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Analysis of Existing Regional Measures and of the Needs for New/Updated Regional Measures to achieve Good Environmental Status

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Explanatory Note by the Secretariat

According to the MAP Mid-Term Strategy (MTS) 2016-2021 and the MAP Programme of Work (PoW) 2016-2017, both adopted by COP 19 in 2016 (Decisions IG.22/1 and IG. 22/20), the Secretariat (MED POL) was requested under the Strategic Outcome 2.2 to prepare a more elaborated gap analysis of regional measures, on the basis of the previous EcAp based Gap Analysis of measures. The aim of this activity would be to “prepare a policy paper on potential future pollution prevention and control programmes of measures required to achieve GES based on existing studies related to sectors/drivers development”.

In this regard, the Secretariat, with support from the EU-funded ActionMed Project, undertook a gap analysis of existing regional measures to identify areas where measures are not sufficient and/or not efficiently implemented and developed a list of potential new/updated measures to achieve GES. The main outcomes of this work have been already presented and reviewed by the Regional Meeting of Experts, held in Marseille in October 2016.

In addition, the Secretariat undertook, in line with the MAP MTS 2016-2021 and PoW 2016-2017 an assessment of Annexes to the pollution-related Protocols to the Barcelona Convention, in light of recent developments at regional and global levels, with the view to suggest possible revisions to the Annexes provisions. The present report consists of three parts.

Part I is an introductory part providing the background and rationale for preparation of the present document.

Part II presents the main findings of studies that have been reviewed for the present document:

Section 1 of Part II provides information on the gap analysis of regional measures for pollution and marine litter-related Ecological Objectives (EO 5, 9, 10).

Section 2 of Part II presents the main findings of the assessment of the Annexes to the Pollution related Protocols to the Barcelona Convention (LBS, Dumping, Hazardous Wastes and Offshore)

Section 3 of Part II sets out the main outcomes of the Socioeconomic assessment of three pollution related selected regional measures (plastic bag tax, no special fee at port reception facilities and fishing for litter) that was carried out by Plan Bleu with support from the EU-funded ActionMED Project.

Part III of the report includes a proposed list of new/updated regional measures on pollution and marine litter and a related action plan.

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List of Abbreviations / Acronyms

ALDFG	Abandoned, Lost or otherwise Discarded Fishing Gear
BAT	Best Available Techniques
BEP	Best Environmental Practices
BOD	Biochemical Oxygen Demand
CIS	Common Implementation Strategy
COP	Conference of the Parties
DDT	Dichloro-diphenyl-trichloroethane
EcAp	Ecosystem Approach
EEA	European Environment Agency
EIA	Environmental Impact Assessment
ELV	Emission Limit Values
EO	Ecological Objectives
EU	European Union
FP	Focal Points
GES	Good Environmental Status
GPA	Global Programme of Action for the Protection of the Marine Environment from Land-based Activities
HNV	High Nature Value
HW	Hazardous Wastes
IMAP	Integrated Monitoring and Assessment Programme
IMO	International Maritime Organization
KTM	Key Types of Measures
LBS Protocol	Protocol for the Protection of the Mediterranean Sea against Pollution from Land-Based Sources and Activities
LC-LP	London Convention and Protocol
MAP	Mediterranean Action Plan
MED POL	Programme for the Assessment and Control of Marine Pollution in the Mediterranean Sea
MLPR	Regional Plan on Marine Litter Management in the Mediterranean
MPA	Marine Protected Area
MSFD	Marine Strategy Framework Directive
MTA	Multi-trophic aquaculture
NAPs	National Action Plans
OFOG	Barcelona Convention Offshore Oil and Gas Group
PCB	Polychlorinated biphenyls
PCCP	Personal Care and Cosmetic Products
PoM	Programmes of Measures
POP	Persistent Organic Pollutants
PRF	Port Reception Facilities
PRTR	Pollutant Release and Transfer Register
SAP-MED	Strategic Action Programme to address pollution from land-based activities
SCP	Sustainable Consumption and Production
SoER-MED	State of the Mediterranean Marine and Coastal Environment Report
UNEP	United Nations Environment Programme (now called UN Environment)
WWT	Wastewater Treatment
WWTP	Wastewater Treatment Plant

PART I. Background

1. In the MAP/Barcelona Convention system marine pollution is a priority issue and a comprehensive legal and regular framework has been established to tackle it. The Barcelona Convention is complemented by four pollution-related Protocols, addressing different activities/sources of pollution: LBS Protocol¹, Dumping Protocol², Hazardous Wastes Protocol³ and the Offshore Protocol⁴. Furthermore, two specific MAP Strategies are relevant to marine pollution, namely the Strategic Action Programme to address pollution from land-based activities (SAP-MED) adopted by the COP 9, in 1997, setting regional pollution reduction targets up to 2025, and the Regional Strategy for Prevention of and Response to Marine Pollution from Ships (2016-2021) adopted by COP 19, in 2016. A number of Regional Plans adopted in the framework of the LBS Protocol on the reduction/elimination of harmful substances discharges (including mercury, POPs, BOD, marine litter etc.) adopted by COP decisions, as well as the Mediterranean Offshore Action Plan, adopted by COP19 in 2016 (IG.22/3) are also important regional instruments containing measures, timetables and programmatic actions.

2. The Ecosystem Approach (EcAp) is the overarching principle of UNEP/MAP with the ultimate aim of achieving and/or maintaining a Good Environmental Status (GES) of the Mediterranean Sea. It was first adopted by the Contracting Parties in COP15, while in COP17 the Contracting Parties adopted a specific implementation Roadmap. The Ecosystem Approach, aims to ensure that all the different activities are managed in an integrated manner and that cumulative impacts are addressed, in the framework of the Barcelona Convention, in order to reach GES. With regards to the EcAp pollution related Ecological Objectives EO5 on eutrophication, EO9 on contaminants and EO10 on marine litter, a number of Operational Objectives, GES definitions and related targets have been adopted by the Contracting Parties.

3. In this legal and political context, it is important to ensure that the existing regional measures are efficient and sufficiently implemented to achieve GES and related targets on pollution and marine litter.

4. In that view and following Decision IG. 21/3 adopted by the COP 18, the Secretariat undertook a gap analysis of the measures adopted and implemented under the Barcelona Convention/ Protocols relevant for the achievement or maintenance of good environmental status (GES) of the Mediterranean Sea.

5. The gap analysis 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 findings were presented in the UNEP(DEPI)/MED WG.401/5 Initial Gap Analysis and UNEP(DEPI)/MED WG.420/5 Ecosystem Approach based Measures Gap Analysis.

6. Following this initial gap analysis, the MAP Programme of Work, that was adopted by the COP19 in 2016 (Decision IG. 22/20), provides under its Strategic Outcome 2.2 “Development or update of new/existing action plans, programmes and measures, common standards and criteria, guidelines”, of the Core theme of land and sea-based pollution, for a more elaborated gap analysis of

¹ Protocol for the Protection of the Mediterranean Sea against Pollution from Land-Based Sources and Activities

² Protocol for the Prevention and Elimination of Pollution of the Mediterranean Sea by Dumping from Seas and Aircraft or Incineration at Sea

³ Protocol on the Prevention of Pollution of the Mediterranean Sea by Transboundary Movements of Hazardous Wastes and their Disposal

⁴ Protocol for the Protection of the Mediterranean Sea against Pollution Resulting from Exploration and Exploitation of the Continental Shelf and the Seabed and its Subsoil

regional measures with the aim to “prepare a policy paper on potential future pollution prevention and control programmes of measures required to achieve GES based on existing studies related to sectors/drivers development”.

7. The aim of this analysis was to review the main stressors and impacts on the Mediterranean Sea, examine the existing measures at regional level, assess their capacity to achieve GES 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 to:

- (a) Identify main pressures and drivers;
- (b) List the measures adopted at regional level (to address pressures);
- (c) Assess measures’ efficiency;
- (d) Identify gaps i.e. assess whether measures have the capacity to bridge the gap between the GES and current situation.

8. It should be noted that the full studies on gap analysis and potential new/updated measures are not limited to pollution but cover all the main pressures on the Mediterranean Sea and coast. For the purposes of the present report, only information relevant to Ecological Objectives 5, 9, and 10 have been used. The full gap analysis report is presented as information document (UNEP(DEPI)/MED WG.439/Inf.13).

9. In accordance with 2016-2017 PoW, the Secretariat undertook an assessment of the Annexes to the Pollution-related Protocols to the Barcelona Convention, which is presented as information document (UNEP(DEPI)/MED WG.439/Inf.14).

10. Finally, the present report has also used some of the main findings of the socio-economic assessment of selected potential new measures prepared by Plan Bleu in the framework of the ActionMed Project, for those measures which are relevant to pollution and litter.

11. It should be noted that the studies that were reviewed for the elaboration of the present report, have been subject to consultation with representatives of the Contracting Parties and other key relevant stakeholders, on the occasion of various Meetings and Workshops. In particular, the regional gap analysis, initial proposals for potential new/updated measures, as well as the socioeconomic assessment of potential new measures have been presented in the “Regional Meeting on NAPs Implementation – Lessons learned and the way forward” that was organized by the Secretariat in Marseille, France, in October 2016 and the Regional PoM Workshop that was held in Madrid, Spain, in December 2016, in the framework of the ActionMed Project. The studies were updated and finalized based on feedback received by the Meetings participants.

PART II. Main findings of the reviewed studies

1. Gap analysis of regional measures

12. In addition to previous EcAp gap analyses, the regional gap analysis took into account the outcomes of 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 also used.

13. The regional gap analysis concluded that a large number of regional measures have 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.

14. With regards to the pollution related Ecological Objectives (EO5 on eutrophication, EO9 on contaminants and EO10 on marine litter) the main findings are presented below:

1.1. Eutrophication (EO5)

15. As regards eutrophication, the regional gap analysis highlighted the following gaps,:

(a) Gaps in wastewater management

16. Most of organic pollution from sewage comes results from direct/untreated or inadequately treated discharges⁵.

- i. Despite the existing measures providing for the establishment of WWT systems in all agglomerations, there are many coastal cities without WWTPs. This measure needs to be better implemented at least for the major coastal cities;
- ii. At regional level, 21% of treated wastewater receives only primary treatment, while only 8% is subject to tertiary treatment;
- iii. Treatment systems need to be improved based on new technologies, i.e. extraction of nutrients for production of fertilizers, and use of sludge for production of energy;
- iv. New measures should provide for application of pretreatment technologies;
- v. Revised standards and limits to assess and tackle overcapacity and mal function of WWTP should be adopted.

(b) Insufficient regulation of agriculture activities

17. Existing measures at regional level are not sufficient to adequately address the issue.

18. Stricter technical guidelines and management standards, or even Regional Plans are required to tackle inputs from agricultural activities and promote more sustainable farming practices, in line with the provisions under the SCP Action Plan. Some potential measures to be considered are the following:

- Better regulation of and restrictions in the use of fertilizers;
- Optimized nutrient use;
- Incentives for the establishment of more sustainable agriculture farms;
- Better management of animal manure⁶;

⁵ UNEP/MAP: State of the Mediterranean Marine and Coastal Environment, UNEP/MAP – Barcelona Convention, Athens, 2012

⁶ http://ec.europa.eu/environment/marine/good-environmental-status/descriptor-5/index_en.htm

- Cultivation of nitrogen fixing crops and catch crops;
- Promotion of organic and HNV farming, by setting a target of e.g. 10% of total arable land;
- Creation of buffer stripes, especially in intensively farmed areas;
- Application of water pollution charges for polluting industries, in line with the polluter pays principle.

(c) Insufficient regulation of aquaculture activities

19. Existing measures at regional level are not sufficient to adequately address this sector.

20. Stricter technical guidelines and management standards, or even Regional Plans are required to tackle inputs from aquaculture activities. New measures need to be adopted to ensure that aquaculture activities are adequately planned and developed sustainably and that the environmental impacts are minimized. Nutrient balanced aquaculture needs to be promoted.

21. The GFCM Draft Version of the Strategy for the sustainable development of Mediterranean and Black Sea aquaculture, highlights the lack of guidelines on control and prevention, the lack of applied standards for prevention and control of contaminant procedures along the value chain and the lack of harmonized regulatory and monitoring frameworks, as factors that hamper the efforts to monitor interactions between aquaculture and environment. In this regard identifies the need for activities aiming among others at mitigating impacts on environment and improving environmental protection and enhancing research and knowledge sharing on aquaculture.

22. Documents submitted to and discussed by the 10th Scientific Advisory Committee on Aquaculture (CAQ) identify a number of potential measures that should be considered in order to better regulate the impacts of aquaculture activities on the marine and coastal environment, relevant to eutrophication, contaminants as well as invasive alien species Ecological Objectives. These include identification of restoration schemes for wild stocks and development of risk management tools including alert systems (e.g. for biotoxins and algal blooms) for mussel and oyster farming, use of adequate marine spatial planning to optimize site selection, determination of principles for identification of ecological borders for aquaculture production, development of guidelines on risk analysis and data recording, including environmental issues, training and assistance on the implementation of environmental monitoring programme (EMP), promotion of aquaculture better management practices (BMPs) etc.

23. Potential new measures extracted from the European Commission Staff Working Document⁷ that can be also considered may include: limitation of site biomass and production levels to a maximum level, limitation of fertilizer use to the real requirements of the site, use of nutrient enriched water for biogas production or irrigation, implementation of measures to minimize the release of nutrients such as use of closed containment or partial recirculation, development of multi-trophic aquaculture (MTA) systems, recirculating aquaculture systems etc.

(d) Knowledge/data gaps

24. During the Adriatic Sub-regional Workshop organized in the framework of the ActionMed Project, stakeholders from the participating countries identified as main gaps on eutrophication the modelling mesoscale, the insufficiency and/or bad design of monitoring programmes and the lack of data/information sharing systems.

⁷ European Commission; SWD (2016) 178 final, Commission Staff Working Document – On the application of the Water Framework Directive (WFD) and the Marine Strategy Framework Directive (MSFD) in relation to aquaculture; Brussels 2016

25. New measures are needed, providing for the establishment of a bottom-up approach in monitoring, the transboundary cooperation and the development of harmonized indicators/metrics

26. The gap analysis concluded that further actions were necessary in the following areas:

- (a) 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;
- (b) Adoption of new measures for agriculture (addressing inter alia restrictions in fertilisers use, optimised nutrient use, promotion of sustainable and organic farming etc.);
- (c) Adoption of technical guidelines and/ or management standards for aquaculture (see section 1.1.c);
- (d) 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.).

1.2. Contaminants (EO 9)

27. As regards contaminants, the regional gap analysis highlighted the following gaps:

- (a) Waste and wastewater management gaps
 - i. There is still 21% of wastewater quantity that undergo only primary treatment, while the percentage of wastewater quantity undergoing tertiary treatment is very low (8% at regional level) (UNEP/MAP MED POL, 2011)⁸;
 - ii. There is still a high number of collected municipal wastes that is disposed in open dumps⁹;
 - iii. There are insufficient accounting and cost-recovery mechanisms in many Contracting Parties regarding wastewater and solid waste management¹⁰;
 - iv. There no efficient measures for sludge management;
 - v. According to the H2020 Mediterranean Report¹¹, in many Mediterranean countries municipal solid waste management has the following gaps: i. weak legislation, ii. No waste reduction policies, iii. Lack of separate collection, iv. Lack of knowledge, v. Strong regional disparities between urban and rural areas, vi. Lack of data;
 - vi. There are gaps in stormwater management, with very limited use of green infrastructure and nature based solutions;
 - vii. Despite the existing measure providing for the establishment of WWT systems in all agglomerations, there are many coastal cities without WWTPs, especially in the southern and eastern Mediterranean¹²;
 - viii. There are important sectors contributing to pollution from contaminants that are not adequately regulated at regional level, including desalination, agriculture, aquaculture and tanneries¹³;

⁸ Horizon 2020 Mediterranean Report –Toward shared environmental information systems, EEA-UNEP/MAP joint report, 2014, 142 pp.

⁹ Horizon 2020 Mediterranean Report –Toward shared environmental information systems, EEA-UNEP/MAP joint report, 2014, 142 pp.

¹⁰ Horizon 2020 Mediterranean Report –Toward shared environmental information systems, EEA-UNEP/MAP joint report, 2014, 142 pp.

¹¹ Horizon 2020 Mediterranean Report –Toward shared environmental information systems, EEA-UNEP/MAP joint report, 2014, 142 pp.

¹² Horizon 2020 Mediterranean Report –Toward shared environmental information systems, EEA-UNEP/MAP joint report, 2014, 142 pp.

¹³ UNEP/MAP, 2015. Draft Ecosystem Approach based Measures Gap Analysis. UNEP(DEPI)/MED WG.420/5

- ix. A general upward trend for mercury and lead has been identified in the period between 1998 and 2012¹⁴.
- (b) Knowledge/data gaps
 - i. A lot of progress has been made at regional level, on data collection and we have a good knowledge of the situation. However there are short time series and differences in sampling conditions that don't allow for robust trend analysis of the available data (UNEP/MAP/MED POL 2011) while data availability on oil discharges is very limited¹⁵;
 - ii. Reporting under MED POL is not at annual basis¹⁶;
 - iii. Monitoring activities across the region lack harmonization;
 - iv. Monitoring and reporting is particularly problematic in the area of wastewater management. According to the H2020 Mediterranean Report, large amounts of wastewater that remains uncollected is currently not accounted for¹⁷.
- (c) Insufficient implementation/enforcement of legislation
 - i. The amendments of the Dumping Protocol are not yet in force;
 - ii. The Offshore Protocol has entered into force, but it is still ratified by a minority of Contracting Parties;
 - iii. Enforcement of environmental legislation on marine pollution is in general weak;
 - iv. MARPOL Convention has been ratified by a big number of Mediterranean countries. However gaps are identified with regards to the establishment of coherent legal frameworks for its implementation¹⁸;
 - v. According to the assessment of pollution data conducted by Gomez-Gutierrez et al. 2007, POPs have declined. However this decline is more evident for DDTs than for PCBs, which should, according to the SoER-MED¹⁹, be alarming as an indicator of possible ongoing inputs. Moreover, in areas where trend analysis can be carried out, PCB concentrations in biota are relatively constant or even slightly increased (northwestern and eastern Mediterranean)²⁰.

28. The following have been identified as the main areas where further measures are needed to address the gaps:

- (a) Full implementation of existing measures on urban and industrial wastewater treatment, better regulation, enhanced enforcement and control of sludge management;
- (b) Stricter implementation and enforcement of measures aiming to eliminate some key contaminants that continue to be present in the Mediterranean;
- (c) Adoption of new measures or Regional Plans for relevant sectors (including, aquaculture (see chapter 1.1.c), desalination and tanneries);
- (d) Review and update of priority contaminants list, to also take into account emerging pollutants;
- (e) Adoption of new measures to better address atmospheric deposition of contaminants;

¹⁴ State of Europe's seas, European Environment Agency, 2015

¹⁵ UNEP/MAP: State of the Mediterranean Marine and Coastal Environment, UNEP/MAP – Barcelona Convention, Athens, 2012

¹⁶ Horizon 2020 Mediterranean Report –Toward shared environmental information systems, EEA-UNEP/MAP joint report, 2014, 142 pp.

¹⁷ Horizon 2020 Mediterranean Report –Toward shared environmental information systems, EEA-UNEP/MAP joint report, 2014, 142 pp.

¹⁸ UNEP/MAP, 2015. Draft Ecosystem Approach based Measures Gap Analysis. UNEP(DEPI)/MED WG.420/5

¹⁹ UNEP/MAP: State of the Mediterranean Marine and Coastal Environment, UNEP/MAP – Barcelona Convention, Athens, 2012

²⁰ UNEP/MAP: State of the Mediterranean Marine and Coastal Environment, UNEP/MAP – Barcelona Convention, Athens, 2012

- (f) Adoption of measures to promote Green Infrastructure and nature-based solutions for storm water management;
- (g) Upscale ratifications and implementation of both the Dumping and Offshore Protocols;
- (h) Obligation for more frequent reporting, and improvements in data collection.

1.3. Marine Litter (EO 10)

29. As regards marine litter, the regional gap analysis highlighted the following gaps:

- (a) Knowledge and data gaps^{21 22}
 - i. Data collection has been improved across the region, however it lacks consistency and harmonization;
 - ii. For the moment, the main impacts on marine organisms for which scientific certainty exists are linked to entanglement, ingestion, colonization and rafting, while there is limited knowledge on the sub-lethal effects of marine litter ingestion on species populations, as well as the potential for secondary pollution;
 - iii. Knowledge is still very limited regarding microplastics and especially their potential impacts on biodiversity and human health. The gaps in knowledge are even bigger when it comes to nanoplastics, which, may have even greater impacts on marine ecosystems;
 - iv. There is insufficient knowledge on litter colonization and transport dynamics;
 - v. There is need for more research and improved knowledge on the degradation process of litter (especially plastics) and the leachability of pollutants;
 - vi. The socio-economic impacts of marine litter are not fully assessed and understood, especially regarding the specific economic activities that are among the most impacted, such as tourism, fishing and aquaculture;
 - vii. There is a limited knowledge on marine litter in the deep sea environments (over 500m).
- (b) Key items not efficiently regulated
 - i. Although smoking related activities in general are one of the most important sources of marine litter in the Mediterranean, especially compared to the global average, and cigarette butts the most commonly found litter on beaches, there are no targeted measures to ensure their prevention/reduction;
 - ii. Single-use plastic bags are one of the most important marine litter items. There is only one measure in the MLRP specifically aiming at the reduction of plastic bags. The problem of single-use plastic bags is still persistent;
 - iii. Microplastics are not specifically addressed in the MLRP;
 - iv. Existing measures are not sufficient to prevent/reduce the use of microplastics (microbeads) in Personal Care and Cosmetic Products (PCCP)²³;
 - v. Electronic waste and medical waste are not specifically addressed in the MLRP
 - vi. Tourism is not adequately addressed at regional level as one of the main sectors responsible for generation of marine litter.
- (c) Waste management gaps
 - i. The percentage of inadequately managed waste remains very high in some countries, even more than 60% in some cases (Jambeck et al. 2015)²⁴;

²¹ Marine Litter Assessment in the Mediterranean, UNEP/MAP, Athens, 2015

²² UNEP/MAP: State of the Mediterranean Marine and Coastal Environment, UNEP/MAP – Barcelona Convention, Athens, 2012

²³ Eunomia for European Commission DG Environment 2016, Study to support the development of measures to combat a range of marine litter sources, Chris Serrington, Chiarrina Darah, Simon Hann, George Cole, Mark Corbin

²⁴ Marine Litter Assessment in the Mediterranean, UNEP/MAP, Athens, 2015

- ii. A large proportion of the collected municipal solid waste is disposed in open dumps, despite the existing measures²⁵;
- iii. Port reception facilities still don't operate optimally, especially regarding small harbors and marinas;
- iv. Less than 10% of the waste collected in the Mediterranean region is currently recycled²⁶;
- v. A regional survey prepared by UNEP/MAP and MIO ECSDE in 2015, revealed some important gaps, relating to Abandoned, Lost or otherwise Discarded Fishing Gear (ALDFG) including i. insufficient facilities for effective management of fishing gear and other marine litter collected on board, ii. Weak implementation and/or enforcement of the relevant legislation, iii. Worsening of the derelict fishing gear impacts on biodiversity;
- vi. The circular economy concept is not fully integrated and implemented in the framework of the marine litter policies in the Mediterranean;
- vii. Links to human health are not sufficiently addressed.

30. The following have been identified as the main areas where further measures are needed to address the gaps:

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

31. To sum up, the main gaps identified for pollution and litter related ecological objectives and targets can be overall summarised as follows:

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

²⁵ Horizon 2020 Mediterranean Report –Toward shared environmental information systems, EEA-UNEP/MAP joint report, 2014, 142 pp.

²⁶ <http://www.eea.europa.eu/soer-2015/countries/mediterranean>

Lack of resource efficiency and insufficient use of economic instruments	N, C, ML
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N = Nutrients (eutrophication); C = Contaminants; ML = Marine Litter

2. Evaluation of Annexes to the Pollution-related Protocols to the Barcelona Convention

32. The Annexes to the pollution-related Protocols have never been amended since their adoption. Significant regulatory, scientific and technical developments achieved at the regional and global levels were taken into account through the elaboration of technical guidelines, common targets, standards and other tools. These developments include the introduction and implementation of the ecosystem approach with the adoption of EcAp related COP Decisions, as well as the adoption of and amendments to relevant global and regional legal instruments, addressing issues that are covered by the BC Protocols, such as the London Convention and Protocol (LC-LP), the Stockholm Convention, the Basel Convention, other Regional Seas Conventions (RSC) and developments under the MSFD.

33. The **MAP Programme of Work** for the biennium 2016-2017 (Decision IG.22/20, COP 19, 2016) provided in the activity 2.2.1.1 for an “assessment of the content of the annexes of the LBS, Dumping and Hazardous Wastes (HW) Protocols in light of recent relevant global and regional developments”, in accordance with the UNEP/MAP Mid-Term Strategy 2016-2021 (Decision IG.22/1, COP19, 2016) Output 2.2.1 “Guidelines, decision-support tools, common standards and criteria provided for in the Protocols and the Regional Plans, developed and/or updated for key priority substances or sectors”.

34. The main results of the Evaluation of Annexes to the Pollution related Protocols to the Barcelona Convention that is presented as information document (UNEP(DEPI)/MED WG.439/Inf.14) are the following:

35. The Annexes to the Pollution related Protocols, take already into consideration ecosystem elements, in particular potential impacts on marine ecosystems, organisms, human health as well as other legitimate uses of the sea.

36. The links between the **Dumping Protocol** to the Barcelona Convention and the London Convention and Protocol are obvious as they address the same issue. A high level of streamlining has been achieved after the adoption of the 1995 amendments to the Dumping Protocol, which introduced to the MAP system a new approach of general prohibition of dumping followed by a list of material which can be dumped upon special permit (same approach as in the 1996 London Protocol). Through the analysis of the Annexes to both the LC-LP and the Barcelona Convention Dumping Protocol a high level of alignment was identified. An additional element that is covered by the London Convention Annex and should be considered for inclusion in the MAP Dumping Protocol is the establishment of a clear procedure to assess the wastes or other matter that may be considered for dumping.

37. Currently the assessment process is addressed by the Dumping Protocol Guidelines. However it would be useful and safer for the national competent authorities to have a uniform process of assessment, with the following steps: (a) Waste prevention audit; (b) Waste management options; (c) Chemical/ physical/ biological properties (linked with the point A of the current Annex); (d) Development of an Action List specifying an upper level and a lower level; (e) Dump site selection (linked with the point B of the current Annex); (f) Impact assessment; (g) Monitoring programmes; (h) Permit conditions.

38. With regards to the **Annexes of the LBS Protocol**, and in the absence of a global Treaty specifically regulating pollution from land-based sources and activities, the analysis was based on the developments under the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA) and provisions under relevant legal instruments, including the Stockholm and Rotterdam Conventions, the Minamanata Convention, the developments under MSFD

as well as relevant provisions under other Regional Seas Conventions. In this respect, the MSFD CIS Task Group 8 Report on Contaminants and pollution effects (April 2010)²⁷ was also reviewed. This analysis concluded in a high consistency of the LBS Protocol Annexes with other relevant instruments at regional and global levels. There is room for development, and therefore, a number of amendments can be proposed for consideration, concerning mainly the priority activity sectors, the main characteristics of the substances in the environment, the priority contaminants, the characteristics of the receiving environment and the criteria for best available techniques (BAT) and best environmental practices (BEP).

39. With regards to the **Hazardous Wastes Protocol**, the Basel Convention was reviewed and the main conclusion is that there is a full streamlining with the Annexes of the Basel Convention that had been adopted before 1998. There are only a few differences between the two instruments' Annexes, responding to the specificities of the HW Protocol. However, in 1998, two new Annexes to the Basel Convention were adopted by its Parties, that are not reflected in the Barcelona Convention HW Protocol. It would be therefore recommended to include these two new Annexes to the HW Protocol, updated as appropriate, to take into account the textual differences between the two instruments.

40. With regards to the **Offshore Protocol**, the main amendments proposed are derived from the Working Document WG.434/3 submitted by the Secretariat to the First Meeting of the Barcelona Convention Offshore Oil and Gas Group (OFOG) Sub-Group on Environmental Impact of Offshore Monitoring Programmes, on the basis of the request of the Offshore Action Plan Specific Objective 7.c, to identify the required modifications of Annex I, II and III to the Offshore Protocol and provide definition of which chemicals should be covered and not covered by such standards and under which conditions.

41. Since the examined Protocols and their Annexes were adopted before the adoption of the Ecosystem Approach, an initial suggestion could be to further integrate the ecosystem approach into the provisions of the Annexes to the pollution related Protocols.

42. Building on the proposed **amendments to the MSFD Annex III**, it could be considered to better define the key pressures of human activities covered by each Protocol, to identify the main ecosystem elements affected by those activities, and link these elements to the relevant Ecological Objectives, mainly 5, 9, 10 (eutrophication, contaminants and marine litter) but also other Ecological Objectives concerned, as appropriate (i.e. noise and input of other forms of energy, biodiversity etc.)

²⁷ Marine Strategy Framework Directive Task Group 8 Report; Contaminants and pollution effects (April 2010) R. Law, G. Hanke, M. Angelidis, J. Batty, A. Bignert, J. Dachs, I. Davies, Y. Denga, A. Duffek, B. Herut, K. Hylland, P. Lepom, P. Leonards, J. Mehtonen, H. Piha, P. Roose, J. Tronczynski, V. Velikova & D. Vethaak Joint Report Prepared under the Administrative Arrangement between JRC and DG ENV (no 31210 – 2009/2010), the Memorandum of Understanding between the European Commission and ICES managed by DG MARE, and JRC's own institutional funding

3. Socioeconomic assessment of selected potential new measures

43. Plan Bleu has undertaken a 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.

44. 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.

45. Relevant to the present document are the three first measures and the main outcomes of the Report are as follows:

46. 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.

47. 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 €650 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.

48. Cost-effectiveness and cost-benefit aspects of the **use of port waste reception facilities at no-special-fee** have been analyzed 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.

49. **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.

PART III. Potential new/updated measures to achieve GES**1. List of proposed measures**

50. 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. Particular attention was paid to areas where effectiveness of measures could be fostered through regional cooperation and/ or joint implementation of measures.

51. As a result, a list of possible measures for the new/ updated regional PoM was compiled and is presented in the following table for further elaboration/ refinement. The list comprises both existing and new measures.

EO	Potential Measures	Existing (E) or New (N)
Eutrophication and contaminants (EO5, EO9)	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	N
	Technical guidelines and management standards (or Regional Plan) to tackle inputs of nutrients and contaminants from aquaculture	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
	Updated 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	

EO	Potential 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 (EO10)	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
	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	
Marine Litter (EO10)	Study of marine litter hotspots (accumulations affecting sensitive areas)	
	Implement pilot projects for removal of marine litter accumulations impacting on MPAs	E+N

EO	Potential Measures	Existing (E) or New (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

2. Factsheets for priority measures

52. The Secretariat prepared factsheets for three pollution-related measures included in the list of potential new/updated measures, for which a socioeconomic assessment has been carried out by Plan Bleu, namely plastic bag tax, no-special-fee as a cost recovery mechanism for port reception facilities for ship-generated waste, and fishing for litter programmes, containing the following information:

- (a) Description of the measure;
- (b) Rationale;
- (c) Category (existing/ new), mode of action, links to the MSFD Key Types of Measures (KTM) (when possible);
- (d) Link to GES Ecological Objective;
- (e) Link to driver, pressure and impacts;
- (f) Expected effects;
- (g) Scale of application (regional/ sub-regional/ national);
- (h) Coordination requirements/ needs;
- (i) Information on the impacts and effectiveness of measure, if available; information on costs and benefits;
- (j) Timing for preparation/ implementation (in line with the action plans).

53. These factsheets will be presented in the document UNEP(DEPI)/MED WG. 439/Inf.17.

3. The way forward: Medium and Long-term Regional PoM Action Plan

54. The process of reviewing, preparing and deciding on the new/ updated regional measures may involve several steps:

Actions	Timetable	Actors
Submission of a proposed list of new/ updated measures to the MEDPOL Focal Points (FP) Meeting	May 2017	UNEP/MAP MED POL FP Contracting Parties
Submission of a 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 FP EcAp Coordination Group Contracting Parties
Preparation of feasibility studies for some priority new/ updated regional measures during the 2018-2019 biennium, if/ as mandated by the MAP Focal Points Meeting; 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	2018-2019	UNEP/MAP MAP Focal Points Contracting Parties [Environmental and socioeconomic experts]
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	2019	UNEP/MAP EcAp Coordination Group MAP Focal Points Contracting Parties
Adoption of new/ updated measures by COP 22 as appropriate.	2021	UNEP/MAP Contracting Parties

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