable governance of Adriatic fisheries		To adopt the approach, addresses and measures proposed by the models when drafting management plans and when implementing EMFF measures	To adopt the approach, addresses and measures proposed by the models when making new policies
The DISPLACE model and the alternative management scenarios		To adopt the approach, addresses and measures proposed by the model when drafting management plans and when implementing EMFF measures	To adopt the approach, addresses and measures proposed by the models when making new policies
Set of DORY Pilot projects - sustainable practices for biodiversity restoration and aquaculture ecological impact reduction	To adopt the models as best practice when implementing EMFF measures	To adopt the approach, addresses and measures proposed by the model when drafting management plans and when implementing EMFF measures	To promote the adoption of best practices throughtout the new policies

Table 4: Measures and procedures that can be used to "systematize" good practices and instruments developed during the project IT-HR INTERREG DORY.

Conclusions

Based on the analysis of the EWS platform, it is recommended to proceed with its implementation considering its positive impact on reducing CO_2 emissions and financial sustainability. The EWS platform has the potential to evolve and be useful to many stakeholders, and only minor modifications and additions are needed to make it more intuitive for all users. The platform is easy to use and very intuitive, with some suggestions for improvement such as the visualization of a legend near the maps and specifying measurement units in graphs and tables.

The section related to sea's sentinels is interesting and needs greater dissemination among stakeholders. The manual uploading of lab analysis data would benefit from having a uniform format for data collection. In case of future exploitation, some improvements are required to allow for full exploitation.

Overall, the EWS platform is a promising solution for addressing environmental issues and has the potential to make a significant impact on reducing CO2 emissions. It can become an even more effective tool for stakeholders with some improvements and modifications.