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**“MSFD – EcAp NATIONAL MEDIUM AND LONG-  
TERM ACTION PLANS”**

*Evaluation of MSFD possible measures at national level  
(Greece)*

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

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## EXECUTIVE SUMMARY

The scoping study analysis is a general analysis on what would be required by Greece, in order to prepare the PoMs according to the requirements of Article 13 of MSFD. This desk study was carried out on the premises of the following:

- A “Measure” in the MSFD should be considered as any action on a national, European or international level with a view to achieving or maintaining GES and with reference to the environmental targets.
- A programme of measures (PoM) is a set of measures that the Member State is responsible for implementing, put into context with each other, referring to the environmental targets they address. The programme of measures includes existing and new measures.
- Articles 13.1 and 13.2 of the MSFD make clear that the Programme of Measures should “take into account relevant measures required under EU legislation together with ones resulting from international agreements, including those made under the relevant Regional Sea Conventions (RSCs)” (EC, 2014).
- “Existing measures (Article 13.1 & 13.2) are:
  - ❖ Category 1.a: Measures relevant for the achievement and maintenance of GES under the MSFD, that have been adopted under other policies and implemented;
  - ❖ Category 1.b: Measures relevant for the achievement and maintenance of GES under the MSFD that have been adopted under other policies but that have not yet been implemented or fully implemented;
- New measures (Art 13.3) are:
  - ❖ Category 2.a: Additional measures to achieve and maintain GES which build upon existing implementation processes regarding other EU legislation and international agreements but go beyond what is already required under these;
  - ❖ Category 2.b: Additional measures to achieve and maintain GES which do not build on existing EU legislation or international agreements.”

Through a review of the environmental targets of the Greek marine strategy and the existing measures as outlined in this document, it would appear that the current environmental targets would be largely addressed through the provisions of the existing legislative framework. Nevertheless there would need to be a detailed specification between measures already implemented and those under implementation.

Moreover, it is considered that the results of the Technical Assessment of the MSFD 2012 obligations for Greece would need to be incorporated into the Greek Marine Strategy. With regard to targets an important conclusion made in the Technical Assessment is that “many environmental targets are monitoring targets”.

This important step mentioned above will assist in the identification of gaps as regards the specification of robust new measures to be incorporated into the Programme of Measures for Greece.

The purpose of the study on streamlining of measures is to prepare a proposal on how the marine pollution pressure component of a Programme of Measures for Greece

(eutrophication, contaminants and marine litter (addressing Descriptors 5, 8 & 9 and 10) could be more concretely elaborated, through a streamlining of the Greek measures already identified under sub-task 3.2.2 of the Action Med Project of relevance to the Marine Strategy Framework Directive (MSFD) requirements for measures (presented in Supplement A to this report (Caparis, 2016. ActionMed Deliverable 3.8A (Supplement A): Identified measures for pollution and marine litter MSFD Descriptors in Greece, November 2016, 22p), with those deriving from the Barcelona Convention, with a particular focus on the Land Based Sources Protocol (LBS) Strategic Action Programme (SAPMED), LBS Regional Plans and from the Mediterranean Action Plan Ecosystem Approach (ECAP) Good Environmental Status (GES) targets.

The methodology applied in this study involves a comparative analysis of measures already identified of significance for inclusion in the MSFD programme of measures for Greece, along with those provisions foreseen under the LBS SAP MED and those of the LBS Regional Plans. Through this comparative analysis, the requirements for potential streamlining will be identified and further checked across the ECAP GES targets for updating the National Action Plans.

According to the MSFD, the development of the Programme of Measures would need to be coordinated within marine regions and the Regional Seas Conventions can and should play a key role in this process.

Under the Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (Barcelona Convention) coordination for the implementation of marine strategies is achieved through the adoption and implementation of the Ecosystem Approach Process (ECAP) (UNEP/MAP, 2008). In the framework of this process, 11 Ecological Objectives have been approved, reflecting to a large extent the descriptors of the MSFD, along with their respective GES definitions, Operational Objectives and targets to achieve them (UNEP/MAP, 2013a).

The Strategic Action Programme (SAP) is an action-oriented MAP/MED POL initiative identifying priority target categories of substances and activities to be eliminated or controlled by the Mediterranean countries through a timetabled schedule for the implementation of specific control measures and interventions. The SAP, adopted by the Contracting Parties in 1997, is an important basis for the implementation of the Land Based Sources Protocol by the Mediterranean countries.

A series of Regional Plans have been adopted by the Contracting Parties in accordance with Article 15 of the Barcelona Convention Protocol for the Protection of the Mediterranean Sea against Pollution from Land Based Sources and Activities (LBS Protocol). These Regional Plans contain measures and a timetable for their implementation and become legally binding on the one hundred and eightieth day following the day of notification.

The Contracting Parties have prepared, for the first time in 2004-2005, National Action Plans (NAPs) for the protection the Mediterranean Sea from land-based sources, towards the implementation of the LBS Protocol of the Barcelona Convention and the respective Strategic Action Programme to combat pollution from land-based sources and activities (SAP-MED). They are currently in the process of updating their National Action Plans following the Decisions at COP 16 in 2008 and COP 18 in 2013, with the



view to achieving good environmental status (GES) through the implementation of the LBS Protocol and the Regional Plans, taking into account pressure related ECAP ecological objectives 5, 9 and 10 dealing with eutrophication, contaminants and marine litter and their respective targets.

## EUTROPHICATION

The Strategic Action Programme to Address Pollution from Land-Based Activities in the Mediterranean Region (SAP MED) identifies the main anthropogenic sources of nutrients to be urban wastewater (municipal sewage), industrial waste water, agriculture; and atmospheric emissions.

As regards urban wastewater, in terms of streamlining the requirements for measures, it is considered that the general requirements of the SAP MED to control the adverse effects from the improper discharge of municipal wastewater, leading to eutrophication, would be addressed by those requirements for measures of the national legislation implementing the EU WFD (measures deriving from the implementation of the River Basin Management Plans) and related Directives such as the Urban Wastewater Treatment Directive (91/271/EEC).

The SAP requirements as regards nutrients in industrial wastewater and those derived from agricultural activities have corresponding applications in the national legislative framework implementing the EU Urban Wastewater Treatment Directive, the Nitrates Directive and the IPPC Directive.

Under national obligations to implement the European Community legislative framework, under the Urban Wastewater Treatment Directive (91/271/EEC) the requirements for discharges from urban waste water treatment plants specify that the values for concentration of BOD5 or for the percentage of reduction shall apply (BOD5 at 20°C without nitrification 25 mg/l O<sub>2</sub> or 70-90% reduction of the influent load (secondary treatment)).

Furthermore, by 31 December 2000, biodegradable industrial waste water from plants belonging to the industrial sectors listed in Annex III (Agrofood Industry) of Directive 91/271/EEC, which does not enter urban waste water treatment plants before discharge to receiving waters, shall respect conditions established in prior regulations and/or specific authorization by the competent authority or appropriate body, before discharge. This requirement is in respect of all discharges from plants representing 4000 population equivalent (p.e.) or more. Until these latter requirements are met, national limits apply (COD 125mg/l, BOD 25mg/l).

These requirements therefore, affirm also, that national measures to address the European community legislative framework, will address the eutrophication reduction measures under the Regional Plans in the framework of the SAP MED and ECAP, needed for the updating of the National Action Plans.

## CHEMICAL CONTAMINANTS

A comparative analysis of the provisions of the SAP MED with national measures required to implement the European Union legislative framework to combat chemical pollution of surface waters revealed that the general requirements of the SAP MED correspond to those national obligations to implement the Water Framework Directive as set out in Article 16. This requires the establishment of a list of priority substances to be selected from amongst those presenting a significant risk to or via the aquatic environment at EU level. It also requires the designation of a subset of priority hazardous substances, and proposals for controls to reduce the emissions, discharges and losses of all the substances and to phase out the emissions, discharges and losses of the subset of priority hazardous substances. This designation is setting a combined approach in the measures to be applied involving both environmental quality criteria and emissions/discharges standards and the application of BAT, identifying a list of priority toxic, persistent and bio accumulative (TPB) substances to be phased out within a period of approximately 20-25 years. The substances of concern to the aquatic environment listed under the WFD including priority hazardous substances and also listed in the SAP MED are shown in Annex III.

While for certain priority substances the SAP MED has predetermined percentage reductions to be achieved within a specified time-schedule, the WFD requires the achievement of good ecological status and good chemical status. The national measures to implement the Integrated Pollution Prevention and Control Directive (IPPC) indirectly also implies the achievement of considerable percentage reductions of substances, including the priority substances identified in the SAP MED, thus covering to a large extent the earlier reductions deadlines specified in the SAP MED.

The general requirements of the SAP MED for point sources discharges and releases from industrial activities such as prior authorization; the control of pollution through the application of guidelines on BAT; the preparation of inventories of discharges and emissions of industrial pollutants (including uses and quantities produced or in stock); the establishment of pollutant release and transfer registers (PRTR), also have corresponding applications in the national obligations to implement the IPPC Directive, which include a permitting system for specific industrial installations, the application of BAT as a prerequisite for authorization; the preparation of BAT reference documents (BREFS) to guide the industrial installations accordingly; and, setting up a European Pollution Emission Register

The SAP MED requirements for specific industrial pollutants (POPs, TPB heavy metals, organometallic compounds, other heavy metals, other organohalogen compounds) correspond to the national requirements to meet the earlier European Community policy concerning dangerous or hazardous substances in European waters, notably the Directive on pollution caused by discharges of certain dangerous substances (Directive 76/464/EEC, codified as 2006/11/EC). In addition, several substances listed in Annex I of Directive 76/464/EEC have been regulated in specific Directives by defining emission limit values and quality objectives in the surface and coastal waters. These “Specific Directives” were later amended and subsequently repealed by Directive 2008/105/EC on environmental quality standards in the field of water policy. As part of the restructuring of the Community water policy, Directive 76/464/EEC was integrated into the Water Framework Directive 2000/60/EC and was fully repealed in 2013. There are a large number of organohalogen compounds that are listed as priority

hazardous substances in the Water Framework Directive, subject to the cessation or phasing-out of discharges, emissions and losses within a timeframe of 20 years

Furthermore, from the 1980s the EU started to implement a limited number of bans on specific pesticides, mainly persistent organohalogen compounds, due to growing evidence of human or environmental harm. For example, the decision to ban the persistent, organochlorine insecticide DDT was made in 1986. In 1991 EU Directive (79/117/EEC) consolidated decisions on 20 active ingredients, prohibiting their sale and use. As a result some of the more dangerous substances including DDT, aldrin and endrin have not been produced or used in the EU for some time while most uses of other pesticides, including lindane, chlordane, dieldrin, HCH, hexachlorobenzene and campheclor have also been prohibited.

The use and marketing of PCBs was banned through Directive 85/467/EEC amending Council Directive 76/769/EEC on the marketing and use of certain dangerous substances and preparations.

The national regulatory framework as regards POPs implements Commission Regulation (EC) 850/2004, as amended by Commission Regulation (EU) 757/2010, that complement earlier Community legislation on POPs and align it with the provisions of the international agreements on POPs. The national regulatory framework accordingly contains provisions regarding production, placing on the market and use of chemicals, management of stockpiles and wastes, and measures to reduce unintentional releases of POPs. Furthermore, national obligations include setting up emission inventories for unintentionally produced POPs, national implementation plans (NIPs) and monitoring and information exchange mechanisms

According to the IPPC Directive organohalogen compounds and substances that may form such compounds in the aquatic environment are included in the indicative list of the main polluting substances to be taken into account for fixing emission limits into water. All the relevant existing national industrial installations were required to meet permit conditions based on BAT and operate in accordance with the requirements of the Directive by 30 October 2007.

Regarding the streamlining of measures applicable to Greece, in order to achieve the requirements for updating the National SAP MED National Action Plan taking into consideration the measures envisaged under the Regional Plans, it would be necessary to add that in the case of mercury, there is no chlor-alkali industry activity in Greece or other industrial process utilizing mercury as a catalyst or mercury salts.

Furthermore, implementation of the European Regulation 1907/2006 (REACH Regulation) introduces prohibitions and restrictions to the use of mercury and its compounds. Mercury emissions from industrial installations are primarily regulated through the implementation of the IPPC Directive. Implementation of the European Regulation 1102/2008 provides for the procedures for temporary storage and final disposal of stock piles of mercury.

In terms therefore of streamlining the requirements for measures regarding chemical contaminants, it may be concluded that the requirements of the SAP MED and measures for updating the National Action Plan through the implementation of the Regional Plans to control the adverse effects from industrial activities, would be addressed by those

requirements for measures of the national legislative framework implementing the EU WFD (measures deriving from the implementation of the River Basin Management Plans), IPPC Directive, the REACH Regulation, and the national regulatory framework as regards POPs.

## MARINE LITTER

From the comparative analyses of activities under the SAP MED and national obligations under the European Union legislative framework it may be deduced that the measures for the implementation in Greece of the National Plan for the Management of Waste and the National Plan for the Prevention of the Creation of Waste in accordance with Law 4042/2012 implementing the Waste Framework Directive 2008/98/EC will also address the requirements of SAP MED on urban solid waste.

In order to achieve a streamlining of national measures required for the management of solid waste under the European Union legislative framework and regional requirements under the implementation of LBS Protocol Regional Plan and ECAP GES targets concerning marine litter, the following measures have been identified, based on the requirements for updating the SAP MED National Action Plans:

- ❖ Apply prevention measures related to the establishment of mandatory Deposits, Return and Restoration System for expendable polystyrene boxes in the fishing sector
- ❖ Apply Fishing for Litter practices, in consultation with the competent international and regional organizations and in partnership with fishermen and ensure adequate collection, sorting and environmentally sound disposal of the fished litter
- ❖ Charge reasonable costs for the use of port reception facilities or, when applicable apply a “No-Special-Fee system”, in consultation with competent international and regional organizations
- ❖ Introduce “Gear marking to indicate ownership” concept and “reduced ghost catches through the use of environmentally neutral upon degradation nets, pots and traps concept”, in consultation with the competent international and regional organizations in the fishing sector
- ❖ Sanction illegal dumping in accordance with national legislation including littering on beaches
- ❖ Identify in collaboration with relevant stakeholders accumulations / hotspots of marine litter and implement compulsory national programmes on regular removal and sound disposal
- ❖ Implement National Marine Litter Cleanup Campaigns on a regular basis
- ❖ Participate in International Coastal Cleanup Campaigns and Programmes

Following this analysis, the above list has been incorporated into the identified measures for Greece, as shown in Supplement A (Caparis, 2016a. ActionMed Deliverable 3.8A (Supplement A): Identified measures for pollution and marine litter MSFD Descriptors in Greece, November 2016, 22p).

The Scoping Study Analysis was presented during the National Action Med Workshop (See ActionMed Deliverable D3.4b: Report for the Greek National Stakeholder Workshop), along with measures identified from the existing national legislative

framework and regional and international agreements, for Descriptors 5, 8/9 and 10 (Supplement A of this Report, Caparis M., 2016a. ActionMed Deliverable 3.8A (Supplement A): Identified measures for pollution and marine litter MSFD Descriptors in Greece, November 2016, 22p.). Subsequently, measures for the biodiversity Descriptors 1, 4, and 6 were identified from the existing national legislative framework and regional and international agreements (Supplement B of this Report, Caparis M., 2016b. ActionMed Deliverable 3.8A (Supplement B): Identified measures for biodiversity MSFD Descriptors in Greece, November 2016, 28p.), thus completing the identification of Greek measures for the MSFD Descriptors dealt within the ActionMed Project. From an analysis of all the information gathered under sub-task 3.2.2 (Subtask 3.2.2. Elaboration of possible measures at National level) of the Action Med Project, including the desk study on how the Greek measures on marine pollution and litter (D5, D8, D9, D10) could be more concretely prepared, in order to achieve their streamlining with Barcelona Convention LBS SAP-MED Regional Plans and EcAp GES targets and taking into consideration the absence as yet of a Greek PoM, a study on a National and Medium and Long-Term Action Plan for Greece was carried out, pointing out the major attributes for a successful implementation of a Programme of Measures for Greece. These consist of the following actions:

**Medium-Term Action 1:** Categorisation of the existing Greek measures as concerns the status of implementation

**Medium-Term Action 2:** Preparation for reporting of the measures identified through assignment under Key Types of Measures

**Medium Term Action 3:** Incorporation of the results of the Action Med National Workshop regarding measures considered as the most implementable and executable for Eutrophication (D5).

**Medium Term Action 4:** Incorporation of the results of the Action Med National Workshop regarding measures considered as the most implementable and executable for Contaminants and Contaminants in Seafood (D8 and D9).

**Medium Term Action 5:** Incorporation of the results of the Action Med National Workshop regarding measures considered as the most implementable and executable for Marine Litter (D10)

**Medium Term Action 6:** Incorporation of the measures for Biodiversity Descriptors identified in Supplement B (Caparis M., 2016b. ActionMed Deliverable 3.8A (Supplement B): Identified measures for biodiversity MSFD Descriptors in Greece, November 2016, 28p.).

**Medium-Long-Term Action 1:** Revisiting the definitions of GES in the Greek Marine Strategy.

**Medium-Long Term Action 2:** Revisiting the environmental targets set in the Greek Marine Strategy

**Long Term Action 1:** Revisiting the Initial Assessment of the Greek Marine Strategy



**PART I:**  
**SCOPING ANALYSIS ON POMS REQUIRED BY**  
**GREECE TO ACHIEVE GES IN ACCORDANCE**  
**WITH ARTICLE 13 OF THE MSFD**





## 1 INTRODUCTION ADDRESSING THE REQUIREMENTS OF THE MSFD DIRECTIVE ON MEASURES

The aim of the Programme of Measures is set out in MSFD Art. 13(1):

*Member States shall, in respect of each marine region or sub region concerned, identify the measures which need to be taken in order to achieve or maintain good environmental status, as determined pursuant to Article 9(1), in their marine waters.*

Those measures shall be devised on the basis of the initial assessment made pursuant to Article 8(1) and by reference to the environmental targets established pursuant to Article 10(1), and taking into consideration the types of measures listed in Annex VI (of the MSFD).

In developing the Programme of Measures, one of the main considerations is to ensure that it meets the requirements of the Directive. The key articles are set out below:

<b>Article 13(7): Addressing pressures -improving status</b>	The programme of measures should indicate how measures identified contribute towards the maintenance or achievement of GES and related environmental targets.
<b>Article 13(2): EU and other regional and international policies</b>	The programme of measures should take into account relevant measures required under existing and planned EU legislation and other regional and international agreements.
<b>Article 13(3): Socio-economic impacts</b>	When proposing new measures, Member States must give “due consideration to sustainable development and, in particular, to the social and economic impacts of the measures envisaged and that measures are cost effective and technically feasible and carry out impact assessments, including cost-benefit analyses, prior to the introduction of any new measures”.
<b>Article 13(4): Spatial protection measures</b>	Member States are required to include spatial protection measures in their programmes of measures that contribute towards “coherent and representative networks of marine protected areas, adequately covering the diversity of the constituent ecosystems”.
<b>Article 13(8): Impacts on waters of other Member States</b>	Member States should consider the implications of their programme of measures on waters beyond their marine waters.

<p><b>Article 17(2) (d): Updates</b></p>	<p>An update of the programmes is required every 6 years, i.e. by 31 March 2022 at the latest.</p>
<p><b>Article 14: Exceptions</b></p>	<p>There are 2 broad categories of exceptions, under Article 14(1) and 14(4), with different obligations attached. Article 14(1) covers exceptions to reaching GES or the associated targets. These can fall within distinct subcategories:</p> <ul style="list-style-type: none"> <li>• action or inaction for which the Member State is not responsible</li> <li>• natural causes</li> <li>• force majeure</li> <li>• modifications or alterations to the physical characteristics of marine waters brought about by actions taken for reasons of overriding public interest which outweigh the negative impact on the environment, including any transboundary impact</li> <li>• natural conditions which do not allow timely improvement in the status of the marine waters concerned.</li> </ul> <p>Article 14(4) allows for 2 additional subcategories of exceptions: "significant risk" and "disproportionate costs".</p>

The European Commission guidance document on the implementation of measures under the MSFD (EC, 2014) sets out basic principles for the establishment of Programmes of Measures, guidance for their implementation and the main elements to be considered when reporting programmes of measures to the European Commission. It includes the following definitions:

“**Measure**” in the MSFD should be considered as any action on a national, European or international level with a view to achieving or maintaining GES and with reference to the environmental targets.

While MSFD measures will primarily focus on changing the intensities of predominant pressures, activities to improve environmental status directly, such as restoration of habitats and reintroductions of species, can also be defined as measures under the MSFD.

**A programme of measures (PoMs)** is a set of measures that the Member State is responsible for implementing, put into context with each other, referring to the environmental targets they address. The programme of measures includes existing and new measures.”

“Existing measures (Article 13.1 & 13.2) are:

- ❖ Category 1.a: Measures relevant for the achievement and maintenance of GES under the MSFD, that have been adopted under other policies and implemented;
- ❖ Category 1.b: Measures relevant for the achievement and maintenance of GES under the MSFD that have been adopted under other policies but that have not yet been implemented or fully implemented;

New measures (Art 13.3) are:

- ❖ Category 2.a: Additional measures to achieve and maintain GES which build upon existing implementation processes regarding other EU legislation and international agreements but go beyond what is already required under these;
- ❖ Category 2.b: Additional measures to achieve and maintain GES which do not build on existing EU legislation or international agreements.”

### Content of the MSFD Programme of Measures

The European Commission PoMs Recommendation (EC, 2014) gives the following information regarding the content of the PoMs:

*The Programme of Measures shall contain:*

1. *An overview of the existing measures with reference to their original publication;*
2. *A short analysis of the contribution of existing measures towards GES (baseline) and the gap that needs to be addressed (gap analysis);*
3. *A List of new measures including a summary:*
  - *Category 2.a: if described elsewhere, brief details with reference to document containing exhaustive description (e.g. WFD PoM ...), if not full description (ref chap IV.3);*
  - *Category 2.b: full description (ref chap IV.3).*
4. *Justification for exceptions where no measures will be taken.*

## 2 A SCOPING ANALYSIS OF MEASURES

### 2.1. Existing measures

Articles 13.1 and 13.2 of the MSFD make clear that the Programme of Measures should “take into account relevant measures required under EU legislation together with ones resulting from international agreements, including those made under the relevant Regional Sea Conventions (RSCs)”.

Table 1 provides, for each MSFD Descriptor, a list of relevant EU legislation, contributing to achieving or maintaining GES. This table contributes to identifying where measures under other legislation or policies contribute to the delivery of MSFD objectives.

**Table 1.** Relevant EU legislation directly related to measures, by Descriptor.

Descriptor No.	Topic	EU legislative measures contributing to MSFD characteristics of GES
1	<b>Biological Diversity</b>	<p>Birds Directive (2009/147/EC);</p> <p>Habitats Directive (92/43/EEC);</p> <p>Water Framework Directive (2000/60/EEC);</p> <p>Environmental Impact Assessment Directive (2011/92/EU);</p> <p>Strategic Environmental Assessment Directive (2001/42/EC);</p> <p>Common Fisheries Policy (1380/2013);</p> <p>Council Regulation (EC) No. 812/2004 laying down measures concerning incidental catches of cetaceans in fisheries.</p> <p>Council Regulation (EC) No 1967/2006 concerning management measures for the sustainable exploitation of fishery resources in the Mediterranean Sea;</p> <p>Regulation (EU) No 1343/2011 on certain provisions for fishing in the GFCM (General Fisheries Commission for the Mediterranean) Agreement area (as amended by Regulation (EU) No 2102/2015</p> <p>Environmental Liability Directive (2004/35/EC) (as amended);</p> <p>Safety of Offshore Oil and Gas Operations Directive (2013/30/EU);</p>

- 2 Non-indigenous Species**
- Birds Directive (2009/147/EC);
- Habitats Directive (92/43/EEC);
- Council Directive (2006/88/EC) concerning animal health requirements for aquaculture animals (and products), the placing on the market and the prevention and control of certain diseases in aquatic animals;
- Environmental Liability Directive (2004/35/EC) (as amended);
- EC, 2014, Regulation (EU) No. 1143/2014 of the European Parliament and of the Council of 22 October 2014 on the prevention and management of the introduction and spread of invasive alien species;
- Council Regulation (EC) No 708/2007 concerning use of alien and locally absent species in aquaculture (as amended).
- 3 Commercial Fish and Shellfish**
- Common Fisheries Policy (1380/2013)
- Council Regulation (EC) No. 2347/2002 establishing specific access requirements and associated conditions applicable to fishing for deep-sea stocks;
- Council Regulation (EC) No. 812/2004 laying down measures concerning incidental catches of cetaceans in fisheries.
- Council Regulation (EC) No 1967/2006 concerning management measures for the sustainable exploitation of fishery resources in the Mediterranean Sea;
- Regulation (EU) No 1343/2011 on certain provisions for fishing in the GFCM (General Fisheries Commission for the Mediterranean) Agreement area (as amended by Regulation (EU) No 2102/2015
- European Maritime and Fisheries Fund;
- Environmental Liability Directive (2004/35/EC) (as amended);
- Council Regulation (EC) No. 809/2007 as concerns drift nets;
- 4 Food Webs**
- Birds Directive (2009/147/EC);
- Habitats Directive (92/43/EEC);
- Water Framework Directive (2000/60/EEC);
- Environmental Impact Assessment Directive (2011/92/EU);
- Strategic Environmental Assessment Directive (2001/42/EC);
- Common Fisheries Policy (1380/2013);
- Environmental Liability Directive (2004/35/EC) (as amended);
- Safety of Offshore Oil and Gas Operations Directive (2013/30/EU);
- Council Regulation (EC) No. 812/2004 laying down measures concerning incidental catches of cetaceans in fisheries.

- 5 Eutrophication**
- Water Framework Directive (2000/60/EC);  
Nitrates Directive (91/676/EEC);  
Urban Waste Water Treatment Directive (91/271/EEC);  
Industrial Emissions Directive (2010/75/EU);  
National Emissions Ceiling Directive (2001/81/EC);  
Regulation (EU) No. 1305/2013 of the European Parliament and of the Council of 17 December 2013 on support for rural development by the European Agricultural Fund for Rural Development (EAFRD).
- 6 Sea-floor Integrity**
- Birds Directive (2009/147/EC);  
Habitats Directive (92/43/EEC) ;  
Water Framework Directive (2000/60/EEC) ;  
Environmental Impact Assessment Directive (2011/92/EU);  
Strategic Environmental Assessment Directive (2001/42/EC);  
Common Fisheries Policy (1380/2013);  
Council Regulation (EC) No 1967/2006 concerning management measures for the sustainable exploitation of fishery resources in the Mediterranean Sea]  
Environmental Liability Directive (2004/35/EC) (as amended);  
Safety of Offshore Oil and Gas Operations Directive (2013/30/EU).
- 7 Hydrographical Conditions**
- Environmental Impact Assessment Directive (85/337/EEC) (as amended);  
Strategic Environmental Assessment Directive (2001/42/EC);  
Maritime Spatial Planning Directive (2014/89/EU);  
Water Framework Directive (2000/60/EC);  
Habitats Directive (92/43/EEC);  
Birds Directive (2009/147/EC);  
Environmental Liability Directive (2004/35/EC) (as amended).

8

**Contaminants**

Water Framework Directive (2000/60/EC);

Biocidal Product Regulation (EU) No. 528/2012;

Ship-source pollution and criminal penalties Directive 2005/35/EC (as amended);

Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) Regulation (EC) No. 1907/2006;

Classification, Labelling and Packaging (CLP) Regulation (EC) No. 1272/2008;

Persistent Organic Pollutants Regulation (EC) No 850/2004 as amended by Regulation (EU) No. 519/2012 (particularly Annex I);

Priority Substances Directive 2013/39/EU amending the Directives 2000/60/EC and 2008/105/EC;

Sustainable Use of Pesticides Directive (2009/128/EC);

Integrated Pollution Prevention and Control - Industrial Emissions Directive 2010/75/EU;

Dangerous Substances Directive (2006/11/EC);

Control of major accident hazards involving dangerous substances Directive (2012/18/EU);

EC Port Reception Facilities Directive (2000/59/EC, amended in 2002/84/EC, Directive 2007/71/EC);

Environmental Liability Directive (2004/35/EC) (as amended);

Safety of Offshore Oil and Gas Operations Directive (2013/30/EU).

9

**Contaminants in Seafood**

Regulation (EC) No. 1881/2006 (as amended) setting maximum levels for certain contaminants in foodstuffs;

Regulation (EC) No. 178/2002 laying down the General Principles and requirements of food law, establishing the EFSA and procedures in matters of food safety;

Regulation (EC) No. 854/2004 laying down specific rules for the organisation of official controls on products of animal origin intended for human consumption;

Regulation (EC) No. 882/2004 on official controls performed to ensure the verification of compliance with feed and food law, animal health and animal welfare rules;

Water Framework Directive (2000/60/EC);

Dangerous Substances Directive (76/464/EEC);

Animal health requirements for animals and products thereof, and on the prevention and control of certain diseases in aquatic animals Directive (2006/88/EC);

		Safety of Offshore Oil and Gas Operations Directive (2013/30/EU).
<b>10</b>	<b>Marine Litter</b>	<p>Waste Framework Directive (2008/98/EC);</p> <p>Urban Waste-Water Treatment Directive (1991/271/EEC);</p> <p>Integrated Pollution Prevention and Control Directive (Directive 96/61/EC);</p> <p>Port Reception Facilities for Ship-generated Waste and Cargo Residues Directive (2000/59/EC);</p> <p>Waste Management (Waste Electrical and Electronic Equipment (WEEE) Directive (2012/19/EU);</p> <p>Restriction of Hazardous Substances (RoHS) Directive (2002/95/EC);</p> <p>Environmental Liability Directive (2004/35/EC) (as amended);</p> <p>Safety of Offshore Oil and Gas Operations Directive (2013/30/EU);</p> <p>Batteries and Accumulators Directive (2006/66/EC);</p> <p>End-of-life vehicles Directive (2000/53/EC).</p>
<b>11</b>	<b>Energy (incl. Underwater Noise)</b>	<p>Habitats Directive (92/43/EEC);</p> <p>Environmental Liability Directive (2004/35/EC) (as amended);</p> <p>Environmental Impact Assessment Directive (2011/92/EU);</p> <p>Strategic Environmental Assessment Directive (2001/42/EC).</p>

### 2.1.1 The Water Framework Directive Measures

There are strong links between the Water Framework Directive (WFD) and the Marine Strategy Framework Directive (MSFD). Both Directives have comparable objectives. While the MSFD focuses on the achievement of GES in marine waters, the WFD aims to achieve Good Ecological and Good Chemical Status in coastal and transitional waters. Whilst Good Environmental Status is not exactly equivalent to Good Ecological/Chemical Status there are some significant areas of overlap, particularly as concerns chemical quality, the effects of nutrient enrichment (eutrophication) and some aspects of ecological quality and hydro-morphological quality.

There is also some overlap between the waters covered by the WFD and the MSFD. The MSFD recognises these overlaps with the WFD and makes it clear that in coastal waters the MSFD applies to those aspects of GES which are not already covered by the WFD (e.g. noise, litter, most commercial fish species and aspects of biodiversity).



For Descriptor 8 (contaminants) and Descriptor 5 (eutrophication), considering that most of the anthropogenic activities which cause these pressures are either land-based or occur in the coastal zone, it is highly likely that measures taken under the WFD and its related Directives will be sufficient to achieve and maintain GES for these Descriptors. For Descriptor 7 (hydrographical conditions), it is considered that the application of the WFD in the coastal area, along with a wider application of the Environmental Impact Assessment Directive through the marine licensing process, would be sufficient to achieve GES for this Descriptor.

In its 2012 Communication “A Blueprint to Safeguard Europe's Water Resources” (EC, 2012), the European Commission stated that “As a land-based pressure also influences to a large extent the status of the marine environment, the Blueprint will contribute to achieving good environmental status under the Marine Strategy Framework Directive, provided that there is adequate coordination with programmes of measures under the Marine Strategies due by 2015”.

As stated in the European Commission guidance document (EC, 2014), “both Directives foresee an update every six years: the first cycle of the MSFD is implemented simultaneously with the second implementation cycle of the WFD. Programmes of measures are to be adopted and implemented for both Directives in December 2015: the existing WFD PoM will be updated while MSFD PoMs will be developed for the first time.

In order to adequately coordinate the implementation of the two Directives, Member States may wish to clarify who does what: i.e. which measures will be developed in which PoMs. One way of clarifying this might be to identify for each measure related to a pressure:

- ❖ where the pressure arises (i.e. if land-based or upstream from coastal waters, in coastal waters, or if sea-based)?
- ❖ which water is impacted by the pressure (i.e. whether it affects WFD waters and then spreads to MSFD waters, or whether it affects primarily MSFD waters)?

### 2.1.2. Spatial protection measures

It is recalled that article 13(4) of the MSFD requires the inclusion of spatial protection measures in the programmes of measures, that contribute towards “coherent and representative networks of marine protected areas, adequately covering the diversity of the constituent ecosystems”.

#### 2.1.2.1 Marine Protected Areas (MPAs)

The existing network of MPAs consists of:

- ❖ The Natura 2000 Network Special Areas of Conservation (SACs) designated to implement the Habitats Directive and Special Protection Areas (SPAs) designated to implement the Birds Directive;
- ❖ Marine Protected Areas (MPAs) designated to implement international or regional agreements, including those designated under the Barcelona Convention framework, as well as Ramsar sites, and of the Agreement on the

Conservation of Cetaceans in the Black Sea, Mediterranean Sea and Contiguous Atlantic Area (ACCOBAMS).

- ❖ Additional nationally-designated MPAs.

The network of MPAs will play a significant role in supporting the achievement of a number of the GES characteristics and targets set out in the national strategy – in particular for Descriptor 1 (biodiversity) and Descriptor 6 (seafloor integrity). The national MPAs network constitutes an integral element of the programme of measures for GES and contributes to the Directive's requirements to put in place spatial protection measures which contribute to a coherent and representative network of MPAs.

### 2.1.3. Habitats and Birds Directives

Habitat and species protection is also already provided in national waters through the implementation of the Habitats and Birds Directives (92/43/EEC and 2009/147/EC respectively). The spatial protection aspects of these Directives have already been mentioned under the section on MPAs however these two Directives also set specific conservation objectives for particular species and habitats. Measures implemented under the Habitats Directive are intended to achieve Favourable Conservation Status (FCS) for the species and habitats listed. Under the Birds Directive measures relate to the conservation of all species of naturally-occurring birds in the wild state in the country's European territory to which the Treaty applies.

As a result of the strong links between the MSFD and the above Directives, the management measures to achieve the aims of the Habitats and Birds Directives will play a significant role in achieving the GES targets for Descriptors 1 (biodiversity), 4 (food webs) and 6 (seafloor integrity).

### 2.1.4. Regionally coordinated measures

According to the MSFD, the development of the programme of measures would need to be coordinated within marine regions and the Regional Seas Conventions can and should play a key role in this process.

Under the Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (Barcelona Convention) coordination for the implementation of marine strategies is achieved through the adoption and implementation of the Ecosystem Approach Process (ECAP) (UNEP/MAP, 2008). In the framework of this process, 11 Ecological Objectives have been approved, reflecting to a large extent the descriptors of the MSFD, along with their respective GES definitions, Operational Objectives and targets to achieve them (UNEP/MAP, 2013a). The work of the Barcelona Convention in relation to common measures has focused on the analysis of existing measures and gaps analysis (UNEP/MAP, 2015a). It is envisaged that following COP 19 (February 2016), the measures gaps analysis will be further elaborated along with a plan for coordinated and/or joint measures in the scope of the Mediterranean Sea, for the biennium 2016-2017.

Regionally Coordinated Measures contributing to MSFD characteristics of GES, under the Barcelona Convention are depicted in Annex I.

In the Mediterranean the Agreement for the establishment of the General Fisheries Commission for the Mediterranean ('the GFCM Agreement') provides an appropriate framework for multilateral cooperation to promote the development, conservation, rational management and best utilisation of living marine resources at levels which are considered sustainable and at low risk of collapse. An indicative list of EU Regulations related to the implementation of GFCM Recommendations is included in Table 1 above.

### 3 THE TECHNICAL SPECIFICATION OF ENVIRONMENTAL TARGETS TO BE ACHIEVED THROUGH MEASURES

MSFD Article 10 requires that Member States set environmental targets to guide progress towards achieving GES, i.e. to bridge the gap between the current environmental status (identified under the Art. 8 assessment) and the desired status of the marine environment (Good Environmental Status).

These targets are to be achieved through the development and implementation of the corresponding measures. For the development of the programme of measures the underlying environmental targets should wherever possible be clearly specified and/or quantified.

Where it is not possible to develop quantified environmental targets, these may be politically determined; agreed through technical conventions; determined through expert judgment (i.e. interim targets or trends).

A summary of environmental targets presented in the results of the first phase of the MSFD implementation in Greece is presented in Appendix I.

Through a review of the environmental targets of the Greek marine strategy summarised in Appendix I and the existing measures as outlined in this document, it would appear that the current environmental targets would be largely addressed through the existing legislative framework. Nevertheless there would need to be a specification between measures already implemented and those under implementation.

Moreover it is considered that the results of the MSFD Article 12 Technical Assessment of the MSFD 2012 obligations for Greece (JRC, 2014) would need to be incorporated into the Greek marine strategy. The general conclusions of this assessment are listed in Annex 2. With regard to targets an important conclusion made in this assessment is that “many environmental targets are monitoring targets”.

This important step mentioned above will assist in the identification of gaps, as regards the specification of robust new measures to be incorporated into the Programme of Measures for Greece. It is recalled that the development of marine strategies under the MSFD is an iterative process with a review every six years. (Figure 1).



**Figure 1.** The development of marine strategies under the MSFD as an iterative process.

## Conclusion

Through a review of the environmental targets of the Greek marine strategy and the existing measures as outlined in this document, it would appear that the current environmental targets would be largely addressed through the provisions of the existing legislative framework. Nevertheless, there would need to be a detailed specification between measures already implemented and those under implementation.

Moreover, it is considered that the results of the Technical Assessment of the MSFD 2012 obligations for Greece would need to be incorporated into the Greek marine strategy. With regard to targets an important conclusion made in the Technical Assessment is that “many environmental targets are monitoring targets”.

This important step mentioned above will assist in the identification of gaps, as regards the specification of robust new measures to be incorporated into the Programme of Measures for Greece.

## **PART II:**

**A STUDY ON HOW THE GREEK MEASURES ON  
MARINE POLLUTION AND LITTER (D5, D8, D9,  
D10) COULD BE MORE CONCRETELY  
PREPARED, IN ORDER TO ACHIEVE THEIR  
STREAMLINING WITH BARCELONA  
CONVENTION, LBS SAP-MED REGIONAL  
PLANS AND ECAP GES TARGETS.**





## 1. INTRODUCTION

The purpose of this study is to prepare a proposal on how the marine pollution pressure component of a programme of measures for Greece (eutrophication, contaminants and marine litter (addressing Descriptors 5, 8 & 9 and 10) could be more concretely elaborated, through a streamlining of the Greek measures already identified under sub-task 3.2.2 of the Action Med Project (Subtask 3.2.2. Elaboration of possible measures at National level) of relevance to the Marine Strategy Framework Directive (MSFD) requirements for measures (presented in Annex I), with those deriving from the Barcelona Convention, with a particular focus on the Land Based Sources Protocol (LBS) Strategic Action Programme (SAPMED), LBS Regional Plans and from the Mediterranean Action Plan Ecosystem Approach (ECAP) Good Environmental Status (GES) targets.

The methodology applied in this study involves a comparative analysis of measures already identified of significance for inclusion in the MSFD programme of measures for Greece, with respect to the provisions foreseen under the LBS SAP MED and those of the LBS Regional Plans. Through this comparative analysis, the requirements for potential streamlining will be identified and further checked across the ECAP GES targets for updating the National Action Plans.

A “Measure” in the MSFD should be considered as any action on a national, European or international level with a view to achieving or maintaining GES and with reference to the environmental targets.

A programme of measures (PoMs) is a set of measures that the Member State is responsible for implementing, put into context with each other, referring to the environmental targets they address. The programme of measures includes existing and new measures.

Articles 13.1 and 13.2 of the MSFD make clear that the Programme of Measures should “take into account relevant measures required under EU legislation together with ones resulting from international agreements, including those made under the relevant Regional Sea Conventions (RSCs)” (EC, 2014).

Through a review of the environmental targets of the Greek marine strategy and the existing legislative framework and Regional Agreements directly related to measures, performed as part of the Scoping Study Analysis (Part I), it was concluded that it would appear that the current environmental targets would be largely addressed through the provisions of the existing legislative framework and Regional Convention requirements.

There are strong links between the Water Framework Directive (WFD) and the Marine Strategy Framework Directive (MSFD). Both Directives have comparable objectives. While the MSFD focuses on the achievement of GES in marine waters, the WFD aims to achieve Good Ecological and Good Chemical Status in coastal and transitional waters. Whilst Good Environmental Status is not exactly equivalent to Good Ecological/Chemical Status there are some significant areas of overlap, particularly as concerns chemical quality, the effects of nutrient enrichment (eutrophication) and some aspects of ecological quality and hydro-morphological quality.

There is also some overlap between the waters covered by the WFD and the MSFD. Under the MSFD these overlaps with the WFD are recognized and it is made clear that in coastal waters the MSFD applies to those aspects of GES which are not already covered by the WFD (e.g. noise, litter, most commercial fish species and aspects of biodiversity).

It is recalled that under the WFD first of all, the objectives for good ecological and chemical status are established for the river basin. Then an analysis of human impact is conducted so as to determine how far from the objective each body of water is. At this point, the effect on the problems of each body of water of full implementation of all existing legislation is considered. If the existing legislation solves the problem, well and good, and the objective of the framework Directive is attained. However, if it does not, the Member State must identify exactly why, and design whatever additional measures are needed to satisfy all the objectives established. These might include stricter controls on polluting emissions from industry and agriculture, or urban waste water sources, say. This should ensure full co-ordination.

For Descriptor 8 (contaminants) and Descriptor 5 (eutrophication), considering that most of the anthropogenic activities which cause these pressures are either land-based or occur in the coastal zone, it is highly likely that measures taken under the WFD and its related Directives will be sufficient to achieve and/or maintain GES for these Descriptors.

According to the MSFD, the development of the programme of measures would need to be coordinated within marine regions and the Regional Seas Conventions can and should play a key role in this process.

Under the Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (Barcelona Convention) coordination for the implementation of marine strategies is achieved through the adoption and implementation of the Ecosystem Approach Process (ECAP) (UNEP/MAP, 2008). In the framework of this process, 11 Ecological Objectives have been approved, reflecting to a large extent the descriptors of the MSFD, along with their respective GES definitions, Operational Objectives and targets to achieve them (UNEP/MAP, 2013).

The Strategic Action Programme (SAP) is an action-oriented MAP/MED POL initiative identifying priority target categories of substances and activities to be eliminated or controlled by the Mediterranean countries through a timetabled schedule for the implementation of specific control measures and interventions. The SAP, adopted by the Contracting Parties in 1997, is an important basis for the implementation of the Land Based Sources Protocol by the Mediterranean countries.

A series of Regional Plans have been adopted by the Contracting Parties in accordance with Article 15 of the Barcelona Convention Protocol for the Protection of the Mediterranean Sea against Pollution from Land Based Sources and Activities (LBS Protocol). These Regional Plans contain measures and a timetable for their implementation and become legally binding on the one hundred and eightieth day following the day of notification.

The Contracting Parties have prepared, for the first time in 2004-2005, National Actions Plans (NAPs) for the protection the Mediterranean Sea from land-based sources,

towards the implementation of the LBS Protocol of the Barcelona Convention and the respective Strategic Action Programme to combat pollution from land-based sources and activities (SAP-MED). They are currently in the process of updating their National Action Plans following the Decisions at COP 16 in 2008 and COP 18 in 2013, with the view to achieving good environmental status (GES) through the implementation of the LBS Protocol and the Regional Plans, taking into account pressure related ECAP ecological objectives 5, 9 and 10 dealing with eutrophication, contaminants and marine litter and their respective targets. The pollution reduction measures to be incorporated into the updated NAPs under the Regional Plans in the framework of the SAP-MED and ECAP (UNEP MAP, 2015b) are presented in Annex III.

## 2. EUTROPHICATION

The Strategic Action Programme to Address Pollution from Land-Based Activities in the Mediterranean Region (SAP MED) identifies the main anthropogenic sources of nutrients to be urban wastewater (municipal sewage), industrial waste water, agriculture; and atmospheric emissions.

### 2.1. Urban Wastewater

As regards urban wastewater the SAP MED is concerned with the general control of the adverse environmental and health effects caused by the improper discharge into coastal environments of municipal sewage that may carry pathogens, suspended solids, excessive nutrients, BOD, plastics and other marine debris, heavy metals and other toxic substances.

More specifically, activities envisaged in the SAP MED to be carried out on a national level to prevent eutrophication caused by urban wastewater (municipal sewage) are as follows:

By the year 2005, to develop National Plans and Programmes for the environmentally sound Management of Sewage, and to this end to ensure:

- ❖ By the year 2005, to develop National Plans and Programmes for the environmentally sound Management of Sewage, and to this end to ensure:
- ❖ That by the year 2005, the coastal cities and urban agglomerations of more than 100.000 inhabitants, are connected to a sewer system and dispose all waste water in conformity with a national regulation system;
- ❖ To locate coastal outfalls so as to obtain or maintain agreed environmental quality criteria and to avoid exposing shell fisheries, water intakes, and bathing areas to pathogens and to avoid the exposure of sensitive environments (such as lagoons, seagrass beds, etc.) to excess nutrient or suspended solid loads;
- ❖ To promote the primary, secondary and, where appropriate and feasible, tertiary treatment of municipal sewage discharged to rivers, estuaries and the sea;
- ❖ To promote and control the good operation and proper maintenance of existing facilities;
- ❖ To promote the reuse of the treated effluents for the conservation of water resources. To this end, infrastructural measures, treatment at source and the segregation of industrial effluents, shall be encouraged, as well as:
  - The beneficial reuses of sewage effluents and sludge by the appropriate design of treatment plant and processes and controls of the quality of influent waste waters in accordance with national regulations;
  - The environmentally sound treatment when domestic and compatible industrial effluents are treated together;
- ❖ To promote the separate collection of rain waters and municipal waste waters and ensure treatment of first rain waters considered particularly polluting;
- ❖ To identify the availability and sustainability of productive uses of sewage sludge, such as land-spreading, composting, etc;
- ❖ To prohibit the discharge of sludge into seawater, in the (LBS) Protocol area.

As regards national obligations under the European Community legislative framework, the Urban Wastewater Treatment Directive (91/271/EC) has as its objective to protect the environment from the adverse effects of urban waste water discharges and discharges from certain industrial sectors specified in Annex III of the Directive and concerns the collection, treatment and discharge of domestic waste water, mixture of waste water; and, waste water from certain industrial sectors. The Directive more specifically requires:

- ❖ The Collection and treatment of waste water in all agglomerations of >2000 population equivalents (p.e.);
- ❖ Secondary treatment of all discharges from agglomerations of > 2000 p.e, and more advanced treatment for agglomerations >10 000 population equivalents in designated sensitive areas and their catchments;
- ❖ A requirement for pre-authorisation of all discharges of urban wastewater, of discharges from the food-processing industry and of industrial discharges into urban wastewater collection systems;
- ❖ Monitoring of the performance of treatment plants and receiving waters; and
- ❖ Controls of sewage sludge disposal and re-use, and treated waste water re-use whenever it is appropriate.

Therefore on a comparative basis, both approaches outlined above require the discharges of municipal sewage into coastal waters to be strictly subject to authorization or regulation by the competent authorities. In addition, they both set a deadline for the connection of urban agglomerations to a sewer system and for carrying out primary or secondary treatment of municipal wastewater discharging into coastal waters. Primary treatment according to the SAP MED should be combined with appropriate coastal outfalls, while in the EU Directive it is acceptable, but as an exception subject to special agreement with the Commission. The deadline for the connection to a sewer system in the case of agglomerations greater than 100,000 inhabitants was 2005 according to the SAP MED and was the year 2000 according to the EU Directive requirements for all discharges from agglomerations of more than 15000p.e. The SAP MED provides for tertiary treatment where deemed necessary and the EU Directive specifies cases where stricter controls should be applied (sensitive areas to eutrophication requiring controls on concentrations of P and N in discharges from wastewater treatment plants). Both regulatory obligations require the phasing out of any dumping or discharge of sewage sludge into surface waters.

The Decision IG.19/7: "Regional Plan on the reduction of BOD<sub>5</sub> from urban waste water<sup>1</sup> in the framework of the implementation of Article 15 of the LBS Protocol" (UNEP/MAP, 2009) has as its objective to protect the coastal and marine environment and health from the adverse effects of the above mentioned waste water (urban wastewater) direct and/ or indirect discharges, in particular regarding adverse effects

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<sup>1</sup> "Urban waste water" means waste water of the mixture of domestic waste water with industrial waste water pre-treated or not and/or run-off rain water;

(b) "Domestic waste water" means waste water from residential settlements and services which originates predominantly from the human metabolism and from household activities;

on the oxygen content of the coastal and marine environment and eutrophication phenomena.

Article 3 of this Regional Plan focuses on the measures to be implemented, specifying that Parties shall ensure that all agglomerations collect and treat their urban waste waters before discharging them into the environment; the collecting systems should satisfy the requirements set forth in the Appendix I of the Regional Plan;

The Parties are expected to adopt National BOD<sub>5</sub> ELVs for urban waste waters after treatment (i.e. maximum allowable concentration of BOD<sub>5</sub> to be finally discharged from WWTP to the receiving water environment), while the characteristics of collected and treated urban waste waters shall before discharge in the environment, be in accordance to provisions on ELVs (LBS Protocol Area  $\leq 50$  mg/l O<sub>2</sub> assuming a performance of reduction of the influent load of 70-90 % (secondary treatment; LBS Protocol Area – marine outfalls (ref. Art. 7 LBS Protocol)  $\leq 200$  mg/l O<sub>2</sub> assuming a performance of reduction of the influent load of 20 % (primary treatment);

The national competent authorities or appropriate bodies shall monitor discharges from municipal WWTP to verify compliance with the requirements of the ELVs taking into account guidelines included in Appendix II of the Regional Plan.

As regards national obligations under the European Community legislative framework, under the Urban Wastewater Treatment Directive (91/271/EEC) the requirements for discharges from urban waste water treatment plants specify that the values for concentration of BOD<sub>5</sub> or for the percentage of reduction shall apply (BOD<sub>5</sub> at 20 °C without nitrification 25 mg/l O<sub>2</sub> or 70-90% reduction of the influent load (secondary treatment).

In terms of streamlining the requirements for measures, it is considered that the general requirements of the SAP MED to control the adverse effects from the improper discharge of municipal wastewater, leading to eutrophication, would be addressed by those requirements for measures of the national legislation implementing the EU WFD (measures deriving from the implementation of the River Basin Management Plans) and related Directives such as the Urban Wastewater Treatment Directive (91/271/EEC).

## 2.2 Industrial Wastewater (Agrofood Industry)

According to the SAP, the disposal of wastewater from certain sectors of the agro-food industry should be subject to authorization or regulation by the competent authorities of the Parties, to conform to the provisions of the LBS Protocol. Similarly, the national legislation implementing the EU Urban Wastewater Treatment Directive requires that the discharge of industrial waste water into collecting systems and urban waste water treatment plants is subject to prior regulations and/or specific authorizations by the competent authority or appropriate body.

The SAP stipulates that the Mediterranean countries that have not already undertaken pollution control measures are expected to make budget commitments to halve the discharges emissions and losses of nutrients from industrial installations by 2010, by applying guidelines for BAT and BEP.

Activities envisaged in the SAP MED to be carried out on a national level to prevent eutrophication from emissions of the agro-food industry are as follows:

- ❖ To reduce discharges of pollutants as much as possible and, in order to do so, to promote the implementation of environmental audits and apply BEP and, if possible, BAT in the industrial installations which are sources of BOD, giving priority to installations located in hot spots
- ❖ To develop National Programmes for the environmentally sound management of waste water and solid waste from industrial installations which are sources of BOD

The Decision IG.20/8.2 "Regional Plan on the reduction of BOD<sub>5</sub> in the food sector in the framework of the implementation of Article 15 of the LBS Protocol" (UNEP/MAP, 2012a) has as its objective to prevent pollution and to protect the coastal and marine environment from the adverse effects of discharges of organic load (BOD<sub>5</sub>) from food sectors. To this end the main measure to be implemented is the reduction of pollution load by application of BEP and BAT in Industrial Food Plants outlined in Appendix I of the Regional Plan which discharge more than 4000 pe into water bodies, which shall meet the requirements (24-hour values) of Chemical Oxygen Demand (COD) 160 mg/l or Total Organic Carbon (TOC) 55 mg/l; Biochemical Oxygen Demand BOD<sub>5</sub> or (BOD<sub>7</sub>) 30 mg/l.

Under national legislation implementing the European Union requirements, considerable reductions from agro-food industries are expected to result from the requirements of the IPPC Directive, according to which all the existing installations that may cause the discharge of substances causing eutrophication (in particular, nitrates and phosphates) should meet permit conditions based on BAT and operate in accordance with the requirements of the Directive, by 30<sup>th</sup> October 2007.

Under national obligations implementing the Urban Wastewater Treatment Directive, by 31 December 2000, biodegradable industrial waste water from plants belonging to the industrial sectors listed in Annex III (Agrofood Industry) which does not enter urban waste water treatment plants before discharge to receiving waters shall before discharge respect conditions established in prior regulations and/or specific authorization by the competent authority or appropriate body, in respect of all discharges from plants representing 4 000 population equivalent (p.e.) or more. Until these latter requirements are met, national limits apply (COD 125mg/l, BOD 25mg/l).

### 2.3. Agricultural Activities

To reduce the input of nutrients from agricultural activities under the SAP MED the countries are expected to apply codes of good agricultural practice for the rational use of fertilizers and manure and to participate in relevant international programmes such as the FAO programmes for sustainable agricultural development in the Mediterranean.

More specifically activities envisaged in the SAP MED to be carried out on a national level to prevent eutrophication from agricultural activities are as follows:

- ❖ To assess the quantities and types of fertilizers used;
- ❖ To assess the quantity of solid and liquid manure produced by farm animals;
- ❖ To promote the rational use of fertilizers and reduce the losses of nutrients by misuse of inorganic fertilizers and manure;

- ❖ To promote ecological agriculture and ecological aquaculture;
- ❖ To promote rules of good agricultural practices;
- ❖ To participate in the programmes and activities of international organizations, especially FAO, on sustainable agricultural and rural development in the Mediterranean.

Correspondingly in implementing national obligations under the legislative framework of the European Union, the EU Nitrates Directive 91/676/EEC which forms an integral part of the implementation of the Water Framework Directive and is one of the key instruments in the protection of waters against agricultural pressures, requires the production and promotion of Codes of Good Agricultural Practice in order to reduce the level of nitrate loss to surface water, including marine waters, and groundwater from agriculture. It contains monitoring requirements and, in areas identified as being vulnerable to nitrate pollution (N “vulnerable zones” or NVZ), it imposes Action Programmes with legally enforceable constraints on agricultural practices (code(s) of good agricultural practice becomes mandatory) together with limits on the spreading of organic manure (< 170 kg N organic/hectare/year).

Form the above considerations it may be deduced that the SAP requirements for nutrients in industrial wastewater and those derived from agricultural activities have corresponding applications in the national legislative framework implementing the EU Urban Wastewater Treatment Directive, the Nitrates Directive and the IPPC Directive.

#### 2.4. Measures for the reduction of eutrophication to be implemented under the updated National Action Plans

Measures under the Regional Plans, identified for updating the National Action Plans of potential significance to the implementation of the eutrophication component of the MSFD Programme of measures are shown in Table 2.

**Table 2.** Eutrophication Reduction Measures under the Regional Plans in the framework of the SAP MED and ECAP.

<b>Eutrophication Reduction Measures</b>	<b>Deadline</b>
Ensure that all agglomerations of more than 2000 inhabitants collect and treat their urban wastewater before discharging them into the environment	2015 or 2019
Adopt emission limit values (ELV) for BOD <sub>5</sub> <sup>2</sup> in urban wastewater after treatment in accordance with the requirements of the “regional guideline on the reduction of BOD <sub>5</sub> from urban waste water ”	2015 or 2019
Enforce the adopted ELVs by monitoring discharges from municipal wastewater treatment plants and industrial food plants into the environment	
Report on the implementation of the measures on the reduction of BOD <sub>5</sub> from urban waste water and industrial food plants and on their effectiveness	On a biannual basis

<sup>2</sup> LBS Protocol Area <=50 mg/l O<sub>2</sub> assuming a performance of reduction of the influent load of 70-90 % (secondary treatment; LBS Protocol Area – marine outfalls (ref. Art. 7 LBS Protocol) <=200 mg/lO<sub>2</sub> assuming a performance of reduction of the influent load of 20 % (primary treatment) without prejudice to stricter provisions respecting the reduction of BOD<sub>5</sub> from urban waste water contained in other existing of future national, regional or international instruments or programmes



Adopt emission limit values (ELV) for the reduction of pollution load (BOD <sub>5</sub> ) by application of BEP and BAT in Industrial Food Plants which discharge more than 4 000 pe into water bodies <sup>3</sup>	2014
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As described above under national obligations to implement the European Community legislative framework, under the Urban Wastewater Treatment Directive (91/271/EEC) the requirements for discharges from urban waste water treatment plants specify that the values for concentration of BOD<sub>5</sub> or for the percentage of reduction shall apply (BOD<sub>5</sub> at 20°C without nitrification 25 mg/l O<sub>2</sub> or 70-90% reduction of the influent load (secondary treatment)).

Furthermore, by 31<sup>st</sup> December 2000, biodegradable industrial waste water from plants belonging to the industrial sectors listed in Annex III (Agrofood Industry) of Directive 91/271/EEC which does not enter urban waste water treatment plants before discharge to receiving waters shall before discharge respect conditions established in prior regulations and/or specific authorization by the competent authority or appropriate body, in respect of all discharges from plants representing 4000 population equivalent (p.e.) or more. Until these latter requirements are met, national limits apply (COD 125mg/l, BOD 25mg/l).

These requirements therefore, affirm also, that national measures to address the European community legislative framework, will address the eutrophication reduction measures under the Regional Plans in the framework of the SAP MED and ECAP needed for the updating of the National Action Plans.

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<sup>3</sup> (24-hour values) of Chemical Oxygen Demand (COD) 160 mg/l or Total Organic Carbon (TOC) 55 mg/l; Biochemical Oxygen Demand BOD<sub>5</sub> or (BOD<sub>7</sub>) 30 mg/l without prejudice to stricter provisions respecting the levels of organic load (BOD<sub>5</sub>) from food sectors contained in other existing or future national, regional or international instruments or programmes.

### 3. CHEMICAL CONTAMINANTS

#### 3.1 Activities under the SAP MED and national obligations under the European Union legislative framework

The objective of the SAP MED with regard to chemical contaminants is to reduce and to the fullest possible extent eliminate pollution from industrial installations, giving priority to the phasing out of substances that are toxic, persistent and liable to bio accumulate.

The ultimate target of the SAP MED is that by 2025 the point source discharges into the Protocol Area from industrial installations take place in conformity with the provisions of the Land Based Protocol and other agreed international and national provisions.

The SAP MED has the following specific targets:

- ❖ Phase out inputs of 9 pesticides and PCBs by 2010 (Aldrin, DDT, Dieldrin, Endrin, Chlordane, Heptachlor, Mirex, Toxaphene, PCB/PCT);
- ❖ Reduce to the fullest possible extent hexachlorobenzene, dioxins and furans by 2010;
- ❖ Phase out inputs of PAHs by 2025;
- ❖ Phase out to the fullest possible extent discharges and emissions and losses of heavy metals (mercury, cadmium and lead) by 2025;
- ❖ Phase out to the fullest possible extent discharges and emissions and losses of organotin compounds by 2010 (Butyltin compounds);
- ❖ Reduce discharges, emissions and losses of zinc, copper and chromium by 2010 and eliminate by 2025;
- ❖ Reduce discharges, emissions and losses of organohalogen compounds into the Mediterranean Sea by 2010 and eliminate by 2025.

To fulfill the above SAP MED targets the Contracting Parties are expected to prepare and adopt guidelines for industrial wastewater treatment and disposal (deadline 2005) and environmental quality criteria as well as emission limit values for point source discharges of substances from industrial installations (deadline 2010).

The countries are expected to make or update inventories of point source discharges and emissions of industrial pollutants in hot spots and areas of concern and from the public industrial sector, as well as inventories of the uses and the quantities of pollutants produced or in stock for the following groups of substances:

- ❖ POPs and PAHs;
- ❖ Organometallic compounds;
- ❖ Other Pesticides and other Organohalogenated compounds (chlorinated paraffins);
- ❖ Obsolete Chemicals;

- ❖ Luboils;
- ❖ Batteries.

The deadline for the preparation of a set of guidelines on BAT and BEP to be adopted in industries for the control of pollution caused by POPs, TPB heavy metals (Hg, Cd, Pb), zinc, copper and chromium, organometallic compounds, other organohalogen compounds and nutrients was 2005.

Of the toxic persistent and bioaccumulative (TPB) industrial pollutants, special attention is given to the 12 Priority POPs, whose inputs into the environment should be phased out (year 2010). The deadline for the reduction of their input into the environment by 50% was 2005, while by that time all PCB waste would be collected and disposed of in an environmentally sound manner. The deadline for the preparation of a set of guidelines for the introduction of alternatives to the 12 Priority POPs was 2003.

For the remaining TPBs, the deadline for the reduction of the input into the environment of Polycyclic Aromatic Hydrocarbons (PAH), also a POP group, by 25%, was 2010 and to be phased out by 2025. The deadline for the reduction of the discharges of the heavy metals mercury, cadmium and lead and of organometallic compounds by 50% was 2005 and to be phased out by 2025. The deadline to phase out the use of organomercuric compounds was 2005.

In the meantime the adoption of national regulations would be required to apply the following:

- a) The common measures for the control of pollution by organotin compounds adopted by the Contracting Parties in 1989.
- b) The common measures for the prevention of mercury pollution: maximum concentration 0.050 mg/l total mercury in effluent discharges, before dilution into the sea, adopted by the Contracting Parties in 1987.
- c) For industries of the alkaline chloride electrolysis sector an additional maximum value of 0.5 g Hg in the water per tonne of chlorine production capacity (brine recirculation) or 5g Hg in the water per tonne chlorine production capacity (lost brine technology) and 2 g Hg from total releases into water, air and products.
- d) The common measures for the control of pollution by cadmium and cadmium products: 0.2mg/l total cadmium in effluent discharges, before dilution into the sea, adopted by the Contracting Parties in 1989.

It is expected that the countries will reach the above levels of releases at the latest by 2025, following the implementation of environmental management plans and the adoption of BAT and BEP in industry.

For other heavy metals (Zn, Cu and Cr), the discharges into the environment should be eliminated by 2025, while in the meantime the countries are expected to adopt national regulations concerning the application of the common measures to control pollution caused by zinc, copper and their compounds, which were adopted by the Contracting

Parties in 1996: a maximum concentration of 1.0 mg/l of zinc and 0.5 mg/l of copper in effluent discharges released into the sea. The countries will reach the above levels of releases at the latest by 2025, following the implementation of environmental management plans and the adoption of BAT and BEP in industry, giving priority to installations located in hot spot areas.

Concerning other organohalogen compounds listed in the SAP MED, discharges into the environment should be eliminated by 2025 and in the meantime the adoption of national regulations for the application of the common measures for the control of pollution by organohalogen compounds adopted by the Contracting Parties in 1989. In addition, a regulation of releases of organochlorines by the paper and paper pulp industries, by limiting discharges measured as AOX (adsorbable organic halogen to 1kg per tonne of pulp produced). Further reductions should be achieved through the promotion of alternative bleaching and the use of BAT and BEP.

A comparative analysis of the provisions of the SAP MED with national measures required to implement the European Union legislative framework to combat chemical pollution of surface waters revealed that the general requirements of the SAP MED correspond to those national obligations to implement the Water Framework Directive as set out in Article 16. This requires the establishment of a list of priority substances, these to be selected from amongst those presenting a significant risk to or via the aquatic environment at EU level. It also requires the designation of a subset of priority hazardous substances, and proposals for controls to reduce the emissions, discharges and losses of all the substances and to phase out the emissions, discharges and losses of the subset of priority hazardous substances., setting a combined approach in the measures to be applied involving both environmental quality criteria and emissions/discharges standards and the application of BAT, identifying a list of priority toxic, persistent and bio accumulative (TPB) substances to be phased out within a period of approximately 20-25 years. The substances of concern to the aquatic environment listed under the WFD including priority hazardous substances and also listed in the SAP MED are shown in Annex IV.

While for certain priority substances the SAP MED has predetermined percentage reductions to be achieved within a specified time-schedule, the WFD requires the achievement of good ecological status and good chemical status. The national measures to implement the Integrated Pollution Prevention and Control Directive (IPPC<sup>4</sup>) indirectly also implies the achievement of considerable percentage reductions of substances, including the priority substances identified in the SAP MED, thus covering to a large extent the earlier reductions deadlines specified in the SAP MED.

The general requirements of the SAP MED for point sources discharges and releases from industrial activities such as prior authorization; the control of pollution through the application of guidelines on BAT; the preparation of inventories of discharges and emissions of industrial pollutants (including uses and quantities produced or in stock); the establishment of pollutant release and transfer registers (PRTR), also have

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<sup>4</sup> The Directive on industrial emissions 2010/75/EU (IED – Integrated Pollution Prevention and Control) was adopted on 24 November 2010. It entered into force on 6 January 2011 and had to be transposed into national legislation by EU Member States by 7 January 2013. The IED repeals the IPPC Directive as of 7 January 2014

corresponding applications in the national obligations to implement the IPPC Directive which include a permitting system for specific industrial installations, the application of BAT as a prerequisite for authorization; the preparation of BAT reference documents (BREFS) to guide the industrial installations accordingly; and, setting up a European Pollution Emission Register

The SAP MED requirements for specific industrial pollutants (POPs, TPB heavy metals, organometallic compounds, other heavy metals, other organohalogen compounds) correspond to the national requirements to meet the earlier European Community policy concerning dangerous or hazardous substances in European waters, notably the Directive on pollution caused by discharges of certain dangerous substances (Directive 76/464/EEC, codified as 2006/11/EC). In addition, several substances listed in Annex I of Directive 76/464/EEC have been regulated in specific Directives by defining emission limit values and quality objectives in the surface and coastal waters. These “Specific Directives” were later amended and subsequently repealed by Directive 2008/105/EC on environmental quality standards in the field of water policy. As part of the restructuring of the Community water policy, Directive 76/464/EEC was integrated into the Water Framework Directive 2000/60/EC and was fully repealed in 2013. There are a large number of organohalogen compounds that are listed as priority hazardous substances in the Water Framework Directive, subject to the cessation or phasing-out of discharges, emissions and losses within a timeframe of 20 years

Furthermore, from the 1980s the EU started to implement a limited number of bans on specific pesticides, mainly persistent organohalogen compounds, due to growing evidence of human or environmental harm. For example, the decision to ban the persistent, organochlorine insecticide DDT was made in 1986. In 1991 EU Directive (79/117/EEC) consolidated decisions on 20 active ingredients, prohibiting their sale and use. As a result some of the more dangerous substances including DDT, aldrin and endrin have not been produced or used in the EU for some time while most uses of other pesticides, including lindane, chlordane, dieldrin, HCH, hexachlorobenzene and campheclor have also been prohibited.

The use and marketing of PCBs was banned through Directive 85/467/EEC amending Council Directive 76/769/EEC on the marketing and use of certain dangerous substances and preparations.

The national regulatory framework as regards POPs implements Commission Regulation (EC) 850/2004, as amended by Commission Regulation (EU) 757/2010, that complement earlier Community legislation on POPs and align it with the provisions of the international agreements on POPs. The national regulatory framework accordingly contains provisions regarding production, placing on the market and use of chemicals, management of stockpiles and wastes, and measures to reduce unintentional releases of POPs. Furthermore, national obligations include setting up emission inventories for unintentionally produced POPs, national implementation plans (NIPs) and monitoring and information exchange mechanisms.

According to the IPPC Directive organohalogen compounds and substances that may form such compounds in the aquatic environment are included in the indicative list of the main polluting substances to be taken into account for fixing emission limits into water. All the relevant existing national industrial installations were required to meet

permit conditions based on BAT and operate in accordance with the requirements of the Directive by 30 October 2007.

In terms of streamlining the requirements for measures regarding chemical contaminants, it is considered that the requirements of the SAP MED to control the adverse effects from industrial activities, would be addressed by those requirements for measures of the national legislation implementing the EU WFD (measures deriving from the implementation of the River Basin Management Plans), IPPC Directive, and the national regulatory framework as regards POPs.

### 3.2. Regulatory developments with regard to priority contaminants - Legally binding measures under the LBS Protocol

Six legally binding measures (Regional Plans) were elaborated and adopted in the framework of the implementation of Articles 5 and 15 of the LBS Protocol. The origin of these measures can be traced back to the year 2008 when MED POL Focal Points agreed to establish a List of 'action' priority substances. The 'action' priority substances as regards chemical contaminants consist of Metals, Organic metallic compounds, Polychlorinated Biphenyls (PCBs), Polychlorinated dibenzodioxins (PCDDs), Polychlorinated dibenzofurans (PCDFs), Volatile Organic Compounds and POPs. In principle, it was agreed that in order to propose measures, the substance:

- ❖ Is covered by regional and/or international instruments regulating its use, release or phasing out;
- ❖ Should have an Emission Limit Value (ELV) or its ELV is under development either at national or at regional levels;
- ❖ The substance and/or its high input could represent a risk to the marine environment or human health; and
- ❖ The Parties may propose additional substances at the Contracting Parties meetings.

Based on this process, the following Regional Plans, as regards chemical contaminants, were prepared and adopted by the Contracting Parties in 2009 and 2012:

- ❖ Elimination of the POPs Aldrin, Chlordane, Dieldrin, Endrin, Heptachlor, Mirex and Toxaphene (Decision IG.19/8, effective 2011 and 2012 for stock piles) (UNEP/MAP 2012b);
- ❖ Phasing out of DDT (Decision IG.19/9, effective 2011 and 2012 for stock piles) (UNEP/MAP 2012c);
- ❖ Reduction of inputs of Mercury (Decision IG.20/8) (UNEP/MAP, 2012d);
- ❖ Phasing out of the POPs hexabromodiphenyl ether, heptabromodiphenyl ether, tetrabromodiphenyl ether and pentabromodiphenyl ether (Decision IG20/8, effective 2013 latest) (UNEP/MAP, 2012e);
- ❖ Phasing out of the POPs lindane and endosulphan (Decision IG20/8, effective 2013 latest) (UNEP/MAP 2012e);
- ❖ Phasing out of the POPs perfluorooctane sulfonic acid, its salts and perfluorooctane sulfonyl fluoride (Decision IG20/8, effective 2013 latest) (UNEP/MAP, 2012e);
- ❖ Elimination of the POPs alpha hexachlorocyclohexane, beta hexachlorocyclohexane, chlordecone, hexabromobiphenyl ether,

pentachlorobenzene (Decision IG20/8, effective 2013 latest) (UNEP/MAP, 2012e).

### 3.3 Measures on chemical contaminants to be implemented under the updated National Action Plans

Measures envisaged under the Regional Plans, identified for updating the National Action Plans of potential significance to the implementation of the contaminants component of the MSFD Programme of measures are shown in Table 3.

Regarding the streamlining of measures applicable to Greece in order to achieve the requirements for updating the National SAP MED National Action Plan it would be necessary to add that in the case of mercury, there is no chlor-alkali industry activity in Greece or other industrial process utilizing mercury as a catalyst or mercury salts.

Furthermore implementation of the European Regulation 1907/2006 (REACH Regulation) introduces prohibitions and restrictions to the use of mercury and its compounds. Mercury emissions from industrial installations are primarily regulated through the implementation of the IPPC Directive. Implementation of the European Regulation 1102/2008 provides for the procedures for temporary storage and final disposal of stock piles of mercury.

As previously mentioned, the national regulatory framework as regards POPs implements Commission Regulation (EC) 850/2004, as amended by Commission Regulation (EU) 757/2010, that complement earlier Community legislation on POPs and align it with the provisions of the international agreements on POPs. The Regulation contains provisions regarding production, placing on the market and use of chemicals, management of stockpiles and wastes, and measures to reduce unintentional releases of POPs. Furthermore, national obligations include setting up emission inventories for unintentionally produced POPs, national implementation plans (NIPs) and monitoring and information exchange mechanisms.

Finally it is noted that in 2015 the EC Expert Network on Contaminants prepared a Template for the review of Decision 2010/477/EU concerning MSFD criteria for assessing good environmental status according to the review technical manual. Descriptor 8 (EC JRC, 2015)

**Table 3.** Chemical Contaminant (from industrial installations) Reduction Measures under the Regional Plans in the framework of the SAP MED and EcAp.

Chemical contaminant reduction measures	Deadline
Prohibit and/or take legal and administrative measures necessary to eliminate the production and use of POPs <sup>5</sup> and their wastes	Deadline passed (2011-2013)
Identify stock piles consisting of or containing POPs	Deadline passed (2013)
Application of BAT and BEPs for the environmentally sound management of POPs wastes	Deadline passed (2011-2013)
Prohibit the installation of new Chlor alkali plants using mercury cells and vinyl chloride monomer production plants using mercury as a catalyst	Deadline passed
Adopt National ELVs for mercury emissions based on values included in the “regional plan on the reduction of inputs of mercury” from other than the Chlor Alkali industry <sup>6</sup>	2019
Cease releases of mercury from the activity of Chlor- alkali plants	2020
Reduce the inputs of Mercury emissions from sectors other than the chlor-alkali industry and use alternatives as appropriate.	2015-2019
Identify existing sites which have been historically contaminated with mercury	Deadline Passed
Apply environmentally sound management measures to sites which have been historically contaminated with mercury	2015 – 2019
Take the appropriate measures to isolate and contain mercury- containing wastes	2025
Achieve the environmentally sound management of metallic mercury from decommissioned sites	To be achieved following decommission

The recommendation of this Expert Network was for the establishment of an EU-wide minimum list of elements and/or parameters for assessing GES based on:

- ❖ WFD Priority Substances (including amendments);
- ❖ A clear and justified mechanism for excluding WFD priority substances from MSFD assessments where they are not relevant in the marine environment;

<sup>5</sup> Aldrin, Chlordane, Dieldrin, Endrin, Heptachlor, Mirex and Toxaphene , DDT, hexabromodiphenyl ether, heptabromodiphenyl ether, tetrabromodiphenyl ether and pentabromodiphenyl ether, lindane and endosulphan, , perfluorooctane sulfonic acid, its salts and perfluorooctane sulfonyl fluoride, alpha hexachlorocyclohexane, beta hexachlorocyclohexane, chlordecone, hexabromobiphenyl ether, pentachlorobenzene

<sup>6</sup> Chemical industries using mercury catalysts, batteries industry, non-ferrous metal industry, waste treatment, incineration plants



- ❖ Other substances (marine region specific substances, selected through Regional Sea Convention mechanisms), or river basin specific pollutants) that might be relevant and would need to be monitored.

Under the MSFD, Member States shall consider WFD Priority Substances (WFD PS). However, some WFD PS might not be relevant for the marine environment and, consequently, should not be necessarily assessed in the marine environment (including coastal waters). Therefore, Member States can exclude the non-relevant WFD PS for their own situation. The WFD PS exclusion process has to be clearly documented and justified based on predefined situations based on the chemical/ physical properties of the contaminant (e.g. volatility and persistence in the marine environment), monitoring data evidence and the significance of sources and inputs.

River Basin Specific Pollutants (RBSP) are considered under WFD in the transitional waters and coastal waters (1 nm). There might be a future provision to make a RBSP EQS non-compliance trigger further investigation in marine waters. Legacy pollutants are present in the marine environment. Their basic monitoring and assessment is needed to assess GES, even if direct mitigation measures cannot be provided.

It may be concluded from the comparative analyses that in terms of streamlining the requirements for measures regarding chemical contaminants, that the requirements of the SAP MED and measures for updating the National Action Plan through the implementation of the Regional Plans to control the adverse effects from industrial activities, would be addressed by those requirements for measures of the national legislative framework implementing the EU WFD (measures deriving from the implementation of the River Basin Management Plans), IPPC Directive, the REACH Regulation, and the national regulatory framework as regards POPs.

## 4. MARINE LITTER

### 4.1 Activities under the SAP MED and national obligations under the European Union legislative framework

The amended LBS Protocol includes coastal litter in the list of priority substances that require the development of action plans. The Strategic Action Programme (SAP/MED) specifically addresses the issue of coastal litter derived from urban solid waste. The objective of the SAP MED is to control the adverse environmental effects caused by the direct or indirect release of coastal solid waste into the sea, and the adverse environmental and health effects that may be generated by the residues from the burning of household wastes.

The target of the SAP MED is to base urban solid waste (coastal litter) management on reduction at source, separate collection, recycling, composting and environmentally sound disposal, at the latest by 2025. By 2005, this target is expected to be achieved in all coastal cities and urban agglomerations exceeding 100.000 inhabitants and in areas of concern. The countries would be expected to develop national plans and programmes for the environmentally sound management of urban solid waste (coastal litter, by 2005) based on the SAP MED target and to this end take into consideration a set of Guidelines for the Management of Coastal Litter for the Mediterranean Region (MAP/UNEP/MED POL, 2004).

Waste management according to the requirements of the European Union is based on the following principles:

- ❖ Prevention: waste production must be minimised and avoided where possible.
- ❖ Producer responsibility and polluter pays: those who produce the waste or contaminate the environment should pay the full costs of their actions;
- ❖ Precaution: potential problems should be anticipated;
- ❖ Proximity: waste should be disposed of as closely as possible to where it is produced.

These principles were more concretely elaborated in the 1996 EU general strategy on waste, which sets out a preferred hierarchy of waste management operations.

The strategy also stresses the need for reduced waste movements and improved waste transport regulation as well as new and better waste management tools such as:

- ❖ Regulatory and economic instruments;
- ❖ Reliable and comparable statistics on waste;
- ❖ Waste management plans;
- ❖ Proper enforcement of legislation.

In its Resolution of 24 February 1997 on a Community strategy for waste management, the European Council confirmed that waste prevention should be the first priority of waste management, and that re-use and material recycling should be preferred to energy recovery from waste, where and insofar as they are the best ecological options.

Directive 2008/98/EC or the Waste Framework Directive provides for a general framework of waste management requirements and sets the basic waste management definitions for the EU such as definitions of waste, recycling, recovery. It explains when waste ceases to be waste and becomes a secondary raw material (so called end-of-waste criteria), and how to distinguish between waste and by-products.

The Directive lays down some basic waste management principles: it requires that waste be managed without endangering human health and harming the environment, and in particular without risk to water, air, soil, plants or animals, without causing a nuisance through noise or odours, and without adversely affecting the countryside or places of special interest.

The Directive also requires Member States to take appropriate measures to encourage firstly, the prevention or reduction of waste production and its harmfulness and secondly the recovery of waste by means of recycling, re-use or reclamation or any other process with a view to extracting secondary raw materials, or the use of waste as a source of energy. The Directive's requirements are supplemented by other directives for specific waste streams and repealed Directive 2006/12/EC (the codified version of Directive 75/442/EEC on waste disposal, as amended), the hazardous waste Directive 91/689/EEC, and the Waste Oils Directive 75/439/EEC.

From the above considerations it may be deduced that the measures for the implementation in Greece of the National Plan for the Management of Waste and the National Plan for the Prevention of the Creation of Waste in accordance with Law 4042/2012 implementing the Waste Framework Directive 2008/98/EC will also address the requirements of SAP MED on urban solid waste.

#### **4.2 Measures for the reduction of marine litter to be implemented under the updated National Action Plans**

In 2012, COP17 mandated the Secretariat to prepare a Regional Action Plan on Marine Litter, in the framework of the Article 15 of the LBS Protocol to the Barcelona Convention. The Regional Plan on Marine Litter Management in the Mediterranean was adopted in 2013 by COP18 (UNEP/MAP, 2013b), making UNEP/MAP the first Regional Sea Convention to adopt legally binding measures and timelines regarding the prevention and reduction of marine litter.

The main objectives of the Marine Litter Regional Plan are:

- ❖ The prevention of generation of marine litter;
- ❖ The reduction to the minimum of marine litter pollution and its impacts on ecosystem services;
- ❖ The removal of existent marine litter;
- ❖ The enhancement of knowledge on marine litter; and
- ❖ The management of marine litter in accordance with accepted international standards.

The main operational targets set out in the Regional Plan include:

- ❖ The integration of marine litter measures into the National Action Plans (NAP);
- ❖ The adoption of appropriate legislation and/or establishment of adequate institutional arrangements for efficient marine litter prevention and reduction;

- ❖ The adoption of specific measures for the prevention of marine litter from land-based and sea-based sources;
- ❖ The removal of existing marine litter by ensuring its environmentally sound disposal;
- ❖ The assessment of the state of marine litter in the Mediterranean;
- ❖ The development of a Mediterranean Marine Litter Monitoring Programme;
- ❖ The enhancement of public awareness and participation.

Measures under the Regional Plan, identified for updating the National Action Plans of potential significance to the implementation of the marine litter component of the MSFD Programme of measures are shown in Table 4:

**Table 4.** Marine Litter Reduction Measures under the Regional Plan in the framework of the SAP MED and EcAp.

Measure	Deadline
Update the existing LBS National Action Plans to integrate marine litter measures in accordance with the provisions of the Regional Plan	2015
National reports on the implementation of the Regional Plan	biennially
To base urban solid waste management on reduction at source, separate collection, recycling, composting of the organic fraction and environmentally sound disposal	2025
Implement adequate waste reducing/reusing/ recycling measures in order to reduce the fraction of plastic packaging waste that goes to landfill or incineration	2017 [2019]
Prevention measures related to Extended Producer Responsibility strategy by making the producers, manufacturer brand owners and first importers responsible for the entire life-cycle of the product with measures prioritizing the hierarchy of waste management in order to encourage companies to design products for reuse, recycling and materials reduction in weight and toxicity	2017
Prevention measures related to Sustainable Procurement Policies contributing to the promotion of the consumption of recycled plastic-made products	2017
Prevention measures related to establishment of voluntary agreements with retailers and supermarkets to set an objective of reduction of plastic bags consumption and/or establishment of plastic bag taxes	2017
Prevention measures related to establishment of mandatory Deposits, Return and Restoration System for expendable polystyrene boxes in the fishing sector	2017
Prevention measures related to establishment of mandatory Deposits, Return and Restoration System for beverage packaging prioritizing when possible their reuse	2017
Take necessary measures to establish adequate urban sewer, wastewater treatment plants and waste management systems to prevent run-off and riverine inputs of litter	2020 [2025]
In accordance with Article 14 of the Prevention and Emergency Protocol explore and implement to the extent possible ways and means to charge reasonable cost for the use of port reception facilities or when applicable, apply No-Special-Fee system and take the necessary steps to provide ships using their ports with updated information relevant to the obligation arising from Annex V of MARPOL Convention and from their legislation applicable in the field	2017

“Fishing for Litter” system, in 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	2017
“Gear marking to indicate ownership” concept and “reduced ghost catches through the use of environmentally neutral upon degradation nets, pots and traps concept”, in consultation with the competent international and regional organizations in the fishing sector	2017
Apply necessary measures to prevent any marine littering from dredging activities in accordance with the relevant guidelines adopted in the framework of Dumping Protocol of the Barcelona Convention	2017
Take the necessary measures to close the existing illegal dump sites in the geographical area of the Regional Plan	2020
Sanction illegal dumping in accordance with national legislation including littering on the beach, illegal sewage disposal in the coastal zone and rivers in the area of the application of the Regional Plan in accordance with national legislation	2017
Identify in collaboration with relevant stakeholders accumulations / hotspots of marine litter and implement compulsory national programmes on their regular removal and sound disposal	2017 [2019]
Implement National Marine Litter Cleanup Campaigns on regular basis	2017 [2019]
Participate in International Coastal Cleanup Campaigns and Programmes	2017 [2019]
Apply as appropriate Adopt-a-Beach or similar practices and enhance public participation role with regards to marine litter management	2017 [2019]
Apply Fishing for Litter practices, in consultation with the competent international and regional organizations and in partnership with fishermen and ensure adequate collection, sorting and environmentally sound disposal of the fished litter	2017 [2019]
Charge reasonable costs for the use of port reception facilities or, when applicable apply No-Special-Fee system, in consultation with competent international and regional organizations when using port reception facilities for implementing the measures provided for in Article 10.	2017 [2019]
Assessment of the state of marine litter in the Mediterranean	Every 6 years
Establishment of an Expert Group on Regional Marine Litter Monitoring Programme	2014
For the purpose of the Regional Plan and in compliance with the monitoring obligations under Article 12 of the Barcelona Convention and Article 8 of the LBS Protocol design in cooperation with the Secretariat National Monitoring Programme on Marine Litter	2015 [2017]
Report, in accordance with Article 13 of the LBS Protocol, on the implementation of the National Marine Litter Monitoring Programme	Biennially

In order to achieve a streamlining of national measures required for the management of solid waste under the European Union legislative framework and regional requirements under the implementation of LBS Protocol Regional Plan and ECAP GES targets concerning marine litter, the following measures have been identified, based on the requirements for updating the SAP MED National Action Plans:

- ❖ Apply prevention measures related to the establishment of mandatory Deposits, Return and Restoration System for expendable polystyrene boxes in the fishing sector;
- ❖ Apply Fishing for Litter practices, in consultation with the competent international and regional organizations and in partnership with fishermen and ensure adequate collection, sorting and environmentally sound disposal of the fished litter;
- ❖ Charge reasonable costs for the use of port reception facilities or, when applicable apply a “No-Special-Fee system”, in consultation with competent international and regional organizations;
- ❖ Introduce “Gear marking to indicate ownership” concept and “reduced ghost catches through the use of environmentally neutral upon degradation nets, pots and traps concept”, in consultation with the competent international and regional organizations in the fishing sector;
- ❖ Sanction illegal dumping in accordance with national legislation including littering on beaches;
- ❖ Identify in collaboration with relevant stakeholders accumulations / hotspots of marine litter and implement compulsory national programmes on regular removal and sound disposal;
- ❖ Implement National Marine Litter Cleanup Campaigns on a regular basis;
- ❖ Participate in International Coastal Cleanup Campaigns and Programmes;
- ❖ Apply as appropriate “Adopt-a-Beach” or similar practices and enhance public participation role with regard to marine litter management.

Following this analysis, the above list has been incorporated into the identified measures for Greece as shown in Supplement A (Caparis M., 2016a. ActionMed Deliverable 3.8A (Supplement A): Identified measures for pollution and marine litter MSFD Descriptors in Greece, November 2016, 22p.).



**PART III**

**STUDY ON THE DEVELOPMENT OF A  
COUNTRY SPECIFIC MSFD-ECAP NATIONAL  
MEDIUM AND LONG TERM ACTION PLAN FOR  
GREECE**





## 1. INTRODUCTION

Greece is one of the Action Med Project countries that have not yet submitted its PoM to the European Commission. The National Action Med Workshop was an opportunity for the ActionMed Project to support the Greek stakeholders and policy-makers in the definition of concrete and applicable measures for Descriptors 5, 8/9 and 10. The Scoping Study Analysis was presented during the National Action Med Workshop, along with measures identified from the existing national legislative framework and regional and international agreements, for Descriptors 5, 8/9 and 10 (Supplement A of this Report, Caparis M., 2016a. ActionMed Deliverable 3.8A (Supplement A): Identified measures for pollution and marine litter MSFD Descriptors in Greece, November 2016, 22p.). Subsequently, measures for the biodiversity Descriptors 1, 4, and 6 were identified from the existing national legislative framework and regional and international agreements (Supplement B of this report, Caparis M., 2016b. ActionMed Deliverable 3.8A (Supplement B): Identified measures for biodiversity MSFD Descriptors in Greece, November 2016, 28p.). From an analysis of all the information gathered under sub-task 3.2.2 of the Action Med Project, including the desk study on the how the Greek measures on marine pollution and litter (D5, D8, D9, D10) could be more concretely prepared in order to achieve their streamlining with Barcelona Convention LBS SAP-MED Regional Plans and EcAp GES targets and taking into consideration the absence of a Greek PoMs, a study on a National and Medium and Long-Term Action Plan for Greece was carried out, pointing out the major attributes for a successful implementation of a Programme of Measures for Greece.

## 2. THE MAIN ELEMENTS OF A MEDIUM AND LONG TERM ACTION PLAN FOR GREECE

### Medium-Term Action 1:

#### *Categorisation of the existing Greek measures as concerns the status of implementation*

It is recalled that a programme of measures (PoMs) is a set of measures that the Member State is responsible for implementing, put into context with each other, referring to the environmental targets they address. The programme of measures includes existing and new measures.

Existing measures (Article 13.1 & 13.2) are:

- ❖ Category 1.a: Measures relevant for the achievement and maintenance of GES under the MSFD, that have been adopted under other policies and implemented;
- ❖ Category 1.b: Measures relevant for the achievement and maintenance of GES under the MSFD that have been adopted under other policies but that have not yet been implemented or fully implemented.

New measures (Art 13.3) are:

- ❖ Category 2.a: Additional measures to achieve and maintain GES which build upon existing implementation processes regarding other EU legislation and international agreements but go beyond what is already required under these;
- ❖ Category 2.b: Additional measures to achieve and maintain GES which do not build on existing EU legislation or international agreements.

It is also recalled that MSFD Article 10 requires that Member States set environmental targets to guide progress towards achieving GES, i.e. to bridge the gap between the current environmental status (identified under the Art. 8 assessment) and the desired status of the marine environment (Good Environmental Status).

These targets are to be achieved through the development and implementation of the corresponding measures. For the development of the programme of measures the underlying environmental targets should wherever possible be clearly specified and/or quantified.

Where it is not possible to develop quantified environmental targets, these may be politically determined; agreed through technical conventions; determined through expert judgment (i.e. interim targets or trends).

A summary of environmental targets reported to the European Commission in the results of the first phase of the MSFD implementation in Greece is shown in Appendix I.

The Scoping Study Analysis in Part I indicated that through a review of the environmental targets of the Greek Marine Strategy and of the existing measures, it would appear that the current environmental targets would be largely addressed through the existing legislative framework.

In general there is an important volume of international, European and national legislative provisions in Greece leading to measures. A main challenge is in the enforcement of the legislative framework by Government and the implementation of measures. One of the medium-term actions would be to categorize the existing Greek measures identified in the ActionMed Project according to their status of implementation, as is in any case stated under the MSFD PoM Recommendations for implementation and reporting of the European Commission, according to which, as described above, existing measures are to be divided into measures that have been adopted under other policies and implemented (Category 1a) and those that have been adopted under other policies but that have not yet been implemented (or not fully implemented/in the process of implementation) (Category 1b). This process will also assist in ensuring the robustness of any future gap analysis. A best estimate of the status of implementation of the existing measures for pollution and marine litter has been carried out under the Action Med Project, but this would need to be further validated, which is beyond the scope of the Action Med Project.

### **Medium-Term Action 2:**

#### ***Preparation for reporting of the measures identified through assignment under Key Types of Measures***

At the Water Directors' and Marine Directors' meeting of 5-6 June 2014 in Heraklion, Crete, Greece it was agreed that the development of the MSFD PoMs and their reporting would take place in close conjunction with the PoMs reporting for the WFD. Taking into consideration that a large number of pressures on the marine environment are land-based and thus their respective measures to improve the status will most likely be considered under the WFD, the MSFD reporting can follow the WFD reporting guidance, to the extent possible and feasible. An important aspect of this coordinated reporting is that under the MSFD, as with the WFD reporting, measures are to be aggregated under a predefined set of Key Types of Measures (KTMs). In the WFD 2016 Reporting Guidance, a set of 25 KTMs has been developed. Table 5 shows the KTMs included in the WFD 2016 reporting guidance and an indicative relationship to the MSFD (GES Descriptors) (EC, 2014).

**Table 5.** List of WFD Key Types of Measures and an indicative relationship to the MSFD and its GES Descriptors.

<b>KTM No</b>	<b>WFD KTM description</b>	<b>Indicative relevance to MSFD</b>
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)
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)

<b>18</b>	Measures to prevent or control the adverse impacts of invasive alien species and introduced diseases	Relevant (D2)
<b>19</b>	Measures to prevent or control the adverse impacts of recreation including angling	Relevant (D2, D3, D10, D11)
<b>20</b>	Measures to prevent or control the adverse impacts of fishing and other exploitation/removal of animal and plants	Relevant (D1,D3, D4, D6)

In order to address sea-based pressures and other types of action in marine waters, and therefore to cover any MSFD-specific measures, new additional MSFD-specific KTMs have been developed, as shown in Table 6 (EC, 2014). These are based on the list of pressures in MSFD Annex III Table 2. As the list of KTMs is part of a coordinated reporting and that many WFD KTMs can contribute to achieving environmental targets and GES for the MSFD, the numbering of MSFD KTMs has been set to continue from that of the WFD KTMs.

**Table 6.** Key Types of Measures (KTMs) for the MSFD, supplementing the WFD KTMs listed in Table 5.

<b>KTM N°</b>	<b>Additional KTMs for MSFD reporting</b>
26	Measures to reduce physical loss <sup>33</sup> of seabed habitats in marine waters (and not reported under KTM 6 in relation to WFD Coastal Waters)
27	Measures to reduce physical damage <sup>34</sup> 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

In order to not repeat reporting efforts already undertaken through the WFD, and to ensure consistency, comparability and coordinated action with WFD implementation, the proposed approach for reporting of the MSFD PoMs according to the European Commission Recommendations (EC, 2014) is to build upon the existing WFD reporting framework in the following ways:

- a. Use the 2016 WFD reporting for land-based measures which are relevant to MSFD but which are already being reported under WFD;
- b. Use the WFD approach to organise the measures by Key Types of Measures (KTMs) categories;
- c. Use the WFD approach to report on new ‘MSFD measures’, by using an adapted WFD template for describing each measure and by having this information held at national level (on a national web site) rather than reported directly to the Commission (as xml files).

This approach reduces the reporting requirements for MSFD to:

- a. Reporting on measures which are additional to those reported under WFD in 2016, either existing measures under other policies or new ‘MSFD measures’, and grouping these according to a set of MSFD KTMs;
- b. Reporting on issues which are specific to the MSFD, such as links to Article 10 environmental targets and to the GES descriptors, regional cooperation and exceptions.

### Medium Term Action 3:

***Incorporation of the results of the Action Med National Workshop regarding measures considered as the most implementable and executable for Eutrophication (D5).***

A total of 20 measures on Eutrophication (D5) that could be included in a Greek PoMs, were selected by the groups of experts and decision makers participating in the Action Med National Workshop. These measures were selected from measures already identified in the Scoping Study Analysis (UNEP/MAP-Maria Caparis), and possible measures resulting from a desk review undertaken by ISOTECH of the Programmes of Measures of other Mediterranean countries, namely Cyprus, Slovenia and Spain, that could be potentially transferred for implementation in Greece. These measures were categorized by ISOTECH under six broad categories: urban/industrial sources, agriculture, fishing, port facilities, monitoring, and measures to improve research and baseline knowledge (Table 7).

**Table 7.** List of measures agreed by the experts and decision-makers working on Eutrophication (D5).

No	Category	Measure
1	Urban/ Industrial Sources	Completion of wastewater treatment installation structural works for settlements falling under the provisions of Directive 91/271/EC
2		Determination of conditions and prerequisites for the connection of industries to the wastewater/industrial wastewater reception network of Wastewater Treatment Plants.
3		Intensification of the checks of effective operation at wastewater treatment plants
4		Intensification of targeted checks at creameries to ensure the environmentally sound disposal of their wastewaters.
5		Creation of the regulatory framework for the tracking and control of heavy vehicles transporting urban sewage
6		Design and implementation of a central warning and management system for pollution deriving from accidents at installations (sewage treatment plants, industrial wastewater treatment plants), or due to natural phenomena
7	Agriculture	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
8		Creation of a cooperation framework through negotiation between coastal protected area management operators and operators of agricultural and farming activities for the purpose of improving the status of conservation of coastal wetland ecosystems through the adoption of environmentally friendly agricultural activities with a simultaneous improvement of the added value of their produce
9		Encouragement and support (technical and scientific) to producers implementing conventional cultivation techniques for the conversion to organic cultivation, as a priority in nitrate vulnerable zones
10		Organisation of Information days on new technologies, modern cultivation techniques, environmental conservation, sustainability of agricultural lands etc.



11		Feasibility studies on the sustainability of farm wastewater treatment installations and their prospective placement, with the purpose of facilitating their eventual construction.
17	Fishing	Creation of a cooperation framework through negotiation between coastal protected area management operators and operators of fish/shellfish farms for the purpose of improving the status of conservation of coastal waters and wetland ecosystems through the adoption of environmentally friendly fish/shellfish farming activities with a simultaneous improvement of the added value of their produce
15	Port Facilities	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
16		Implementation of MARPOL Annex IV on the Prevention of Pollution by Sewage from Ships
12	Monitoring	Systematic monitoring of the nitrate levels in water bodies designated as being subjected to or potentially subjected to nitrate pollution.
13		Integrated coastal water monitoring of environmental parameters of concern and means for their solution (FP7 My Ocean Project - Bay of Thessaloniki)
14		Intensification of the periodic monitoring of rainwater outlet waters and other point sources of pollution that ends up at sea in coastal areas.
18	Measures to improve research and baseline knowledge	Development of the discharges national census which contains data for the discharges into water public domain and discharges made from land to sea. Its content is public, and is proposed as a mechanism to help decision making for the technicians involved in the authorisation of discharges, as sharing experience between different agencies and serve as a basis for the development of guidance documents on reference emission limits for different types of waste
19		Guidelines for Land-Sea Dumping in order to adapt and to fulfil the new guidelines and regulatory requirements, and to include new types of discharges within the specific regulation of the projects for land-sea dumping, including different types of discharges, such as brines, thermal wastes and wastewaters, as a basis for future legislative regulation

20		<p>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</p>
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Of the measures identified above, the following (Table 8) were considered to be the 5-7 most important (implementable and executable) according to the experts and stakeholders participating in the Action Med National Workshop:

**Table 8.** Measures selected as the most important for Eutrophication (D5).

D5 – Eutrophication
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
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
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.
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
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.

The measures listed in Table 8 would therefore be considered to form the minimal requirements for measures in order to satisfy a MSFD –ECAP Medium Term Action Plan for Greece, to address key challenges and actions regarding eutrophication.

#### Medium Term Action 4:

#### *Incorporation of the results of the Action Med National Workshop regarding measures considered as the most implementable and executable for Contaminants and Contaminants in Seafood (D8 and D9).*

A total of 30 measures were selected by the group of experts working on Descriptors 8 – Contaminants and 9 – Contaminants in Seafood, to be included in a Greek PoM (Table 9). These measures were selected from measures already identified in the Scoping Study Analysis (this report), and possible measures resulting from a desk review undertaken by ISOTECH regarding the Programmes of Measures of other Mediterranean countries, namely Cyprus, Slovenia and Spain, that could be potentially transferred for implementation in Greece (ActionMed Deliverable 3.4). These measures fell within six broad categories according to ISOTECH: implementation of the PoMs of the 2nd River Basin Management Plan to limit pollutants into the marine environment, accident management planning, management of wastes from vessels, management of waste and wastewater from industry, management and improvement of coastal water bodies in hotspot areas, other measures (not falling within a specific category).

**Table 9.** List of measures selected by the experts working on Contaminants and Contaminants in Seafood (D8 and D9).

No	Category	Measure
1	Implementation of the Programme of Measures of the 2nd River Basin Management Plan to limit pollutants into the marine environment.	Creation in each River Water District of a registry, including where available maps, of emissions, discharges and losses for all priority substances and pollutants in accordance with the provisions of Directive 2008/105/EC
2		Cessation of the dumping of "red mud" as a bauxite residue, in the Bay of Antikira (WBD7)
3		Cessation of the dumping of electric arc furnace "rust" from iron-nickel mining into the Northern Evoikos. (WBD7)
4		Issue of guidelines for the disposal of brine from desalination plants (WBD 13, 14)
5	Accident management planning	Design and implementation of a central warning and management system for pollution deriving from accidents at installations (sewage treatment plants, industrial wastewater treatment plants), or due to natural phenomena
6		Completion of the External Contingency Plans for Large-Scale Technological Accidents

7		Compilation of Large Scale Technological Accident Contingency Plans for installations falling under the IPPC and SEVESO Directives, that include provisions for the protection of water bodies, particularly those listed in the registry of protected areas, from substantial fallouts or accidents.
8	Management of wastes from vessels	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
9		Updating of the plans for the reception and management of wastes produced from ships and cargo residues
10		Enhance control and enforcement under MARPOL (International Convention for the prevention of pollution from ships)
11	Management of waste and wastewater from industries	Updating of the national legislative framework on the management of wastes and industrial wastewater
12		Determination of conditions and prerequisites for the connection of industries to the wastewater/industrial wastewater reception network of Wastewater Treatment Plants.
13		Completion of works for the collection and treatment of wastes falling under the provisions of the IPPC Directive
14		Fulfilment of the requirement to hold a registry of installations falling under the provisions of the IPPC and SEVESO Directives
15		Construction and upgrade of industrial wastewater treatment plants, including on farms. Improving treatment plants connected to urban collectors, and construction and improvement of the collectors of industrial effluents and farms.
16		Increase in the frequency of submission of reports of conformity to approved environmental terms of operation by industries located in areas of increased environmental pressure - timely recognition of possible adverse environmental effects and immediate undertaking of remediation measures
17	Management and improvement of coastal water bodies in hotspot areas	Monitoring and analyses of waters inside and out of the Port of Thessaloniki (WBD 10) (including petroleum hydrocarbons, heavy metals)
18		Monitoring and determination of the causes of exceedance of chemical substances in the Bay of Thessaloniki (WBD 10) (including heavy metals, organophosphates, organochlorinated pesticides, triazines)

19		Master Plan for the sustainable protection and management of the coastal water bodies of the Thermaikos Bay (Monitoring of the effect of industrial activity, recording of points of discharge of treated municipal and industrial wastewater, rainwater network runoff, storm water overflow, feasibility studies for technical interventions to control pollution of coastal water bodies)
20		Investigative monitoring of Aegean island coastal water systems (WBD 14) (including PAH and heavy metals in sediments) and proposals of immediate implementation for measures for the amelioration of the quality of ecosystems under investigation.
21	Other Measures	Enactment/determination of emission limit levels for priority substances and other pollutants affecting surface waters in accordance with the provisions of Directive 2008/105/ EC.
22		Implementation of Decision IG.20/8.1 Regional Plan on the reduction of inputs of Mercury in the framework of the implementation of Article 15 of the LBS Protocol to the Barcelona Convention
23		Intensification of the periodic monitoring of rainwater outlet waters and other point sources of pollution that ends up at sea in coastal areas.
24		Enactment of a compulsory programme for the qualitative monitoring of metal mining runoff water
25		Upgrade of industrial wastewater treatment plants and construction of new ones where necessary
26		Codification of existing legislation and regulations on waste and industrial wastewater
27		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
28		Assessment of contaminated sites urgently in need of remediation
29		Measures to prevent or control diffuse pollution from urban areas, transport and infrastructure. Includes measures such as sealing, collection and treatment of leachate from landfills, landfill waterproofing and sealing, building leachate collection networks, as well as actions to reduce urban runoff and constructing of rainwater

		collection networks and interceptors and treatment facilities.
30		Improving knowledge on marine pollution issues.

Of the measures identified above, the following (Table 10) were considered to be the 5 most important (implementable and executable) according to the experts and stakeholders participating in the Action Med National Workshop:

**Table 10.** Measures selected as the most important for Contaminants and Contaminants in Seafood (D8 and D9).

D8/9 – Contaminants/Contaminants in Seafood
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
Enhance control and enforcement under MARPOL (International Convention for the prevention of pollution from ships)
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 falling under the provisions of the IPPC Directive) - Upgrade of industrial wastewater treatment plants and construction of new ones where necessary
Assessment of contaminated sites urgently in need of remediation

The measures listed in Table 10 would therefore be considered to form the minimal requirements for measures in order to satisfy a MSFD –EcAp Medium Term Action Plan for Greece, to address key challenges and actions regarding contaminants and contaminants in seafood.

#### Medium Term Action 5:

##### *Incorporation of the results of the Action Med National Workshop regarding measures considered as the most implementable and executable for Marine Litter (D10)*

A total of 20 measures were selected by the experts and decision-makers working on Descriptor 10, Marine Litter (Table 11). These measures were selected from measures already identified in the Scoping Study Analysis (UNEP/MAP-Maria Caparis), and possible measures resulting from a desk review undertaken by ISOTECH of the Programmes of Measures of other Mediterranean countries, namely Cyprus, Slovenia and Spain, that could be potentially transferred for implementation in Greece.

The selected measures fell within three categories of measures according to ISOTECH: awareness raising actions and communication to the general public, local authorities, schools etc., measures for the prevention of marine litter from marine and land sources, measures for the removal of marine litter.

**Table 11.** List of measures selected by the experts and decision-makers working on Marine Litter.

No	Category	Measure
1	Awareness Raising Actions and communication to general public, local authorities, schools etc	Media Plan for general public Awareness Campaigns
2		Promoting awareness, targeting Municipalities and other local authorities with the aim to intensify the cleaning activities in riverbanks. This measure will contribute to the reduction of the riverine input of litter in the coastal-marine areas.
3		Support UNEP-MAP initiative of "Cleanup Day" and promote participation of general public, local authorities etc
4		Creation, continuation and completion of the existing programmes for businesses, to increase awareness on the prevention of the creation of waste
5		Promoting awareness of the professional and amateur fishermen during issuing their fishing licenses (and later on during their fishing activities), on the marine litter problem, is expected to contribute to the reduction of littering during the fishing activities
6	Measures for the Prevention of Marine Litter from Marine and Land Sources	Establishment and implementation of a National Action Plan on marine litter and incorporate it in the National Plan for solid Waste management
7		Implement Local Waste Management Plans (Reform the Regional Waste Management Plans in order to conform with the National Plan)
8		Undertake measures for re-use, recycling and recovery (common ministerial decision, to be concluded)
9		Establishment of the separate selection of recyclable materials at public utility facilities
10		Completion of the network for the treatment of mixed and/or preselected urban solid waste
11		Development of networks for the collection and transport of agricultural and farming waste of non-organic origin (plastics, fertiliser packaging, medicinal packaging, etc.) to be included in networks for waste recovery



12		Implementation of the measures for the reduction of consumption of plastic bags.
13		Extension and intensification of the existing network for the collection of used portable electronic batteries and accumulators to more distant areas
14		Extension of recycling at health facilities (feasibility study for the recycling of medicinal packaging and other recyclable waste)
15		Regulation on the Management of Dredged Materials, which will include the characterisation of dredged material and the evaluation of their management techniques, will become mandatory in all projects of dredging and dumping, or disposal at sea of materials and procedures for authorisation.
16		Development of a Management Plan to Collect Waste from Fish Farms and Aquaculture
17		Further promotion of voluntary agreements for the prevention of the creation of waste
18	Measures for the Removal of Marine Litter	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
19		Support and fund cleaning activities in rivers, beaches, floating and shallow sea bed
20		Study on marine litter hotspots (areas of greatest accumulation or specifically vulnerable areas with presence of litter)

Of the measures identified above, the following (Table 12) were considered to be the 5 most important (implementable and executable) according to the experts and stakeholders participating in the Action Med National Workshop:

**Table 12.** Measures selected as the most important for Marine Litter (D10).

D10 – Marine Litter
Awareness Raising Actions and communication to general public, local authorities, schools etc
Establishment and implementation of a National Action Plan on marine litter and incorporate it in the National Plan for solid Waste management
Undertake measures for re-use, recycling and recovery (common ministerial decision, to be concluded)
Implementation of the measures for the reduction of consumption of plastic bags.
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

The measures listed in Table12 would therefore be considered to form the minimal requirements for measures in order to satisfy a MSFD –ECAP Medium Term Action Plan for Greece, to address key challenges and actions regarding Marine Litter.

### Medium Term Action 6:

#### ***Incorporation of the measures for Biodiversity Descriptors identified in Supplement B (ActionMed Deliverable 3.8A (Supplement B))***

The list of measures identified in Supplement B (Caparis M., 2016b. ActionMed Deliverable 3.8A (Supplement B): Identified measures for biodiversity MSFD Descriptors in Greece, November 2016, 28p.) for Descriptors 1 (Biodiversity), 4 (Food Webs) and 6 (Seafloor Integrity) contain *inter alia* measures included in the Greek Prioritised Action Framework (PAF) for Natura 2000 for the EU Multiannual Financing Period 2014-2020. It is considered that these measures would be the most implementable and executable in the period stated and could form the minimal requirements for measures in order to satisfy a MSFD –ECAP Medium Term Action Plan for Greece, to address key challenges and actions regarding Biodiversity.

### Medium-Long-Term Action 1:

#### ***Revisiting the definitions of GES in the Greek Marine Strategy.***

The results of the European Commission MSFD Article 12 Technical Assessment of the MSFD 2012 obligations for Greece (JRC, 2014) as regards the definitions of GES would need to be incorporated into the Greek marine strategy.

For the Descriptors dealt with in the Action Med Project the results of the Article 12 Technical Assessment as regards the definitions of GES in the Greek MSFD marine strategy are indicatively summarized as follows:

For Descriptor 1 (Biodiversity) the GES definition is considered to be **partially adequate**. Neither of the two parts of the GES definition (paper report and reporting sheet) is quantified, which means that **it is not possible to assess whether GES is achieved**. No reference is made to the Favourable Conservation Status of the Habitats Directive or to the Good Ecological Status of the WFD but they may be reflected in the various criteria. No reference is made to other regional or international agreements.

For Descriptor 4 (Food Webs) the GES definition is considered **partially adequate**. Because of a lack of thresholds and baselines, **the GES definition is not measurable** and it is not possible to know when it is achieved.

For Descriptor 6 (Seafloor Integrity) the GES definition is considered **inadequate** since it is only a very close approximation to the Annex I of the MSFD definition. As a result, it **lacks thresholds, baselines or other aspects that would make the achievement of GES measurable**. There is no reference to WFD good ecological status in the definition.

For Descriptor 5 (Eutrophication) the GES definition is assessed as **adequate**. Greece covers all criteria and most indicators and provides sufficient thresholds against which the achievement of GES can be measured in the short term (even if macrophytobenthos and phytoplankton community composition indices and thresholds still have to be developed). **However, whether the approach integrates with the WFD classification of coastal water ecological status remains unclear.**

For Descriptor 8 (Contaminants) the definition of GES is considered **partially adequate**. Greece has defined GES for both criteria of the Commission Decision, however coverage of criterion on effects of contaminants is not considered adequate as only concentrations in sediment and biota are measured, other biological effects in species/functional groups are not considered and acute pollution events are not covered at all.

For Descriptor 9 (Contaminants in seafood) the GES definition for D9 by Greece is considered as partially adequate.

For Descriptor 10 (marine litter) the definition of GES is considered as inadequate. The definition is only qualitative and insufficient detail is provided in order to assess if and when GES is achieved.

According to Article 13.1 of the MSFD Member States shall, identify the measures which need to be taken, in order to achieve or maintain good environmental status, as determined pursuant to Article 9(1), in their marine waters. Therefore it is considered that revisiting the definitions of GES in the Greek marine strategy by the pertinent authorities, taking into consideration the results of the European Commission Article 12 Assessment for Greece will assist in the identification of gaps as regards the specification of robust new measures to be incorporated into a Programme of Measures for Greece.

## Medium-Long Term Action 2:

### *Revisiting the environmental targets set in the Greek Marine Strategy*

According to Article 13.1 of the MSFD the measures shall be devised by reference to the environmental targets established pursuant to Article 10. As mentioned in the Scoping Study Analysis in Part I, the environmental targets set in the Greek Marine Strategy would appear to be addressed by measures in the existing national, European, Regional and international legislative framework. However, the results of the European Commission MSFD Article 12 Technical Assessment of the MSFD 2012 obligations for Greece (JRC, 2014) as regards the environmental targets set for the achievement of GES would need to be incorporated into the Greek marine strategy.

For the Descriptors dealt with in the Action Med Project the results of the Article 12 Technical Assessment as regards the environmental targets set by Greece in the marine strategy are indicatively summarized as follows:

For Descriptor 1 (Biodiversity) the set of targets and associated indicators defined by Greece is considered as **inadequate**. It is relatively specific as it relates to specific species and habitats but **it is not measurable and lacks details on the baselines to be used. As such, it is uncertain whether it is achievable and realistic**. In addition, as it is limited to specific species and habitats, they would not be sufficient to help achieve GES as defined in the first part of the GES definition (which addresses all habitats/species).

For Descriptor 4 (Food Webs) the environmental target and associated indicator defined by Greece is considered as **inadequate**. The target is only a monitoring target and it is not sufficient to achieve GES as it only focused on one functional group (demersal fish). The Greek target is not SMART and does not cover all aspects of the GES definition.

For Descriptor 6 (Seafloor Integrity) the set of environmental targets and associated indicator defined by Greece are considered as **inadequate**. The targets lack thresholds, baselines or other aspects that would make the achievement of GES measurable. None of the targets are SMART. One of them is a monitoring/assessment target, while the other one is a state target, which relates to only one of the four conditions defined for GES (on the number of opportunistic species in benthic communities). The two targets defined are not sufficient to help achieve GES.

For Descriptor 5 (Eutrophication) the set of environmental targets and associated indicators defined by Greece is assessed as **partially adequate**. Both targets are qualitative and therefore, in principle, they are achievable and realistic, however, they are not time bound (apart from the reference to achieve GES by 2020) and the first one is very generic. The targets are both pressure-based but the indicators are impact-based. The inclusion of indicators on macroalgal and harmful phytoplankton is positive but the lack of thresholds means that they are not measurable and therefore not helpful for the achievement of the target. The targets are not focused on those eutrophication hotspots discussed in the initial assessment.

For Descriptor 8 (Contaminants) the environmental target and associated indicators defined by Greece are considered as **inadequate**. The target simply requires Greece to monitor contaminant concentrations and effects. It is definitely realistic and achievable

but it is not possible to assess whether it is enough to achieve or maintain GES by 2020 since it does not contain any quantitative threshold values. While the initial assessment clearly refers to a number of hot spots where levels are higher than regulatory levels, no target has been defined to address these specific areas.

For Descriptor 9 (Contaminants in seafood) the environmental target and associated indicators set by Greece are considered **partially adequate**. It is unspecific with regard to the substances and species addressed but it is measurable (as it contains a direct reference to permissible levels) and realistic, considering that GES is already achieved in the Greek marine waters.

For Descriptor 10 (Marine Litter) the environmental target and associated indicator defined by Greece are assessed as **inadequate**. The target is very similar to the GES definition. It is qualitative and not measurable. It does not cover all the different pressures and impacts identified in the initial assessment

It is considered that revisiting the environmental targets set in the Greek marine strategy by the pertinent authorities, taking into consideration the results of the European Commission Article 12 Assessment for Greece will assist in the identification of gaps as regards the specification of robust new measures to be incorporated into a Programme of Measures for Greece.

### Long Term Action 1:

#### *Revisiting the Initial Assessment of the Greek Marine Strategy*

According to Article 13.1 of the MSFD the measures which need to be taken, in order to achieve or maintain good environmental status shall be devised on the basis of the initial assessment. It is recalled that the development of marine strategies under the MSFD is an iterative process with a review every six years. The results of the European Commission MSFD Article 12 Technical Assessment of the MSFD 2012 obligations for Greece (JRC, 2014) as regards the Initial Assessment of the Greek marine waters would need to be incorporated into the Greek marine strategy.

For the Descriptors dealt with in the Action Med Project the results of the Article 12 Technical Assessment as regards the initial assessment in the Greek MSFD marine strategy are indicatively summarized as follows:

For Descriptors 1: (Biodiversity), 4 (Food Webs), 6 (Seafloor Integrity)

The initial assessment by Greece of physical loss and damage is considered **partially adequate**. Different types and causes of physical loss and damage are documented and reported as are some impacts; nonetheless the information is very limited and mostly based on the existing literature. In addition, there are no conclusive judgements on the current status even if there is information on the plans to gather data that will allow these judgements to be made in the future.

The initial assessment by Greece of biological features is considered **inadequate**. Although most habitat types and species groups are covered, the information is limited,

qualitative and mostly based on the existing literature. Few judgements on status were provided but these are never in relation to GES. Reference to existing international conservation agreements and to the Habitats Directive is scarce.

For Descriptor 5 (Eutrophication) the initial assessment is considered as **adequate**. The assessment covers loads (including references to sources) and concentrations of all the relevant nutrients. Organic matter is not covered but plans (monitoring) to address this gap are reported. Most impacts are covered. Trends and judgements on the current status are provided, as well as, in some cases, threshold values and baselines.

For Descriptor 8 (Contaminants) the initial assessment as regards hazardous substances and acute pollution events is considered **partially adequate**. Greece has made a detailed assessment of concentration levels for all substances concerned and made a judgement on these concentrations in relation to GES.

The assessment of impacts on functional groups and seabed habitats is very weak however and conclusions in relation to GES are not based on objective threshold values.

Greece acknowledges information gaps regarding sources of contamination (e.g. riverine inputs), input loads, and the state of the open sea. It also reports knowledge gaps on impacts on ecosystem components (in particular in top predators) and on the bioavailable fraction of the metals, which constitutes a threat to the marine environment.

Greece mentions that there are still hot spots, mainly in coastal areas, where contaminant concentrations are occasionally high, exceeding maximum permissible levels. It is not clear what aggregation rule Greece has used in order to come to the conclusion, in the reporting sheets, that the three sub-regions are at GES.

For Descriptor 9 (Contaminants in Seafood) the assessment of contamination of fish and seafood by hazardous substances and microbial pathogens is considered **partially adequate**. The assessment is made on the basis of the EC regulatory levels (although all substances are not covered). There is a lack of specification of the species used for the sampling and no mention of the origin of samples.

For Descriptor 10 (Marine Litter) the initial assessment of Greece for marine litter is assessed as **adequate**. The information reported is substantial and adequate in light of current state of knowledge. Greece acknowledges the gaps in its assessments and provides a number of plans to address these.

It is considered that revisiting the initial assessment of the Greek marine strategy by the pertinent authorities, taking into consideration the results of the European Commission Article 12 Assessment for Greece will assist in the identification of gaps as regards the specification of robust new measures to be incorporated into a Programme of Measures for Greece.

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**APPENDIX I:**  
**A SUMMARY OF ENVIRONMENTAL TARGETS**  
**PRESENTED IN THE RESULTS OF THE FIRST**  
**PHASE OF THE MSFD IMPLEMENTATION IN**  
**GREECE**



### Descriptor 1 (Biodiversity):

Targets:

- 1) Maintain the population of monk seals *Monachus monachus* in Greek waters.
- 2) Census of marine turtle *Caretta caretta* reproducing in the Greek coasts and conservation of spawning areas.
- 3) Conservation and mapping of *Posidonia oceanica* meadows.
- 4) Inventory of area occupied by biogenic Maerl type sediments and other sensitive coralligenous habitats
- 5) Preservation of the structure of the benthic macrofauna and plankton communities.

Associated indicators:

- 1) Size, characteristics and distribution of the population of the Mediterranean monk seal *Monachus monachus* in the marine sub regions
- 2) Breeding area of the Mediterranean monk seal *Monachus monachus* and the sea turtle *Caretta caretta*
- 3) Presence of *Posidonia oceanica* meadows.
- 4) Presence and composition of benthic macrofauna communities and planktonic communities.

### Descriptor 2: (Non Indigenous Species)

Environmental target:

Census (inventory) of the invasive alien species and of their environmental impacts on the marine ecosystems

Associated indicator:

Occurrence per species [‘incidence by type’] of the invasive alien species

### Descriptor 3 (Commercial fish and shellfish)

Environmental targets:

- 1) Monitoring of fishing mortality ratio  $F/F_{msy}$  and  $B/B_{msy}$  ratio (the current adult biomass relative to the adult biomass that would provide the maximum sustainable yield) of main target demersal species.
- 2) The exploitation rate of main target pelagic fish to be within the designated thresholds as they are defined by National and EU legislation.
- 3) Correlation of the fishing activities with the designated indicators.
- 4) Monitoring and evaluation of the balance of biomass at higher trophic levels in the total catch of demersal fish.

Associated indicators:

- 1) The  $F/F_{msy}$  and  $B/B_{msy}$  ratios for main target demersal species should be within the designated thresholds as they are defined by National and EU legislation.
- 2) The exploitation rate of main target pelagic fish to be within the designated thresholds as they are defined by National and EU legislation
- 3) The  $F/F_{msy}$  and  $B/B_{msy}$  ratios for main target demersal species should be within the designated thresholds as they are defined by National and EU legislation.
- 4) The exploitation rate of main target pelagic fish to be within the designated thresholds as they are defined by National and EU legislation
- 5) Proportion of biomass at higher trophic levels in the total catch of demersal fish.

#### **Descriptor 4 (Food Webs):**

Environmental targets:

Environmental target:

The monitoring and assessment of balance biomass at higher trophic levels in the total catch of demersal fish.

Associated indicator:

The ratio of biomass in the higher trophic levels to the total catch of demersal fish.

#### **Descriptor 5 (Eutrophication)**

Environmental targets:

- 1) Reduction in nutrients and organic matter loads entering the marine environment from point and diffused sources
- 2) Reduction in nitro pollution caused by agricultural activities according to Good Agricultural Practice in order to reduce the amounts of nutrients entering coastal waters

Common associated indicators to both targets:

- 1) Chlorophyll concentration
- 2) Abundance of harmful phytoplankton
- 3) Presence and abundance of macroalgae
- 4) Nutrient concentrations

#### **Descriptor 6 (Seafloor Integrity):**

Environmental targets:

- 1) Mapping the sensitive benthic habitats
- 2) Maintenance of the balance of benthic macrofauna

Associated indicator:

Monitoring of the proportion of resistant/opportunistic species in relation to the total abundance of benthic macrofauna.

### **Descriptor 7 (Hydrographical Conditions):**

Environmental target:

Prevention of environmental impact of permanent alterations in hydrographical conditions caused by local human activities

Associated indicators

- 1) Estimation of variations in vertical stratification with main indicators:

Temperature; Salinity; Pressure; Turbidity; Chlorophyll - a concentration; Dissolved oxygen; Inorganic nutrients; Phytoplankton; Zooplankton

- 2) Indicators of renewal rates of marine waters

### **Descriptor 8 (Contaminants):**

Environmental target:

Investigation of impacts and determination of dominant trends of contaminants concentrations in the water column, sediments, marine organisms and ecosystems.

Associated indicators:

- 1) Hazardous substances concentrations
- 2) Associated indicator: Types of hazardous substances

### **Descriptor 9 (Contaminants in Seafood):**

Environmental target:

Maintaining contaminants concentrations in fish and other seafood destined for human consumption at permissible levels

Associated indicators:

- 1) Contaminants concentrations in fish and other seafood destined for human consumption
- 2) The number of contaminants in fish and other seafood destined for human consumption.

### **Descriptor 10 (Marine Litter)**

Environmental target:

The reduction in litter of anthropogenic origin from the coastal and marine environment.

Associated indicator:

The composition, distribution, quantity and origin of litter found on coasts, in the water column and the sea bottom.

### **Descriptor 11 (Introduction of Energy, including Noise)**

Environmental target:

Control of energy levels and noise, so that they do not adversely affect the marine environment.

Associated indicator:

The measurement of underwater noise and assessment of impact on species populations and the main functional groups.

**ANNEX I:  
REGIONALLY COORDINATED MEASURES -  
MEASURES UNDER THE BARCELONA  
CONVENTION, CONTRIBUTING TO  
ACHIEVING MSFD GES.**



<b>Descriptor No.</b>	<b>Topic</b>	<b>Regionally Coordinated Measures contributing to MSFD characteristics of GES - Measures under the Barcelona Convention</b>
<b>1</b>	<b>Biological Diversity</b>	<p><i>SPA and Biodiversity Protocol of the Barcelona Convention</i></p> <p><i>Action Plan for the Management of the Mediterranean monk seal.</i></p> <p><i>Action Plan for the Conservation of Mediterranean Marine Turtles.</i></p> <p><i>Action Plan for the conservation of cetaceans in the Mediterranean Sea</i></p> <p><i>Action Plan for the conservation of marine vegetation in the Mediterranean Sea.</i></p> <p><i>Action Plan for the conservation of bird species listed in Annex II of the Protocol on Specially Protected Areas and Biological Diversity</i></p> <p><i>The Action Plan for the Conservation of cartilaginous fishes (Chondrichthyans) in the Mediterranean</i></p> <p><i>Action Plan for the conservation of the Coralligenous and other Calcareous Bio-concretions in the Mediterranean Sea</i></p> <p><i>Action Plan for the conservation of habitats and species associated with seamounts, underwater caves and canyons, aphotic hard beds and chemo-synthetic phenomena in the Mediterranean Sea (Dark Habitats Action Plan)</i></p> <p><i>Strategic Action Programme for the Conservation of Biological Diversity in the Mediterranean Region (SAP/BIO)</i></p>
<b>2</b>	<b>Non-indigenous Species</b>	<p><i>SPA and Biodiversity Protocol of the Barcelona Convention</i></p> <p><i>Action Plan concerning species introductions and invasive species in the Mediterranean Sea</i></p> <p><i>SAP/BIO</i></p> <p><i>Decision IG.20/11 Regional strategy addressing ship's ballast water management and invasive species</i></p>

- 3**                      **Commercial Fish and Shellfish**      *SPA and Biodiversity Protocol of the Barcelona Convention*
- The Action Plan for the Conservation of cartilaginous fishes (Chondrichthyans) in the Mediterranean*
- SAP/BIO*
- 4**                      **Food Webs**                      *See Descriptor 1, 2 and 3 above*
- 5**                      **Eutrophication**                      *LBS Protocol of the Barcelona Convention*
- Strategic Action Plan to address pollution from land-based activities in the Mediterranean (SAP Med) and National Action Plan*
- Programme for the Assessment and Control of Pollution in the Mediterranean (MED POL)*
- Decision IG.19/7 "Regional Plan on the reduction of BOD5 from urban waste water in the framework of the implementation of Article 15 of the LBS Protocol "*
- Decision IG.20/8.2 "Regional Plan on the reduction of BOD5 in the food sector in the framework of the implementation of Article 15 of the LBS Protocol"*
- 6**                      **Sea-floor Integrity**                      *SPA and Biodiversity Protocol of the Barcelona Convention and related Action Plans*
- Protocol of the Barcelona Convention concerning the Protection of the Mediterranean Sea Against Pollution Resulting from Exploration and Exploitation of the Continental Shelf and the Seabed and its Subsoil*
- Decision IG.20/12 Action Plan to implement the Protocol of the Barcelona Convention concerning the Protection of the Mediterranean Sea Against Pollution Resulting from Exploration and Exploitation of the Continental Shelf and the Seabed and its Subsoil*
- Decision IG.22/3 Mediterranean Offshore Action Plan in the framework of the 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*



		<p><i>Decision IG.22/3 Mediterranean Offshore Action Plan in the framework of the 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</i></p> <p><i>Decision IG.22/4 Regional Strategy for Prevention of and Response to Marine Pollution from Ships (2016-2021)</i></p> <p><i>Decision IG.22/5 Regional Action Plan on Sustainable Consumption and Production in the Mediterranean</i></p>
<b>9</b>	<b>Contaminants in Seafood</b>	<i>See Descriptor 8 above</i>
<b>10</b>	<b>Marine Litter</b>	<p><i>LBS Protocol of the Barcelona Convention</i></p> <p><i>Decision IG.21/7 Regional Plan on Marine Litter Management in the Mediterranean in the Framework of Article 15 of the Land Based Sources Protocol</i></p> <p><i>Decision IG.22/5 Regional Action Plan on Sustainable Consumption and Production in the Mediterranean</i></p> <p><i>Decision IG.22/2 Mediterranean Strategy for Sustainable Development 2016-2025</i></p>
<b>11</b>	<b>Energy (incl. Underwater Noise)</b>	<p><i>SPA and Biodiversity Protocol of the Barcelona Convention</i></p> <p><i>Action Plan for the conservation of cetaceans in the Mediterranean Sea</i></p> <p><i>Strategic Action Programme for the Conservation of Biological Diversity in the Mediterranean Region (SAP/BIO)</i></p> <p><i>Decision IG.22/2 Mediterranean Strategy for Sustainable Development 2016-2025</i></p>



**ANNEX II:**  
**ARTICLE 12 ASSESSMENT GENERAL**  
**CONCLUSIONS**  
**GREECE (JRC, 2014)**

Overall, the Greek report presents various positive and negative elements as follows:

Positive elements:

- Robust legal status of environmental targets and associated indicators
- Use of EU requirements and standards
- Coverage of all descriptors
- For a number of pressures, attempt to make a judgement on the level of, and impacts from, the pressure in relation to GES.
- Systematic identification of knowledge and data gaps

Negative elements:

- Lack of clarity in what constitutes GES (in particular for D3)
- No systematic use of the 2010 Commission Decision criteria
- Limited reference to the Regional Sea Conventions (only reference to OSPAR, no reference to UNEP/MAP-MED POL)
- For a number of pressures, the initial assessment is limited to a collection of information from existing literature without a clear objective to assess current status.
- Impacts from pressure are rarely reported on
- No assessment has been made of the pressure from underwater noise
- Many environmental targets are monitoring targets
- The role of the associated indicators (i.e. assessing the achievement of the environmental targets) is not always clear
- Lack of clear future plans to address knowledge and data gaps
- Inconsistency in the use of the five assessment areas for the initial assessment





**ANNEX III:**  
**REQUIREMENTS OF THE ECOSYSTEM**  
**APPROACH TARGETS AND REGIONAL**  
**PLANS IN THE FRAMEWORK OF SAP-MED**

Sector Substance		Pollution Reduction Measures under the Regional Plans in the framework of the SAP- MED and ECAP	Deadline
Urban Environment	Municipal Wastewater Treatment	Coastal cities and urban agglomerations of more than 100,000 inhabitants are connected to a sewer system <i>[SAP- MED Requirement]</i>	Deadline passed
		Ensure that all agglomerations of more than 2000 inhabitants collect and treat their urban wastewater before discharging them into the environment <sup>7</sup> <i>[Regional Plan Requirement]</i>	2015 or 2019
		Take necessary measures to establish adequate urban sewer and wastewater treatment plants that prevent run-off and riverine inputs of litter <i>[Regional Plan Requirement]</i>	2020
	Solid Waste	Establish environmentally suitable and economically feasible systems of collection and disposal of urban solid waste in cities of more than 100,000 inhabitants <i>[SAP- MED Requirement]</i>	Deadline passed
		Implement programmes on regular removal and sound disposal of accumulations/hotspots of marine litter <i>[Regional Plan Requirement]</i>	2019
		Implement adequate waste reducing/reusing/ recycling measures in order to reduce the fraction of plastic packaging waste that goes to landfill or incineration without energy recovery <i>[Regional Plan Requirement]</i>	2019
		Close to the extent possible existing illegal solid waste dump sites <i>[Regional Plan Requirement]</i>	2020
	Air Pollution	Promote the introduction of buses using gaseous fuel or other alternative forms of energy instead of diesel oil <i>[SAP- MED Requirement]</i>	Not specified
Pursue increased regional and domestic natural gas development projects in order to substitute high sulfur fuel oil with natural gas and natural gas conversion for urban proximities <i>[SAP- MED Requirement]</i>		Not specified	
Industrial Development	POPs, Heavy Metals (Hg, Cd, Pb), Organometallic Compounds	Identify stock piles consisting of or containing POPs <i>[Regional Plan Requirement]</i>	Deadline passed
		Phase out inputs of the 9 pesticides and PCBs and reduce inputs of unwanted contaminants: hexachlorobenzene, dioxins and furans <i>[Regional Plan Requirement]</i>	Deadline passed
		Phase out to the fullest possible extent discharges, emissions and losses of organomercuric compounds and reduce those of organolead and organotin compounds <i>[SAP- MED Requirement]</i>	Deadline passed
		Identify existing sites which have been historically contaminated with mercury <i>[Regional Plan Requirement]</i>	Deadline passed
		Apply environmentally sound management measures to sites which have been historically contaminated with mercury <i>[Regional Plan Requirement]</i>	2015

<sup>7</sup> Secondary treatment shall be applied for discharges from urban wastewater treatment plants. Primary treatment shall be applied for discharges from marine outfalls.

Sector Substance		Pollution Reduction Measures of the Regional Plans in the framework of the SAP- MED and ECAP(continued)	Deadline
Industrial Development (continued)		Achieve environmentally sound management of metallic mercury from the decommissioned plants <i>[Regional Plan Requirement]</i>	To be achieved following decommission
	POPs, Heavy Metals Organometallic Compounds (continued)	Progressively reduce total releases of mercury (to air, water and to products) from existing Chlor alkali plants until their final cessation <i>[Regional Plan Requirement]</i>	2020
		Take appropriate measures to isolate and contain mercury containing wastes <i>[Regional Plan Requirement]</i>	2025
		Phase out inputs of PAHs <i>[SAP- MED Requirement]</i>	2025
		Phase out discharges and emissions and losses of mercury, cadmium and lead <i>[SAP- MED Requirement]</i>	2025
	Other heavy metals <sup>8</sup>	Eliminate to the fullest possible extent pollution of the Mediterranean Sea caused by discharges, emissions and losses of zinc, copper and chrome <i>[SAP- MED Requirement]</i>	2025
	Organohalogen compounds <sup>9</sup>	Eliminate to the fullest possible extent pollution caused by discharges, emissions and losses of organohalogen compounds <i>[SAP- MED Requirement]</i>	2025
	Radioactive substances	Eliminate to the fullest possible extent inputs of radioactive substances <i>[SAP- MED Requirement]</i>	2025
	Nutrients and suspended solids <sup>10</sup>	Reduce nutrient inputs, from agriculture and aquaculture practices into areas where these inputs are likely to cause pollution <i>[SAP- MED Requirement]</i>	2025
		Dispose all wastewater from industrial installations which are sources of BOD, nutrients and suspended solids <i>[SAP- MED Requirement]</i>	2025
Hazardous wastes <sup>11</sup>	Dispose all hazardous wastes in a safe and environmentally sound manner <i>[SAP- MED Requirement]</i>	2025	

<sup>8</sup> Other heavy metals include Zinc, Copper, chromium.

<sup>9</sup> Halogenated aliphatic and aromatic hydrocarbons, Chlorinated phenolic compounds and organohalogenated pesticides.

<sup>10</sup> These include industrial wastewater and agriculture.

<sup>11</sup> These include obsolete chemicals, lube oils and batteries.

**ANNEX IV:**  
**LIST OF PRIORITY SUBSTANCES UNDER WFD,  
LISTED IN UN POPS, REACH REGULATION,  
ECHA RESTRICTIONS LIST, INCLUDED IN  
SAP MED, MED POL NBB RECORDS AND  
ELV CONSIDERATIONS.**

CHEMICAL COMPOUNDS	UN POP	WFD	REACH	“Auth orizati on”	ECHA Restri ctions List	Rotter dam	NBB records		Included in SAP?	Any ELV?
							2003	2008		
<b>METALS AND RELATED COMPOUNDS</b>										
<b>Metals</b>										
Cadmium (and its compounds)		X <sup>c</sup>			X		238 <sup>12*</sup>	429 <sup>1*</sup>	Yes	X
Lead (and its compounds)		X			X		267 <sup>1*</sup>	475 <sup>1*</sup>	Yes	X
Mercury (and its compounds)		X <sup>c</sup>			X		165	379	Yes	X
Selenium							2	2		X
Nickel (and its compounds)		X			X		-	-		X
Organic tin compounds									Yes	X
Tributyltin compounds		X <sup>c</sup>					5 <sup>13</sup>	20	Yes	
Tributyltin-cation		X <sup>c</sup>								
Triphenyltin compounds									Yes	
Organic Mercury compounds					X	X			Yes	
Organic Lead compounds						X			Yes	
Selenium compounds										
<b>HYDROCARBONS</b>										
<b>Aliphatic HC</b>										
cyclododecane										
1,5,9-cyclododecatriene										
<b>Aromatic HC</b>										
Benzene		X			X		39	152	?	
<b>Polycyclic Aromatic Hydrocarbons</b>										
Anthracene		X <sup>c</sup>			X			20	Yes	

<sup>12\*</sup> Sum of two separate entries for gas and liquid emissions

<sup>13</sup> Butyltin compounds

CHEMICAL COMPOUNDS	UN POP	WFD	REACH	“Auth orizati on”	ECHA Restrict ions List	Rotter dam	NBB records		Included in SAP?	Any ELV?
							2003	2008		
Napthalene		X			X		2	35	Yes	
Fluoranthene		X					26	70	Yes	X
Benzo(a)pyrene		X			X		20	33	Yes	X
Benzo(b)fluoranthene		X			X		36	90 <sup>14</sup>	Yes	X
Benzo(g,h,i)perylene		X					36	81	Yes	X
Benzo(k)fluoranthene		X			X		See above		Yes	X
Indeno(1,2,3-cd)pyrene		X					36	76	Yes	X
<b>Synthetic musk</b>										
Musk xylene				X				22 <sup>15</sup>		
<b>ORGANOHALOGEN COMPOUNDS</b>										
<b>Halogenated Aliphatics</b>										
Chlorinated paraffins, short chained (SCCP or chloroalkanes, C <sub>10-13</sub> )		X <sup>c</sup>		X (recommended)					Yes	Phase out
Chlorinated paraffins, medium chained (MCCP, or chloroalkanes C <sub>14-17</sub> )										
Chloroform (Trichloromethane)		X			X		5	33 <sup>16</sup>	Yes	
Dichloromethane		X			X		10	46	Yes	X
1,2-Dichloroethane		X		X			21	42	Yes	X
Hexachlorobutadiene	X <sup>a</sup>	X <sup>c</sup>					2	4		X
PFOs (Perfluorooctane sulfonate)	X	X <sup>c</sup>					-	-		

<sup>14</sup> NBB category is Benzo(b,k)fluoranthene

<sup>15</sup> NBB category is ‘Xylenes’

<sup>16</sup> Sum of records for ‘Chloroform’ (16) and ‘Trichloromethan (17)

CHEMICAL COMPOUNDS	UN POP	WFD	REACH	H "Auth orizati on"	ECHA Restrict ions List	Rotter dam	NBB records		Included in SAP?	Any ELV?	
							2003	2008			
PFOSF (Perfluorooctane sylphonyl fluoride)	X										
PFOA (Perfluorooctanoic acid)											
Hexabromocyclododecanes (HBCDD)	X	X <sup>c</sup>		X							
<b>Halogenated Aromatics</b>											
<u>Chlorobenzenes</u>											
Trichlorobenzenes		X			X			9	Yes	X	
1,2,3-trichlorobenzene										X	
1,2,4-trichlorobenzene		X								X	
1,3,5-trichlorobenzene										X	
Pentachlorobenzene	X	X <sup>c</sup>									
<u>Brominated Flame Retardants</u>											
Brominated diphenyl ethers BDEs		X <sup>c</sup>				X		1	Yes		
Tetrabromodiphenyl ether		X <sup>c</sup>				X					
Pentabromodiphenyl ether		X <sup>c</sup>				X			Yes		
Hexabromodiphenyl ether	X	X <sup>c</sup>				X					
Heptabromodiphenyl ether	X	X <sup>c</sup>				X					
Octabromodiphenyl ether)	X				X						
Decabromodiphenyl ether											
Polybrominated biphenyls (PBBs)					X	X			Yes		
Hexabromobiphenyl	X				X				Yes		
Polychlorinated Biphenyls (PCBs)	X					X			Yes	X	
Polychlorinated dibenzodioxins (PCDDs)	X	X <sup>c</sup>						145 <sup>17</sup>	288	Yes	X

<sup>17</sup> Sum of gas and liquid PCDD and PCDF together

CHEMICAL COMPOUNDS	UN POP	WFD	REACH	“Auth orizati ...”	ECHA Restricti ons List	Rotter dam	NBB records		Included in SAP?	Any ELV?
							2003	2008		
Polychlorinated dibenzofurans (PCDFs)	X	X <sup>c</sup>					See above		Yes	
2,4,6-bromophenyl 1-(2,3-dibromo-2-methylpropyl)										
Pentabromoethylbenzene										
Heptachloronorborene										
Pentachloroanisole										
<b>Polychlorinated naphthalenes</b>	X <sup>a</sup>								Yes	
dichloronaphthalene	X <sup>a</sup>									
trichloronaphthalene	X <sup>a</sup>									
tetrachloronaphthalene	X <sup>a</sup>									
pentachloronaphthalene	X <sup>a</sup>									
hexachloronaphthalene	X <sup>a</sup>									
heptachloronaphthalene	X <sup>a</sup>									
octachloronaphthalene	X <sup>a</sup>									
naphthalene, chloro derivs.										
<b>Chlorinated Phenolic Compounds</b>									Yes	
phenol, 4,4'-(1-methylethylidene)bis[2,6-dibromo- / tetrabromobisphenol A (TBBP-A)										
<b>ORGANOHALOGENATED PESTICIDES/BIOCIDES</b>										
<b>Aclonifen</b>		X								
<b>Alachlor</b>		X								
<b>Atrazine</b>		X					3			
1,2-Dibromoethane										
Chlorophenoxyacids									Yes	
2,4,5-T									Yes	



CHEMICAL COMPOUNDS	UN POP	WFD	REACH	"Auth orizati on"	ECHA Restrict ions List	Rotter dam	NBB records		Included in SAP?	Any ELV?
							2003	2008		
Acrylonitrile										
Aldrin	X					X		8	Yes	
Aramite										
BifenoX		X								
Chlordane	X					X			Yes	
Chlordecone (Kepone)	X					X			Yes	
Chlordimeform						X				
Chlorfenvinphos		X								
Chlorpyrifos		X <sup>c</sup>								
Cypermethrin		X								
Dichlorvos		X								
Dicofol		X <sup>c</sup>								
DDTs	X					X		4	Yes	
Diuron		X <sup>c</sup>						6		X
Dieldrin	X					X		4	Yes	
Endosulphan (alpha-endosulfan)	X	X <sup>c</sup>				X		1		
Endrin	X							2	Yes	
Ethyl O-(p-nitrophenyl) phenyl phosphonothionate (EPN)										
Fluoroacetic acid and derivatives										
Flucythrinate										
Hexachlorocyclohexane (HCH isomers)						X	1	18	Yes	
HCH (gamma-isomer, Lindane)	X	X <sup>c</sup>				X			Yes	
alpha-HCH	X								Yes	
beta-HCH	X								Yes	
Heptachlor (and heptachlor epoxide)		X <sup>c</sup>				X		1	Yes	

CHEMICAL COMPOUNDS	UN POP	WFD	REACH	H "Auth orizati ..."	ECHA Restrict ions List	Rotter dam	NBB records		Included in SAP?	Any ELV?
							2003	2008		
Hexachlorobenzene	X	X <sup>c</sup>				X			Yes	
Isobenzane										
Isodrin										X
Isoproturon		X <sup>c</sup>								
Kelevan										
Methoxychlor										
Mirex	X								Yes	
Morfamquat										
Nitrophen										
Pentachlorophenol	X <sup>a</sup>	X <sup>c</sup>			X	X		1	Yes	
Quinoxifen		X								
Quintozene										
Simazine		X <sup>c</sup>								
Tetrasul										
Trifluralin		X <sup>c</sup>								
Toxaphene	X								Yes	
<b>Phenols</b>										
2,4,6-tri-tert-butylphenol										X
Nonylphenol/ethoxylates (NP/NPEs)					X					
Nonylphenols		X <sup>c</sup>						7		
Nonylphenol, 4-		X								
Octylphenols		X <sup>c</sup>						4		
(para-tert-octylphenol)		X								
Octylphenol ethoxylates										
<b>Organic Nitrogen Compounds</b>										

CHEMICAL COMPOUNDS	UN POP	WFD	REACH	"Auth orizati on"	ECHA Restrict ions List	Rotter dam	NBB records		Included in SAP?	Any ELV?
							2003	2008		
4-(dimethylbutylamino)diphenylamin (6PPD)										
3,3'-(ureylenedimethylene)bis(3,5,5-trimethylcyclohexyl) diisocyanate										
<b>1,3,5 Triazine biocides</b>										
Cybutryne		X								
Terbutryn		X								
<b>Organic Oxygen Compounds</b>										
neodecanoic acid, ethenyl ester										
2-propenoic acid, (pentabromo) methyl ester										
Dibutylphthalate (DBP)										
Diethylhexylphthalate (DEHP)		X <sup>c</sup>	X					17		
<b>Pharmaceuticals</b>										
Clotrimazole										
Diosgenin										

### **ACRONYMS:**

UNPOPs: Stockholm Convention on Persistent Organic Pollutants. (**X**: approved POPs; **X<sup>a</sup>**: proposed substance)

*WFD: List of priority substances in Directive 2013/39/EC amending the Water Framework Directive and 2008/105/EC (**X**: priority substance; **X<sup>c</sup>**: identified or being identified as possible “priority hazardous substance”).*

REACH: SVHCs of previous columns included in the Authorisation List (Annex XIV) of Regulation 1907/2006 (EC) (REACH Regulation) and subject to authorisation. These substances cannot be placed on the market or used after a given date, unless an authorisation is granted for their specific use, or the use is exempted from authorisation.

ECHA: European Chemical Agency. Substances of previous columns subject to Restrictions: may limit or ban the manufacture, placing on the market or use of a substance. These are included in REACH Regulation Annex XVII.

### **COLOUR HIGHLIGHT LEGEND:**

**Grey** *Substances for which LBS Protocol legally binding measures for reduction/phase-out/elimination have been adopted.*

**Pink** *Substances included in SAPMED for which more additional scientific information (sources, quantities) is needed*

**Green** *Substances Recommended by the POPRC for 2015*

**Orange** *NBB Records show emissions of substances considered priority hazardous under WFD, not included in SAPMED. It is noted that the pesticide Diuron in this group is not expected to be detected in the marine environment*

**Blue** *Substances included in WFD priority list of substances, not included in SAPMED. It is noted that pesticides/biocides in this category have not been detected in European marine monitoring activities*



