

Article 12 Technical Assessment of the MSFD 2012 obligations Italy

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Final version



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The main authors of this report are Claire Dupont, Alice Belin, Bastiaan Vermonden and Goncalo Moreira with contributions from Sabine Cochrane, Lindsay Wilson and Chris Emblow (D1, 4, 6), Belinda Kater (D2), Sophie Des Clercs (D3), William Parr (D5), Christophe Le Visage (D7), Norman Green (D8 and 9), Jan Cools (D10) and Frank Thomsen (D11). This report is provided under Contract No 070307/2012/634823/SER/D2 – Task F.

Milieu Ltd. (Belgium), 15 rue Blanche, B-1050, Brussels, tel: 32 2 506 1000; Fax 32 2 514 3603; e-mail: claire.dupont@milieu.be and alice.belin@milieu.be; web address: www.milieu.be

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Section 1. Introduction and cross cutting issues

Overall approach

Italy has uploaded its reporting sheets (in English) on 6 May 2013 for the last time.

The paper report (in Italian) has been uploaded on 12 October 2012 and again on 30 April 2013, however, this last version updated only the GES and the environmental targets. The paper report consists of several documents: 1) documents containing the general information (e.g. introduction and assessment areas), 2) for the initial assessment – one document per topic and per sub-region, 3) for GES and environmental targets – one document per descriptor, 4) for ESA – one document for the analysis of marine uses and one document for the evaluation of the cost of degradation. There are sometimes discrepancies between the paper report and the reporting sheets; when the differences were more substantial, as a rule, the assessment was based on the most complete/clearer version. The status of the paper report is rather uncertain as it seems that all GES definitions and environmental targets (as per the version of 30 April 2013) are still only suggestions/proposals (*proposte*) rather than final versions endorsed by the authorities.

The approach used to define GES varies. For some descriptors GES is defined at descriptor level (Descriptor 11), in other cases is defined only at criteria level (Descriptors 2, 8 and 9), in other cases at descriptor, criteria and indicator level (Descriptors 5, 10), and for the remaining descriptors, at criteria and indicator level (Descriptor 3, 7).

Overall, the initial assessment is mainly descriptive. In general, information gaps are clearly identified and these gaps affect the identification of pressures and impacts for the descriptors. Pressures are sparsely reported for some descriptors in accordance to availability of information and analysis, whereas impacts are often not provided. Judgements on the current status in relation to GES are not consistently made.

Italy has not set environmental targets for descriptors 7 and 11. All environmental targets are interim targets with the exception of those set for Descriptor 8. In general, the environmental targets were more clearly presented and more complete (e.g. with indication of the associated indicator) than in the reporting sheets. Therefore, the assessment has focussed on the version from the paper report.

Scope of marine waters

According to the Directive, Italy's marine waters are part of the marine region of the Mediterranean Sea and cover the sub-regions of the Adriatic Sea, the Ionian Sea and the Central Mediterranean Sea and the Western Mediterranean Sea. Italy does not describe in details the boundaries of its marine waters but provides a map showing the Italian territorial waters (12 nautical miles) and the Ecological Protection Zone (EPZ).

No formal subdivision has been identified.

Assessment areas and aggregation scales

The GES definitions and targets are, in most cases, defined for the whole of the Italian marine waters together, with no distinction of specific assessment areas. Assessment areas were considered for the initial assessment and, depending on the topic in question. These areas may coincide with or may be representative of the sub-regions. For instance, with regards to the Descriptor 7 (Hydrographical conditions), the sub-region "Adriatic Sea" coincides with the assessed area, whereas only two specific and geographically limited "assessment areas" are assessed within the subregions "Western Mediterranean Sea and Ionian Sea and the Central Mediterranean Sea".

Regional Cooperation

Italy is party to the Barcelona Convention. Efforts of regional coordination have been described in the paper report, where the necessity of obtain a successful coordination amongst countries mainly through existing international cooperation instruments has been stressed. Italy participated in a first meeting of trilateral coordination with France and Spain to compare country-approaches and general frame and implementation of initial assessment, definition of GES and environmental targets for the Western Mediterranean Sea sub-region. With regards to the other two sub-regions, no meetings have been held so far, but brief meetings will be organized in the next future to enhance regional cooperation. In particular, for the “Ionic and Central Mediterranean Sea” sub-region brief meetings with Malta and Greece are proposed, while for the “Adriatic Sea” sub-region they will be held in cooperation with Slovenia and possibly Croatia.

Socio-economic analysis

The economic and social analysis of marine uses for Italy has been carried out using the water accounts approach. Data and methodologies have been briefly described for each subregion or for the entire Mediterranean Region depending on the activity considered (professional, commercial, recreational fisheries, tourism, ports, oil and gas). Results, when available, are traceable, even though they are often not provided due to lack of information and data gaps. Italy has followed a cost based-approach to evaluate the cost of degradation. The sources of information have been described but the methodology is barely mentioned and the description is not exhaustive. Cost of degradation has been considered as a whole in the paper report and information gaps are clearly highlighted, whereas neither specific plans or actions nor a time schedule to address these gaps have been reported. A description on how the exercise should have been done, in accordance with the EU requests, is provided.

Data and knowledge gaps

Data and knowledge gaps are generally identified and well described for each Article (GES, initial assessment and targets). For several descriptors, at present it is not possible to carry out an initial assessment due to lack of data or available information and the partial assessment is only sufficient to describe some pressures. The need to establish monitoring campaigns and standardized sampling is undeniable and frequently mentioned but specific plans are not always provided.

Section 2. Summary of the assessment

The table presents a summary of the assessment, using the following keys:

Keys	Meaning
+++	Good practice (can be attributed to one individual criterion)
++	Adequate
+	Partially adequate
-	Inadequate
0	Not reported

	GES		Initial assessment		Targets	
	Assessment	Criteria	Assessment	Criteria	Assessment	Criteria
D1	+	<ul style="list-style-type: none"> - Coverage of most of the Commission Decision criteria but 1.1 and 1.4. - Effort to quantify the GES definitions by setting specific threshold values for different ecosystem components - All ecosystem components are not covered equally – a number of species and habitats are addressed specifically - Baseline is often current status but with ambition to improve on it 	+	Pressures: <ul style="list-style-type: none"> - The different types and causes of physical loss and damage are reported, but the information is limited - The information is mainly qualitative (even though the proportion of areas/habitats impacted is given) - No trends or conclusive judgements have been provided 	-	<ul style="list-style-type: none"> - Targets that are specific and measurable relate to inspection and training activities - Targets focused on reducing the pressure from human activities are not measurable (no threshold values) - The targets only focus on a limited number of species/functional groups related to those included in the GES definition - No target on habitats
D2	+	<ul style="list-style-type: none"> - Descriptor set at criteria level - As GES expressed as a status of no increase yet to be determined indicator values, it is no clear if minimum requirements are reflected before these values are set 	+	<ul style="list-style-type: none"> - List of invasive species - Information on the level of pressure - No judgement of the status in relation to GES - Knowledge/data gaps identified and proposals to address those but no clear commitment 	-	<ul style="list-style-type: none"> - Only one interim target - No fully SMART, in particular as may be not achievable - Relates to surveillance only - Not ambitious enough to reach GES
D3	+	<ul style="list-style-type: none"> - GES is defined at criteria level for all three criteria - Criteria 3.1 and 3.2 in line with Commission Decision - Threshold to exploit 100% of stocks at F0.1 or E=0.4 still preliminary and therefore assumed as not permanently adopted. 	+	<ul style="list-style-type: none"> - Stocks assessed in relation to relevant reference points (F0.1, E0.4) - Fleets have been assessed - Trends in fishing pressure are assessed - Impacts on functional groups and seabed are not discussed 	-	<ul style="list-style-type: none"> - Targets set to introduce new regulations, collect knowledge and follow CFP and ICCAT advice. - No state targets - Unclear whether the targets are sufficient to achieve GES as defined by Italy - None of the targets aim for stocks to be within safe biological limits

	GES		Initial assessment		Targets	
	Assessment	Criteria	Assessment	Criteria	Assessment	Criteria
D4	-	<ul style="list-style-type: none"> - GES defined at indicator level but not all indicators for D4 are covered - Definition covers only criteria 4.2 and 4.3 - Definition for 4.3 requires that the current situation remains stable which indicates a low level of ambition 		See D1.	-	<ul style="list-style-type: none"> - Target only recalls the necessity to achieve targets under other descriptors – no specific target for D4.
D5	+	<ul style="list-style-type: none"> - The definition of GES refers to all D5 criteria from the 2010 Commission Decision - WFD has been applied as a reference condition for coastal waters but it is not clear if the WFD and MSFD classifications align correctly for all coastal waters - No thresholds are provided - Impacts on macrophytobenthos communities are not sufficiently taken into account 	+	<ul style="list-style-type: none"> - Covers most pressures but it is rather limited on impacts - The main causes of pressure are reported on and a fair attempt to provide quantification is made - No conclusive judgements on the level or the impacts of eutrophication are provided - No clear reference is made to the WFD or to the relevant international/regional conventions 	-	<ul style="list-style-type: none"> - The targets are specific, measurable, and probably, achievable and realistic but focus only on one single source of pressures - Impacts are not addressed at all and therefore it is not possible to know if GES will be achieved - There is no direct link to the WFD (although the targets are linked to the UWWT Directive)
D6	+	<ul style="list-style-type: none"> - Ambitious objective that all biogenic habitats are protected from abrasion - Effort to quantify GES but lack of certain threshold values - No coverage of criterion 6.2 		See D1.	-	<ul style="list-style-type: none"> - The three targets defined lack ambition - Two targets relate to increasing and improving inspections - Third target lacks specificity on how the area should be designed - Unclear whether the targets are already achieved
D7	+	<ul style="list-style-type: none"> - GES is not a copy of the 2010 Commission Decision but only criterion 7.1 and indicator 7.1.1 are covered - The classifications of the WFD are taken into account but GES does not seem to go beyond existing obligations - A quantitative threshold is provided but it does not seem to be supported by the initial assessment 	++	<ul style="list-style-type: none"> - Although the assessment is limited and focused on pressures, the information is in line with the information reported under the WFD - The percentage of areas affected and a judgement on current status are provided - Knowledge gaps are clearly identified and the plans to address them well described 	0	
D8	+	<ul style="list-style-type: none"> - Only partial coverage of criterion 8.2 (no coverage of acute pollution events) - Detailed and specific but information missing (i.e. substances, species or biological effects covered by the GES definition) - Use of appropriate standards (EQS) for water and biota; uncertainty regarding the standards used for sediments - Aggregation rules defined but seem unambitious. 	-	<ul style="list-style-type: none"> - Very limited information provided and only focused on input loads - Almost no information provided on concentration levels - No information on biological effects on ecosystem components, only information on share of functional groups affected by the pressure - No judgement in related to GES - No assessment of acute pollution events 	-	<ul style="list-style-type: none"> - SMART targets but rather expressions of GES than targets to help achieve GES - No pressure-related target - Inappropriate timeline for achievement of target

	GES		Initial assessment		Targets	
	Assessment	Criteria	Assessment	Criteria	Assessment	Criteria
		- Covers radionuclides (+++)				
D9	+	<ul style="list-style-type: none"> - GES defined in relation to relevant regulatory levels - Specification that samples should come from its waters (+++) - No adequate coverage of indicator 9.1.2 on the frequency of regulatory levels being exceeded 	0	<i>Assessment of contamination by microbial pathogens and formulation of threshold values (+++)</i>	0	
D10	-	<ul style="list-style-type: none"> - Only qualitative definition - Insufficient details to assess when GES is achieved - Justification provided why criteria of Commission Decision are not used for the GES definition - On-going work presented as part of GES definition 	+	<ul style="list-style-type: none"> - Available data presented concisely - Microplastics reported for certain subregions - One subregion (Ionian Sea) not reported - Data gaps and recommendations for future plans are presented 	+	<ul style="list-style-type: none"> - All targets potentially measurable but will be fully SMART only after monitoring programmes are set up - Sources/pressures of marine litter not addressed in the targets - Targets address clean-up of existing waste and the end-of-pipe impact
D11	-	<ul style="list-style-type: none"> - GES definition is very similar to the definition of the 2010 Commission Decision - Only at descriptor level, no further specification is made 	0		0	

Section 3. D1, D4 and D6 (Biodiversity)

I. Good Environmental Status (GES)

1.1 Descriptor 1

Definition of GES (paper report):

Valid for all the three subregions:

1.2.1 Conservation status of seabird populations is consistent with the Birds Directive and, where appropriate, AEWa. In particular, GES is achieved when the population abundance of key species (selected on the basis of their actual and total dependence on marine environment) does not fall below mean values referred to the baseline.

1.2.1 The GES is achieved when the trend of the abundance of populations of species of cetaceans, proposed as indicator-species according to their ecological representativeness (*Balaenoptera physalus*, *Tursiops truncatus* and *Stenella coeruleoalba*) is stable or without reductions (statistically significant and taken into account the natural variability) compared to the present situation (provisional assessment).

1.2.1 The good environmental status is considered maintained and/or achieved when, in a given area, the number of specimens of *Pinna nobilis* is stable or not significantly altered due to anthropogenic causes, compared to the baseline.

1.3.1 Conservation status of seabird populations is consistent with the Birds Directive and, where appropriate, with the African-Eurasian Waterbird Agreement (AEWA). In particular, GES is achieved when the breeding success is satisfactory and in accordance to the demographic characteristics of each species.

1.5.1 The Good Environmental Status can be considered as maintained and/or achieved when the natural habitat occurrence and the covered surface are stable or increasing. This condition is evaluated respecting the habitat extent for the Maerl and Rhodolites beds and respecting both habitat extent and upper/lower limit variation for the *Posidonia oceanica*. When the total contribution of the impacts occurring over the habitats cause a strong and long-term alteration of key parameters (natural distribution; structure and functions) the variation have to be considered as relevant. In this case the modification of the natural condition will be not in line with the maintenance/achieving of GES.

1.6.1 Good Environmental Status with respect to the indicator 1.6.1 is maintained and/or reached when the presence, the composition and the vitality of habitat builder species are stable or not significantly altered due to anthropic actions from the fixed baseline

1.6.2 The Good Environmental Status with respect to the indicator 1.6.2. is considered maintained or achieved when the relative abundance of the plankton communities compatible with the natural conditions, or presents a slight deviation from these conditions.

1.7.1 Composition and relative proportions of ecosystem components (habitats and species): GES is achieved when the major ecosystem components (selected from the list of predominant habitat and functional groups defined by MSFD) are in line with the prevailing natural conditions. The latter are referred to the physiographic, geographic and climatic conditions (as for Descriptor 1) and the normal abundance and diversity (as reported in the Descriptor 4). The natural conditions could be defined as not showing human-induced significantly adverse alteration. GES is defined as percentage (100%) of components in line with prevailing natural conditions.

Valid only for the Adriatic Sea subregion:

1.2.1 GES is achieved when values of abundance and biomass in the assessment area of the species *Diplodus sargus* and *Diplodus vulgaris*, which have been selected as suitable indicators for the status of coastal fish communities, are equal to or exceed the threshold value (quantitatively expressed).

1.2.1 GES is achieved when the trend in abundance of *Caretta caretta* in the assessment area, is stable or without reductions (statistically significant and taken into account the natural variability) compared to the present situation (provisional assessment).

1.3.1 GES is achieved when values of mean size in the assessment area of the species *Diplodus sargus*, *Diplodus vulgaris* which have been selected as suitable indicators for the status of coastal fish communities, are equal to or exceed the threshold value (quantitatively expressed)

1.3.2 Population genetic structure of bluefin tuna (*Thunnus thynnus*), European hake (*Merluccius merluccius*) and common sole (*Solea solea*) inhabiting the Adriatic Sea subregion (AMS) are in line with the species prevailing conditions; genetic diversity is maintained over the threshold values in at least half of the assessed species.

1.6.1 The GES condition for demersal elasmobranches is achieved when temporal trend of specific diversity (Shannon-Wiener Index) is constant or significantly increasing in the assessment area.
 1.6.1 GES is achieved when values of fish species diversity (the Shannon-Wiener index), in the assessment area is equal to or exceed the threshold value (quantitatively expressed)
 1.6.2 As far as concern demersal elasmobranches the indicator 1.6.2 is implemented by the abundance (number) and biomass (weight) of piscivorous species (Troph. Lev. 4,0). The achievement of GES is obtained when temporal trends in abundance and biomass of demersal piscivorous elasmobranches are constant or significantly increasing ($p < 0.05$).

Valid only for the Ionian and Central Mediterranean subregion:

1.2.1 GES is achieved when values of abundance and biomass in the assessment area of the species *Diplodus sargus*, *Diplodus vulgaris* and *Epinephelus marginatus*, which have been selected as suitable indicators for the status of coastal fish communities, are equal to or exceed the threshold value (quantitatively expressed).
 1.2.1 GES is achieved when the trend in abundance of *Caretta caretta* in the assessment area, is stable or without reductions (statistically significant and taken into account the natural variability) compared to the present situation (minimum estimation from provisional assessment).
 1.3.1 GES is achieved when values of mean size in the assessment area of the species *Diplodus sargus*, *Diplodus vulgaris* and *Epinephelus marginatus* which have been selected as suitable indicators for the status of coastal fish communities, are equal to or exceed the threshold value (quantitatively expressed)
 1.3.2 Population genetic structure of *Epinephelus marginatus* and European hake (*Merluccius merluccius*) inhabiting the Ionia and Central Mediterranean Region (IMS) are in line with the species prevailing conditions; genetic diversity is maintained over the threshold values in at least half of the assessed species.

1.6.1 The GES condition for demersal elasmobranches is achieved when temporal trend of specific diversity (Shannon-Wiener Index) is constant or significantly increasing in the assessment area.
 1.6.1 GES is achieved when values of fish species diversity (the Shannon-Wiener index), in the assessment area is equal to or exceed the threshold value (quantitatively expressed)
 1.6.2 As far as concern demersal elasmobranches the indicator 1.6.2 is implemented by the abundance (number) and biomass (weight) of piscivorous species (Troph. Lev. 4,0). The achievement of GES is obtained when temporal trends in abundance and biomass of demersal piscivorous elasmobranches are constant or significantly increasing ($p < 0.05$).

Valid only for the Western Mediterranean subregion:

1.2.1 GES is achieved when values of abundance and biomass in the assessment area of the species *Diplodus sargus*, *Diplodus vulgaris* and *Epinephelus marginatus*, which have been selected as suitable indicators for the status of coastal fish communities, are equal to or exceed the threshold value (quantitatively expressed).
 1.2.1 GES is achieved when the trend in abundance of *Caretta caretta* in the assessment area, is stable or without reductions (statistically significant and taken into account the natural variability) compared to the present situation (minimum estimation from provisional assessment).
 1.3.1 GES is achieved when values of mean size in the assessment area of the species *Diplodus sargus*, *Diplodus vulgaris* and *Epinephelus marginatus* which have been selected as suitable indicators for the status of coastal fish communities, are equal to or exceed the threshold value (quantitatively expressed)
 1.3.1 GES is maintained/achieved when the demographic structure of *Patella Ferruginea* is stable or not significantly altered in relation to baseline, due to human causes.
 1.3.2 Population genetic structure of bluefin tuna (*Thunnus thynnus*) and *Epinephelus marginatus* inhabiting the Western Mediterranean subregion (WMS) are in line with the species prevailing conditions; genetic diversity is maintained over the threshold values in at least half of the assessed species.
 1.6.1 The GES condition for demersal elasmobranches is achieved when temporal trend of specific diversity (Shannon-Wiener Index) is constant or significantly increasing in the assessment area.
 1.6.1 GES is achieved when values of fish species diversity (the Shannon-Wiener index), in the assessment area is equal to or exceed the threshold value (quantitatively expressed)
 1.6.2 As far as concern demersal elasmobranches the indicator 1.6.2 is implemented by the abundance (number) and biomass (weight) of piscivorous species (Troph. Lev. 4,0). The achievement of GES is obtained when temporal trends in abundance and biomass of demersal piscivorous elasmobranches are constant or significantly increasing ($p < 0.05$).

Italy has defined GES for Descriptor 1 at criteria level in the reporting sheets and in the paper report. The definitions of GES in the reporting sheets and in the paper report are not always entirely

consistent. Since it is not always clear in the reporting sheets to which sub-region/marine units the GES definitions apply this analysis is based on the paper report. The definition of criterion 1.7 is not included under the definition for D1 in the paper report but under the definition for D4. All criteria and indicators laid out for Descriptor 1 in the 2010 Commission Decision except for criteria 1.1 and 1.4 are incorporated in the definition. Some of the criteria of the definition of GES are applicable to all three Italian marine sub-regions: the Adriatic Sea, the Ionian Sea and the Central Mediterranean Sea, and the Western Mediterranean Sea. Other criteria vary slightly depending on the sub-region to which they apply.

Italy has defined GES for criterion 1.2 (population size) for a range of species: large erect bivalves (*Pinna nobilis*), seabirds in accordance with the Birds Directive and the AWEA (which means that only listed birds are covered and not all seabirds in general), loggerhead sea turtles (*Caretta caretta*), three species of cetaceans and three species of coastal fish which have been selected as indicators for GES assessment. For seabirds, the threshold value is given as three scores out of six, referring to additional guidelines. No thresholds have been set for sea turtles, probably due to lack of available information. A number of figures are given for fish, which presumably are taken from an established monitoring programme. Fish are restricted to three species, and may (or may not) be limited to coastal areas (it is unclear what is used for farther offshore waters).

For criterion 1.3 (population condition), appropriate mention is made of genetic variability, and some additional species are mentioned (e.g. tuna, hake and sole). Thus, for species level and criteria 1.2 and 1.3, fish, reptiles, mammals and birds are covered; not cephalopods. It remains to be assessed whether the range of species considered is sufficient to indicate GES on the whole.

For criterion 1.5 (habitat extent), Italy defined GES to cover Maerl and Rhodolite habitats and also the seagrass *Posedonia*. Reference point is not given, but the text refers to current conditions or increasing, which is equivalent to 'no further decline'. Current habitat extent is given as the baseline for GES. However, other habitats are missing, such as seafloor sediment types.

The definition of GES for criterion 1.6 refers to the use of multi-metric indices, which are assumingly applicable to seafloor habitats. Reference conditions seem to be set using some form of protected area. Plankton is covered as are elasmobranchs (which belong under 1.3) and (although this is not clear) biologically engineered habitats (such as coral reefs, etc.). Current condition is given as a baseline but it is not clear whether these are already at GES or whether improvements are necessary. Water column habitat types are not described.

The definition of GES for criterion 1.7, (only reported in the reporting sheets) for ecosystems is left at a general level (but the concept of acceptable deviation from pristine conditions is covered).

Appropriate references are made to the Habitats and Birds directives and the Water Framework Directive, as well as to the Barcelona Convention.

Conclusion on adequacy: The GES definition of Descriptor 1 for Italy is *partially adequate*. The GES definition is not just a repeat of the descriptor text. Due attention is given to the Commission Decision criteria, although some criteria and/or biodiversity components are not addressed and habitat types, functional groups or pressures are not listed. Baseline states seem to be largely based on current conditions but an explanation of where current conditions are in relation to the target state is lacking, as is an evaluation as to what extent current states are degraded or in need of restitution. Appropriate references are made to the Habitats and Birds directives and the Water Framework Directive, as well as to the Barcelona Convention.

1.2 Descriptor 4

Definition of GES (paper report and reporting sheet):

1) 1.7.1 GES is achieved when the major ecosystem components (selected from the list of predominant habitat and functional groups defined by MSFD) are in line with the prevailing natural conditions. The latter are referred to the physiographic, geographic and climatic conditions (as for Descriptor 1) and the normal abundance and diversity (as reported in the Descriptor 4). The natural conditions could be defined as not showing human-induced significantly adverse alteration. GES is defined as percentage (100%) of components in line with prevailing natural conditions.

2) 4.2.1 GES is reached when the proportion in weight of large fish above a threshold length "Lcut" (to be defined by 2018) caught by research trawl-surveys is above a percentage "Wlim" (to be defined by 2018) (percentage of the total weight of fish)

3) 4.3.1 GES is achieved when there is not a significant trend in abundance (or other appropriate metric) of key functional groups present in the ecosystem indicating a substantial change in their negative state. The groups species taken into account for the evaluation are as follows:

- Seagrasses;
- Phytoplankton;
- Zooplankton;
- Jellyfish;
- Bony fishes;
- Cartilaginous fishes;
- Fish-eating fish;
- Marine reptiles;
- Marine mammals.

Similar to Descriptor 1, the assessment is based on the text in the paper report for the same reasons described above. It should however be noted that in the paper report GES for Descriptor 4 has been defined at the indicator level while the GES in the reporting sheets has been reported at the criteria level. The definitions provided in the reporting sheets for the criteria are however identical to those set at indicator level in the paper report.

The Italian definition for indicator 1.7.1 is an approximation of the Descriptor 4 definition as found in Annex I of the MSFD but deviates in certain areas. The MSFD definition applies to "all elements of the marine foodweb" while the Italian definition applies to the "major ecosystem components" (which is explained by the fact that it is defined for the ecosystem structure (1.7) as well as for D4). In line with the definition of Descriptor 4 in the Annex I of the MSFD, Italy states that the covered components should occur at normal abundances and diversity. However, it does not include the reference to the retention of the "full reproductive capacity."

In relation to the criteria, only criteria 4.2 and 4.3 are defined, this means that the concept of productivity has not been used. Italy states that indicator 4.1.1 has not been applied since the species of mammals and birds proposed by the task group for this indicator are specific to the North Sea and are therefore not applicable in the Mediterranean context. However this does not seem an appropriate reason to exclude this indicator as the Commission Decision is not specific in regard to the species to be used and there are key predator species including marine mammals and birds in the Mediterranean that are relevant.

Criterion 4.2 is expressed at the level of the indicator 4.2.1 and will require that the weight of the catch of large fish is a specific proportion of the weight of the catch. This proportion is to be set in 2018. Indicator 4.2.1 is therefore not fully complete at present. The definition for indicator 4.3.1 in the paper report does not make sense as it would mean that GES is achieved when there is no change in the negative state of the key functional groups. The GES definition in the reporting sheet however requires that trends in the abundance or other metrics should not show a significant negative alteration of the status. This would mean that GES is achieved when the current situation is maintained. It is however

not clear whether GES is currently achieved and considering that practically all reported stocks for Descriptor 3 are over exploited, it is unlikely that GES can be considered achieved for bony fish and piscivorous fish. The provisional groups to be used for the GES assessment require further clarification in order to become operational, therefore criterion 4.3 should be considered incomplete at this stage.

Conclusion on adequacy: The definition of GES for D4 is considered *inadequate*. Some of the indicators are not completed. The justification given for excluding indicator 4.1.1 is not appropriate. Criterion 4.1 and thereby the concept of productivity has not been included in the GES definition. Criterion 4.3 requires that the current situation remains stable which indicates a low level of ambition and considering the status of fish stocks in Italian waters does not seem appropriate as a definition of GES.

1.3 Descriptor 6

Definition of GES (paper report and reporting sheet):

6.1.2 Extent of the seabed significantly affected by human activities for the different substrate types

6.1. GES is characterized by the absence of significant pressure due to abrasion determined by benthic-impacting fishing gears (trawl, rapido trawl and hydraulic dredge) and sealing (determined by coastal defence structures, offshore structures, pipes, etc.) on biogenic substrates. The biogenic substrates include the following habitats: *Posidonia oceanica* meadows, Maerl beds, Coralligenous biocoenosis (reef) and deep corals.

In particular, on biogenic substrates:

- pressure determined by benthic-impacting fishing gears is always significant and it must be absent (0 % of presence), i.e. below a limit related to uncertainty (10%) (*related to the pressure assessment method)
- pressure determined by sealing is always significant and it must be absent, except when it is allowed by current laws

On the other types of substrates not biogenic (sand, mud, mixed sediment, etc.):

- pressure determined by benthic-impacting fishing gears (trawl, rapido trawl and hydraulic dredge) is significant when the area covered by the pressure is higher than a % of maximum acceptable surface (taking into account a specific temporal unit) to be determined by 2018.
- pressure determined by sealing does not contribute to determine GES (* the current estimate of the error could be re-assessed)

Descriptor 6 has been defined for indicator 6.1.2 of the Commission decision, criterion 6.1 is therefore covered but criterion 6.2 is not covered by the Italian GES definition for D6. Focusing the GES definition on sealing and abrasion by fishing gear on biogenic substrates is appropriate for criterion 6.1.

The substrates mentioned are relevant although the assessment cannot guarantee that this covers all relevant biogenic substrates. Furthermore since the GES definition is specific to abrasion by fishing gear other impacts related to abrasion, such as anchor damage, are not covered by the GES definition. Sealing and abrasion by fishing gear on biogenic habitats should be totally absent and thereby provides a clear threshold.

For non-biogenic habitats the pressure of abrasion originating from fishing gears should not be higher than a still to be determined % of the seafloor surface. This aspect of the GES definition is therefore still incomplete. For non-biogenic habitats sealing will not be considered when assessing GES.

Lastly Italy in the accompanying text states that GES will be achieved by 2024 instead of 2020.

Conclusion on adequacy: The definition of GES for D6 is considered *partially adequate* as it does not cover criterion 6.2 and only indicator 6.1.2 for criterion 6.1. Furthermore the GES definition is not fully complete as some threshold values included in the definition (e.g. per cent of the seafloor surface) is not specified. On the other hand, the set objective that all biogenic habitat is protected from abrasion from fishing and sealing is ambitious.

II. Initial Assessment

2.1 Pressures (physical loss and physical damage)

Italy has carried out a limited initial assessment in relation to physical loss and physical damage. The information is scarce, focused exclusively on pressures and mainly qualitative. The structure and level of the information reported for each of the Italian sub-regions – the Adriatic Sea, the Ionian Sea and Central Mediterranean, and the West Mediterranean – is very similar and, therefore, will be analysed in conjunction.

In relation to physical loss, Italy acknowledges the existence of knowledge gaps associated mainly with the lack of geospatial data related to substrate types but notes that there are plans to produce a map of the Mediterranean seabed (referring inclusively to the acquisition of specific monitoring equipment). Italy reports that physical loss occurs exclusively because of sealing, which is mostly restricted to the coastal zones. Italy lists the construction and maintenance of ports, land claim defence and cables and pipelines as the main causes of physical loss and provides the proportion of the area affected by this pressure (less than 1% in all assessment areas). However, no trends or conclusive judgements are reported due to lack of data. Italy proposes to use “a trend status indicator” per reference to the current physical loss to assess status and note that it will only be possible from 2018 onwards.

The data available on physical damage is also limited. In addition to the lack of knowledge on the substrates distribution, already referred to above, in relation to physical loss, Italy acknowledges the lack of data on habitats distribution and for some of the main pressure types (in particular, data related to coastal fisheries). There are some data available for some specific areas but that data is not sufficient to determinate the current status. In any case, the data is sufficient for Italy to identify abrasion related to fishing as the main pressure leading to physical damage; changes in siltation, caused mainly by man-made structures (fisheries, the construction and maintenance of ports and land claim defence) are also referred to as another important pressure.

The proportion of the area affected by physical damage is provided and varies between 1-5% in the Sicilian Sea and 25-50% in the North Adriatic Sea. No trends are reported but a descriptive assessment of status is provided for the level of pressure in the environment and the impacts on seabed habitats – in all cases it is considered that the status is “not sustainable” because the biogenic substrates were affected by abrasion.

Conclusion on adequacy: The initial assessment by Italy of physical loss and damage is considered *partially adequate*. The different types and causes of physical loss and damage are documented and reported, but the information is limited. The information is mainly qualitative (even though the proportion of areas/habitats impacted is given) and no trends or conclusive judgements have been provided.

2.2 Biological features

Habitats

Italy has carried out an initial assessment on habitats. The assessment is both qualitative and quantitative, covering both seabed and water column habitats. Italy indicates, however, that the information available is not sufficient to assess the current status of the majority of the habitats

reported. The need to carry out more appropriate scientific monitoring is noted, especially with the objective of developing habitat maps and registering the footprint of the main pressures.

Italy used several areas of assessment within each of the Italian marine sub-regions (two for the Adriatic Sea, two for the Ionian Sea and Central Mediterranean and seven for the West Mediterranean) and reported all their habitats under the category “special and other habitats”. Italy has reported on Maerl beds, Coralligenous beds, Cymodocea beds, Posidonia beds and a series of other seabed and water column habitats types under a national classification, including, *Sabbie Fini Ben Calibrate*, *Detritico Costero*, *Fanghi batiali*, *Detritico Infangato* and *Fanghi Terrigeni Costieri*. The list of habitats reported is not comprehensive as, e.g., sandbanks (covered in water), coastal lagoons, salt marshes/meadows, salt steppes and sea cliffs, all of which have been listed by Italy as being of community interest in the Italian interpretation Manual of the habitats (92/43/EEC Directive), *biondi et al.* 2010, do not seem to have been covered in Italy’s initial assessment. For each of the habitats addressed the information reported in the reporting sheets includes a brief description of the habitat distribution, extension and condition, and the main causes of pressure. For some of these habitats the status of the habitat in relation to the natural status, the proportion of habitat that is altered is also provided. Trends and conclusive judgements on the current status and the criteria (1.1, 1.2, 1.4, 1.5 and 1.6) and indicators used for the assessment are only provided for a small number of the habitats reported. There is no explicit reference to the Habitats Directive or to the habitats listed under the relevant international conventions.

Species/functional groups

In the reporting sheets, Italy has reported only on the following species/functional groups: coastal fish, demersal fish, deep-sea fish, demersal elasmobranchs, and deep-sea elasmobranchs. In the paper report, Italy has reported also on marine mammals. In addition, Italy reported on a series of specific individual species from different species/functional groups, although not on birds, for which it notes that data are still not available. Several areas of assessment within each of the Italian marine sub-regions were used to report on species/functional groups.

The information on most of the groups reported includes a brief description of group condition and relative abundance, their status in relation to the natural status and the main causes of pressure. Judgements on the current status and trends are provided (e.g. the overall status of demersal elasmobranchs in the Western Mediterranean is good and showing an improving trend), as are the criteria, indicators, and baselines (temporal trend obtained by regressing the average values of the Shannon-Wiener diversity index against the period 1994-2011) used for the assessment. The information on individual species usually includes a brief description of the species distribution, population size and population condition. Their status in relation to the natural status and the main causes of pressure are also provided. Trends and conclusive judgements are, however, only provided for some of these species due to the lack of data. The number of species on which Italy has provided information in relation to all the three sub-regions is very large and therefore these individual species are not listed here.

Ecosystem

In the reporting sheets, Italy has reported on ecosystems at sub-regional level. The information, however, consists exclusively on the identification of knowledge gaps for each of the topics to cover (i.e. ecosystem structure, ecosystem productivity, etc.) and the plans to address them.

Conclusion on adequacy: The initial assessment by Italy of biological features is considered *partially adequate*. The information on habitats is qualitative and quantitative and covers both seabed and water column habitat types. In relation to functional/species groups, only fish and mammals are reported on, although most species groups (apart from birds) are represented at individual species level. Trends and judgements on status are provided only in some cases. Italy has not reported on ecosystems but provided a fair amount of detail on the existing knowledge gaps and plans to address them.

III. Environmental targets

3.1 Descriptor 1

Environmental targets (paper report):

T1: Proper management of coastal fish catch

Major impacts on the populations of many coastal fish, especially those of high commercial value (some of which being also important in terms of conservation), derive from an excessive harvesting by professional (artisanal) and not professional (recreational) fishing activities. A significant step towards achieving a more sustainable exploitation of these species is represented by a rigorous application of management measures and control of fishing activities (e.g. type of fishing gear allowed, minimum sizes for particular species) already foreseen by community regulations (e.g. EC Regulation n. 1967/2006) and national legislations (e.g. DPR 10/02/1968 n., 1639, DM 6/12/2010, 9/01/2012 DL n. 4). This objective can be achieved through:

- increasing surveillance and number of inspections at sea and on land by the authorities in charge (+20% of number of surveillance and controls)
- encouraging the cooperation of professional and recreational fishermen by means of awareness-raising activities on "best practices" concerning the exploitation of marine resources as well as training activities on the current fisheries legislation (50% of organisations present within the territory met).

T2: By-catch reduction in the areas of aggregation of *Caretta caretta*

It is proposed that the operative target for the mitigation of *Caretta caretta* by-catch be articulated as follows:

- 1) Spatial identification of the areas with highest use of pelagic long line (southern Tyrrhenian and southern Ionian sea) and trawling (northern Adriatic)
- 2) Completion of the spatial definition of *Caretta caretta* aggregation areas based on an approach capable of assessing temporal and seasonal distribution differences for each aggregation area (based on indicator 1.1.2 completion) so as to provide a final definition of the operative target
- 3) Monitoring of accidental captures in the areas subjected to operational target
- 4) Application of by-catch reduction measures in areas listed in point 3), through one or more of the following activities:

- Application of methods for the mitigation of accidental capture in pelagic surface longlines and trawling net through structural modifications to the gear (i.e. circle hooks, TEDs etc.) and application of best practices for the reduction of mortality following capture (percentage). Note: in order to allow an immediate reduction of the pressure it is advised that best practices be applied in the geographic areas where preliminary knowledge already defines the presence of an aggregation area, before defining the incidence of total capture in the specific gear.
- Reduction of fishing pressure (percentage)

T3: Implementation of training and awareness actions to reduce mortality from by-catch of demersal elasmobranchs

Demersal elasmobranchs are mainly affected by incidental catches (by-catch) occurring during the professional trawl fishery activity (Ferretti et al., 2013). A reduction of the fishery-related mortality for these species, generally of low commercial value, can be obtained through the implementation of a fisherman awareness campaign on the adoption, during their fishing activity, of the best practices (60% of the organisations is met). [...]

T4: By-catch mitigation: setting up of a mechanism for assessing the sustainability of incidental mortality caused by fishing activities on cetaceans

The mitigation of incidental catches of cetaceans is a required target in the implementation of the Marine Strategy and is in line with Articles 11 and 12 of the Habitats Directive and with the principles of the Common Fisheries Policy in relation to the prevention of incidental catches of marine mammals – for example, Regulation (EC) No 812/2004. To ensure the sustainability of the incidental mortality caused by fishing activities, on each regular species of cetaceans by fishing gear considered most harmful, it is necessary to evaluate annual catch rates and estimate the total number of catches. In addition, it is necessary to assess the possible impacts at the population level of the cumulative mortality through the use of models that relate the state of the populations with mortality induced by human activities, to assess their sustainability. Finally, as a general rule, it is necessary to minimize the catch and restrict or prohibit fishing activities that cause unsustainable mortality for species and populations

T5: Implementation of control and training activities to avoid catching of benthic species

Major impacts on the populations of benthic species, especially those important in terms of conservation, is the illegal harvesting. A significant step towards achievement of more effective protection is represented by a rigorous application of management measures and control of harvesting already foreseen by community regulations (e.g. Law no. 150 7 / 02/92, Regulation (EC) n. 1967/2006, legislative Decree of 8 January 2012, n.4; Directive 2008/99/EC; legislative Decree 7 July 2011, 121).

This objective can be achieved through:

- increasing surveillance and number of inspections at sea and on land by the authorities in charge (20% increase);
- increasing the cooperation and information by means of awareness-raising activities on "best practices" concerning the exploitation regulations of marine resources, in particular at the AMP (80% increase of meetings and training activity)

T6: Waste water treatment plants with secondary treatment - Directive 91/271/EEC concerning urban waste water treatment related to the habitat "Pelagic" (*same as for D5*)

At least 90% of the treatment plants serving agglomerations with a generated load greater than 2000 population equivalents and with the point of discharge into coastal waters or inland waters within 20 km from the coast must be equipped with a system of secondary treatment of wastewater. [...]

Italy has provided six targets and associated indicators to address Descriptor 1 which are applicable to all three Italian marine sub-regions. It should be noted that the text is quoted as reported by the Member State although it is obvious that some of it should be considered as accompanying text rather than part of the targets as such.

In relation to Descriptor 1, the targets are the same in the reporting sheets and in the paper report with the exception of the last target (which in the reporting sheets reads: "*Urban waste water entering collecting systems shall before discharge be subject to secondary treatment a) for all discharges from agglomerations of more than 2.000 p.e. discharging to freshwater and b) for all agglomerations of more than 10.000 p.e. discharging to coastal waters, in accordance with Article 4 of the Council Directive of 21 May 1991 concerning urban waste water treatment.*").

The first target focuses on the management and control of fishing practices, for the protection of coastal fish populations. Threshold values are given – "20% increase of meetings and training activity" (but it is not clear what the current practice is) and "meetings with 50% of the existing fishery associations". Community legislation is mentioned, but it is not clear whether it is/will be implemented. This target could be expected to move from meetings to remedial measures, but this is not specified. It also needs to be stated what the status of the populations are, and what is the aim that this target should achieve in terms of the species distribution, population extent and condition.

The second target focuses on the loggerhead turtle, and has the aim of decreasing accidental mortalities by regulating fishing practices. The target has several components which aim to acquire increased knowledge and to implement regulatory practices (it is not clear whether these practices are already in place). No targets or threshold values are otherwise given. The target is stated as being based on the completion of indicator 1.1.2 (which is not addressed for GES but is included in the initial assessment).

The third, fourth and fifth targets focus, respectively, on reducing mortality of elasmobranchs, reducing mortality of cetaceans, and benthic communities (not clear which species are threatened though, probably the erect *Pinna* bivalves mentioned in the definition of GES) and illegal harvesting. Community legislation is mentioned, but it is not clear whether it is/will be implemented. Thresholds are given for elasmobranchs and benthic communities, but again relate either to meetings or inspections. As with the first target, it needs to be stated what the status of the populations are, and what is the aim that these target should achieve in terms of the species distribution, population extent and condition.

The sixth target was also reported under Descriptor 5 although slightly differently and is only indirectly related to biodiversity as untreated sewage can negatively impact the seabed, although this specific impact is not addressed by the target. The aim of 90% reported in the paper report seems achievable (although it is not clear when this target must be achieved).

No target relates to seabed or water column habitats.

Conclusion on adequacy: The Italian targets for D1 are assessed as *inadequate*. The targets do not address all components of biodiversity. They focus on some of the species/functional groups covered by the GES definition, but not all. They do not address habitats at all. There are clear targets for improving awareness but a quantitative goal for reducing pressures is not given. In addition, where reference values are given, they refer to current state, but there is no assessment of whether current state is at GES. The targets which relate to increasing the frequency of meetings or inspections are measurable, but they need to be expanded to state measurable goals for the biodiversity. The targets refer to the relevant Community legislation but it is not clear whether it is/will be implemented.

3.2 Descriptor 4

Environmental targets (paper report):

T1: Ecosystem structure

It is necessary to make progress towards improving the status of the individual structural components of ecosystems through implementation of environmental targets which are identified within the MSFD descriptors considered in context (in particular D1, D3, D6, D5) by 2018. In clearly critical geographic areas (assessment areas or ecosystems) targets are addressed towards mitigation / removal of the causes of human disturbance. T=100%

Italy has defined one target to cover Descriptor 4. The target for Descriptor 4 is only reported in the paper report. In the reporting sheets, the only target identified as addressing Descriptor 4 is the target related to the *Caretta caretta*, which has been also reported under Descriptor 1 and is analysed above.

This target relates directly to the targets reported under Descriptors 1, 3, 5 and 6 (to be identified by 2018), which indicates that Italy assumes that the achievements of these targets will lead to the achievement of GES for Descriptor 4.

The second sentence of the text is ambiguous. It refers to ‘clearly critical geographic areas’, which are still to be determined, and states that targets should focus on mitigation/removal of the cause of human disturbance which is an overall rule and not specific. The report does not specify to what relates the 100% threshold.

Conclusion on adequacy: The Italian target for D4 is considered as *inadequate* as it only recalls the necessity to achieve the targets defined for other Descriptors in order to achieve GES for D4. This means that

3.3 Descriptor 6

Environmental targets (paper report):

T1: Limitation of fishing on biogenic substrates

By 2018 it is necessary to reinforce control and monitoring systems in order to avoid benthic-impacting fishing gears on biogenic substrates, also taking into consideration the limitations already prescribed by European Regulations (Reg. EC 1967/2006), and for the relevant aspects the EU Reg. N. 1224/2009. In order to assess the achievement of the target it is necessary to verify the increasing in controls on vessels using benthic impacting fishing gears (otter trawl, rapido trawl, hydraulic dredge). These controls should be substantially increased for

ships with LOA <15 m.

T2: Limitation of fishing on substrates currently exploitable

By 2018, it is necessary to reach 10% of area to be protected from benthic-impacting fishing gears (otter trawl, rapido trawl and hydraulic dredge). Given the fact that currently it is not known in detail the presence of biogenic substrates compared to substrates currently exploitable by benthic impacting fishing gears, the target of 10% of area to be protected is considered achieved even if this percentage, in addition to not biogenic substrates, includes areas of biogenic substrate currently not known. These areas may be identified in future monitoring (by 2018).

T3: Limitation of the impacts resulting from physical loss of biogenic substrates

Implementation and adoption of Good Practice Handbooks aimed at limiting the impact of physical loss pressure (sealing) on biogenic substrates sensu MSFD.

Italy has defined three targets for to cover Descriptor 6. The targets for Descriptor 6 are not consistent between the reporting sheets and the paper report (in the reporting sheet the third target covers only the Adriatic Sea, while in the paper report it applies to all sub-regions).

All three targets provided for Descriptor 6 are interim operational targets and the timescale for achievement should be 2012, which seems to be a mistake, unless the targets are already achieved, in which case they are not very useful for 2020.

The first target has a focus on increasing controls, presumably to gain knowledge on current practices and status (this should be verified by data on the condition of the benthic habitats – i.e. D6.2, which is not covered by GES), but it is not measurable since no thresholds are provided.

The second target has a specific aim of having a 10% area which is protected, and is measurable. However, the target could have been more specific in stating how this 10% should be selected (e.g. through MPA designation). It is also not clear what the current condition is and whether some remediation is needed.

The third target relates to providing and adopting appropriate practices in relation to sealing relating to biogenic substrates. The target is SMART. It is a good complementary target but lacks ambition as such.

Conclusion on adequacy: The Italian targets are judged as *inadequate*. The targets do not address all components of biodiversity. The three targets defined lack ambition, two targets only relate to increasing and improving inspections and the third target lacks specificity on how the area to be protected should be designed. It is unclear whether this target (T2) is already achieved and therefore how useful it is.

IV. Consistency

In general, there is a lack of consistency in the definitions of GES and the targets between the paper report and the reporting sheet which complicates the assessment given the lack of certainty on what should be considered as GES and the targets for biodiversity. In general the GES definitions and targets from the paper report were used unless there was an overriding reason to use the reporting sheets.

In general it can be said that the GES definitions and the initial assessment are very specific in regard to species and habitats of which most are not explicitly referred to in the targets. There is also no specific target for birds while they are part of the GES definition for descriptor 1. This could be due to the fact that Italy has chosen to use operational targets rather than state targets. The operational targets

in most cases seem suggestive rather than actual set targets. It could be interpreted that Italy considers the GES definitions to act as state targets.

For Descriptor 6 specifically there is a lack of coordination between the GES and targets. The GES definition requires that no abrasion of biogenic habitats occurs, the main target relating to abrasion however aims to protect 10% of the seabed from abrasion as the result of fisheries. It is not entirely clear whether this target applies only for non-biogenic habitats and areas which might contain unknown biogenic habitats or the entire area of seabed although the former seems likely. In case of the former situation there is actually no target to protect biogenic habitats from abrasion. The targets for descriptor 6 are therefore not comprehensive for a full coverage of the descriptor.

Section 4. Descriptor 2 (Non-indigenous species)

I. Good Environmental Status (GES)

Definition of GES (paper report):

In the reporting sheet only the first definition is reported.

2.1 GES is considered the status when there is no increase of the indicator value (abundance and frequency of occurrence of invasive species) with respect to a threshold value that will be defined on ad hoc monitoring surveys basis. Monitoring surveys will be carried out in selected areas with a high probability of introduction and in areas of ecological interests

2.2 GES is considered the status when there is no increase of impact based on an ad-hoc assessment carried out in selected areas with a high probability of introduction and in areas of ecological interests. The indicator will be expressed based on the Biopollution Index according to the method of Olenin et al., 2007

The definition of GES for Descriptor 2 is the same for all sub-regions. GES is defined only at criteria level. GES is basically about no new introduction or further spreading of NIS in relation to a baseline still to be set. This baseline (threshold value) will be based on ad-hoc monitoring surveys. Hence, the baseline is considered to be the one observed at the end of the initial monitoring surveys in 2018.

Detailed description of future monitoring to address data gaps are provided, namely:

- investigations will be carried out on benthic macrofauna and macroflora (possibly fish fauna), of infralittoral hard substrate (or mobile).
- the sampling technique is the standard one (withdrawal by scratching, bucket or box corer depending on substrate) and taxonomic analysis in laboratories for the species. For some specific cases, such as invasive species of megabenthos, there could be other techniques of investigation.
- in each subregion at least two marine areas with a high probability of introduction will be identified (adjacent to port areas and / or sites for aquaculture), and at least two marine areas of control (e.g. MPA, Natura 2000 sites)
- in any area identified at least two monitoring sites are planned
- the frequency of monitoring depends on the taxonomic group, mostly annual or semi-annual
- As for the assessment of impacts within the definition of BPI, manipulation activities of individual species might be required, to be implemented only twice (once/year over 2 years)

Italy proposes to develop the indicator values mentioned in the GES definition by 2018 through ad hoc monitoring, considering the current data gaps. The survey should be carried out in areas with a high probability of introduction and in areas of ecological interests. It is proposed to make operational only indicators 2.1.1 and 2.2.2, as indicator 2.2.1 is deemed not practical as it requires an extremely high sampling efforts compared to the outcome indication of the impacts and there is no evidence of impacts related to this within the three sub-Mediterranean regions. Italy further refers to the process of ratification by Italy of the International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM) (IMO, 2004), while for aquaculture, it mentions Regulation EC 708/2007.

Conclusion on adequacy: the GES definition for D2 is assessed as *partially adequate*. The descriptor is set at criteria level. GES is formulated as a status with no increase of yet to be determined indicator values. Therefore, it is not clear if the minimum requirements (no further increase of NIS which have an adverse effect on the ecosystem, i.e. no new introductions of NIS, and where possible no further spreading of them) are reflected before 2018 when the indicator values are determined.

II. Initial Assessment

In the reporting sheet ‘inventory of NIS’, Italy has provided a list of 94 NIS for the Adriatic Sea, 96 for Ionian Sea/Central Mediterranean and 117 for the Western Mediterranean, indicating for all of them the predominant habitat or functional group to which the species belongs or is associated, as well as the means of arrival for the majority. However, it should be noted that these figures do not correspond to those in the reporting sheets on pressure, where Italy indicates in 47 NIS for the Adriatic Sea out of which 24 are considered to be invasive; 104 NIS for the Ionian Sea/Central Mediterranean out of which 52 are considered to be invasive and 119 NIS in the Western Mediterranean out of which 58 are considered to be invasive. The paper report includes for each sub-region a map showing the localisation where NIS have been recorded.

In all three sub-regions, the main vectors/pathways of introduction are shipping and aquaculture, and Italy considers that the cumulative number of NIS is growing. No assessment has been done on the level of impact of the pressure on the water column, sea bed or functional groups. The judgement on pressures and impacts is only descriptive and rather limited to specific species.

The reporting sheet mentions the lack of data on abundance and impacts, as well as on the main introduction vectors and notes that the gaps may be addressed through i) activation of monitoring networks aiming at evaluating the real settlement of non-indigenous species, in particular the invasive ones, and their impact, through a standardized methodology; ii) activation of monitoring systems in marine protected areas where human impact is absent or limited; iii) surveillance actions in areas with high probability of introduction such as harbours and aquaculture sites and control actions on ballast water and fouling, and aquarium trade. Finally, it also indicates that contribution of non-voluntary introductions to NIS pressure should be better understood by a better comprehension of risks linked to aquaculture.

Conclusion on adequacy: the initial assessment is considered as *partially adequate*. It appears relatively complete in the light of what can be expected for Descriptor 2. Italy has provided a list of invasive NIS and information on the level of pressure, but no judgement of the status in relation to GES. There is no assessment of impacts. Italy notes knowledge and data gaps and presents proposals to address those. However, these are non-committal.

III. Environmental targets

Environmental targets (reporting sheet)¹:

T1: Early warning for NIS

The target is the development of an early warning system in areas at high risk of NIS introduction (ports, aquaculture sites). The system should guarantee a rapid identification of undesired introduced species and an associated risk evaluation followed by rapid alert of competent authorities

Associated indicator: territorial cover of the early warning system

Italy has set one environmental target for Descriptor 2, with one associated indicator. The target is identical for all three sub-regions.

The target itself is geared towards establishing a risk identification tool rather than addressing the risk of introduction and spreading. While early identification of invasive NIS is a key first step in preventing their introduction and spreading, it is far to be sufficient in itself to ensure that no

¹ In the paper report, the definition is slightly less elaborated and reads ‘*The target is the development of an early warning system aimed at the rapid identification and notification to the competent authorities of the new introduced species and the vector of introduction*’

introduction occurs and further spreading is prevented. Italy recognises that this is an interim target which will be further developed by 2018.

The target is relatively specific explaining which areas are at high risk. It is measurable in relation to the associated indicator - territorial coverage of the system, with a threshold value of 50% of the sites at high risk of introduction of NIS due to human activities. However, it may be not fully achievable and realistic given that it requires extensive monitoring, extensive preliminary activities and that, as noted in the paper report, the financial resources necessary to the achievement of the target, have not been identified yet. It is foreseen that there will be identified once the monitoring plans are defined.

<p><i>Conclusion on adequacy:</i> the environmental target is considered as <i>inadequate</i>. It is not fully SMART, in particular it may not be achievable. It is only one interim target which does not address pressures as such but is rather about surveillance and is not sufficiently ambitious to reach GES.</p>

IV. Consistency

While the assessment has identified particular species and vectors/pathways, the definition of GES remains very general and subject to further development. The target also lacks specification and is only a surveillance target, also subject to further development.

Section 5. Descriptor 3 (Commercial fish and shellfish)

I. Good Environmental Status (GES)

Definition of GES (paper report and reporting sheet):

3.1 To the purposes of implementing the Initial Assessment, GES has been defined as the following: “GES is achieved when all commercial species are subjected to sustainable exploitation (not in overfishing), i.e. $F_{curr} \leq F_{0.1}$ (used as proxy for FMSY) or, in the case of small pelagics, E (Exploitation pattern = F/Z) = 0.4 (value proposed by Patterson, 1992, as reference limit for EMSY)” applying a preliminary threshold value of 100%.

3.1 To the purposes of implementing the Initial Assessment GES has been defined as the following: “GES is achieved when all commercial species are subjected to sustainable exploitation (not in overfishing), showing stability or a decrease in the ratio between catch and biomass indexes from trawl surveys” applying a preliminary threshold value of 100%.

3.2 To the purposes of implementing the Initial Assessment GES has been defined as the following: “GES is achieved when fish stocks are not overexploited, i.e. the Spawning Stock Biomass (SSB) of all commercial species is equal or above the reference limit of SSB_{msy} or its proxy (SSB_{msy-trigger}, SSB_{F0.1}, SSB_{pa}, etc.)” applying a preliminary threshold value of 100%.

3.2 To the purposes of implementing the Initial Assessment GES has been defined as the following: “GES is achieved when all commercial species show stable or significant positive trends of the biomass indexes from trawl surveys, referred to the sexually mature individuals of the population” applying a preliminary threshold value of 100%.

3.3 To the purposes of implementing the Initial Assessment GES has been defined as the following: “GES is achieved when all commercial species show stable or significant positive trends of the proportion of fish larger than the mean size at first sexual maturity, from trawl survey data” applying a preliminary threshold of 100%.

Definition of GES (paper report):

3.3.1 The good environmental status is achieved when the 95th percentile of the distribution of size, derived from trawl-surveys for all commercially exploited species is stable or showing a significant increase.

The Italian GES definition for Descriptor 3 has been defined at the criteria and indicator level. All three criteria of the Commission Decision are covered, as well as indicators 3.1.1, 3.1.2, 3.2.1, 3.2.2 and 3.3.1, while indicator 3.3.3 is also included but only in the paper report.

It is mentioned that each indicator has a preliminary threshold set at 100% of the stocks but it is mentioned in the accompany text that these thresholds might need to be revised taking into account the CFP reform, the lack of current reference points for F_{pa}, the uncertainty regarding existing stock assessments, the multispecies nature of Mediterranean fisheries as well as the multi-trophic interaction among species and environmental drivers. Furthermore it is noted that in the context of the Ionian Sea, the Central Mediterranean sub region (GSA16) and the Adriatic Sea sub-region (GSA17 and 18) there are stocks shared between EU and non EU countries which require international cooperation in order to achieve sustainable exploitation.

In the definition for criterion 3.1, the section corresponding to indicator 3.1.1 of the Commission Decision has been defined as being achieved when F_{curr} is equal to $F_{0.1}$ or in the case of small pelagics $E=0.4$ for all commercial species assuming that the preliminary threshold becomes permanent. The Task Group Report on D3 has concluded that $F_{0.1}$ is an acceptable proxy for F_{msy}. The Task Group Report also concludes that $E=0.5$ could often be a an acceptable proxy for F_{msy}, the Italian proxy $E=0.4$ however results in a lower fishing mortality than at 0.5 and is therefore even a bit more cautious and can be considered in line with the Commission Decision. The second part of the

definition for criterion 3.1 corresponds to the secondary indicator 3.1.2 of the Commission Decision and requires that catch biomass indices remain stable or decrease, which is in line with the Commission Decision.

With regard to criterion 3.2 both the primary and the secondary indicators have been applied. Assuming that the preliminary threshold of 100% becomes permanent, the primary indicator corresponding to indicator 3.2.1 of the Commission Decision requires that all stocks are at or above SSB_{msy} or its proxies “such as SSB_{msy-trigger}, SSB_{F0.1}, SSB_{pa}, etc.”, which is in line with the Commission Decision. This however cannot be fully verified as it is unsure which other reference points might be included due to the “etc.” remark. The secondary indicator corresponding to indicator 3.2.2 of the Commission Decision applies biomass indices and requires them to be stable or have significant positive trends. Setting as a threshold the absence of a degradation trend for indicator 3.2.2 is considered by the Task Group Report as the best option until appropriate reference points are identified and therefore the Italian definition for indicator 3.2.2 is considered acceptable. The reliance on this indicator however does not ensure that stocks are at least at PA levels for all stocks. In relation to criterion 3.2 it should be noted that in the paper report, it is mentioned that the current status of the development of stock assessments at the national level does not allow for the determination of SSB (indicator 3.2.1) reference values (PA, MSY) that could be used for the evaluation of GES, except for stocks of highly migratory pelagic species that are assessed internationally by ICCAT.

For criterion 3.3, Italy has applied indicator 3.3.1 of the Commission Decision in both the paper report and reporting sheets and indicator 3.3.3 of the Commission Decision only in the paper report. The indicators have been set so that they need to show stable or significant positive trends, this goes beyond guidance from the commission which has not provided advice regarding the thresholds for the indicators associated with criterion 3.3.

Since the descriptor as provided in Annex 1 of the MSFD has not been used and the definitions for criterion 3.2 do not mention that all stocks need to be within safe biological limits, Italy’s GES definition does not require all stocks to be within safe biological limits.

Conclusion on adequacy: The Italian GES definition is *partially adequate*. The Italian GES is defined at criteria level, incorporating various indicators from the Commission Decision, but is not defined at Descriptor level. Both criteria 3.1 and 3.2 have been defined in line with the Commission Decision but to be fully compliant the preliminary threshold of 100% for all commercial stocks should be adopted permanently. For criterion 3.3 indicators 3.3.1 in the reporting sheet and paper report and indicator 3.3.3 only in the paper report have been applied. These have been applied with a threshold requiring that the indicator should remain stable or show significant positive trends for all stocks which can be considered a best practice.

II. Initial Assessment

Italy has provided a number of stock assessments in relation to F0.1 for GSA 9 in the Ligurian and Northern Tyrrhenian Seas, GSA 10 in the South and Central Tyrrhenian Sea, GSA 11 in the Sardinia Sea, GSA 17 and 18 in the Adriatic Sea and GSA 16, 15, 15-16, 12-13-14-15-16 and 19 in the Ionian Sea. In GSA 9 all stocks except for one shellfish stock are overexploited, in GSA 17 all stocks but one fish stock are over exploited and for the remainder all stocks are overexploited in relation to reference point F0.1 or Emsy. Therefore only 2 out of 32 stocks are assessed as not overexploited. However a result from the trend analysis of trawl surveys shows increasing trends for both the functional group of demersal fish and demersal elasmobranchs in all GSA regions except for 17.

The assessment of fisheries pressure for the different GSA regions for various fleet metiers suggests a decreasing fishing pressure although not for all regions or fleets. From the report it was not clear what the codes used to identify the metiers corresponded which prevented a full understanding of the assessment presented. Finally Italy has provided an assessment of GES in relation to the indicators

defined in the Commission Decision for fish and shellfish by GSA region, none of the regions achieve the GES. The assessment has not covered impacts on the seafloor and functional groups due to a lack of established methods.

Conclusion on adequacy: The initial assessment of fisheries in Italy is considered *partially adequate*. The assessment provides a relevant overview of stocks in relation to relevant reference points (F0.1, E0.4). Additionally the assessment provides an assessment of the trends of fishing pressure and finally has made an assessment of GES in relation to the indicators provided in the commission decision. The assessment has however not covered impacts on the seafloor or on functional groups.

III. Environmental targets

Environmental targets (reporting sheet):

T1. For those stocks that show signs of overfishing ($F > F_{msy}$ or $E > E_{msy}$), or that are overexploited ($SSB < SSB_{ref}$ level), or show signals pointing to an ongoing significant alteration of their age structure/reproductive capacity according to indicators 3.2.2, 3.3.1, 3.3.3, a reduction in fishing mortality aligned with the objectives that will be defined in the forthcoming reform of Common Fishery Policy (CFP) will be implemented. Concerning large pelagics stocks (bluefin tuna and swordfish) the target and programme of measures will be aligned with the prescriptions of ICCAT. It is also worth noting that in GSA 16 (Sub-region: Ionian Sea and Central Mediterranean) and GSA 17 and 18 (Subregion: Adriatic Sea) there is a presence of shared stocks between Italy and EU and non EU countries, thus the target should be agreed among countries exploiting the shared resources.

T2. Assessing and hindering Illegal, Unreported and Unregulated Fishing (IUUF). The reduction of the IUUF impacts is needed within 2018, together with the improvement of the knowledge on IUUF effects on fishing resources and biodiversity. This target is then related to both professional fishing (carried out with illegal gear and/or affecting fish size, species, habitats and areas on which fishing is prohibited) and not professional fishing (not professional fishermen operating with prohibited professional gear and /or affecting fish size, species, habitats and areas on which fishing is prohibited and/or reporting catches exceeding legal weight limits and/or selling fish).

T3. Regulation on recreational fishing in Italian marine waters and first assessment of its impact within 2018. Regulation should take into account the exploitation of fishing resources (in terms of species, areas, fishing periods and legal gear) and fishing licences and authorizations. This target also considers the reinforcement of control activity to verify its implementation and the recreational fishing data collection by onboard logbook compilation.

T4. Introduction of a minimum landing size (MLS) regulation for commercial elasmobranchs (based on their life-history traits, e.g. size at maturity) within 2018. This regulation will be applied to the species contributing to about the 90% (in terms of total catch) of Italian elasmobranch landings and in particular to demersal elasmobranchs belonging to genera *Scyliorhinus*, *Squalus*, *Mustelus*, *Galeus*, *Raja* (and similar species).

Italy has reported four targets for Descriptor 3 in its reporting sheets as well as in its paper report. The targets used in the present report are those from the reporting sheets, as they are the most recent version submitted to the Commission. The targets are aimed at introducing new regulations and management measures or following the prescriptions that will result from the CFP reform in order to reduce specific pressures. It is not clear how these targets will achieve GES as defined for Article 9, and the targets do not include state objectives (e.g. stocks at SSB_{msy}) or indicators.

Target T1 states that Italy will apply the recommendations that arise from the CFP reform as well as prescriptions from ICCAT for over exploited stocks, as an interim operational target. This target is not specifically aimed at achieving the objectives of the MSFD

Target T2 deals with illegal, unreported and unregulated fishing (IUUF). The target prescribes both a reduction of the pressure from IUUF as well as the increased knowledge on the topic by 2018. It is unclear what level of reduction of IUUF should be achieved which means that the target is not SMART.

Target T3 is aimed at creating a regulation for recreational fishing and making a first assessment of its impacts. The target explains what the regulation should take into account but it is not indicated whether the regulations might result in a pressure reduction on fish stocks. The target can lead to improved fisheries management but there is currently no indication on how it might contribute to achieving GES by 2020.

Target T4 aims to set up minimum landing sizes for certain elasmobranch species. This can contribute to a better management of elasmobranch species depending on the actual minimum landing sizes to be implemented and the range of species considered. It is noted that this regulation could contribute to the medium to long term recovery of stocks of selachii. This is therefore unlikely to be achieved by 2020 especially taking into account the slow reproductive strategies of selachii.

Conclusion on adequacy: The set of targets by Italy is considered *inadequate*. The targets are aimed at improving general aspects of fisheries management and reducing the fishery pressure on overfished stocks by following the prescriptions that will result from the CFP reform and those provided by ICCAT. The targets do not contain state indicators (e.g. SSBmsy) and none of the targets explicitly aim to ensure that stocks are at least within safe biological limits and not overfished by 2020.

IV. Consistency

Italy, when formulating its GES definition for D3 and carrying out the initial assessment, has used the reference points $F_{0.1}$ and $E/Z=0.4$ as proxies for F_{msy} and E_{msy} . The first target as provided in Article 10 also refers to the reference points F_{msy} and E_{msy} but it is clear that Italy will rely on the CFP reform and recommendations of ICCAT to reduce overfishing.

The targets do not contain state indicators and do not specifically require that any of the stocks are overfished and that they are within safe biological limits. Therefore while the targets as proposed can result in better management of the Italian fisheries it is not certain that they will achieve GES as defined under Article 9 by 2020. It is also unclear what Italy would do if the prescriptions coming from the CFP reform and ICCAT are insufficient to achieve GES as defined for Article 9 of the MSFD.

Section 6. Descriptor 5 (Eutrophication)

I. Good Environmental Status (GES)

Definition of GES (paper report):

D5. GES achieved if at least two of the three criteria indicated by Decision 2010/477/EU for the Descriptor 5 meet the requirements listed below.

Criterion 5.1: In the waters beyond the limit of coastal water bodies indicated in Directive 2000/60/EC and territorial waters (waters 'offshore') the concentration of nutrients in shallow waters (annual geometric mean + standard error calculated over 6 years) must not exceed the threshold values in each of the specific areas or sub-areas of assessment (indicator 5.1.1). The threshold value to be used for this indicator will be defined in 2018 following the acquisition of additional data and validation of the approach. Any use of the indicator N / P ratio will be defined in 2018, following the acquisition of additional data and validation of the approach (indicator 5.1.2).

Criterion 5.2: The coastal water bodies mentioned in Directive 2000/60/EC must be at least been 'good' for the Biological Quality Element 'Phytoplankton', in the waters beyond the limit of water bodies and territorial waters (waters 'offshore') the concentration of chlorophyll 'a' in shallow waters (annual geometric mean calculated over 6 years) must not exceed the threshold values to be defined for each of the areas or sub-areas of assessment (indicator 5.2.1). The threshold values will be defined in 2018 following the acquisition of additional data and validation of the approach. The parameters and threshold values related to phytoplankton composition and abundance for the sub-region will be defined in 2018, following the acquisition of additional data and validation of the method of using the indicator (indicator 5.2.4).

Criterion 5.3: The threshold values related to the deviation from the 100% saturation of dissolved oxygen for the sub-region will be defined in 2018, following the acquisition of additional data and validation of the method of using the indicator (indicator 5.3.2).

Italy has defined GES for Descriptor 5 at criteria and indicator levels, but only in the paper report (no GES for Descriptor 5 has been defined in the reporting sheets). The definition of GES is applicable to all three Italian marine sub-regions: the Adriatic Sea, the Ionian Sea and the Central Mediterranean Sea, and the Western Mediterranean Sea. While GES is defined, the definition refers to threshold values which will not be developed until 2018. The justification for this is that further monitoring and analysis of available data are required, particularly since some of the thresholds being developed require 6 years of monitoring data.

All criteria laid out for Descriptor 5 in the 2010 Commission Decision are incorporated. Indicators 5.1.1, 5.1.2, 5.2.1, 5.2.4 and 5.3.2 are to be used, while indicators 5.2.2 (water transparency), 5.2.3 (abundance of opportunistic macroalgae) and 5.3.1 (abundance of perennial macrophytobenthos) are not, but no justification is provided for that. Transparency is important in determining the euphotic depth, and thus relates to the depth of colonisation of phyto-benthos. The definition of GES therefore includes the three high level trophic status criteria (nutrient concentrations, direct and indirect impacts), but requires no monitoring or protection of macrophytobenthos communities.

For MSFD GES to be achieved, the Water Framework Directive coastal water bodies must be at least of 'good quality' for the Water Framework Directive biological quality element 'phytoplankton' (but not 'phyto-benthos'). Furthermore, as the threshold levels of only two of three high level indicators need to be achieved for D5 GES to be achieved under the MSFD, it is possible that discrepancies may arise between waterbodies classified under the MSFD and the Water Framework Directive. It is not clear whether supporting the Water Framework Directive 'physico-chemical' or 'phyto-benthos' quality elements will contribute to GES determination under the Water Framework Directive, but if so they are not used for MSFD purposes.

The Italian approach essentially follows the OSPAR Common Procedure for assessing the trophic status of marine waters, even though their waters are not within the North East Atlantic. Under the Common Procedure no monitoring/assessment of eutrophication impacts on macrophytobenthos is required.

Conclusion on adequacy: the GES definition of Italy for D5 is assessed as *partially adequate*. The definition of GES contains reference to all D5 criteria from the 2010 Commission Decision, but no thresholds are provided. While the use of one normative of the Water Framework Directive has been applied as a reference condition for coastal waters, it is still possible that the Water Framework Directive and MSFD classifications may not align correctly for all coastal waters. The GES definition is not sufficiently robust enough to take account of eutrophication impacts on macrophytobenthos communities.

II. Initial Assessment

Adriatic and Ionian Sea and the Central Mediterranean Sea

An initial assessment (relating to five assessment areas) – qualitative and quantitative - has been undertaken, relating primarily to pressures, rather than impacts. The only impacts considered are: 1) nutrient concentrations in the marine environment, but beyond 3 km from land these concentrations are modelled not monitored, requiring validation in the coming years; and 2) chlorophyll concentration data derived from remote sensing imagery. The main causes of the pressure have been identified, but impacts on the seabed or pelagic ecosystems have not been assessed.

All relevant nutrients are included as are simply-modelled estimates of point source loading of organic inputs, but diffuse source-derived organic loads are not considered. Water transparency and impacts on the macrophytobenthos community have not been covered. Data provided on nutrient levels further than 3 km from shore are all modelled, not monitored, but an effort has been made to incorporate all relevant geographical areas. Atmospheric deposition is considered only in terms of that originating from local cities, not from further afield. No judgements are provided on the level of pressure. Because GES thresholds have not yet been established, it is not possible to determine whether eutrophication impacts are considered acceptable or not, but organic loads data are still required for the Western Ionian Sea and Sicily Channel. Organic enrichment of the Northern/Central Adriatic is considered to be improving, while in the Southern Adriatic, the situation is worsening. There is no clear reference to the reports submitted under the Water Framework Directive or to monitoring undertaken under UNEP MAP/MARPOL.

Western Mediterranean Sea

An initial assessment (relating to four assessment areas) has been undertaken, albeit one which is limited by data availability. Pressure data are relatively complete (albeit with a shortfall in riverine BOD loads; also, atmospheric deposition is only considered in terms of that arising from local cities, not from further afield). Impacts on nutrient levels are reported, but details of direct or indirect impacts are unclear. The level of information available, particularly in terms of ecological impacts is inadequate. However, an attempt appears to have been made to include all relevant geographical areas. The assessment includes an estimate of organic material loads, but only those originating from UWWT plants and Italy acknowledges that improved quantification of organic loads discharged into the sea should be further explored. No overall judgements are made on the levels of pressures or impacts, but reference is made to localised eutrophic areas in an otherwise oligotrophic sub-region, with industrial, tourism-related or urban pressures identified as the principal causative agents. There is no clear reference to the reports submitted under the Water Framework Directive or to monitoring undertaken under UNEP MAP/MARPOL.

Conclusion on adequacy: the initial assessment of Italy for eutrophication is assessed as *partially adequate*. The assessment covers most pressures but it is rather limited in relation to impacts. The main causes of pressure are reported on and a fair attempt to provide quantification is made. No

conclusive judgements on the level or the impacts of eutrophication are provided, and trends are only reported in a few cases. No clear reference is made to the Water Framework Directive or to the relevant international/regional conventions.

III. Environmental targets

Environmental targets (paper report and reporting sheet):

Adriatic Sea:

T1: Reduction of 75% of nitrogen and phosphorus loads - Directive 91/271/EEC concerning urban waste water treatment: achieve 75% of reduction of the load of nitrogen and phosphorus in wastewater treatment plants by 2018 (referring to wastewater collected in the area of the Po Delta and the coastal zone of the North Western Adriatic Sea.)

Abatement percentage of the load of nitrogen and phosphorus calculated as follows:

For nitrogen: % N = $(N_{in} - N_{out}) / N_{in} * 100$

For phosphorus: % P = $(P_{in} - P_{out}) / P_{in} * 100$

where,

N_{in} = nitrogen load entering all treatment plants of urban waste water having at least one emission point in the area of the Po Delta and the coastal zone of the Adriatic North Western

N_{out} = nitrogen load output at all treatment plants considered for N_{in}

P_{out} = phosphorus load output at all treatment plants considered for N_{in}

P_{in} = phosphorus load output at all treatment plants considered for N_{in}

All sub-divisions:

T2: Wastewater treatment plants with secondary treatment - Directive 91/271/EEC concerning urban waste water treatment: 100% of the agglomerations with population equivalent: a) greater than 2000 equivalent if the point of spilling is into inland waters, b) greater than 10000 population equivalent if the point of spilling is in marine coastal waters, must be provided of a system of wastewater secondary treatment.

Percentage of population equivalents:

$I_{sec}\% = I_{sec} / I_{tot} * 100$

where,

I_{sec} = percentage of population equivalent with secondary treatment plant related to agglomerations greater than 2000 equivalent if the point of spilling is into inland waters or greater than 10000 population equivalent if the point of spilling is in marine coastal waters;

I_{tot} = total number of agglomerations with a population equivalent for agglomerations greater than 2000 equivalent if the point of spilling is into inland waters or greater than 10000 population equivalent if the point of spilling is in marine coastal waters.

Italy has defined two targets and associated indicators to address Descriptor 5, but one of the targets is only applicable to the Adriatic Sea sub-region. The targets are the same in the reporting sheets and in the paper report although the text is slightly different and indicators are only reported in the paper report (therefore, the version transcribed in this analysis is from the paper report). The targets are measurable, appear to be realistic/achievable and suitably specific indicators are provided. The targets tackle only a single source of nutrients/organic matter, diffuse sources (including atmospheric deposition) and transboundary fluxes are not considered.

While TG 34 seems sufficiently targeted towards reducing levels of pressure, it is not clear if the same occurs with TG 35. Achievement of TG34 would result in a decrease in nutrient loading from UWWT plants to the marine environment, providing the population equivalents served by those plants do not increase to a large extent. However, the construction of sewerage systems and treatment works with secondary level treatment will only remove some 30-35% of nutrients from the wastewater collected. If this wastewater had previously been treated via septic tanks, a greater proportion of the nutrients would probably have been removed before the treated wastewater reached/was discharged to surface waters. However, if the wastewater had previously been treated at a wastewater plant employing only

a primary level process (settlement), an additional 10-15% of influent nutrients would be removed. The upgrading of an UWWT plant from primary level treatment only to also include secondary level treatment would increase BOD removal (from the wastewater) from about 33% to >90%.

It is not possible to assess if the targets are sufficiently ambitious to reduce the pressure or impact to levels that will achieve GES since little information was provided on eutrophication impacts and GES has still to be defined in quantitative terms.

Conclusion on adequacy: the set of environmental targets and associated indicators defined by Italy for D5 is assessed as *inadequate*. The targets provided are specific, measurable, and probably, achievable and realistic. However, they focus only on one single source of pressures – impacts are not addressed at all, and therefore it is not possible to know if GES will be achieved. The targets are directly linked to the UWWT Directive but, apart from that, there is no direct link to the Water Framework Directive.

IV. Consistency

Italy has provided a narrower definition of GES for D5 than that presented in 2010 Commission Decision, so the impacts to be considered are fewer. However, the pressures to be addressed remain the same and the need for improved quantification of those pressures is acknowledged by Italy.

Although the requirement for pressure reduction cannot be quantified at this stage, the targets tackle only urban sources, and they are existing targets, not targets developed for MSFD purposes. The Water Framework Directive RBMP targets are not referred to; neither are Nitrates Directive requirements, nor current plans for the control of atmospheric deposition of nitrogen. No reference is made to the protection of marine Natura 2000 sites, if any of these are considered to be suffering from eutrophication. In short, the targets appear to bear little consideration to the overall MSFD target with regard to eutrophication.

It is likely to be a moderate reduction in pressure from a single source (UWWT plants), but whether this would lead to a reduction in impacts cannot be assessed, based on the information provided. It is not possible to assess if the targets are sufficiently ambitious to reduce the pressure or impact to levels that will achieve GES since little information was provided on eutrophication impacts and GES has still to be defined in quantitative terms.

Section 7. Descriptor 7 (Hydrographical conditions)

I. Good Environmental Status (GES)

Definition of GES (reporting sheet):

7.1 No more than 5% of the extension of coastal marine water bodies as defined in the WFD presents impacts (Article 5 WFD) with type due to change in the thermal regime and salinity regime.

7.1.1 Extension of water bodies under the WFD, affected by impacts due to change in the thermal and salinity regime of water.

Italy has defined GES for Descriptor 7 at criteria level in the reporting sheets and at criteria and indicator levels in the paper report. Only criterion 7.1 and indicator 7.1.1 of the 2010 Commission Decision are incorporated. The definition of GES is applicable to all three Italian marine sub-regions: the Adriatic Sea, the Ionian Sea and the Central Mediterranean Sea, and the Western Mediterranean Sea.

The definition of GES for Descriptor 7 is not a copy of the 2010 Commission Decision but it is not clear and does not seem to add specific objectives beyond those already set up under the Water Framework Directive and which are applicable only to coastal waters (the reference to Article 5 WFD is also not entirely clear as it is Annex V, Point 1.2.5 which covers "heavily modified bodies"). In addition the threshold of 5 % reported by Italy does not seem to be supported by the information provided in the initial assessment. Italy reports the "present state of impacts" as the baseline for assessing GES.

Conclusion on adequacy: the GES definition of Italy for D7 is assessed as *partially adequate*. The definition is not a copy of the 2010 Commission Decision; only Criterion 7.1 and indicator 7.1.1 are covered. The definition takes into account the classification of the Water Framework Directive but does not seem to go beyond existing obligations. Although a 5 % threshold is provided, this does not seem to be supported by the initial assessment.

II. Initial Assessment

Italy has carried out a limited initial assessment on the level of hydrographical changes and their impacts. The structure and level of the assessment, which was carried out at sub-region level, is very similar to all the three Italian marine sub-regions and for this reason they are analysed in conjunction. Italy indicates that the assessments are based on the reports delivered under the Water Framework Directive and focused on changes in the temperature regime ("elevated temperatures") and the conditions of salinity ("saline intrusions or alteration"). Italy acknowledges, however, that it is not in possession of the data or methodologies to assess the impacts of hydrographical changes on habitats or functional groups or to identify the activities causing changes in the temperature regime. It is proposed to develop a standard methodology at national level for a quantitative assessment to be used on time to be included in the second cycle of the River Basin Management Plans under the Water Framework Directive.

For each of the three sub-regions the proportion of the area affected is provided (less than 1% in the Adriatic Sea, between 1-5% in the Ionian Sea and Central Mediterranean as well as in the Western Mediterranean). Trends are not provided but a descriptive assessment of status is provided (status is considered good in the Adriatic Sea and mostly acceptable in the Ionian Sea and Central Mediterranean as well as in the Western Mediterranean) and the problematic areas are identified. Italy has also reported on marine acidification, providing the results of a series of measurements and listing

the main causes of pressure – industry, agriculture, forestry and extraction of oil and gas – but acknowledging the need for further monitoring and investigation.

Conclusion on adequacy: the initial assessment of Italy for hydrographical changes is assessed as *adequate*. Although the assessment is limited and focused on pressures, the information is in line with the information reported under the Water Framework Directive. No trends are provided, but the percentage of areas affected and a judgement on current status is provided. In addition, the knowledge gaps are clearly identified and the plans to address them well described. Marine acidification is also addressed.

III. Environmental targets

Italy has not defined any environmental targets for Descriptor 7.

IV. Consistency

The assessment of the pressure and its impacts is consistent with the Slovenian definition of GES for D7 as the definition of GES is not very specific.

As there are no targets defined it is not possible to assess the consistency between these and the initial assessment and the definition of GES.

Section 8. Descriptor 8 (Contaminants)

I. Good Environmental Status (GES)

Definition of GES (paper report and reporting sheet):

8.1 Contaminants: Considering single samples, the GES is reached when, for each defined contaminant group (except radionuclides), the chemical concentrations (indexed and integrated for each contaminant group), according to the legislation and International references, are lower than the Environmental Quality Standards (EQS) applied under the WFD. Taking into account the whole Assessment Area (AA), the GES is reached when at least the 70% of the useful surface (for data coverage) complies with the conditions above. When these latter are satisfied for all the AAs of the subregion, the GES is reached in the whole subregion. RADIONUCLIDES: Concentrations of ¹³⁷Cs and ²¹⁰Po in water and sediment are below the levels producing an incremental dose rate to reference organisms equal or higher than the Predicted No Effect Dose Rate. Trends in concentrations of radionuclides in the relevant matrices are within acceptable limits and declining.

8.2. Contaminants: Considering the single sample, for each defined contaminant group, the variations in terms of bioaccumulation and biological effects (biomarkers), compared to their respective controls and thresholds, are not significant. In addition, the control organisms must come from areas that comply with the GES in terms of chemical concentrations. Taking into account the Assessment Area (AA), the GES is reached when at least 50% of the surface covered by data complies with the conditions above. When this condition is fulfilled for all the AA of the subregion, the GES is reached in the whole subregion. RADIONUCLIDES: The marine ecosystem is protected from effects on its structure and function from chronic exposure to radionuclides. The incremental dose rate deriving from human activities to reference organisms (from external and internal irradiation) is below or equal to the Predicted No Effect Dose Rate (PNEDR).

Italy has defined GES for Descriptor 8 at criteria level. In addition, Italy quotes the text of Annex I of the Directive for D8 and the Commission Decision indicators 8.1.1 and 8.2.1. While criterion 8.1 is fully covered by the Italian definition, criterion 8.2 is only partially covered as acute pollution events are not included in the scope of the definition. Italy justifies this by stating that there has been no pollution event between 2006 and 2011 (as well as in the previous period). GES is defined at the level of the subregion (and not at the national level) however the conditions to achieve GES are the same for the three subregions.

Concentration of contaminants

With regard to criterion 8.1 (and indicator 8.1.1), Italy provides a detailed definition, which is based on compliance with the EQS Directive. Italy refers to a “contaminant group” but does not specify which ones these are. These are presumably those they list for the GES definition. In the accompanying text, it refers to the Initial Assessment for these groups of substances. It is presumed that all contaminants addressed by the EQS Directive and relevant for the Italian marine waters are covered by the Italian definition. The first condition to achieve GES is that contaminant concentrations, indexed and integrated by groups of contaminants, should be lower than the EQS, extended to the open sea. In the accompanying text, Italy mentions that the integration by groups of contaminants means looking at concentration levels (indices) of each substance, including a weighting coefficient according to risk / priority based on Decision 2455/2001/EC (list of priority substances) and then taking the average of the indices of the contaminants that make up a specific group. Italy explains that this integration mechanism, which is a first aggregation rule, is designed to give a margin of tolerance and elasticity to the application of the EQS Directive and to the “all in, all out” principle, in particular taking into account that little is known about the open sea on this topic. However, the weighting procedure is not defined. The objective of 70% of the assessment area has an integrated index below the EQ may not be sufficient.

In the reporting sheets, Italy reports that the threshold value should be lower than 0 (presumably meaning lower than the reference conditions, i.e. the EQS) with respect to both the integrated index and to each index substances. In the “baseline” field, Italy confirms that the reference condition is represented by the EQS but mentions that it may be possible to define area-specific reference conditions, but does not provide further details. Reference to the EQS and the Water Framework Directive would imply that only concentrations in water and biota are covered since no EQS is defined for sediment concentrations. However, in the accompanying text Italy refers to concentrations in sediment. Since it refers to EQS reported in “national / international regulations”, it is not clear whether Italy also considers national standards that may have been defined for the sediment matrix or whether it also covers other standards, e.g. the OSPAR EAC.

In addition, Italy has defined as an aggregation rule that 70% of the useful surface for all waters of an assessment area (AA) (for which there is data) should be in compliance with this first condition (i.e. the EQS) and that GES is achieved for the whole subregion when all assessment areas comply with this second aggregation rule. It is not clear what is meant by ‘useful surface’.

Italy also includes radionuclides in its GES definition. The GES definition addresses radioactive substances ^{137}Cs and ^{210}Po . The GES condition for these radionuclides is that their concentrations in water and sediment are below the levels producing an incremental dose rate to reference organisms equal or higher than the Predicted No Effect Dose Rate. It also specifies that trends in concentrations of radionuclides in the relevant matrices should be within acceptable limits and declining. Italy specifies further that the threshold value is that defined in the ERICA EU project (specified as 100 bq/m³ in the paper report). In the reporting sheets, Italy specifies that the baseline should be the background levels of natural and anthropogenic radionuclides, which is unclear. In the paper report, it mentions that the baseline should be the concentrations of Cs-137 and Po-210 below the limit for which there may cause negative effects on the ecosystem, however this seems to be rather the threshold value than the baseline. It is therefore not clear what the baseline should be to assess that trends in concentrations are declining, as is specified in the GES definition. No aggregation rule at subregional level has been defined for radionuclides.

Effects of contaminants

With regard to criterion 8.2, Italy refers to bioaccumulation and biological effects (biomarkers) but does not specify which biological effects or which organisms/ecosystem components are covered by the GES definition. As for the groups of substances in 8.1, it may be that the biomarkers are specified in the Initial assessment report. The condition for the achievement of GES is that variation of these compared to their respective controls and thresholds are not significant. It is not clear what “not significant” entails. In the GES definition, Italy specifies that control organisms should come from areas that are in GES with regard to concentration levels. The GES boundary is defined in terms of statistical significance for bioaccumulation ($p < 0.05$ by t-test for homogeneous variances) and for biomarker. In addition, for biomarker (p) should not exceed the specific thresholds for biological relevance. The use of statistical test for bioaccumulation needs further explanation and is not clear from the text.

As for contaminants’ concentrations, Italy defines an aggregation rule that GES is achieved for an assessment area when at least 50% of the waters (for which there is data) complies with the conditions mentioned above.

Italy has also specified GES for effects of radionuclides. The condition to achieve GES is that the marine ecosystem should be protected from effects on its structure and function from chronic exposure to radionuclides. In terms of threshold value, this means that the incremental dose rate deriving from human activities to reference organisms (from external and internal irradiation) is below or equal to the Predicted No Effect Dose Rate (PNEDR), i.e. 10 $\mu\text{G}/\text{h}$. The baseline comes from the EU ERICA project definition for a generic ecosystem.

Conclusion on adequacy: The GES definition for Descriptor 8 by Italy is considered *partially adequate*. It is rather detailed and specific but a number of specific information is missing (i.e. substances, species or biological effects covered by the GES definition) and it covers only partially criterion 8.2 as acute pollution events are not covered in the GES definition. The justification that no event has occurred in the past years is not considered sufficient as acute pollution events are unpredictable. Italy provides a number of detailed information regarding threshold values and baselines to use to measure the achievement of GES and meets the minimum requirements (compliance with EQS Directive). It also provides aggregation rules to be able to assess when GES is achieved at the level of the subregion. However these are quite low, meaning that GES can be achieved even if a large part of the marine waters do not comply with the GES boundaries. It covers radionuclides, which is considered a good practice.

II. Initial assessment

Synthetic and non-synthetic substances

In the reporting sheets, Italy reports very limited and mostly qualitative information on contamination by hazardous substances. It does not mention the specific substances covered but refers to PAHs for synthetic substances and metals. In terms of sources of contamination, it mentions that land-based pollution comes mostly from licensed plants and riverine inputs while sea-based contamination comes from offshore platforms and air-based pollution from atmospheric deposition for man-made and non-synthetic substances. For synthetic substances, it provides quantitative information on input loads from land-based sources (tonnes/year for 2007 to 2011) in all three subregions. For heavy metals, it also provides this information for air-based sources (in tonnes/m²/yr). In the Adriatic subregion, it mentions that both types of substances (PAHs and heavy metals) show an increasing temporal trend (but no mention of the timescale), probably due to the increasing number of licensed plant. For the other two subregions, the trend is visible for metals but not for PAHs.

Italy has not reported on the concentration levels in the environment. For heavy metals only it has reported on the level of the pressure in functional groups. It does so by stating, for various functional groups (i.e. demersal elasmobranch, coastal fish and coastal, shelf and pelagic cephalopod), the share of the functional group affected by the pressure over a certain period of time (2006 to 2011). The results vary from 0.48 for coastal fish in the Adriatic Sea to 15% for coastal fish in the Mediterranean Central area.

Italy has not reported on effects of contaminants on ecosystem components. It has not provided a judgement on the current level of the pressure in relation to GES.

Radionuclides

Italy does not report on the sources of contamination by radionuclides (it only mentions phosphogypsum disposal and the aluminium industry in the Western Mediterranean area as potential sources). It provides a quantification of input loads from 2006 to 2011 for land-based and air-based sources (but without specifying the sources of contamination), expressed in GBq/y.

For concentration levels in the environment, it only refers to measurements for ¹³⁷Cs in biota for the Central and Western Mediterranean subregions, mention the Mediterranean mussel as one of the species assessed. It reports that levels are generally very low, in any case lower than the limits fixed for food consumption. Italy does not specify what it refers to. While these could be The EU relevant Euratom legislation (944/87/Euratom, 3954/87/Euratom, 2218/89/Euratom), Italy has not quoted these.

Italy does not provide information on effects on ecosystem components nor a judgement on the current level of, and impact from, the pressure.

Acute pollution events

Italy does not report on acute pollution events, which is in line with its lack of definition on this aspect.

Conclusion on adequacy: the initial assessment of contamination of the Italian marine waters by hazardous substances and radionuclides is considered *inadequate*. Very little information is provided and it is only focused on input loads. Almost no information is provided on concentration levels and no information is provided at all on biological effects on ecosystem components. There is no judgement in relation to GES or any reference to the EQS Directive.

III. Environmental targets

Environmental target (reporting sheet and paper report):

T1: Concentration of the contaminants in biota, sediment and water ensures comparability with the assessments under Directive 2000/60/EC.

T2: Levels of pollution effects on the ecosystem components concerned, where a cause/effect relationship has been established and needs to be monitored.

In the reporting sheets, Italy has defined two environmental targets to cover D8 and no associated indicators. In the paper report, it is not clear what constitutes the environmental target and what is only a copy from the Directive/Commission Decision. In addition, in the paper report, Italy adds a “qualitative description of the target”, which summarizes the GES definition.

In any case, it seems that the targets defined by Italy to help towards the achievement of GES are actually expressions of GES. In this sense, they will not be assessed again, as the assessment made under Article 9 is valid for this section too. The targets, along with their qualitative description, are specific and measurable and they seem to be achievable and realistic since the aggregation rules defined by Italy for the GES definition are quite low in ambition. However, the timescale for the achievement of the target is 2012, which is unrealistic and is therefore considered to be an error in the reporting.

In the paper report, Italy mentions that the targets are less strict than the GES definition (“higher degree of tolerance of number of parameters exceeding the limit values”) and suggest that the targets would therefore constitute a first step towards achieving GES. Since no appropriate timeline is provided, it is difficult to know whether this is adequate. In addition, the qualitative descriptions of the targets seem to be exactly the same as the GES definitions and the aggregation rules seem to be the same too.

Conclusion on adequacy: the set of targets defined by Italy to address D8 is considered *inadequate*. The targets are SMART when taking in conjunction with their qualitative description in the paper report but they are repeat of the GES definition (despite what Italy says in the accompanying text) meaning that it is unclear how they can help towards achievement of GES. They do not address specific pressures or substances.

IV. Consistency

Considering the poor level of details provided in the initial assessment, it is not consistent with the GES definition, which is rather specific. In addition, the GES definition refers to “groups of substances” defined in the 2012 initial assessment report and these are not reported in the reporting

sheets. Finally, the initial assessment does not refer to the EQS Directive, which form the basis of the GES definition.

The level of consistency between the GES and the targets is very high since the targets are a simple repeat of the GES definition.

Section 9. Descriptor 9 (Contaminants in Fish and Seafood)

I. Good Environmental Status (GES)

Definition of GES (paper report and reporting sheet):

9.1. For each subregion and for each contaminant included in the legislation, concentrations are significantly lower than the thresholds identified by national and international legislation (Reg. 1881/2006 and further updates). The compliance with GES is estimated on samples of fish and fishery products coming from national waters. The GES of subregion is reached when at least 95% of the samples complies with the conditions above.

Italy has defined GES for Descriptor 9 at criteria level. The definition for criterion 9.1 covers indicator 9.1.1. No definition has been provided for indicator 9.1.2 but Italy states that it is covered by the definition for indicator 9.1.1. In the accompanying text, in the paper report, as part of the assessment method, Italy mentions that a deviation of 26% from the average value is acceptable (compared to the typical 20% deviation from average values), which it says constitute the frequency of exceedance. However, this is not understood to be the same as frequency of exceedance of regulatory levels, which should be expressed over a fixed time period. The explanations provided by Italy to explain where the 26% value comes from are not clear.

The definition for indicator 9.1.1 reflects the minimum requirements in that it refers to compliance with the relevant regulatory levels (EU Regulation 1881/2006 and further amendments) and it mentions that this assessment should be done on fish and fishery products originating from Italian marine waters. It defines an aggregation rule that for the subregion to be at GES, 95% of the samples should be compliant with the regulatory levels.

Italy does not specify the species of fish and other seafood covered by the GES definition.

Conclusion on adequacy: The definition of GES for D9 by Italy is considered *partially adequate*. Italy has defined GES in relation to the relevant regulatory levels and has specified that the samples should originate from its marine waters, which is considered a good practice. However, it has not specified GES for indicator 9.1.2 on the frequency of regulatory levels being exceeded, or at least it has not specified it appropriately (by an expression of number of times over a period of time, rather than possible deviation).

II. Initial Assessment

Italy has not made an assessment of contamination of fish and seafood by hazardous substances in the reporting sheets or in the paper report.

Microbial pathogens

Italy has reported on microbial pathogens. The assessment covers bathing waters and shellfish waters, although Italy recognises that the information is incomplete with regard to shellfish waters and described the work needed to address these gaps.

The main sources of pressure are identified as land based activities/industries, in particular wastewater treatment, but also agricultural run-off forestry and emissions and industrial discharges. For all three sub-regions, the level of pressure on shellfish waters is assessed as stable and on bathing waters as improving, referring to the Shellfish and the Bathing Water Directives. The level of impacts on shellfish is characterised as stable for Adriatic and Western Mediterranean – unknown for Ionian

Sea/Central Mediterranean. Italy has made an effort to formulate threshold values under Indicator 9.1.2 relating to microbial pathogens.

While the assessment of contamination of shellfish waters by microbial pathogens is considered as adequate, and the formulation of threshold values as a good practice, the lack of assessment on contamination of fish and seafood for human consumption means that it is not possible to make an assessment of adequacy of Italy's initial assessment in relation to D9.

III. Environmental targets

No environmental target has been defined to cover D9.

IV. Consistency

No consistency assessment has been made since no initial assessment has been carried out and no targets have been defined to cover Descriptor 9.

Section 10. Descriptor 10 (Marine Litter)

I. Good Environmental Status (GES)

Definition of GES (reporting sheet and paper report)

D10. The condition of GES achievable is defined only as one in which the waste decreases to a fraction of those initially recorded, in consequence to an increase of the collecting activity and the decrease of the contributions, reaching a value that does not cause adverse consequences for the marine environment and human activities.

10.1 At this time there are not data available, to elaborate GES for Trends in the amount and in the distribution and composition of micro-plastics in the Mediterranean basin. The knowledge of the nature of micro-particles in marine environment and their riskiness is still too little developed and this does not allow the establishment of an environmental target or a meaningful indicator in a definitive fashion. Taking into account that the production of plastic is increasing and that their decomposition is very slow, it is unavoidable that the abundance of such fragments can tend to increase in the next decades. The determination of a minimum value of the size of the objects to be considered highly condition the hypothetical threshold. In such conditions the implementation of such indicator will have to be bound to research programmes supporting the marine strategy.

10.2 At this time there are not data available, to elaborate GES for the amount and composition of marine waste ingested by the biota in all Mediterranean. The objectives that all OSPAR Countries have adopted concerning the content of plastic in the stomach refer to studies that lasted ten years and establish values that vary very much in percentage "Less than 10-50% of exemplars of *Fulmarus* have more of 0,1 g of plastic particles in the stomach". For the other marine areas (especially the Mediterranean given the absence of *Fulmarus*), the works are based mainly on preliminary studies run by Italy in 2012 (Litter ad Biota Protocol) and they are addressed to the use of turtles *Caretta caretta* and their rate of waste ingested. Therefore it must be taken into consideration a target similar to the one adopted for the *Fulmarus*, establishing new values proposed on the basis of data obtained during the monitoring phase. In this context the volume of litter ingested is considered is a more adequate data also for the impact assessment in relation to the weight

Italy has defined GES in the paper report and in the reporting sheet at descriptor and criteria level. The definitions in the reporting sheet are the same as in the paper report.

The first statement is a GES definition at descriptor level. The others refer to the indicators and criteria of the 2010 COM decision and contain the justification why a more detailed GES definition could not have been defined (lack of information). For the definition of GES, a distinction is not made between the sub-regions of the Italian waters.

On-going work to assess the impact of marine litter on biota is presented as part of the GES definition. This includes a guideline on litter and biota and the work on a protocol to monitor ingested plastic by loggerhead sea turtles *Caretta caretta* through the analysis of stomach content and faecal pellets. Threshold values have not been set as a consequence of the lack of data and will be set after the monitoring programmes have been installed. A reference to OSPAR is given (EcoQO on Fulmars), but not to UNEP/MAP.

Conclusion on adequacy: The definition of GES for Descriptor 10 is considered as *inadequate*. The definition is only qualitative and insufficient detail is provided in order to assess if and when GES is achieved. The description on the on-going work is appreciated.

II. Initial Assessment

For all sub-regions, Italy reports that data availability on marine litter is not sufficient to describe the initial status. Nevertheless, the available data is presented and where possible, an assessment is done.

Adriatic Sea

For the initial assessment, the Adriatic Sea is split in the “North Adriatic” and “South Adriatic” subdivision. For the North Adriatic Sea, data from trawl surveys (seabed litter) are reported. Beach litter is collected in several clean-up campaigns by NGO’s. For the South Adriatic Sea, no data is reported. Data on seabed litter is collected, but not analysed yet. Limited information is reported on the impact of marine litter on marine life. References to scientific publications are given on the ingestion of marine litter by the loggerhead sea turtles (*Caretta caretta*) in the Adriatic Sea. Work is ongoing to develop a protocol to assess ingested litter by *Caretta caretta*.

Data gaps are listed and literature from other seas is presented, including on the ingestion of plastics by fish, the crustacean *Nephrops norvegicus* (scampi), the analysis of the plastic derivatives in stomachs and the use of biomarkers. For the analysis of the impact of marine litter on marine life, Italy argues that more than one methodology is needed.

Western Mediterranean

For the initial assessment, the Western Mediterranean is split in the “North-Central Tyrrhenian and Sardinia” and the “South Tyrrhenian Sea”. For the North-Central Tyrrhenian and Sardinia, the main reported information is on seabed litter from trawl surveys. Data on waste abundance and a composition analysis is reported. Shipping (commercial, fishing, ferry and recreational) are the main sources of waste. Micro-plastics are measured through a standard plankton net in the Cetacean sanctuary “Pelagos”. Beach litter is collected in several clean-up campaigns by NGO’s, though as the amount of marine litter collected, without specification of the type of litter. For the South Tyrrhenian Sea, no data is reported. Data on seabed litter is collected, but not analysed yet. The data gaps and recommendation on the analysis of the impact of marine litter on marine life in the Adriatic Sea are repeated for the Western Mediterranean

Ionian Sea

The reported information is not specifically targeting the Ionian Sea.

Conclusion on adequacy: The reporting for the Western Mediterranean and Adriatic Sea are *partially adequate*. The available data is concisely presented, as well as first list of data gaps and example publications from other seas. For the Ionian Sea, no specific data is reported.

III. Environmental targets

Environmental targets (paper report and reporting sheet):

T1: The target consists in increasing effort in collecting waste on the seabed on annual base for each sub-region. The quantity of waste on the coast will be expressed in item per unit of coast length

Associated indicator: Increase of the yearly length of the coast that undergoes a cleaning and waste collection activity.

T2: The target is operational and consists of the progressively increasing of efforts on the annually collected waste on the seabed for each sub region. This practice is already in operation in several marine zones of the north Europe and it is known as fishing for litter. The reduction of the quantity of litter on the sea bottom is expressed as Kg/Km². It will be necessary to monitor the trend of the quantity of waste on the sea bottom through measuring campaign of the density based on a statistically significant sample case.

Associated indicator: Increase of the effort to collect marine waste on the sea bottom

T3: Reduction of the increase rate of the amount of microplastic on sea surface. At this time there are no data available in all the Mediterranean Sea, to elaborate on trends in the amount, distribution and, where possible, composition of micro-particles. Knowledge of the nature of microplastic and harmfulness in marine environment it is not sufficiently developed. Considering that plastic production is increasing year by year and that its decomposition is very slow it can be supposed that the abundance of these fragments can tend to increase in the

course of next decades. This happens because the material that is already present behaves as a source of micro-plastic through processes that last years. Only a significant reduction of the emission in the sea environment of plastic material and the removal of the material that is already introduced can guarantee a trend inversion that could also take a decade. It is possible to suppose as target a significant reduction of the increase rate of the plastic microparticles considering that the identification of a minimum value of the size of the objects (the maximum size is 5mm) highly conditions the hypothetical threshold. It is therefore possible to give a specific value to the target only after careful monitoring activities are carried out.

Associated indicators: Trend of the amount and distribution of the micro-plastics on the sea surface.

T4: Reduction of gastrointestinal or fecal pellet litter rate, in marine organism. In Mediterranean country the general idea of the Member States is to study and analyse the quantity of marine litter found in the stomach and excrement of the sea turtles *Caretta Caretta*. Such analysis is still at an embryonic stage. At the moment the only indications at Mediterranean level are based on a preliminary study on *Caretta Caretta* carried out by ISPRA, Stazione Zoologica Naples, University Siena, CNR_IAMC Oristano, Arpa Toscana, University Padova. This study led to the development of an assessment protocol, approved by the Marine Litter Sub-Group established by the European Commission. Such protocol needs to be better developed and detailed through a field monitoring activity.

Associated indicator: Reduction of the percentage of sea turtles *Caretta caretta* (or other marine species) with ingested litter, and expressed in terms of weight and volume, relative to the observed animal

Italy has identified four targets in the reporting sheets and in the paper report. The formulation between the reporting sheet and paper report is sometimes different, but the content is the same. In the paper report, also associated indicators are reported.

All targets are measurable, but threshold values have not been defined and can only be expected after monitoring programmes have been set up. The first two targets relate to clean-up actions, respectively on the shoreline and on the seabed. The last two indicators monitor the end-of-pipe impact (floating micro-particles and the plastics ingested by sea turtles).

The sources/pressures of marine litter are not addressed in the targets. Even though the target on micro-particles is intrinsically measurable, it might be difficult in practice and would require a long multi-annual time series.

Conclusion on adequacy: The targets reported by Italy for Descriptor D10 are *partially adequate*. The targets are measurable, but thresholds have not been set. The targets address the clean-up of existing waste and the end-of-pipe impact. The sources of marine litter are not addressed.

IV. Consistency

A general lack of data is reported, except for seabed litter in the North Adriatic and North-Central Tyrrhenian Sea. Targets cover the need for more waste collection in the marine environment, as included in the GES definition, but not the requirement of to “decrease the contributions”. Targets are linked to clean-up and end-of-the-pipe impacts. The achievement of the targets will lead to a marine environment with less plastic, but does not reduce the inflows. Good practice is the effort related to the development of an assessment methodology and related targets to assess the impact of marine litter on sea turtles.

Section 11. Descriptor 11 (Introduction of energy)

I. Good Environmental Status (GES)

Definition of GES (reporting sheet)

11.1 The introduction of anthropogenic loud, low and mid-frequency impulsive sound energy is at levels that do not adversely affect the marine biota.

11.2 The introduction of anthropogenic low-frequency ambient noise is at levels that do not adversely affect the existing marine biota.

Italy has defined GES for Descriptor 11 at the descriptor/criteria. The definitions are set at criteria level but they rather read as definitions at descriptor level.

Each definition focuses on one of the two types of underwater noise targeted in the criteria of the 2010 Commission Decision, i.e. loud, low and mid-frequency impulsive sound and low-frequency continuous (or ambient) noise. Further specification is not given, e.g. threshold values to define what is meant with “at levels that do not adversely affect the marine biota”.

No reference is made to the criteria and indicators of the Commission Decision.

Conclusion on adequacy: the GES definition of Italy for D11 is assessed as *inadequate*. The Italian definition is similar to GES definition of the 2010 Commission Decision, though without further specification.

II. Initial Assessment

Italy has not carried out an initial assessment in relation to D11 due to the lack of information available, and therefore, no characterization or evaluation of the current status is reported.

III. Environmental targets

For D11, Italy has not set targets. Instead, justification (lack of data) is provided for not setting targets. Italy aims to achieve GES for Descriptor 11 by means of regulating the anthropogenic activities that introduce underwater sound. The recommendation of the Technical Sub Group (TSG) Noise to setup a noise registry for loud, medium and low frequency impulsive sounds (indicator 11.1.1) is mentioned, but without engagement to setup a noise registry. The text is also confusing with respect to the combination of the Environmental Impact Assessment (EIA), typically project specific at small scale and the noise registry, to developed at large scale.

IV. Consistency

The reported information on Descriptor 11 is limited. An initial assessment has not been done. GES is defined at Descriptor level, but without further specification. Targets have not been set.

Section 12. General Conclusions

Overall, the Italian report presents various positive and negative elements as follows.

Positive elements:

- Systematic use of EU requirements and standards
- In general, the initial assessment is well-focussed on the needs of the marine strategy and Italy has made a fair attempt to provide judgement on status and trends, with the exception of D8 and D9
- Extensive and comprehensive identification of knowledge gaps and options to address those gaps through research and monitoring
- Use of various assessment areas depending on the descriptor, for the initial assessment
- Italy mentions Regulation (EC) 708/2007 in relation to NIS
- In relation to Descriptor 3, Italy have included an environmental target addressing recreational fisheries
- Italy has proposed a threshold when setting GES for Indicators 3.3.1 and 3.3.3
- Italy has set a target – and developed an assessment methodology – to reduce marine litter ingested by sea turtles *Caretta caretta*, a promising alternative for the Fulmars target in the North-East Atlantic Ocean

Negative elements:

- Uncertainties about the status of GES definitions and environmental targets which are still ‘proposals’
- The vast majority of environmental targets are interim ones and even some GES definitions are still to be developed, in particular
- Due to the lack of allocation of responsibilities and financial commitment, the actual implementation of monitoring campaigns and other types of actions to be implemented by 2018 is under question.
- Discrepancies between the GES definitions, environmental targets and indicators as set respectively in the reporting sheets and in the paper report
- Impacts from pressure are often not reported on
- General lack of ambition, in relation to both GES definitions and targets
- Limited reference to the Barcelona Convention