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MEDITERRANEAN ACTION PLAN

Third EcAp Coordination Group Meeting

Athens (Greece), 9 September 2013

Secretariat Explanatory Note on the proposed EcAp process for the next biennium, with a special focus on the proposed list of Mediterranean Good Environmental Status and Targets

The Secretariat however also noted the voice of those parties, who highlighted the importance of not leaving any EOs (and related indicators, targets) behind and the need of giving opportunity of further technical specifications, discussions.

In the EcAp timeline thus (as presented in Annex III of the Draft EcAp Decision) it is proposed to have additional COR GEST meetings (one per sub-cluster, possibly in an integrated manner), to address specific requirements regarding inter-linkages between the different EOs/GES/indicators/targets, data availability and other specific issues, which will be also necessary to discuss in order to ensure that the future Correspondence Groups on Monitoring (COR-MON) will be able to start working with some clear guidance.

The aim of these additional COR-GEST meetings will be two-some, on the one hand, to integrate, and to propose a list of common indicators and possible “knot-targets” (i.e. targets, which have multiple benefits towards various different indicators), which could be the basis for future technical work on monitoring (COR-MON) and on the other hand, to take under a phasing exercise, ie address how to ensure that work will progress in addition to all EOs in a scientific manner (as presented in Annex III to this document, in the *Table of GES and Targets to be further addressed*).

In addition, the Secretariat will make sure that the EcAp Coordination Group will be informed on ongoing work of other relevant international bodies (for example ACCOBAMS in relation to EO11) and address how and when best to integrate the outcomes of their work to the EcAp process of the Barcelona Convention/UNEP MAP, but at the same time also give recommendations, in case appropriate to these bodies from a Barcelona Convention/UNEP MAP perspective.

This gradual work, with phasing based on available data and progress on the specific EOs and related GES and targets enables a realistic process, which makes it possible in cases of EOs and related indicators, targets, which are already mature enough, to further progress on working on elements key to their monitoring, while not leaving any EOs behind, ensuring that work continues on them too and when they are ripe enough, include them in the work of the monitoring experts.

The monitoring work foreseen will be also gradual, taking note of available data and ongoing monitoring activities (as presented in document WG.386/Inf.4 Secretariat gap analysis on ongoing monitoring activities).

It is foreseen that the next two years will be devoted to technical, expert level work, to enable the Mediterranean region to agree on an integrated monitoring and assessment programme, which will set out some key common bases (including common indicators) for the future monitoring and assessment programme and which will ensure that the parties will not have parallel reporting obligations.

At the same time, we foresee a similar gap analysis to take place for the programmes of measures, aiming to identify existing measures of the Barcelona Convention and its contracting parties, through which they already implement measures relevant to the EcAp and its GES/targets/indicators, while also noting gaps and proposing new measures, if necessary to address them in an integrated manner.

The Secretariat prepared Draft EcAp Decision and the related documents that will be addressed in our current meeting in light of the above, in line with the relevant articles of the Barcelona Convention and its related Protocols and the Marine Strategy Framework Directive Common Implementation Strategy's Regional Sea Conventions related process.

Annex I

Tables compiling sub-groups proposed GES and Targets

Ecological Objective 1 (Biodiversity) – Subcluster Rabat Meeting FR

Proposed GES description and targets for Key coastal and marine habitats

Operational objective	Indicator	Proposed GES Description	Proposed Targets
1.4 Key coastal and marine habitats are not being lost	1.4.1 Potential / observed distributional range of certain coastal and marine habitats listed under SPA protocol ¹	The habitat is present in all its natural distributional range.	<p>State The ratio Natural / observed distributional range tends to 1</p> <p>Pressure Decrease in the main human causes of the habitat decline</p>
	1.4.2 Distributional pattern of certain coastal and marine habitats listed under SPA protocol	The distributional extent is in line with prevailing physiographic, hydrographic, geographic and climatic conditions.	<p>State Decline in habitat extension is reversed and the extension of recovering habitats shows a positive trend.</p>
	1.4.3 Condition of the habitat-defining species and communities	The population size and density of the habitat-defining species, and species composition of the community, are within reference conditions ensuring the long term maintenance of the Habitat	<p>State No human induced significant deviation of population abundance and density from reference conditions²</p> <p>The species composition shows a positive trends towards reference condition over an increasing proportion of the habitat(for recovering habitats)</p>

Geographical Scale: The assessments should be made at national level and used to compile subregional (and where possible regional) assessments. The subregional assessments shall be compiled for each of the four Mediterranean subregions used for the initial assessment carried out within the framework of the EcAp process.

Habitats to be considered:

Biocoenosis of infralittoral algae (facies with vermetids or trottoir),
 Hard beds associated with photophilic algae,
 Meadows of the sea grass *Posidonia oceanica*,
 Hard beds associated with Coralligenous biocenosis and semi dark caves,
 Biocoenosis of shelf-edge detritic bottoms (facies with *Leptometra phalangium*),
 Biocoenosis of deep-sea corals,
 Seeps and biocoenosis of bathyal muds (facies with *Isidella elongata*).

¹ The meeting proposed that this indicator should refer to natural distributional range instead of potential distributional range

² Reference conditions should be defined for the habitats to be considered under EO1

Natural monuments listed by the Marine Vegetation Action Plan³: Barrier reefs of Posidonia, organogenic surface formations, terraces (platforms with vermitids covered by soft algae) and certain Cystoseira belts.

Upwelling areas, fronts and gyres.

This is an indicative list, the meeting recommended that the habitats to be considered should be given further consideration (particularly regarding the pelagic habitats) within the framework of the elaboration of the integrated monitoring for each of the four Mediterranean subregions.

Proposed GES description and targets for Marine Mammals

Operational objective	Indicator	Proposed GES Description	Proposed Targets
1.1 Species distribution is maintained	1.1.1 Distributional range	<p><u>Cetaceans</u>: Not relevant</p> <p><u>Monk Seal</u>: Monk Seal is present along all Mediterranean coasts with suitable habitats for the species.</p>	<p>State <u>Cetaceans</u> Not relevant</p> <p><u>Monk Seal</u>: The distribution of Monk Seal remains stable or expanding and the species is recolonizing areas with suitable habitats.</p> <p>Pressure/Response: Human activities⁴ having the potential to exclude marine mammals from their natural habitat within their range area or to damage their habitat are regulated and controlled.</p> <p>Conservation measures implemented for the zones of importance for cetaceans</p> <p>Fisheries management measures that strongly mitigate the risk of incidental taking of monk seals and cetaceans during fishing operations are implemented.</p>
	1.1.2 Area covered by the species (for sessile/benthic species)		
1.2 Population size of selected	1.2.1 Population abundance	The species population has abundance levels allowing to qualify to Least Concern Category of IUCN. ⁵	State Populations recover towards natural levels.

³ The Action Plan for the conservation of marine vegetation in the Mediterranean Sea has been adopted by the Eleventh Ordinary meeting of the Contracting Parties to the Barcelona Convention and its Protocols (Malta, 27-30 October 1999).

⁴ Seismic surveys, marine noise generating activities, fishing, maritime traffic, etc.

⁵ A taxon is Least Concern when it has been evaluated and does not qualify for “Critically Endangered”, “Endangered”, “Vulnerable” or “Near Threatened”

Operational objective	Indicator	Proposed GES Description	Proposed Targets
species is maintained	1.2.2 Population density	<u>Cetaceans:</u> N/A <u>Monk Seal:</u> Number of individuals by colony allows to achieve and maintain a favourable conservation status ⁶	State Continual recovery of population density
1.3 Population condition of selected species is maintained	1.3.1 Population demographic characteristics (e.g. body size or age class structure, sex ratio, fecundity rates, survival/mortality rates)	<u>Cetaceans:</u> Species populations are in good condition: Low human induced mortality ⁷ , balanced sex ratio and no decline in calf production <u>Monk Seal:</u> Species populations are in good condition: Low human induced mortality, appropriate pupping seasonality, high annual pup production, balanced reproductive rate and sex ratio	State Decreasing trends in human induced mortality Pressure/Response <u>Cetaceans:</u> Appropriate measure implemented to mitigate incidental catch, prey depletion and other human induced mortality <u>Monk Seal:</u> Appropriate measures implemented to mitigate direct killing and incidental catches and to preclude habitat destruction.

Geographical Scale: For cetaceans the assessments should be made at the Mediterranean level and at national level whenever possible. For the Monk seal assessments should be made at national and subregional scale.

Marine mammal Species to be considered (in alphabetical order):

- *Balaenoptera physalus* Fin whale
- *Delphinus delphis* Common dolphin
- *Globicephala melas* Long-finned pilot whale
- *Monachus monachus* Monk Seal
- *Physeter macrocephalus* Sperm whale
- *Stenella coeruleoalba* Striped dolphin
- *Tursiops truncatus* Bottlenose dolphin

⁶ To be applied at local level and not at national scale

⁷ Baseline data are required.

Proposed GES description and targets for Birds

Operational objective	Indicator	Proposed GES Description	Proposed Targets
1.1 Species distribution is maintained	1.1.1 Distributional range	The species continues to occur in all their Mediterranean natural habitat ,	State No significant shrinkage in the population distribution in the Mediterranean in all indicator species, and for colonial-breeding seabirds (ie, most species in the Mediterranean): New colonies are established and the population is encouraged to spread among several alternative breeding sites ⁸ .
	1.1.2 Area covered by the species (for sessile/benthic species)		
1.2 Population size of selected species is maintained	1.2.1 Population abundance	The species population has abundance levels allowing to qualify to Least Concern Category of IUCN. ⁹	No human induced decrease in population abundance. Population recovers towards natural levels where depleted. The total number of individuals is sparse enough in different spots.
	1.2.2 Population density	Population density allows to achieve and maintain a favourable conservation status	State Continual recovery or maintenance of population density in enough different spots to allow resilience No decrease in population density in new/ recolonized critical habitat (for recovered populations)
1.3 Population condition of selected species is maintained	1.3.1 Population demographic characteristics (e.g. body size or age class structure, sex ratio, fecundity rates, survival/ mortality rates)	Species populations are in good conditions: Natural levels of breeding success & acceptable levels of survival of young and adult birds.	Population models point to long-term maintenance of populations of all taxa, particularly those with IUCN threatened status Incidental catch mortality is at negligible levels, particularly for species with IUCN threatened status.
1.4 Key coastal and marine habitats are not being lost	1.4.1 Potential / observed distributional range of certain coastal and marine habitats listed under SPA protocol		

⁸ This is recommended by the conservation plans of some taxa (Audouin's G, Lesser-crested T)

⁹ A taxon is Least Concern when it has been evaluated and does not qualify for "Critically Endangered", "Endangered", "Vulnerable" or "Near Threatened"

Operational objective	Indicator	Proposed GES Description	Proposed Targets
	1.4.2 Distributional pattern of certain coastal and marine habitats listed under SPA protocol		
	1.4.3 Condition of the habitat-defining species and communities		

Geographical Scale: For Birds the assessments should be made at national, subregional and Mediterranean level, and where possible at population level.

Bird species to be considered: (in alphabetical order):

Calonectris diomedea (Scopoli, 1769)

Chroicocephalus genei (Breme, 1839)

Hydrobates pelagicus (Linnaeus, 1758)

Larus audouinii (Payraudeau, 1826)

Phalacrocorax aristotelis (Linnaeus, 1761)

Puffinus mauretanicus (Lowe, PR, 1921)

Puffinus yelkouan (Brünnich, 1764)

Sterna bengalensis (Lesson, 1831)

Sterna nilotica (Gmelin, JF, 1789)

Sterna sandvicensis (Latham, 1878)

Proposed GES description and targets for Reptiles

Operational objective	Indicator	Proposed GES Description	Proposed Targets
1.1 Species distribution is maintained	1.1.1 Distributional range	The species continues to occur in all its natural range in the Mediterranean , including nesting, mating, feeding and wintering sites.	State Turtle distribution is not significantly affected by human activities Turtles continue to nest in all known nesting sites Pressure/Response Protection of nesting turtle nesting sites. Human activities ¹⁰ having the potential to exclude marine turtles from their range area are regulated and controlled.
	1.1.2 Area covered by the species (for sessile/benthic species)		
1.2 Population size of selected species is maintained	1.2.1 Population abundance	The population size allows to achieve and maintain a favourable conservation status	State No human induced decrease in population abundance Population recovers towards natural levels where depleted.
	1.2.2 Population density	N/A for Mediterranean marine turtles	N/A for Mediterranean marine turtles
1.3 Population condition of selected species is maintained	1.3.1 Population demographic characteristics (e.g. body size or age class structure, sex ratio, fecundity rates, survival/ mortality rates)	Low mortality induced by incidental catch ¹¹ , Favourable sex ratio and no decline in hatching rates	Response Measures to mitigate incidental catches in turtles implemented
1.4 Key coastal and marine habitats are not being lost	1.4.1 Potential / observed distributional range of certain coastal and marine habitats listed under SPA protocol		
	1.4.2 Distributional pattern of certain coastal and marine habitats listed under SPA protocol	Increasing distribution of nesting sites	The species recovers historical nesting sites
	1.4.3 Condition of the habitat-defining species and communities		

Geographical Scale: The assessments should be made at national and Mediterranean scales for nesting activity and at Mediterranean level for the population size and condition.

Turtle species to be considered:

Caretta caretta (Linnaeus, 1758)

Chelonia mydas (Linnaeus, 1758)

Trionyx triunguis (Forsk. 1775)

¹⁰ Uncontrolled use of turtle nesting sites, fishing, maritime traffic, etc.

¹¹ Baseline data are required.

GES description and targets with regard to Ecological Objective 2 (Non-indigenous species)

Operational objective	Indicator	Proposed GES Description	Proposed Targets
2.1 Invasive non-indigenous species introductions are minimized	2.1.1. Spatial distribution, origin and population status (established vs. vagrant) of non-indigenous species	Introduction and spread of NIS linked to human activities ¹² are minimised, in particular for potential IAS	<p>State The number of species and abundance of IAS introduced as a result of human activities¹³ is reduced.</p> <p>Pressure/Response</p> <ul style="list-style-type: none"> – Improved management of the main human related pathways¹⁴ and vectors of NIS introduction (Mediterranean Strategy for the management of ballast waters, early warning systems, etc.) – Action plans developed to address high risk NIS, should they appear in the Mediterranean.
	2.1.2 Trends in the abundance of introduced species, notably in risk areas	Decreasing abundance of introduced NIS in risk areas	<p>State Abundance of NIS introduced by human activities¹⁵ is reduced to levels giving no detectable impact</p>
2.2. The impact of non-indigenous particularly invasive species on ecosystems is limited	2.2.1 Ecosystem impacts of particularly invasive species	No decrease in native species abundance, no decline of habitats and no change in community structure that have been generated by IAS via competition, predation or any other direct or indirect effect.	<p>Pressure/Response Impacts of NIS reduced to the feasible minimum</p>
	2.2.2 Ratio between non-indigenous invasive species and native species in some well-studied taxonomic groups	Stable or decreasing proportion of NIS in the different habitats	<p>State To be set upon species choice and their related impact degree of the invasive upon the indigenous ones, taking into account the role of Climate Change in accelerating the establishment of NIS populations.</p>

Geographical scale:

The assessments should be made at subregional scale.

Species to be considered:

Cluster of IAS shall be identified by subregion within the framework of the integrated monitoring.

¹² Excluding introduction through the Suez Canal

¹³ Excluding introduction through the Suez Canal

¹⁴ Excluding introduction through the Suez Canal

¹⁵ Excluding introduction through the Suez Canal

GES description and targets with regard to Ecological Objective 3 (Harvest of commercially exploited fish and shellfish)

Note: the COR-GEST meeting of the second sub-cluster group on Biodiversity and Fisheries (during the SPA Focal Points meeting in Rabat, 2 July) recommended to consider the work done so far on the Ecological Objective 3 as preliminary and to refine it jointly with GFCM and ICCAT, building on the existing proposal and ongoing cooperation with them.

Operational objective	Indicator	Proposed GES Description	Proposed Targets
3.1 Level of exploitation by commercial fisheries is within biologically safe limits	3.1.1 Total catch by operational unit ¹⁶	Total catch does not exceed the Maximum Sustainable Yield (MSY) ¹⁷ . Remark: If only landings by commercial fleet are considered, the total catch would not reflect all the fish biomass removed from the stock, since IUU and recreational fishing may generate significant taking in some stocks. However data on IUU and recreational fishing are missing for most areas and stocks.	MSY
	3.1.2 Total effort by operational unit ¹⁸	Total effort does not exceed the level of effort allowing the Maximum Sustainable Yield (MSY). It includes the effort deployed by commercial fleet and estimated effort from recreational fishing and IUU operators.	Fishing effort does not exceed the level of effort allowing the MSY
	3.1.3 Catch per unit effort (CPUE) by operational unit	Stable or increasing CPUE ¹⁹	Stable or positive trend.
	3.1.4 Ratio between catch and biomass index (hereinafter catch/biomass ratio).	The catch/biomass ratio allows to recover the stock or to maintain it at a level where it can produce the Maximum Sustainable Yield (MSY) Remark: This ratio can be calculated only if regular sampling programmes are carried out by the countries	
	3.1.5 Fishing mortality	Fishing mortality in the stock does not exceed the level that allows MSY ($F \leq F_{MSY}$)	$F_{0.1}$
3.2 The reproductive capacity of stocks is maintained	3.2.1 Age structure determination (where feasible)	Size structure of the stocks allows to maintain or to reach the Maximum yield-per-recruit	Average size of fish caught > average size at maturity.
	3.2.2 Spawning Stock Biomass (SSB)	The spawning stock biomass (SSB) is at a level capable of providing MSY or higher	

¹⁶ Operational Unit should be replaced by GFCM's GSA

¹⁷ MSY: The largest annual catch that may be taken from a stock every year without affecting the catch of future years

¹⁸ Operational Unit should be replaced by GFCM's GSA

¹⁹ Not to be applied for gregarious species such as small pelagic. For other species, if CPUE data are not available at Operational Unit level, CPUE at the stock level will be considered.

Geographical scale:

As part of the guidance for a common methodology to be used by clusters, the ECAP Coordination Group recommended that scales should be national and when possible regional (Mediterranean) and transboundary or sub-regional. Currently, around half of the Mediterranean countries have stock assessments for some of the stocks being fished on their national waters.

Under GFCM, stock assessments are made by Geographical Sub-Areas (GSA) established as management units in 2001 and amended in 2009 (RESOLUTION GFCM/33/2009/2). The GSA delimitation is mainly based on practical considerations rather than on the stock distribution, and many stocks extend beyond the geographic limits of GSAs. However, although the concept of their delimitation still needs further consideration, the GSAs, as established by GFCM appear as the most appropriate subdivisions for stock assessments for management purposes in the Mediterranean Sea. They are also adopted for assessments at national level.

Species to be considered

Considering that most of the Mediterranean fisheries are multi-specific with a limited number of fisheries targeting only one species, the determination of GES for EO3 within a context of an Ecosystem Approach should be based on the assessment of the adopted indicators for a set of species belonging to different trophic levels. Considering the above criteria, the following species are proposed to be considered:

		Pelagic/ Demersal	Province
<i>Thunnus thynnus</i>	High trophic level fish predator	Pelagic	Neritic/ Oceanic
<i>Xiphias gladius</i>	High trophic level fish predator	Pelagic	Neritic/ Oceanic
<i>Engraulis encrasicolus</i>	Planktivorous fish	Pelagic	Neritic
<i>Sardina pilchardus</i>	Planktivorous fish	Pelagic	Neritic
<i>Merluccius merluccius</i>	Predator fish, (lives between 70 and 370 m)	Demersal	Neritic
<i>Mullus barbatus</i>	Predator Fish (medium trophic level) (Sand and soft bottoms at depths less than 100 m)	Demersal	Neritic
<i>Mullus surmuletus</i>	Predator Fish (medium trophic level) (Lives on broken and rough grounds but found also on sand and soft bottoms at depths ranging from 5 to 400 m)	Demersal	Neritic/
<i>Parapenaeus longirostris</i>	Crustacean	Demersal	Oceanic
<i>Scylliorhinus canicula</i>	Predator fish	Demersal	Neritic/ Oceanic
<i>Nephrops norvegicus</i>	Crustacean	Demersal	Neritic/ Oceanic

GES description and targets with regard to Ecological Objective 4 (Marine food webs)

Geographical scale:

Considering the knowledge gaps on food webs in Mediterranean ecosystems and the impact of the continuous change in species composition induced by NIS, in particular in the Eastern Basin, the GES description and Targets for EO4 should be addressed at subregional level.

Operational objective	Indicator	Proposed GES Description	Proposed Targets
4.1 Ecosystem dynamics across all trophic levels are maintained at levels capable of ensuring long-term abundance of the species and the retention of their full reproductive capacity	4.1.1 Production per unit biomass estimates for selected trophic groups and key species, for use in models predicting energy flows in food webs	Production per unit biomass allows for levels of energy flows in food webs that sustain the long-term abundance of the species and the retention of their full reproductive capacity	Quantitative targets may be established if baseline information will be available. (Remark: modelling energy flows in food web requires a significant amount of data) ²⁰
4.2 Normal proportion and abundances of selected species at all trophic levels of the food web are maintained	4.2.1 Proportion of top predators by weight in the food webs	The ratio of top predators to the rest of the food web is at level that will not have long-term adverse effects on food web dynamics and related viability	Threshold may be established if baseline information will be available.
	4.2.2 Trends in proportion or abundance of habitat-defining groups	The population size and density of the habitat-defining species are at levels ensuring the long term maintenance of the ecosystem	No [human induced] decrease in population abundance and density The species shows a positive trends in population abundance and density (for recovering ecosystems)
	4.2.3 Trends in proportion or abundance of taxa with fast turnover rates	Taxa with fast turnover rates significantly contribute in maintaining food web dynamics	The partitioning of biomass among trophic levels is adapted to the trophic structure of the ecosystem

²⁰ The use of MTI (Marine Trophic Index) is recommended for the areas with accurate data about fishery catches.

GES description and targets with regard to Ecological Objective 5 (eutrophication)

Human-induced eutrophication is prevented, especially adverse effects thereof, such as losses in biodiversity, ecosystem degradation, harmful algal blooms and oxygen deficiency in bottom waters.

Operational Objectives	Indicators	Proposed GES	Proposed Target
5.1 Human introduction of nutrients in the marine environment is not conducive to eutrophication	5.1.1 Concentration of key nutrients in the water column ²¹	Concentrations of nutrients in the euphotic are in line with prevailing physiographic, geographic and climate conditions	<p>State</p> <ol style="list-style-type: none"> Reference nutrients concentrations according to the local hydrological, chemical and morphological characteristics of the un-impacted marine region²² Decreasing trend of nutrients concentrations in water column of human impacted areas, statistically defined <p>Pressure</p> <ol style="list-style-type: none"> Reduction of BOD emissions from land based sources Reduction of nutrients emissions from land based sources
	5.1.2 Nutrient ratios (silica, nitrogen and phosphorus), where appropriate	Natural ratios of nutrients are kept	
5.2 Direct effects of nutrient over-enrichment are prevented	5.2.1 Chlorophyll-a concentration in the water column	Natural levels of algal biomass in line with prevailing physiographic, geographic and climate conditions	<p>State</p> <ol style="list-style-type: none"> Chl-a concentrations in high-risk areas below thresholds²³ Decreasing trend in chl-a concentrations in high risk areas affected by human activities
	5.2.2 Water transparency where relevant	Clear water in line with prevailing physiographic, geographic and climate conditions	<p>State</p> <ol style="list-style-type: none"> Secchi disk depth above threshold in risk areas Increasing trend of transparency in areas impacted by human activities

²¹ Indicators in bold have been selected for agreement at COP18 (Istanbul, December 2013) mainly for data availability

²² Thresholds to be set in the future, subject to decision of Contracting Parties

²³ Thresholds to be set in the future, subject to decision of Contracting Parties

Operational Objectives	Indicators	Proposed GES	Proposed Target
<p>5.3 Indirect effects of nutrient over-enrichment are prevented</p>	<p>5.3.1 Dissolved oxygen near the bottom, i.e. changes due to increased organic matter decomposition, and size of the area concerned²⁴</p>	<p>Bottom water fully oxygenated in line with prevailing physiographic, geographic and climate conditions</p>	<p>State</p> <ol style="list-style-type: none"> 1. Dissolved oxygen concentrations in high-risk areas above local threshold²⁵ 2. Increasing trend in dissolved oxygen concentrations in areas impacted by human activities

²⁴Monitoring to be carried out where appropriate

²⁵Thresholds to be set in the future, subject to decision of Contracting Parties

GES description and targets with regard to Ecological Objective 6 (Sea-floor integrity)

Operational objective	Indicator	Proposed GES Description	Proposed Targets
6.1 Extent of physical alteration to the substrate is minimized	6.1.1 Distribution of bottom impacting activities	Limited distribution/extent of bottom impacting activities	All most important bottom impacting activities are regulated.
	6.1.2 Area of the substrate affected by physical alteration due to the different activities	Limited surface area of the substrate affected by bottom impacting activities (for sensitive substrate types)	Surface area of each substrate type affected by bottom impacting activities is reduced from current levels.
6.2 Impact of benthic disturbance in priority benthic habitats is minimized	6.2.1 Impact of bottom impacting activities in priority benthic habitats	Impact of bottom impacting activities on priority benthic habitats is minimized	No priority benthic habitat impacted by bottom impacting activities
	6.2.2 Change in distribution and abundance of indicator species in priority habitats	The population size and density of the habitat-defining species are at levels ensuring the long term maintenance of the Habitat	State No human induced decrease in population abundance and density The species shows a positive trends towards reference conditions in terms of population abundance and density (for recovering habitats)

Geographical scale:

The assessments for the determination of GES and targets in relation to the Ecological Objectives 6 (Sea-floor integrity) will be made at subregional level.

Sensitive substrates and Priority benthic habitats to be considered:

A list of sensitive substrates shall be defined for each of the 4 subregions taking into account its specificities

From the list of habitat to be considered for Ecological Objective 1 (Biodiversity), the habitats that are vulnerable to bottom impacting activities will be considered for the Ecological Objective 6 (Sea-floor integrity)

GES description and targets with regard to Ecological Objective 7 (HYDROGRAPHY²⁶)

Alteration of hydrographic conditions does not adversely affect coastal and marine ecosystems.

Operational objectives	Indicators	Proposed GES	Proposed Target
7.1 Impacts to the marine and coastal ecosystem induced by climate variability and/or climate change are minimized	7.1.1 Large scale changes in circulation patterns, temperature, pH, and salinity distribution	Ecosystems healthy enough to cope with the expected climate change and existing and future anthropogenic impacts	Anthropogenic additional impacts which may alter ecosystems' adaptive capacity are reduced in order to maintain and improve ecosystem health".
	7.1.2 Long term changes in sea level		
7.2 Alterations due to permanent constructions on the coast and watersheds, marine installations and seafloor anchored structures are minimized	7.2.1. Impact on the circulation caused by the presence of structures	With new structures in place, nearshore wave- and current patterns remain as natural as possible.	Marine and shore based structures planned, constructed and operated in a way to maintain the natural wave and current pattern as much as possible
	7.2.2 Location and extent of the habitats impacted directly by the alterations and/or the circulation changes induced by them: footprints of impacting structures	Negative impacts are minimal with no influence on the larger scale coastal and marine system	Planning of structures takes into account all possible mitigation measures in order to minimize the impact on coastal and marine ecosystem and its services integrity and cultural/historic assets
	7.2.3 Trends in sediment delivery, especially in major deltaic systems	Natural variability of delta outline, water depth in delta and other ecosystems' functions are maintained and biodiversity not affected by changes in sediment budget	The sediment coming from the watershed and longshore drift is sufficient to maintain less or not impacted coastal ecosystems (including major deltaic systems) Sufficient sediment budget is provided to restore damaged coastal ecosystems, where applicable
	7.2.4 Extent of area affected by coastal erosion due to sediment supply alterations	Natural or near natural erosion, deposition and sediment movement patterns are maintained	The coastal and marine structures that will alter the sediment transport and accelerate erosion/accretion are

²⁶ Bold text is used for EO's indicators for which agreement could be reached at COP18, and they should be considered as priority

Operational objectives	Indicators	Proposed GES	Proposed Target
			planned, constructed and operated with minimum negative impact
7.3 Impacts of alterations due to changes in freshwater flow from watersheds, seawater inundation and coastal freatic intrusion, brine input from desalination plants and seawater intake and outlet are minimized	7.3.1. Trends in fresh water/sea water volume delivered to salt marshes, lagoons, estuaries, and deltas; desalination brines in the coastal zone	Water circulation in coastal and marine habitats, including salinity and temperature threshold, allows for natural/ecological processes take place (sustain, maintain)	Provide adequate freshwater inflow to salt marshes, lagoons, estuaries and deltas to ensure water circulation balance
	7.3.2. Location and extent of the habitats impacted by changes in the circulation and the salinity induced by the alterations	Water circulation in coastal and marine habitats, including salinity and temperature threshold, allows for natural/ecological processes take place (sustain, maintain)	Cumulative negative impacts on coastal and marine habitats are avoided while planning, construction and operating of coastal and marine infrastructure AND DO not hinder habitat integrity
	7.3.3 Changes in key species distribution due to the effects of seawater intake and outlet	Water circulation in coastal and marine habitats, and changes in the levels of salinity and temperature are within thresholds, to maintain natural/ecological processes	Site specific tolerable limits of key species in immediate proximity of seawater intake and outlet structures are considered while planning, constructing and operating such infrastructure

GES description and targets with regard to Ecological Objective 8 (COASTAL ECOSYSTEMS AND LANDSCAPES²⁷)

The natural dynamics of coastal areas is maintained and coastal ecosystems and landscapes are preserved.

Operational objectives	Indicators	Proposed GES	Proposed Target
8.1 The natural dynamic nature of coastlines is respected and coastal areas are in good condition	8.1.1. Areal extent of coastal erosion and coastline instability	Coastal resilience maintained and improved; and coastal uses made adaptable to coastal erosion	Impacts of coastal erosion caused by man made factors anticipated and prevented through coastal erosion management allowing for natural fluctuation of the coast and minimizing coastal erosion risk
	8.1.2 Changes in sediment dynamics along the coastline	Long term sediment dynamics is within natural patterns	Disturbance in sediment inflows reduced through improved Integrated River Basin Management and coastal sand management practices
	8.1.3 Areal extent of sandy areas subject to physical disturbance	Human activities (mechanical cleaning, sand mining, dune destruction, etc.) cause no physical disturbance in sandy coastal areas“physical disturbance to sandy coastal areas induced by human activities should be minimized” or “there should be no biological impact induced by physical disturbance to sandy coastal areas due to human activities”	Appropriate management measures are implemented (artificial beach nourishment, dune management etc.) to minimize negative impacts of human activities on sandy coastal areas
	8.1.4 Length of coastline subject to physical disturbance due to the influence of manmade structures	Physical disturbances on coastline caused by man made structures do not impair coastline integrity	Appropriate management measures to avoid cumulative negative impacts are implemented to minimize negative impacts of coastal infrastructure on coastline
8.2 Integrity and diversity of coastal ecosystems, landscapes and their geomorphology are preserved	8.2.1 Change of land-use	Perpendicular and linear coastal development is in balance with integrity and diversity of coastal ecosystems and landscape	Cumulative negative impacts of coastal development are not increasing by means of coastal spatial planning with the aim of creating a balanced coastal land use structure

²⁷ Bold text is used for EO's indicators for which agreement could be reached at COP18, and they should be considered as priority

	8.2.2 Change of landscape types	Diversity of landscape types form a harmonious and balanced whole, where coastal landscape becomes strategic element of local identity	Mixed landscape structure maintained, which avoids dominance of mono- type coastal landscapes and where network of protected coastal landscapes is expanded
	8.2.3 Share of non-fragmented coastal habitats	Coastal habitats are not fragmented to a level that prevents them from providing ecological functions and environmental services	Share of non-fragmented coastal habitats is maintained at the present level or increasing

GES description and targets with regard to Ecological Objective 9 (POLLUTION)

Contaminants cause no significant impact on coastal and marine ecosystems and human health

Operational Objectives	Indicators	Proposed GES	Proposed Target
9.1 Concentration of priority²⁸ contaminants is kept within acceptable limits and does not increase	9.1.1 Concentration of key harmful contaminants ²⁹ in biota, sediment or water	Level of pollution effects are below a determined threshold defined for the area and species	State Concentrations of specific contaminants below EACs or below reference concentrations ³⁰ Decreasing trend in contaminants concentrations in sediment and biota from human impacted areas, statistically defined
			Pressure Reduction of contaminants emissions from land based sources
9.2 Effects of released contaminants are minimized	9.2.1 Level of pollution effects of key contaminants where a cause and effect relationship has been established	Concentrations of contaminants are not giving rise to pollution effects	State Contaminants effects below threshold ³¹
9.3 Acute pollution events are prevented and their impacts are minimized	9.3.1 Occurrence, origin (where possible), extent of significant acute pollution events (e.g. slicks from oil, oil products and hazardous substances) and their impact on biota affected by this pollution	Non-occurrence of pollution events	State 1. Decreasing trends in the concentrations of oil in the water column and the occurrence of tar balls on the beach Pressure 1. Decreasing trend in the occurrences of pollution events 2. Decreasing trend in the operational releases of oil and other contaminants from coastal, maritime and off-shore activities

²⁸ Priority contaminants as listed under the Barcelona Convention and LBS Protocol

²⁹ Use for further work on reference conditions ERL for sediments taking into account specifics of the Mediterranean

³⁰ Thresholds to be set in the future, subject to decision of Contracting Parties

³¹ Thresholds to be set in the future, subject to decision of Contracting Parties

Operational Objectives	Indicators	Proposed GES	Proposed Target
9.4 Levels of known harmful contaminants in major types of seafood do not exceed established standards	9.4.1 Actual levels of contaminants that have been detected and number of contaminants which have exceeded maximum regulatory levels in commonly consumed seafood ³²	Concentrations of contaminants are within the regulatory limits for consumption by humans	State Concentrations of contaminants are within the regulatory limits set by legislation
	9.4.2 Frequency that regulatory levels of contaminants are exceeded	No regulatory levels of contaminants in seafood are exceeded	State Decreasing trend in the frequency of cases of seafood samples above regulatory limits for contaminants
9.5 Water quality in bathing waters and other recreational areas does not undermine human health	9.5.1 Percentage of intestinal enterococci concentration measurements within established standards	Concentrations of intestinal enterococci are within established standards	State Increasing trend in the percentage of intestinal enterococci concentrations within established standards
	9.5.2 Occurrence of Harmful Algal Blooms within bathing and recreational areas	No occurrence of HABs	State Decreasing trend in the frequency of the occurrence of HABs

³² Traceability of the origin of seafood sampled should be ensured

GES description and targets with regard to Ecological Objective 10 (MARINE LITTER)

Marine and coastal litter do not adversely affect coastal and marine environment

Operational Objectives	Indicators	Proposed GES	Proposed Target
10.1 The impacts related to properties and quantities of marine litter in the marine and coastal environment are minimized	10.1.1 Trends in the amount of litter washed ashore and/or deposited on coastlines, including analysis of its composition, spatial distribution and, where possible, source	Number of marine litter items on the coastline do not have negative impacts on human health, marine life and ecosystem services	State Decreasing trend in the number of marine litter items deposited on the coast
	10.1.2 Trends in amounts of litter in the water column, including microplastics, and on the seafloor	Number of marine litter items in the water surface and the seafloor do not have negative impacts on human health, marine life, ecosystem services and do not create risk to navigation	State Decreasing trend in the number of marine litter items in the water surface and the seafloor
10.2 Impacts of litter on marine life are controlled to the maximum extent practicable	10.2.1 Trends in the amount of litter ingested by or entangling marine organisms, especially mammals, marine birds and turtles ³³		Decreasing trend in the cases of entanglement or/and a decreasing trend in the stomach content of the sentinel species.

(*)The Secretariat will cooperate with ACCOBAMS and provide detailed information at a later stage. Also, the work of the Marine Litter WG of EU in the context of MSFD will be followed and taken into account as appropriate

³³ Marine mammals, marine birds and turtles included in the regional action plans of the SPA/BD Protocol.

GES description and targets with regard to Ecological Objective 11(ENERGY INCLUDING UNDERWATER NOISE)

Noise from human activities cause no significant impact on marine and coastal ecosystems

Operational Objectives	Indicators	Proposed GES	Proposed Target
11.1 Energy inputs into the marine environment, especially noise from human activities is minimized	11.1.1 Proportion of days and geographical distribution where loud, low and mid-frequency impulsive sounds exceed levels that are likely to entail significant impact on marine animals	*	*
	11.1.2 Trends in continuous low frequency sounds with the use of models as appropriate	*	*

(*)The Secretariat will cooperate with ACCOBAMS and provide detailed information at a later stage. Also, the work of the Noise WG of EU in the context of MSFD will be followed and taken into account as appropriate.

Annex II

Table of data availability and nature related to proposed GES and Targets

Operational objective	Indicator	Proposed Targets	Nature of target (Sec. Analysis)	Data av. (Sec. Analysis)	Links (Sec. Analysis)	Notes of the Secretariat
1.4 Key coastal and marine habitats are not being lost ³⁴	1.4.1 Potential / observed distributional range of certain coastal and marine habitats listed under SPA protocol ³⁵	State The ratio Natural / observed distributional range tends to 1 ³⁶	Quantitative	Yes medium confidence	8.2.2.- 8.2.3	
		Pressure Decrease in the main human causes of the habitat decline		Yes (low confidence)		Target needs further consideration due to the large number of potential pressures, subject(to integrated monitoring)
	1.4.2 Distributional pattern of certain coastal and marine habitats listed under SPA protocol	State Decline in habitat extension is reversed and the extension of recovering habitats shows a positive trend.	Qualitative	Yes (moderate confidence)		OK
	1.4.3 Condition of the habitat-defining species and communities	State No human induced significant deviation of population abundance and density from reference conditions The species	Qualitative	Yes (low confidence)		OK

³⁴ The list of priority habitats as well as species is something that was not discussed during the Integration Workshop, it was included into the final proposed integrated list of GES and Targets as the sub-cluster group experts proposed it in Rabat (2 July 2013). These lists are currently restricted to marine mammals.

³⁵ The Rabat meeting proposed that this indicator should refer to natural distributional range instead of potential distributional range

Operational objective	Indicator	Proposed Targets	Nature of target (Sec. Analysis)	Data av. (Sec. Analysis)	Links (Sec. Analysis)	Notes of the Secretariat
		composition shows a positive trends towards reference condition over an increasing proportion of the habitat(for recovering habitats)				
1.1 Species distribution is maintained (marine mammals)	1.1.1 Distributional range	<p>State <u>Cetaceans</u> Not relevant</p> <p><u>Monk Seal</u>: The distribution of Monk Seal remains stable or expanding and the species is recolonizing areas with suitable habitats.</p> <p>Pressure/Response: Human activities³⁷ having the potential to exclude marine mammals from their natural habitat within their range area or to damage their habitat are regulated and controlled.</p>	Quantitative /qualitative	Yes (for monk seal)	EO3	OK

³⁷ Seismic surveys, marine noise generating activities, fishing, maritime traffic, etc.

Operational objective	Indicator	Proposed Targets	Nature of target (Sec. Analysis)	Data av. (Sec. Analysis)	Links (Sec. Analysis)	Notes of the Secretariat
		<p>Conservation measures implemented for the zones of importance for cetaceans</p> <p>Fisheries management measures that strongly mitigate the risk of incidental taking of monk seals and cetaceans during fishing operations are implemented.</p>				
	1.1.2 Area covered by the species (for sessile/benthic species)					
1.2 Population size of selected species is maintained	1.2.1 Population abundance	State Populations recover towards natural levels.	Qualitative	Yes (moderate)		OK
	1.2.2 Population density	State Continual recovery of population density	Qualitative /Quantitative	Yes (moderate)		OK
1.3 Population condition of selected species is maintained	1.3.1 Population demographic characteristics (e.g. body size or age class structure, sex ratio, fecundity rates, survival/ mortality rates)	<p>State Decreasing trends in human induced mortality</p> <p>Pressure/Response <u>Cetaceans:</u></p>	Qualitative	No (pending ACCOBAMS Surrey initiative)	EO3	OK, but for cetaceans pending ACCOBAMS Surrey initiative

Operational objective	Indicator	Proposed Targets	Nature of target (Sec. Analysis)	Data av. (Sec. Analysis)	Links (Sec. Analysis)	Notes of the Secretariat
		<p>Appropriate measure implemented to mitigate incidental catch, prey depletion and other human induced mortality</p> <p><u>Monk Seal:</u> Appropriate measures implemented to mitigate direct killing and incidental catches and to preclude habitat destruction.</p>				
1.4 Key coastal and marine habitats are not being lost (birds)	1.4.1 Potential / observed distributional range of certain coastal and marine habitats listed under SPA protocol					
	1.4.2 Distributional pattern of certain coastal and marine habitats listed under SPA protocol					
	1.4.3 Condition of the habitat-defining species and communities					
1.1 Species distribution is maintained	1.1.1 Distributional range	<p>State</p> <p>No significant shrinkage in the population distribution in the Mediterranean in</p>	Qualitative	Yes		Yes

Operational objective	Indicator	Proposed Targets	Nature of target (Sec. Analysis)	Data av. (Sec. Analysis)	Links (Sec. Analysis)	Notes of the Secretariat
		all indicator species, and for colonial-breeding seabirds (ie, most species in the Mediterranean): New colonies are established and the population is encouraged to spread among several alternative breeding sites ³⁸ .				
	1.1.2 Area covered by the species (for sessile/benthic species)					
1.2 Population size of selected species is maintained	1.2.1 Population abundance	No human induced decrease in population abundance. Population recovers towards natural levels where depleted. The total number of individuals is sparse enough in different spots.	Qualitative	Yes		Yes

³⁸ This is recommended by the conservation plans of some taxa (Audouin's G, Lesser-crested T)

Operational objective	Indicator	Proposed Targets	Nature of target (Sec. Analysis)	Data av. (Sec. Analysis)	Links (Sec. Analysis)	Notes of the Secretariat
	1.2.2 Population density	State Continual recovery or maintenance of population density in enough different spots to allow resilience No decrease in population density in new/ recolonized critical habitat (for recovered populations)	Quantitative	Yes		Yes
1.3 Population condition of selected species is maintained	1.3.1 Population demographic characteristics (e.g. body size or age class structure, sex ratio, fecundity rates, survival/ mortality rates)	Incidental catch mortality is at negligible levels, particularly for species with IUCN threatened status.	Quantitative	Yes, partial		Yes
1.4 Key coastal and marine habitats are not being lost	1.4.1 Potential / observed distributional range of certain coastal and marine habitats listed under SPA protocol					
	1.4.2 Distributional pattern of certain coastal and marine habitats listed under SPA protocol					
	1.4.3 Condition of the habitat-defining species and communities					

Operational objective	Indicator	Proposed Targets	Nature of target (Sec. Analysis)	Data av. (Sec. Analysis)	Links (Sec. Analysis)	Notes of the Secretariat
1.1 Species distribution is maintained (reptiles)	1.1.1 Distributional range	<p>State Turtle distribution is not significantly affected by human activities</p> <p>Turtles continue to nest in all known nesting sites</p> <p>Pressure/Response Protection of nesting turtle nesting sites.</p> <p>Human activities³⁹ having the potential to exclude marine turtles from their range area are regulated and controlled.</p>	Qualitative	Yes	8.2.2-8.2.3.and 8.2.1	Yes
	1.1.2 Area covered by the species (for sessile/benthic species)					
1.2 Population size of selected species is maintained	1.2.1 Population abundance	<p>State No human induced decrease in population abundance Population recovers towards natural levels where depleted.</p>	Qualitative	Yes		Yes

³⁹ Uncontrolled use of turtle nesting sites, fishing, maritime traffic, etc.

Operational objective	Indicator	Proposed Targets	Nature of target (Sec. Analysis)	Data av. (Sec. Analysis)	Links (Sec. Analysis)	Notes of the Secretariat
	1.2.2 Population density	N/A for Mediterranean marine turtles				
1.3 Population condition of selected species is maintained	1.3.1 Population demographic characteristics (e.g. body size or age class structure, sex ratio, fecundity rates, survival/mortality rates)	Response Measures to mitigate incidental catches in turtles implemented	Qualitative	Yes	EO3	Yes
1.4 Key coastal and marine habitats are not being lost	1.4.1 Potential / observed distributional range of certain coastal and marine habitats listed under SPA protocol					
	1.4.2 Distributional pattern of certain coastal and marine habitats listed under SPA protocol	The species recovers historical nesting sites	Qualitative	Yes	8.22-8.2.3	Yes
	1.4.3 Condition of the habitat-defining species and communities					
2.1 Invasive non-indigenous species introductions are minimized	2.1.1. Spatial distribution, origin and population status (established vs. vagrant) of non-indigenous species	State The number of species and abundance of IAS introduced as a result of human activities is reduced.	Quantitative	Moderate	<u>EO5</u>	<u>OK</u> <u>List to be set inside the integrated monitoring by sub-regions.</u>

Operational objective	Indicator	Proposed Targets	Nature of target (Sec. Analysis)	Data av. (Sec. Analysis)	Links (Sec. Analysis)	Notes of the Secretariat
		<p>Pressure/Response</p> <ul style="list-style-type: none"> – Improved management of the main human related pathways and vectors of NIS introduction (Mediterranean Strategy for the management of ballast waters, early warning systems, etc.) – Action plans developed to address high risk NIS, should they appear in the Mediterranean. 				
	2.1.2 Trends in the abundance of introduced species, notably in risk areas	<p>State</p> <p>Abundance of NIS introduced by human activities is reduced to levels giving no detectable impact</p>	<u>Quantitative</u>	<u>Moderate</u>		<u>OK</u>
2.2. The impact of non-indigenous particularly invasive species on ecosystems is	2.2.1 Ecosystem impacts of particularly invasive species	<p>Pressure/Response</p> <p>Impacts of NIS reduced to the feasible minimum</p>	Quantitative	Moderate		OK

Operational objective	Indicator	Proposed Targets	Nature of target (Sec. Analysis)	Data av. (Sec. Analysis)	Links (Sec. Analysis)	Notes of the Secretariat
limited	2.2.2 Ratio between non-indigenous invasive species and native species in some well-studied taxonomic groups	State To be set upon species choice and their related impact degree of the invasive upon the indigenous ones, taking into account the role of Climate Change in accelerating the establishment of NIS populations.				<u>No target proposed by the cluster, but suggestion of Secretariat to be subject to further consideration.(possibly already in the integrated monitoring programme).</u>
3.1 Level of exploitation by commercial fisheries is within biologically safe limits	3.1.1 Total catch by operational unit ⁴⁰	MSY	Quantitative	Not available at level of operational units.		The 2 nd Biodiversity and Fisheries sub-cluster COR-GEST meeting (2 July, 2013, Rabat) recommended to consider the work done so far on the Ecological Objective 3 as preliminary and to refine it jointly with GFCM and ICCAT.
	3.1.2 Total effort by operational_unit ⁴¹	Fishing effort does not exceed the level of effort allowing the MSY	Quantitative	Not available at level of operational units.		

⁴⁰ Operational Unit should be replaced by GFCM's GSA

⁴¹ Operational Unit should be replaced by GFCM's GSA

Operational objective	Indicator	Proposed Targets	Nature of target (Sec. Analysis)	Data av. (Sec. Analysis)	Links (Sec. Analysis)	Notes of the Secretariat
	3.1.3 Catch per unit effort (CPUE) by operational unit	Stable or positive trend.	Qualitative	Not available at level of operational units.		
	3.1.4 Ratio between catch and biomass index (hereinafter catch/biomass ratio).					
	3.1.5 Fishing mortality	$F_{0.1}$	Quantitative	Yes		
3.2 The reproductive capacity of stocks is maintained	3.2.1 Age structure determination (where feasible)	Average size of fish caught > average size at maturity.	Quantitative	Not available at level of operational units.		
	3.2.2 Spawning Stock Biomass (SSB)					
4.1 Ecosystem dynamics across all trophic levels are maintained at levels capable of ensuring long - term abundance of the species and the retention of their full reproductive capacity	4.1.1 Production per unit biomass estimates for selected trophic groups and key species, for use in models predicting energy flows in food webs	Quantitative targets may be established if baseline information will be available. (Remark: modelling energy flows in food web requires a significant amount of data) ⁴²				The 2 nd Biodiversity and Fisheries sub-cluster COR-GEST meeting recommended further work on the EO4 related proposed targets

⁴² The use of MTI (Marine Trophic Index) is recommended for the areas with accurate data about fishery catches.

Operational objective	Indicator	Proposed Targets	Nature of target (Sec. Analysis)	Data av. (Sec. Analysis)	Links (Sec. Analysis)	Notes of the Secretariat
4.2 Normal proportion and abundances of selected species at all trophic levels of the food web are maintained	4.2.1 Proportion of top predators by weight in the food webs	Threshold may be established if baseline information will be available.				
	4.2.2 Trends in proportion or abundance of habitat-defining groups	No [human induced] decrease in population abundance and density The species shows a positive trends in population abundance and density (for recovering ecosystems)	Quantitative	No		
	4.2.3 Trends in proportion or abundance of taxa with fast turnover rates	The partitioning of biomass among trophic levels is adapted to the trophic structure of the ecosystem	Quantitative	No		

Operational objective	Indicator	Proposed Targets	Nature of target (Sec. Analysis)	Data av. (Sec. Analysis)	Links (Sec. Analysis)	Notes of the Secretariat
5.1 Human introduction of nutrients in the marine environment is not conducive to eutrophication	5.1.1 Concentration of key nutrients in the water column ⁴³	State 1. Reference nutrients concentrations according to the local hydrological, chemical and morphological characteristics of the un-impacted marine region ⁴⁴	⁴⁵ Quantitative	High <ul style="list-style-type: none"> • MED POL monitoring programme under LBS protocol • Specific information provided by countries⁴⁶ 	<ul style="list-style-type: none"> • EO 3 and EO4 • EO1 (habitat is) 	OK
		2. Decreasing trend of nutrients concentrations in water column of human impacted areas, statistically defined		<ul style="list-style-type: none"> • Initial assessment reports under MSFD implementation 		OK
		Pressure 3. Reduction of BOD emissions from land based sources 4. Reduction of nutrients emissions from land based sources	Quantitative	SAP MED		

⁴³ Indicators in bold have been selected for agreement at COP18 (Istanbul, December 2013) mainly for data availability

⁴⁴ Thresholds to be set in the future, subject to decision of Contracting Parties

⁴⁵ Partial data, only from European Mediterranean countries, and not harmonised between countries.

⁴⁶ Information requested in Sarajevo meeting (partial data).

Operational objective	Indicator	Proposed Targets	Nature of target (Sec. Analysis)	Data av. (Sec. Analysis)	Links (Sec. Analysis)	Notes of the Secretariat
	5.1.2 Nutrient ratios (silica, nitrogen and phosphorus), where appropriate		Quantitative	<ul style="list-style-type: none"> • High confidence • MED POL monitoring programme under LBS protocol • Initial assessment reports under MSFD implementation 		<ul style="list-style-type: none"> • OK
5.2 Direct effects of nutrient over-enrichment are prevented	5.2.1 Chlorophyll-a concentration in the water column	State 3.Chl-a concentrations in high-risk areas below thresholds ⁴⁷ 4.Decreasing trend in chl-a concentrations in high risk areas affected by human activities	Quantitative	<ul style="list-style-type: none"> • Moderate • MED POL monitoring programme under LBS protocol • Specific information provided by countries • Initial assessment reports under MSFD implementation • WFD and related EU legislation, MED GIG 	<ul style="list-style-type: none"> • EO 3 and EO4 • EO1 (habitat is) 	<ul style="list-style-type: none"> • OK • Additional note on state of play: data may be existing in country level.(but not on regional level (not available by Secretariat).)

⁴⁷ Thresholds to be set in the future, subject to decision of Contracting Parties

Operational objective	Indicator	Proposed Targets	Nature of target (Sec. Analysis)	Data av. (Sec. Analysis)	Links (Sec. Analysis)	Notes of the Secretariat
	5.2.2 Water transparency where relevant	State 1. Secchi disk depth above threshold in risk areas 2. Increasing trend of transparency in areas impacted by human activities	Quantitative	Low MEDPOL Initial assessment reports under MSFD implementation		OK
5.3 Indirect effects of nutrient over-enrichment are prevented	5.3.1 Dissolved oxygen near the bottom, i.e. changes due to increased organic matter decomposition, and size of the area concerned ^{*48}	State 3. Dissolved oxygen concentrations in high-risk areas above local threshold ⁴⁹ 4. Increasing trend in dissolved oxygen concentrations in areas impacted by human activities	Quantitative	Low Initial assessment reports under MSFD implementation		Yes
6.1 Extent of physical alteration to the substrate is minimized	6.1.1 Distribution of bottom impacting activities	All most important bottom impacting activities are regulated.	Qualitative	Yes		The 2 nd Biodiversity and Fisheries sub-cluster COR-GEST meeting recommended further work on the GES descriptors and targets related to this EO.

⁴⁸Monitoring to be carried out where appropriate

⁴⁹ Thresholds to be set in the future, subject to decision of Contracting Parties

Operational objective	Indicator	Proposed Targets	Nature of target (Sec. Analysis)	Data av. (Sec. Analysis)	Links (Sec. Analysis)	Notes of the Secretariat
	6.1.2 Area of the substrate affected by physical alteration due to the different activities	Surface area of each substrate type affected by bottom impacting activities is reduced from current levels.	Quantitative	Partial (EU)		
6.2 Impact of benthic disturbance in priority benthic habitats is minimized	6.2.1 Impact of bottom impacting activities in priority benthic habitats	No priority benthic habitat impacted by bottom impacting activities	Qualitative	Partial		
	6.2.2 Change in distribution and abundance of indicator species in priority habitats	<p>State No human induced decrease in population abundance and density</p> <p>The species shows a positive trends towards reference conditions in terms of population abundance and density (for recovering habitats)</p>	Qualitative	Partial		

Operational objective	Indicator	Proposed Targets	Nature of target	Data av. (Sec. Analysis)	Links	Notes of the Secretariat
7.1 Impacts to the marine and coastal ecosystem induced by climate variability and/or climate change are minimized	7.1.1 Large scale changes in circulation patterns, temperature, pH, and salinity distribution	Anthropogenic additional impacts which may alter ecosystems' adaptive capacity are reduced	Quantitative	Low Mostly broad scale only, detailed data on cause-consequences lacking		OK
	7.1.2 Long term changes in sea level		Quantitative	Moderate		OK
7.2 Alterations due to permanent constructions on the coast and watersheds, marine installations and seafloor anchored structures are minimized	7.2.1 Impact on the circulation caused by the presence of structures	Marine and shore based structures planned, constructed and operated in a way to maintain the natural wave and current pattern as much as possible	Qualitative	Low/Moderate Good through nautical charts, data can be improved in the short term by local measurements, full system understanding can be modelled numerically		OK
	7.2.2 Location and extent of the habitats impacted directly by the alterations and/or the circulation changes induced by them: footprints of impacting structures	Planning of structures takes into account all possible mitigation measures in order to minimize the impact on coastal and marine ecosystem and its services integrity and cultural/historic assets	Qualitative	Low/Moderate Can be obtained through local measurements on short notice, physical conditions that affect environmental health can be modelled		OK

Operational objective	Indicator	Proposed Targets	Nature of target	Data av. (Sec. Analysis)	Links	Notes of the Secretariat
	7.2.3 Trends in sediment delivery, especially in major deltaic systems	<p>The sediment coming from the watershed and longshore drift is sufficient to maintain less or not impacted coastal ecosystems (including major deltaic systems)</p> <p>Sufficient sediment budget is provided to restore damaged coastal ecosystems, where applicable</p>	Qualitative	Low Locally varying data availability, conditions can anyhow be modelled		Requires further consideration
	7.2.4 Extent of area affected by coastal erosion due to sediment supply alterations	The coastal and marine structures that will alter the sediment transport and accelerate erosion/accretion are planned, constructed and operated with minimum negative impact	Quantitative	Low Seabed morphology data available through nautical charts, in problem areas often more detailed data available		Requires further consideration

Operational objective	Indicator	Proposed Targets	Nature of target	Data av. (Sec. Analysis)	Links	Notes of the Secretariat
7.3 Impacts of alterations due to changes in freshwater flow from watersheds, seawater inundation and coastal freatic intrusion, brine input from desalination plants and seawater intake and outlet are minimized	7.3.1 Trends in fresh water/sea water volume delivered to salt marshes, lagoons, estuaries, and deltas; desalination brines in the coastal zone	Provide adequate freshwater inflow to salt marshes, lagoons, estuaries and deltas to ensure water circulation balance	Quantitative	Low Often low data availability, only where specific studies have been carried out	EO1	Requires further consideration
	7.3.2 Location and extent of the habitats impacted by changes in the circulation and the salinity induced by the alterations	Cumulative negative impacts on coastal and marine habitats are avoided while planning, construction and operating of coastal and marine infrastructure AND DO not hinder habitat integrity	Qualitative	Low Understanding of environmental reaction to expected changes often available, but low general data availability necessary to assess interlinked cause-consequence chains	EO1	Requires further consideration
	7.3.3 Changes in key species distribution due to the effects of seawater intake and outlet	Site specific tolerable limits of key species in immediate proximity of seawater intake and outlet structures are considered while planning, constructing and operating such infrastructure	Qualitative	Moderate Data regarding natural conditions often available, expected changes can be modelled	EO1 (habitats) EO3	OK

Operational objective	Indicator	Proposed Targets	Nature of target	Data av. (Sec. Analysis)	Links	Notes of the Secretariat
8.1 The natural dynamic nature of coastlines is respected and coastal areas are in good condition	8.1.1 Areal extent of coastal erosion and coastline instability	Impacts of coastal erosion caused by man made factors anticipated and prevented through coastal erosion management allowing for natural fluctuation of the coast and minimizing coastal erosion risk	Quantitative	Moderate Relatively good, particularly in the Northern Mediterranean: <ul style="list-style-type: none"> • DEDUCE • Eurosion • CONSCIENCE • Pegaso • EEA: Coastal erosion patterns in Europe 	EO7 EO1 (habitats and reptiles)	OK Note: data availability is not by Secretariat, but publicly available (fragmented data)
	8.1.2 Changes in sediment dynamics along the coastline	Disturbance in sediment inflows reduced through improved Integrated River Basin Management and coastal sand management practices	Quantitative	Moderate Good but fragmented, no regional data base	EO7 EO1 (habitats and reptiles)	OK Note: data availability is not by Secretariat, but publicly available (fragmented data)
	8.1.3 Areal extent of sandy areas subject to physical disturbance	Negative impacts of human activities on sandy coastal areas are minimized through appropriate management measures (artificial beach nourishment, dune management etc.) to minimize negative impacts of human activities on sandy coastal areas	Quantitative	Low Knowledge about the problem areas exist, but specific data availability often hard to get	EO1 (habitats and reptiles)	Requires further consideration Target to be revisited (based on length of coastline)

Operational objective	Indicator	Proposed Targets	Nature of target	Data av. (Sec. Analysis)	Links	Notes of the Secretariat
	8.1.4 Length of coastline subject to physical disturbance due to the influence of manmade structures	impacts of human activities on sandy coastal areas are minimized through appropriate management measures to minimize negative impacts of coastal infrastructure on coastline	Quantitative	<p>Moderate Data exist but fragmented, often at local level</p> <p>Possible sources in Northern Mediterranean:</p> <ul style="list-style-type: none"> • DEDUCE • Pegaso • EEA: Coastal erosion patterns in Europe 		<p>OK Target may be revisited (based on length of coastline, subject to be included in the).</p>
<p>8.2 Integrity and diversity of coastal ecosystems, landscapes and their geomorphology are preserved</p>	8.2.1 Change of land-use	Cumulative negative impacts of coastal development are not increasing by means of coastal spatial planning with the aim of creating a balanced coastal land use structure	Quantitative	<ul style="list-style-type: none"> • Moderate • Corine Land Cover (may be of insufficient resolution) • DEDUCE • EEA • Pegaso • National data sets and Coastal Spatial Plans, but may be non synthesized 	EO1 (habitats and reptiles)	<ul style="list-style-type: none"> • OK

	8.2.2 Change of landscape types	Mixed landscape structure maintained, which avoids dominance of mono-type coastal landscapes and where network of protected coastal landscapes is expanded	Quantitative	<ul style="list-style-type: none"> • Low • LEAC (Pegaso) • EEA: The changing faces of Europe's coastal areas • Corine Land Cover 	EO1 (habitats and reptiles)	Requires further consideration
	8.2.3 Share of non-fragmented coastal habitats	Share of non-fragmented coastal habitats is maintained at the present level or increasing	Quantitative	<p>Low No consistent source of data</p> <p>Information is fragmented throughout coastal spatial plans which show the land use structure</p>	EO1 (habitats and reptiles)	OK, but requires further consideration.
9.1 Concentration of priority⁵⁰ contaminants is kept within acceptable limits and does not increase	9.1.1 Concentration of key harmful contaminants ⁵¹ in biota, sediment or water	<p>State Concentrations of specific contaminants below EACs or below reference concentrations⁵²</p> <p>Decreasing trend in contaminants concentrations in sediment and biota from human impacted areas, statistically defined</p>	<ul style="list-style-type: none"> • Quantitative 	<ul style="list-style-type: none"> • High confidence (for the parameters already monitored in the framework of the • MED POL monitoring programme under LBS protocol) 	<ul style="list-style-type: none"> • EO1 (species), EO3, EO4 and 9.2 and 9.4 	<ul style="list-style-type: none"> • OK (for the contaminants already included in the Medpol Monitoring Programme).

⁵⁰ Priority contaminants as listed under the Barcelona Convention and LBS Protocol

⁵¹ Use for further work on reference conditions ERL for sediments taking into account specifics of the Mediterranean

⁵² Thresholds to be set in the future, subject to decision of Contracting Parties

Operational objective	Indicator	Proposed Targets	Nature of target	Data av. (Sec. Analysis)	Links	Notes of the Secretariat
		Pressure Reduction of contaminants emissions from land based sources		Medium/High (SAP MED targets on inputs of heavy metals and organohaligen compounds)		OK (for the ones included in the Medpol Monitoring Programme)
9.2 Effects of released contaminants are minimized	9.2.1 Level of pollution effects of key contaminants where a cause and effect relationship has been established	State Contaminants effects below threshold ⁵³	Quantitative	Low	EO1, EO3, EO4	OK, but further consideration is necessary
9.3 Acute pollution events are prevented and their impacts are minimized	9.3.1 Occurrence, origin (where possible), extent of significant acute pollution events (e.g. slicks from oil, oil products and hazardous substances) and their impact on biota affected by this pollution	State 2. Decreasing trends in the concentrations of oil in the water column and the occurrence of tar balls on the beach	Quantitative	Low	EO4 9.1-9.2 EO1 (habitats mainly)	OK (further consideration is necessary on state -1, where data availability is low).

⁵³ Thresholds to be set in the future, subject to decision of Contracting Parties

Operational objective	Indicator	Proposed Targets	Nature of target	Data av. (Sec. Analysis)	Links	Notes of the Secretariat
		<p>Pressure</p> <p>3. Decreasing trend in the occurrences of pollution events</p> <p>4. Decreasing trend in the operational releases of oil and other contaminants from coastal, maritime and off-shore activities</p>	Quantitative	Moderate/High REMPEC under Prevention and Emergency Protocol	EO4 9.1.1-9.2 EO1 (habitats mainly)	OK (country reporting is to be improved) Further consideration, for sectors other than shipping.
9.4 Levels of known harmful contaminants in major types of seafood do not exceed established standards	9.4.1 Actual levels of contaminants that have been detected and number of contaminants which have exceeded maximum regulatory levels in commonly consumed seafood ⁵⁴	<p>State</p> <p>Concentrations of contaminants are within the regulatory limits set by legislation</p>	Quantitative	Moderate/High, but currently not available by the Secretariat Initial assessment reports under MSFD implementation	EO3	Yes
	9.4.2 Frequency that regulatory levels of contaminants are exceeded	<p>State</p> <p>Decreasing trend in the frequency of cases of seafood samples above regulatory limits for contaminants</p>	Quantitative	Moderate/High, but currently not available by the Secretariat Initial assessment reports under MSFD implementation	EO3	Yes

⁵⁴ Traceability of the origin of seafood sampled should be ensured

Operational objective	Indicator	Proposed Targets	Nature of target	Data av. (Sec. Analysis)	Links	Notes of the Secretariat
9.5 Water quality in bathing waters and other recreational areas does not undermine human health	9.5.1 Percentage of intestinal enterococci concentration measurements within established standards	State Increasing trend in the percentage of intestinal enterococci concentrations within established standards	Quantitative	Moderate National monitoring programmes under BWD implementation (partial data, only from European Mediterranean countries)	EO3	OK
	9.5.2 Occurrence of Harmful Algal Blooms within bathing and recreational areas	State Decreasing trend in the frequency of the occurrence of HABs	Quantitative	Low/Moderate National monitoring programmes under BWD implementation (partial data, only from European Mediterranean countries)	EO2 and EO3	OK
10.1 The impacts related to properties and quantities of marine litter in the marine and coastal environment are minimized	10.1.1 Trends in the amount of litter washed ashore and/or deposited on coastlines, including analysis of its composition, spatial distribution and, where possible, source	State Decreasing trend in the number of marine litter items deposited on the coast	Quantitative	Low/Moderate UNEP/MAP, 2009. Results of the assessment of the status of marine litter in the Mediterranean	EO1 ,(EO9	OK,

Operational objective	Indicator	Proposed Targets	Nature of target	Data av. (Sec. Analysis)	Links	Notes of the Secretariat
	10.1.2 Trends in amounts of litter in the water column, including microplastics, and on the seafloor	State Decreasing trend in the number of marine litter items in the water surface and the seafloor	Quantitative	Low UNEP/MAP, 2009. Results of the assessment of the status of marine litter in the Mediterranean Initial assessment reports under MSFD implementation	EO1, , EO2 and EO3, EO9	OK,
10.2 Impacts of litter on marine life are controlled to the maximum extent practicable	10.2.1 Trends in the amount of litter ingested by or entangling marine organisms, especially mammals, marine birds and turtles ⁵⁵	Decreasing trend in the cases of entanglement or/and a decreasing trend in the stomach content of the sentinel species.	Quantitative	Low EcoQO for plastic particles in fulmars in OSPAR region (partial availability)	EO1,(species) , EO3 and EO9	OK
11.1 Energy inputs into the marine environment, especially noise from human activities is minimized	11.1.1 Proportion of days and geographical distribution where loud, low and mid-frequency impulsive sounds exceed levels that are likely to entail significant impact on marine animals	*	*			Further work needed, no targets proposed yet, work with ACCOBAMS is needed

⁵⁵ Marine mammals, marine birds and turtles included in the regional action plans of the SPA/BD Protocol.

	11.1.2 Trends in continuous low frequency sounds with the use of models as appropriate	*	*			
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Confidence Levels of data availability

Low: (i) Calculated, but based on very incomplete data or (ii) not calculated, based on expert opinion (little or no monitoring)

Moderate: (i) Calculated, based on partial data with some extrapolation or (ii) not calculated but based on surveys/monitoring with short time series and/or (iii) low spatial resolution, or not calculated but based on surveys/monitoring and trend analysis with good spatial resolution but large variability.

High: (i) Calculated, based on extensive data with minimal extrapolation/modelling required or (ii) not calculated but based on surveys/monitoring and trend analysis with long time series, good spatial resolution and low/acceptable.

Annex III**Tables of GES and Targets to be further addressed****Ecological Objective 1 (Biodiversity)****Key coastal and marine habitats**

Operational objective	Indicator	Proposed GES Description	Proposed Targets
1.4 Key coastal and marine habitats are not being lost	1.4.1 Potential/ observed distributional range of certain coastal and marine habitats listed under SPA protocol ⁵⁶	The habitat is present in all its natural distributional range.	State The ratio Natural / observed distributional range tends to 1 Pressure Decrease in the main human causes of the habitat decline
	1.4.2 Distributional pattern of certain coastal and marine habitats listed under SPA protocol	The distributional extent is in line with prevailing physiographic, hydrographic, geographic and climatic conditions.	State Decline in habitat extension is reversed and the extension of recovering habitats shows a positive trend.
	1.4.3 Condition of the habitat-defining species and communities	The population size and density of the habitat-defining species, and species composition of the community, are within reference conditions ensuring the long term maintenance of the Habitat	State No human induced significant deviation of population abundance and density from reference conditions ⁵⁷ The species composition shows a positive trends towards reference condition over an increasing proportion of the habitat(for recovering habitats)

Geographical Scale: The assessments should be made at national level and used to compile subregional (and where possible regional) assessments. The subregional assessments shall be compiled for each of the four Mediterranean subregions used for the initial assessment carried out within the framework of the EcAp process.

⁵⁶ The 2nd meeting of the Biodiversity and Fisheries COR GEST meeting proposed that this indicator should refer to natural distributional range instead of potential distributional range

⁵⁷ Reference conditions should be defined for the habitats to be considered under EO1

Marine Mammals

Operational objective	Indicator	Proposed GES Description	Proposed Targets
1.1 Species distribution is maintained	1.1.1 Distributional range	<u>Cetaceans</u> : Not relevant	State <u>Cetaceans</u> : Not relevant
	1.1.2 Area covered by the species (for sessile/benthic species)		
1.2 Population size of selected species is maintained	1.2.2 Population density	<u>Cetaceans</u> : N/A	

Geographical Scale: For cetaceans the assessments should be made at the Mediterranean level and at national level whenever possible. For the Monk seal assessments should be made at national and subregional scale.

Birds

Operational objective	Indicator	Proposed GES Description	Proposed Targets
1.1 Species distribution is maintained	1.1.2 Area covered by the species (for sessile/benthic species)		
1.4 Key coastal and marine habitats are not being lost	1.4.1 Potential / observed distributional range of certain coastal and marine habitats listed under SPA protocol		
	1.4.2 Distributional pattern of certain coastal and marine habitats listed under SPA protocol		
	1.4.3 Condition of the habitat-defining species and communities		

Geographical Scale: For Birds the assessments should be made at national, subregional and Mediterranean level, and where possible at population level.

Reptiles

Operational objective	Indicator	Proposed GES Description	Proposed Targets
1.1 Species distribution is maintained	1.1.2 Area covered by the species (for sessile/benthic species)		
1.2 Population size of selected species is maintained	1.2.2 Population density	N/A for Mediterranean marine turtles	N/A for Mediterranean marine turtles
1.4 Key coastal and marine habitats are not being lost	1.4.1 Potential / observed distributional range of certain coastal and marine habitats listed under SPA protocol		
	1.4.3 Condition of the habitat-defining species and communities		

Geographical Scale: The assessments should be made at national and Mediterranean scales for nesting activity and at Mediterranean level for the population size and condition.

Turtle species to be considered:

Caretta caretta (Linnaeus, 1758)

Chelonia mydas (Linnaeus, 1758)

Trionyx triunguis (Forsk., 1775)

Ecological Objective 3 (Harvest of commercially exploited fish and shellfish)

Note: the meeting of the SPA Focal Points (2nd meeting of the COR GEST sub-cluster on biodiversity and fisheries, Rabat 2 July 2013) recommended to consider the work done so far on the Ecological Objective 3 as preliminary and to refine it jointly with GFCM and ICCAT.

Based on this recommendation, the Secretariat will further cooperate with GFCM and ICCAT Secretariats, to ensure that in their ongoing work the outcomes of the UNEP MAP EcAp process are reflected and at the same time will report back to the EcAp Coordination Group on developments.

Operational objective	Indicator	Proposed GES Description	Proposed Targets
3.1 Level of exploitation by commercial fisheries is within biologically safe limits	3.1.1 Total catch by operational unit ⁵⁸	Total catch does not exceed the Maximum Sustainable Yield (MSY) ⁵⁹ . Remark: If only landings by commercial fleet are considered, the total catch would not reflect all the fish biomass removed from the stock, since IUU and recreational fishing may generate significant taking in some stocks. However data on IUU and recreational fishing are missing for most areas and stocks.	MSY
	3.1.2 Total effort by operational_unit ⁶⁰	Total effort does not exceed the level of effort allowing the Maximum Sustainable Yield (MSY). It includes the effort deployed by commercial fleet and estimated effort from recreational fishing and IUU operators.	Fishing effort does not exceed the level of effort allowing the MSY
	3.1.3 Catch per unit effort (CPUE) by operational unit	Stable or increasing CPUE ⁶¹	Stable or positive trend.

⁵⁸ Operational Unit should be replaced by GFCM's GSA

⁵⁹ MSY: The largest annual catch that may be taken from a stock every year without affecting the catch of future years

⁶⁰ Operational Unit should be replaced by GFCM's GSA

⁶¹ Not to be applied for gregarious species such as small pelagic. For other species, if CPUE data are not available at Operational Unit level, CPUE at the stock level will be considered.

	3.1.4 Ratio between catch and biomass index (hereinafter catch/biomass ratio).	The catch/biomass ratio allows to recover the stock or to maintain it at a level where it can produce the Maximum Sustainable Yield (MSY) Remark: This ratio can be calculated only if regular sampling programmes are carried out by the countries	
	3.1.5 Fishing mortality	Fishing mortality in the stock does not exceed the level that allows MSY ($F \leq F_{MSY}$)	$F_{0.1}$
3.2 The reproductive capacity of stocks is maintained	3.2.1 Age structure determination (where feasible)	Size structure of the stocks allows to maintain or to reach the Maximum yield-per-recruit	Average size of fish caught > average size at maturity.
	3.2.2 Spawning Stock Biomass (SSB)		

Geographical scale:

As part of the guidance for a common methodology to be used by clusters, the ECAP Coordination Group recommended that scales should be national and when possible regional (Mediterranean) and transboundary or sub-regional. Currently, around half of the Mediterranean countries have stock assessments for some of the stocks being fished on their national waters.

Under GFCM, stock assessments are made by Geographical Sub-Areas (GSA) established as management units in 2001 and amended in 2009 (RESOLUTION GFCM/33/2009/2). The GSA delimitation is mainly based on practical considerations rather than on the stock distribution, and many stocks extend beyond the geographic limits of GSAs. However, although the concept of their delimitation still needs further consideration, the GSAs, as established by GFCM appear as the most appropriate subdivisions for stock assessments for management purposes in the Mediterranean Sea. They are also adopted for assessments at national level.

Species to be considered

Considering that most of the Mediterranean fisheries are multi-specific with a limited number of fisheries targeting only one species, the determination of GES for EO3 within a context of an Ecosystem Approach should be based on the assessment of the adopted indicators for a set of species belonging to different trophic levels. Considering the above criteria, the following species are proposed to be considered:

Species to be considered

		Pelagic/ Demersal	Province
<i>Thunnus thynnus</i>	High trophic level fish predator	Pelagic	Neritic/ Oceanic
<i>Xiphias gladius</i>	High trophic level fish predator	Pelagic	Neritic/ Oceanic
<i>Engraulis encrasicolus</i>	Planktivorous fish	Pelagic	Neritic
<i>Sardina pilchardus</i>	Planktivorous fish	Pelagic	Neritic
<i>Merluccius merluccius</i>	Predator fish, (lives between 70 and 370 m)	Demersal	Neritic
<i>Mullus barbatus</i>	Predator Fish (medium trophic level) (Sand and soft bottoms at depths less than 100 m)	Demersal	Neritic
<i>Mullus surmuletus</i>	Predator Fish (medium trophic level) (Lives on broken and rough grounds but found also on sand and soft bottoms at depths ranging from 5 to 400 m)	Demersal	Neritic/
<i>Parapenaeus longirostris</i>	Crustacean	Demersal	Oceanic
<i>Scyliorhinus canicula</i>	Predator fish	Demersal	Neritic/ Oceanic
<i>Nephrops norvegicus</i>	Crustacean	Demersal	Neritic/ Oceanic

Ecological Objective 4 (Marine food webs)

Considering the knowledge gaps on food webs in Mediterranean ecosystems and the impact of the continuous change in species composition induced by NIS, in particular in the Eastern Basin, the GES description and Targets for EO4 should be addressed at subregional level

Operational objective	Indicator	Proposed GES Description	Proposed Targets
4.2 Normal proportion and abundances of selected species at all trophic levels of the food web are maintained	4.1.1 Production per unit biomass estimates for selected trophic groups and key species, for use in models predicting energy flows in food webs	Production per unit biomass allows for levels of energy flows in food webs that sustain the long-term abundance of the species and the retention of their full reproductive capacity	Quantitative targets may be established if baseline information will be available. (Remark: modelling energy flows in food web requires a significant amount of data) ⁶²
	4.2.1 Proportion of top predators by weight in the food webs	The ratio of top predators to the rest of the food web is at level that will not have long-term adverse effects on food web dynamics and related viability	Threshold may be established if baseline information will be available.
	4.2.2 Trends in proportion or abundance of habitat-defining groups	The population size and density of the habitat-defining species are at levels ensuring the long term maintenance of the ecosystem	No [human induced] decrease in population abundance and density The species shows a positive trends in population abundance and density (for recovering ecosystems)
	4.2.3 Trends in proportion or abundance of taxa with fast turnover rates	Taxa with fast turnover rates significantly contribute in maintaining food web dynamics	The partitioning of biomass among trophic levels is adapted to the trophic structure of the ecosystem

⁶² The use of MTI (Marine Trophic Index) is recommended for the areas with accurate data about fishery catches.

Ecological Objective 6 (Sea-floor integrity)

Operational objective	Indicator	Proposed GES Description	Proposed Targets
6.1 Extent of physical alteration to the substrate is minimized	6.1.1 Distribution of bottom impacting activities	Limited distribution/extent of bottom impacting activities	All most important bottom impacting activities are regulated.
	6.1.2 Area of the substrate affected by physical alteration due to the different activities	Limited surface area of the substrate affected by bottom impacting activities (for sensitive substrate types)	Surface area of each substrate type affected by bottom impacting activities is reduced from current levels.
6.2 Impact of benthic disturbance in priority benthic habitats is minimized	6.2.1 Impact of bottom impacting activities in priority benthic habitats	Impact of bottom impacting activities on priority benthic habitats is minimized	No priority benthic habitat impacted by bottom impacting activities
	6.2.2 Change in distribution and abundance of indicator species in priority habitats	The population size and density of the habitat-defining species are at levels ensuring the long term maintenance of the Habitat	State No human induced decrease in population abundance and density The species shows a positive trends towards reference conditions in terms of population abundance and density (for recovering habitats)

Geographical scale:

The assessments for the determination of GES and targets in relation to the Ecological Objectives 6 (Sea-floor integrity) will be made at subregional level.

Sensitive substrates and Priority benthic habitats to be considered:

A list of sensitive substrates shall be defined for each of the 4 subregions taking into account its specificities

From the list of habitat to be considered for Ecological Objective 1 (Biodiversity), the habitats that are vulnerable to bottom impacting activities will be considered for the Ecological Objective 6 (Sea-floor integrity)

Ecological Objective 7 (HYDROGRAPHY⁶³)

Alteration of hydrographic conditions does not adversely affect coastal and marine ecosystems.

Operational objective	Indicator	Proposed GES Description	Proposed Targets
7.2 Alterations due to permanent constructions on the coast and watersheds, marine installations and seafloor anchored structures are minimized	7.2.3 Trends in sediment delivery, especially in major deltaic systems	Natural variability of delta outline, water depth in delta and other ecosystems' functions are maintained and biodiversity not affected by changes in sediment budget	The sediment coming from the watershed and longshore drift is sufficient to maintain less or not impacted coastal ecosystems (including major deltaic systems) Sufficient sediment budget is provided to restore damaged coastal ecosystems, where applicable
	7.2.4 Extent of area affected by coastal erosion due to sediment supply alterations	Natural or near natural erosion, deposition and sediment movement patterns are maintained	The coastal and marine structures that will alter the sediment transport and accelerate erosion/accretion are planned, constructed and operated with minimum negative impact
7.3 Impacts of alterations due to changes in freshwater flow from watersheds, seawater inundation and coastal freatic intrusion, brine input from desalination plants and seawater intake and outlet are minimized	7.3.1. Trends in fresh water/sea water volume delivered to salt marshes, lagoons, estuaries, and deltas; desalination brines in the coastal zone	Water circulation in coastal and marine habitats, including salinity and temperature threshold, allows for natural/ecological processes take place (sustain, maintain)	Provide adequate freshwater inflow to salt marshes, lagoons, estuaries and deltas to ensure water circulation balance
	7.3.2. Location and extent of the habitats impacted by changes in the circulation and the salinity induced by the alterations	Water circulation in coastal and marine habitats, including salinity and temperature threshold, allows for natural/ecological processes take place (sustain, maintain)	Cumulative negative impacts on coastal and marine habitats are avoided while planning, construction and operating of coastal and marine infrastructure AND DO not hinder habitat integrity

⁶³ Bold text is used for EO's indicators for which agreement could be reached at COP18, and they should be considered as priority

Ecological Objective 8 (COASTAL ECOSYSTEMS AND LANDSCAPES)

The natural dynamics of coastal areas is maintained and coastal ecosystems and landscapes are preserved

Operational objective	Indicator	Proposed GES Description	Proposed Targets
8.1 The natural dynamic nature of coastlines is respected and coastal areas are in good condition	8.1.3 Areal extent of sandy areas subject to physical disturbance	Human activities (mechanical cleaning, sand mining, dune destruction, etc.) cause no physical disturbance in sandy coastal areas“physical disturbance to sandy coastal areas induced by human activities should be minimized” or “there should be no biological impact induced by physical disturbance to sandy coastal areas due to human activities”	Appropriate management measures are implemented (artificial beach nourishment, dune management etc.) to minimize negative impacts of human activities on sandy coastal areas
8.2 Integrity and diversity of coastal ecosystems, landscapes and their geomorphology are preserved	8.2.1 Change of land-use	Perpendicular and linear coastal development is in balance with integrity and diversity of coastal ecosystems and landscape	Cumulative negative impacts of coastal development are not increasing by means of coastal spatial planning with the aim of creating a balanced coastal land use structure
	8.2.2 Change of landscape types	Diversity of landscape types form a harmonious and balanced whole, where coastal landscape becomes strategic element of local identity	Mixed landscape structure maintained, which avoids dominance of mono- type coastal landscapes and where network of protected coastal landscapes is expanded
	8.2.3 Share of non-fragmented coastal habitats	Coastal habitats are not fragmented to a level that prevents them from providing ecological functions and environmental services	Share of non-fragmented coastal habitats is maintained at the present level or increasing

Ecological Objective 11(ENERGY INCLUDING UNDERWATER NOISE)

Noise from human activities cause no significant impact on marine and coastal ecosystems

Operational Objectives	Indicators	Proposed GES Description	Proposed Target
11.1 Energy inputs into the marine environment, especially noise from human activities is minimized	11.1.1 Proportion of days and geographical distribution where loud, low and mid-frequency impulsive sounds exceed levels that are likely to entail significant impact on marine animals	*	*
	11.1.2 Trends in continuous low frequency sounds with the use of models as appropriate	*	*

(*)The Secretariat will cooperate with ACCOBAMS and provide detailed information at a later stage. Also, the work of the Noise WG of EU in the context of MSFD will be followed and taken into account as appropriate.