



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

Descriptor 1

Version	Date	Authors	Description
1.0	15/05/2014	DG ENV, Milieu, JRC, ICES	Draft manual to guide the technical review of the GES decision.
1.1	30/05/2014	DG ENV, Milieu	Approach and results from the Art.12 assessment filled up.
2.0	21/07/2014	JRC	Further developed and distributed to experts for comments and input.
2.1	13/10/2014	JRC, Member States experts	Comments and input from experts incorporated in the current draft version. Sent to WG GES meeting October 2014.
3	17/03/2015	JRC, MS experts, WG GES	1st round comments and inputs from experts group and GES members incorporated in the current draft version, also including outcomes from cross-cutting workshop (Jan. 2015). To be sent for a 2 nd round of consultation to experts and ENV.
4	08/04/2015	JRC, MS experts, WG GES, ENV	Final version of the document sent to WG GES for the April's 2015 meeting

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7 **Review of Decision 2010/477/EC**

8 **Introduction**

9 The MSFD Committee (Art. 25 of the MSFD) discussed and concluded an approach and an outline for the
10 review and possible revision of the Commission Decision 2010/477/EU on criteria and methodological
11 standards on Good Environmental Status (GES) of marine waters and of MSFD Annex III (see
12 Committee/07/2013/03rev for details). Based on the template in the annex to the mandate of the MSFD
13 Committee, a more detailed manual for the technical phase relating to the review of Commission
14 Decision 2010/477/EC has been developed to guide the parallel preparatory process and discussions per
15 descriptor. The review will aim to define GES criteria more precisely, including setting quantifiable
16 boundaries for the GES criteria where possible and specifications and standardised methods for GES
17 assessment in particular as regards temporal and spatial aggregation. The review of Annex III will be
18 carried out as a parallel process. The review of the Common Understanding Document is also taking
19 place alongside these two processes. Close coordination between these three processes should be
20 ensured.

21

22 **Descriptor 1: Biodiversity**

23 *Good Environmental Status for Descriptor 1: Biological diversity is maintained. The quality and*
24 *occurrence of habitats and the distribution and abundance of species are in line with the prevailing*
25 *physiographic, geographic and climate conditions (Annex I of the MSFD).*

26 **Review (technical phase) of Part B of the Decision (per descriptor)**

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50 those identified by the Article 12 assessment 21

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88	particular criterion and if necessary aggregation across assessment areas up to larger areas (e.g.	
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98	document or technical background document.	52
99	10. <i>Reference Documents</i>	53

100

101

<i>1. Approach</i>

102

103 **1.1 General guiding principles for the review**

104

105 The review aims to analyse the results from the first MSFD reporting round on Articles 8, 9, and 10 with

106 a view to update and simplify the Com Decision 2010/477/EU. Based on the Information in the Art 12

107 assessment reports (COM(2014)97 final) and the JRC in-depth assessments (Palialexis et al., 2014¹) a
108 template has been prefilled by Milieu for the DG ENV, commented by DG ENV and completed by JRC
109 which should enable the experts group to analyse current shortcomings, propose ways forward, such as
110 e.g. needs for further guidance and development, but eventually also to develop proposals for amending
111 the Decision 2010/477/EU, based on scientific knowledge and experience in the implementation
112 process.

113 The current review should lead to a new GES Decision which is:

- 114 • Simpler
- 115 • Clearer
- 116 • Introducing minimum requirements (to be enhanced by regions and MS, if necessary)
- 117 • Self-explanatory
- 118 • Coherent with other EU legislation
- 119 • Coherent with regional assessment methods (where EU does not exist)
- 120 • Have a clear and minimum common list of criteria and methodological standards and related
121 characteristics (Table 1, Annex III), at least at a sub-regional scale
- 122 • Ensure that criteria and methodological standards are adequately addressing the Descriptors are
123 covered by the proposed criteria, to lead to complete assessments
- 124 • Coherent with the MSFD terminology

125
126 This review should lead to a more coherent approach to the definition of GES based on agreed criteria
127 and methodological standards that allow for determining the distance of the current state from GES.
128 Figure 1 shows an example on the link between MSFD terminology and existing practical approach taken
129 from EU legislations. This can be used as guide for the characteristics/elements to be addressed under
130 Annex III and the revised Decision and to streamline the discussion to be carried out through the review
131 process.

132

¹ Palialexis A., Tornero A. V., Barbone E., Gonzalez D., Hanke G., Cardoso A. C., Hoepffner N., Katsanevakis S., Somma F., Zampoukas N., 2014. In-Depth Assessment of the EU Member States' Submissions for the Marine Strategy Framework Directive under articles 8, 9 and 10. EUR – Scientific and Technical Research series. Luxembourg: Publications Office of the European Union. EUR 26473 EN, 149 pp. doi: 10.2788/64014.

MSFD provision	Role/contents	Applied example
Art. 3 (5) GES definition	Goal	GES by 2020: "the environmental status of marine waters where ... "
Annex I GES descriptor	Quality objective	D1: "Biological diversity is maintained. The quality and occurrence of ..."
Annex III GES elements	Assessment elements	Birds, mammals , reptiles, fish, seabed habitats, water column habitats
Art. 9(3) GES criteria and methodological standards	EU-wide minimum specifications: Criteria: a. Assessment elements b. Assessment parameters c. Reference points (baseline and GES boundary values) Methodological standards: d. Assessment tools and procedures e. Assessment scale (generic)	Example: Mammals a. List of mammal functional groups (e.g. seals, small cetaceans) b. Distribution, population size, health condition c. Reference condition and acceptable deviation values (cf FCS target levels of Habitats Directive) d. FCS aggregation procedures/methods e. Cetaceans at subregional scale; seals at subdivision scale (nested approach)
Art. 9(1) Determination of GES	Sub(regional) specification by MS: a. Further specify criteria and methodological standards (e.g. RSC region/subregion-specific assessment elements, common indicators and assessment tools) b. Additional characteristics for region/subregion	Example: North-East Atlantic a. Harbour seal, grey seal b. OSPAR common indicators: • M-1 Distribution of seals • M-3 Abundance of seals • M-5 Seal pup production c. OSPAR-defined subdivisions of subregions (nested approach)
Art. 11(4) – Specifications and standardised methods for monitoring and assessment: e.g. EU-wide minimum specifications for spatial and temporal resolution of monitoring, monitoring methods (sampling, analysis, QA/QC), scaling, aggregation rules		

134
135**Figure 1.** Interpretation of Art. 9 of the MSFD for Descriptor 1²

136

137 The following points are summarising the role of GES in MSFD. According to the Directive GES is:

- 138 • starting and end point of MSFD
- 139 • reference point for the other MSFD provisions
- 140 • determined at the level of marine (sub)regions
- 141 • specified by common criteria and methodological standards
- 142 • legally time bound (2020) and subject to legally defined exceptions where this is not feasible

143 GES needs to ideally be quantified/quantifiable or measurable to allow for determining the distance of
144 the current state from GES and targets to monitor the progress towards GES³. According to the Com
145 Decision 2010/477/EU GES Art. 9(1) MS should determine GES at the level of criteria for each assessed

² Cross-cutting meeting Copenhagen 21-22 January 2015. https://circabc.europa.eu/d/a/workspace/SpacesStore/c47780cf-3fd6-4807-92c1-15a78a3ee29b/1501_GES_CCworkshop_Session%201.ppt

³ From DG ENV's presentation in March's 2014 WG GES group:

https://circabc.europa.eu/d/a/workspace/SpacesStore/2e3f1f2f-c1ef-407f-a433-12cf73e9e61b/GES_11-2014-13_CommonUnderstanding.ppt

146 element at a certain scale. This is the lowest quantifiable assessment block, which will be aggregated to
147 provide the overall GES for the marine ecosystem (see section 6.2 for aggregation rules).

148 **1.2 Overall reflection of the type of descriptor and descriptor criteria (e.g. state/pressure,** 149 **quantitative/qualitative) and its relationship with Article 3(5).**

150

151 According to MSFD Annex I for the biological diversity descriptor D1, GES means the environmental
152 status of marine waters, where “Biological diversity is maintained. The quality and occurrence of
153 habitats and the distribution and abundance of species are in line with prevailing physiographic,
154 geographic and climate conditions”. An ICES/ JRC expert Task Group (TG1) established in 2009 prepared
155 the scientific basis for developing the Commission Decision (2010/477/EC) and has in this context
156 addressed the definition/interpretation of key terms included in the descriptor of biodiversity, i.e.
157 biological diversity and maintained.

158 The Group adopted for the purpose of the Task the definition of the Convention on Biological Diversity
159 (CBD) for **‘biological diversity’**: “the variability among living organisms from all sources including,
160 *interalia*, [terrestrial,] marine [and other aquatic ecosystems] and the ecological complexes of which
161 they are part; this includes diversity within species, between species and of ecosystems”⁴. Table 1 in
162 Annex III of the MSFD lists biodiversity related features that should be considered in the
163 implementation.

164 The term **‘maintained’** is key to the quantification of GES for D1 and thus for the elaboration of
165 recommendations on criteria and methodological standards. The TG1 has associated the condition
166 (‘maintained’) to three determining factors: “a) no further loss of the diversity within species, between
167 species and of habitats/ communities and ecosystems at ecologically relevant scales, b) any deteriorated
168 attributes of biological diversity are restored to and maintained at or above target levels, where intrinsic
169 conditions allow (cf. Art. 1.2 a) and c) where the use of the marine environment is sustainable”.

170 The term **‘habitat’** in this Descriptor addresses both the abiotic characteristics and the associated
171 biological community, treating both elements together in the sense of the term biotope (Commission
172 Decision 2010/477/EU), whereas ‘quality’, ‘occurrence’, ‘distribution’, ‘extent’ and ‘abundance’ form the
173 basis of the criteria standards to assess GES.

174 Descriptor 1 has a broad scope, requiring assessment at several ecological levels: species, habitats
175 (addressing both the abiotic characteristics and the associated biological community, treating both
176 elements together) and ecosystems. At the species level, GES shall be defined for the full range of
177 functional and taxonomic groups occurring in the marine environment, including the native
178 angiosperms, macro-algae and invertebrate bottom fauna, phytoplankton, zooplankton, fish, mammals,
179 reptiles, seabirds and cephalopods (Annex III, Table 1 of the MSFD).

⁴ Task Group 1 Report Biological diversity (2010) – text in [...] shows where the definition is less relevant to the marine environment.

180 The MSFD requires Member States to understand and assess the condition of the typical species
181 associated with the seabed and the pelagic habitats and the representative species of the functional
182 groups (MSFD, TG1, CSWD 2011). Special attention is given to the listed species under EU Directives (the
183 Birds Directive, the Habitats Directive) (MSFD paragraph 6; COM DEC 2010/477/EU paragraph 5) and
184 international conventions (Helsinki, OSPAR, Barcelona, Bucharest) - also referred to Annex III Table I of
185 the MSFD.

186 At the habitat level, determination of GES is required for the predominant habitat types (as defined in
187 Annex III, Table 1 of the MSFD, in TG1 report and in the SWD 2011/1255) and the special habitat types
188 listed under EU legislation or international conventions.

189 The determination of GES for biological diversity at the ecosystem level shall be based on evaluation of
190 the structure (composition and proportion) and interaction between the ecosystem components, the
191 processes and functioning, connectivity and resilience of the ecosystem. This would be the level for
192 biological traits and ecosystem services. Some of the aforementioned ecosystem attributes are also
193 tackled by other descriptors (e.g. 4 and 6) and these links have to be specified and clarified, consisting
194 one of the major issues in the review process.

195 It is recognized that there are strong links between D1 (biodiversity per se), D4 (food webs) and D6 (sea-
196 floor integrity), which are frequently addressed together as the “biodiversity theme” since requirements
197 for monitoring and assessment of these descriptors partially overlap (see e.g. Zampoukas et al., 2012⁵,
198 Table 1). Thus, it is necessary to ensure a coherent approach across the descriptors to avoid overlapping,
199 contradictory and double assessments. Besides, all other descriptors include, more or less explicitly,
200 effects on “state” of various biodiversity components in at least one criterion (except actually implicitly
201 for D11). Thus, GES of “pressure” descriptors should be defined and assessed in line with the GES of
202 “biodiversity” descriptors. This to optimize i) integrated indicators/monitoring standards (across criteria
203 within and/or between Descriptors), ii) associated monitoring, and iii) efficient guidance for measures
204 (pressure/state relationships).

205 Overall, for the MSFD, assessments of status are focused on the following groups of highly mobile
206 marine species: birds, mammals, reptiles, fish and cephalopods, and on predominant habitat types of
207 the water column and seabed together with their associated biological communities (SWD 2014/49). In
208 addition to these broad categories, attention is directed also to specific species and habitat types which
209 are listed for protection under the Birds and Habitats Directives and under international agreements.
210 Genetic- and ecosystem-level aspects are also important for the status characterization.

211 **1.3 Linkages with existing relevant EU legal requirements, standards and limit values, such** 212 **as the WFD, and the identification of potential incoherence.**

213

⁵ Zampoukas N, Piha H, Bigagli E, Hoepffner N, Hanke G, Cardoso AC. 2012. Monitoring for the Marine Strategy Framework Directive: Requirements and options. JRC Scientific and Technical Reports.
<http://publications.jrc.ec.europa.eu/repository/bitstream/111111111/23169/1/lbna25187enn.pdf>

214 ***The Habitats Directive (92/43/EEC)***

215 The main aim of the Directive is to contribute towards ensuring biodiversity through the conservation of
216 natural habitats and of wild fauna and flora. It requires that EU MS take measures to ensure that the
217 species and habitats “of community interest” listed in its annexes are protected so as to be in
218 “favourable conservation status” (FCS).

219 The Habitats Directive specifically establishes the network of Special Areas of Conservation (SACs),
220 which together with the Special Protection Areas (SPAs) under the Birds Directive form the Natura 2000
221 network of protected areas, including marine areas, as a mean to achieving FCS for the listed species
222 and habitats. In the network each site contributes to the attainment of FCS, but this objective is to be
223 attained at the scale of the natural range of species or habitat type. The site level conservation
224 objectives are set upon identification of the contribution of the particular site to the Member States’
225 achievement of FCS for the habitats and species present in the whole area of the Member States.

226 Site objectives should be established for SACs under the Habitats Directive and also for special protected
227 areas (SPAs) under the Birds Directive. The conservation objectives at the site level must take in
228 consideration the following elements (COM Note on establishing conservation objectives for the Natura
229 2000 sites 23/11/2012):

- 230 • the ecological requirements of the species and habitat types listed in the Natura 2000 Standard
231 Data Form and whose presence is significant
232 • the local, regional, national conservation status of the habitats and species
233 • the overall coherence of the Natura 2000 network
234 • the higher level conservation objectives at national/ biogeographical level and the contribution
235 of the site to them.

236 Member States are required to report on the status of the species and habitats including their
237 distribution within the territory of the Member State and measures taken and their impact on the
238 conservation status of concerned habitats and species every six years. Assessment of whether a species
239 or habitat is in FCS is based on specified criteria with principle threshold values⁶, with failure of any one
240 criterion giving a ‘below-FCS’ outcome (one-out-all-out principle). Assessment of FCS is by biogeographic
241 regions. Where Member State's territories lie in several biogeographic regions, separate assessments
242 are required for their territory within each region. There is then an aggregation of assessments across
243 the Member States to give the overall status per species and habitat at the biogeographic region level.

244

245 ***The Birds Directive (2009/147/EC)***

246 The Birds Directive (BD) refers to the need for a sufficient diversity and area of habitats for listed bird
247 species (Annex I of the BD) and migratory species not listed. It requires the establishment of measures

⁶ Annex C and E of the following report:
http://www.bfn.de/fileadmin/MDB/documents/themen/monitoring/Art_17_Reporting_Formats.pdf

248 to maintain the populations of these species including the designation of protected areas (Special
 249 Protection Areas)⁷. These measures should be reported every six years. The establishment of
 250 conservation measures should take into account trends and variations in populations. In 2007 bird
 251 species were assessed for the first time using the same FCS criteria and methodology as under the
 252 Habitats Directive. However, no threshold values had to be submitted in the 2007 report.

253 ***The Water Framework Directive (2000/60/EC)***

254 In the marine environment, the Water Framework Directive (WFD) spatially covers ‘transitional waters’
 255 and ‘coastal waters’, of which coastal waters are also covered by MSFD. The Directive aims to achieve
 256 good water status, which is assessed at the ‘water body’ scale. It considers both the good chemical
 257 status (whose specifications are relevant for other descriptors, but not D1) and the good ecological
 258 status (GEcS), which is defined in terms of the quality of the biological communities, the hydrological
 259 characteristics and the chemical characteristics (WFD, Annex V). The WFD does not explicitly mention
 260 biodiversity. However, taxonomic composition of phytoplankton, macrophytes and zoobenthos and
 261 their abundance/biomass are assessed as quality elements for the classification of ecological status⁸.

262 ***Specifying linkages across EU legislations***

263 Even if the assessment classifications (FCS and GES) are different, the criteria for species and habitats in
 264 MSFD and HBD are very similar (Table 1) and offer good opportunity for optimization of assessments
 265 (i.e. coherent methods based on common criteria). These criteria provide a ‘framework’ where for each
 266 species or habitats only relevant criteria should be allocated (e.g. habitat distributional range is not
 267 suitable for physically-defined habitats).

268

269 **Table 1.** Pairing MSFD species and habitats criteria with the Nature Directives criteria (from the cross-
 270 cutting workshop’s presentation⁹).

	MSFD (D1, 3, 4, 6)	BD & HD	IUCN Red List
Species	Distribution (1.1)	Range	Range (EEO, AOO)
	Population size (1.2); reproductive capacity (3.2)	Population	Population size Small population

⁷ Special Areas of Conservation (HD) and Special Protection Areas (BD) together comprise the **Natura 2000** network of protected areas.

⁸ JRC, 2014. In-Depth Assessment of MS’ submissions for MSFD Art. 8, 9 & 10

⁹ https://circabc.europa.eu/d/a/workspace/SpacesStore/b91483a7-e849-4664-b391-6bb6a667d39e/1501_GES_CCworkshop_Session%202-3.ppt

	Population condition (1.3); age & size distribution (3.3)		Mature individuals incl. above
		Habitat for species	Habitat quality incl. in Range
		Future prospects	Included above
Habitats	Distribution (1.4)	Range	Quantity (extent of occurrence; area of occupancy)
	Extent (1.5)	Area covered	
	Condition (1.6, 6.2)	Structures & functions	Quality (biotic, abiotic)
		Future prospects	Included above

271
272 According to the “Links between MSFD and the Nature Directives¹⁰”, if FCS is not achieved at a
273 particular level (MS territory/region), and given that FCS and GES objectives are mutually
274 supportive and assessed at similar scales, it could influence whether GES for biodiversity
275 components is achieved on the same scale. Consequently it should be acknowledged that
276 achieving FCS for the relevant marine species and habitats is likely to be a key aspect in
277 assessing the achievement of GES for the biodiversity component of the MSFD. Equally,
278 measures taken under the Habitats Directive outside Natura 2000 sites to avoid deterioration of
279 the features within SACs are likely to contribute to achieving GES. Despite the different set
280 objectives across these Directives, their assessments on habitats and species are comparable
281 and MSFD has to consider existing Community Legislations’ assessments.
282

283 The Common Understanding document¹¹ encourages MS to follow the matching of the relevant
284 Directives classification that is presented in Figure 2. In waters with overlapping regimes, the boundary
285 for Good Environmental Status should preferably coincides with the boundaries/thresholds of
286 “favourable conservation status” for the Habitats Directive and “good ecological status” and “good
287 chemical status” for the Water Framework Directive. This is illustrated in relation to the degree of

¹⁰ <https://circabc.europa.eu/d/a/workspace/SpacesStore/e67df5e9-21e0-4dbd-9778-ac4fb08fe1f7/Doc%209%20Links%20MSFD%20HBD%20FAQ.doc>

¹¹ MSFD CIS, Common Understanding of (Initial) Assessment, Determination of Good Environmental Status (GES) & Establishment of Environmental Targets. https://circabc.europa.eu/d/a/workspace/SpacesStore/ae13d0d6-8787-4d62-b2b6-1718cf760fe8/CommonUnderstandingArt.8-9-10_Nov2011.doc

288 pressures and impacts from human activities. It is to be noted however that these regimes are applied at
 289 differing scales and there may be cases where good status under the MSFD and WFD may not be
 290 sufficient to meet the specific objectives of the Birds and Habitats Directive¹⁰, and vice versa.

EU Directives	Assessment of environmental status				
MSFD	Good Environmental Status		GES not achieved		
Habitat Directive	Conservation status favourable		Inadequate	Bad	
WFD (ecological status)	High	Good	Moderate	Poor	Bad
WFD (chemical status)	Good chemical status		Good chemical status not achieved		
Pressures and impacts					

291
 292 **Figure 2:** Classifications of the assessment of the environmental status under EU Directives. In waters
 293 with overlapping regimes, the boundary for Good Environmental Status should coincide with the
 294 boundaries for “Favourable Conservation Status” of the Habitats Directive and “Good Ecological Status”
 295 and “Good Chemical Status” of the Water Framework Directive (from the MSFD CIS document¹¹).

296

297 1.4 Linkages with international and RSC norms and standards

298

299 The **HELCOM CORESET** project developed first proposals for core indicators that the CORESET II project
 300 (2013-2015) continue developing and potentially developing additional indicators to strengthen for
 301 example, the coverage e.g. of the plankton. The core indicators have been developed using the common
 302 principles agreed by HELCOM (HOD 35/2011). Currently, 20 core indicators are under development for
 303 biological diversity: five core indicators cover benthic habitats and communities¹², four indicators cover
 304 mammals, five cover birds (one shared with mammals) and five cover fish. The pelagic or planktonic
 305 features have a weaker representation - with only one zooplankton indicator. The 20 biodiversity
 306 indicators relate to three MSFD descriptors, D1, D4 and D6 and not just to D1. As a separate exercise,
 307 HELCOM has recently assessed the status of its species and habitats according to modified IUCN criteria
 308 and leading to Red Lists of species and habitats for the Baltic (HELCOM 2013).

¹² The HELCOM biodiversity CORESET indicators final report, 2013. An updated list of indicators will be found in the HELCOM Meeting Portal (<https://portal.helcom.fi/meetings/STATE-CONSERVATION%202-2015-232/default.aspx>) by the end of May 2015.

309 For **OSPAR**, the Intersessional Correspondence Group on the Coordination of Biodiversity Assessment
310 and Monitoring (ICG-COBAM) is responsible for the coordination of OSPAR's biodiversity assessment and
311 monitoring work under the guidance of the Biodiversity Committee, and has a particular focus on the
312 requirements of the MSFD in relation to biodiversity aspects. In March 2015, ICG COBAM has adopted
313 15 common biodiversity indicators (3 for mammals, 2 for Birds, none for turtles, 2 for fish, 2 for benthic
314 habitats, 2 for pelagic habitats, 2 for food webs, 1 common to pelagic and food webs, and 1 for non-
315 indigenous species), all relevant for D1, but some also for D2, D4 or D6. These common indicators have
316 been tested in the 2014/2015 meeting cycle. Relevant common indicators will deliver to OSPAR's
317 Intermediate Assessment in 2017, which will be recommended, to EU Members States, to be integrated
318 in the 2018 reporting of MSFD Article 8, 9 and, where feasible, article 10. Further, several candidate
319 biodiversity indicators may be promoted to common indicators in the future. The ICG COBAM continues
320 the work on improving regional coordination for assessing and monitoring biodiversity descriptors under
321 OSPAR.

322 The Ecosystem Approach (EcAp) of the Contracting parties in **Barcelona Convention** will gradually
323 implement the ecosystem approach to the management of human activities in the Mediterranean,
324 aiming to attain "A healthy Mediterranean with marine and coastal ecosystems that are productive and
325 biologically diverse for the benefit of present and future generations"¹³ by May 2015. One of the three
326 main goals of this approach is focused on the preservation and restoration of marine biodiversity in the
327 region. Indicators and monitoring programmes to support the 11 Ecological Objectives of EcAp, including
328 biodiversity objectives similar to those of MSFD, are currently being developed; the process follows a
329 similar approach to that of HELCOM and OSPAR, notably through the Integrated Correspondence
330 Groups of GES and Targets (CORGEST) and the Correspondence Group on Monitoring, (CORMON)
331 Biodiversity and Fisheries. These recent groups work on issues in line with D1, D2, D3, D4 and D6.

332 Within the **Black Sea** the policy on biodiversity is outlined in two key legally binding documents: the
333 Black Sea Biodiversity and Landscape Conservation Protocol 2002 (BSBLCP), which entered into force in
334 2011, and the Black Sea Strategic Action Plan (BSSAP, 2009) for environmental protection and
335 rehabilitation of the Black Sea. The purpose of the BSBLCP is "to maintain the Black Sea ecosystem in
336 good ecological state and its landscape in favourable conditions, to protect, to preserve and to
337 sustainably manage the biological and landscape diversity of the Black Sea in order to enrich the
338 biological resources". This Protocol stipulates a number of regional measures that are consistent with D1
339 "biodiversity is maintained". Towards this goal, in 2014, the contracting states "shall adopt a list of
340 species of Black Sea importance that may be threatened or important by reason of their role in
341 ecosystem functioning or other significance for the region". The listed species "will be subject to special
342 measures". The regional states "shall adopt a list of important landscapes and habitats of the Black Sea
343 that may be threatened of destruction, or important by their nature, cultural or historical value, which
344 constitute the natural, historical and cultural heritage or present other significance for the Black Sea
345 region". In addition to BSBLCP provisions, the BSSAP determines the "Conservation of Black Sea
346 Biodiversity and Habitats" as the second of four Ecosystem quality objectives (ECOQOs) towards

¹³ Decision IG.17/6, Spain, 2008.

347 achieving the overall long-term desired ecosystem state called “Vision for the Black Sea”. A couple of
348 sub-objectives are formulated with regards to the native biodiversity: EcoQO 2a- Reduce the risk of
349 extinction of threatened species and EcoQO 2b- Conserve coastal and marine habitats and landscapes.
350 The management targets defined to achieve the EcoQOs of BSSAP are conceptually equivalent to the
351 “operational targets” sensu MSFD for GES achievement.¹⁴.

352 **1.5 Clarification of the relevant scientific, technical and policy terminology in relation to** 353 **the descriptor.** 354

355 The revision of the Common Understanding document is taken forward through the drafting group GES
356 (WG GES 12/2014)¹⁵. The revision includes a new section on ‘Basic understandings’, which aims at a
357 common interpretation of MSFD concepts and terminology. Annex 1 of the document is an expanded
358 glossary of MSFD terms. The TG1 report provides definition of key terms for Descriptor 1 (see also
359 section 1.2 of this document) and an analytical glossary of relevant terms to biological diversity and
360 MSFD implementation. An agreed glossary of terms based on existing practices and documents would
361 definitively be required to enhance common understanding. Biodiversity glossaries for the MSFD and D1
362 implementation are also included in documents coming from the RSCs (e.g. the OSPAR’s MSFD Advice
363 Manual and Background Document on Biodiversity 2012¹⁶, annex 8.2),) and research projects’
364 deliverables (e.g. DEVOTES recommendations for the implementation of the Marine Strategy
365 Framework Directive, annex¹⁷; HARMONY’s glossary of terms commonly used in the Marine Strategy
366 Framework Directive¹⁸).

367 The GES definition for Descriptor 1 is split into three ecological levels in the Commission Decision (2010)
368 addressing GES at species, habitat and ecosystem levels. The elements to be addressed under these
369 three levels should take into account Annex III of the MSFD and be coherent with the requirements laid
370 down in Directives 92/43/EEC and 2009/147/EC. The indicative lists of characteristics in Annex III of the
371 MSFD (Table 1) can however be improved to promote consistency in their use by MS (Patricio et al.,
372 2014¹⁸).

373

¹⁴ KnowSeas, Knowledge-based Sustainable Management for Europe’s Seas, 2013.

¹⁵ https://circabc.europa.eu/d/a/workspace/SpacesStore/d0c8db99-676b-4e79-937f-4bee634e8daf/GES_12_2014_06_Common_Understanding_final.doc

¹⁶ OSPAR (2012). MSFD Advice Manual and Background Document on Biodiversity. London, Publication Number: 581/2012, 141 pp. (available at: http://www.ospar.org/v_publications/download.asp?v1=p00581)

¹⁷ Patricio et al., 2014. DEVOTES recommendations for the implementation of the Marine Strategy Framework Directive. http://www.devotes-project.eu/wp-content/uploads/2014/10/DEVOTES_Deliverable-1-5.pdf

¹⁸ Andersen, J.H., Hansen, J.W., Mannerla, M., Korpinen, S. & Reker, J. 2013: A glossary of terms commonly used in the Marine Strategy Framework Directive. Aarhus University, DCE – Danish Centre for Environment and Energy, 32 pp. Technical Report from DCE – Danish Centre for Environment and Energy No. 16. <http://www.dmu.dk/Pub/TR16.pdf>,

374 **1.6 Descriptor specificities should be highlighted and justified (e.g. if it is recommended to**
 375 **combine several descriptors together).**
 376

377 Assessments at ecosystem level can be considered to have links to the assessment of food webs
 378 (Descriptor 4). The assessment of seabed habitats has links to Descriptor 6 on sea-floor integrity and
 379 also to Descriptor 7 (criteria on habitats affected by permanent hydrological changes). The status of
 380 commercial fish and shellfish under Descriptor 3, as part of fish and benthic community's biodiversity
 381 (but only for commercial species), may have input and linkages to the assessment of fish and seabed
 382 habitats under this descriptor (SWD 2014/49). Descriptor 1 has links to all the pressure-related
 383 descriptors (i.e. Descriptors 2, 3, 5, 6, 7, 8, 9, 10 and 11), due to the range of threats related to it. The
 384 selected elements (species, habitats, functional groups) in D1 should where possible be directly linked
 385 with the pressure descriptors, as the pressures and impacts have to be linked with specific ecosystem
 386 elements, to the extent that current knowledge allows.

387 Attention should be drawn on the fact that a clear separation between state and pressure descriptors is
 388 somewhat artificial, as the current Commission Decision stands. Several descriptors include both criteria
 389 of state and pressure, and there are even examples of criteria mixing both types of indicators, state and
 390 pressure (Berg et al., 2015¹⁹).

391 Table 2 presents the overlapping/similar state criteria (or state indicators included in pressure criteria)
 392 and the level of the common assessed elements under those criteria. These overlaps have to be
 393 clarified, either by merging or synchronizing the assessments or by simply eliminating the overlapped
 394 attributes. The review process and the directions given after the cross-cutting workshop²⁰ in respect of
 395 the integration of assessments are contributing to tackle the aforementioned issues.

396 **Table 2²¹.** Descriptors sharing common assessment elements, criteria and indicators. The review process
 397 needs to avoid overlaps, streamline the, in any case, artificial distinction of the state descriptors towards
 398 an ecosystem-based management to human activities.

Descriptors	Elements → common lists	Overlapping Criteria
D1, D4 (ecosystem scale)	Species, Functional groups, Ecosystems	1.1, 1.2 + 4.2 & 1.7 + 4.2
D1, D6 (seabed habitats)	Habitats (predominant, special)	1.5, 1.6 + 6.1 & 1.7 + 6.2
D1, D3 (species groups)	Species, Functional groups	1.2 + 3.2 (3.2.2) 1.3 + 3.3

¹⁹ Berg T, Fürhaupter K, Teixeira H, Uusitalo L, Zampoukas N. 2015. The Marine Strategy Framework Directive and the ecosystem-based approach - pitfalls and solutions. Accepted for publication in Marine Pollution Bulletin.

²⁰ https://circabc.europa.eu/d/a/workspace/SpacesStore/9daafb84-fe4f-42ad-864f-21b338c8269b/CCWorkshop_Summary%20Notes_20022015_Final.docx

D1, D2 (species groups)	Species	2.1+1.2
D1, D5 (species groups)	Species, Functional groups	1.2 + 5.2 (5.2.3), 5.3 (5.3.1)
D1, D7 (habitats)	Habitats (predominant, special)	1.5, 1.6 + 7.2

399
400 Not only the overlaps presented in Table 2, but also the links across the Descriptors' criteria should be
401 clarified to support a holistic assessment based on the ecosystem approach, which is further discussed
402 in section 6. Annex V of the SEC 2011/1255 provides a comprehensive basis that links pressure-impact
403 and state indicators of the COM DEC 2010/477/EU with the MSFD's Annex III (Table 1) attributes. This
404 table has to be updated accordingly to support the review process and to be in-line with the proposed
405 changes. At the level of criteria Figure 3 allocates the main pressures (P), to main state elements (S)
406 through the main impacts criteria. Distinction at criterion level between pressure and state is not so
407 clear e.g. D6 is more pressure/impact, while D7 is more an impact descriptor than a pressure descriptor
408 (hydrological changes typically stem from physical infrastructures (i.e. a consequent impact)).
409 Assessments of impacts from pressures need to be clearly related to state components (i.e. at similar
410 resolution to state elements being assessed).
411

			Physical damage	Hydrological	Energy, incl. UW noise	Nutrients	Contaminants	Litter	Fishing/ by-catch	NIS
		P S	6.1	7.1	11.1, 11.2	5.1	8.1, 9.1	10.1	3.1	2.1
Ecosystem 1.7, 4.1-4.3	Birds	1.1-1.3					8.2	10.2		2.2
	Mammals	1.1-1.3								
	Reptiles	1.1-1.3								
	Fish	1.1-1.3							3.2, 3.3	
	Water	1.4-1.6				5.2, 5.3				
	Seabed	1.4-1.6	6.2	7.2			8.2		3.2	

412 **Figure 3:** 2010/477/EU Decision criteria allocated to main pressures (P) and main state elements (S)
413 through the main impacts (modified from the cross-cutting workshop presentation²¹).

414 More effort is needed for the identification of particular impacts on the assessed state elements, which
415 can be better facilitated at a lower than the criteria level, such as through particular methodological
416 standards that are able to quantify the level of the impact.

417

418 **1.7 An analysis of whether the criteria and/or indicators and/or methodological standards** 419 **for the particular descriptor are likely to be common across the EU or need aspects to be** 420 **specific at region or other scales.**

421

422 The criteria for D1 -also considering MS reports for 2012 reporting (COM(2014)97; Palialexis et al.
423 2014²²)- have and should have an EU-wide implementation, since they are general enough to cover all
424 biodiversity aspects and there are no particular regional specificities that would require an alternative
425 approach under another criterion. On the other hand, the elements to be assessed (species, functional
426 groups, habitats, ecosystems) have a strong regional character and their selection should consider the
427 existing lists on either EU legislations (e.g. CFP, HD, BD) or RSCs. The list of characteristics in Table 1 of
428 the Annex III of the MSFD should therefore be revised to set the guidelines and regional requirements in
429 support of a coherent approach to the selection of such elements across MS (Patricio et al., 2014¹⁷). The
430 use of EU-wide lists, such as EUNIS for habitats classification, and SWD 2011/1255 for functional groups
431 classification would facilitate a coherent and comparable assessment. RSCs have started working on the
432 implementation of MSFD criteria and methodological standards, optimizing them on their regional
433 specificities and taking stock of the work they have previously done on their marine waters. Their
434 experiences will be used on the generation of basic regional lists of the various components, while
435 existing lists have to be taken into account. Section 2.3 includes existing lists of species, habitat types
436 and functional groups that should be considered in the selection of assessment elements, e.g.
437 representative (sub)regional species and habitat community to be assessed for practical issues
438 (monitoring, indicators), according to relevant and commonly agreed selection criteria. Further work is
439 required to reach an agreement on selection and de-selection criteria of elements included in those lists,
440 as well as generating an EU-wide or regional lists.

441 Functional groups and habitats types (predominant/special/particular) should be the level of agreement
442 and reporting, and lists of representative species/habitat community should be used as living documents
443 and tools to enhance cooperation and joint monitoring (e.g. through RSC where works on such lists have
444 been, and are still, in progress).

445 **1.8 The "climate sensitivity" for D1 (or criteria/indicators)**

446

²¹ https://circabc.europa.eu/d/a/workspace/SpacesStore/b91483a7-e849-4664-b391-6bb6a667d39e/1501_GES_CCworkshop_Session%202-3.ppt.

²² Palialexis A., Tornero A. V., Barbone E., Gonzalez D., Hanke G., Cardoso A. C., Hoepffner N., Katsanevakis S., Somma F., Zampoukas N., 2014. In-Depth Assessment of the EU Member States' Submissions for the Marine Strategy Framework Directive under articles 8, 9 and 10. EUR – Scientific and Technical Research series. Luxembourg: Publications Office of the European Union. EUR 26473 EN, 149 pp. doi: 10.2788/64014.

447 Descriptor 1 has a high sensitivity to climate change; hence the Annex I descriptor text states that the
448 quality and occurrence of habitats and the distribution and abundance of species should be in line with
449 the prevailing climatic conditions. Due to climatic changes the prevailing conditions will potentially
450 change, which can also affect the distribution and ranges of habitats and species as well as other
451 attributes. Therefore, where biological diversity targets have been set that do not take into account
452 changing prevailing conditions, some biological diversity objectives might not be achievable in the long
453 term or should be adapted over time to take into account changing conditions. An explicit analysis on
454 the effects of climate change on GES determination for D1 is included in Elliott et al. (2015)²³.

455 Consideration should also be given to the combined effects of changing prevailing conditions and the
456 effects of human pressures. Climate change in its own right is a pressure and will exacerbate the effects
457 of other pressures, thus it should be considered when GES boundaries and thresholds are established to
458 avoid "shifting baselines". This has particular relevance as climate change is regarded as an exogenic
459 unmanaged pressure, i.e. operating outside the control of management measures employed in a
460 regional sea and where the management measures can only address the consequences rather than the
461 causes (for more details see Patrício et al. 2014²⁴). Making the distinction between changes due to
462 climatic changes and other pressures is likely to pose a challenge in the delimitation of their synergistic
463 and cumulative effects. Environmental status should therefore be considered at the slightly broader
464 level of functional groups of species, functional habitats and their relationships, within which a suitable
465 degree of fluctuation in species composition and relative abundance can be anticipated (OSPAR's ICG-
466 COBAM Advice Manual²⁵).

467 A "network" of reference population (e.g. mobile species) and habitats, along biogeographic gradient in
468 Europe could be good information to comprehend/estimate effects of climate/global change at wide
469 scale and help interpretation of other changes at more or less finer scale.

470 **1.9 An indication of whether a quantitative GES definition for the descriptor will be** 471 **possible or whether a qualitative/normative definition only should be used (on the basis of** 472 **Article 3(5))** 473

474 It is envisaged that a quantitative definition of GES at the criterion level for each assessment element is
475 feasible, considering the definitions of FCSs - Favourable Reference Values - provided by the HD.
476 Generally, a quantitative definition of GES for biological diversity seems to be difficult, considering also
477 the variety of the assessment elements, which cannot be homogeneously captured by a single quantity. A

²³ Elliott M., A. Borja, A. McQuatters-Gollop, K. Mazik, S. Birchenough, J. H. Andersen, S. Paintin, M. Peck, 2015. Force majeure: Will climate change affect our ability to attain Good Environmental Status for marine biodiversity? Marine Pollution Bulletin, <http://dx.doi.org/10.1016/j.marpolbul.2015.03.015>

²⁴ Patrício J, Teixeira H, Borja A, Elliott M, Berg T, Papadopoulou N, Smith C, Luisetti T, Uusitalo L, Wilson C, Mazik K, Niquil N, Cochrane S, Andersen JH, Boyes S, Burdon D, Carugati L, Danovaro R, Hoepffner N. 2014. DEVOTES recommendations for the implementation of the Marine Strategy Framework Directive. Deliverable 1.5, 71 pp. DEVOTES project. JRC92131

²⁵ http://www.ospar.org/documents/dbase/publications/p00581/p00581_advice%20document%20d1_d2_d4_d6_biodiversity.pdf

478 potential conceptual approach for a quantitative GES can be framed in a way that the resilience of the
479 ecosystem is suited to accommodate the quantified biodiversity, or in other words, it will be accounted
480 in the determination of the GES boundaries as the “naturally” allowed deviation from the reference
481 point. Where GES cannot be quantified it could be at a first step qualitatively defined, notably according
482 to the actual lacks of knowledge for many species or habitats. For example, benthic habitat condition
483 could be defined qualitatively (based on species composition and proportions) and the GES/no GES
484 could be a deviation (qualitative or semi-quantitative-range) around this qualitatively defined reference.
485 Considering the dynamic ecosystems and the naturally varying environmental conditions GES deemed to
486 be directly quantified for certain scales, species and habitats. To that end, lists of elements and common
487 classification systems of elements can facilitate a coherent and comparable quantitative determination
488 of GES, at least regionally. Qualitative definitions of GES may deviate from FCS provided by HD. There
489 may be species that are not in FCS for (coastal and/or) marine waters, but they are in FCS on a national
490 level. In this case the Member State is not obligated to undertake action to change the status in marine
491 waters (e.g. gulls, terns, waders that are breeding in coastal and further inland habitats)

492

493

2. Analysis of the implementation process

494

495 **2.1 Based on the Commission/Milieu Article 12 reports and the JRC in-depth assessments,**
496 **a detailed summary of the findings of Article 12 relating to the determination of GES and**
497 **specifically the use of the Decision criteria and indicators should be made.**
498

499 All MSs of the four marine regions have defined GES for Descriptor 1 but none have defined it in the
500 same way (or even similarly); the levels of detail vary enormously, GES definitions are not comparable,
501 not linked with boundaries and the degree to which GES is achieved is not measurable (COM(2014)97 ;
502 Palialexis et al. 2014). More than half of the MSs defined GES on the basis of criteria often in agreement
503 with the Commission Decision specifications, although not all the Commission Decision criteria are
504 always used. The majority of MSs covered species, habitats and ecosystems but at varying levels of
505 detail. Habitat criteria (1.4-1.6) are reported less often than species criteria and the ecosystem structure
506 criterion 1.7 is applied the least (Palialexis et al., 2014¹).

507 The level of integration between MSFD D1 and other EU legislations (i.e. HD, BD, WFD), other
508 international agreements (e.g. conventions – Bern, CITES, Bonn) and RSC agreements was assessed; it is
509 characterized by a wide variation (Palialexis et al., 2014). The HD was more often taken into account
510 compared to other legislations, but the general overview of the level of integration is relatively low,
511 despite the overlap between MSFD and assessed legislations and agreements and the associated data
512 availability (Palialexis et al., 2014). Regarding the RSC, the MSs have indicated intention to follow the
513 corresponding agreements, especially in the RSC that are more advanced in assessing biodiversity.

514 Palialexis et al. (2014) assessed the coherence of the reported characteristics e.g. list of species,
515 habitats, ecosystems, functional groups within and between the RSC and against the list in SEC
516 (2011)1255²⁶. The discrepancy across the reported lists and groups did not allow for conclusive
517 comparison, increasing the incoherence and inability for adequately assessing GES at any spatial level.

518 An additional element of complexity in the assessment of the reports is the different allocation of
519 methodological standards either to an indicator, criterion or descriptor. MSs should, ideally, report GES
520 at the same level (criterion according to MSFD and COM DEC 477/2010/EU) in order to reduce the
521 heterogeneity in reporting and the different interpretations of the COM DEC 477/2010/EU amongst the
522 MSs (Palialexis et al., 2014). The inclusion of generic indicators in the COM DEC 477/2010/EU instead of
523 specific methodological standards gave room for several interpretations of the criteria and a vast
524 number of non-comparable methodological standards for D1. The lack of a common list of
525 characteristics associated with common GES boundaries hindered the goal established by the MSFD for
526 comparable and coherent assessment of GES.

527 Three MSs use functional groups, in addition to species groups, in their GES definition. One MS covers
528 both cephalopods and reptiles in its GES definition and two MS have included shellfish in the scope of
529 their GES definition. Seven MS have included a specific reference to listed/protected species and
530 habitats in their GES definitions. These include species covered by the Habitats and Birds Directives and
531 species protected by the OSPAR Convention, the Barcelona Convention, the IUCN list of endangered
532 species and the ASCOBANS and ACCOBAMS Agreements. Six MS have defined quantitative threshold
533 values with their GES definition, but often using different thresholds for different biological features. 3
534 MS have included the notion of 'restoration' of biodiversity in their GES definition. Two Member States
535 have acknowledged natural/climatic variations and ecosystem dynamics and have not sought a rigid
536 state for particular biodiversity components. Finally one MS has clearly stated that it will tend towards
537 achieving FCS for all ecosystem features however its achievement is not considered realistic in the
538 timeframe of the MSFD.

539 **Species (Criteria 1.1 Species distribution, 1.2 Population size, 1.3 Population condition)**

540 There is a large variation in the approaches to defining GES for species. Some MSs have defined GES
541 using species groups, functional groups, species with specific life history traits (e.g. long-lived slowly
542 reproducing), and/or individual species, while others apply GES on species with no further specifications.
543 A few MSs also refer to protected species; these included references to species covered by the Habitats
544 and Birds Directives, those protected by the OSPAR convention and IUCN lists of endangered species
545 and those covered by ASCOBANS and ACCOBAMS agreements.

546 **Habitat (Criteria 1.4 Habitat distribution, 1.5 Habitat extent, 1.6 Habitat condition)**

²⁶ Relationship between the initial assessment of marine waters and the criteria for good environmental status. Commission Staff Working Paper. SEC(2011) 1255 final.
http://ec.europa.eu/environment/marine/pdf/SEC_2011_1255_F_DTS.pdf

547 The approach to defining GES for habitats is heterogeneous and there is little coherence within regions.
548 Many MSs are not specific in regards to the habitats covered by the definition, which in most cases
549 implies that all habitats are covered equally. In a few cases it is clear that only benthic habitats are
550 covered, thus excluding those of the water column. Less than half of the MSs have included a specific
551 reference to listed/protected habitats. Some of these references specifically referred to those covered
552 from the Habitats Directive and/or relevant RSC lists while others referred to protected habitats in
553 general. A few MSs have included specific habitats in their definition of GES, including protected
554 habitats. For example, in the Mediterranean three MSs refer specifically to *Posidonia oceanica* sea-grass
555 habitats. Finally a number of countries also use WFD type specific Good Ecological Status boundaries to
556 assess GES.

557 **Ecosystem (Criterion 1.7 Ecosystem structure)**

558 Only ten MS have defined GES for Criterion 1.7 either in a way that it covers the whole ecosystem
559 structure or some specific ecosystem aspects such as the fish community.

560 For Art.9, the wide variance of the reported approaches for GES determination led to low level of
561 coherence within each of the four regional seas (COM(2014)97 final). For Art. 8 and regarding the highly
562 mobile species groups (birds, mammals, reptiles, fish, cephalopods) MSs' reports varied, from species
563 group assessments to single species. MSs had the option to report species assessments under BD and
564 HD, in fulfilling also their legal obligation for the MSFD reporting, however this option has just increased
565 the incoherence in assessing D1 and hindered any effort for comparable assessments. RSC's lists of
566 species are considered by some of their contracted parties. The information available for assessment
567 appeared to be most readily available for species, and in particular for species specifically listed for
568 protection, or commercially exploited species. MSs also reported the most frequently associated
569 pressures on these species groups; in the Baltic these were extraction of species and physical loss of
570 habitat and in the North East Atlantic and Mediterranean the extraction of species and biological
571 disturbance (COM(2014)97 final).

572 **2.2 Identification of any questions arising from the application of the current Decision,** 573 **including those identified by the Article 12 assessment**

574

575 The main issues pointed out through the COM Article 12 assessment and the JRC in-depth assessment
576 are the following:

- 577 a. many GES characteristics have not been set in a measurable way, in some cases not going
578 beyond what Annex I and the GES Decision already describes; and in other cases revealing an
579 apparent confusion between definition of GES and the setting of targets (MSFD Art. 9 and 10
580 respectively);
- 581 b. a large diversity in understanding and approaches amongst Member States reflecting
582 differences in the interpretation and application of Article 9;
- 583 c. MSs have not built adequately upon other EU legislation and have adopted a "pick-and-choose"
584 approach from the work undertaken (and agreed) in the RSCs to which they are Parties.

585 A common and minimum level of determined characteristics (Art, 9(1)) should be established to ensure
586 an adequate assessment for biodiversity and comparable and coherent implementation of the MSFD, at
587 least on regional level, while those lists of characteristics that are already included in other legislations
588 (e.g. List of habitats and species in HD and BD, CSWD (SEC, 2011)1255 final) must be considered,
589 recognizing that there may be differences in implementing BHD on national level. MSs should be
590 encouraged to further support the RSC actions for a harmonized biodiversity assessment on a regional
591 scale, since there is still room for improving the level of integration in this perspective (COM(2014)97 ;
592 Palialexis et al. 2014).

593 Adequacy and coherence for D1 can be improved by following the specifications laid down by the
594 Habitats and Birds Directives (potentially also the WFD) for an agreed list of species and habitats
595 covering each Directive (and taking into account Annex III MSFD) that would constitute a consistent
596 standard for assessments across the biodiversity criteria. The RSCs can play an important role in this
597 process, since the HD and BD do not have a requirement for regional cooperation (COM(2014)97 ;
598 Palialexis et al. 2014).

599 A common concept for defining GES boundary values, which accommodates sustainable use, should be
600 applied, which should follow the 'acceptable deviation from a reference' approach (if possible) already
601 encompassed within the standards for the WFD and the Nature Directives. In this common concept
602 should, however, avoided that this will lead to differences between regional defined GES boundaries
603 and national objectives of the WFD and Natura Directives.

604 The definition of GES should clearly address *all* biodiversity components, although its assessment can be
605 based on selected representative species and habitats (COM(2014)97 final). The specific elements to be
606 addressed should reflect the differing biodiversity characteristics of each region, but should be selected
607 in such a way as to maintain consistency within (sub)regions. Regarding predominant seabed habitats,
608 the determination of GES and its assessment should be fully aligned with that required for Descriptor 6
609 (with reference to the different substrates of the seabed). For ecosystem-level assessments, the
610 approaches should be aligned with that required under Descriptor 4 on food webs, aiming to address
611 the overall balance of components in the ecosystem and their functioning (COM(2014)97 final). This
612 aligning between D1, D4 and D6 should be also guaranteed by making use of the work of RSCs.

613 **2.3 Relevant data from other sources, specific to every descriptor and recent findings from** 614 **MS should also be considered.**

615
616 Sources to provide information and data for the D1 assessment can include other EU legislation and
617 agreements, but also e.g. research programmes, monitoring programmes or existing databases. Such
618 sources can guide the adoption of common methodological standards for MSFD purposes, namely
619 regarding: 1) data and parameters surveyed or sampled across Europe; 2) lists of relevant species or
620 groups and lists of habitats, compiled for several purposes; and 3) operational indicators available and in
621 use within and across marine regions. Below we highlight some of the most relevant sources relevant for
622 D1.

623 2.3.1 Sources of monitoring data

624 Regional Sea Conventions:

625 Data and parameters for D1 derived from RSCs are comprehensively listed in the report “Development
626 of a shared data and information system between the EU and the Regional Sea Conventions²⁷”
627 (presented in WG DIKE, CIRCABC) which examines the data and information holdings within each of the
628 four Regional Sea Conventions (RSCs) as well as the European Environment Agency (EEA), with the aim
629 of characterizing the present data and information holdings and flow processes in place across Europe.
630 This report covers methodological standards, parameters that are linked with criteria and monitoring
631 programmes. Most of RSCs don’t have yet an operational information system to compile data nor
632 compute indicators at regional scales for most of MSFD issues on Biodiversity (D1, D4 and part of D6).
633 These standards and further developments should be taken into account and included in this section.

634 *Other sources:*

635 DEVOTES FP7 project has produced an in-depth analysis of marine monitoring networks in Europe
636 aiming to assess the status of marine biodiversity monitoring for D1, D2, D4 and D6 (Patricio et al.,
637 2014b)²⁸. The **Catalogue of Monitoring Networks** provides an initial overview of the potential for
638 effective implementation of the MSFD assessment of GES. This DEVOTES survey has allowed 1) to
639 critically evaluate the European marine monitoring activities related to biodiversity (i.e. what monitoring
640 is being currently performed, why it is being performed, which biodiversity descriptors, biological
641 components and habitats are addressed and to what pressures it is linked); 2) to identify potential gaps
642 in monitoring based in the information compiled; 3) to identify needs for further development for
643 marine biodiversity monitoring to improve and optimise the MSFD implementation, and 4) to promote
644 or foster harmonisation among countries sharing marine regions for joint GES assessments.

645 The catalogue includes 285 monitoring programmes reported by 15 EU Member States and 14 countries
646 that share European Regional Sea boundaries. There are details at the European, regional and
647 subregional sea levels, as well as the four-biodiversity descriptors, 11 biodiversity components, 22
648 habitats and the 37 pressures addressed. A recent version of this catalogue (June 2014) is publically
649 available in DEVOTES website²⁹.

650 Importantly, the catalogue includes details on key contacts, data sources and timescales for data
651 collection associated with each monitoring activity. This information should enable MS to optimise their
652 sampling scheme by collating details on the spatial coverage, measured parameters and sampling
653 frequency associated with other monitoring programmes, thus producing an optimal sampling design to

²⁷ https://circabc.europa.eu/d/a/workspace/SpacesStore/aff9880d-df5e-44ec-854e-8f098fcff2e5/DIKE_10-2014-05b_RSCDataReporting_Report.pdf

²⁸ Patrício J, Little S, Mazik K, Thomson S, Zampoukas N, Teixeira H, Solaun O, Uyarra MC, Papadopoulou N, Kaboglu G, Bucas M, Churilova T, Kryvenko O, Moncheva S, Stefanova K, Borja A, Alvarez M, Zenetos A, Smith C, Zaiko A, Danovaro R, Carugati L, Elliott M (2014b) Report on SWOT analysis of monitoring. Deliverable 1.4 100pp + 4 Annexes. DEVOTES FP7 Project. JRC89561 <http://www.devotes-project.eu/report-on-swot-analysis-of-monitoring/>

²⁹ <http://www.devotes-project.eu/devotool/>

654 complement (rather than duplicate) existing monitoring efforts. Potentially this could also help MS,
655 through the Regional Sea Conventions, to coordinate their monitoring in terms of timing of their
656 sampling, the parameters/data being collected and the geographical location, resulting in large,
657 coordinated datasets for the (sub)regions of each Regional Sea. Hereby, it is important that this
658 contributes to the implementation of the biodiversity indicators of the RSCs.

659

660 **2.3.2 Sources for species and habitats lists**

661 *MSFD supporting documents:*

662 The SWD 2011/1255 includes lists of predominant habitat types and functional groups that should be
663 considered by the MS. The categories adopted for habitat types in this Commission's document were
664 agreed so that their use could provide "*a direct link between the habitats assessed under Descriptor 1*
665 *and the substrate types to be assessed for Descriptor 6 (indicator 6.1.2 – different substrate types*
666 *affected by physical damage) and to the European EUNIS habitat classification scheme*" (SWD 2011, p
667 18).

668

669 *Other EU pieces of legislation:*

670 Species and habitat types compiled in the framework of the **Habitats and Birds Directives** are available
671 through the European Nature Information System EUNIS³⁰ databases - an additional useful tool to be
672 taken into consideration. The MSFD CIS document on "Links between MSFD and the Nature Directives"³¹
673 identifies lists of:

- 674 • Marine species for Article 17 reporting of the HD;
- 675 • Seabirds and waterbird species for which SPAs should be considered under the Birds Directive
676 (Annex I and migratory species)³²;
- 677 • Potential overlap between MSFD predominant habitats and habitat types listed in Annex 1 of
678 the HD and considered 'marine' for Article 17 reporting;

679 The EUNIS pan-European classification system for habitats that could be the basis for a coherent
680 assessment across MSFD marine regions. Although, adjustments to the current EUNIS classification

³⁰ <http://eunis.eea.europa.eu/about>

³¹ <https://circabc.europa.eu/d/a/workspace/SpacesStore/e67df5e9-21e0-4dbd-9778-ac4fb08fe1f7/Doc%209%20Links%20MSFD%20HBD%20FAQ.doc>

³² Reference: Table 3: Seabirds and waterbird species for which SPAs should be considered. Guidelines for the establishment of the Natura 2000 network in the marine environment. Application of the Habitats and Birds Directives, Appendix 2: Lists of existing marine Habitat types and Species for different Member States, European Commission 2007, http://ec.europa.eu/environment/nature/natura2000/marine/index_en.htm

681 scheme might be needed to better fit the needs of the MSFD assessments (Patricio et al. 2014a)³³. The
682 marine section of EUNIS has been restructured and is expected to become available in 2015.

683
684 Under the **Common Fishery Policy** and the Community framework for the collection, management and
685 use of data in the fisheries sector the Commission Decision 2010/93/EC³⁴ in Appendix VII provides a list
686 of Biological variables with species sampling specification that covers widely marine species and
687 monitoring parameters that can directly be assessed for the MSFD D1 criteria.

688
689 Non-Indigenous Species (NIS) are part of the ecosystems and habitats and as such have to be considered
690 and assessed. NIS inventories, such as the **European Alien Species Information Network** (EASIN³⁵) can
691 be the basis to provide information on the presence/distribution of NIS in particular ecosystems and
692 habitats.

693
694 *Other international initiatives:*

695 The **IUCN Red List of Threatened Species**³⁶ is widely recognized as the most comprehensive, objective
696 global approach for evaluating the conservation status of plant and animal species and can provides a
697 source of marine threatened species in the European waters. However, it should be recognized that the
698 MSFD aims at achieving a GES and is not focused on protection of individual species. In other words,
699 selected rare species (e.g. Roseate Tern) should in general not be used to indicate the environmental
700 status. Species protection should be done through the nature directives.

701
702 *Other databases:*

703 DEVOTES FP7 Project listed the potential European Keystone Species (Smith *et al.*, 2014) and listed also
704 indicator species, taxa or groups frequently included in indicators (Teixeira *et al.*, 2014). This information
705 is available through two catalogues that can support MS during the MSFD implementation process. The
706 catalogues potential application in the context of supporting the selection of relevant biological features
707 is explained below. We highlight, however, that these catalogues cannot replace or overcome the lack of
708 clear and agreed general guidance on how to select biological features by MS.

709 The **DEVOTES Catalogue of Indicators** (Teixeira et al. 2014³⁷; freely available as software **DEVOTool**³⁸)
710 includes so far 557 indicator entries with respective metadata information, including the biodiversity

³³ see discussion in Patricio et al. 2014a, pp 4-9

³⁴ http://datacollection.jrc.ec.europa.eu/c/document_library/get_file?uuid=296dff3-9c81-4759-b691-9b1654ea66b9&groupId=10213

³⁵ <http://easin.jrc.ec.europa.eu/>

³⁶ <http://www.iucnredlist.org/>

³⁷ Teixeira *et al.*, 2014. Existing biodiversity, non-indigenous species, food-web and seafloor integrity GEnS indicators. DEVOTES FP7 Project; 2014. JRC89170. DEVOTES public Deliverable 3.1 http://www.devotes-project.eu/wp-content/uploads/2014/02/D3-1_Existing-biodiversity-indicators.pdf

³⁸ <http://www.devotes-project.eu/devotool/>

711 components (sensu SWD, 2011) to which the indicators apply or focus on. This catalogue provides a
712 good insight into the most relevant biological features usually considered in marine biodiversity
713 assessments. The catalogues show that most of the indicators available have been developed specifically
714 for assessing state change of biodiversity components, subcomponents or specific taxa (using categories
715 for biological features as indicated in Table 1 of Annex III MSFD and in SWD 2011). However, some
716 indicators have defined groups independently of biodiversity components, such as functional groups,
717 keystone species or non-indigenous species. The later categories reflect more closely those considered
718 in some of the Commission Decision criteria (e.g. of indicators reported in the catalogue: 'Abundance of
719 functional groups', 'Number of bioceonosis/facies' or 'Rate of new introduction of non-indigenous
720 species (per defined period)'). The information in this catalogue can facilitate knowledge transfer across
721 countries and marine regions. It can be used e.g. to identify operational indicators within neighbouring
722 countries that focus on the same biodiversity components, enhancing comparability and broader scale
723 assessments of relevant species or groups of species within marine regions. It can also highlight
724 indicators that could be potentially adapted to other areas or applied at a higher EU scale, for example,
725 by identifying relevant species or groups of species widely surveyed by all MS.

726 The **DEVOTES Catalogue of Keystone species** and associated report is a review of potential keystone
727 species in European marine habitats (Smith et al. 2014³⁹). The catalogue includes 210 distinct species
728 and 19 groups classified by major habitat in the EU Regional Seas and the Norwegian Sea. The keystones
729 in the catalogue are identified from several sources, such as published work, expert opinion and models
730 (high 'keystoneness index' values in Ecopath with Ecosim models). The keystone species originate from a
731 wide range of faunal/floral groups and trophic levels and many are invasive species. Gaps exist partially
732 from a lack of expertise in specific areas (for certain groups or certain habitats), but also from the very
733 limited information available on keystone species in general.

734 Although the scientific community is aware that important difficulties remain in the definition of
735 keystone species (Smith et al. 2014), for example, at what point does a species become keystone?, are
736 keystone species promoters or reducers (through primary or secondary impacts)?, can a prey species be
737 a keystone?, can a keystone species be a species group (e.g. a genus, a family), functional group or even
738 a habitat? and what is the scale (primarily spatial but also temporal) that the keystone works over?;
739 many of these species are already considered to some extent as key/important species, and DEVOTES
740 noted an overlap between species included in the indicator and keystone catalogues. Also a number of
741 keystone species were reported in the MS Initial Assessments. Specifically for keystone habitat species,
742 many operational indicators already exist (Teixeira et al. 2014) and have long been applied in the
743 context of environmental assessment and conservation initiatives such that these species can be tracked
744 as indicators for GES. These indicators are, however, mostly structural indicators that provide little
745 information on the interaction or the role of the species in the ecosystem. DEVOTES discussed the
746 possibility of using keystone species as indicators in monitoring programmes and suggested that

³⁹ Smith C, Papadopoulou N, Sevastou K, Franco A, Teixeira H, Piroddi C, Katsanevakis S, Furhaupter K, Beauchard O, Cochrane S, Ramsvatn S, Feral J, Chenuil A, David R, Kiriakopoulou N, Zaiko A, Moncheva S, Stefanova K, Churilova T, Kryvenko O (2014) Report on the identification of keystone species and processes across regional seas. Deliverable 6.1 105pp + 1 Annex. Devotes FP7 Project. JRC91370 <http://www.devotes-project.eu/wp-content/uploads/2014/07/DEVOTES-D6-1-Keystones.pdf>

747 keystone can provide relevant information for the future consequences of environmental changes in the
748 entire ecosystem (Smith et al. 2014). In supporting the MSFD functional approach, the Catalogue of
749 Keystone Species promotes keystone functional groups where a group of species/taxa may have a
750 keystone function, for example, rich coralligenous communities or mixed coral and sponge fields. This
751 catalogue can be used to help select relevant biological features for assessment.

752

753 **2.3.3 Sources of indicators**

754 *Regional Sea Conventions:*

755 Core and candidate indicators for D1 derived from RSCs are comprehensively listed in the report
756 “Development of a shared data and information system between the EU and the Regional Sea
757 Conventions⁴⁰” (presented in WG DIKE, CIRCABC). Links of these indicators with monitoring frameworks
758 and technical specifications are also provided.

759

760 *Other databases:*

761 DEVOTES has compiled two databases as an inventory of existing methods to support the choice of
762 methodological standards in the scope of the MSFD. These scientific indicators are potential tools that
763 can be used to assess the environmental status of European seas within the MSFD. The list of available
764 indicators and indices potentially valuable for the implementation of the four biodiversity related
765 descriptors, including D1 Biological Diversity, can be found in the **DEVOTES Catalogue of Indicators**
766 (Teixeira et al. 2014; freely available as software **DEVOTool**³⁸) and in the **Catalogue of Model-derived**
767 **Indicators** (Piroddi et al. in prep). The DEVOTool software allows navigating a database of indicators of
768 marine biodiversity, within all European Regional Seas but also from other seas. Currently, the catalogue
769 includes 557 entries (version 6) which have been collected from Member States, Regional Sea
770 Conventions and scientific literature. One of the aims of the catalogue is to foster transfer of know-how
771 across countries and marine regions, so that indicators operational in one area could be potentially
772 adapted to other areas and used in the environmental assessment. The catalogue contains information
773 on metadata ranging from indicator descriptions, data requirements, developmental status, reference
774 values and quality thresholds, to geographical coverage and applicable habitats, biodiversity
775 components and related human pressures.

776 Specifically for D1, a search in the DEVOTool Catalogue of Indicators showed that, except for indicator
777 1.3.2 ‘Population genetic structure’, all other criteria and associated indicators could be addressed by at
778 least 30 operational indicators. The Catalogue of Model-derived Indicators (Piroddi et al. in prep) also

⁴⁰ https://circabc.europa.eu/d/a/workspace/SpacesStore/aff9880d-df5e-44ec-854e-8f098fcff2e5/DIKE_10-2014-05b_RSCDataReporting_Report.pdf

779 revealed that, except also for indicator 1.3.2, all D1 criteria and associated indicators could potentially
780 be addressed by existing modelling approaches.

781

782 **2.4 Good examples and approaches applied by MS, especially if used by multiple Member** 783 **States, and shortcomings should be listed systematically.**

784

785 RSCs are developing initiatives towards common monitoring and assessment on a regional scale. For
786 example, OSPAR ICG COBAM is working on assessments for indicators on a (sub)regional scale. ICG
787 COBAM has set up seven expert groups on the relevant biodiversity elements (e.g. birds, mammals,
788 benthic habitats, etc). Over 100 experts in ten Member States are involved in this work. The HELCOM
789 CORESET is also considered as a good example. Within Member States it is good to gather all national
790 experts concerned with MSFD in working groups to achieve coherence across ecosystem components,
791 criteria and descriptors. Expert consultation is critical for policy decisions.

792

793 **2.5 Differences and similarities between regions.**

794

795 Flora and fauna change enormously not only due to the latitudinal gradient⁴¹ but also within areas in the
796 same latitude. These changes are mainly driven by the different local water mass characteristics and
797 other factors such as human activities.

798

799 **3. Analysis of the current text of the Decision**

800

801 **3.1 Analysis of the current text of the Decision, identifying in particular those parts which** 802 **are best placed in guidance, those parts which are interpretative or explicative information** 803 **and those parts which need to be kept in the Decision in accordance with the mandate** 804 **provided by the Directive**

805

806 In Part B of the Commission Decision, the first paragraph as well as the paragraphs introducing the
807 criteria and standards for the species and habitats level could be considered for integration within the
808 criteria and standards as they relate to the definition of the scope of these criteria (in terms of the
809 biological features to consider for D1). The assessment criteria and methodological standards associated
810 to the legislative instruments listed in point 2 of Part A, which are relevant for biological diversity,
811 should also be considered for potential input in the criteria and standards for clarification or instead

⁴¹ Fisher, J., Frank, K. T., and Leggett, W. C. 2010. Global variation in marine fish body size and its role in biodiversity–ecosystem functioning. *Marine Ecology Progress Series*, 405: 1–13

812 include reference to the relevant document where these are established. It should be noted that similar
813 information about the scope of the criteria has not been included for criterion 1.7.

814 The paragraphs below in copy from the Commission Decision include a proposal for changes.

815 ~~“Assessment is required at several ecological levels: ecosystems, habitats (including their associated~~
816 ~~communities, in the sense of biotopes) and species, which are reflected in the structure of this section,~~
817 ~~taking into account point 2 of Part A. For certain aspects of this descriptor, additional scientific and~~
818 ~~technical support is required (5).~~ To address the broad scope of the descriptor, it is necessary, having
819 regard to Annex III to Directive 2008/56/EC (MSFD), to prioritise among biodiversity features at the level
820 of species, habitats and ecosystems. This enables the identification of those **biological** features and
821 those areas where impacts and threats arise and also supports the identification of appropriate
822 ~~indicators among the selected criteria, adequate to the areas and the features concerned (6).~~ The
823 obligation of regional cooperation contained in Articles 5 and 6 of Directive 2008/56/EC (**MSFD**) is
824 directly relevant to the process of selection of **biological** features within regions, sub-regions and
825 subdivisions, including for the establishment, where appropriate, of reference conditions pursuant to
826 Annex IV to Directive 2008/56/EC. ~~Modelling using a geographic information system platform may~~
827 ~~provide a useful basis for mapping a range of biodiversity features and human activities and their~~
828 ~~pressures, provided that any errors involved are properly assessed and described when applying the~~
829 ~~results. This type of data is a prerequisite for ecosystem-based management of human activities and for~~
830 ~~developing related spatial tools (7).”~~ Assessment methods and standards, to address each criterion
831 **should reflect the actual knowledge, and should evolve according to scientific and technical**
832 **improvements.**

833 ***Species Level***

834 “For each region, sub-region or subdivision, taking into account the different species and communities
835 ~~(e.g. for phyto-plankton and zooplankton)~~ contained in the indicative list in Table 1 of Annex III to
836 Directive 2008/56/EC, it is necessary to **assess all functional groups (SWD 2011) by a selection of**
837 **representative species or population to cover actual MSFD requirements,** having regard to point 2 of
838 Part A of the COM Dec 2010/477/EU. The identification of the “relevant species” should be based on
839 **harmonized methodology applied to a common agreed list of species or group of species, in accordance**
840 **to other EU legislations and RSCs agreements.**⁴² ~~The three criteria for the assessment of any species are~~
841 ~~species distribution, population size and population condition. As to the later, there are cases where it~~
842 ~~also entails an understanding of population health and inter- and intra-specific relationships. It is also~~
843 ~~necessary to assess separately subspecies and populations where the initial assessment, or new~~
844 ~~information available, identifies impacts and potential threats to the status of some of them. The~~
845 ~~assessment of species also requires an integrated understanding of the distribution, extent and~~
846 ~~condition of their habitats, coherent with the requirements laid down in Directive 92/43/EEC (8) and~~

⁴² Functional groups and rules to select species/populations should be discussed, agreed and described here.

847 Directive 2009/147/EC, to make sure that there is a sufficiently large habitat to maintain its population,
848 taking into consideration any threat of deterioration or loss of such habitats. In relation to biological
849 diversity at the level of species, the three criteria for assessing progress towards good environmental
850 status, as well as the indicators methodological standards related respectively to them, are the
851 following:...”

852

853 **Habitat level**

854 “For the purpose of Directive 2008/56/EC, the term habitat addresses both the abiotic characteristics
855 and the associated biological community, treating both elements together in the sense of the term
856 biotope. For each region, sub-region or subdivision, taking into account the different habitats types
857 contained in the indicative list in Table 1 of Annex III to Directive 2008/56/EC, it is necessary to assess all
858 habitat types, by a selection of representative habitats, to cover the MSFD requirements.⁴³ A set of
859 habitat types needs to be drawn up for each region, sub-region or subdivision, taking into account the
860 different habitats contained in the indicative list in Table 1 of Annex III and having regard to the
861 instruments mentioned in point 2 of Part A. Such instruments also refer to a number of habitat
862 complexes (which means assessing, where appropriate, the composition, extent and relative
863 proportions of habitats within such complexes) and to functional habitats (such as spawning, breeding
864 and feeding areas and migration routes). Additional efforts for a coherent classification of marine
865 habitats, supported by adequate mapping, are essential for assessment at habitat level, taking also into
866 account variations along the gradient of distance from the coast and depth (e.g. coastal, shelf and deep
867 sea). The three criteria for the assessment of habitats are their distribution, extent and condition (for
868 the latter, in particular the condition of typical species and communities), accompanied with the
869 indicators related respectively to them. The assessment of habitat condition requires an integrated
870 understanding of the status of associated communities and species, coherent with the requirements laid
871 down in Directive 92/43/EEC (9) and Directive 2009/147/EC, including where appropriate an
872 assessment of their functional traits. In relation to biological diversity at the level of habitats, the criteria
873 for assessing progress towards good environmental status, as well as the methodological standards
874 related respectively to them, are the following:”

875

876 **Ecosystem level [This level might change after adopting the proposals in chapter 5]**

877 In addition, the interactions between the structural components of the ecosystem are fundamental for
878 assessing ecosystem processes and functions for the purpose of the overall determination of good
879 environmental status, having regard, inter alia, to Articles 1, 3(5) and 9(1) of Directive 2008/56/EC.
880 Other functional aspects addressed through other descriptors of good environmental status (such as
881 descriptors 4 and 6), as well as connectivity and resilience considerations, are also important for

⁴³ Predominant habitats (e.g. level EUNIS 3-4) and rules to select habitats (community level, e.g. level EUNIS 5-6) should be discussed, agreed and described here.

882 ~~addressing ecosystem processes and functions.~~ [Need to be updated after defining and agreeing on the
883 content of the current 1.7 criterion and on the integration approach amongst the state descriptors].

884

885 **3.2 Identification of needs for guidance**

886

887 To summarize the previous conclusions guidelines are needed on the following issues for supporting the
888 scope of the review process and of the overall MSFD implementation:

- 889 • How the habitat assessment criteria should be related to the species criteria. The Commission
890 Decision mentions, in relation to the species level, the need for ‘an integrated understanding of
891 the distribution, extent and condition of their habitats’; however, habitat assessment criteria are
892 not clearly related to the species criteria. Whilst there is some consideration of species level
893 within the habitat level (criterion 1.6), the two assessments are likely to be carried out by
894 different people which may make cross-over problematic. It either needs to be made clearer
895 that the two needs to be supplementary assessed, or there needs to be some replication to
896 ensure that habitat types are adequately linked to species, where possible, according to the
897 MSFD objectives. On the other hand species should be assessed in association with particular
898 habitats –essential species habitats- related with their GES status (spawning, nursery, feeding
899 grounds).
- 900 • How the assessment at the ecosystem level should be done, including how to handle the
901 connections with other descriptors (e.g. D3, D4, D5, D6). The assessments for MSFD’s Article 12
902 showed that Member States used criterion 1.7 “ecosystem structure” the least. Clarification is
903 needed as to what is an ecosystem as an assessment unit for the MSFD and what should be the
904 content of 1.7. To this end the ecosystem approach to management has to be interpreted and
905 raised at the level of state Descriptors –including the current state criteria and indicators from
906 all Descriptors-that would come through an efficient integration amongst them.
- 907 • How to adopt existing habitat classification systems for MSFD purposes. The EEA’s EUNIS habitat
908 classification system for the marine environment is currently being revised. It would be sensible
909 if there is some cross-over between the Commission Decision and EUNIS revisions to allow
910 comparisons and exchange of data to ensure that MSFD predominant habitat types equate
911 clearly to EUNIS types. The issue will be to specify the need to use EUNIS and the resolution of
912 the habitat types to be assessed (i.e. the predominant types). Need also to equate the ‘different
913 substrate types’ of D6 to D1 predominant habitats.

914

915 **3.3 An analysis of what to keep should take place, including specification on what may be** 916 **out dated or may need to be aligned with other or new legislation, etc.**

917

918 The review of the current Commission Decision (and associated methodological standards), which is
919 foreseen in its paragraph 4, would guarantee the exploitation and adoption of the scientific knowledge,

920 technical improvements and evolution in environmental management. Examples, criteria and selecting
921 or deselecting methods of assessment elements (species, habitats, and functional groups) should be
922 specified to improve the clarity and coherence of the Com Dec 2010/477/EU.

923 Specifications on the integration of the state descriptors and their links with the impact and pressure
924 aspects of the others should be included in the decision, aiming to streamline the assessment across the
925 descriptors. The state-impact-pressure definition of the criteria in the revised COM Decisions can be
926 linked with the targets to enhance the associations and clarity amongst articles 8, 9 and 10 of the MSFD.
927 Additionally, guidelines on the exploitation of existing legislations (mostly HD and BD for D1) and
928 convergence of their status classifications can improve the implementation of the MSFD, avoiding
929 double assessments and leading to a cost-effective and simpler implementation.

930

931 **4. Identification of issues**

932

933 **4.1 Main findings and information that will be used in the next step of the revision process.**

934

935 The recent MSFD assessment carried out in relation to Article 12 concluded the following:

- 936 • Low integration with the WFD and BD, relatively good integration with the HD. **MSs can exploit**
937 **methods, data and characteristics derived from other legislations more efficiently** (see Evans
938 and Arvela, 2011 for HD⁴⁴). Besides, MSFD has specific issues. Optimisation in monitoring
939 (methods and spatial/temporal designs) and data management should be enhanced, but some
940 aspects are new in MSFD and require additional specific and coherent assessments. This can be
941 reflected in the GES determination and in the computation of statistical indicators (optimized
942 common data and additional ones), which can lead to (slightly) different threshold and targets
943 (and characteristics).
- 944 • Low/Moderate integration with the RSC. An **active involvement of the MSs on regional level is**
945 **required** for the establishment of coherent and comparable approaches to the assessment. This
946 could be feasible after establishing coherent objectives and assessments between MSFD-RSC-
947 WFD and other relevant legislations
- 948 • Assessing biodiversity (from species to ecosystems) should **ensure a coherent list of**
949 **characteristics (species, habitats and ecosystems levels)** highlighting characteristic common for
950 neighbouring MS.
- 951 • Reduction of the heterogeneity in the definition of GES both at European level and at regional
952 level. **MSFD terminology should be clarified and commonly interpreted.** GES should be defined
953 on a criterion level and criteria should be quantifiable and linked with specific methodological
954 standards and boundaries to provide measurable, comparable and operational GES definitions.

⁴⁴ Evans D. and M. Arvela (2011): Assessment and reporting under Article 17 of the Habitats Directive. Explanatory Notes & Guidelines for the period 2007-2012. ETC, Paris

- 955 • Gap in biodiversity knowledge was reported by most of the MSs. Bilateral and regional
956 cooperation through RSCs should be encouraged to set a more comprehensive background on
957 biodiversity, taking into account the environmental similarities. Scientific and pilot projects at
958 regional and sub-regional level could facilitate this issue.
- 959 • High heterogeneity in the number and type of methodological approaches, thresholds and limits
960 in MS reports has been observed. **Common agreed and comparable (pragmatic and fully
961 operational) methodological standards and relevant boundaries on a regional or EU scale**
962 should be established. The most frequently used methods could be the starting point for
963 defining a coherent list of methodological approaches. Besides, it should be kept in mind that
964 most frequently used methods are used for specific issues (and scales). (Sub)regional
965 specificities may also require adaptation of possible methods (e.g. observation by imagery or
966 divers depends of water clarity). Finally, some new issues (and/or cost-efficiency) require new
967 methods or adaptation of existing one, and should take into account (and facilitate) scientific
968 and technical Research & Developments (e.g. molecular tools for systematic, applied to Non
969 indigenous species detection).
- 970 • Specific issues include **the risk of double counting** (Teixeira *et al.* 2014⁴⁵), i.e. the accounting of
971 the same ecosystem feature in different contexts **within and across descriptors**. This needs to
972 be considered in a subsequent step of the process.
- 973 • Ecosystem is ambiguous, as much as criterion 1.7. According to the apparent increasing
974 biological level, this criterion should assess biodiversity and functional links between previous
975 levels: (mobile) species and habitats. Function can be trophic but also connectivity (notably
976 between “species habitats” *sensus* HD and implied under Decision indicator D7.2.2) or material
977 flow (e.g. calcareous).
978

979 Recommendations (from Berg *et al.* 2015⁴⁶): The Berg *et al.* (2015) manuscript from DEVOTES public
980 Deliverable 3.1 provides specific evidence that can complement and support many of the findings of the
981 “In-depth Assessment” (Palialexis *et al.*, 2014)

- 982 a) “Clearly define terms and use them consistently”. An updated Common Understanding
983 document will highly contribute to that end. In this case, “‘*area*’ is only meaningful for immobile
984 components and mainly associated to the habitat level and as such it is covered in the Decision
985 by parameter 1.5.1 (Habitat area). This would lead resolving the issue of the ambiguous use of
986 the term ‘*distribution*’ between species and habitat level”;
- 987 b) “Criteria of Descriptor 1 should be specified following an approach to avoid overlaps and
988 guidelines should be provided along with the criteria. It could be suggested that the **species**
989 **level** criteria (1.1-1.3) are used only on mobile species that are wide-ranging and typically not

⁴⁵ Teixeira *et al.*, 2014. Existing biodiversity, non-indigenous species, food-web and seafloor integrity GENs indicators. DEVOTES FP7 Project; 2014. JRC89170. DEVOTES public Deliverable 3.1 http://www.devotes-project.eu/wp-content/uploads/2014/02/D3-1_Existing-biodiversity-indicators.pdf

⁴⁶ Berg T, Fürhaupter K, Teixeira H, Uusitalo L, Zampoukas N. 2015. The Marine Strategy Framework Directive and the ecosystem-based approach - pitfalls and solutions. Accepted for publication in Marine Pollution Bulletin.

990 associated to a single habitat, as already suggested by (Cochrane *et al.*, 2010⁴⁷), and the habitat
991 level criteria (1.4–1.6) would be used for the (often immobile) components tightly associated to
992 a single or a few related habitats”.

993 c) “Since the term ‘habitat’ is used in the sense of ‘biotope’ (Olenin and Ducrotoy, 2006) in
994 Commission Decision, criteria 1.4–1.6 would assess the combination of the physical habitat and
995 its associated communities. As such ‘Habitat extent’ should relate to the whole community [and
996 its abiotic characteristics]. Some habitats (e.g. biogenic reefs as seagrasses, *Sabellaria* reefs,
997 oyster beds, *Crepidula* banks, etc.) may require an assessment at this “engineering” species
998 level, as this structures the whole habitat (abiotic and biotic structure). Also, this would result in
999 removing parameter 1.1.3 completely since it is superfluous under this definition.”

1000 d) A clear differentiation is needed on which aspects are assessed within descriptors 1, 4 and 6
1001 respectively in order to avoid **double counting (over-weighting of assessments) across**
1002 **descriptors**. The criteria/indicators in other descriptors contributing to a risk of “**double**
1003 **counting**” are:

1004 • (in relation to D4 Food web) 4.3 Abundance/distribution of key trophic
1005 groups/species / 4.3.1 Abundance trends of functionally important selected
1006 groups/species;

1007 “The assessment of abundance/area of key trophic groups like habitat-defining species may not have a
1008 high indicator value for D4 food web” since it “does not target the processes and linkages within and
1009 between the food webs but is restricted to the state of a particular node of that web, much like the
1010 indicators already in place for Descriptor 1”.

1011 • (in relation to D6 Sea floor integrity) 6.2 Condition of benthic community / 6.2.2
1012 Multi-metric indexes assessing benthic community condition and functionality;

1013 There is a high opportunity that “indicators addressing criterion 6.2 (Condition of benthic community)
1014 are also used under criterion 1.6 Habitat condition / 1.6.1 Condition of the typical species and
1015 communities of Descriptor 1, because the benthic communities are also regarded as being the biotic
1016 components of benthic habitats”.

1017 e) It is recommended to integrate all criteria and parameters relating to condition or state of the
1018 benthic communities and species functionally important groups into the habitat level of D1 (this
1019 was a common approach across MSs for the Art. 8 assessments in the first phase of the MSFD
1020 implementation). Alternatively, the scope and aim of each criterion should be re-defined in
1021 order to reflect the specificities in relation to each descriptor.

1022 f) RSCs have gathered, and are still gathering, various practical experiences in developing, testing,
1023 assessing and implementing biodiversity indicators, e.g. data flows (access to governmental

⁴⁷ Cochrane S.K.J., D.W. Connor, P. Nilsson, I. Mitchell, J. Reker, J. Franco, V. Valavanis, S. Moncheva, J. Ekebom, K. Nygaard, R. Serrão Santos, I. Narberhaus, T. Packeiser, W. van de Bund & A.C. Cardoso, 2010. Marine Strategy Framework Directive Task Group 1 Report Biological diversity EUR 24337 EN – 2010. <http://ec.europa.eu/environment/marine/pdf/1-Task-group-1-Report-on-Biological-Diversity.pdf>

1024 private owned data), reporting, gap analysis, practical (e.g. division of tasks amongst Member
1025 States, financial consequences), etc. It is recommended to use these practical experiences.

1026

1027

5. GES criteria (in accordance with Art. 9.3)

1028

1029 **5.1 Conclude on the use of the existing Decision criteria and indicators, in the light of the**
1030 **"refined" common understanding, the findings of the Article 12 assessment and relevant**
1031 **international, EU and RSC legislation and approaches.**

1032

1033 *Clarification of the GES concept:*

- 1034 • D1 covers all biodiversity – how to handle this in practice (currently via functional groups and
1035 predominant habitat types) needs to be clearer. The lists of functional groups and predominant
1036 habitats in SWD 2011 aim to cover all biodiversity, but would benefit from review to ensure they
1037 are a suitable practical set. Define which (sets of) species should be assessed to represent each
1038 group (including also threatened/sensitive species or groups).
- 1039 • Key terms and concepts (e.g. links across the state descriptors, aggregation of descriptors to the
1040 overall-ecosystem assessment, etc) used in GES definitions are often insufficiently clear so
1041 guidelines and agreements are needed for the specification of their exact meaning.

1042 *Regional coherence:*

- 1043 • Guidelines specifying the EU desired level of ambition could be necessary to ensure that
1044 implementation requires a comparable level of GES adequacy while taking into account regional
1045 and sub-regional differences. The aim should be an EU coherence on the assessment criteria,
1046 high level thresholds and baselines, whilst expecting the specific species/habitats/values to be
1047 defined at regional -through RSCs- (or national) level to reflect ecological variation and also the
1048 species and habitats that are most suitable to assess considering the differences in pressures.
- 1049 • Within and across the RSCs (in particular HELCOM and OSPAR), the work to develop and agree
1050 upon a core set of indicators is currently on-going, increasing coherence within these regions,
1051 especially on setting boundaries for GES.
- 1052 • Criteria – HBD, RSCs, European Red List assessments (on-going) – can be broadly aligned –
1053 centred on quantity and quality. These criteria for habitats and the Member States' obligation to
1054 monitor and report, should be aligned between neighbouring Member States and if possible
1055 standardised to be coherent and comparable. Quantifying attributes for species and habitats
1056 can be costly and technically difficult, this need however to be considered when designing the
1057 protected areas network and monitoring. However patterns can be determined/modelled on
1058 the basis of presence data.

1059

1060 **5.2 Recommendation on which criteria to retain, which to amend and any to remove**

1061

1062 **Species Level**

1063 Biodiversity component and species groups to be considered, at species biological level, are listed in
 1064 Table 3 (from SEC 2011/1255).

1065 Table 3: Functional groups of highly mobile and widely dispersed species of marine birds, mammals,
 1066 reptiles, fish and cephalopods (Table 3 of SEC(2011)1255).

Biodiversity components	Species group
Birds	Intertidal benthic-feeding birds
	Inshore surface-feeding birds
	Inshore pelagic-feeding birds
	Inshore benthic-feeding birds
	Inshore herbivorous-feeding birds
	Offshore surface-feeding birds
	Offshore pelagic-feeding birds
	Ice-associated birds
Mammals	Toothed whales
	Baleen whales
	Seals
	Ice-associated mammals
Reptiles	Turtles
Fish	Diadromous fish
	Coastal fish
	Pelagic fish
	Pelagic elasmobranchs
	Demersal fish
	Demersal elasmobranchs
	Deep-sea fish
	Deep-sea elasmobranchs
	Ice-associated fish
Cephalopods	Coastal/shelf pelagic cephalopods
	Deep-sea pelagic cephalopods

1067

1068 These elements should be defined and be in line with all Descriptors and criteria implying assessment of
 1069 state or impacts on species (cf. 1.6). These elements have to be updated after the review process and be
 1070 harmonised with potential changes in the content of afore-mentioned Descriptors, criteria and
 1071 indicators. Standards for inclusion or exclusion of assessment elements for the needs of the MSFD
 1072 should be developed in accordance to HD criteria (Appendix III of the HD).

1073 Relevant species allocated to the species groups and functional groups of SWD 2011/1255 Table 3
 1074 include, *inter alia*:

- 1075 a) species listed under EU Directives and international agreements⁴⁸;
- 1076 b) Key species (as representatives of key structural components or functions of the ecosystem);
- 1077 c) commercially exploited species (in relation to Descriptor 3);
- 1078 d) genetically distinct forms of indigenous species;
- 1079 e) non-indigenous species, particularly those which are invasive.

1080 The RSCs can play herein an important role by defining the species to be assessed on the level of region
1081 or subregion.

1082 Section 2.3 refers to lists of marine species that are included in other legislations. Their assessments has
1083 to be adapted to the MSFD D1 assessment.

1084 **1.1. Species ~~distribution~~ geographic distribution**

1085 GES determination: species geographic distribution should be in line with the assessments conducted for
1086 the HD, BD and RSCs agreements and not deteriorated significantly by human activities. For species
1087 distribution where specific thresholds have been set, these should be considered (e.g. a threshold of Y%
1088 of natural range).

1089 GES for the listed species in HD can be assessed based on similar criteria as for the “favourable
1090 conservation status” assessment defined by the Habitats Directive and discussed in section 1.3⁴⁹. In
1091 addition to typical and endangered species, GES is required for the commercially-exploited species
1092 addressed by the Common Fisheries Policy (EC 2008b); the criteria and indicators for healthy
1093 commercial stocks are detailed in Descriptor 3.

1094 The methodological standards to support criterion 1.1 could derive (to include) the approach from the
1095 HD, which follows. The conservation status for the species (Directive provisions, Art. 1) will be taken as
1096 'favourable' when (the second bullet is relevant to MSFD criterion 1.1):

- 1097 • population dynamics data on the species concerned indicate that it is maintaining itself on a
1098 long-term basis as a viable component of its natural habitats, and
- 1099 • the natural range of the species is neither being reduced nor is likely to be reduced for the
1100 foreseeable future, and

⁴⁸ Tables in page 23 of the following LIFE III document:

http://ec.europa.eu/environment/nature/natura2000/marine/docs/appendix_4_life.pdf

⁴⁹ It should be noted that qualitative definitions of GES may deviate from FSCs provided by HD. There may be species that are not in FCS for (coastal and/or) marine waters, but they are in FSC on a national level. In this case the Member State is not obligated to undertake action to change the status in marine waters (e.g. gulls, terns, waders that are breeding in coastal and further inland habitats). Further, differences have to be avoided between regional defined GES boundaries and national objectives of the WFD and Natura Directives.

1101 • there is, and will probably continue to be, a sufficiently large habitat to maintain its populations
1102 on a long-term basis;

1103 Proposed methodological standards could include:

- 1104 • distributional range
- 1105 • distributional pattern, where relevant
- 1106 • area covered by species, where relevant
- 1107 • species distribution models
- 1108 • ...

1109 Depending on the species and the monitoring programmes several types of data can be generated
1110 including occurrence data, presence-absence data and abundance per sampling station. Species
1111 distribution models are able to link species distributions with preferable environmental conditions
1112 bridging this criterion to the habitat condition criterion (1.6), in line also with the HD criterion for natural
1113 habitats and the conservation status of its typical species (Directives provisions, Art.1). RSCs should play
1114 an important role in coordinating these monitoring programmes and modelling.

1115 The most common methodological standards reported for D 1.1 according to Palialexis et al. (2014)
1116 were:

- 1117 • Location and distribution of species or species groups
- 1118 • Distributional range of species or species groups
- 1119 • Area covered by species or species groups

1120 These were reported for specific species or species groups.

1121 Boundaries associated with these methodological standards and links with GES:

1122 GES boundaries for species geographic distribution should be in line with boundaries defined for other
1123 legislations and agreements and in line with the GES determination. Due to the variety of elements-
1124 species only general rules for GES boundaries can be defined according to the Common Understanding
1125 document and the cross-cutting workshop conclusions. Species distribution subjects to natural
1126 processes (e.g. intra-, inter-species competition) that cannot always be distinguished from the effects of
1127 anthropogenic activities hindering any attempt to include deterioration of species distribution into the
1128 general GES definition or into boundaries. Endangered and vulnerable species, though, should be
1129 treated more strictly, if is needed to be included in the assessment, due to their direct threat. A similar
1130 approach should also be applied for relevant habitats. For such elements it is suggested to include the
1131 maintenance of distributional range in their GES assessment. In any case, endangered and vulnerable
1132 species are assessed by the nature Directives.

1133 *Distributional range (1.1.1)*

1134 *Distributional pattern within the latter, where appropriate (1.1.2)*

1135 ~~Area covered by the species (for sessile/benthic species) (1.1.3)~~

1136 **1.2. Population size**

1137 GES determination: species population abundance and/or biomass should be in line with the
1138 assessments conducted for the HD, BD and RSCs agreements and not be deteriorated significantly by
1139 human activities. Where abundance and/or biomass specific thresholds have been or can be set, these
1140 should be considered.

1141 Methodological standards:

1142 In line with criterion 1.1, the methodological standards to support criterion 1.2 could derive (to include)
1143 the approach from the HD, as is presented above.

1144 Proposed methodological standards could include:

- 1145 - Population abundance and/or biomass, as appropriate

1146 The Data Collection Framework of the Common Fisheries Policy provides data for the assessment of
1147 biomass and abundance for a number of marine species (see also section 2.3).

1148 The most common methodological standards reported for D 1.2 according to Palialexis et al. (2014)
1149 were:

- 1150 • Size (biomass, number, coverage) of the population of individual species or species groups

1151

1152 Boundaries associated with these methodological standards and links with GES:

1153 GES boundaries for population size should be in line with boundaries defined for other legislations and
1154 agreements and in line with the GES determination. Due to the variety of elements-species only general
1155 rules for GES boundaries can be defined according to the Common Understanding document and the
1156 cross-cutting workshop conclusions.

1157 Good practices for GES determination for 1.2: A MS for MSFD Art. 9 determined GES considering existing
1158 assessments: "Good conditions according to the Water Framework Directive (i.e. good ecological status),
1159 Habitats and Birds Directives (i.e. favourable conservation status) and OSPAR (i.e. ecological quality
1160 objectives) are attained. Rare and threatened habitat types and species, included in existing legislation
1161 and conventions, are protected to the level envisaged by that legislation or convention". Another good
1162 practice for a quantitative determination of GES coming from the 2012 reporting includes: "GES is
1163 achieved when values of abundance and biomass in the assessment area of the species X, Y and Z, which
1164 have been selected as suitable indicators for the status of coastal fish communities, are equal to or
1165 exceed the threshold value (quantitatively expressed)".

1166

1167 **1.3. Population condition**

1168 *GES determination: species population condition should be in line with the assessments conducted for*
1169 *the HD, BD and RSCs agreements and not be significantly and adversely affected by human activities. The*
1170 *population's structure and health status can safeguard reproduction and genetic variation to such an*
1171 *extent that the viability of the population can be maintained.*

1172 Methodological standards:

1173 — Population demographic characteristics (e.g. body size or age class structure, sex ratio, fecundity
1174 rates, survival/ mortality rates)

1175 — Population genetic structure, where appropriate

1176 Proposed methodological standards:

- 1177 • Productivity
- 1178 • survival rate,
- 1179 • breeding success
- 1180 •

1181 The most common methodological standards reported for D 1.2 according to Palialexis et al. (2014)
1182 were:

- 1183 • Productivity
- 1184 • survival rate,
- 1185 • breeding success
- 1186 • genetic structure of the population

1187

1188 *Boundaries associated with these methodological standards and links with GES:*

1189 *GES boundaries for species population conditions should be in line with boundaries defined for other*
1190 *legislations and agreements and in line with the GES determination. Due to the variety of elements-*
1191 *species only general rules for GES boundaries can be defined according to the Common Understanding*
1192 *document and the cross-cutting workshop conclusions.*

1193 *Good practices for GES determination for 1.3: A MS determined GES as: "The population's structure and*
1194 *health status can safeguard reproduction and genetic variation to such an extent that the viability of the*
1195 *population can be maintained". Several MS referred to assessments from other EU legislations (BD, HD)*
1196 *for the particular criterion.*

1197

1198 **Habitat level**⁵⁰

1199 For a consistent and coherent assessment of habitats it is proposed to follow specific classification
1200 schemes. Table 7 of the SWD 2011/1255 lists predominant habitats. The criteria for selecting sites
1201 eligible for identification as sites of community importance and designation as special areas of
1202 conservation (Appendix III of the HD) should be considered to extend the proposed list of habitats.
1203 Additionally, the EUNIS classification system may facilitate a consistent assessment, especially because
1204 of its pan-EU coverage. To that end, direct links between the SWD 2011/1255 predominant habitats and
1205 the 2015 EUNIS classes have to be adjusted. Regional sea specific habitat/biotope classifications based
1206 on EUNIS can further improve a regionally coherent assessment taking into account particular spatial
1207 specificities (see HELCOM HUB as good practice⁵¹).

1208 *(scope) A set of habitats needs to be drawn up (based on EUNIS and considering the SWD 2011/1255*
1209 *predominant habitats) for each region, sub-region or subdivision, taking into account the different*
1210 *habitats contained in the indicative list in Table 1 of Annex III and having regard to the instruments*
1211 *mentioned in point 2 of Part A. Such instruments also refer to a number of habitat complexes (which*
1212 *means assessing, where appropriate, the composition, extent and relative proportions of habitats within*
1213 *such complexes) and to functional habitats.*

1214 **1.4. Habitat geographic distribution and extent.**

1215 GES determination: Habitat geographic distribution and extent *should be in line with the assessments*
1216 *conducted for the HD and RSCs agreements and shall not be significantly and adversely affected by*
1217 *human activities. For habitats distribution and extent where specific thresholds have been set, these*
1218 *should be considered (e.g. maintain a threshold of Y% of natural range not affected or Y% of natural*
1219 *range able to provide sustainable services).*

1220 Methodological standards to assess habitats distribution:

1221 The methodological standards to support criteria 1.4 & 1.5 could derive (to include) the approach
1222 from the HD, which follows. In the case of natural habitats, favourable conservation status (ref Article
1223 1(e)) is achieved when:

- 1224 - *its natural range and the areas it covers within that range are stable⁵² or increasing⁵³, and*
1225 - *the specific structure and functions which are necessary for its long-term maintenance are exist*
1226 *and are likely to continue to exist for the foreseeable future, and*
1227 - *the conservation status of its typical species is favourable as defined in Article 1(i).*

⁵⁰ Marine habitat types included in Annex I of the HD should be considered.

⁵¹ <http://helcom.fi/baltic-sea-trends/biodiversity/helcom-hub>

⁵² MSFD doesn't require conservation towards achievement of a pristine habitat, but achievement of sustainable use. To that end, stable is referring to habitats sensitive to human impacts. "Increasing" refers to heavily impacted habitats that are under a restoration framework, towards natural extent.

⁵³ According to the MSFD objectives "increasing" refers to heavily impacted habitats that are under a restoration framework, towards natural extent.

1228 The last two points are more relevant to the MSFD D1 habitat condition criterion.

1229 Proposed Methodological standards

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- 1256
- *Distributional range: Habitat distributional range* is the geographical region where occurrences of a habitat can be found within the waters of each MS. They should be typically bound by habitat range limits, defined as the spatial boundaries beyond which there is no occurrence of a habitat in a Member State. Range is the actual distribution of a habitat and not the potential distribution delineated by environmental limitations and reflected in the habitat extent.
 - *Distributional pattern: Habitat distributional pattern* is the manner in which a habitat is spatially arranged. Random, regular/uniform and clumped are the three traditional patterns considered. The pattern of habitat distribution may not be permanent. Seasons influence environmental conditions and resource availability (e.g., position of pelagic features), therefore influencing the location and even existence of certain habitats. They may depend of the scale at which the pattern is analysed therefore occurrences need to be binned at defined harmonized resolution to ensure comparability of results between countries and throughout MSFD regions and sub-regions. The particular methodological standard is more relevant to specific habitats (e.g. coral reefs), but can potentially indicate fragmented habitats resulting from anthropogenic activities that can threaten biodiversity.
 - *Habitat extent (area and volume): Habitat extent* refers to the area or volume effectively occupied by the habitat within its range. Typically, accurate habitat extent delimitation results from the analysis of ground-truth remote sensing images (aerial, satellite or acoustic). Alternatively, habitat extent may result from validated statistical models. An effort should be made to report on the current habitat extent as well as on that prior to anthropogenic impacts. Anthropogenic pressures typically related to major habitat losses or damage include construction of coastal infrastructures and aggregate dredging. Other pressures affecting both habitat extent and condition include sediment disposal, non-indigenous species invasions, opportunistic species development, global warming, ocean acidification and changes in predator-prey balance. Despite aiming to prevent any further deterioration of the habitat extent, the two latter approaches provide less scope for recovery of the populations as deterioration of habitat extent has already occurred (adapted from WG GES 2011⁵⁴).

1257

1258 The most common methodological standards reported for D1.4 & D1.5 according to Palialexis et al.
1259 (2014) were:

- 1260
- 1261
- 1262
- Distributional range of habitats
 - Distributional pattern of habitats
 - Area occupied by habitat

⁵⁴ WG GES 2011. Draft Common Understanding of (Initial) Assessment, Determination of Good Environmental Status (GES) and Establishment of Environmental Targets (Art.s 8, 9 & 10 MSFD). Version 5.

- 1263 • Sites or volume occupied by certain species (e.g. *Posidonia* meadows)

1264

1265 GES boundaries for habitat geographic distribution and extent should be in line with boundaries defined
1266 for other legislations and agreements, while more effort is needed to streamline the existing boundaries
1267 towards consistent ones for all habitats. Due to the variety of elements-habitats only general rules for
1268 GES boundaries can be defined according to the Common Understanding document and the cross-
1269 cutting workshop conclusions. Such rules have been already set by HD, IUCN and RSCs (i.e. OSPAR).
1270 Habitats subject to natural variation that cannot always be distinguished from the effects of
1271 anthropogenic activities hindering any attempt to include maintenance and reduction of habitat areas
1272 into the general GES definition or into boundaries. Threatened and sensitive to pressures habitats,
1273 though should be treated more strictly, due to their direct danger for degradation and when their
1274 sustainability of services is not maintained. A similar approach should also be applied for relevant
1275 habitats. For such elements it is suggested to include the maintenance of distributional extent and range
1276 in their GES assessment.

1277 *Good practices for GES determination for 1.4 & 1.5:* A MS determined GES including the followings: GES
1278 is achieved when Good conditions according to the Water Framework Directive (i.e. good ecological
1279 status), Habitats and Birds Directives (i.e. favourable conservation status) and RSC's (i.e. ecological
1280 quality objectives) are attained. Rare and threatened habitat types and species, included in existing
1281 legislation and conventions, are protected to the level envisaged by that legislation or convention".
1282 Another MS determined GES for particular species reporting: "GES is achieved when no significant
1283 reduction of the area occupied by the maerl-type sediments and other coralligenous habitats".
1284 Unfortunately, there was no GES determination for 1.4 & 1.5 to include a quantifiable parameter, other
1285 than the maintenance of the area (trend based quantification).

1286

1287 **1.5. Habitat condition**

1288 GES determination: Habitat conditions should be in line with the assessments conducted for the HD (in
1289 terms of structure and functions), BD (in terms of quality-biotic & abiotic) and RSCs agreements and not
1290 be significantly and adversely affected by human activities.

1291

1292 Methodological *standards to assess habitats conditions:*

1293 Condition means the actual environmental state of a habitat in a given geographical area. The
1294 assessment of state can be derived by taking direct measurements of the particular biodiversity
1295 component, such as a typical species or communities. In practice it is nearly impossible to measure the
1296 condition of all habitats in a given marine region by field sampling and a risk based approach is
1297 suggested including, *interalia*, selection of representative habitats affected by each pressure.

1298 In line with criterion 1.4, the methodological standards to support criterion 1.5 could derive (to include)
1299 the approach from the HD, as is presented above.

1300 Proposed methodological standards:

- 1301 • *Condition of the typical species and communities*
- 1302 • *Relative abundance and/or biomass, as appropriate*

1303 The most common methodological standards reported for D1.6 according to Palialexis et al. (2014)
1304 were:

- 1305 • Diversity indices (e.g. Shannon-Wiener)
- 1306 • Benthic Quality Index (BQI)
- 1307 • species ratios
- 1308 • Abundance or biomass of species or groups of species
- 1309 • Oxygen saturation (under the "physical, hydrological and chemical conditions)

1310 BQI was also reported under D 5.2. Some MS reported habitat extent (1.4) as an indication of 1.5 habitat
1311 condition. Specific abiotic parameters of the habitats have to be assessed through the pressure
1312 Descriptors reflecting the level of certain pressures to habitats.

1313
1314 GES boundaries for habitat condition should be in line with boundaries defined for other legislations and
1315 agreements, while more effort is needed to streamline the existing boundaries towards consistent ones
1316 for all habitats. Due to the variety of elements-habitats only general rules for GES boundaries can be
1317 defined according to the Common Understanding document and the cross-cutting workshop
1318 conclusions. Habitats subject to natural variation, which cannot always be distinguished from the effects
1319 of anthropogenic activities, hindering any attempt to include maintenance and reduction of habitat
1320 areas into the general GES definition or into boundaries. Threatened and sensitive to pressures habitats,
1321 though should be treated more strictly, due to their direct danger for degradation. A similar approach
1322 should also be applied for relevant habitats. For such elements it is suggested to include condition
1323 maintenance in their GES assessment.

1324
1325 Good practices for GES determination for 1.4 & 1.5: A MS determined GES using a diversity index for
1326 specific group of species providing a quantitative definition for habitats condition.

1327
1328 Typical species and communities should be defined and listed, at least regionally.

1329
1330 **1.6. Ecosystem structure**

1331
1332 The Ecosystem structure criterion was not reported by all MSs. The lack of specification in its content,
1333 which is also reflected in the lack of an introductory note in the COM DEC 2010/477/EU in contrast to
1334 the other two levels, led to different interpretations and assessments.

1335 **[Currently there are two prevailing approaches]:**

1336 The ecosystem assessment refers to the ultimate goal of the MSFD and there is no need to be included
1337 in D1. This will be achieved by a global assessment of the state descriptors including the impacts of the
1338 pressure Descriptors, in line with the ecosystem approach dictated by the MSFD (Figure in 6.1). Under

1339 this perspective, it is suggested by some MS to eliminate this level. The fact that some ecosystem's
1340 attributes -e.g. functions and resilience- are assessed under other Descriptors (D4 and D6) enhances the
1341 elimination of the particular criterion for the sake of simplicity and to avoid duplicated assessments. In
1342 addition, difficulties to assess this criterion were obvious in the JRC's IDA, but also in the RSCs core
1343 indicator work (see table 3.1 & 3.6 of the "Development of a shared data and information system
1344 between the EU and the Regional Sea Conventions⁵⁵" where the lack of indicators for 1.7 is highlighted
1345 across the RSCs). Another argument denotes that "ecosystem processes and functions" are high-level
1346 consideration of assessment (e.g. under Art. 8), rather than a criterion under D1. This high-level gets
1347 input from a set of descriptors (e.g. D4, D6). Finally, monitoring programmes for biodiversity have not
1348 been designed to adequately cover ecosystem processes and functions.

1349 **[The second approach is presented in section 5.3 as a proposal for a criterion to substitute and clarify**
1350 **criterion 1].**

1351

1352 Methodological standards to assess ecosystem structure:

- 1353 • *Composition and relative proportions of ecosystem components (habitats and species)*

1354

1355 The most common methodological standards reported for D1.7 according to Palialexis et al. (2014)
1356 were:

- 1357 • Ecological Evaluation Index (EEI),
- 1358 • BENTIX,
- 1359 • PREI,
- 1360 • species diversity indices (e.g. Hill's N1)

1361 These methods reported also under other Descriptors (4, 6, 5) or under other criteria of D1 (1.6).

1362

1363 **5.3 Proposals for new criteria**

1364

1365 In an effort to cover aspects related to *Ecosystem processes and functions*, the current EC Decision
1366 2010/477/EU includes the following text:

1367 *"In addition, the interactions between the structural components of the ecosystem are fundamental for*
1368 *assessing ecosystem processes and functions for the purpose of the overall determination of good*
1369 *environmental status, having regard, inter alia, to Articles 1, 3(5) and 9(1) of Directive 2008/56/EC. Other*
1370 *functional aspects addressed through other descriptors of good environmental status (such as*
1371 *descriptors 4 and 6), as well as connectivity and resilience considerations, are also important for*
1372 *addressing ecosystem processes and functions."*

1373 Given the importance of this level and the continued progress in the field, it is possible that presently
1374 more specific criteria can be identified to address these aspects. The proposals presented by the TG1
1375 report (Cochrane et al., 2010⁵⁶) are following. Operational indicators and methodological standards that
1376 address, for instance, the estimation of connectivity, patchiness, fragmentation, integrity and resilience,

⁵⁵ https://circabc.europa.eu/d/a/workspace/SpacesStore/aff9880d-df5e-44ec-854e-8f098fcff2e5/DIKE_10-2014-05b_RSCDataReporting_Report.pdf

1377 between habitat occurrences and species meta-populations at MSFD region and sub-region level could
1378 be included at the ecosystem level. Note that these indicators should be complementary (rather than
1379 overlapping) to ecosystem functioning elements already addressed in descriptors D4 (food webs) and D6
1380 (sea-floor integrity). In addition, these should complement to the indicator work of the RSCs.

1381 *1.6. Ecosystem processes and functions*

- 1382 • Interactions between the structural components of the ecosystem (1.6.1)
- 1383 • Services provided by biological diversity within ecosystems (1.6.2)

1384

1385 Services provided by biological diversity within ecosystems, could be linked with the implementation of
1386 the EU Biodiversity Strategy and more specific with ecosystem assessments under Action 5 of the EU
1387 Biodiversity Strategy by 2020. According to this “Member States, with the assistance of the Commission,
1388 will map and assess the state of ecosystems and their services in their national territory by 2014, assess
1389 the economic value of such services, and promote the integration of these values into accounting and
1390 reporting systems at EU and national level by 2020”.

1391

1392 Proposed Methodological standards

- 1393 • Conservation Status of Species by numbers⁵⁷
- 1394 • Mean Maximum Length of fish community⁵⁸
- 1395 • Large Fish Indicator (LFI)⁵⁹
- 1396 •

1397 **5.4 Rationale and proposal, where appropriate, for defining GES threshold values and**
1398 **reference points, based on established and agreed scientific methods for quantifying and**
1399 **applying GES boundaries, or for a normative definition of GES;**
1400

1401 Experts’ input on defining reference points (after clarification of quantifying GES): At least for marine
1402 benthos, the high percentile method is standard used in the intercalibration process to estimate
1403 reference values for biotic indicators such as species richness, Shannon index and AMBI. Percentile
1404 values in the range of 95 to 99 percentile of a sufficiently large dataset (>10 years) are used. The 99
1405 percentile seems to be used increasingly, and appears (at least for marine benthos) NOT to overestimate
1406 reference values. Expert judgment remains necessary to evaluate the estimated reference values and
1407 resulting EQR values. For example, it appears that this percentile method gives too low estimates of
1408 reference values, if a benthic community is a poor or low moderate state. In this case, suitable simple
1409 and pragmatic correction methods of these reference values have to be designed and used.

⁵⁶ Cochrane S.K.J., D.W. Connor, P. Nilsson, I. Mitchell, J. Reker, J. Franco, V. Valavanis, S. Moncheva, J. Ekebom, K. Nygaard, R. Serrão Santos, I. Narberhaus, T. Packeiser, W. van de Bund & A.C. Cardoso, 2010. Marine Strategy Framework Directive Task Group 1 Report Biological diversity EUR 24337 EN – 2010. <http://ec.europa.eu/environment/marine/pdf/1-Task-group-1-Report-on-Biological-Diversity.pdf>

⁵⁷ Dulvy, N., Jennings, S., Rogers, S.I., Maxwell, J.D., 2006. Threat and decline in fishes: an indicator of marine biodiversity. Canadian Journal of Fisheries and Aquatic Sciences 63, 1267

⁵⁸ Jennings, S., Greenstreet, S. P. R., and Reynolds, J. D. 1999. Structural change in an exploited fish community: a consequence of differential fishing effects on species with contrasting life histories. Journal of Animal Ecology, 68: 617-627

⁵⁹ Modica, L., Velasco, F., Preciado, I., Soto, M., and Greenstreet, S. P. R. Development of the large fish indicator and associated target for a Northeast Atlantic fish community. – ICES Journal of Marine Science, doi: 10.1093/icesjms/fsu101.

1410 HELCOM CORESET and HOLAS II are working towards the quantification of indicators, which is strongly
1411 dependent on the type of indicator, while for some types the determination of reference points might
1412 not be feasible.

1413 Agreed and established references and thresholds from other legislations and RSCs should be
1414 considered for the MSFD assessments. D1 elements should be linked with pressure Descriptors and
1415 pressure thresholds that affect GES of the state elements. Annex V of the SEC 2011/1255 can guide such
1416 links between pressure and state criteria, through impacts.

1417 Despite the complexity to provide a general qualitative definition of GES at the level of criterion, due to
1418 the heterogeneity of the elements, it is much easier to determine a quantitative GES for specific
1419 selected species, groups of species and habitats, as shown in the good practices provided in 5.2.

1420 **5.5 Link to possible future EEA indicator.**

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1424 **6. GES methodological standards (in accordance with Art. 9.3)**

1425

1426 **6.1 Proposals for (new) methodological standards to be applied to the criteria in order to** 1427 **assess whether GES has been achieved for the descriptor (e.g. aggregation/integration** 1428 **methods across the criteria and across the quality elements, e.g. across contaminants,** 1429 **species, habitats), using JRC / ICES / RSC protocols, Article 12 findings and guidance from** 1430 **the Scales project, as appropriate.**

1431

1432 On aggregation methods and scales the recent report by Deltares⁶⁰ has given a good overview of the key
1433 questions that need to be addressed, provided examples and gives advantages and disadvantages for
1434 the different approaches. The One-Out-All-Out (OOAO) is not suitable for D1, due to the large number of
1435 assessment elements under each criterion. It could be useful for certain groups of elements (e.g.
1436 endangered species, sensitive habitats, engineering species) either within each relevant criterion or
1437 across the species/habitats criteria. For large group of elements a percentage of elements to be in GES
1438 could be a useful approach to provide quantitative GES and monitor the progress towards its
1439 achievement through the targets and programmes of measures.

1440

1441 The cross-cutting workshop outcome⁶¹ on assessment scales, in relation to elements, is that multiple
1442 scales would need to be selected so that data being collected ensures appropriate coverage of the

⁶⁰ Prins, T.C., Borja, A., Simboura, N., Tsanagaris, C., Van der Meulen, M.D., Boon, A.R., Menchaca, I., & Gilbert, A.J. 2014 in prep. Coherent scales and aggregation rules for environmental status assessment with the Marine Strategy Framework Directive. Towards a draft guidance. Deltares/AZTI/HCMR, Report 1207879-000-ZKS-0014 to the European Commission, Delft, 47pp.

⁶¹ https://circabc.europa.eu/d/a/workspace/SpacesStore/9daafb84-fe4f-42ad-864f-21b338c8269b/CCWorkshop_Summary%20Notes_20022015_Final.docx

1443 needs and no data gaps are observed. Overall, one scale does not fit all elements, and there is a need for
 1444 a system that address the different needs.
 1445 Define scales at each stage of process⁴⁶:
 1446

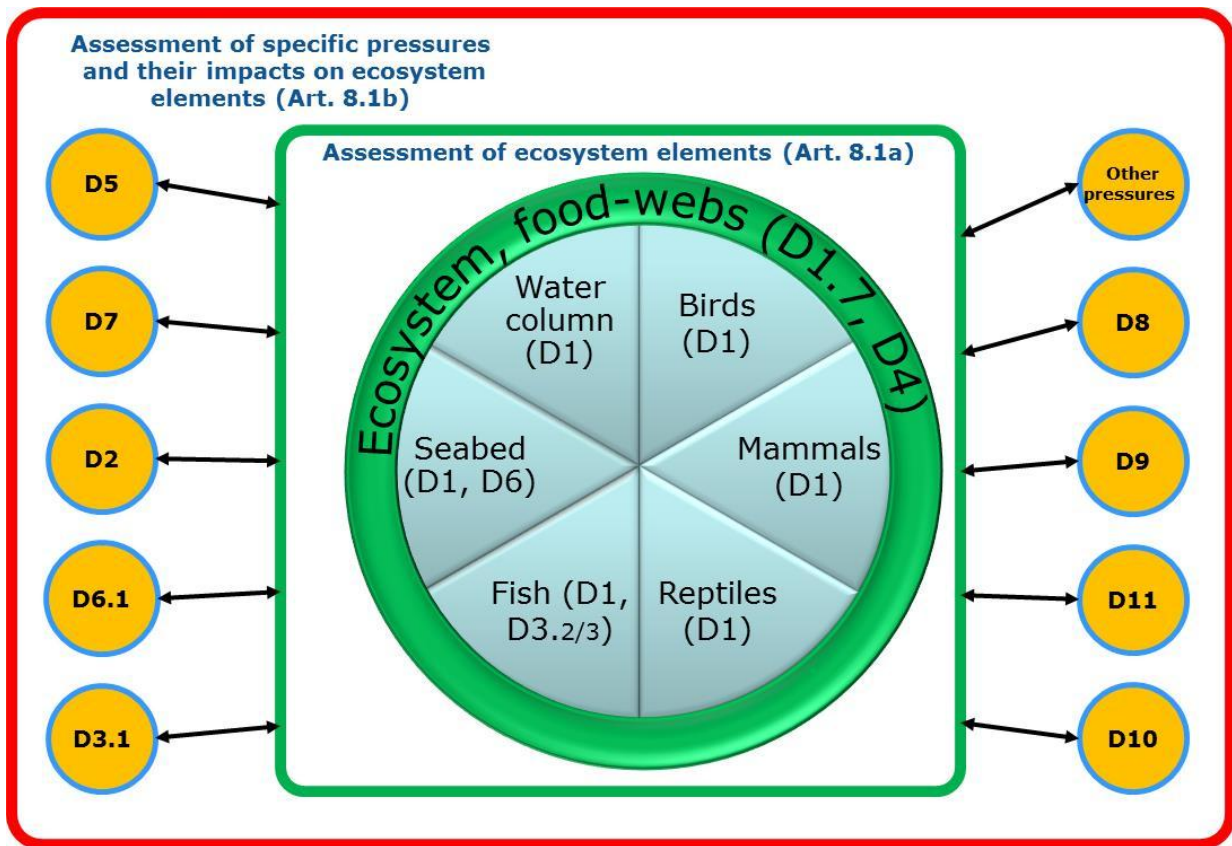
	Process	Scale
1	Define GES	(sub)Region
2	Define 'indicators' for assessment	(sub)Region and possibly EU level
3	Collect the data (monitoring)	National, considering WFD for coastal waters and MSFD offshore
4	Process the data for use in indicator assessment	National, considering WFD for coastal waters and MSFD offshore
5	Aggregate the data and assess indicator	Sub(Regional) ('national' sub-basins)

1447
 1448 Scales are an important aspect for the MSFD implementation that should be defined in several
 1449 processes. Generally, the assessment elements (species, habitats and ecosystems) embed this attribute
 1450 and can potentially direct scales determination for several steps (assessment, monitoring, measures). In
 1451 any case, scales have to be representative for all ecosystem elements and to reflect the spatial extent of
 1452 the pressures. For the sake of coherence and consistent/comparable implementation a common
 1453 approach can be suggested. As a starting point, the "nested approach" (as developed and applied in
 1454 HELCOM) should be introduced to all marine regions, being already attempt by OSPAR.

1455 For the D1 the specified elements for assessment (species, habitats) can, generally, define the
 1456 assessment scales. For instance, large cetacean should be assessed regionally, pelagic and demersal fish
 1457 species on a sub-regional level, seabed habitats on a sub-division level. Following the agreed lists of
 1458 elements to be assessed under D1 a corresponding scale assessment can be predefined.

1459
 1460 ***Integration across descriptors and the ecosystem-based approach of MSFD***
 1461

1462 The artificial distinction of pressures, state and impact attributes to the 11 descriptors led unavoidably
 1463 to overlaps across them in terms of assessments. For a holistic state assessment of the ecosystem-in line
 1464 with the ecosystem-based approach to management Art. 1(3) the state descriptors and the state criteria
 1465 of some pressure descriptors should be bridged. The review process, even if it was organised on a
 1466 descriptor level following the structure of the COM DEC 2010/477/EU, provided the floor to also discuss
 1467 cross-cutting issues in a workshop held in Copenhagen 21-22 January 2015. The ecosystem-based
 1468 approach to MSFD implementation (Fig. 4) can be framed through an integration of the GES criteria for
 1469 the state-based descriptors (overall state assessment) where the impact of the pressure-based
 1470 descriptors will feed the state assessment. In this process an essential part is the definition of the state
 1471 elements to be assessed (internal cycle) and their links, functions and structure (external cycle) that
 1472 bridge D4 and D6 with D1.



1473

1474 **Figure 4⁶²:** An ecosystem-based approach to determination and assessment of GES follows the main
 1475 elements of the ecosystem (state-based descriptors, centre) and is closely linked to the effects of
 1476 pressures from human activities (pressure-based descriptors, satellite circles). Note that descriptors D2,
 1477 D3, D5, D6, D7, D8, D9 and D10 include both a pressure criterion and an impact criterion in the 2010
 1478 Decision; the impact criteria should be closely linked to the state-based assessments.

1479

1480 **7. Specifications and standardized methods for monitoring and assessment**
 1481 **(in accordance with Art. 11(4))**
 1482

1483 **7.1 Proposals for specifications on methods for monitoring (i.e. the collection of data**
 1484 **needed for assessment of each criterion, including parameters, units of measurement and**
 1485 **data quality requirements), which aim at ensuring the comparability of monitoring results,**

⁶² https://circabc.europa.eu/d/a/workspace/SpacesStore/b391ea98-1dbb-4080-8c4a-a0e2d661f4ea/CCworkshop_conclusions_final%20revised%2030032015.ppt

1486 **on the basis of existing survey protocols and relevant European/international standards**
1487 **(e.g. ISO/CEN).**
1488

1489 The report “Development of a shared data and information system between the EU and the Regional
1490 Sea Conventions⁶³” (presented in WG DIKE, CIRCABC) is examining the data and information holdings
1491 within each of the four Regional Sea Conventions (RSCs) as well as the European Environment Agency
1492 (EEA), with the aim of characterizing the present data and information holdings and flow processes in
1493 place across Europe. This is specifically to evaluate how these data could be used to support the
1494 reporting objectives of the Marine Strategy Framework Directive and other related EU Directives. Table
1495 3.6 provides a comprehensive list of the parameters used or proposed by the RSCs for assessment of
1496 their biodiversity indicators in relation to the MSFD indicators for D1. This exercise is an important step
1497 for taking stock of the on-going assessments and their parameters and align these parameters with the
1498 MSFD needs.

1499 In 2013, three Pilot-Projects (BALSAM in the Baltic, IRIS-SES in the Mediterranean and Black Sea, JMP
1500 NS/CS in the North Sea) were launched as part of DG ENV initiative for coordination and support action
1501 to support coherent and comparable implementation of MSFD with focus on monitoring programmes.
1502 The objectives are to show benefits and challenges of joint monitoring network and multi-use of existing
1503 platform, increasing efficiency and reducing costs, and promote cooperation among research
1504 institutions within selected regions. A specific objective (e.g. IRIS-SES) is to elaborate guidelines for
1505 sampling across the various disciplines in order to meet MSFD requirements. It is expected that these
1506 projects (ending in May 2015) will provide recommendations for better harmonization and coordination
1507 of monitoring efforts and collection of data to support MSFD needs.

1508

1509 In principle, the set-up of the methodological standards for monitoring and assessment for D1
1510 components should be developed in the following steps, considering also the coordinated work of
1511 Member States through RSCs:

1512 1) Identification of representative, threatened and functional groups for predominant and special
1513 habitats and species according to Table 1 Annex III MSFD (Plankton, macrophytes, invertebrates, fish,
1514 reptiles, mammals, birds and other regional important species groups).

1515 2) Establish distribution and abundance sampling system for different groups, if necessary and where not
1516 existing.

1517 3) Establish sampling stations to analyze locally the impact of relevant pressures (by-catch, extraction,
1518 toxicities, etc. using Annex III table 2).

1519 4) Develop thresholds or trends for each habitat or species category on the measured local analyses
1520 (assuming that the GES quantification has meanwhile adequately developed).

⁶³ https://circabc.europa.eu/d/a/workspace/SpacesStore/aff9880d-df5e-44ec-854e-8f098fcff2e5/DIKE_10-2014-05b_RSCDataReporting_Report.pdf

- 1521 5) Develop models for the effect of important pressures
- 1522 6) Model distribution of pressure and its effect for the relevant marine regions
- 1523 7) Define GES or at least describe range for a good and a bad ecological state or trend for each marine
1524 region
- 1525 8) If appropriate develop areal analysis of the distribution of good and bad ecological states in each
1526 marine region.

1527 These steps are indicative and might be more appropriate adapted to the specific biodiversity elements.

1528 Generally, standardized methods are relevant to monitoring programmes. WFD works on the
1529 standardization of such methods and these should be also considered for MSFD, where relevant. The
1530 use of ISO method 16665 (2005): (Water quality — Guidelines for quantitative sampling and sample
1531 processing of marine soft-bottom macrofauna) can be proposed for the MSFD.

1532 For monitoring of phytoplankton, zooplankton, macroalgae, benthic invertebrates and coastal fish joint
1533 guidelines for monitoring exists in the HELCOM COMBINE manual, while MS are currently working
1534 towards joint documentation of the monitoring guidelines for other biological components such as
1535 birds, mammals, non-indigenous species and benthic habitats in the HELCOM Monitoring Manual. The
1536 manual aims to support MSFD Article 11 reporting for those Contracting parties that are also EU
1537 Member States.

1538 **7.2 Proposals for specifications on methods for assessment, which aim at ensuring**
1539 **comparability of assessment results, including aggregation of monitoring data within an**
1540 **assessment area for a particular criterion and if necessary aggregation across assessment**
1541 **areas up to larger areas (e.g. (sub) region scales), and based on general guidance prepared**
1542 **on scales and aggregation rules²³ and taking account of JRC / ICES / RSC inventories and**
1543 **Article 12 findings.**

1544

1545 In the Baltic Sea, HELCOM assessment units are used to support spatial aggregation dividing the Baltic
1546 Sea into four assessment levels; 1) the whole Baltic Sea 2) 17 sub basins, 3) sub-basins divided into
1547 coastal and offshore areas, 4) further division of coastal areas into WFD water types or water bodies.
1548 Methods for aggregating monitoring data within an assessment unit will be developed as part of the
1549 development of HELCOM core indicators in the CORESET II project. Aggregation of assessment units to
1550 larger areas as well as several different topical assessments towards holistic assessments will be
1551 elaborated under the planned HELCOM HOLAS II project. However, scaling up is in general only
1552 considered as useful when ecologically relevant e.g. for populations that are distributed over larger
1553 areas.

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8. Rational and technical background for proposed revision

8.1 Justification and technical background justifying the above proposals.

Covered in previous sections

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

9.1 Where aspects are identified which should be usefully laid down but not as part of the decision, these elements should be specified and a proposal should be made in which way they should be laid down, e.g. interpretative guide for the application of the future Decision or CU guidance document or technical background document.

9.1 Where aspects are identified which should be usefully laid down but not as part of the decision, these elements should be specified and a proposal should be made in which way they should be laid down, e.g. interpretative guide for the application of the future Decision or CU guidance document or technical background document.

- Lists of elements and selection and/or deselecting criteria for species (e.g. selection criteria from Texel-Faial):
 - Listed elements in Directives and Conventions, etc. & section 2.3 of this document
 - Vulnerable species (exposed to pressure which impact (or could impact) them at a level, which could lead, at short or longer term, to no GES)
 - Links to pressure Descriptors, notably D2, D3
 - rare, declining, natural heritage value
 - functional role: (i) common (= widely occurring, even at low abundances AND/OR high abundances, even if less widely distributed) Trophic (important link in the food chain) - Link to D4
 - For habitats:
 - listed (Directives, Conventions, etc.) = *special habitats*
 - Vulnerable habitats (exposed to pressure which impact (or could impact) them at a level, which could lead, at short or longer term, to no GES). = „*particular*“ *area habitats*: *Links to pressure Descriptors, notably D2, D5, D6*
 - rare, declining, natural heritage value
 - functional role:
 - * common (= widely occurring, even at low abundances AND/OR high abundances, even if less widely distributed)
 - * Trophic (important link in the food chain). *Link to D4*
 - * High biodiversity (e.g. biogenic reefs. *Link to D6.*)
- In relation to biodiversity at the level of habitats, the criteria for assessing progress towards good environmental status, as well as the methodological standards related respectively to them, are the following:”

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10. Reference Documents

- Review of the GES Decision 2010/477/EU and MSFD Annex III Approach and outline for the process, (EC- Committee/07/2013/03rev, 2013);
- First steps in the implementation of the Marine Strategy Framework Directive - Assessment in accordance with Article 12 of Directive 2008/56/EC, (CSWD, 2014);
- Article 12 Technical Assessment, (Milieu ltd, 2014);
- Marine Strategy Framework Directive - Descriptor 3, (ICES, 2012);
- Common Understanding of (Initial) Assessment, Determination of Good Environmental Status (GES) & Establishment of Environmental Targets (Articles 8, 9 & 10 MSFD), (DG GES, 2014);
- Coherent geographic scales and aggregation rules in assessment and monitoring of Good Environmental Status – analysis and conceptual phase, (Deltares, 2014);
- In-depth assessment of the EU Member States’ Submissions for the MSFD under articles 8,9 and 10, EUR26473EN (JRC 2014)
- Review of Methodological Standards Related to the Marine Strategy Framework Directive Criteria on Good Environmental Status (JRC, 2011)
- Guidance / Terms of Reference for the task groups ‘criteria and methodological standards for the Good Ecological Status (GES) descriptors’ (JRC, 2010)
- CSWP (2011) on the Relationship between the initial assessment of marine waters and the criteria for good environmental status.
- OSPAR (2012b). MSFD Advice Manual and Background Document on Biodiversity. London, Publication Number: 581/2012, 141 pp. (available at: http://www.ospar.org/v_publications/download.asp?v1=p00581)

