

Template for the review of Decision 2010/477/EU
concerning MSFD criteria for assessing good environmental status
according to the review technical manual

Descriptor 3

Document history				
Version	Date	File name	Authors	Description
1.0	02/05/2014	Annex I D3 manual Milieu.docx	Milieu	Approach and results from the Art.12 assessment filled up.

Possible approach to amend Decision 2010/477/EC

Outline example for D (i.e. further detail needed)

Title of Descriptor
<i>Good Environmental Status for Descriptor 3 – Populations of all commercially exploited fish and shellfish are within safe biological limits, exhibiting a population age and size distribution that is indicative of a healthy stock.</i>
Approach

Definition of the Descriptor

Descriptor 3 deals specifically with the pressure of exploitation on all commercially exploited fish and shellfish. The Descriptor definition contains a number of specific components that require further specifying.

‘Commercially exploited fish and shellfish’ are all living marine resources targeted for economic profit such as the bony fish, sharks and rays (known as elasmobranchs), crustacean such as lobsters and shrimps, and molluscs (including bivalves, cuttlefish and squid). It also includes other creatures such as jellyfish and starfish.¹

‘All’ The Descriptor is specific in that it applies to **“all”** commercially exploited fish and shellfish. However the status is not assessed for all commercially exploited species. Important target species with a high commercial importance or making up a high proportion of landings are more comprehensively monitored and assessed than stocks of lesser importance. Work is currently ongoing to define in a pragmatic way what constitutes all commercially exploited fish and shellfish for the purpose of assessing descriptor 3. The use of the word **“all”** also means that Descriptor 3 covers both internationally managed stocks as well as regionally and nationally managed stocks.

‘fish and shellfish’ The Descriptor 3 text distinguishes between fish and shellfish and covers both. In fisheries terms the term fish can be used collectively to include both finfish and non-fish species such as molluscs but the Descriptor makes a clear distinction. Fish includes both teleosts and elasmobranchs. Shellfish include molluscs including cephalopods and crustaceans.

‘Safe biological limits’ In general terms stocks are characterized as being outside safe biological limits (or overfished stocks) when the fishing pressure (mortality) exerted on them, exceeds sustainability i.e. when mortality exceeds recruitment and growth. There are however also some more specific fisheries concepts and fish stock reference points that can be associated with the wording **“safe biological limits.”** ICES previously classified stocks that were below the reference point Bpa as being outside **“safe biological limits”** even if fishing mortality was below the Fpa reference point². (ICES stopped using the

¹ http://ec.europa.eu/environment/marine/good-environmental-status/descriptor-3/index_en.htm

² <http://www.eea.europa.eu/data-and-maps/indicators/fish-stocks-outside-safe-biological-limits/fish-stocks-outside-safe-biological-limits>

wording “safe biological limits” in 2008.) The EEA however considers stocks outside of safe biological when both the spawning stocks biomass (SSB) is below the Bpa reference point and the fishing mortality is higher than the Fpa reference point.³ The Descriptor text does not provide guidance on which approach is correct. Furthermore the concept of what constitutes “within safe biological limits” could be defined using other fish stock reference points and other management concepts including those for managing stocks according to MSY principles.

‘exhibiting a population age and size distribution that is indicative of a healthy stock’ the final part of the Descriptor 3 text introduces a requirement to manage the demographics of fish stocks a concept that is not part of existing fisheries management concepts. It is currently still unclear what constitutes a healthy stock and which age and size distributions are reflective of such a healthy stock, discussions are still ongoing. In the Commission Decision it is stated that “healthy stocks are characterised by a high proportion of old, large individuals.”

The Commission Decision identifies three criteria for Descriptor 3: (3.1) Level of pressure of the fishing activity, (3.2) Reproductive capacity of the stock, (3.3) Population age and size distribution.

Linkages with existing relevant EU legal requirements, standards and limit values

Regulation (EU) 1380/2013 the Common Fisheries Policy (CFP) is closely linked to the MSFD and the achievement of GES for Descriptor 3 relies on the measures taken under the CFP. When the MSFD was adopted the CFP was still in the reform process. The new CFP includes specific links to the MSFD in particular Article 11(1)⁴ creates a direct link between from the CFP to the MSFD.

The objective of the newly reformed CFP is to exploit all stocks at or below a the maximum sustainable yield (MSY) exploitation rate by 2020. Where possible stocks should be exploited at MSY by 2015. The limit value of Fmsy applied to all stocks for the CFP is the same as that applied for indicator 3.1.1 of Commission Decision (2010/477/EU). The Commission Decision states that achieving GES requires that all F values are equal to or lower than Fmsy.

Next the Aim of the CFP is to restore and maintain populations of fish stocks above biomass levels capable of producing the maximum sustainable yield however the CFP sets no specific limit for the SSB of commercially exploited stocks. The Descriptor 3 text however requires that populations of all commercially exploited fish and shellfish are within safe biological limits. While the interpretation of what constitutes a safe biological limits is requires further specification it does infer that there is a limit. This limit is specified in more depth in the Commission Decision (2010/477/EU) which requires that the SSB of commercially exploited stocks are at or above MSY levels or if the SSBmsy reference point cannot be found at or above the SSBpa reference point. The Commission Decision does allow for the possibility that it might not be possible to have all stocks at or above SSBmsy limits simultaneously due to interspecies interactions.

³ <http://www.eea.europa.eu/data-and-maps/indicators/fish-stocks-outside-safe-biological-limits>

⁴ 1. Member States are empowered to adopt conservation measures not affecting fishing vessels of other Member States that are applicable to waters under their sovereignty or jurisdiction and that are necessary for the purpose of complying with their obligations under Article 13(4) of Directive 2008/56/EC, Article 4 of Directive 2009/147/EC or Article 6 of Directive 92/43/EEC, provided that those measures are compatible with the objectives set out in Article 2 of this Regulation, meet the objectives of the relevant Union legislation that they intend to implement, and are at least as stringent as measures under Union law.

Regulation (EC) 199/2008 establishes the Community framework for the collection, management and use of data in the fisheries sector (Data Collection Framework (DCF)). Pursuant to the Regulation, the Commission Decision (2010/93/EU) set forth the multiannual Community programme for the collection, management and use of data in the fisheries sector. It determines which stocks considered under the DCF for the period covered by the Decision, i.e. 2011-2013. Descriptor 3 applies at least to all DCF stocks as laid out in the multiannual community programmes for the relevant time period but also regional stocks currently not listed under the DCF.

Linkages with international and RSC norms and standards

The RSCs vary in their approach to fisheries.

OSPAR has two EcoQOs that are relevant to Descriptor 3. The first one is to maintain the spawning stock biomass above precautionary reference points for commercial fish stocks where those were agreed by the competent authority for fisheries management. This EcoQO is strongly linked to the requirement of Descriptor 3 for stocks to remain within safe biological limits and to indicator 3.2.1 of Commission Decision (2010/477/EU). The second EcoQO is that at least 30% of fish (by weight) should be greater than 40cm in length. This EcoQO is relevant as a secondary indicator of fishing pressure.

HELCOM adopted the Baltic Sea Action Plan, which urges the ‘competent fisheries authorities to take all the necessary measures to ensure that, by 2021, populations of all commercially exploited fish species are within safe biological limits, reach Maximum Sustainable Yield, and are distributed through their natural range, and contain full size/age range.’ The text is close to Descriptor 3 definition in that it requires all species to be within safe biological limits but it also states that fish populations should reach the Maximum Sustainable Yield although it is not completely clear whether this refers to the exploitation rate or SSB. The text also introduces a concept which is not in the MSFD Descriptor 3. It states that all stocks should be distributed throughout their natural range and that they should contain full size/age range. This does not refer to healthy stocks but to concepts similar to those covered by criterion 3.3 of the Commission Decision (2010/477/EU).

The HELCOM Fish Pro II project for a Baltic-wide assessments of coastal fish communities in support of an ecosystem based management (2013-2018). One of the programme objectives is to develop different assessment and monitoring methodologies for coastal fish, including indicators with targets and reference values.

Among the 11 ecological objectives⁵ set by the Barcelona Convention (UNEP/MAP), one objective applies to fisheries: Populations of selected commercially exploited fish and shellfish are within biologically safe limits, exhibiting a population age and size distribution that is indicative of a healthy stock. The text is almost the same as the one for Descriptor 3. The only difference is that instead of applying to all commercially exploited stocks it applies to selected stocks.

⁵ <http://planbleu.org/sites/default/files/upload/files/Information%20Note%20EcAp%20Process.pdf>

In the Strategic Action Plan (SAP) as implemented under the Bucharest Convention, one EcoQOs has been defined for the Black Sea: preserve commercial marine living resources. The EcoQO is split into two components of which both remain very general and noncommittal:

EcoQO 1a: Sustainable use of commercial fish stocks and other marine living resources

EcoQO 1b: Restore/rehabilitate stocks of commercial marine living resources.

Definition of GES

Descriptor 3 of the MSFD addresses the status of exploited fish stocks according to three criteria (exploitation rate, stock size and size structure). For the commercial species, the Commission Decision identifies three attributes to determine GES: stocks being exploited sustainably consistent with high long-term yield, full reproductive capacity, healthy age and size distribution. GES is achieved for a particular stock only if all attributes are fulfilled.

Criterion 3.1 Level of pressure of the fishing activity	Criterion 3.2 Reproductive capacity of the stock	Criterion 3.3 Population age and size distribution
The CFP requires that all stocks are exploited at or below FMSY. GES boundaries should be defined in line with this requirement.	- The lack of a legal standard/threshold make it more difficult for MS to define quantitative GES boundaries for all indicators under criterion 3.2. - OSPAR has set a quantified objective (spawning stock biomass above precautionary reference points, which have been defined by ICES for most important stocks), but this system will not be used anymore in the future (see below section on updating)	- The lack of a legal standard/threshold at EU and regional sea level makes it more difficult for MS to define quantitative GES boundaries for all indicators under criterion 3.3. - In general, it appears impossible practically to define quantitative GES boundaries for the four indicators covered by criterion 3.3.

The "climate sensitivity" for Descriptor 3

Fish stocks have a high level of climate sensitivity. The distribution of many fish stocks have been shifting northwards although this trend is not uniform across stocks.⁶ Furthermore in areas where species cannot shift their range further, it is possible that some species will be lost. In the case of the Mediterranean it might become a more homogenous tropical like ecosystem with likely loss of cold-water species.⁷ In such situations the achievement of GES in particular in regards to criterion 3.2 on reproductive capacity of the stock and criterion 3.3 on population age and size distribution needs to take into account and be able to differentiate between shifts that are due to fishing pressure and those that are due to shifts in climatic/hydrographical conditions.

⁶<http://www.ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/SSGSUE/2013/WGHIST2013.pdf>

⁷ http://www.vliz.be/wiki/Predicted_biodiversity_changes_in_the_Mediterranean_Sea

Analysis of the implementation process

Descriptor

All Member States defined GES for Descriptor 3 however four only at descriptor level. Although GES definitions were not directly comparable between Member States, none were defined in a way that significantly deviated from those provided in the Commission Decision 2010/477/EU. Most Member States applied criteria 3.1 and 3.2 and a more limited, but still noticeable, number applied criterion 3.3.

Criterion 3.1 Level of pressure of the fishing activity

All Member States applied indicator 3.1.1 fishing mortality (F) and each of those used the fishing mortality at maximum sustainable yields (FMSY) in their GES definition except one Member State which used a proxy for FMSY (F0.1). Most countries have GES definitions which do not require either explicitly or implicitly that all stocks are exploited at or below FMSY. Two Member States used FMSY as an environmental target value rather than as a limit or boundary for GES. For those stocks for which F could not be determined seven Member States applied the secondary indicator 3.1.2 catch/biomass ratio. One Member State also provided a third indicator Catch Per Unit Effort (CPUE). Moreover, three Member States have included the “exploitation rate” indicator and set a threshold level $E=0.4$ which is appropriate for small pelagic species.

Criterion 3.2 Reproductive capacity of the stock

For criterion 3.2, most Member States have covered the primary indicator (indicator 3.2.1), i.e. Stock Spawning Biomass SSB, but they used different reference points: SSB_{msy}, SSB_{pa} or BMSY-trigger. Other Member States implicitly applied Precautionary Approach levels by stating that stocks needed to be within safe biological limits. Six Member States also applied the secondary indicator 3.2.2 biomass indices. One Member State proposed an alternative secondary indicator based on trends of survey abundance.

Criteria 3.3 Population age and size distribution

Criterion 3.3 was the least developed criteria for Descriptor 3, as it still needs further methodological development.

Regional coherence descriptor 3

There are few specific regional differences to highlight. Only Mediterranean Member States applied the indicator exploitation rate (E) for small pelagic species. Criterion 3.3 was proportionally used least in the North East Atlantic, the Mediterranean and Baltic Member States applied this Criterion more often.

Analysis of the current text of the Decision

The introductory section states that the ‘section applies for all the stocks covered by Regulation (EC) No 199/2008 (within the geographical scope of Directive 2008/56/EC) and similar obligations under the common fisheries policy.’ The text should however take into account the fact that the MSFD also applies

to regional and local stocks. Some might not be covered under the DCF, in particular freshwater species in the Baltic and shellfish species (the ICES recommendations if adopted could be added to this section).

➤ **To be kept in the Decision, in accordance with the mandate provided by the Directive**

The text of Indicator 3.1.1 (the primary indicator) should be limited to the first sentence: *“Achieving or maintaining good environmental status requires that F values are equal to or lower than F_{MSY} , the level capable of producing Maximum Sustainable Yield (MSY).”* The remaining text, which is primarily of explanatory nature, should be included in guidance.

For the secondary indicator (3.1.2) as well as any defined by the Member State under criterion 3.1, it should be clear that the indicator is to be used as a proxy of F_{MSY} . The following text could be kept but made more explicit in this regard.

“The value for the indicator that reflects F_{MSY} needs to be determined by scientific judgement following analysis of the observed historical trends of the indicator combined with other information on the historical performance of the fishery. Where stock production-based assessments are available, the catch/biomass ratio yielding MSY can be taken as indicative reference. Alternatively to the catch/biomass ratio, secondary indicators may be developed on the basis of any other appropriate proxy for fishing mortality, adequately justified.

For Criterion 3.3, it is recommended to only keep indicators 3.3.1 and 3.3.3 and to not use indicators 3.3.2 and 3.3.4⁸.

➤ **To be taken out of the Decision and included in guidance**

In line with the recommendations above, the following parts of the Decision could be taken out and included in a guidance document

Criterion 3.1:

“This means that in mixed fisheries and where ecosystem interactions are important, long term management plans may result in exploiting some stocks more lightly than at F_{MSY} levels in order not to prejudice the exploitation at F_{MSY} of other species. F is estimated from appropriate analytical assessments based on the analysis of catch (to be taken as all removals from the stock, including discards and unaccounted catch) at age or at length and ancillary information.” Where the knowledge of the population dynamics of the stock do not allow to carry out simulations, scientific judgement of F values associated to the yield-per-recruit curve (Y/R), combined with other information on the historical performance of the fishery or on the population dynamics of similar stocks, can be used.”

Criterion 3.2 Indicator 3.2.1

“This is estimated from appropriate analytical assessments based on the analysis of catch at age or at length and ancillary information.”

⁸ This position was also supported by ICES. See <https://circabc.europa.eu/sd/a/d875d4e9-64e6-4ee9-9400-7656d275bc1d/Draft%20recommendations%20for%20the%20assessment%20of%20MSFD%20Descriptor%203.pdf>

“Further research is needed to address the fact that a SSB corresponding to MSY may not be achieved for all stocks simultaneously due to possible interactions between them.”

Criterion 3.2 Indicator 3.2.2

“It can be used if such indices can be obtained for the fraction of the population that is sexually mature. In such cases, such indices need to be used when scientific judgement is able to determine, through detailed analysis of the historical trends of the indicator combined with other information on the historical performance of the fishery, that there is a high probability that the stock will be able to replenish itself under the prevailing exploitation conditions.”

Criterion 3.3

For the two sets of indicators (proportion of old fish and size at first sexual maturation), expert judgement is required for determining whether there is a high probability that the intrinsic genetic diversity of the stock will not be undermined. The expert judgement needs to be made following an analysis of the time series available for the indicator, together with any other information on the biology of the species.

➤ Outdated

In relation to criterion 3.2, the reference to SSB_{msy} and SSB_{pa} is likely going to be outdated in light of the reform of the CFP and consequent shift to the use MSY Btrigger by ICES.⁹ Therefore the explanatory text for criterion 3.2 should be reviewed and possibly adapted in response to the changes to fisheries management being developed in ICES and GFCM.

Identification of issues

1. Nearly all Member States apply the MSY concept in their GES definition
2. Criterion 3.1 should be reviewed to determine whether the indicators exploitation rate (E) for small pelagics and F(0.1) or others should be specifically incorporated in the Commission Decision
3. The Commission Decision should include updated advice on the minimum stock biomass levels needed for all stocks in order to achieve GES
4. Criterion 3.2 should be adapted to take into account other SSB reference points such as BMSY-trigger.
5. Criterion 3.3 and the Descriptor 3 text relating to what constitutes a healthy stock requires further development

⁹http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2014/Special%20Requests/EU_Draft_recommendations_for_the_assessment_of_MSFD_Descriptor3.pdf

- The deletion of indicators 3.3.3 and 3.3.4 should be considered in line with the advice from ICES
- A conclusion on the stocks to be used to assess GES still needs to be made (e.g. proportion of the landings, ad hoc list) and such advice should be included in the Commission Decision

GES criteria (in accordance with Art. 9.3)

- Proposal to combine criteria for.
- GES boundaries defined according to limit values.
- Proposals for new criteria not yet covered, e.g.
- **Link to possible future EEA indicator.**

Illustrative example of review of current GES criteria:

GES methodological standards (in accordance with Art. 9.3)

Illustrative example:

Standardised methods for monitoring for comparability (in accordance with Art. 11.4)

- Proposals for specifications which aim at improving comparability of monitoring results on the basis of JRC / ICES / RSCs inventories and Article 12 findings linked to proposed criteria.

Illustrative example:

Standardised methods for assessment for comparability (in accordance with Art. 11.4 GES)

- Proposals for specifications which aim at improving comparability of assessment results on the basis of general guidance prepared by Deltares taking account of JRC / ICES / RSCs inventories and Article 12 findings linked to proposed criteria.

Illustrative example:

Rational and technical background for proposed revision

- Justification and technical background justifying the above proposals.

Other related products (e.g. technical guidance, reference in common understanding document)

Reference Documents

Descriptor