



Deliverables D3.3 and D3.7

**“ACTION PLAN ON IMPLEMENTING THE POMs
AND THE NAPs BY INTEGRATING REGIONAL
AND EU MSFD REQUIREMENTS”**

and

**“MEDIUM AND LONG-TERM REGIONAL POMs
ACTION PLAN”**

Date: December 2016

**Action Plans for Integrated Regional
Monitoring Programmes, Coordinated
Programmes of Measures and Addressing Data
and Knowledge Gaps in Mediterranean Sea**

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CONTENTS

LIST OF FIGURES AND TABLES.....	III
ABBREVIATIONS	IV
EXECUTIVE SUMMARY	5
PART I: CONTEXT	11
1 INTRODUCTION.....	12
2 SCOPE AND OBJECTIVES OF THE REPORT	14
3 METHODOLOGY	16
4 RELATED PROJECTS AND ACTIVITIES	18
4.1 ARCADIS MSFD SUPPORT PROJECT.....	18
4.2 DECYDE-4-ACTIONMED	20
5 CONSULTATIONS.....	22
5.1 ACTIONMED REGIONAL AND NATIONAL WORKSHOPS	23
5.2 NAPS MEETING.....	27
5.3 POMS WORKSHOP.....	28
PART II – REGIONAL AND NATIONAL POM ANALYSIS: SYNTHESIS OF FINDINGS.....	30
6 IMPLEMENTATION OF THE EU MSFD AND BARCELONA CONVENTION ECAP AT NATIONAL LEVEL	31
6.1 POMS AND NAPS OF THE EU MEDITERRANEAN STATES.....	32
6.2 NAPS SYNOPSIS: THE MAIN FINDINGS RELATED TO MEASURES.....	33
7 REGIONAL POMS ANALYSIS	36
8 NATIONAL POMS ANALYSIS.....	40
9 SUB-REGIONAL ISSUES FOR THE ACHIEVEMENT OF GES	43
10 SOCIO-ECONOMIC ASSESSMENT AT REGIONAL AND NATIONAL LEVELS	47
10.1 PLAN BLEU’S SOCIO-ECONOMIC ASSESSMENT OF REGIONAL MEASURES	47
10.2 ASSESSMENTS IN THE FRAMEWORK OF MSFD POMS.....	48
10.3 SOCIO-ECONOMIC ASSESSMENTS IN THE NAPS.....	50
PART III: ELABORATION OF POSSIBLE NEW MEASURES AT REGIONAL LEVEL	52

11	AREAS AND ISSUES WHERE NEW MEASURES ARE NEEDED	53
12	LIST OF POTENTIAL NEW/ UPDATED MEASURES	53
13	FACTSHEETS FOR PRIORITY MEASURES.....	61
PART IV: ACTION PLANS		67
14	ACTION PLAN ON IMPLEMENTING THE POMS AND THE NAPS BY INTEGRATING REGIONAL AND MSFD REQUIRMENTS	68
15	MEDIUM AND LONG TERM REGIONAL POMS ACTION PLAN.....	70
ANNEXES		73
ANNEX 1: MSFD DESCRIPTORS AND ECAP ECOLOGICAL OBJECTIVES		74
ANNEX 2: MSFD MEASURES		75
REFERENCES		80

LIST OF FIGURES AND TABLES

<i>Figure 1: DeCyDe-4 ActionMed scoring scale</i>	Error! Bookmark not defined.
<i>Figure 2: DeCyDe-4 ActionMed evaluation matrix: example of marine litter measures</i>	Error! Bookmark not defined.
<i>Table 1: Actions/ measures proposed under ARCADIS MSFD Support Project needed to reach the GES targets.....</i>	19
<i>Table 2: Outputs of ActionMed sub-regional workshops on identification/ selection of common measures.....</i>	23
<i>Table 3: Output of the Greek national workshop: measures assessed as the most implementable and effective.....</i>	26
<i>Table 4: Priority investment (technical) measures relevant for EO5.....</i>	34
<i>Table 5: Priority investment (technical) measures relevant for EO9.....</i>	34
<i>Table 6: Priority investment (technical) measures relevant for EO10.....</i>	35
<i>Table 7: Legal and policy frameworks for the existing regional measures in the Mediterranean.....</i>	37
<i>Table 8: Future issues to be considered related to measures for eutrophication.....</i>	41
<i>Table 9: Future issues to be considered related to measures for contaminants.....</i>	41
<i>Table 10: Future issues to be considered related to measures for marine litter.....</i>	42
<i>Table 11: The main characteristics and issues in the four Mediterranean sub-regions.....</i>	43
<i>Table 12: Percentage cover of marine protected area networks in the Mediterranean marine sub-regions.....</i>	45
<i>Table 13: Gaps and needs identified during the Adriatic sub-regional workshop.....</i>	45
<i>Table 14: New/ updated regional PoM: proposed list of measures</i>	55
<i>Table 15 : Action plan on implementing the PoM and the NAPs by integrating regional and MSFD requirements.....</i>	68
<i>Table 16 : Medium and long-term regional PoM action plan.....</i>	70

ABBREVIATIONS

ACCOBAMS	Agreement on the Conservation of Cetaceans in the Black Sea Mediterranean Sea and Contiguous Atlantic Area
BATs	Best Available Techniques
BEPs	Best Environmental Practices
BOD	Biochemical Oxygen Demand
CAM	Coordination and Alignment Meetings
CBA	Cost benefit analysis
CEA	Cost-effectiveness analysis
CFP	Common Fisheries Policy
CIS	Common Implementation Strategy
COP	Conference of Parties
EcAp	Ecosystem Approach
EEA	European Environment Agency
EFA	Ecological Focus Areas
EIA	Environmental Impact Assessment
ELV	Emission Limit Values
EMFF	European Maritime and Fisheries Fund
FP	Focal points
FRA	Fisheries restricted areas
GES	Good Environmental Status
GFCM	General Fisheries Commission for the Mediterranean
IAS	Invasive Alien Species
ICZM	Integrated Coastal Zone Management
IMAP	Integrated Monitoring and Assessment Programme
IUU	Illegal, Unreported, and Unregulated Fishing
KTM	Key type of measures
LBS	Land-based sources
MLRP	Regional Plan for the Marine Litter Management in the Mediterranean
MPA	Marine Protected Areas
MSCG	Marine Strategy Coordination Group
MSFD	Marine Strategy Framework Directive
MSP	Maritime Spatial Planning
MSSD	Mediterranean Strategy on Sustainable Development
MSY	Maximum sustainable yield
NAP	National Action Plans
NGO	Non-governmental organisation
NIS	Non-indigenous species
PoM	Programmes of Measures
PRF	Port Reception Facilities
PRTR	Pollution Release and Transfer Register
RBMP	River Basin Management Plan
SAP/BIO	Strategic Action Plan for the conservation of marine and coastal biodiversity in the Mediterranean
SAP/MED	Strategic Action Programme to Address Pollution from Land-Based Activities
SCP	Sustainable Consumption and Production
SIA	Strategic Impact Assessment
SoER-MED	State of the Mediterranean Marine and Coastal Environment
SPA/ BD	Specially Protected Areas and Biodiversity (Protocol)
UNEP/MAP	United Nations Environment Programme – Mediterranean Action Plan
WFD	Water Framework Directive
WWTP	Wastewater Treatment Plant

EXECUTIVE SUMMARY

The Marine Strategy Framework Directive (MSFD) aims to achieve Good Environmental Status (GES) in the EU's marine waters by 2020. The Ecosystem Approach (EcAp) is a guiding principle for the overall work under Barcelona Convention/ Mediterranean Action Plan (UNEP/MAP) and its policy framework, with the ultimate goal of achieving the GES of the Mediterranean Sea. A step-wise approach to implementing the MSFD and EcAp is applied both at the EU and at the level of the Regional Sea Convention – Barcelona Convention.

Following completion of the first phase of the MSFD implementation, lack of consistency and coherence has been identified, in particular for the Mediterranean. The project “*Action Plans for Integrated Regional Monitoring Programmes, Coordinated Programmes of Measures and Addressing Data and Knowledge Gaps in Mediterranean Sea (ActionMed)*” aims to address some of the identified issues by supporting the development of regional action plans and best practices for integrated monitoring programmes, coordinated programmes of measures and filling of data gaps for the Mediterranean marine waters.

The main aim of the ActionMed Activity 3 was to assist the EU Member States in the Mediterranean region in their work on programme of measures, by addressing particular gaps identified at national and regional levels, in a coordinated manner, both in line with the EU MSFD and the Barcelona Convention’s EcAp process (Decision IG. 21/3). Under this activity, a desk study on potential new measures on the regional level was prepared and a list of new/ updated measures proposed. Based on these, Action plan on implementing the PoM and the NAPs by integrating regional and MSFD requirements (ActionMed deliverable D3.3) and Medium and long-term Regional PoM action plan (ActionMed deliverable D3.7) were elaborated, as presented in the current report.

The current report (study on potential new/ updated measures with related action plans) builds upon results of the ActionMed Activity 3 and available analyses of the MSFD Programmes of Measures (PoMs) and Barcelona Convention National Action Plans (NAPs), as well as upon results of related projects/ activities. It provides a synthesis of the main findings with the purpose to identify areas where strengthened implementation and new measures are needed to achieve GES. Within this analytical framework, the main objectives of the current report were to:

- Review and streamline available information on the regional gaps (insufficient implementation or lack of measures) that need to be overcome in order to achieve GES;
- Review the available analysis of programme of measures compiled under the EU MSFD for the Mediterranean countries and synopsis of the Barcelona Convention NAPs to identify common measures and/ or needs for further coordination in planning and implementing measures;
- Propose a new/ updated list of regional measures (Regional PoM) to address the key gaps, coordination and integration needs to achieve GES with particular focus on descriptors 5, 8, 9 and 10;

- Recommend necessary actions to further align the EU MSFD implementation timeline with Ecosystem Approach road map under UNEP/ MAP – Barcelona Convention to:
 - further strengthen coordination and integration of the MSFD and regional requirements, through implementation of PoMs and NAPs, and
 - elaborate and implement new/ updated regional PoM.

Findings of the regional gap analysis (ActionMed deliverable D3.1) were the starting point for elaboration of new/ updated measures. Results of other ActionMed activities (primarily ActionMed deliverables D3.2 and D3.8), as well as results of related projects and NAPs update were also taken into account. Possible measures to address the gaps were formulated and screened against a set of criteria to identify the most relevant ones in terms of their effectiveness, significance of the driver/ impact they are addressing, relevance for other policies and potential for coordinated/ joint implementation. In doing so, interventions aiming to reduce implementation gaps for the existing measures as well as new measures targeting the most significant pressures/ impacts were considered. Particular attention was paid to areas where effectiveness of measures could be fostered through regional cooperation and/ or joint implementation of measures. The identified measures were also cross-checked against available information on the development of MSFD PoMs, to contribute to further alignment of MSFD and EcAp programmes of measures.

The findings and proposals outlined in the current report take into account consultations conducted through the workshops and meetings held within the ActionMed project and in the framework of UNEP/MAP - Barcelona Convention activities, including two ActionMed sub-regional workshops (for the Adriatic sub-region, as well as for Cyprus, Greece and Malta), national ActionMed workshop for Greece, and UNEP/MAP – MEDPOL Regional Meeting on NAPs Implementation (see Deliverables 3.4 a, b, c).

Implementation gaps or lack of measures have been identified both on the regional and national levels. The proposed new/ updated Regional PoMs comprises both existing and new measures. For the achievement of GES, it is very important to ensure full implementation of the existing measures and their adjustments/ updating, as the new information becomes available (e.g. through 2017 State of the Environment Report, Integrated Monitoring and Assessment Programme - IMAP, MSFD and EcAp review cycles). New measures should be phased in; starting with those that will address the most significant deviations from GES, while taking into account implementation capacities. Whenever applicable, new measures should build on the previously established measures and achievements. Potential to strengthen coordination in developing and implementing measures is still significant and should be tapped.

In some cases it was possible to define proposed measures to a significant level of detail. Some measures were defined as self-standing actions, while as in other cases framework interventions were proposed with sets of measures organised in the form of various plans, policies and guidance documents. Further work is necessary to specify, elaborate in detail and confirm relevance of measures before formal preparation starts and decision-making process is initiated.

Proposal of the new/ updated regional measures (Regional PoMs) is structured around the themes listed below, whereas relevant descriptors/ ecological objectives are provided in brackets:

- **Biodiversity** (D1, D4, D6 i.e. EO1, EO4, EO6);
- **Non-indigenous and invasive species** (D2/ EO2);
- **Fish stocks** (D3/ EO3);
- **Eutrophication and contaminants** (D5, D8, D9/ EO5, EO9);
- **Marine litter** (D10/ EO10);
- **Cross-cutting issues** (climate change, ICZM, sustainable consumption and production, relevant to all descriptors/ ecological objectives; ICZM particularly relevant for EO8);
- **Horizontal measures** (several descriptors/ ecological objectives).

Measures proposed under **biodiversity** theme refer to the following:

- Expansion of the network of marine protected areas, strengthening of its coherence and representativity and improvements in the MPA management and financing, accompanied with promotion of other spatial measures to protect biodiversity;
- Strengthened enforcement of the existing protection measures and restrictions, improved control and surveillance of the MPA network;
- Strengthened implementation of the Barcelona Convention SAP/BIO and of the species Action Plans;
- Protection of sea mammals, sea birds and sea turtles (measures targeting by-catch, noise, collisions with ships);
- Mapping/ protection of *Posidonia* and of other significant habitats;
- Control and minimisation of impacts on sea-floor integrity (including mooring and anchoring, bottom trawling, artificial reefs, offshore activities);
- Restoration of degraded habitats;
- Overcoming knowledge gaps (threatened species, sea-floor habitats, impacts of dredging on sea-floor integrity, marine food webs, deep sea ecosystems, impacts of Invasive Alien Species (IAS) and pathogens).

As regards **non-indigenous species**, proposed measures highlight the need for better management of ballast waters, strengthened implementation of the updated Invasive Alien Species (IAS) Action Plan, improved management of aquaculture, adoption of a common list of priority IAS, establishment of early warning and rapid response system (including exchange of information on new introductions), and improvements in knowledge on invasive species.

Measures proposed under the **fish stocks** theme include preparation of guidelines/ regional plan on sustainable fisheries (including recreational fishing), improved implementation of Multiannual Management Plans, strengthened research and application on new fishing technologies (to *inter alia* minimise by-catch), better enforcement of the existing restrictions, promoting the application of the EU policy to minimise discards, expansion of Fisheries Restricted Areas (FRAs) and others.

To address **eutrophication and contaminants**, measures referring to the following were proposed:

- Strengthened implementation of the UNEP/ MAP – Barcelona Convention Regional Plans;
- Improvements in the efficiency of wastewater treatment plants (WWTPs);
- Setting of targets for secondary and tertiary treatments, as well as for reuse of treated wastewater;
- Strengthening of the existing and development of new measures to improve region-wide performance with sewage sludge management;
- Promoting construction, expansion and upgrading of industrial WWTPs;
- Preparation of technical guidelines/ management standards/ Regional Plans for agriculture and aquaculture;
- Introduction of, or improvements in the management of runoff from urban areas and effluents from storm water sewers;
- Development of plans to reduce pollution from atmospheric depositions;
- Regional guidelines/ management standards for desalination and tanneries, as well as for management of dredged materials;
- Measures targeting specific contaminants (mercury and lead);
- Setting of Emission Limit Values (ELVs) for more contaminants, including emerging contaminants;
- Improved implementation of the Regional Plans' provisions on remediation of contaminated sites;
- Further improvements with the implementation of the Dumping, Offshore (including Offshore Action Plan) and Emergency Protocols, as well as with MARPOL Annex IV;
- Adoption of an updated list of priority contaminants;
- Establishment of national/ regional PRTRs.

Under **marine litter** theme, measures were proposed to strengthen solid waste management systems in the region and promote waste prevention (including Sustainable Consumption and Production - SCP, green procurement and circular economy strategies and measures). Strengthened implementation of the Marine Litter Regional Plan (MLRP) (in general and specifically of the provisions on closure of illegal dumps) was also included in the proposed new/ updated Regional PoMs, alongside with efforts to prevent and/ or minimise inputs of marine litter through WWTPs, wastewater and storm water collection systems, runoff and rivers. Moreover, measures addressing the following were proposed:

- Monitoring, assessments and availability of data on marine litter;
- Plastics, packaging wastes and microplastics;
- Assessing options to phase out landfilling of recyclable wastes and plastics in particular;
- Implementation of MARPOL Annex V;
- Use of port reception facilities at no-special fee;
- Implementation of guidelines on the dumping of dredged materials;
- Prevention/ retrieval of lost/discarded fishing gear and implementation of fishing for litter schemes;

- Improving data on marine litter hot spots and removal of accumulated litter affecting MPAs;
- Measures to reduce incidence of cigarette butts;
- Clean-up and awareness raising activities.

As regards **cross-cutting issues**, the proposed new/ updated Regional PoMs comprises measures aiming to support implementation of legal instruments, strategies and action plans on climate change, SCP and ICZM, and to enhance integration, research and availability of information. Specific measures on e.g. promotion of eco-design for man-made structures in the marine environment and sustainability-directed innovations in aquaculture are also included. Moreover, measures to demonstrate possible applications of Maritime Spatial Planning in the framework of ICZM policies and to adopt common methodologies to assess uses and management of coasts are envisaged under this theme.

Finally, measures to amend and improve knowledge on the value of marine ecosystems and costs of degradation of marine environment, as well as on socio-economic impacts of marine litter are included under the theme of **horizontal measures**. This is accompanied with measures aiming to strengthen application of polluter and user pays, as well as of precautionary principles. Training and awareness raising activities are also envisaged here.

Priority measures, for which socio-economic assessment has been conducted (ActionMed deliverable D3.2), were elaborated in more detail and are presented in the form of fact sheets in the current report.

Finally, appropriate actions for the implementation of the PoMs and the NAPs, as well as for the development of the new/ updated regional measures were identified and elaborated. The following are recommended under the **Action plan on implementing the PoMs and the NAPs by integrating regional and MSFD requirements**:

- Analyse effectiveness of existing Barcelona Convention measures to improve the status of marine ecosystems, undertake analysis of the implementation of Regional Plans;
- Annual review of NAPs/ PoMs implementation overall;
- Sharing information on the identification and implementation of specific measures at regional and EU levels (additional forums);
- Support country assessments and national monitoring programmes, and use the Assessment Sheets, as they become available to refine measures and focus coordination and implementation efforts;
- Identify cooperation and coordination needs and priorities for endorsement and support by COPs;
- Support the Contracting Parties with implementation of the NAPs;
- Support implementation of the MLRP through continued coordination between countries (EU and non-EU); facilitate coordination through establishment of tools such as ML data bank, regional database on 'fishing for litter' schemes;

- Strengthen capacities for socio-economic assessment and use of CEA/ CBA in selecting the measures; transfer of knowledge between countries;
- Awareness raising and communication activities, improving visibility for EcAp and MSFD.

As regards the **Medium and long-term Regional PoMs action plan**, the following actions are recommended:

- Further work on the elaboration of a potential list of new/ updated measures by the UNEP/ MAP-Barcelona Convention for presentation at the MEDPOL FP meeting;
- Revision based on the MEDPOL FP meeting recommendations and submission to MAP FP through EcAp Coordination Group;
- Undertake feasibility studies for some priority new/ updated regional measures during the 2018 – 2019 biennium, if/ as mandated by the MAP FP;
- Based on the findings of feasibility studies and MEDPOL FP, ECAP Coordination Group and MAP FP recommendations, COP 21 may mandate elaboration of concrete new/ updated measures;
- Adoption of new/ updated measures by COP 22 (in 2021) as appropriate.



PART I: CONTEXT



1 INTRODUCTION

The Marine Strategy Framework Directive (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. The Directive is based on the ecosystem approach.

In order to achieve GES by 2020, Member States (MSs) were/are required to develop Marine Strategies through the following sequence of steps:

- The initial assessment of the environmental status of national marine waters and the environmental impact and socio-economic analysis of human activities in these waters (due in 2012);
- The determination of what GES means for national marine waters (by 15 July 2012) ;
- The establishment of environmental targets and associated indicators to achieve GES by 2020 (2012);
- The establishment of a monitoring programme for the on-going assessment and the regular update of targets (2014);
- The development of a programme of measures designed to achieve or maintain GES by 2020 (2015);
- The review and preparation of the second cycle (2018 – 2021).

The Directive defines the EU marine regions and sub-regions and recognizes that cooperation and coordination at regional level are necessary for successful implementation. In this context, MSs are required to use the existing regional mechanisms and structures, and as far as possible to build upon relevant existing programmes and activities developed in the framework of Regional Sea Conventions.

The legal framework of the Barcelona Convention¹ comprises seven Protocols that regulate various aspects of the protection of marine environment: Dumping Protocol, Prevention and Emergency Protocol, LBS Protocol, SPA & Biodiversity Protocol, Offshore Protocol, Hazardous Wastes Protocol, and ICZM Protocol. These legal instruments are complemented with two Strategic Action Programmes – SAP/MED (addressing pollution from land-based sources and activities) and SAP/BIO (focusing on the Mediterranean biodiversity), legally binding Regional Plans on pollution prevention, action plans on biodiversity/ specific species protection, integrated coastal zone management, sustainable consumption and production, and offshore activities, as well as with the Climate Change Adaptation Framework and the Mediterranean Strategy on Sustainable Development (MSSD). This set of legal and policy instruments with related measures is implemented at regional and national levels.

As decided by the Contracting Parties at COP 15 and COP 17 (Decisions IG. 17/6 and IG. 20/4), the Ecosystem Approach (EcAp) became a guiding principle for the overall work under Barcelona Convention/ Mediterranean Action Plan (UNEP/MAP), with the ultimate goal of achieving GES of the Mediterranean Sea. These Decisions laid down the EcAp implementation roadmap and were followed and further

¹ Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean

operationalized through the COP 18 Decision IG. 21/3 on GES and targets, and COP 19 Decision IG. 22/7 on Integrated Monitoring and Assessment Programme (IMAP). The Barcelona Convention EcAp is aligned with the MSFD approach.

The Report from the Commission to the Council and the European Parliament (COM(2014) 97) on the first phase of implementation of the MSFD and accompanying documents (such as the Commission Staff Working Document SWD(2014)49 final) showed that Member States' submissions under articles 8, 9 and 10 (initial assessments, determination of GES, establishment of targets) did not fully meet the requirements of adequacy, consistency and coherence. Lack of coherence was recorded even among the countries within the same marine region or sub-region, and assessed to be particularly pronounced in the Mediterranean.

The project *Action Plans for Integrated Regional Monitoring Programmes, Coordinated Programmes of Measures and Addressing Data and Knowledge Gaps in Mediterranean Sea* (ActionMed) aims to address some of the issues identified following completion of the first phase of the MSFD implementation, by supporting the development of regional action plans and best practices for integrated monitoring programmes, coordinated programmes of measures and filling of data gaps for the Mediterranean marine waters.

The ActionMed objectives are to be achieved through the following activities:

- **Activity 1:** Systematic solutions of current gaps and needs in relation to articles 8, 9, 10 of the MSFD. Focus on biodiversity;
- **Activity 2:** Gaps, needs and actions to implement for national and regional monitoring for MSFD programmes (article 11);
- **Activity 3:** Assistance in the preparation of programme of measures, by addressing particular gaps identified both at national and regional level, linking together work on Programmes of Measures (PoM) under the MSFD and under the auspices of UNEP/MAP-Barcelona Convention (the PoM activity);
- **Activity 4:** The information management system for knowledge and data update; and
- **Activity 5:** Coordination and management, communication, dissemination and sustainability.

This report has been prepared under the PoMs Activity (Activity 3), comprising a desk study on potential new measures on the regional level and a proposed list of new/ updated measures. Based on these, Action plans on implementing the PoMs and the NAPs by integrating regional and MSFD requirements (ActionMed deliverable D3.3) and Medium and long-term Regional PoM action plan (ActionMed deliverable D3.7) were elaborated and are included in the current report.

The main aim of Activity 3 is to assist the EU Member States in the Mediterranean region in their work on programme of measures, by addressing particular gaps identified both at national and regional level, in a coordinated manner, both in line with the EU MSFD and the Barcelona Convention's EcAp process (Decision IG. 21/3). To this end, the following tasks have been implemented as a part of the PoMs Activity: 1) assessment of common gaps in national and regional measures and

selection of issues requiring further actions to achieve or maintain GES, 2) elaboration of possible measures, 3) socio-economic/ cost-efficiency analysis in elaborating the PoMs, and 4) preparation and dissemination of recommendations.

This report has been designed and prepared, in order to address regional dimension of the task 3.2 (elaboration of possible measures), while building up on the results of work carried out under tasks 3.1 and 3.3 (gap and socio-economic assessments) and providing inputs for the task 3.4 in the form of Action Plans on regional measures and integration of MSFD and regional (Barcelona Convention EcAp) requirements.

2 SCOPE AND OBJECTIVES OF THE REPORT

In 2015/ 2016, MSFD PoMs to achieve or maintain GES were developed by the EU Member States parties to the Barcelona Convention. Towards the end of 2016, most of the Mediterranean EU Member States have prepared their PoMs or were in the final stages of preparation. Moreover, a number of Contracting Parties to the Barcelona Convention which are EU Member States compiled National Action Plans (NAPs) by using the elaborated PoMs and adjusting them to the purpose and requirements of the EcAp pollution related ecological objectives (in accordance with the agreement reached within UNEP/MAP-Barcelona Convention framework).

In the same period, Contracting Parties of the Barcelona Convention updated their NAPs to reduce pollution from land-based sources. The aim of this update was to set operational targets and elaborate measures needed to achieve GES for pollution related ecological objectives (EO5 on eutrophication, EO9 on contaminants and EO10 on marine litter) through the implementation of the requirements of the LBS Protocol, related Regional Plans and SAP/MED provisions.

Under the auspices of Barcelona Convention, *Ecosystem Approach based Measures Gap Analysis* UNEP(DEPI)/MED WG.420/5, was prepared. The analyses focused on the existing measures² contributing to the implementation of the Barcelona Convention and its Protocols on both regional and national levels, linking them to EcAp ecological objectives and targets, and identifying the main shortcomings of the existing framework and its implementation to deliver the GES.

The work on identification of gaps continued through the ActionMed project, where the aim was to review the main stressors and impacts on the Mediterranean Sea, examine the existing measures at regional level and identify further actions that are required in order to reach GES, including strengthening of implementation and enforcement of existing measures, and/ or adoption of additional new measures. The findings are presented in the ActionMed *Regional PoMs Analysis* (deliverable D3.1).

Socio-economic assessment of four selected regional measures (introduction of a plastic bag tax, no-special-fee as a cost recovery mechanism for port reception facilities for ship-generated waste, fishing for litter programmes and extension of the

² Including: i) measures adopted and implemented, for which time limits for their completion have been reached; ii) measures adopted but not yet implemented, for which time limits for their completion have not been yet reached; and iii) measures covering issues linked to EcAp environmental objectives, but not going far enough to achieve targets.

current network of marine protected areas) was also conducted in the framework of ActionMed (as presented in the Deliverable D3.2). The aim was to provide analysis to underpin preparation/ update of PoMs and facilitate decision making by providing useful levels of information (quantitative and/or qualitative) on effectiveness, costs and benefits of selected measures. The aim of this component of ActionMed work was also to provide guidelines for national socio-economic assessments of measures, based on the analysis of the approaches applied in the preparation of PoMs in three EU Member States and international best practice.

Moreover, under ActionMed activity 3, analysis of national PoMs *vis a vis* requirements under the MSFD and the Barcelona Convention was undertaken³ and several stakeholder workshops were conducted on the regional, sub-regional and national levels dealing with elaboration of measures and preparation of PoMs.

For the purpose of this report, available PoMs and NAPs analyses reports⁴ were reviewed in order to identify areas and issues of common concern across the region for which measures were proposed to reach GES.

The current report (study on potential new/ updated measures with related action plans) builds upon results of the ActionMed Activity 3 and available analyses of the MSFD PoMs and Barcelona Convention NAPs, as well as upon results of related projects/ activities (for example, ARCADIS MSFD Support Project described in section 4.1). It provides a synthesis of the main findings with the purpose to identify areas where strengthened implementation and new measures are needed to achieve GES. Within this analytical framework, the main objectives of the study were to:

- Review and streamline available information on the regional gaps (insufficient implementation or lack of measures) that need to be overcome in order to achieve GES;
- Review the available analysis of programme of measures compiled under the EU MSFD for the Mediterranean countries and synopsis of the Barcelona Convention NAPs to identify common measures and/ or needs for further coordination in planning and implementing measures;
- Propose a new/ updated list of regional measures (Regional PoM) to address the key gaps, coordination and integration needs to achieve GES with particular focus on descriptors 5, 8, 9 and 10;
- Recommend necessary actions to further align the EU MSFD implementation timeline with Ecosystem Approach roadmap under UNEP/ MAP – Barcelona Convention to:
 - further strengthen coordination and integration of the MSFD and regional requirements, through implementation of PoMs and NAPs, and

³ Results are presented in the ActionMed deliverable D3.8: *MSFD – EcAp National Medium and Long-term Action Plan (D3.8); Analysis of National PoM vis a vis requirements under the MSFD and the Barcelona Convention*

⁴ Including *Synopsis of updated NAPs: Hotspots, sensitive areas, targets, measures, indicators and investment portfolios*, UNEP(DEPI)/MED WG.426/3

- elaborate and implement new/ updated regional PoMs.

This report consists of three parts. In the first part, the context in which the work has been carried out is outlined and methodological approach explained. Stakeholder consultations mechanisms and tools relevant for the report are also described in the first part. The second part encompasses information from the available analyses and reports on the EU MSFD and Barcelona Convention implementation at regional and national levels, providing an overview of the analytical work and assessments done under ActionMed, with synthesis of the main findings. The third part includes proposal of the new/ updated regional PoMs to address identified gaps with accompanying action plans and elaboration of priority measures. The Action Plans are aligned (to the extent current information allowed) with the MSFD and EcAp processes, as well as with the UNEP/ MAP Mid-term Strategy (MTS) 2016 – 2021 and Programme of Work 2016 – 2017⁵.

3 METHODOLOGY

In order to achieve the objectives of the report, the following steps were carried out:

1. Regional gap analysis (ActionMed deliverable D3.1) was examined as a starting point for determination of areas that need to be addressed with new/ updated measures on the regional level to achieve GES, together with information on effectiveness, costs and benefits of selected potential new measures (ActionMed deliverable D3.2);
2. Available analyses and reports on the national PoMs (ActionMed deliverable D3.8) and on Barcelona Convention NAPs (*Synopsis of updated NAPs: Hotspots, sensitive areas, targets, measures, indicators and investment portfolios*, UNEP(DEPI)/MED WG.426/3) were reviewed;
3. Available MSFD PoMs (for the Mediterranean countries) and Barcelona Convention NAPs were screened with the purpose to identify potential new measures of regional relevance;
4. Taking into account steps 1 – 3, ActionMed consultations and results of the previous projects:
 - a. potential new/ updated measures were identified, screened against a set of criteria⁶ and cross-checked with measures included in the PoMs/ NAPs,
 - b. a list of potential strengthened/ updated (existing but better implementation or extension needed) and new measures was compiled and proposed for consultations at the PoMs workshop,
 - c. new/ updated list of regional measures was finalised based on the stakeholders' feedback and priority measures were described in the form of fact sheets,

⁵ Decisions IG.22/1 and IG.22/2

⁶ Combination of criteria used in the application of DeCyDe-4-ActionMed tool in the ActionMed activities and those proposed in the working document for the October 2016 NAP update meeting (*Potential new/updated measures to achieve GES on pollution and litter*, UNEP(DEPI)/MED WG.426/4)).

- d. action planning elements were determined and consulted to formulate a set of time-bound recommendations on integration of MSFD and EcAp programmes of measures, and on elaboration, adoption and implementation of updated/ new regional measures.

Efforts were made to consider sub-regional issues to the extent possible. According to MSFD (Article 4.2 (b)), Mediterranean sub-regions are: the Western Mediterranean Sea; the Adriatic Sea; the Ionian Sea and the Central Mediterranean Sea; and the Aegean-Levantine Sea. This approach to delineating marine sub-regions was also applied in the initial assessment done under EcAp.

Based on the EU MSFD requirements and recommendations⁷, requirements set out in the Barcelona Convention COP Decisions on EcAp⁸ and the analysed information (including analyses reports on regional and national levels, PoMs and NAPs, UNEP/MAP-Barcelona Convention documents), proposal of the new/ updated Regional PoM is structured around the themes listed below, whereas relevant descriptors/ ecological objectives⁹ are provided in brackets:

- **Biodiversity** (D1, D4, D6 i.e. EO1, EO4, EO6);
- **Non-indigenous and invasive species** (D2/(EO2));
- **Fish stocks** (D3/ EO3);
- **Eutrophication and contaminants** (D5, D8, D9/ EO5, EO9);
- **Marine litter** (D10/ EO10);
- **Cross-cutting issues** (climate change, ICZM, sustainable consumption and production, relevant to relevant to all descriptors/ ecological objectives; ICZM particularly relevant for EO8);
- **Horizontal measures** (several descriptors/ ecological objectives).

In elaborating possible updated/ new measures, an effort was made to link them to the appropriate categories, modes of actions and key types of measures (KTM) as envisaged under MSFD and Common Implementation Strategy (CIS – coordination programme established at the level of the EU with a view to support implementation of the MSFD).

For the purpose of action planning, a distinction is made between mid-term (2017/ 2018) and long-term (beyond 2018) actions. To the extent possible, action planning is aligned with the MSFD and EcAp implementation processes.

⁷ Such as a series of documents prepared under the MSFD Common Implementation Strategy, including: *Updated Recommendation on Programmes of measures* (PoMs Recommendation), MSCG, 2014; *Programmes of Measures under the Marine Strategy Framework Directive: Recommendations for implementation and reporting*, 2014; and *Reporting on Programmes of Measures (Art.13) and on exceptions (Art.14) for the Marine Strategy Framework Directive*, WG DIKE, 2015

⁸ Including: COP 15 Decision IG. 17/6 on implementation of EcAp (Almeria, Spain, 2008), COP 17 Decision IG. 20/4 on implementing MAP ecosystem approach roadmap (Paris, France, 2012), COP 18 Decision IG.21/3 on GES and targets (Istanbul, Turkey, 2013) and COP 19 Decision IG. 22/7 on IMAP (Athens, Greece, 2016).

⁹ List of MSFD descriptors and EcAp ecological objectives is provided in [Annex 1](#).

4 RELATED PROJECTS AND ACTIVITIES

Several projects and specific activities relevant for the scope and objectives of this report have been conducted recently. The most relevant ones – namely project to support joint implementation of the MSFD in the Mediterranean (implemented *inter alia* through a series of meetings aiming at coordination and alignment of activities carried out at national level) and the DeCyDe-4-ActionMed tool - originally developed under the IRIS-SES project – are briefly presented in the subsequent sections.

4.1 ARCADIS MSFD support project

The project “*Technical and administrative support for the joint implementation of the Marine Strategy Framework Directive by EU MED Member States (ARCADIS MSFD support project)*” was implemented by a consortium led by ARCADIS under Framework contract for services related to coordination between the different marine regions in implementing the ecosystem approach – Phase I (monitoring programme) and Phase II (Programme of Measures)¹⁰.

Within project activities, five Coordination and Alignment Meetings (CAMs) have been organised, bringing together representatives of the eight EU Member States in the Mediterranean (EU MED MSs) to discuss specific issues related to the development of PoMs. The project work focused on joint or coordinated measures, which should be further completed by national measures for each of the EU MED MSs (national measures were outside project’s scope). The meetings provided for an information exchange and discussion platform for common issues in the Mediterranean. The project also had a sub-regional dimension (whereas trilateral meetings were held, including one relevant for the Western Mediterranean Sea).

The project activities led to identification, selection and analysis of measures to address specific issues related to descriptors D10 (marine litter), D1 (biodiversity) and D3 (commercially exploited species); for D1 and D3, conservation measures with an area-based component were considered. Overview of the key outcomes pertinent for the regional level¹¹ is presented in Table 1.

¹⁰ Details on the Phase II results available from the final report titled *Joint document on regional coordination of Programme of Measures in the Mediterranean Sea*, ARCADIS, 2015.

¹¹ Actions relevant for global, European and national levels were also identified.

Table 1: Actions/ measures proposed under ARCADIS MSFD Support Project needed to reach the GES targets.

D1/D3	Area-based measures - Cetaceans
Regional actions ¹⁾ still needed to reach targets	<p>Control offshore activities (incl. drilling, wind farms) and maritime traffic</p> <ul style="list-style-type: none"> • (N) Identification of important areas (hot spots) for cetaceans – MSP and SIA may be used as tools • (E + N) Offshore protocol action plan (UNEP-MAP) • (N) Project to map ambient noise (incl. setting the baseline) at (sub)regional level in the MED (ref. to EMFF fund / Horizon 2020 / Barcelona convention), in cooperation with ACCOBAMS working group on noise • (N) Test initiatives on noise in a restricted area as marine protected areas • (E+N) Promote the installation of ship-strike alarm systems to prevent collisions with marine mammals <p>Impacts caused by fisheries activities and recreational activities</p> <ul style="list-style-type: none"> • (N) Coordinated implementation of regulation 1005/2008 on IUU (Illegal, Unreported and Unregulated fishing) at EU Med level • (N) Stimulation of implementation of regulation 1005/2008 on IUU by non-EU MS • (E + N) Pilot research on by-catch (turtles, cetaceans, elasmobranchs) by GFCM, in coordination with ACCOBAMS in western MED; research area will be expanded to the whole MED • (N) Scientific proposal by GFCM that any management plan should incorporate a mitigation measures for by-catch (proposed by scientific Committee of GFCM to Commission of GFCM) • (N) Preparation of training material/ leaflets for awareness raising of small scale fisheries by GFCM • (E) on-going activities on IUU within GFCM (assessment extension IUU, training, compensation) • (N) Training of inspectors to handle IUU fisheries • (N) Test initiatives on pesca-tourism in a restricted area as marine protected areas • (E) Label "High Quality Whale Watching" ® ACCOBAMS/Pelagos
D1/D3	Area-based measures – Habitats
Regional actions ¹⁾ still needed to reach targets	<p>Regional/sub-regional joint or coordinated measures on anchoring and mooring:</p> <ol style="list-style-type: none"> 1. Development of Mediterranean strategy on mooring and anchoring practices (code of good practice) 2. Coordinated implementation of existing guidelines + proposed Mediterranean strategy on mooring and anchoring practices 3. Merchant ships: Operational warning system of the non-compliance of ships by UNEP/MAP (communication between countries) 4. Merchant ships: Promote guidelines on waste, noise, etc. in waiting areas. 5. Cruise ships: Communication and awareness raising towards local authority/ municipalities, cruise operators and ports <p>Proposed regional measures or actions regarding coordination of MPA networks/ area based measures for further discussion by EU MED MS:</p> <p><u>Actions to be developed to reach the CBD target of 10 % designation of MPA:</u></p> <ul style="list-style-type: none"> • Lobby to give priority to MPA establishment/ area-based measures with regards to new EU calls on MPA networks (e.g. Interreg OP). • Collaboration and strengthening of NGO network in the MED <p><u>Actions to be developed to increase coherence and representativeness of MPA's:</u></p> <ul style="list-style-type: none"> • Coordination meetings to be organised at regular times and at different levels (e.g. BARCON/OSPAR; EU MED level, sub-regional level) • Guidelines with common criteria for coherence and representativeness on

	<p>MPA at EU level / Regional level</p> <p><u>Actions to be developed to ensure effective management of MPA's:</u></p> <ul style="list-style-type: none"> • EU/Regional/ National: proposal for long-term funding of MPA management • National/regional: Application for stewardship for MPA.
D10	Marine litter
	<ol style="list-style-type: none"> 1. MEDPOL to develop the Regional Sea Databank on Marine Litter by 2016 and upload the data provided by contracting parties 2. Ensure regional coordination on the implementation of EU Directive 2000/59/EC in relation to MARPOL Annex V ship generated waste. 3. (E) Install appropriate recovery systems which are adapted to EPB and used fishing gear recovered by fishermen and promote their use to generate value. 4. (E) Explore the possibility to apply cost-effective measures to prevent any marine littering from dredging activities taking into account the relevant guidelines adopted in the framework of Dumping protocol of the Barcelona Convention 5. (E+N) Take necessary measures to establish as appropriate adequate urban sewer, wastewater treatment plants and waste management systems to prevent run-off and riverine inputs of litter 6. (E) Where it is environmentally sound on the basis of EIA procedures, cost-effective and economically viable, remove existing accumulated litter impacting protected areas 7. (N) Launch and encourage participation by all contracting parties to a Mediterranean Coastal Clean-up day 9. (E) Encourage and implement to the extent possible the 'fishing for litter' schemes 10. (N) Include marine litter as topic in the education programmes for recreational sea farers to reduce littering by recreational vessels 11. (E) Promote engagement/awareness by applying, when appropriate, adopt a beach or similar practices (Beach stewardship scheme)

1) Various measures/ actions have been proposed by the EU MED MS to address relevant pressures and impacts. They reflect ideas/ suggestions made by the experts attending the CAMs. No formal commitment between the EU MS has been made so far.

[N= new action, E = existing action to be effectively implemented and/ or reinforced]

4.2 DECYDE-4-ActionMed

The DeCyDe-4-ActionMed is a decision support tool based on a self-assessment method that integrates logical processes, established scientific knowledge and real local data. The method was used in the framework of the IRIS-SES project, where DeCyDe-4-IRIS tool was developed by ISOTECH, to facilitate preparation of joint monitoring programmes in Mediterranean. Under the ActionMed project, the tool was adjusted by ISOTECH to support elaboration of measures in the course of national and sub-regional workshops. Application of DeCyDe-4-ActionMed in the course of these workshops encouraged active participation of stakeholders and decision-makers in the selection of possible measures for Descriptors 5, 8, 9 and 10, and in the identification of possible common measures for implementation at a sub-regional level. The tool was used to evaluate lists of potential measures based on predefined criteria, and to rank them in terms of their importance/ urgency for implementation while reflecting the views and opinions of participating stakeholders.

The measures were evaluated and ranked based on criteria derived from the Guidance Document 10¹²:

- Criterion 1: Delivery against environmental targets;
- Criterion 2: Costs of implementation;
- Criterion 3: Social impact;
- Criterion 4: Environmental impact;
- Criterion 5: Economic impact.

The principle of comparing couples was used to rank the measures against each criterion. According to this principle, each measure is compared against all others in a pair-wise manner and scores are assigned according to the scoring scale shown in Figure 1.

Measure X Less important				Compared to			Measure Y More important		is
←				→					
Extremely	Very Strongly	Strongly	Moderately	Equally	Moderately	Strongly	Very Strongly	Extremely	
1/9	1/7	1/5	1/3	1	3	5	7	9	

Figure 1: DeCyDe-4-ActionMed scoring scale

Figure 2 shows an example of evaluation/ ranking of different measures on marine litter (D10) for the ‘delivery against environmental targets’ criterion. Scores are assigned based on comparison of couples (of measures) listed in spread sheet rows and columns, by answering a question whether (and to what extent) measure X is more or less important than measure Y in terms of delivering set targets. When a measure is compared to itself, score of 1 is assigned, creating a mirror line of the matrix (purple cells in Figure 1). The score of 3 assigned when ‘awareness raising’ is compared to ‘monitoring’ means, for example, the ‘awareness raising’ is assessed to be moderately more important in its delivery against environmental target than ‘monitoring’.

¹² MSFD Common Implementation Strategy, *Programmes of Measures under the Marine Strategy Framework Directive: Recommendations for implementation and reporting*, 2014



	A	B	C	D	E	F	G	H	I
1	 DeCyDe-4-ActionMed 								
2									
3									
4									
5									
6									
7	D10 - MARINE LITTER								
8									
9	DELIVERY AGAINST ENVIRONMENTAL TARGETS								
10			Awareness raising	Monitoring	Fishing Practices	Green Tourism	Waste water treatment-landfills	Weight Coef	% Coef
11			score	score	score	score	score		
12	Awareness raising	1	3	1/3	1/3	1/5	0.58	8.4%	
13	Monitoring	1/3	1	1/3	1/5	1/5	0.34	4.9%	
14	Fishing Practices	3	3	1	1	1/5	1.12	16.3%	
15	Green Tourism	3	5	1	1	1/5	1.25	18.0%	
16	Waste water treatment-landfills	5	5	5	5	1	3.62	52.4%	
17							6.91	100.0%	

Figure 2: DeCyDe-4-ActionMed evaluation matrix: example of marine litter measures.

When a score of 3 is assigned to a given cell (e.g. cell D12 in Figure 2), a score of 1/3 is automatically assigned to the cell where the inverse pair of measures pair is compared (cell C13) i.e. when ‘monitoring’ is compared to ‘awareness raising’. Once all the scores are assigned, percentage score of each measure is calculated using the geometric mean of all the scores. In this way, a ranked list of measures can be derived for each criterion.

5 CONSULTATIONS

The main findings of the current report and the proposed new/ updated regional PoMs with Action Plans have been drawn taking into account consultations held within ActionMed project, as well as those held in the framework of UNEP/ MAP - Barcelona Convention activities. The key meetings which were used to this end were:

- First ActionMed Sub-regional Stakeholder Workshop: Towards Common Measures for Good Environmental Status in the Adriatic Sub-region held in July 2014, in Piran, Slovenia, for Croatia, Italy and Slovenia (report is presented in the deliverable D3.4(a));
- ActionMed National Stakeholder Workshop: Towards the Definition of Programme of Measures for Achieving GES for Greece, held in October 2016 in Athens, Greece (report is presented in the deliverable D3.4(b));
- Second ActionMed Sub-regional Stakeholder Workshop: Towards Common Measures for Good Environmental Status in Cyprus, Greece and Malta held in November 2016 in Nicosia, Cyprus (report is presented in the deliverable D3.4(c));

- ActionMed Regional PoMs Workshop, held in 30th November - 1st December 2016 in Madrid, Spain.
- Regional Meeting on NAPs Implementation – Lessons Learned and the Way Forward held in October 2016 in Marseille, France¹³ (conclusions presented in the Report of the Meeting UNEP(DEPI)/MED WG.426/5).

5.1 ACTIONMED Regional and National Workshops

The two sub-regional workshops implemented under the PoMs Activity of the ActionMed Project aimed at bringing together various stakeholders and engaging them in a dialogue to identify priority common measures for achieving the GES in the Adriatic marine sub-region, as well as for Cyprus, Malta and Greece.

The Adriatic sub-regional workshop resulted with identification of the main pressures, gaps and needs for eutrophication, contaminants and marine litter. Subsequently, measures were identified and evaluated by using the DeCyDe-4-ActionMedtool for three criteria: delivery against environmental targets, cost of implementation, and social impact. The evaluation was undertaken as a capacity building exercise. Among the marine litter measures, for example, improvements in waste water plants and landfill management received the highest overall score i.e. was assessed as the best performing measure in terms of delivering targets, implementation costs and social impacts. This despite the fact that as a costly measure, it received the lowest score for implementation costs, which was nevertheless outweighed by high effectiveness and positive impacts on society as a whole.

The Mediterranean sub-regional workshop allowed for exchange of information among three countries which were at the various stages of PoMs development, with Cyprus PoMs published in the beginning of 2016, Greece PoMs being prepared, and Malta PoMs nearing public consultations phase. The workshop resulted with identification of possible common measures for implementation in Cyprus, Greece and Malta.

The key outputs of the two workshops are presented in Table 2.

Table 2: Outputs of ActionMed sub-regional workshops on identification/ selection of common measures.

Adriatic sub-regional workshop (Croatia, Italy, Slovenia)	Mediterranean sub-regional workshop (Cyprus, Greece, Malta)
D5 – Eutrophication	
Update sewerage network to minimise losses from leaks	Awareness-raising for the agricultural sector (e.g. best practices, code of conduct, info about conversion to organic farming) to

¹³ The meeting was organised by UNEP/MAP (MEDPOL and Plan Bleu) in collaboration with the EU-funded Regional Project “SWIM and Horizon 2020 Support Mechanism”

Adriatic sub-regional workshop (Croatia, Italy, Slovenia)	Mediterranean sub-regional workshop (Cyprus, Greece, Malta)
	reduce nutrient loading, especially in nitrate sensitive areas
At the moment all communities with more than 15,000 residents must be connected to a municipal waste treatment plant. Decrease this limit to 5,000 residents.	Banning of shipping/ vessel discharges and the provision/ upgrade of port reception facilities
Set a fertiliser quota in riverine catchment areas	Significantly reduce the concentrations of eutrophication contaminants from wastewater outfalls through the intensification of the checks of the effective operation of wastewater treatment plants
Provide tax exemptions to aquaculture businesses that invest in optimised feeding systems	
Engagement and awareness-raising in the agricultural sector	
D8/D9 – Contaminants	
Standardisation of stakeholder involvement in decision-making: establishment of a standard-systematic procedure (tool) in an official form for stakeholder involvement in the decision-making process.	Vessel waste management specifically liquid discharges from the shipping and fishing industries, through banning of shipping/ vessel discharges and the provision/ upgrade of port reception facilities
Data sharing policy: establishment of a formal data-sharing policy at a European level	Establishment of seafood quality standards
Standardisation of source mapping, standardisation of reporting and registering of impacts from sources contributing to contamination in terms of methods, frequency of analysis, instrumentation, limits, etc. (e.g. CORINAIR for air quality).	Accident management plans for offshore activities (shipping, hydrocarbon exploration and exploitation)
Monitoring and control of the implementation of abatement measures: establishment of a method/ procedure or a body that will oversee the implementation of abatement measures.	Regulation of hydrocarbon exploration and extraction activities by Strategic Impact Assessments and Environmental Impact Assessments, as well as the Offshore Protocol of the Barcelona Convention
International standard of recording data/measurements/results of monitoring.	Accident management plans for land-based activities
D10 – Marine litter	
Awareness raising of general public and education targeted to specific groups (tourism, industry, shipping/fishing and decision makers)	Targeted awareness raising campaigns
Specific monitoring e.g. for microplastics in fish tissue	Support Fishing for Litter practices, including for derelict fishing gear, with the no-fee disposal of litter collected by fishermen
Fishing practices e.g. fishing gear management and fishing for litter and sustainable clean-ups	Launch and encourage participation to a Mediterranean Clean-up Day by UNEP-MAP
Promotion and introduction of green practices	Reduction of the consumption of plastic bags

Adriatic sub-regional workshop (Croatia, Italy, Slovenia)	Mediterranean sub-regional workshop (Cyprus, Greece, Malta)
in tourism sector	(through e.g. a tax on plastic bags)
Improvement in wastewater treatment plant and landfill management	Promotion of measures for the ban of microplastics in cosmetics and awareness-raising on the sources and impacts of microplastics

Source: ActionMed deliverables D3.4 (a) and D3.4(c)

A significant share of the stakeholders that took part in the Adriatic workshop (in particular for the groups working on eutrophication and contaminants) were experts working on the MSFD monitoring process. This is visible in the workshop results. Their backgrounds and expertise influenced the identified gaps (e.g. no modelling on the mesoscale, insufficient/ inadequately designed monitoring programmes, and lack of data sharing between countries for eutrophication), needs and measures, which mainly refer to data, monitoring and reporting. Situation was somewhat different with marine litter, where more decision makers took part in the respective workshop group.

The main findings of the regional ActionMed workshops (as presented in the above-mentioned deliverables D3.4(a), (b) and (c), as well as in the ActionMed deliverable D3.6 – *Evaluation of suggested measures and major attributes for successful implementation*) were used for informative purposes in drafting the current report, while having in mind their shortcomings (they were primarily conducted as capacity building exercises, the results were affected by the range of participating stakeholders, and so on).

The national ActionMed workshop for Greece brought together experts and decisions makers from institutions relevant for the PoMs preparation and ActionMed project partners. From the list of measures included in the Cyprus, Spain and Slovenia PoMs (compiled by Isotech) and supported by the lists of measures already included in European or national legislation and/ or national action plans and strategies adopted in Greece (prepared by UNEP/MAP in the framework of ActionMed), the participants selected appropriate measures (or suggested other ones) to be included in the Greek PoMs for the descriptors D5, D8/D9 and D10. This and subsequent activities were conducted as exemplary exercises to showcasing possible approaches that can be used in selecting the PoMs.

From the comprehensive lists of measures, participants selected five measures for each descriptor that were considered to be the most important ones. These priority measures were then evaluated by using the DeCyDe-4-ActionMed tool against two criteria: implementation potential (the ease of implementation given coordination efforts, time and resources needed) and effectiveness (the extent to which the measure can make a significant difference towards achievement of GES). Results of the process are presented in Table 3. Number 1 in the left column means the measure received the highest score among measures assessed for the given descriptor, number 5 that the specific measures was assessed as the least implementable and effective solution.

Table 3: Output of the Greek national workshop: measures assessed as the most implementable and effective.

Ranking (DeCyDe-4- ActionMed)	Measures
D5 – Eutrophication	
3	Completion of wastewater treatment installation structural works for settlements falling under the provisions of Directive 91/271/EC; Intensification of the checks of effective operation at wastewater treatment plants
1	Delimitation of further nitrate vulnerable zones based on water body chemical condition assessment and drawing up action plans based on crop type and development of specialized methods/tools for the rational use of fertilisers and water in nitrate vulnerable zones
5	Integrated coastal water monitoring of environmental parameters of concern and means for their solution (FP7 My Ocean Project - Bay of Thessaloniki) - Intensification of the periodic monitoring of rainwater outlet waters and other point sources of pollution that end up at sea in coastal areas.
2	Completion of the necessary infrastructure at all port installations to ensure the safe reception of ship wastewater or oily residues and other wastes and avoid pollution of the sea
4	Improving Knowledge on Marine Pollution Issues. This measure includes different research initiatives carried out by several actors (scientific institutions, universities, public research organisations), and financed by various administrations, which will provide a progressive advance in the knowledge of these issues, as well as their prevention, control and mitigation
D8/9 – Contaminants	
3	Completion of the necessary infrastructure at all port installations (port reception facilities) to ensure the safe reception of ship wastewater or oily residues and other wastes to avoid pollution of the sea
2	Enhance control and enforcement under MARPOL (International Convention for the prevention of pollution from ships)
4	Industrial waste and wastewater management (determination of conditions and prerequisites for the connection of industries to WWTP, and completion of works for the collection and treatment of wastes from industry)
1	Upgrade of municipal wastewater treatment plants and construction of new ones where necessary
5	Assessment of contaminated sites urgently in need of remediation
D10 – Marine litter	
2	Awareness Raising Actions and communication to general public, local authorities, schools etc.
1	Establishment and implementation of a National Action Plan on marine litter and incorporate it in the National Plan for solid waste management
4	Undertake measures for re-use, recycling and recovery (common ministerial decision, to be concluded)
3	Implementation of the measures for the reduction of consumption of plastic

Ranking (DeCyDe-4- ActionMed)	Measures
	bags
5	Support and finance "fishing for litter" practice. Introduce the "no special fees" policy for the disposal of litter brought by fishermen, and improve port waste reception facilities and management

Source: ActionMed deliverable D3.4 (b)

5.2 NAPs meeting

The regional meeting on NAPs Implementation was held in October 2016, in Marseille, France. The meeting was attended by the MEDPOL Focal Points (FPs), experts from the country teams that have prepared NAPs, and other stakeholders. The aim of the meeting was to support the Contracting Parties in their effort to implement the NAPs in a coherent and coordinated manner by sharing lessons learned and paving the way forward. The discussions focused on the main findings from the NAPs updating process, including the identified measures, operational targets, and indicators, the assessment of hotspot and sensitive areas, as well as other NAP elements. Priority common actions, measures and targets to achieve GES were identified and discussed at the meeting.

As regards the next steps, the meeting considered the paper *Regional Programme of Measures to achieve Good Environmental Status; Overview of gap analysis and proposals for new/updated measures*, UNEP(DEPI)/MED WG.426/4. The paper outlined a possible approach to preparing new/ strengthened regional PoMs needed to overcome the identified gaps. Based on the earlier findings of the UNEP/ MAP Initial and EcAp gap analyses, as well as on the ActionMed *Regional PoMs Analysis* (deliverable D3.1), the main gaps (implementation gaps and/ or lack of measures) for pollution related ecological objectives were summarised (and presented at the meeting) as follows:

- Insufficient coverage, level of treatment and operational efficiency of WWT systems;
- Lack of performance standards and guidelines for key economic sectors contributing to marine and coastal environmental pollution such as agriculture, aquaculture etc.;
- Insufficient measures to address atmospheric depositions and inputs of nutrients and contaminants through storm water/ runoff;
- Inadequate solid waste management (including lack of measures to ensure decoupling of waste generation from economic growth, circular economy);
- Insufficient implementation/ enforcement of existing measures to eliminate key contaminants;
- There is no list of emerging contaminants;
- Existing research, monitoring and assessment programmes are not sufficient for informed policy making and efficient management of marine pollution;
- Existing measures do not address plastics and microplastics sufficiently;

- There is a lack of specific measures on cigarette butts;
- Lack of resource efficiency measures and insufficient use of economic instruments.

An indicative set of different categories of measures to address these gaps was also proposed for the meeting's consideration, alongside with the following criteria (questions) that should guide identification and selection of measures for the new/ updated regional PoMs:

- (measure is proposed for issues/ sources/ pressures where) State of the environment data indicates deviation from GES target OR There is evidence that the trends are not improving or deteriorating at regional and/ or sub-regional level;
- Significance of the driver (source)/ pressure/ impact the measure is addressing;
- (knowledge/ information on) Social, economic and environmental impacts of measures;
- Potential of measure to bridge the gap between current status and GES;
- Potential for coordinated and/ or joint implementation on either regional or sub-regional level;
- Multiple effects (measure has the potential to address several pressures/ sources/ impacts);
- Relevance for other policies (e.g. biodiversity, climate change), EU legislation where appropriate, relevant global Conventions;
- Technical feasibility of measures; and
- (knowledge/ information on) Cost-effectiveness and/ or cost-benefit analysis of measures.

Discussion and recommendations issued by the meeting included the need to focus on a small number of issues/ sectors (e.g. plastic bags, rainwater management, agriculture etc.), and the need to organise capacity building and training workshops and develop/ implement pilot projects with a view to assess applicability of considered measures.

The meeting concluded that the regional gap analysis carried out under UNEP/ MAP Programme of Work in collaboration with the ActionMed Project and the experience of the Contracting Parties with the NAPs update were reinforcing each other, thus representing a good basis to identify and elaborate new/ updated regional measures in the future. A more concrete proposal on potential new/ updated regional measures is to be prepared based on UNEP(DEPI)/MED WG.426/4 for consideration at the next MEDPOL FPs meeting and for guidance on the next steps.

5.3 POMs Workshop

The main findings, proposals and recommendations of the current study, in particular those pertinent to the new/ updated regional PoMs and related action plans, have been consulted with participating countries and other stakeholders in the final ActionMed

Activity 3 workshop (PoMs workshop) held on 30 November – 1 December 2016 in Madrid.

In the course of the workshop, the main results of the work conducted under ActionMed Activity 3 were reviewed and validated, including:

- assessment of common gaps at regional and national levels and identification of issues requiring further actions to achieve or maintain GES;
- proposal of potential new/ updated measures to fill the gaps and achieve/ maintain GES; and
- socio-economic assessment/ cost efficiency analysis of selected regional measures.

Based on the feedback, proposal of the new/ updated regional PoMs and related actions plans have been finalised.



PART II – REGIONAL AND NATIONAL POM ANALYSIS: SYNTHESIS OF FINDINGS



6 IMPLEMENTATION OF THE EU MSFD AND BARCELONA CONVENTION EcAp AT NATIONAL LEVEL

Programmes of Measures to achieve or maintain GES by 2020 (prepared under the EU MSFD) are to become operational by the end of 2016, marking the start of Marine Strategies implementation. Six-year review of different elements of Marine Strategies is planned for the period 2018 – 2021.

Recognised as a guiding principle for the overall work under the Barcelona Convention, EcAp is synergetic to the MSFD. The EcAp implementation is based on a 7-step roadmap and 11 ecological objectives (Decision IG. 20/4), which are highly consistent with the MSFD process. The only differences between MSFD descriptors and EcAp ecological objectives are inclusion of EcAp EO8 on coastal ecosystems and landscapes (in line with the ICZM Protocol) and existence of two descriptors (D8 and D9) on contaminants under MSFD (whereas contaminants are addressed under single EcAp ecological objective). Gaps and measures related to EO8 are, for the purpose of this study, dealt within the theme of cross-cutting issues. An overview of MSFD descriptors and EcAp ecological objectives is provided in Annex 1.

The seven steps of the EcAp roadmap are:

1. Definition of an ecological vision;
2. Setting of common Mediterranean strategic goals;
3. Identification of important ecosystem properties and assessment of ecological status and pressures (the initial integrated assessment);
4. Development of a set of ecological objectives corresponding to the vision and strategic goals;
5. Development of operational objectives with indicators and targets;
6. Revision of monitoring programmes for on-going assessment and regular updating of targets;
7. Review, development and implementation of Action Plans and Programmes of measures to take into account the EcAp application progress.

By 2016, IMAP has been adopted and launched. NAPs have been prepared and endorsed by COP 19, providing a core of Programme of Measures on the national level for pollution related objectives. Moreover, Contracting Parties are developing other measures to implement legal and policy requirements, as well as standards and recommendations of the Barcelona Convention.

Requirements for adoption and implementation of different types of measures to protect marine environment are set out in the Barcelona Convention itself, as well as in its Protocols. Article 4 of the Convention, for example, calls upon Contracting Parties to “...*individually or jointly take all appropriate measures in accordance with the provisions of this Convention and those Protocols in force to which they are Party to prevent, abate, combat and to the fullest possible extent eliminate pollution of the Mediterranean Sea Area and to protect and enhance the marine environment in that Area so as to contribute towards its sustainable development.*” Article 4 further stipulates that in implementing the Convention and its Protocols, the Contracting

Parties shall adopt programmes and measures which contain, where appropriate, time limits for their completion.

Further references to taking ‘appropriate measures’ to prevent, abate, combat and to the fullest possible extent eliminate pollution from various pollution sources are found in the Convention provisions setting the basis for the seven Barcelona Convention Protocols, as well as in the Protocols themselves. Parties are thus called upon to:

- take necessary legal and administrative measures,
- adopt strategies, action plans and programmes and to develop measures, elaborate and implement, individually or jointly, as appropriate, national and regional action plans and programmes, containing measures and timetables for their implementation,
- take preventive measures,
- take necessary measures to protect, preserve and manage areas of particular natural or cultural value, threatened or endangered species of flora and fauna,
- to carry out management, planning and other measures to ensure favourable state of conservation of endangered or threatened species and their habitats, and similar.

As already mentioned, both MSFD and EcAp implementation processes are foreseeing review cycles for the coming years, including further assessments of gaps, evaluations and adjustments of initial assessments, as well as (in the case of EcAp) review of the existing and completion of the EcAp programme of measures.

6.1 POMs and NAPs of the EU Mediterranean States

Under MSFD, the EU Member States are required to prepare PoMs to achieve or maintain GES by 2020, including existing and new measures. Existing measures are those adopted under other environmental or sectoral policies that are entirely or partly relevant for the achievement of the GES targets. New measures refer to actions necessary to achieve or maintain GES, when existing measures are not sufficient. These can be measures to complement existing ones (to reinforce, optimise or extend geographic scope) or entirely new ones.

As regards the existing measures, the linkage between MSFD and Water Framework Directive (WFD) implementation is particularly important. The two Directives share the same objective, while the scopes of their implementation partly overlap (most notably when it comes to coastal waters). To address common areas of concern, measures drawn under MSFD need to be linked to, or to build upon measures included in the WFD PoMs and/ or water management plans, while addressing issues not regulated under the WFD.

The CIS guidance documents provided lists of key types of measures (KTMs) to which the measures included in the marine strategies PoMs need to be assigned to. There are 25 KTMs deriving from the WFD (intended mainly for pressures having their origin on land), 20 of which have been identified as relevant for marine strategies. In addition to these, 14 additional, clearly marine KTMs were defined to

address other types of pressures related to the activities which take place in the sea and other types of actions which could affect marine waters. Information on the main categories, modes and typology of measures to be included in the PoMs is available from Annex 2.

In order to avoid duplication of work and reporting, it was agreed in the course of Barcelona Convention NAPs preparation meetings, that the PoMs prepared under the MSFD should be adopted for the NAPs purposes for the ecological objectives 5, 9 and 10, provided that they take into account the provisions and specificities of the MAP Barcelona Convention system and respond to the commitments undertaken by COP Decisions. In line with this agreement, Croatia and Cyprus have submitted their NAPs to the Barcelona Convention, with some adjustments (compared to the PoMs) to take into account certain country specificities and NAPs-related tools (such as National Baseline Budget of pollutants, hot spots assessment). Similar work has so far been done in France and Slovenia.

Under the ActionMed Activity 3, measures developed by the Mediterranean EU Member States have been analysed (to the extent PoMs were available by November 2016 in English or other languages ActionMed consultants could review/ understand). The purpose of this analysis was to identify the possible discrepancies in the PoMs in respect to the Barcelona Convention framework and suggest potential measures to address relevant issues and bridge these inconsistencies. The analysis focused on eutrophication, contaminants and marine litter, addressing measures adopted by Member States in relation to descriptors 5, 8, 9 and 10. The main findings of the national PoMs analysis are presented in section 8, while the complete information is available in the ActionMed deliverable D3.8 – *MSFD – EcAp National Medium and Long-term Action Plan (D3.8); Analysis of National PoM vis a vis requirements under the MSFD and the Barcelona Convention*.

6.2 NAPs Synopsis: The main findings related to measures

The updated NAPs endorsed by COP 19 (held in Athens, Greece, in February 2016) incorporate operational objectives (set at the national level) providing links to GES targets and SAP/MED priority pollutants with quantitative targets and deadlines for achievement. The NAPs provide national programmes of measures, preselected based on economic analysis, prioritized according to specific, commonly agreed criteria, aggregated and linked to the established operational targets, and monitored through a set of indicators with regards to the three ecological objectives (EO5, EO9 and EO10). Each NAP includes a number of project fiches for financing investments based on the prioritized measures. The NAPs show a high level of commitment towards the pollution-related obligations under the Barcelona Convention, its Protocols and related regional plans, and have fully streamlined the EcAp taking into account national specificities. Successful and effective implementation of the NAPs is

thus expected to systematically contribute to the achievement of GES targets by 2020 and 2025.¹⁴

The analysis presented in the UNEP/MAP report *Synopsis of updated NAPs: Hotspots, sensitive areas, targets, measures, indicators and investment portfolios* (UNEP(DEPI)/MED WG.426/3) focused on the NAPs submitted by the 10 non-EU Contracting Parties (as well as Jordan and Palestine NAPs). Available PoMs/ NAPs from four Mediterranean EU Member States were also taken into account. The purpose was to establish, among other things, what priority investment (technical) measures were commonly included in the programmes of measures. Results of this *NAP Synopsis* analysis are presented in subsequent Tables (4 – 6). Measures found in at least 2 NAPs/ PoMs are shown in the tables, while those found in majority of the 16 reviewed NAPs/ PoMs are highlighted.

Table 4: Priority investment (technical) measures relevant for EO5.

Priority investment measures under EO5	Number of countries including the measure in the PoMs/ NAPs
Build/ extend sewage networks	8
Build/ expand/ upgrade WWTP	11
Reduce storm water inflows to the sea	2
Improve the reliability of sanitation systems	2
Minimize input of nutrients into groundwater from agricultural activities	2

Sewage networks and wastewater treatment (the need to extend/ upgrade them) are an issue for the all the non-EU Mediterranean countries. Situation is in most cases different in the EU Member States, where significant coverage with wastewater treatment systems has been reached and where this type of measures is usually reported under the WFD Programme of Measures. Building/ expansion of sewage and wastewater treatment systems as well as prevention of nutrient inputs from agriculture were included in the PoMs (MSFD and/ or WFD) of two EU Member States; one EU Member State included measures to reduce storm water inflows and to improve reliability of sanitation systems in the MSFD PoMs.

Table 5: Priority investment (technical) measures relevant for EO9.

Priority investment measures under EO9	Number of countries including the measure in the PoMs/ NAPs
Build/ expand/ upgrade IWWTP	7
Upgrading existing industrial facilities with BAT/ BEP	4
Collection/ containment/ treatment of mercury	5

¹⁴ Information and assessments in this paragraph are from the document *Synopsis of updated NAPs: Hotspots, sensitive areas, targets, measures, indicators and investment portfolios*, UNEP(DEPI)/MED WG.426/3

contaminated wastes	
Collection and treatment of waste containing POPs substances	6
Build/ expand/ upgrade hazardous waste landfill facilities	7
Remediate contaminated industrial sites	7

Similarly to the situation with EO5, most of the priority investment measures included in the NAPs under EO9 were not found in the reviewed PoMs. Measures referring to upgrade of industrial WWTPs and wider application of BAT/ BEP were found in the MSFD PoMs of one EU Member State, while another one included measures on mercury contaminated wastes and wastes containing POPs in its WFD Programme of Measures.

As for the EO10, a small number of non-EU Mediterranean countries included marine litter clean-up campaigns in their NAPs. This on the other hand was in the focus of the EU countries' PoMs, together with measures to strengthen waste collection and disposal system. Closure/ remediation of illegal dump sites was identified as an issue only in the non-EU Mediterranean countries subject to *NAP Synopsis* analysis.

Table 6: Priority investment (technical) measures relevant for EO10.

Priority investment measures under EO10	Number of countries including the measure in the PoMs/ NAPs
Establishing/ reinforcing collection of municipal waste	7
Constructing/ upgrading municipal solid waste landfills	7
Organizing marine litter cleaning campaigns	4
Strengthening waste collection and disposal systems	9
Closure and rehabilitation of illegal dump sites	8

Overall, it can be concluded that priority common measures (measures found in the majority of the NAPs) are mainly formulated in response to the Regional Plans and SAP/MED. Collection and treatment of solid wastes and wastewater management represent an important task for the non-EU countries (and some cases an important challenge) for achieving the GES in the Mediterranean. Similar measures have been and are still being implemented in the EU Member States, mainly in response to umbrella the Water and Waste Framework Directives and related legislation.

Findings from the *NAPs Synopsis* analysis on the common measures were taken into account when proposing the set of new/ updated measures in the framework of this report.

7 REGIONAL POMs ANALYSIS

Regional gap analysis has been carried out in the framework of the ActionMed project (*Regional PoMs Analysis*, deliverable D3.1) by building upon and elaborating further findings of the UNEP/MAP-Barcelona Convention *Initial Gap Analysis* UNEP(DEPI)/MED WG.401/5 and *Ecosystem Approach based Measures Gap Analysis* UNEP(DEPI)/MED WG.420/5. These analyses focused on the existing measures contributing to the implementation of the Barcelona Convention and its Protocols on both regional and national levels, linking them to EcAp ecological objectives (EOs) and targets, and identifying the main shortcomings of the existing framework and its implementation to deliver the GES.

The aim of the ActionMed regional gap analysis was to review the main stressors and impacts on the Mediterranean Sea, examine the existing measures at regional level and identify further actions that are required, in order to reach GES, including strengthening of implementation and enforcement of existing measures or adoption of additional new measures. The main analytical steps were:

- Identification of main pressures and drivers;
- Listing the measures adopted at regional level (to address pressures);
- Assessing efficiency of adopted measures;
- Identification of gaps i.e. assessing whether measures have the capacity to bridge the gap between current situation and GES.

In addition to previous EcAp gap analyses, the regional gap analysis is based on the 2012 *State of the Mediterranean Marine and Coastal Environment Report* (SoER-MED), UNEP/ MAP marine litter assessment, Horizon 2020 Mediterranean Report – *Toward shared environmental information systems*, and other available sources of information. For the assessment of socio-economic issues, Plan Bleu's report on the uses of coastal and marine waters in the Mediterranean (Socio-economic report) was used.

The regional gap analysis concluded that a large number of regional level measures has been adopted to tackle the most important pressures and ensure achievement of GES. However, although significant progress has been achieved in some areas, some pressures are persevering and in some cases even increasing.

The main pressures on the marine environment considered in the regional gap analysis are: i) pollution, including eutrophication, contaminants and marine litter ii) biodiversity loss, including species decline and habitats destruction iii) introduction and spread of non-indigenous species, iv) depletion of fish stocks and v) impact on sea-floor integrity. Moreover, crosscutting issues with a potential to augment the existing and create new pressures were considered, including climate change, unsustainable patterns of consumption and production and impacts from coastal development. An overview of regional responses (i.e. legal instruments and programmes of measures) to these pressures is provided in Table 7.

Table 7: Legal and policy frameworks for the existing regional measures in the Mediterranean.

Pressure	Relevant regional legislation and programmes of measures
Eutrophication	LBS Protocol SAP/MED Regional Plans on BOD5
Contaminants	LBS Protocol Dumping Protocol HW Protocol Offshore Protocol & Action Plan SAP/MED Regional Plans Regional Strategy on pollution from ships
Marine litter	LBS Protocol SAP/MED Marine Litter Regional Plan
Biodiversity loss	SPA/BD Protocol SAP/BIO Species Action Plans
Non-indigenous species	SPA/BD Protocol SAP/BIO Action Plan on Species and Invasive Species
Depletion of fish stocks	SPA/BD Protocol SAP/BIO GFCM measures
Impacts on sea floor integrity	GFCM measures SPA/BD Protocol SAP/BIO Action Plan on marine vegetation Offshore Protocol Offshore Action Plan
Climate change	Regional Climate Adaptation Framework
Unsustainable patterns of consumption and production	SCP Action Plan
Impacts from coastal development	ICZM Protocol ICZM Action Plan

As regards **eutrophication**, the regional gap analysis concluded that further actions were necessary in the following areas:

- Full implementation of measures providing for establishment of WWT systems in all major coastal cities, promotion of secondary and tertiary treatment, upgrading treatment efficiency and increased reuse of wastewater;
- Adoption of new measures for agriculture (addressing *inter alia* restrictions in fertilisers use, optimised nutrient use, promotion of sustainable and organic farming, wider use of EFAs to combat eutrophication, alignment with the EU policies);
- Adoption of technical guidelines and/ or management standards for aquaculture;

- Adoption of measures to prevent nutrient inputs from other sources (reduction of atmospheric depositions, better control of runoffs, use of wetlands as nutrient sinks etc.).

For **contaminants**, the following have been identified as the main areas where further measures are needed to address the gaps:

- Full implementation of existing measures on urban and industrial wastewater treatment, better regulation, enhanced enforcement and control of sludge management;
- Stricter implementation and enforcement of measures aiming to eliminate some key contaminants that continue to be present in the Mediterranean;
- Adoption of new measures or Regional Plans for relevant sectors (including agriculture, aquaculture, desalination and tanneries);
- Adoption of new measures to better address atmospheric deposition of contaminants;
- Adoption of measures to promote Green Infrastructure and nature-based solutions for storm water management;
- Upscale ratifications and implementation of both the Dumping (not yet in force) and Offshore Protocols;
- Obligation for more frequent reporting, improvements in data collection;
- Review and update of priority contaminants list.

The gaps that still exist towards achievement of GES for **marine litter** need to be addressed through:

- Research, monitoring and assessments, including implementation of IMAP; setting of quantifiable reduction targets for priority items;
- Stronger implementation and enforcement of existing measures and adoption of new measures to reduce plastic wastes;
- Adoption of new measures to address the emerging issues of microplastics and nanoplastics;
- Adoption of targeted measures specifically addressing the issue of cigarette butts;
- Better implementation of existing measures and adoption of new measures for pollution from ships (e.g. no-special-fee system);
- Better implementation and enforcement of prevention measures set out in the MLRP;
- Integration of circular economy measures in the MLRP;
- More detailed categorization of marine litter sources.

Important gaps related to existing measures to prevent **biodiversity loss** have been identified and need to be addressed through:

- Stronger implementation of SAP/BIO and biodiversity related Action Plans in the areas where gaps have been identified;

- Measures to achieve enhanced coherence, connectivity and representativeness of the MPA network; improved MPA management and adoption of new spatial measures to complement the MPA network;
- Improved research to fill the knowledge gaps;
- Adoption of technical guidelines/ management standards for aquaculture;
- Better regulation of fisheries;
- Adoption of new measures to support and ensure restoration of degraded ecosystems (restoration target of 15%, in line with the EU Biodiversity Strategy).

As regards **non-indigenous species**, further actions are required in the following areas:

- Full implementation of the updated IAS Action Plan (especially adoption of national legislation, measures to combat and monitor discharges of ballast water, development of National Action Plans etc.);
- Adoption of new measures to ensure efficient training of controllers at check points;
- Enhanced research to overcome the knowledge gaps;
- Stronger ratification efforts to facilitate entry into force of the Ballast Water Convention;
- Adoption of technical guidelines/ management standards for aquaculture;
- Adoption of a Mediterranean List of Priority IAS.

Depletion of fish stocks also requires additional actions to bridge the gaps related to measures, mainly through:

- Enhanced research, monitoring and assessment of fish stocks;
- Adoption of new measures to minimise discards (e.g. by imposing a landing obligation in line with EU CFP provisions);
- Better enforcement and control for prohibited/ restricted practices;
- Adoption of new measures to halt overfishing, including measures related to MSY, fleet capacity, IUU fishing, regulation of recreational fishing etc.;
- Adoption of new measures to minimise bycatch (improved data collection systems, testing of mitigation measures, provision of additional funding for adoption of technological modifications proven to reduce bycatch etc.);
- Expansion of FRAs;
- Better implementation of Multiannual Management Plans;
- Full integration of ecosystem approach into fisheries management;
- Adoption of technical guidelines/ management standards for aquaculture.

Gaps related to the existing measures to address **impacts on sea-floor integrity** need to be overcome by developing and implementing further actions in the following areas:

- Stronger regulation of offshore activities in order to prevent or minimise adverse impacts of offshore installations on sea-floor integrity;
- Minimization of adverse impacts on seabed caused by fishing practices;

- Establishment of a network of marine reserves where bottom trawling is prohibited;
- Better enforcement and control for prohibited practices such as the bottom towed gear at depths beyond 1,000 m;
- Expansion of the FRAs;
- Better regulation of dredging activities (to take into account impacts on sea-floor).

As regards **climate change**, several actions need to be considered, in order to ensure climate change impacts will not compromise achievement of GES. These include measures to address data and knowledge gaps and ensure better understanding and management of co-benefits, synergies and trade-offs with other policy areas, promotion of Green Infrastructure and nature based solutions, strengthening of links between climate change and SCP, ‘climate proofing’ of current policies and others.

To address adverse impacts of **unsustainable patterns of consumption and production** on marine environment, further actions are needed to ensure full implementation of the SCP Action Plan. Moreover, stricter measures to minimise unsustainable fishing and agricultural practices should be considered, alongside with measures to ensure sustainable management of waste agricultural biomass and measures to promote/ support Green Infrastructure and nature based solutions.

Finally, the regional gap analysis suggests that stronger ratification efforts of the ICZM Protocol, development of national ICZM strategies and action plans by all the Contracting Parties, better integration of maritime spatial planning (MSP) into the ICZM policies (at national and sub-regional levels), adoption of harmonised legislation for urban development, adoption of common methodology and harmonised assessments for the use and management of coast should be, *inter alia*, considered as areas where further actions are needed to address **impacts from coastal development**.

8 NATIONAL POMs ANALYSIS

National PoMs analysis (contained in the deliverable D3.8 – *MSFD – EcAp National Medium and Long-term Action Plan (D3.8); Analysis of National PoMs vis a vis requirements under the MSFD and the Barcelona Convention*) focused on the available MSFD Programmes of Measures for descriptors D5, D8, D9 and D10. The main findings are presented below.

As regards eutrophication (D5), the main issues that should be addressed by Member States at the national level, either by introducing new measures or better implementing existing ones, are presented in Table 8.

Table 8: Future issues to be considered related to measures for eutrophication.

Source of pressure	Issues to be addressed
Waste Water Management	<ul style="list-style-type: none"> • Strict implementation of measures targeting WWT • Impact assessment of possible future scenarios of demographic expansions and increase of human activities on the coasts • Modelling on the mesoscale to answer monitoring needs¹⁵
Agricultural and industrial runoff	<ul style="list-style-type: none"> • Improvement in management programmes • Restriction of fertilisers • Shift towards sustainable and organic farming • Better use of nutrients • Promotion of EFAs use to address eutrophication • Increase in transnational cooperation
Aquaculture	<ul style="list-style-type: none"> • Adoption of standards and guidelines for aquaculture sector
Coastal engineering	<ul style="list-style-type: none"> • Harmonization of information to improve data sharing

The main conclusions of the national PoMs analysis pertinent to D8 and D9 (contaminants) are presented in Table 9. The table highlights the main issues that should be addressed by Member States at the national level, either by introducing new measures or better implementing existing ones.

Table 9: Future issues to be considered related to measures for contaminants.

Source of pressure	Issues to be addressed
Waste Water Management	<ul style="list-style-type: none"> • Secondary and tertiary treatment of WW promotion and increase • Promotion of efficient WWT in all major coastal cities
Solid Waste Management	<ul style="list-style-type: none"> • Improvement in management programmes
Better implementation an reporting on existing measures regarding contaminants	<ul style="list-style-type: none"> • Stricter application of existing measures to ensure their realisation • More frequent and efficient reporting system

¹⁵ The results of the ActionMed Second Regional Workshop in the Adriatic Region showed the need to introduce measures of this kind.

Source of pressure	Issues to be addressed
Storm water	<ul style="list-style-type: none"> • Improve management and separation system and infrastructures
New contaminants	<ul style="list-style-type: none"> • Update and review of the list of priority contaminants • Harmonisation at international level and better cooperation in monitoring and information sharing

Finally, as regards marine litter (D10), the main issues that should be addressed by Member States at the national level (by introducing new or better implementing existing measures) are presented in Table 10.

Table 10: Future issues to be considered related to measures for marine litter

Source of pressure	Issues to be addressed
Solid waste	<ul style="list-style-type: none"> • Better implementation and enforcement of existing measures and adoption of new measures to reduce plastics • Adoption of new measures to address the issues of microplastics and nanoplastics • Adoption of targeted measures specifically addressing the issue of cigarette butts • Better implementation and integration of measures addressing ship waste
Prevention	<ul style="list-style-type: none"> • Increase in prevention through awareness raising among the general public (campaigns and initiatives) and among fisheries professional categories
Better knowledge of the marine litter issue	<ul style="list-style-type: none"> • Research and monitoring of the impact of marine litter on ecosystem and health (especially microplastics) • Research and data collection on sources and ways of transportation of marine litter

The national PoMs analysis report concluded that the EU MSFD and Barcelona Convention EcAp processes were highly complementary and synergetic. The report furthermore assessed that despite some implementation delays, the EU MSFD was seen as an instrument that pushed forward and generated significant innovations in the efforts to protect marine environment. Possibilities for the EU Member States to act as a propelling force and to induce progress for the entire Mediterranean region were also identified in the report. The experiences and synergies between the MSFD and Barcelona Convention have the potential to inform and influence positively the next cycle of policy elaboration on both sides achieving overall advancement towards GES.

As regards the alignment in implementation of measures under the MSFD and the UNEP/ MAP - Barcelona Convention, the national PoMs analysis report found out some measures were of common interest for all the Contracting Parties (EU and non – EU countries) and recommended the following actions:

- In the framework of UNEP/MAP - Barcelona Convention, the conditions should be created to ensure collaboration between all the Contracting Parties for the implementation of common measures from now until 2025.
- UNEP/MAP - Barcelona Convention should consider developing, as appropriate, additional new/ updated regional/ sub-regional measures to achieve GES, based on the concrete national measures included in the MSFD PoMs, covering not only pollution and litter but also other descriptors and having strong potential for replication at regional/ sub-regional levels as appropriate.

9 SUB-REGIONAL ISSUES FOR THE ACHIEVEMENT OF GES

A number of sub-regional issues of relevance for the proposal of new/ updated regional measures has been identified for the purpose of this report. To this end, findings of the EcAp initial assessment, proceedings from ActionMed and related projects’ meetings, as well as other reports/ sources were reviewed. The main issues are presented below.

According to EcAp initial assessment, certain specificities and different pressures with differing levels of importance have been recorded for each sub-region notwithstanding the fact that the key pressures and impacts are common to the entire Mediterranean area. The main characteristics and issues for each of the four sub-regions are summarised in the Table 11.

Table 11: The main characteristics and issues in the four Mediterranean sub-regions.

Western Mediterranean
<ul style="list-style-type: none"> - high level of industrialization and coastal development-related habitat loss and alteration, especially on the north coasts; - tourism drives much of the coastal development and is behind much of the degradation of coasts and near-shore waters; - in addition to the physical alteration of the environment and the degradation caused by pollution and loss of key habitats, tourism growth and urbanization cause increased pressures on freshwater (limiting availability in wetlands and estuaries and increasing the need for desalination) and fisheries; - population growth along the coast in the southern part has led to degradation from sewage inputs and run-off; - maritime industries, including shipping, energy development, and aquaculture also degrade the environment and impact on biodiversity, causing localized pollution as well as broader impacts on the delivery of ecosystem services.

Ionian and Central Mediterranean Sea
<ul style="list-style-type: none"> - the same pressures and drivers as in the Western Mediterranean, but somewhat different major impacts, partly due to differing physical characteristics (no direct exchange with waters of the Atlantic, complex bottom topography and numerous straits); - coastlines are generally not as highly developed as in the Western Mediterranean, though urbanization is an important source of pressures in some localized areas; - fishing is a major pressure on species and ecosystems, both due to over-exploitation and incidental catch or by-catch, and due to the use of destructive fishing methods; - shipping pressures are concentrated in the straits between the African continent and the southern Sicilian coast; - nutrient over-enrichment from sewage and run-off puts the south-eastern portion of this sub-region at risk of hypoxia.
Adriatic Sea
<ul style="list-style-type: none"> - eutrophication is a major issue due to limited water exchange (a semi-enclosed sea within a semi-enclosed sea), agricultural inputs and urbanization along western flank, and relative shallowness; point source pollution by toxic contaminants is largely controlled and toxic pollution is confined to a few localized industrial areas, nevertheless run off and inadequately treated sewage continue to affect nutrient balance, leading to algal blooms, mucilages, and spreading hypoxia; - climate change may be exacerbating the impacts of these pressures, as well as compounding the effects of invasive species; - fisheries over-exploitation is also identified as a pressure, especially in the northern reaches of the central Adriatic; - despite these pressures, the sub-region is still remarkably diverse and productive, with a variety of ecosystems providing valuable services; tourism and fisheries are important sectors; - several of the countries within this sub-region have been exploring ways to coordinate research and management.
Aegean-Levantine Sea
<ul style="list-style-type: none"> - perhaps the least known out of the four sub-regions; - very diverse in large-scale biodiversity: extensive archipelagos exist in the north, while a wide shelf with alluvial sediments is found around the Nile Delta to the south; - the coastline and bottom topography is highly varied, as are the human uses of coasts and seas; - all the pressures that exist throughout the Mediterranean are found within this sub-region as well, while invasive species and climate change represent the main reasons of concern; - spreading hypoxia and lowered water quality result from untreated sewage inputs, desalination effluents, and urban run-off; - the trends in water quality, invasive species spread, and tropicalisation from climate change have not yet devalued the sub-region: the northern portion remains one of the primary coastal tourist destinations in the world, and coastal communities throughout the region continue to depend on marine resources.

Source: Decision IG. 20/4 – Annex I Summary for decision-makers of the Initial Integrated Assessment

The EEA report “*Marine messages*” shows that even though the share of MPAs in the Mediterranean, as a whole, is close to the 10% EU/ CBD target, the coverage of MPAs networks in three sub-regions – Ionian and Central Mediterranean, Adriatic, and Aegean-Levantine – is low. Details on the MPAs coverage are provided in Table 12.

Table 12: Percentage cover of marine protected areas networks in the Mediterranean marine sub-regions.

Marine regions and sub-regions	Area covered by MPAs, km ²	% covered by MPAs	Total no. of sites
Western Mediterranean	103,196	15.6	724
Ionian and Central Mediterranean Sea	3,875	1.6	274
Adriatic Sea	2,441	2.0	199
Aegean-Levantine Sea	4,949	2.6	221
Mediterranean	114,461	9.5	1,410

Source: EEA, 2014 (after European Topic Centre/ ICM, 2013)

In the course of the ActionMed Adriatic sub-regional workshop a number of gaps and needs common for Croatia, Italy and Slovenia (ActionMed deliverable D3.4(a)), were identified, mainly referring to monitoring and data gaps. The results of the workshop pertinent to gaps and needs are presented in Table 13.

Table 13: Gaps and needs identified during the Adriatic sub-regional workshop.

Descriptors	Gaps	Needs
D5 Eutrophication	Modelling mesoscale	Bottom up approach to feed the monitoring needs
	Insufficient/ bad design of monitoring programmes	Transboundary cooperation should be increased
	Lack of data sharing/ information system	Harmonise indicators and metrics
D8/9 Contaminants	Lack of communication – horizontal (among scientists) and vertical (between stakeholders, policy makers and scientists)	Inter-comparison policy QA/QC
	Harmonisation and standardization (international)	Monitoring prioritization/cooperation (sustainability/accountability)
	Lack of information and data sharing	Understand and decide as per the synergistic effects of contaminants
D10 - Marine litter	Lack of knowledge of the impact of marine litter, especially of microplastics	Monitoring
	Lack of knowledge regarding the mechanisms, sources and transport of marine litter	Implementation of measures to reduce the pressures
	Awareness and education – changing	New materials (eco-design, lifecycle)

Descriptors	Gaps	Needs
	the mind sets	design)

A trilateral meeting between France, Spain and Italy in the framework of the ARCADIS MSFD support project was held in October 2015 in Paris. The following topics and actions were singled out as the areas for further cooperation on programmes of measures:

- Recreational fisheries - *Address the catches of recreational fisheries: collecting data, better framing activity;*
- Assessment of coherence and representativeness of area-based management network at a sub-regional level and of the effectiveness of management (water under national jurisdiction) - *Identify the eventual need to increase protection in the existing network;*
- Artificialisation of the seafloor (including ship-sinking and artificial reefs) - *Guidelines and management framework.*
- Strategic impact assessment (drilling activities, fisheries, maritime transport) - *To improve efficiency in assessing impacts of these activities, and better use the tool to address transnational impacts: defining tools for sharing information and how to take into account the results of impact assessment;*
- Consistency between what is done in continental shelf and water column.
- MSPD and MSFD - *How to transpose and implement MSP to make it coherent with the MSFD: guidelines from the EC/ inclusion in the CIS work programme/ EU workshop;*
- Marine litter and environmental targets - *To develop action to prevent floating litter in RBMP and ensure coherence with the different MSFD environmental targets.*

10 SOCIO-ECONOMIC ASSESSMENT AT REGIONAL AND NATIONAL LEVELS

Within the scope of the ActionMed Activity 3, Plan Bleu has undertaken socio-economic assessment of four selected (potential) regional measures to achieve GES and has prepared a study providing detailed information on effectiveness, costs and benefits of the assessed measures (results are presented in the Deliverable D3.2 – *Socio-economic assessment of selected potential new measures*). The study also provides guidelines for national socio-economic assessments of measures, based on the approaches applied in the course of PoMs preparation in three EU Member States and international best practice. The study represents an important contribution to the overall socio-economic assessments work conducted in the course of EcAp implementation.

A review of the NAPs for nine non-EU countries has been conducted within the scope of this study to determine what forms of socio-economic analysis have been used in the process of compiling programme of measures for the updated NAPs.

10.1 PLAN BLEU'S socio-economic assessment of regional measures

The four measures assessed in the Plan Bleu's study are: i) introduction of a plastic bag tax; ii) a no-special-fee as a cost recovery mechanism for port reception facilities for ship-generated waste; iii) fishing for litter programmes; and iv) extension of the current surface of marine protected areas. The intent was to provide examples of socio-economic analysis of different types of measures and show what type of results are achievable through literature-based cost-effectiveness, cost-benefit and multi-criteria analysis, and how can they be applied. The analyses also provided useful information on alternative measures potentially leading to the same effects as the assessed ones.

The overall estimated cost-effectiveness of a regional Mediterranean plastic bag tax is €670 million for a 95% reduction of incremental plastic bag waste. Due to a lack of data, it was not possible to quantify many of the impacts of the plastic bag tax and the cost-benefit analysis has been conducted qualitatively, with partial quantification. As it was not possible to calculate a cost-benefit ratio or net present value, a multi-criteria analysis has been undertaken, showing an overall positive effect of the measure.

The measure's direct costs are borne by consumers who pay the plastic bag tax. Tax revenues easily cover public costs incurred due to administration of the tax, leaving around €50 million/ year be spent on environmental purposes. The overall employment impact is estimated to be neutral. Direct economic costs borne by the plastic bag manufacturing sector are likely to be compensated (or exceeded) by increased sales of reusable bags and bin liners. All other impacts, namely on ecosystem services and indirect impacts on different economic sectors, are largely positive and mainly linked to the reduction of plastic bag waste present in marine and coastal ecosystems.

Cost-effectiveness and cost-benefit aspects of the use of port waste reception facilities at no-special-fee have been analysed qualitatively. A multi-criteria analysis, comparing six different cost recovery mechanisms for port reception facilities has been conducted focusing on environmental and financial/ economic characteristics of the different mechanisms. The multi-criteria analysis indicates that the no-special fee scores highest against the selected performance criteria and is thus recommended as the preferred option to recover costs of port reception facilities for ship-generated waste. The measure's main benefits are linked to a significant reduction of chronic pollution from ships, positively impacting ecosystem services and several economic sectors which depend on the quality of the marine and coastal environment.

Fishing for litter schemes have been assessed quantitatively and qualitatively. Cost-effectiveness of relatively large-scale initiatives was estimated at a level of around €900/ ton of fished litter. Cost-benefit analysis has been conducted mostly qualitatively thus turning into to a multi-criteria analysis with an overall conclusion that the impact of the scheme is positive. The measure's costs include administrative/ management costs and waste management, treatment and disposal costs, which are generally borne on a project basis by public and private donors. The costs to the fishing sector are estimated to be small and mostly linked to the effort and time required to bag the waste and bring it to waste reception facilities at ports.

The management cost of Mediterranean Marine Protected Areas (MPAs) has been estimated at almost €50 million in annual running costs for a 10% MPA coverage and less than €140 million for a 30% coverage (both including running costs of already existing MPAs). Cost-benefit analysis has been undertaken qualitatively and since it was not possible to calculate a cost-benefit ratio or net present value, the analysis was transformed into a multi-criteria analysis, concluding that the extension of the current MPAs surface would come with an overall positive socio-economic impact. The costs of the measure are mostly management costs, usually borne by public institutions, and foregone revenue – at least in the short-term – within the local fishing sector. The measure's employment impact has been estimated as generally positive whereas expected loss of jobs in the fishing sector would be offset by jobs created for MPAs management and in the ecotourism sector.

Among other things, the study concluded that strong Mediterranean cooperation in this area would allow streamlining of efforts needed to conduct socio-economic assessment of measures as countries could benefit from assessments conducted in other countries and adapt them to their national context.

10.2 Assessments in the framework of MSFD POMs

The MSFD requires Member States to ensure that planned measures are cost-effective and technically feasible, and to carry out impact assessments, including cost-benefit analyses, prior to introduction of any new measure. The Directive does not specify how these assessments should be conducted¹⁶, hence different practices can be found

¹⁶ Different guidance documents have however been produced, mainly by the WG ESA. Guidance documents on economic analysis in the framework of the WFD are also applicable.

within the national PoMs processes. The Plan Bleu's study analysed approaches applied for socio-economic assessment of measures for Spain, Germany and France PoMs, and the key findings are presented below.

Spain has used forms of cost-effectiveness and cost-benefit analysis specifically developed for the MSFD PoMs. To analyse costs, available information on the budgets of identified measures has been collected. The costs of different measures have then been categorized on a 1-5 scale: 1= very high cost, 2= high, 3=moderate, 4=low, 5=very low cost. To analyse effectiveness of measures, their mitigation effects in relation to 18 pressures identified under MSFD has been also categorised on a 1-5 scale, but with reverse meaning of scores: 1=very low effect, 2=low, 3=moderate, 4=high, 5=very high. Average scores were then calculated to come up with a unique score on effectiveness. Assessment of benefits was done based on the effect of measures on 9 economic activities (aquaculture, fishing, tourism, etc.), also by assigning scores on a scale 1-5 for each activity and by calculating averages to come up with a single score to describe benefits.

The cost effectiveness of new measures was assessed by adding the cost and effectiveness scores and deriving an overall score for each measure, always ranging between 2 and 10. The same logic was applied for cost-benefit analysis. By using a scoring system instead of monetary and unit values, the cost-effectiveness and cost-benefit analyses conducted for the Spanish PoMs have in fact assumed characteristics of a multi-criteria analyses.

Some of the measure fact sheets for the new (and existing but not fully implemented) measures in the Mediterranean PoMs of France include indications about cost-effectiveness, while cost-benefit considerations are very rarely mentioned. Furthermore, information about direct costs of measures is included in some fact sheets. However, these indications are not established based on the application of a unique methodology or approach. Non-use values and ecosystem services do not seem to be assessed as a part of socio-economic assessment conducted under this PoMs. The PoMs contains several indications that socio-economic assessment would be done at a later stage.

As part of the development of its programme of measures, Germany has established measure fact sheets, which include certain information on cost-effectiveness and cost-benefit analysis of measures. Depending on the measures, the degree to which the assessments have been conducted varies largely – from just listing relevant bibliography, as a proof of measure's effectiveness, to, for example, detailed estimations of costs for fishing for litter schemes for different ports. Assessments of benefits are mainly done in a qualitative manner.

Detailed guidance for the socio-economic assessment is annexed to the German PoMs, containing all elements, which typically comprise cost-effectiveness and cost-benefit analyses, including non-use values and ecosystem services. However, information provided in the measures' fact sheets points to a conclusion that the guidance has not been applied to all the measures to a full extent.

The Plan Bleu's study concluded that the analysed countries applied very different approaches to socio-economic analysis, each of them exhibiting a number of limitations and therefore putting into question the applicability and feasibility of full-scale and comprehensive cost-effectiveness and cost-benefit analyses of all new measures. Time and resources needed to conduct a rigorous cost-effectiveness and/ or cost benefit analysis for a large number of measures obviously exceeded those that were available in the course of PoMs preparation. Multi-criteria analysis with elements from cost-effectiveness and cost-benefit analysis could be preferable option for countries, providing good levels of useful information on measures to guide decision making.

10.3 Socio-economic assessments in the NAPs

For the purpose of this report, available NAPs were screened and a quick assessment was carried out, as to how socio-economic analysis was included in the NAPs update.

Similar to the experience with preparation of PoMs in the EU Member States, different approaches and levels of details were applied in some of the national processes of updating the NAPs. The NAPs update Guidelines strongly encouraged Contracting Parties to employ appropriate forms of economic analysis in elaborating NAPs programmes of measures and to conduct cost-effectiveness, cost-benefit and/ or multi-criteria analysis. As regards the methodologies, these recommendations were fully aligned with those issued in the framework of MSFD CIS and based on the available guidelines on the EU level.

As a result, some form of economic analysis was applied in selecting programmes of measures in five out of nine NAPs reviewed for this study. The scope of application of economic analysis tools was different and covered, among others, sets of measures proposed under single operational objective, measures targeting remediation of hot spot areas or measures proposed to address specific issues (e.g. runoff management). Given the time, resources and data limitations, the countries modified respective methodologies and used mainly qualitative forms of cost-effectiveness and cost-benefit analysis as well as multi-criteria analysis to assess selected measures. In some cases however, simplified forms of monetised cost-effectiveness or cost-benefit analysis were carried out, while utilising results of related studies and assessments. In other cases, costs of implementing NAPs measures were compared to costs of inaction (by using basic assumptions of the concept of costs of degradation of marine environment). As a rule, non-use values and ecosystem services were not addressed in these assessments in a significant extent.

The efforts made and results achieved in applying the socio-economic assessments of measures in the NAPs update process are noteworthy, yet there is a large room for strengthening the use and role of economic analysis as decision support tools in the future work on elaboration and selection of new/ updated measures to achieve GES (on national as well as on regional level).



Action Plans for Integrated Regional Monitoring Programmes, Coordinated Programmes of Measures and Addressing Data and Knowledge Gaps in Mediterranean Sea



PART III: ELABORATION OF POSSIBLE NEW MEASURES AT REGIONAL LEVEL

11 AREAS AND ISSUES WHERE NEW MEASURES ARE NEEDED

The analysis conducted for the purpose of this report (based in particular on the findings of the regional gap analysis) highlighted a number of areas, where further actions are needed to ensure achievement of GES. These mainly refer to the following:

- pressures on marine habitats and species (including spread of non-indigenous species) and sea floor integrity from various human activities;
- overexploitation of fish stocks;
- eutrophication remains a challenge, in particular for some marine sub-regions/ their parts;
- some contaminants still represent a problem;
- pollution from atmospheric depositions and urban runoff and storm water needs to be addressed;
- dredging and offshore activities need to be regulated/ managed in a better way;
- marine litter;
- cross-cutting issues (climate change, maritime spatial planning, ICZM, sustainable consumption and production) require stronger coordinated responses;
- there are significant knowledge gaps as regards the impacts of various human activities and state of marine environment.

Implementation gaps or lack of measures have been identified both on the regional and national levels. For the achievement of GES, it is very important to ensure full implementation of the existing measures and their adjustments/ updating as the new information becomes available (e.g. through 2017 State of the Environment Report, IMAP, EcAp and MSFD review cycles). New measures should be phased in, starting with those that will address the most significant deviations from GES while taking into account implementation capacities. Whenever applicable, new measures should build on the previously established measures and achievements. Potential to strengthen coordination in developing and implementing measures is still significant and should be tapped.

12 LIST OF POTENTIAL NEW/ UPDATED MEASURES

Findings of the regional gap analysis were the starting point for elaborating new/ updated measures. Results of other ActionMed activities (as well as of related projects) and of the NAPs update analysis were also taken into account. Possible measures to address the gaps were formulated and screened against a set of criteria to

identify the most relevant ones in terms of their effectiveness, significance of the driver/ impact they are addressing, relevance for other policies and potential for coordinated/ joint implementation. In doing so, interventions aiming to reduce implementation gaps for the existing measures as well as new measures targeting the most significant pressures/ impacts were considered. Particular attention was paid to areas where effectiveness of measures could be fostered through regional cooperation and/ or joint implementation of measures. The identified measures were also cross-checked against available information on the development of MSFD PoMs to contribute to further alignment of MSFD and Barcelona Convention EcAp programmes of measures.

As a result, a list of possible measures for the new/ updated regional PoM was compiled and is presented in the Table 14, for consultations and further elaboration/ refinement. The list comprises both existing and new measures. In some cases it was possible to define proposed measures to a significant level of detail. Some measures were defined as self-standing actions, while as in other cases framework interventions were proposed with sets of measures organised in the form of various plans, policies and guidance documents. Further work in the framework of MAP Barcelona Convention system is necessary to specify, elaborate in detail and confirm relevance of measures before formal preparation starts and decision-making process is initiated.

Table 14: New/ updated regional PoMs: proposed list of measures.

Themes/ descriptors	Measures	Existing (E) or New (N)
Biodiversity D1, D4, D6	Expansion of the network of protected areas, especially for the Ionian/ Central Mediterranean, Adriatic, and Aegean-Levantine sub-regions to reach the 10% target	E+N
	Regional guidelines on coherence and representability of MPAs network and coordination meetings at regional and sub-regional levels	N
	Strengthened implementation of SAP/BIO and of the species Action Plans; updates to address new information	E
	Strengthened management of MPAs (including work and transfer of best practices on conservation objectives, management plans, zoning)	E
	Strengthened enforcement of existing protection measures and restrictions, improved control and surveillance of the MPA network	E+N
	Promotion of spatial measures other than MPAs to protect biodiversity and ensure coordinated approach in implementing them (e.g. protection of important fish habitats or recovery areas, special fishing licences, real time closure areas to combat by-catch)	E+N
	Regional strategy and proposal of mechanisms for long-term financing of MPA network	N
	Assessments of risks of turtles, sea mammals and sea birds by-catch by different fishing gear	N
	Regional plan to reduce by-catch of protected vertebrate species (sea mammals, sea birds, sea turtles, sharks and rays)	N
	Demonstration projects on mitigation and reduction of by-catch of marine turtles, birds and mammals by the different fishing gear	N
	Mediterranean strategy/ code of good practice on mooring and anchoring; coordinated implementation of the existing and future (e.g. of the proposed Strategy/ code of good practice) guidelines	E+N
	Establishment of bottom trawling-free zones and coordinated implementation of other measures aiming to minimise adverse impacts caused by various fishing practices on the sea floor	E
	Guidelines on artificial reefs	N
	Amend Offshore Protocol and Offshore Action Plan as necessary to ensure prevention or minimisation of adverse impacts of offshore activities on sea floor	
	Identification of important areas (hot spots) for cetaceans	N
Mapping of ambient noise at regional/ sub-regional level in cooperation with ACCOBAMs	N	
Promote installation of ship-strike alarm systems to prevent collisions with marine mammals	E+N	

Themes/ descriptors	Measures	Existing (E) or New (N)
	Promote the 'Whale Watching' label recognised by ACCOBAMS/ Pelagos	E
	Mapping of <i>Posidonia</i> habitats in and out of MPAs; mapping of other significant habitats (in line with provisions of Birds and Habitats Directives)	E+N
	Regional guidelines on restoration of degraded habitats and a region-wide target of 15% in line with the EU Biodiversity Strategy	N
	Strengthened research efforts to address knowledge gaps related <i>inter alia</i> to population, size, distribution, abundance and conservation status for threatened species; sea-floor habitats; impacts of dredging on sea-floor integrity; marine food webs; deep sea ecosystems; impacts of invasive alien species and pathogens on biodiversity (especially the new ones)	N
Non-indigenous species D2	Strengthened efforts to support ratification of the International Convention for the Control and Management of Ships' Ballast Water and Sediments	E
	Set up/ strengthen control procedures for the management of ballast waters by vessels, in compliance with the provisions of the ballast water Convention; assess feasibility and possibly develop/ implement sub-regional protocol/s of the Convention	E+N
	Improved aquaculture management to minimise spread and impacts of NIS	E+N
	Ensure full implementation of the updated IAS Action Plan through <i>inter alia</i> support for preparation of national action plans, training and awareness raising	E+N
	Agree/ adopt common Mediterranean List of Priority Invasive Alien Species, subject to regular revisions	N
	Support establishment of early warning and rapid response systems, including exchange of information on new introductions	E+N
	Improved coordination and joint responses to address risks from specific NIS/ IAS	N
	Improving knowledge on invasive species	E+N
Fish stocks D3	Sustainable fisheries guidelines or regional plan to provide recommendations/ common framework for coordinated regulations, policies and practices on MSY, fleet capacity, reduction of by-catch, recreational fisheries, IUU	E+N
	Improved implementation of Multiannual Management Plans	E+N
	Increased research on new technologies to mitigate unsustainable practices and minimize by-catch, discards, ghost fishing seabed destruction etc. Testing (demonstration projects) of new by-catch mitigation/ reduction methods	N
	Strengthened control/ enforcement of fishing restrictions/ prohibitions	E
	Promote region-wide uptake of policies to minimise discards in line with the landing obligation introduced under the EU CFP	N

Themes/ descriptors	Measures	Existing (E) or New (N)
	Expansion of FRAs/ establishment of new ones	E+N
	Enhanced research, monitoring and assessment of fish stocks	E+N
Eutrophication and contaminants D5, D8, D9	Strengthened implementation of Regional Plans' provision on sewage and WWT systems; strengthening of capacities and provision of support for construction, expansion and upgrading of sewage/ WWT systems	E
	Development of efficiency standards for WWTPs; support strengthened control of their operations	E+N
	Setting of targets for secondary treatment; promotion of tertiary treatment (with targets) and of uptake of new improved WWT technologies; setting of targets for reuse of treated wastewater	N
	Strengthening of the existing and development of new measures to improve region-wide performance with sewage sludge management	E+N
	Promoting construction, expansion and upgrading of industrial WWTP (standards, strengthening of capacities)	E
	Technical guidelines and management standards (or Regional Plan) to tackle inputs of nutrients and contaminants from agriculture and to promote sustainable farming practices, in line with EU policies	N
	Technical guidelines and management standards (or Regional Plan) to tackle inputs of nutrients and contaminants from aquaculture in line with the EU policies and recommendations	N
	Guidelines on management of runoff from urban areas and effluents from storm water sewers; promotion of the use of Green Infrastructure and nature based solutions	N
	Development of plans to reduce pollution from atmospheric depositions	N
	Regional guidelines and management standards on desalination and tanneries	N
	Regional guidelines for management of dredged materials	N
	Strengthened implementation of measures for elimination of mercury inputs and adoption of strict measures for lead inputs	E+N
	Setting of Emission Limit Values for more contaminants, including emerging contaminants	N
	Strengthened implementation of the Regional Plans' provisions on remediation of sites contaminated through industrial activities and/ or inadequate management of wastes, and on closure of illegal dumps	E
	Further alignment of the Dumping Protocol Annexes and Guidelines with the international legislation (London Protocol)	E+N
	Support for the development of harmonised legal frameworks at national levels and for implementation of MARPOL Annex IV on pollution from ships	E+N
Promote updating/ preparation of national contingency and pollution response plans	E	

Themes/ descriptors	Measures	Existing (E) or New (N)
	Support for ratification of the Offshore Protocol and implementation of the Offshore Action Plan (including development of regional offshore standards and guidelines)	E+N
	Adopt an updated list priority contaminants taking into account ‘emerging pollutants’ such as pharmaceuticals, nano-materials etc.	N
	Establishment of national/ regional PRTRs	N
Marine litter D10	Strengthen solid waste management systems in the region: adopt quantifiable targets as appropriate, promote adequate collection and treatment/ disposal, stimulate recycling and uptake of new waste management technologies	E+N
	Strengthening the role and capacities of local authorities for solid waste management, addressing cost-recovery issues	E
	Promoting waste prevention at source, better integration of SCP principles and measures, decoupling waste generation from economic growth, green procurement and adoption and implementation of circular economy strategies	E+N
	Strengthened implementation of the MLRP provisions on closing the illegal dumps	E
	Encourage and support establishment of appropriate sewage and storm water collection systems, WWTPs and waste management systems to prevent runoff and riverine inputs on marine litter	E
	Promote upgrading of WWTPs to reduce the inflows of plastics into the marine environment	E
	Support implementation of the MLRP through <i>inter alia</i> inclusion of marine litter into national regulations, preparation of Marine Litter National Action Plans, provision of regional coordination mechanisms and similar	E+N
	Enhanced monitoring and assessments (including implementation of IMAP) and adoption of quantifiable reduction targets for priority items	E+N
	Establishment of a regional marine litter database	E
	Stimulate reduction/ recycling/ prevention of plastics by, for example, adoption of recycling targets, promotion of sustainable consumption patterns, promotion of instruments to reduce packaging wastes, replacement of plastics with bioplastics where feasible, preventing/ reducing use of microplastics (microbeads) in personal care and cosmetics products, and similar	E+N
	Assess options for phasing out landfilling of recyclable wastes (in particular plastics)	N
	Adoption of common definition of microplastics and studies to improve knowledge (sources, quantities, impacts, possible reduction/ prevention measures, differentiated for primary and secondary microplastics)	N
Promote introduction of region-wide plastic bag tax (alternatively promote coordinated approach to restricting single-use plastic bags)	E+N	

Themes/ descriptors	Measures	Existing (E) or New (N)
Marine Litter D10	Regional coordination with the implementation of MARPOL Annex V on ship generated wastes	E+N
	The use of port waste reception facilities at no-special-fee	E+N
	Ensure implementation of the guidelines on the dumping of dredged materials	E+N
	Strengthened implementation of prevention/ retrieval of lost/discarded fishing gear; assessment options for collecting and processing/ recycling fishing gear and equipment at the end of its useful life	E+N
	Encourage and implement to the extent possible 'fishing for litter' schemes	E+N
	Study of marine litter hotspots (accumulations affecting sensitive areas)	
	Implement pilot projects for removal of marine litter accumulations impacting on MPAs	E+N
	Development and implementation of measures to reduce incidence of cigarette butts in marine environment, including provision of adequate facilities and signs on organised beaches, awareness raising and clean-up activities	E+N
	Enhanced partnerships, training and awareness raising activities	E
	Coastal Clean-up Day; clean-up activities targeting riverbanks	E+N
	Promote and expand beach stewardship schemes	E+N
Cross-cutting issues	Implementation of the Regional Climate Change Adaptation Framework, development of new adaptation measures	E+N
	Support integration of climate change into coastal and marine plans and strategies	E+N
	Enhance research and availability and accessibility of climate change information for the Mediterranean	E+N
	Ensure full implementation of the SCP Action Plan	E
	Encourage eco-design of man-made structures in the marine environment (provision of recommendations/ guidelines)	N
	Promote innovations that contribute to sustainability of aquaculture	N
	Support ratifications of the ICZM Protocol and preparations of national ICZM strategies and	E
	Support and demonstrate possible applications of MSP in the framework of ICZM policies at national and sub-regional levels	N
Adoption of common methodology and harmonised assessments on the use and management of coasts; adoption of common indicators to evaluate economic impacts	N	
Horizontal measures	Valuation of ecosystem services, assessment of costs of degradation of marine environment	E+N
	Economic analysis of water uses, cost recovery issues in water sectors	E
	Promote application of the polluter pays principle and wider use of economic instruments to address pollution	E
	Promote further integration of precautionary principle	E

Themes/ descriptors	Measures	Existing (E) or New (N)
	Strengthen capacities for the assessment of socio-economic impacts of marine litter, primarily for tourism, fishing and aquaculture	E+N
	Coordinate approaches for inclusion of specific issues (e.g. threatened species, marine litter) into training curriculum for shipping, fisheries and nautical tourism sectors	E+N
	Awareness raising programmes on the quality of marine environment targeting tourism and fisheries sectors and civil society	E+N

13 FACTSHEETS FOR PRIORITY MEASURES

Following consultations held during the PoMs workshop, a proposed list of new/updated measures was finalised. For the four measures that were prioritised within other ActionMed activities, factsheets were developed within the scope of the current report, partly relying on information produced through the socio-economic assessment (ActionMed deliverable D3.2). The four priority measures are plastic bag tax, no-special-fee as a cost recovery mechanism for port reception facilities for ship-generated waste, fishing for litter programmes, and expansion of the current network of MPAs.

The factsheets contain the following information:

- Description of the measure;
- Rationale;
- Category (existing/ new), mode of action, links to the MSFD KTMs (when possible);
- Link to GES descriptor;
- Link to driver, pressure and impacts;
- Expected effects;
- Scale of application (regional/ sub-regional/ national);
- Coordination requirements/ needs;
- Information on the impacts and effectiveness of measure, if available; information on costs and benefits;
- Timing for preparation/ implementation (in line with the action plans).

Fact sheets for the four priority measures are presented below.

Title of the measure	Expansion of the network of marine protected areas to reach the 10% and 30% targets respectively
Description	Extension of the MPA surface coverage in the Mediterranean to 10% (Aichi target for 2020) and eventually to 30% (recommendation from World Parks Congress hosted by IUCN in 2014)
Rationale	The 2014 EEA report <i>Marine messages</i> shows that even though the share of MPAs in the Mediterranean as a whole is close to the 10% EU/ CBD target, the coverage of MPA networks in three sub-regions – Ionian and Central Mediterranean, Adriatic, and Aegean-Levantine – is low (at the level of or below 2%)
Category, mode of action, links to KTMs	Category: New (2.a) Mode of action: technical Type of measure: Spatial and temporal distribution controls Link to KTM: 38 - Measures related to Spatial Protection Measures for the marine environment (not reported under another KTM)
Link to GES descriptor	D1, D3, D4, D6
Link to driver, pressure and impacts	Driver: fisheries, tourism and recreation, maritime traffic Pressure: species extractions, pollution Impacts: biological disturbances
Expected effects	Positive effects on biodiversity and related descriptors are expected,

	provided that MPA expansion is followed with complementary measures, sound management including enhanced monitoring and reporting, improved stakeholder involvement and similar. Effectiveness of MPAs is generally increased if the MPAs are established within a network promoting cooperation and synergies and connected by the movement of species. The utility of establishing such networks also highlights the regional relevance of extending the current Mediterranean surface of MPAs
Scale of application	National and sub-regional (particularly relevant for Ionian/ Central Mediterranean, Adriatic, and Aegean-Levantine sub-regions)
Coordination requirements/ needs	High level of coordination needed between competent national authorities to ensure effectiveness and representativity at sub-regional/ regional level
Impacts, effectiveness, costs and benefits	The management cost of Mediterranean MPAs has been estimated at almost €50 million in annual running costs for a 10% MPA coverage and less than €40 million for a 30% coverage (both including running costs of already existing MPAs). Qualitative cost-benefit analysis showed that that the extension of the current MPA surface would have an overall positive socio-economic impact. The costs of the measure are mostly management costs, usually borne by public institutions, and foregone revenue – at least in the short-term – within the local fishing sector. The measure’s employment impact has been estimated as generally positive whereas expected loss of jobs in the fishing sector would be offset by jobs created for MPAs management (around 3,100 jobs for a 10% coverage and around 8,800 jobs for a 30% coverage, including jobs in already existing MPAs) and in the ecotourism sector. All other socio-economic impacts are considered to be positive – at least in the long-term - and mainly concern the fishing and tourism sector, society in general and ecosystem services.
Timing for preparation/ implementation	2017 – 2021

Title of the measure	Use of port reception facilities at no-special-fee
Description	Ships generate different types of wastes. A no-special-fee system aims at discouraging the (illegal) discharge of waste into the sea and is defined as a charging system where the cost of reception, handling and disposal of ship-generated wastes, originating from the normal operation of the ship, as well as of marine litter caught in fishing nets, is included in the harbour fee or otherwise charged to ships calling at port, irrespective of whether wastes are delivered or not. The no-special-fee therefore qualifies as an indirect fee and at the same time provides an incentive for ships to deliver their waste on shore. It is indirectly aligned with the polluter pays principle, as the overall polluting sector - maritime shipping – pays, but individual ships not generating waste also remain liable to the fee. The central idea of the no-special-fee is that the port fee should not be related to the amount of waste the vessel leaves in port.
Rationale	Port reception facilities for the disposal of a wide range of ship generated waste and cargo residues are already a requirement under the International Convention for the Prevention of Pollution from Ships (MARPOL 73/78) of the International Maritime Organization (IMO).

	<p>The EU Directive 2000/59/EC for port reception facilities (PRF Directive) is aligned with this IMO Convention. Under MARPOL and the PRF Directive there is an obligation to provide port waste reception facilities (PRF), which must be adequate to meet the needs of ships using the port, without causing undue delay. The PRF Directive also requires the delivery of ship generated waste and the implementation of a cost recovery system by the Member States covering the costs of planning for, collecting and disposal of this waste.</p> <p>At the level of the Barcelona Convention, UNEP-MAP's Regional Plan for Marine Litter Management in the Mediterranean (2013) furthermore urges Mediterranean rim countries to "in accordance with Article 14 of the Prevention and Emergency Protocol explore and implement to the extent possible by 2017, ways and means to charge reasonable cost for the use of port reception facilities or when applicable, apply No-Special-Fee system."</p> <p>In the Mediterranean, there are about 600 ports and terminals recording ship movements and maritime transport produces around €70 billion in turnover per year and sustains around 550,000 direct jobs. Some Mediterranean ports have already adopted a no-special-fee system. However, a comprehensive survey of Mediterranean ports, the characteristics of their PRF and the cost recovery mechanism applied for these facilities is currently lacking.</p>
<p>Category, mode of action, links to KTM</p>	<p>Category: existing (1.b), new (2.a) Mode of action: economic Type of measure: economic incentives Link to KTM: KTM 29 - Measures to reduce litter in the marine environment, KTM 31 - Measures to reduce contamination by hazardous substances (synthetic substances, non-synthetic substances, radio-nuclides) and the systematic and/or intentional release of substances in the marine environment from sea-based or air-based sources and KTM 33 - Measures to reduce nutrient and organic matter inputs to the marine environment from sea-based or air-based sources</p>
<p>Link to GES descriptor</p>	<p>D8, D9, D10; possibly also biodiversity, non-indigenous species, marine food-webs and eutrophication</p>
<p>Link to driver, pressure and impacts</p>	<p>Driver: maritime transport, fishing, tourism Pressure: Introduction of heavy metals, POPs, oil Impacts: Contamination by hazardous substances</p>
<p>Expected effects</p>	<p>Shipping accounts for about 20% of the global discharges into the sea. On a global level it is assumed that only about 27% of all ship waste is delivered to reception facilities, while the majority is dumped or incinerated on board or at port. Theoretically, adequate provision and use of PRF could absorb these discharges into the Sea and thus avoid the pollution stemming from them. Practical effectiveness of the measure depends on the existence of adequate PRF, provision of swift handling of wastes at ports, the level to which the system is harmonized on the regional level, etc.</p>
<p>Scale of application</p>	<p>National, regional</p>

Coordination requirements/ needs	Coordinated approach is needed across region, requiring high coordination efforts
Impacts, effectiveness, costs and benefits	Qualitative information on cost-effectiveness and cost-benefit aspects of the use of PRF at no-special-fee is available. A multi-criteria analysis, comparing six different cost recovery mechanisms for port reception facilities has been conducted focusing on environmental and financial/economic characteristics of the different mechanisms. The multi-criteria analysis indicates that the no-special fee scores highest against the selected performance criteria and is thus recommended as the preferred option to recover costs of port reception facilities for ship-generated waste. The measure's main benefits are linked to a significant reduction of chronic pollution from ships, positively impacting ecosystem services and several economic sectors which depend on the quality of the marine and coastal environment.
Timing for preparation/ implementation	2017 – 2012

Title of the measure	Plastic bag tax
Description	A plastic bag tax is an environmental levy on single-use plastic shopping bags, imposed at a fixed per unit rate at the manufacturer or retailer/point of sale of plastic shopping bags to customers. The primary purpose of a plastic bag tax is to provide an incentive to reduce the use of plastic bags and thus, indirectly, to prevent littering. The introduction of a plastic bag tax is designed to change and explicitly itemize the price of plastic bags and therefore alter the behaviour of producers and consumers.
Rationale	EU Directive 2015/720 amending Directive 94/62/EC “Packaging Waste Directive” regulates the use of lightweight plastic bags in the EU. It requires Member States to adopt measures to reduce the consumption of plastic carrier bags with a thickness below 50 microns, as these are less frequently reused than thicker ones, and often end up as litter. The Directive also states that these measures may include the use of economic instruments, such as charges, national reduction targets, and marketing restrictions such as bans. The introduction of a plastic bag tax is in line with UNEP-MAP's Regional Plan for the Marine Litter Management in the Mediterranean, aiming at reducing 20% of beach litter by 2024 and a significant and measurable decrease of other marine litter items.
Category, mode of action, links to KTMs	Category: existing (1.b), new (2.a) Mode of action: economic/ policy driven Type of measure: economic incentives Link to KTM: KTM 29 - Measures to reduce litter in the marine environment
Link to GES descriptor	D1, D8, D9, D10
Link to driver, pressure and impacts	Driver: multiple sectors and society in general Pressure: marine litter (land-based) Impacts: mostly physical disturbance (plastic bags comprise app. 8.5% of marine litter)

Expected effects	<p>Precise proportion of marine litter attributed to plastic bags is variable and differs depending on the location and the sampling methodology. Practical experiences with application of plastic bag tax show positive results. For example, introduction of a plastic bag levy in Ireland in 2002 (at a unit rate of 15 cents) brought the use of bags per capita from an estimated 328 to 21 bags/year. This has fallen further when the levy was raised to 22 cents in 2014 to an estimated 14 bags/capita.</p> <p>Practical effectiveness of the measures is likely to depend on the a set of factors including fixing of the tax rate at right amount, broad definition of tax base (bags to which the tax is applied), use of revenues, visibility and others.</p>
Scale of application	National, regional
Coordination requirements/ needs	Medium coordination needs
Impacts, effectiveness, costs and benefits	<p>The overall estimated cost-effectiveness of a regional Mediterranean plastic bag tax is €670 million for a 95% reduction of incremental plastic bag waste.</p> <p>The measure's direct costs are borne by consumers who pay the plastic bag tax. Tax revenues easily cover public costs incurred due to administration of the tax, leaving around €50 million/ year be spent on environmental purposes. The overall employment impact is estimated to be neutral. Direct economic costs borne by the plastic bag manufacturing sector are likely to be compensated (or exceeded) by increased sales of reusable bags and bin liners. All other impacts, namely on ecosystem services and indirect impacts on different economic sectors, are largely positive and mainly linked to the reduction of plastic bag waste present in marine and coastal ecosystems.</p>
Timing for preparation/ implementation	2017 – 2021

Title of the measure	Fishing for litter
Description	<p>Fishing for litter initiatives have a twofold aim: to remove marine litter from the marine environment and to raise awareness of marine litter issues, particularly within one of its main stakeholders – the fishing sector - where the measure helps to prevent littering due to Abandoned, Lost or otherwise Discarded Fishing Gear. The main actors in fishing for litter initiatives are the fishermen who are provided with bags to collect litter that accumulates in their nets and other fishing gear during normal fishing activities and to dispose of unwanted fishing gear. The collected waste is disposed at port reception facilities for recycling or final disposal at land. Fishermen participate on a voluntary basis while harbours and ports assist with the handling of waste.</p>
Rationale	<p>The EU MSFD Programmes of Measures have incorporated fishing for litter schemes in several countries. Furthermore, UNEP/MAP's Regional Marine Litter Plan urges Mediterranean countries to “explore and implement to the extent possible the ‘Fishing for Litter’ system, in</p>

	consultation with the competent international and regional organizations, to facilitate clean-up of the floating litter and the seabed from marine litter caught incidentally and/or generated by fishing vessels in their regular activities including derelict fishing gears”.
Category, mode of action, links to KTMs	Category: New (2.a) Mode of action: Technical, Policy driven Type of measure: Mitigation and remediation tools, communication/ public awareness Link to KTM: KTM 29 - Measures to reduce litter in the marine environment
Link to GES descriptor	D10, possibly also biodiversity and commercially exploited fish species
Link to driver, pressure and impacts	Driver: general land-based activities, tourism, fisheries, shipping Pressure: marine litter Impacts: mostly physical disturbance
Expected effects	Effectiveness of fishing for litter initiatives has been proven repeatedly, through several projects/ initiative implemented in various marine regions. Prerequisites for a successful implementation and practical effectiveness include size of participating boats and sound administration/ management of the scheme, including communication and monitoring.
Scale of application	National, regional
Coordination requirements/ needs	Medium coordination needs
Impacts, effectiveness, costs and benefits	Cost-effectiveness of relatively large-scale fishing for litter initiatives was estimated at a level of around €900/ ton of fished litter. Overall conclusion of a qualitative cost-benefit/ multi-criteria analysis is that the impact of the scheme is positive. The measure’s costs include administrative/ management costs and waste management, treatment and disposal costs, which are generally borne on a project basis by public and private donors. The costs to the fishing sector are estimated to be small and mostly linked to the effort and time required to bag the waste and bring it to waste reception facilities at ports.
Timing for preparation/ implementation	2017 – 2021



PART IV: ACTION PLANS



14 ACTION PLAN ON IMPLEMENTING THE POMs AND THE NAPs BY INTEGRATING REGIONAL AND MSFD REQUIREMENTS

The **overall objective** of this action plan is to contribute to the achievement of GES by providing for continued and strengthened coordination and integration of regional and MSFD requirements through the PoMs and NAPs implementation. To achieve this objective, several actions are proposed (linked to identified gaps and solutions) with appropriate timeline for their implementation and actors to be involved (Table 15).

Table 15 : Action plan on implementing the PoMs and the NAPs by integrating regional and MSFD requirements

Gaps	Solutions	Actions	Timeline	Actors involved
<p>(Gaps towards achievement of GES in the Mediterranean have been identified, both in respect to the comprehensiveness and implementation of the existing regional measures)</p> <p>Differences in the so far development of NAPs and PoMs (NAPs focused on waste and wastewater measures, marine litter measures not as diversified in the NAP)</p>	Full implementation of the existing regional measures and their updating as the new information becomes available	Analyse effectiveness of existing Barcelona Convention measures to improve the status of marine ecosystems, undertake analysis of the implementation of Regional Plans	2017 - 2019	UNEP/MAP BC Contracting Parties
	Updating of the regional PoMs through adoption of new measures to address identified gaps (list of proposed new/ updated measures is available in table 14)	Annual review of NAPs/ PoMs implementation overall	2018 - 2021	UNEP/MAP EU BC Contracting Parties
	Continued and strengthened coordination and integration of the MSFD and regional requirements through coordinated approaches to	Sharing information on the identification and implementation of specific measures at regional and EU levels (additional forums)	2017 - 2021	UNEP/MAP MAP Components EU Scientific and research institutions
		Support country assessments and national monitoring programmes, and use the Assessment Sheets as they become	2017 - 2021	UNEP/MAP MAP Components EU - EEA

Gaps	Solutions	Actions	Timeline	Actors involved
<p>countries as in the EU Member States)</p> <p>Information exchange and coordination as regards implementation of measures can be improved</p> <p>Insufficient data and knowledge on the state of marine environment and impacts of different activities</p> <p>Lack of capacities for the implementation of regional measures at national level</p>	<p>development and implementation of measures</p> <p>Foster effectiveness of measures through strengthened cooperation at regional/subregional levels and/ or joint implementation of measures</p> <p>Support to Contracting Parties to implement the existing Barcelona Convention commitments</p> <p>Strengthen exchange of experiences and best practices between the Contracting Parties to the Barcelona Convention</p>	available to refine measures and focus coordination and implementation efforts		BC Contracting Parties
		Identify cooperation and coordination needs and priorities for endorsement and support by COPs	2017 – 2021	UNEP/MAP BC Contracting Parties
		Support the Contracting Parties with implementation of the NAPs	2017 – 2021	UNEP/MAP MAP Components H2020
		Support implementation of the MLRP through continued coordination between countries (EU and non-EU); facilitate coordination through establishment of tools such as ML data bank, regional database on ‘fishing for litter’ schemes	2017 – 2021	UNEP/MAP MAP Components EU BC Contracting Parties
		Strengthen capacities for socio-economic assessment and use of CEA/ CBA in selecting the measures; transfer of knowledge between countries	2018 - 2020	UNEP/MAP MAP Components EU BC Contracting Parties
		Awareness raising and communication activities, improving visibility for EcAp and MFSD	2017 – 2019	UNEP/MAP MAP Components EU BC Contracting Parties

15 MEDIUM AND LONG TERM REGIONAL POMs ACTION PLAN

The **overall objective** of this action plan is to bridge identified gaps between the current state of the marine and coastal environment and the GES in the Mediterranean region, through elaboration and adoption of the new/ updated regional measures as well as through strengthening of capacities for the implementation of existing and new/updated measures. To achieve this objective, several actions are proposed (linked to identified gaps and solutions) with appropriate timeline for their implementation and actors to be involved (Table 16).

Table 16: Medium and long-term regional PoMs action plan,

Gaps	Solutions	Actions	Timeline	Actors involved
<p>Nine identified areas for which existing regional measures are not sufficient or efficiently implemented to achieve GES in the Mediterranean:</p> <ul style="list-style-type: none"> • Human induced pressures on marine habitats and species (including spread of non-indigenous species) and sea floor integrity • Overexploitation of fish stocks • Eutrophication, in particular for some marine sub-regions/ their parts 	<p>Strengthened implementation of existing measures and adoption of proposed new / updated regional measures to fill the identified gaps (the full list can be found in table 14), including:</p> <ul style="list-style-type: none"> - 29 suggested measures addressing gaps related to pressures on marine habitats and species (biodiversity, NIS, sea floor integrity) - 7 suggested measures addressing gaps on the conservation and 	Adoption of potential new/ updated regional measures		
		Refine the proposed list of new/ updated measures in order to be presented at the Meetings of MEDPOL and other RAC Focal Points as appropriate, taking inter alia into account the main findings of the 2017 Quality Status Report	May 2017	UNEP/MAP MAP Components BC Contracting Parties
		Revise the list and submit the revised list of potential measures to the MAP Focal Points Meeting through the EcAp Coordination Group, for information and/or discussion and to get guidance on follow-up, as appropriate	September 2017	UNEP/MAP MAP Components EcAp Coordination Group BC Contracting Parties
		Undertake feasibility studies for some priority new/ updated regional measures during the 2018-2019 biennium, if/ as mandated by the MAP Focal Points Meeting;	2018-2019	UNEP/MAP MAP Components MAP Focal Points BC Contracting

Gaps	Solutions	Actions	Timeline	Actors involved	
<ul style="list-style-type: none"> • Certain priority and emerging contaminants • Pollution from atmospheric depositions and urban runoff and storm water • Management of dredging and offshore activities • Marine litter, especially plastics and microlitter • Cross-cutting issues (climate change, maritime spatial planning, ICZM, sustainable consumption and production) • Knowledge gaps as regards the impacts of various human activities and state of marine environment <p>Lack of capacities for implementation of regional measures (existing and new/ updated)</p>	<p>management of fish stock</p> <ul style="list-style-type: none"> - 20 suggested measures addressing gaps on eutrophication and contaminants - 24 suggested measures addressing gaps on marine litter - 9 suggested measures addressing gaps on cross-cutting issues - 7 suggested horizontal measures <p>Further promote the exchange of experiences and best practices between the Contracting Parties to the Barcelona Convention</p> <p>Support cooperation at regional/ subregional levels for the implementation of measures</p> <p>Ensure adequate funding for</p>	<p>The feasibility studies will provide and/ or complement existing information on technical viability, expected contribution to GES, socio-economic impacts, etc., as well as information on the need to develop regional measures</p>		Parties Environmental and socioeconomic experts	
		<p>Based on the findings of feasibility studies and recommendations from the MED POL Focal Points Meeting, ECAP Coordination Group and MAP Focal Points Meetings, COP 21 may mandate elaboration of concrete new/ updated measures during 2020 – 2021</p>	2019	UNEP/MAP MAP Components EcAp Coordination Group MAP Focal Points BC Contracting Parties	
		<p>Adoption of new/ updated measures by COP 22 as appropriate.</p>	2021	UNEP/MAP BC Contracting Parties	
		Strengthened implementation			
		<p>Activities to be envisaged in the Programme of Work of UNEP/MAP and H2020 aiming to promote sharing of best practices and capacity building with a particular focus on implementation of new/updated regional measures</p>	2017 - 2021	UNEP/MAP H2020 BC Contracting Parties	
		<p>Specific projects to provide funding and technical support in view of strengthening capacities and supporting implementation of specific measures</p>	2017 - 2021	UNEP/MAP H2020 EU - EEA BC Contracting Parties	

Gaps	Solutions	Actions	Timeline	Actors involved
	capacity building activities and the implementation of measures			



ANNEXES



ANNEX 1: MSFD DESCRIPTORS AND ECAP ECOLOGICAL OBJECTIVES

MSFD Descriptors		EcAp Ecological Objectives	
D1	Biodiversity is maintained	EO1	Biological diversity is maintained or enhanced
D2	Non-indigenous species do not adversely alter the ecosystem	EO2	Non-indigenous species introduced by human activities are at levels that do not adversely alter the ecosystem
D3	The population of commercial fish species is healthy	EO3	Populations of selected commercially exploited fish and shellfish are within biologically safe limits and healthy
D4	Elements of food webs ensure long-term abundance and reproduction	EO4	Alterations to components of marine food webs do not have long-term adverse effects on food web dynamics
D5	Eutrophication is minimised	EO5	Human-induced eutrophication is prevented
D6	The sea floor integrity ensures functioning of the ecosystem	EO6	Sea-floor integrity is maintained, especially in priority benthic habitats
D7	Permanent alteration of hydrographical conditions does not adversely affect the ecosystem	EO7	Alteration of hydrographic conditions does not adversely affect coastal and marine ecosystems
D8	Concentrations of contaminants give no effects	EO8	The natural dynamics of coastal areas are maintained and coastal ecosystems and landscapes are preserved
D9	Contaminants in seafood are below safe levels	EO9	Contaminants cause no significant impact on coastal and marine ecosystems and human health
D10	Marine litter does not cause harm	EO10	Marine and coastal litter do not adversely affect coastal and marine environment
D11	Introduction of energy (including underwater noise) does not adversely affect the ecosystem	EO11	Noise from human activities cause no significant impact on marine and coastal ecosystems

ANNEX 2: MSFD MEASURES

Table 1: Categories of measures (based on PoMs recommendation).

Measures	Measure category	Cost-effectiveness analysis (CEA)	Cost-benefit analysis (CBA)
Article 13(1) & 13(2) <i>Measures relevant for the maintenance and achievement of GES under the MSFD that <u>have been adopted under other policies and implemented</u></i>	EXISTING 1.a	No	No
Article 13(1) & 13(2) <i>Measures relevant for the maintenance and achievement of GES under the MSFD that <u>have been adopted under other policies but that have not yet been implemented or fully implemented</u></i>	EXISTING 1.b	No	No
Art 13(3) <i>Additional measures to achieve GES which build on existing EU legislation and international agreements but go beyond what is already required under these</i>	NEW 2.a	Yes Case by case	Yes Case by case
Art 13(3) <i>Additional measures to achieve GES which do not build on existing EU legislation or international agreements, i.e. that are completely new</i>	NEW 2.b	Yes	Yes

Table 2: Modes of action of measures (from PoMs recommendation).

N°	Mode of action
1	Technical: an actual action that one can see (and measure) in the field. In principle a wide range of measures have a primarily technical mode of action.
2	Legislative: Adapting or supplementing national environmental law and other national legislation influencing the marine environment to implement environmental targets and to achieve/maintain GES.
3	Economic: such as economic incentives that provide financial motives to stimulate a desired behaviour or discouraging an unwanted behaviour. Financial instruments are often aimed at the uptake of technical measures. For example, a subsidy for beach resorts of 20 Euros for each additional garbage bin they place.

- 4 **Policy driven:** Policy instruments can be economic incentives, but also other instruments, such as voluntary agreements with stakeholders, communication strategies, awareness raising, and education. For example, the government launches an information campaign to make the beach resorts aware of the new subsidy they can get for placing more garbage bins, or beach resorts informing their customers where the litter bins are located, or teachers telling children it is fun to collect waste and put it in a litter bin and gives you a clean beach as well.

Table 3: Typology of MFSM measures (from MSFD Annex VI).

N°	Description of measure
1	Input controls: management measures that influence the amount of a human activity that is permitted.
2	Output controls: management measures that influence the degree of perturbation of an ecosystem component that is permitted.
3	Spatial and temporal distribution controls: management measures that influence where and when and activity is allowed to occur.
4	Management coordination measures: tools to ensure management is coordinated.
5	Measures to improve traceability , where feasible, of marine pollution
6	Economic incentives: management measures which make it in the economic interest of those using marine environment to act in ways which help to achieve the good environmental status objective.
7	Mitigation and remediation tools: management tools which guide human activities to restore damaged component of marine ecosystems.
8	Communication, stakeholder involvement and raising public awareness.

Table 4: List of WFD Key Types of Measures and an indicative relationship to the MSFD and its GES Descriptors.

N°	WFD KTM description	Indicative relevance to MSFD
1	Construction or upgrades of wastewater treatment plants	Relevant for the reduction of nutrient loads & solid particles (D5, D10)
2	Reduce nutrient pollution from agriculture	Relevant for the reduction of nutrient loads (D5)
3	Reduce pesticides pollution from agriculture	Relevant for the reduction of contaminants loads (D8, D9)
4	Remediation of contaminated sites (historical pollution including sediments, groundwater, soil)	Relevant for the reduction of contaminants loads (D8, D9)
5	Improving longitudinal continuity (e.g. establishing fish passes, demolishing old dams)	Relevant in relation to diadromous fish (D1) and sediments (D7)

N°	WFD KTM description	Indicative relevance to MSFD
6	Improving hydromorphological conditions of water bodies other than longitudinal continuity (e.g. river restoration, improvement of riparian areas, removal of hard embankments, reconnecting rivers to floodplains, improvement of hydromorphological condition of transitional and coastal waters, etc.)	Relevant (D7)
7	Improvements in flow regime and/or establishment of ecological flows	Relevant (D7)
8	Water efficiency technical measures for irrigation, industry, energy and households	Unlikely
9	Water pricing policy measures for the implementation of the recovery of cost of water services from households	Unlikely
10	Water pricing policy measures for the implementation of the recovery of cost of water services from industry	Unlikely
11	Water pricing policy measures for the implementation of the recovery of cost of water services from agriculture	Unlikely
12	Advisory services for agriculture	Relevant for nutrient and pesticide reduction (D5, D8, D9)
13	Drinking water protection measures (e.g. establishment of safeguard zones, buffer zones etc.)	Relevant for seawater desalination (D7)
14	Research, improvement of knowledge base reducing uncertainty	Relevant, could be applied to all descriptors
15	Measures for the phasing-out of emissions, discharges and losses of priority hazardous substances or for the reduction of emissions, discharges and losses of priority substances	Relevant for the reduction of contaminant loads (D8, D9)
16	Upgrades or improvements of industrial wastewater treatment plants (including farms)	Relevant for the reduction of nutrients, solid particles and contaminant loads (D5, D8, D9, D10)
17	Measures to reduce sediment from soil erosion and surface run-off	Possibly relevant for the reduction of nutrients & sediments (D5, D7)
18	Measures to prevent or control the adverse impacts of invasive alien species and introduced diseases	Relevant (D2)
19	Measures to prevent or control the adverse impacts of recreation including angling	Relevant (D2, D3, D10, D11)
20	Measures to prevent or control the adverse impacts of fishing and other exploitation/removal of animal and plants	Relevant (D1, D3, D4, D6)
21	Measures to prevent or control the input of pollution from urban areas, transport and built infrastructure	Relevant for the reduction of pollution in general (D5, D8, D9, D10, D11)
22	Measures to prevent or control the input of pollution from forestry	Possibly relevant for the reduction of nutrient and contaminant loads (D5, D8,

N°	WFD KTM description	Indicative relevance to MSFD
		D9)
23	Natural water retention measures	Relevant for positive effects on nutrients and sediment transport (D5, D7)
24	Adaptation to climate change	Relevant, in particular when related to the coastal zone (D1, D4, D6, D7)
25	Measures to counteract acidification	Unlikely (WFD KTM refers to freshwater systems)

Table 5: Key Types of Measures (KTM) for the MSFD, supplementing the WFD KTM listed in Table 4.

N°	Additional KTM for MSFD reporting
26	Measures to reduce physical loss ¹⁷ of seabed habitats in marine waters (and not reported under KTM 6 in relation to WFD Coastal Waters)
27	Measures to reduce physical damage ¹⁸ in marine waters (and not reported under KTM 6 in relation to WFD Coastal Waters)
28	Measures to reduce inputs of energy, including underwater noise, to the marine environment
29	Measures to reduce litter in the marine environment
30	Measures to reduce interferences with hydrological processes in the marine environment (and not reported under KTM 6 in relation to WFD Coastal Waters)
31	Measures to reduce contamination by hazardous substances (synthetic substances, non-synthetic substances, radio-nuclides) and the systematic and/or intentional release of substances in the marine environment from sea-based or air-based sources
32	Measures to reduce sea-based accidental pollution
33	Measures to reduce nutrient and organic matter inputs to the marine environment from sea-based or air-based sources
34	Measures to reduce the introduction and spread of non-indigenous species in the marine environment and for their control
35	Measures to reduce biological disturbances in the marine environment from the extraction of species, including incidental non-target catches
36	Measures to reduce other types of biological disturbance, including death, injury, disturbance, translocation of native marine species, the introduction of microbial pathogens and the introduction of genetically-modified individuals of marine species (e.g. from aquaculture)
37	Measures to restore and conserve marine ecosystems, including habitats and species
38	Measures related to Spatial Protection Measures for the marine environment (not reported under another KTM)
39	Other measures

¹⁷ Measures relating to placement of infrastructure and landscape alterations that introduce changes to the sea-floor substratum and morphology and hence permanent loss of marine habitat.

¹⁸ Measures which address other types of sea-floor disturbance (e.g. bottom fishing, gravel extraction) which can change the nature of the seabed and its habitats but which are not of a permanent nature.

Table 6: Examples of existing and new measures for selected KTM, indicating how they could be treated in reporting.

KTM n°	KTM description	Examples of individual measures associated to KTM	Measure category	Report category
1	Construction or upgrades of wastewater treatment plants	Treatment of urban waste water to reduce Nitrate and Phosphate inputs to fresh and marine waters	Existing: 1a (existing plants) or 1b (new plants)	WFD
		Upgrading a Wastewater Treatment Plants to reduce the inflows of plastics into the marine environment	New 2b	MSFD
2	Reduce nutrient pollution from agriculture	Reduce application of fertiliser to agricultural fields	Existing 1a/1b	WFD
		Use of winter cover crops to reduce nutrient leaching into the groundwater	Existing 1a/1b	WFD
27	Measures to reduce physical damage to the marine environment (not reported under WFD Coastal Waters)	Restrictions on seabed trawling in selected areas	New 2a	Other (CFP)
29	Measures to reduce marine litter	Permits for deep-sea mining exploitation	New 2b	MSFD
		Beach litter removal plan	New 2b	MSFD
		Economic incentives to deposit shipping waste, including old fishing gear, at port reception facilities	New 2a	MSFD
31	Measures to reduce contamination by hazardous substances (synthetic substances, non-synthetic substances, radio-nuclides) and the systematic and/or intentional release of substances in the marine environment from sea-based or air-based sources	Measures to control offshore pollution from oil and gas operations	Existing 1a	Other (e.g. RSC measure)
38	Measures related to Spatial Protection Measures for the marine environment (not reported under another KTM)	Additional MPAs to protect offshore habitats	New 2a	Other (e.g. RSC measure)

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