



LIFE MARINAPLAN PLUS
LIFE15 ENV/IT/000391



B3.1 REPORT ON POTENTIAL OF SEABED MANAGEMENT PLAN FOR THE OVERALL MARITIME SPATIAL PLANNING STRATEGIES/Framework RELEVANT FOR THE REGION

B3.1 Report on potential of seabed management plan for the overall maritime spatial planning strategies/framework relevant for the region



Reliable and innovative technology for the realization of a sustainable MARINE And coastal seabed management PLAN

**LIFE Environment and Resource Efficiency project
LIFE15 ENV/IT/000391**

**Start Date: 01/10/2016
Expected End Date: 31/12/2020**





Type of Protocol: Public

Expected delivery date:
30/09/2020

Last update:
16/12/2020



Project partners

	<p>Coordinating beneficiary: TREVI S.P.A. Private Commercial R&D Project Engineer Via Dismano 5819 47522, Cesena – Italy http://www.trevispa.com Contact: Giovanni Preda - gpreda@trevispa.com</p>
	<p>Associated beneficiary: Comune di Cervia Public Body Piazza G. Garibaldi 1 48015, Cervia – Italy http://www.comunecervia.it Contact: Simona Melchiorri - melchiorris@comunecervia.it</p>
	<p>Associated beneficiary: International Council of Marine Industry Associations - ICOMIA Private non-commercial Brigade Pironlaan 132 B-1080, Brussels - Belgium http://www.icomia.com Contact: Albert Willemsen - Albertw@icomia.com</p>
	<p>Associated beneficiary: ALMA MATER STUDIORUM - Università di Bologna Public Body Via Zamboni 33 40126, Bologna – Italy http://www.unibo.it Contact: Prof. Cesare Saccani – cesare.saccani@unibo.it</p>

Main author: Marco Pellegrini (University of Bologna).

Co-authors: Cesare Saccani (University of Bologna), Giovanni Preda (Trevi), Albert Willemsen (ICOMIA), Edoardo Pelliconi (University of Bologna), Luca Pingue (Trevi), Gianguido Magnani (Trevi), Federico Fanti (Trevi).



LIFE MARINAPLAN PLUS
LIFE15 ENV/IT/000391



B3.1 REPORT ON POTENTIAL OF SEABED MANAGEMENT PLAN FOR THE OVERALL MARITIME SPATIAL PLANNING STRATEGIES/Framework RELEVANT FOR THE REGION

Index

Disclaimer

1. Introduction
2. Maritime Spatial Planning
 - 2.1 European framework
 - 2.2 Italian framework
 - 2.3 Emilia-Romagna region framework
3. Potential impact of seabed management plan on maritime spatial planning



LIFE MARINAPLAN PLUS
LIFE15 ENV/IT/000391



B3.1 REPORT ON POTENTIAL OF SEABED MANAGEMENT PLAN FOR THE OVERALL MARITIME SPATIAL PLANNING STRATEGIES/Framework RELEVANT FOR THE REGION

Disclaimer

This document contains description of the MarinaPlan Plus project findings, work and products. Certain parts of it might be under partner Intellectual Property Right (IPR) rules. In case you believe that this document harms in any way IPR held by you as a person or as a representative of an entity, please do notify us immediately.

The authors of this document have taken any available measure in order for its content to be accurate, consistent and lawful. However, neither the project consortium as a whole nor the individual partners that implicitly or explicitly participated the creation and publication of this document hold any sort of responsibility that might occur as a result of using its content. This publication has been produced with the support of the European Union. The content of this publication is the sole responsibility of MarinaPlan Plus consortium and can in no way be taken to reflect the views of the European Union.



LIFE MARINAPLAN PLUS
LIFE15 ENV/IT/000391



B3.1 REPORT ON POTENTIAL OF SEABED MANAGEMENT PLAN FOR THE OVERALL MARITIME SPATIAL PLANNING STRATEGIES/Framework RELEVANT FOR THE REGION

1. Introduction

The scope of the report is to evaluate how the seabed management plan (see Deliverable B3.3) designed, tested and validated by LIFE MARINAPLAN PLUS project can contribute to the reduction of human pressure on the marine environment through the integration within Maritime Spatial Planning Strategies. In particular, the report focus the potential impact in the regional framework of Emilia-Romagna.



2. Maritime Spatial Planning

2.1 European framework

The protection of European coasts and marine waters faces complex and multi-faceted problems. Marine and coastal environment is under severe pressure from both land-based and ocean-based pollution sources. EU legislation to protect the marine environment has been progressively implemented in many relevant areas: for instance the regulation of fisheries through the “*Common Fisheries Policy*” (CFP) or the control of input of nutrients and chemicals into the water through the “*Water Framework Directive*” (WFD). But these pieces of legislation, although crucial complementary tools to the protection of marine waters, contribute to the protection of the sea only from specific pressures resulting in a fragmented and sectoral approach.

Recently, European Union has adopted new instruments, like the 2002 EU “*Recommendation on Integrated Coastal Zone Management*” (ICZM) and the 2008 “*Marine Strategy Framework Directive*” (MSFD), which offer a comprehensive and integrated approach to the protection of all European coasts and marine waters.

MSFD aims to achieve Good Environmental Status (GES) of the EU's marine waters by 2020 and to protect the resource base upon which marine-related economic and social activities depend. It is the first EU legislative instrument related to the protection of marine biodiversity, as it contains the explicit regulatory objective that “*biodiversity is maintained by 2020*”, as the cornerstone for achieving GES. The Directive enshrines in a legislative framework the ecosystem approach to the management of human activities having an impact on the marine environment, integrating the concepts of environmental protection and sustainable use. In order to achieve its goal, the Directive establishes European marine regions and sub-regions (Figure 1) on the basis of geographical and environmental criteria. The Directive lists four European marine regions – the Baltic Sea, the North-east Atlantic Ocean, the Mediterranean Sea and the Black Sea – located within the geographical boundaries of the existing Regional Sea Conventions.

B3.1 REPORT ON POTENTIAL OF SEABED MANAGEMENT PLAN FOR THE OVERALL MARITIME SPATIAL PLANNING STRATEGIES/Framework RELEVANT FOR THE REGION

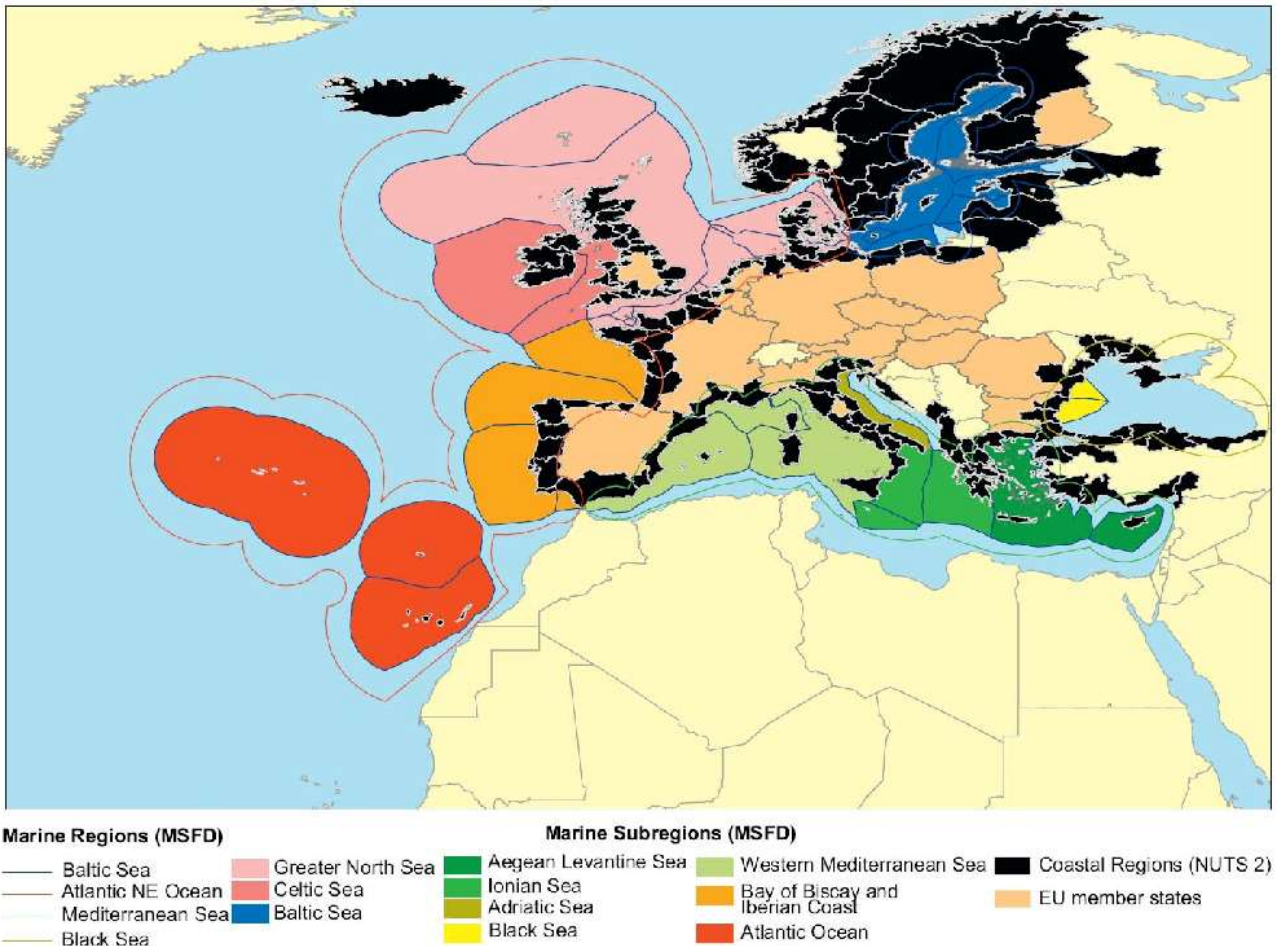


Figure 1. Marine Regions and Subregions as defined in MSFD.

An integrated governance framework for maritime affairs requires horizontal planning tools that cut across sea-related sectoral policies and support joined up policy making. **Maritime spatial planning (MSP)** is commonly understood as a **public process** for analysing and planning the spatial and temporal distribution of human activities in sea areas to achieve economic, environmental and social objectives. The ultimate aim of maritime spatial planning is to draw up plans to identify the utilisation of maritime space for different sea uses. In 2008 the Commission published the Directive 2014/89/EU establishing a framework for MSP. In particular, MSP should include all the **significant pressures on ecosystems and marine resources**: human activities, but also climate change effects, natural hazards and shoreline dynamics such as erosion and accretion, can have severe impacts on coastal economic development and growth, as well as on marine ecosystems, leading to deterioration of environmental status, loss of biodiversity and degradation of ecosystem services. Through MSP design and implementation, EU Member States shall aim to contribute to the sustainable development of energy sectors at sea, of maritime transport, and of the fisheries and aquaculture sectors, and to the preservation, protection and improvement of the environment, including resilience to climate change impacts. In addition, MSP should promote sustainable tourism and sustainable extraction of raw materials.



B3.1 REPORT ON POTENTIAL OF SEABED MANAGEMENT PLAN FOR THE OVERALL MARITIME SPATIAL PLANNING STRATEGIES/Framework RELEVANT FOR THE REGION

Member states shall bring into force the MSP Directive by 18 September 2016, and establish MSPs at the latest by 31 March 2021.

2.2 Italian framework

Italy has transposed the European Directive with the legislative decree n. 201 of 17 October 2016 which plans to adopt, by 2020, MSPs for all waters and bottoms, over which Italy has jurisdiction. The same Decree n. 201 establishes that i) the **Ministry of Infrastructure and Transport** is the **competent Authority** to which specific activities are assigned, ii) an Inter-ministerial **Coordination Table (ICT)** is activated at the Presidency of the Council of Ministers, Department for European Policies (DPE), which includes all the administrations involved, and iii) a **Technical Committee** is created at the Ministry of Infrastructure and Transport, as the competent Authority, of which only the Administrations most involved and the Regions concerned are part. The Ministerial Decree n. 529 of 13 November 2017, as further modified by the Ministerial Decree n. 89 of 11 March 2019 and by the Ministerial Decree n. 263 of 27 June 2019, governs the organization and functioning of the Technical Committee.

With the Decree of the President of the Council of Ministers of 1 December 2017 the **guidelines for the preparation of the maritime spatial plans** were approved. The guidelines include the identification of the marine areas (Figure 2) to be considered for the preparation of maritime plans.

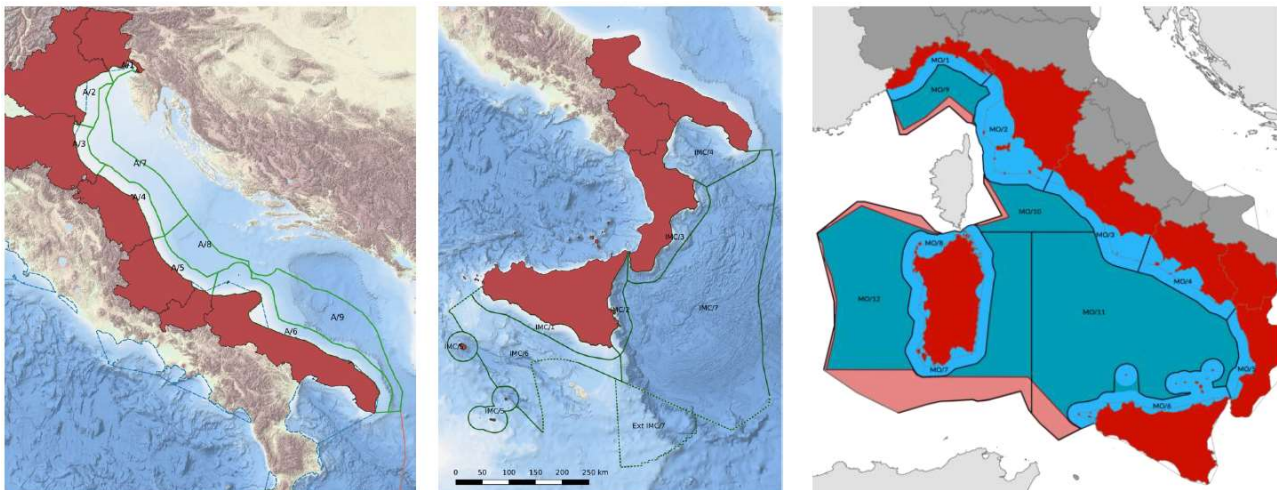


Figure 2. The Italian maritime areas of reference.

The guidelines suggest as relevant actions to be included in maritime spatial plans the ones dealing with:

1. aquaculture and fishing areas;
2. infrastructures and plants for raw materials extraction or energy production;
3. **maritime transport** and traffic flows, including **ports system**;
4. military training areas;
5. nature and species conservation sites and protected areas;



B3.1 REPORT ON POTENTIAL OF SEABED MANAGEMENT PLAN FOR THE OVERALL MARITIME SPATIAL PLANNING STRATEGIES/Framework RELEVANT FOR THE REGION

6. scientific research;
7. submarine cable and pipeline routes;
8. **tourism**, including the interaction city-port;
9. underwater cultural heritage;
10. coastal landscape.

The Italian guidelines define also the strategy for **stakeholders engagement** (Figure 3) and the main **structure of the plan** (Figure 4). The Italian guidelines define also numerous strategic objectives, including: promotion of **high quality design of ports expansion and improvement**, and integrated management of river basin and coastal areas to **address beach erosion** phenomena. Furthermore, ports and related activities are fundamental to identify the terrestrial areas that are relevant for **terrestrial-marine interactions**. The guidelines also define which parameters should be considered in the impact assessment of marine spatial plans, including **biodiversity** (quality of the habitat and number of species), **seabed integrity** (benthic ecosystem monitoring), **underwater noise**. Currently, **no binding maritime spatial plan has been officially elaborated or adopted in Italy**.



Figure 3. Strategy for stakeholders engagement.

B3.1 REPORT ON POTENTIAL OF SEABED MANAGEMENT PLAN FOR THE OVERALL MARITIME SPATIAL PLANNING STRATEGIES/Framework RELEVANT FOR THE REGION

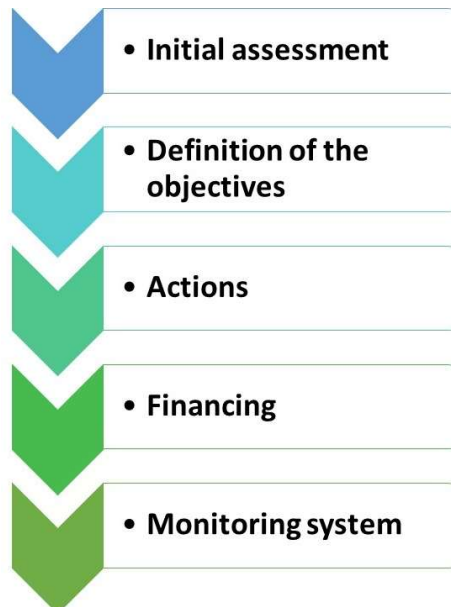


Figure 4. Structure of the marine spatial plan.

2.3 Emilia-Romagna Region framework

The proposals for ICZM-MSP for the Emilia-Romagna Region were formulated within the Italian national **project RITMARE**. The project ran between 2012 and 2017 and the proposals were finalised in **December 2017**. The area investigated by the project extends for 5,256 km² along the 120 km of the regional coast in front of 4 provinces, Ravenna, Ferrara, Forlì-Cesena and Rimini (which include a total of 14 coastal municipalities), and towards the coast up to the line that delimits the eastern limit of the Italian continental shelf about 70 km from the coast, as defined in Figure 5.

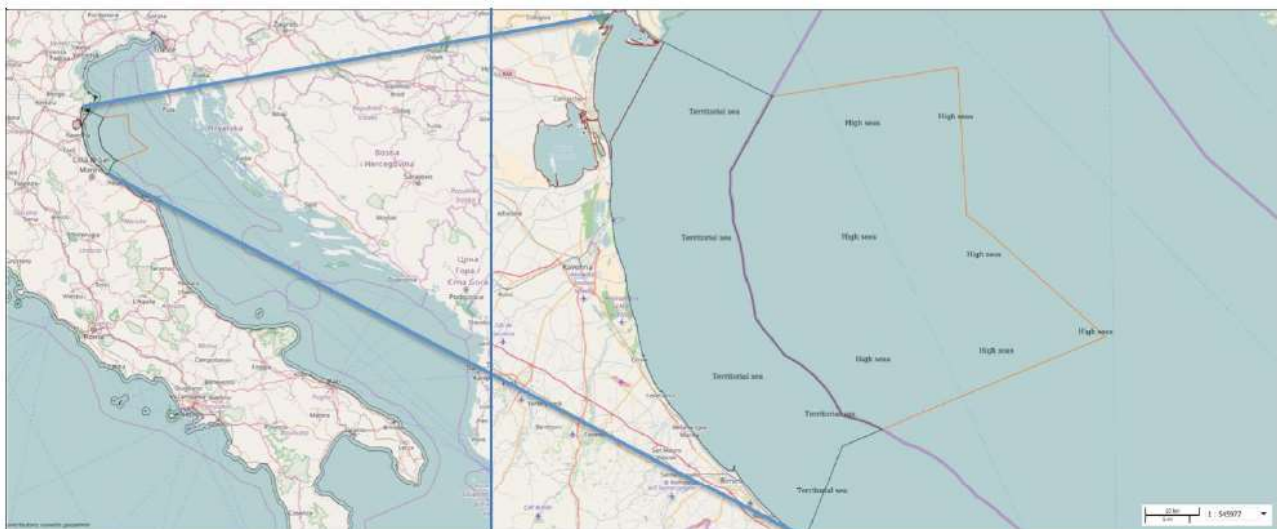


Figure 5. Marine water of Emilia-Romagna Region.

B3.1 REPORT ON POTENTIAL OF SEABED MANAGEMENT PLAN FOR THE OVERALL MARITIME SPATIAL PLANNING STRATEGIES/Framework RELEVANT FOR THE REGION

The study activity was developed in two phases: i) creation of a knowledge reference framework and its analysis to support maritime spatial planning and ii) identification and analysis of possible management objectives and measures to implement them. A portfolio of spatial measures was identified referring to 7 major issues: fishery and aquaculture, energy, coastal defence and **erosion risk**, **maritime transport** and **ports**, coastal and **leisure boating tourism**, **environmental protection** and management of areas used for military purposes. A set of 9 measures was proposed concerning 6 major uses of the marine space. An integrated “managed development” scenario, which considers all the measures implemented at the same time, was finally considered. **Sediment management** is addressed by the proposed maritime spatial plan only regarding coastal erosion, which is mitigated through dredging of sediment from offshore natural storage (see Figure 6 for an example of beach nourishment project realized in Emilia-Romagna in 2015).

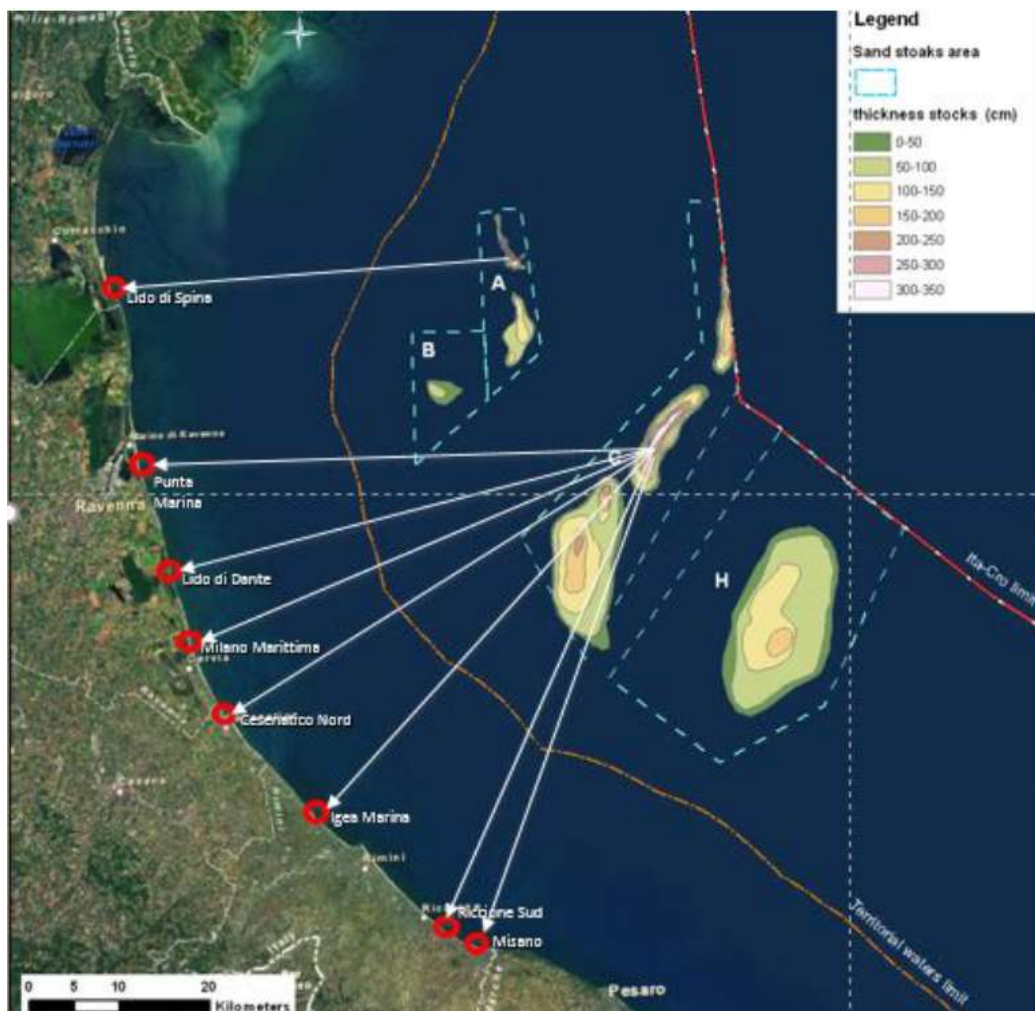


Figure 6. Example of beach nourishment plan as realized in Emilia-Romagna in 2015.



B3.1 REPORT ON POTENTIAL OF SEABED MANAGEMENT PLAN FOR THE OVERALL MARITIME SPATIAL PLANNING STRATEGIES/Framework RELEVANT FOR THE REGION

3. Potential impact of seabed management plan on maritime spatial planning

The impact assessment of marine spatial plans includes:

- **biodiversity** (quality of the habitat and number of species),
- **seabed integrity** (benthic ecosystem monitoring), and
- **underwater noise**.

The impact of demo plant operation on these three key performance indicators (KPIs) has been assessed through direct measurement carried out during 15 months of operation. The methodology for organic and non-organic sampling, pre-processing and storage is described in Deliverable C1.5, while the results of demo plant operation impacts assessment on Cervia marine ecosystem have been included in Deliverable C1.7.

The results show how **the ejectors plant technology produces a zero-impact on the marine ecosystem**. In fact, results of the monitoring activities on integrity of seabed sediments and communities suggest an improvement in the ecological status of the marine ecosystem in the area affected by the demo plant already within a year from the start of the plant operation. Indeed, the improvement is probably not directly produced by the ejectors plant operation itself, but it is a consequence of dredging avoiding. As a matter of fact, stated in literature and also observed during the first sampling campaign, dredging activity produces high negative impact on both biodiversity and seabed integrity. Moreover, the impact of ejectors plant operation on underwater noise is negligible (if any), while, once again, it is well known from literature that dredging equipment can produce relevant local impact on underwater sound pressure level.

Therefore, **the integration of seabed management plan in a maritime spatial planning strategy can contribute in the reduction of negative pressures on the marine environment produced during sediment management by dredging equipment.**