



Marine Strategy Framework Directive (MSFD)
Common Implementation Strategy

**Reporting on the 2020 update of Article 11
for the Marine Strategy Framework Directive**

MSFD GUIDANCE DOCUMENT 17

JUNE 2020

Further guidance for reporting, including use of the MSFD web reporting tool and schemas, is available from <http://cdr.eionet.europa.eu/help/msfd>.

Disclaimer:

This document has been developed through a collaborative programme involving the European Commission, all EU Member States, the Accession Countries, and Norway, international organisations, including the Regional Sea Conventions and other stakeholders and Non-Governmental Organisations. The document should be regarded as presenting an informal consensus position on best practice agreed by all partners. However, the document does not necessarily represent the official, formal position of any of the partners. Hence, the views expressed in the document do not necessarily represent the views of the European Commission.

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LIST OF ACRONYMS

AC	Arctic Council
BSC	Black Sea Commission for the Bucharest Convention
BWD	Bathing Water Directive
CEMP	OSPAR's Coordinated Environmental Monitoring Programme
CFP	Common Fisheries Policy
COMBINE	HELCOM's Cooperative Monitoring in the Baltic Marine Environment
EEA	European Environment Agency
EU	European Union
GES	Good Environmental Status (MSFD Articles 3(5) and 9)
GIS	Geographic Information System (file types)
HELCOM	Helsinki Commission for the Helsinki Convention on the Protection of the Marine Environment of the Baltic Sea Area
ICCAT	International Commission for the Conservation of Atlantic Tunas
MS	Member States
MSFD	Marine Strategy Framework Directive
NEAFC	North-East Atlantic Fisheries Commission
OSPAR	OSPAR Commission for the Oslo-Paris Convention for the Protection of the Marine Environment of the North-East Atlantic
QA	Quality assurance
QC	Quality control
ReportNet	Eionet's infrastructure for supporting data flows (e.g. by Member States for reporting obligations under an EU Directive)
UNEP/MAP	United Nations Environment Programme - Mediterranean Action Plan (Barcelona Convention)
WFD	Water Framework Directive
WISE	Water Information System for Europe
XML	Extensible Mark-up Language (file types)

Marine Strategy Framework Directive (MSFD)

Common Implementation Strategy

Reporting on the 2020 update of Article 11 for the Marine Strategy Framework Directive

1 Introduction

According to Article 17(2) of the Marine Strategy Framework Directive (MSFD), Member States (MS) have to update their marine strategies every six years. This includes the report on monitoring programmes under Article 11, which was prepared in 2014, and which is to be updated by 15 July 2020 and notified to the European Commission by 15 October 2020 at the latest.

This reporting guidance aims to support Member States in fulfilling their 2020 reporting obligation on updated monitoring programmes. The reporting requirements used for Article 11 reporting in 2014¹ have been revised and updated, where considered appropriate, in order to follow the recommendations from the Fitness Check on environmental reporting and monitoring² and to align with the 2018 reporting of Article 17 updates for Articles 8, 9 and 10³. The main changes are related to the reduction of questions, reduction of free-text fields, increased use of code lists, and some changes in the naming and order of the requested information.

The information reported by the MS will be used by the Commission services for assessing under Article 12 whether the elements notified are consistent with the requirements of the MSFD in each Member State (see assessment of the 2014 monitoring programmes⁴), as well as the coherence of frameworks within the different marine regions or subregions and across the Union. In line with the approach to 2018 MSFD reporting on Articles 17 and 18, the Commission services will use only the information reported electronically in XML and GIS files by Member States for its Article 12 assessment. Member States may, if considered relevant, upload text-based reports.

The reported information will also serve the preparation of reports, for example to the European Parliament, Council and the general public, on the implementation of the MSFD. All the information reported will be made publicly available through WISE-Marine⁵, a web-based content management system that shows the efforts made across Europe on implementation of the MSFD.

2 Article 11 requirements

Article 11 requires that monitoring programmes should be established and implemented:

- For the ongoing assessment of environmental status;
- On the basis of the indicative lists of elements in MSFD Annex III;

¹ [GD09 Reporting on Article 11 monitoring programmes \(2014\)](#)

² http://ec.europa.eu/environment/legal/reporting/fc_overview_en.htm

³ [GD14_MSFD2018ReportingGuidance_Art8-9-10_rev20191015](#); [GD14_MSFD2018ReportingGuidance_Art8-9-10_AnnexII_WorkedExamples_rev20190913](#)

⁴ [COM\(2017\) 3](#); [SWD\(2017\) 1](#); [SWD\(2018\) 393](#)

⁵ <https://water.europa.eu/marine>

- On the basis of the list in MSFD Annex V;
- By reference to the environmental targets established pursuant to Article 10.

The monitoring programmes shall be compatible within marine (sub)regions and with monitoring laid down:

- by Union legislation (e.g. Habitats and Birds Directives, Water Framework Directive);
- under international agreements (e.g. Regional Sea Conventions).

In the interest of coherence and coordination, MS sharing a region or subregion should ensure that:

- monitoring methods are consistent across the marine region or subregion so as to facilitate comparability of monitoring results;
- relevant transboundary impacts and transboundary features are taken into account.

In addition, MSFD Annex V indicates a number of needs from the monitoring programmes, including:

- Monitoring in accordance with the criteria and methodological standards defined pursuant to Article 9(3) (i.e. those in Decision (EU) 2017/848);
- Generation of information enabling the identification of indicators for environmental targets, and to evaluate progress towards achievement of the targets;
- Generation of information allowing the assessment of the impact [effectiveness] of measures (Article 13), in particular with respect to the achievement of environmental targets;
- Monitoring activities to identify the cause of change in environmental status and to confirm that corrective measures deliver the desired changes;
- Aggregation of information in marine regions and subregions, and ensuring compatibility of assessment approaches and methods within and between regions and/or subregions.

Based on these requirements, the “Guidance Document 5 - MSFD recommendation on monitoring and reporting”⁶ (hereafter *Recommendation*) was adopted in 2013. It included 10 agreed questions for reporting in its Annex 3, which were used to develop the 2014 reporting requirements.

3 Update of Article 11 reports

3.1 General structure of the reports

The 2014 reporting information was structured into three sections:

- a. General questions
- b. Programme-level questions
- c. Sub-programme-level questions

It aimed to set out a 'minimum reporting requirement' against the 10 questions of the *Recommendation*, with a focus on provision of categorised information (Summary Information) that could be readily analysed and used at EU level, but which was supported where necessary by brief additional explanatory text.

⁶ [Guidance Document 5 - MSFD recommendation on monitoring and reporting \(2013\)](#)

A key issue was to define what was a 'programme' and a 'sub-programme' as this influenced the consistency of reporting across Member States and the level of detail and variation reported under each section. These two levels were distinguished as follows:

- a. *The Programmes were defined around the 11 Descriptors, reflecting the different aspects of good environmental status (GES) for which the monitoring needs to provide data;*
- b. *The Sub-programmes were defined around the practicalities of monitoring, reflecting different data types and ways of collecting these data.*

In order to ensure consistency between Member States in how the reporting on monitoring programmes was structured and to facilitate their assessment under Article 12, an agreed common set of programmes was used.

To facilitate comparison between Member States at sub-programme level an indicative list of sub-programmes was developed. The sub-programmes were expected to address one or more topics:

- a. aspects of ecosystem state/impact (to assess if GES has been met and whether environmental state is changing);
- b. the pressures upon the ecosystem that can cause impacts (adverse effects) on environmental state (e.g. to assess if environmental targets are being met or pressures are increasing or decreasing);
- c. the activities and uses of the marine environment which may be giving rise to the pressures, and
- d. the measures which are in place to address pressures and impacts (to assess whether the measures are effective in managing the activities and uses).

For the update of Article 11 reports in 2020, the three sections have been revised, and a new structure is proposed in order to clarify the terminology used for the different concepts:

- a. Metadata: gathers information related to the administrative set-up of the monitoring programmes, including regional cooperation processes, and the public consultation;
- b. Monitoring strategies: each strategy describes the overall approach to monitoring for a particular descriptor and collects information on the coverage of GES criteria, targets and measures, as well as any gaps in the monitoring and plans to fill the gaps.
- c. Monitoring programmes: gathers information on the practicalities of monitoring, reflecting different monitoring types, methods, spatial and temporal scope, etc. Annex III provides an indicative list of monitoring programmes, aiming to provide a logical structure and suitable resolution for a set of programmes for Article 11 purposes.

In general, the number of questions has been reduced for all three sections, based on a review of the usefulness of the information reported under Article 11 in 2014 in the context of ongoing implementation needs, and the number of code lists for the monitoring programmes information has increased. The relevant code lists used in the 2018 update of Articles 8, 9 and 10 have been included, in order to allow linkages between the information reported under the different articles.

3.2 Information to be reported

As mentioned previously, the amount of information to be reported in 2020 has been reduced significantly. Subjective questions related to adequacy have been removed, and only the most important information on the monitoring has been kept. Similar to what was requested in 2014, there are a number of fields requiring categorised information, but also some free text fields, and URLs can be provided.

In this section, a mapping of the 2014 vs 2020 fields is provided, showing the changes performed in regards to 2014 'General questions' (Table 1), 'Monitoring programmes' (Table 2) and 'Monitoring sub-programmes' (Table 3).

The specific information to be reported in 2020 via XML files, including a description of the fields that are part of the schemas, is provided in [Annex I](#). Each schema also includes fields for the country, reporter and reporting date, as well as a field for XML file control ('Supersedes'). The code lists (enumeration lists) to be used are included in [Annex II](#).

On top of the changes performed on the naming of the sections and the content, the order of the fields has also been modified (e.g. the questions on the competent authority and responsible organisations have been moved to the beginning of the schema).

Table 1 Mapping of new section on 'Metadata' to 2014 'General questions'

2014	2020	Change performed
GENERAL QUESTIONS	METADATA	Section renamed
Q1a_Overall_adequacy		Removed
Q1b_GapsGES		Moved to Monitoring strategies schema as 'Coverage_GEScriteria'
Q1c_GapsTargets		Moved to Monitoring strategies schema as 'Coverage_Targets'
Q1d_GapsFeaturesElements		Removed
Q1e_Gaps_Plans		Moved to Monitoring strategies schema as 'Gaps_Plans'
Q2a_PublicConsultationDates	PublicConsultationDates	
Q2b_PublicConsultationDescription	PublicConsultationSite	Only URL requested
Q3a_RegionalCooperation	RegionalCooperation	
Q3b_TransboundaryImpactsFeatures		Removed
Q3c_EnvironmentalChanges		Removed
Q3d_SourceContaminantsSeafood		Removed
Q3e_AccessAndUseRights		Covered in Monitoring programmes schema by 'DataAccess'
Q4a_ResponsibleCompetentAuthority	ResponsibleCompetentAuthority	
Q4b_ResponsibleOrganisations	ResponsibleOrganisations	
Q4c_RelationshipToCA	RelationshipToCA	

Table 2 Mapping of new section on 'Monitoring strategies' to 2014 'Monitoring programmes'

2014	2020	Change performed
MONITORING PROGRAMMES	MONITORING STRATEGIES	Section renamed
MonitoringProgramme	Descriptor	
Q4e_ProgrammeID		Removed
Q4f_ProgrammeDescription	MonitoringStrategyDescription	
Q5a_RelevantGESCriteria		Moved to Monitoring programmes schema as 'GEScriteria'
Q5b_RelevantGESIndicators		Moved to Monitoring programmes schema as 'RelatedIndicator' and 'RelatedIndicator_name'
Q5c_RelevantFeaturesPressuresIm		Moved to Monitoring programmes

2014	2020	Change performed
pacts		schema as 'Features'
Q5d_AdequacyForAssessmentGES		Removed
Q5e_NaturalVariability		Removed
Q5f_DescriptionGES		Merged with question Q4f as 'MonitoringStrategyDescription'
Q5g_GapFillingDateGES	Coverage_GEScriteria	Covers also 'Q1b_GapsGES' from General questions
Q5h_PlansGES	Gaps_Plans	Covers also 'Q1e_Gaps_Plans' from General questions
Q6a_RelevantTargets	RelatedTargets	
Q6b_AdequacyForAssessmentTargets		Removed
Q6c_TargetUpdating		Removed
Q6d_DescriptionTargets		Removed
Q6e_GapFillingDateTargets	Coverage_Targets	Covers also 'Q1c_GapsTargets' from General questions
Q6f_PlansTargets	Gaps_Plans	Covers also 'Q1e_Gaps_Plans' from General questions
Q7a_RelevantActivities		To be reported as 'Features' in Monitoring programmes schema
Q7b_DescriptionActivities		Removed
Q7c_RelevantMeasures	RelatedMeasure_code; RelatedMeasure_name	
Q7d_DescriptionMeasures		Removed
Q7e_AdequacyForAssessmentMeasures		Removed
Q7f_GapFillingDateActivitiesMeasures	Coverage_Measures	
Q8a_LinksExistingMonitoringProgrammes	MonitoringProgrammes	

Table 3 Mapping of new section on 'Monitoring programmes' to 2014 'Monitoring sub-programmes'

2014	2020	Change performed
MONITORING SUB-PROGRAMMES	MONITORING PROGRAMMES	Section renamed
Q4g_SubProgrammID	ProgrammeCode	
Q4h_TemporalScope	TemporalScope	
Q4i_SpatialScope	SpatialScope	
Q4j_DescriptionSpatialScope		Removed
Q4k_Purpose	MonitoringPurpose	Codelist revised
Q4l_LinksProgrammesDirectivesConventions	OtherPoliciesConventions	Codelist revised
Q9a_ElementsMonitored	Element	New codelist (from 2018 reporting)
Q9b_ParametersMeasured	Parameter, ParameterOther	New codelist (from 2018 reporting)
Q9c_MonitoringMethod	MonitoringMethod, MonitoringMethodOther	New codelist
Q9d_DescriptionMethod	MonitoringDetails	
Q9e_QualityAssurance		Removed (covered by monitoring method)

2014	2020	Change performed
Q9f_QualityControl	QualityControl	Changed to free text
Q9g_SpatialResolutionSampling		Removed
Q9h_TemporalResolutionSampling	MonitoringFrequency	
Q9i_DescriptionSampleRepresentivity	ProgrammeDescription	Changed to general description of programme
Q10a_AggregationData		Removed
Q10b_DescriptionDataAggregation	DataManagement	Generalised free-text field to cover all Q10 questions
Q10c_DataType		Removed
Q10c_DataAccessMechanism	DataAccess	Changed to provision of a URL
Q10c_DataAccessRights		Removed
Q10c_INSPIREStandard		Removed
Q10c_DataAvailable		Removed
Q10c_DataAFrequency		Removed
Q10d_DescriptionDataAccess		Removed
	Feature	'Q5c_RelevantFeaturesPressuresImpacts' from Monitoring programmes schema
	GESCriteria	'Q5a_RelevantGESCriteria' from Monitoring programmes schema
	RelatedIndicator	'Q5b_RelevantGESIndicators' from Monitoring programmes schema
	RelatedIndicator_name	'Q5b_RelevantGESIndicators' from Monitoring programmes schema
	MarineReportingUnit	Previous schemas included MRUs
	DataAccess	'Q3e_AccessAndUseRights' from General questions schema
	ProgrammeName	New field
	UpdateType	New field
	OldProgrammeCodes	New field
	MonitoringType	New field
	RegionalCooperation_coordination	New field
	RegionalCooperation_countries	New field
	RegionalCooperation_implementation	New field
	Contact	New field
	References	New field

3.3 File and envelope naming and submission

Each country should submit:

- One XML file that includes the metadata and all the monitoring strategies
- One XML file that includes all the monitoring programmes

Both files should be in the same envelope. The quality control (QC) procedures will check that the envelopes released contain only these two files, and that they are based on the corresponding schemas.

The XML file names should be built as follows, with a consecutive numbering of the versions:

Schema	File name
Monitoring strategies	ART11_CountryCode_MONstrat_vX (e.g. ART11_FR_MON_v2)
Monitoring programmes	ART11_CountryCode_MONprog_vX (e.g. ART11_FR_MONpro_v2)

The envelopes should be named as follows: ART11_CountryCode_YearMonthDate (e.g. ART11_FR_20200921).

3.4 Reporting tools

The 2014 reporting tools consisted of a Reporting Guidance, 2 schemas, 2 web forms (based on the schemas) and a reporting resources page⁷. The schemas were collecting:

- MSFD11Mon_1p1: general and monitoring programme questions
- MSFD11MonSub_1p0: monitoring sub-programme questions

For the 2020 reporting exercise, the reporting tools include all the above-mentioned resources, updated as necessary according to what is described in this guidance. The revised schemas ('Monitoring strategies' and 'Monitoring programmes') reflect the new reporting structure and contents, and the reporting resources page can be found under the 'MSFD' section in CDR Help⁸.

XML files prefilled with the information reported under the 2014 exercise and according to the revised schemas have been produced and made available on the reporting resources page.

Quality control (QC) specifications have been developed to ensure that the XML files submitted are as required in the schema specifications and this guidance. Among these, there are 'Element checks', 'Within-schema checks' and 'Cross-schema checks'.

Feedback is provided to MS through *errors*, *warnings* and *blockers*, so that they can be aware of any errors in the XML files and amend the files before resubmission.

The QC specifications are part of the reporting package and accessible through EEA's repository (<https://svn.eionet.europa.eu/repositories/Reportnet/Dataflows/MarineDirective/>). A description of the QC procedures is included in Annex IV.

4 Procedures and format for reporting

This section outlines the mechanisms for preparing the reporting information, its formats and the transmission procedure as part of the formal requirement to notify the Commission.

4.1 Technical support for reporting

For details on the technical preparation of the reports, including use of the on-line web form application for reporting and preparation of XML schemas, as well as the applicable quality control rules, please refer to the CDR Help reporting resources page:

<http://cdr.eionet.europa.eu/help/msfd/MSFD%20ART11>

During the reporting process, the **MSFD Helpdesk** (msfd.helpdesk@eionet.europa.eu) will be in operation to support both content and technical queries which may arise.

⁷ <https://cdr.eionet.europa.eu/help/msfd/resources2014/>

⁸ <https://cdr.eionet.europa.eu/help/msfd>

Note that only nominated reporters are able to report. The list of reporters is available in the following link: http://www.eionet.europa.eu/ldap-roles/?role_id=extranet-msfdreporter-data. A Member State (members from WG DIKE or the MSCG) may request changes to one or more of its nominated reporters by contacting the MSFD Helpdesk.

4.2 Reporting language

Member States have the right to complete their reports in any official EU language.

However, reporting in English is strongly encouraged by the Commission services for the following reasons:

- a. The information reported is needed to support and enhance ongoing cooperation among MS within a region or subregion; use of a common language will facilitate such cooperation.
- b. The translation of a MS's information into a common language will support its further use in aggregation of the information to regional, European and global scales for ongoing State of the Environment reporting.
- c. The Commission has 6 months from receiving all MS reports in which to undertake its Article 12 assessment. If the information is available in a common language, this assessment will be greatly assisted. This short time period means it is not feasible to have the information formally translated; consequently, translation by the MS itself prior to submission will help avoid misinterpretation of the information reported.

4.3 Reporting format

As the format for reporting⁹ has not been *formally* specified in the directive, Member States have the right to provide their reports in any format.

However, e-reporting in XML format is strongly encouraged by the Commission services for the following reasons:

- a. The information reported is needed to support ongoing cooperation among MS within a region or subregion so that the monitoring strategies are coherent and follow common approaches, as required under Article 5(2) and 11; use of an electronic format enables the information to be made available in WISE-Marine and will facilitate such regional and subregional cooperation;
- b. Provision of the information in a common format, such as through use of standard code lists, will support its further use in aggregation of the information to regional, European and global scales for ongoing State of the Environment reporting;
- c. The Commission has 6 months from receiving all MS reports in which to undertake its Article 12 assessment. If the information is available in a common electronic format, this assessment will be greatly assisted. This short time period means it is not feasible to adequately assess and compare across MS information which is provided in free-text reports following different structures and styles.

4.4 Formal notification

Formal notification of the Member State's report(s) should follow the standard practice, as follows:

⁹ MSFD Article 24 provides for technical formats to be adopted for the purposes of transmission and processing of data, including statistical and cartographic data. MSFD implementation to date has relied upon definition of such technical formats (i.e. XML and GIS shapefiles) through informal agreement via the MSFD Common Implementation Strategy, including this reporting guidance.

The Member State's Permanent Representation to the European Commission should send to the Commission a) a suitable cover letter indicating the relevant Directive and articles to which the notification refers and b) the receipt(s) obtained from ReportNet of all the reports (files) that have been deposited in relation to this notification.

The cover letter and ReportNet receipt(s) can be sent in hard copy or electronically (as pdf).

The reports deposited in ReportNet as part of the notification should be:

- a. Validated XML files for the following schemas: 'Monitoring strategies' and 'Monitoring programmes'. Each file should hold the data and information defined in the schemas;
- b. In cases where the Marine Reporting Units need to be updated, an updated '4geo.xml' file, together with associated GIS shapefiles¹⁰, should be provided.
- c. Text-based national report(s), if considered necessary.
- d. Any further information the Member State considers appropriate as part of its formal notification. This could, for example, include joint documentation ('roof report') prepared via a Regional Sea Convention or summary documentation used for the Article 19(2) public consultation where this differs to the text-based report under point (c).

¹⁰ These should be submitted before the rest of the reports in order to have the MRU codes available to populate the 'Monitoring programmes' schema.

ANNEX I: Reporting questions and guidance

a) Monitoring strategies

The schema fields and structure is provided in Figure 1 and guidance is provided in Table 4.

Figure 1 Structure for schema 'Monitoring strategies'

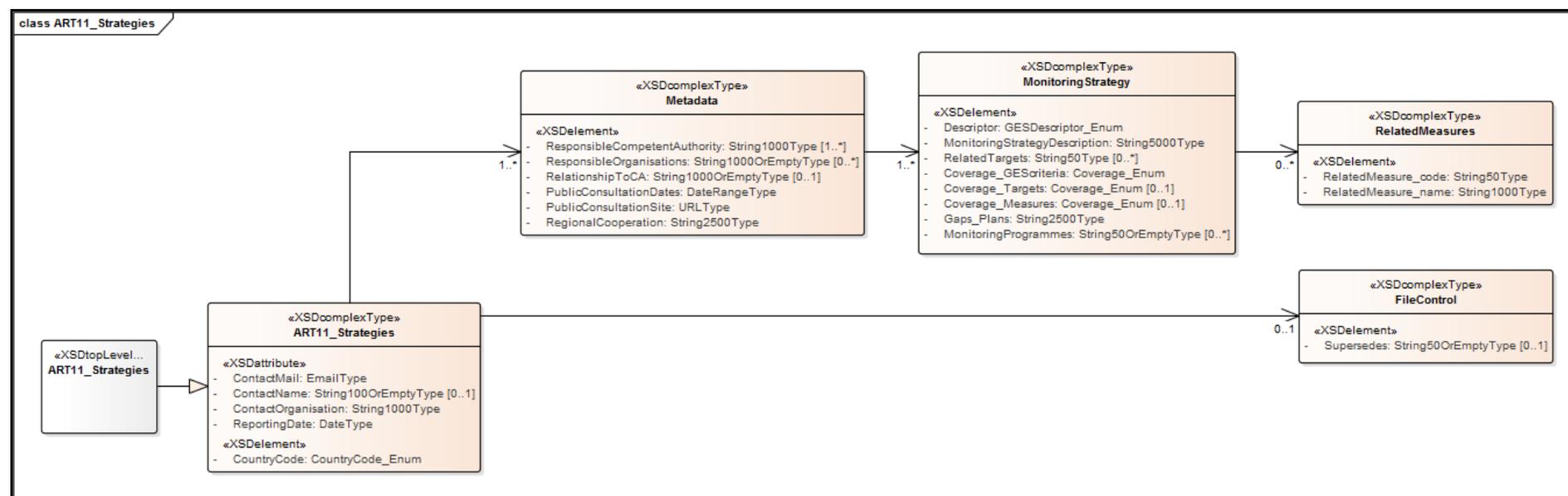


Table 4 'Monitoring strategies' schema fields and guidance

Schema class	Schema field	Description	Property	Guidance
ReporterInfo	CountryCode	Country reporting	Required	Enter corresponding two-letter ISO country code from 'CountryCode_Enum'.
ReporterInfo	ContactName	Name of the reporter	Optional	Free text (max. 100 characters).
ReporterInfo	ContactMail	Email of the reporter or functional email of the organisation	Required	Enter corresponding email (max. 50 characters).
ReporterInfo	ContactOrganisation	Name of the reporter's organisation and address	Required	Free text (max. 1000 characters).
ReporterInfo	ReportingDate	Date when this report was completed	Required	YYYY-MM-DD
File control	Supersedes	File name that is superseded by the present file	Required, where applicable	If the 'Monitoring strategies' XML is updated and a new version is to be released, enter here the old file name that this new version supersedes.
Metadata	ResponsibleCompetentAuthority	Name of the Competent Authority(s) which is responsible for the Article 11 monitoring programmes and who will act as a contact point for the Commission	Required	<p>Enter the Competent Authority(s) (as reported by MS under Article 7) which is formally responsible (within government) for ensuring the MSFD Article 11 monitoring programmes are implemented. In cases where several Competent Authorities share this responsibility (e.g. for different regions within the country), give one of these who will act as the contact point, if needed, for the Commission.</p> <p>Note that the Competent Authority may differ from the organisation(s) that actually undertake the monitoring, such as research institutes or consultants. These organisations can be indicated in 'ResponsibleOrganisations'.</p>
Metadata	ResponsibleOrganisations	Name(s) of responsible organisations	Optional	If the delivery of the monitoring programmes is delegated by the CA to other organisations, these can be listed. These are the organisations that actually undertake or manage the monitoring (e.g. a technical agency or

Schema class	Schema field	Description	Property	Guidance
				<p>research establishment which has the role to do the monitoring assigned to it by the responsible CA).</p> <p>Where the monitoring is sub-contracted to a number of consultants, which may vary from year to year, it is not recommended that these be reported here.</p>
Metadata	RelationshipToCA	Relationship of the responsible organisations to the relevant CA (e.g. an agency of the CA)	Optional	Free text (max. 1000 characters) or URL web link.
Metadata	PublicConsultationDates	Start and end date for the Article 19(2) public consultation related to this update of Article 11	Required	YYYYMMDD-YYYYMMDD
Metadata	PublicConsultationSite	Website for the public consultation	Required	URL web link.
Metadata	RegionalCooperation	Regional cooperation undertaken in the establishment and implementation of the monitoring programmes	Required	Free text (max. 2500 characters).
MonitoringStrategy	Descriptor	Descriptor for which this monitoring strategy applies	Required	<p>Enter corresponding Descriptor code from list 'GEScomponent_Enum'. A monitoring strategy is to be provided for each Descriptor. Relevant GES criteria are entered in the associated 'Monitoring programmes' schema.</p> <p>Whenever a Descriptor is not relevant (e.g. 'D1 Biodiversity - reptiles' in the Baltic and Black Seas), this should be indicated in the fields 'MonitoringStrategyDescription', 'Coverage_GEScriteria' and 'Gaps_Plans'; no other reporting is needed in such cases.</p>
MonitoringStrategy	MonitoringStrategyDescription	Description of the strategy, including rationale for how activities, pressures, impact and state are	Required	Free text (max. 5000 characters). Please describe here whether the strategy includes the use of a low-risk approach. Whenever a Descriptor is not relevant (e.g. D1 Biodiversity - reptiles), enter 'Descriptor not

Schema class	Schema field	Description	Property	Guidance
		monitored (DPSIR framework), how the risk of not achieving GES or of deteriorating from GES is addressed by the strategy, and how the strategy will enable progress with related targets and measures to be assessed		relevant for Member State's waters').
MonitoringStrategy	RelatedTargets	Target(s) defined under Article 10 that are relevant for this descriptor and monitored within this strategy (e.g. targets addressing relevant pressures and impacts)	Required, where applicable	Enter as many target codes as relevant (as reported by MS under the 2018 reporting of Article 10). Include targets for which monitoring is not yet in place and indicate timescale for implementation in 'Coverage_Targets'.
RelatedMeasures	RelatedMeasure_code	Measure code(s) defined under Article 13 that are relevant for this descriptor and monitored within this strategy e.g. measures addressing relevant pressures and impacts)	Required, where applicable	Enter as many measure codes as relevant (as reported by MS under the 2016 reporting of Article 13 or 2019 reporting of Article 18). Include measures for which monitoring is not yet in place and indicate timescale for implementation in 'Coverage_Measures'.
RelatedMeasures	RelatedMeasure_name	Measure name(s) defined under Article 13 that are relevant for this descriptor and monitored within this strategy	Required, where applicable	Enter the corresponding measure names (as reported by MS under the 2016 reporting of Article 13 or 2019 reporting of Article 18).
MonitoringStrategy	Coverage_GEScriteria	In relation to the GES criteria addressed, indicate when sufficient monitoring was in place or by when sufficient coverage will be in place	Required	Enter one value from list 'Coverage_Enum' to indicate the timeframe for when sufficient monitoring was or will be in place to provide sufficient coverage. If the Descriptor (e.g. D1 Biodiversity - reptiles) is not relevant, select the option 'Monitoring for this descriptor is not relevant'.
MonitoringStrategy	Coverage_Targets	In relation to the targets addressed, indicate when sufficient monitoring was in place or by when sufficient coverage will be in place	Required, where applicable	Enter one value from list 'Coverage_Enum' to indicate the timeframe for when sufficient monitoring was or will be in place to provide sufficient coverage.

Schema class	Schema field	Description	Property	Guidance
MonitoringStrategy	Coverage_Measures	In relation to the measures addressed, indicate when sufficient monitoring was in place or when sufficient coverage will be in place	Required, where applicable	Enter one value from list 'Coverage_Enum' to indicate the timeframe for when sufficient monitoring was or will be in place to provide sufficient coverage.
MonitoringStrategy	Gaps_Plans	Description of the implementation gaps and plans to complete the establishment and implementation of this descriptor monitoring strategy	Required	Free text, which should particularly address aspects indicated in the three 'Coverage' fields (for GES criteria, targets and measures) where implementation is not yet fully in place. If the Descriptor (D1 Biodiversity - reptiles) is not relevant, enter 'Monitoring for this descriptor is not relevant' (max. 2500 characters).
MonitoringStrategy	MonitoringProgrammes	Monitoring programmes that contribute to this descriptor monitoring strategy	Required, where applicable	Enter as many programme codes as necessary (as reported by MS in the 'Monitoring programmes' schema). No codes need to be entered if under <i>Coverage_GEScriteria</i> the values 'Monitoring is not being put in place for this descriptor due to a low risk' or 'Monitoring for this descriptor is not relevant' are provided. Note that a Monitoring programme can be linked to more than one Monitoring strategy.

b) Monitoring programmes

The schema fields and structure is provided in Figure 2 and guidance is provided in Table 5.

Figure 2 Structure for Schema 'Monitoring programmes'

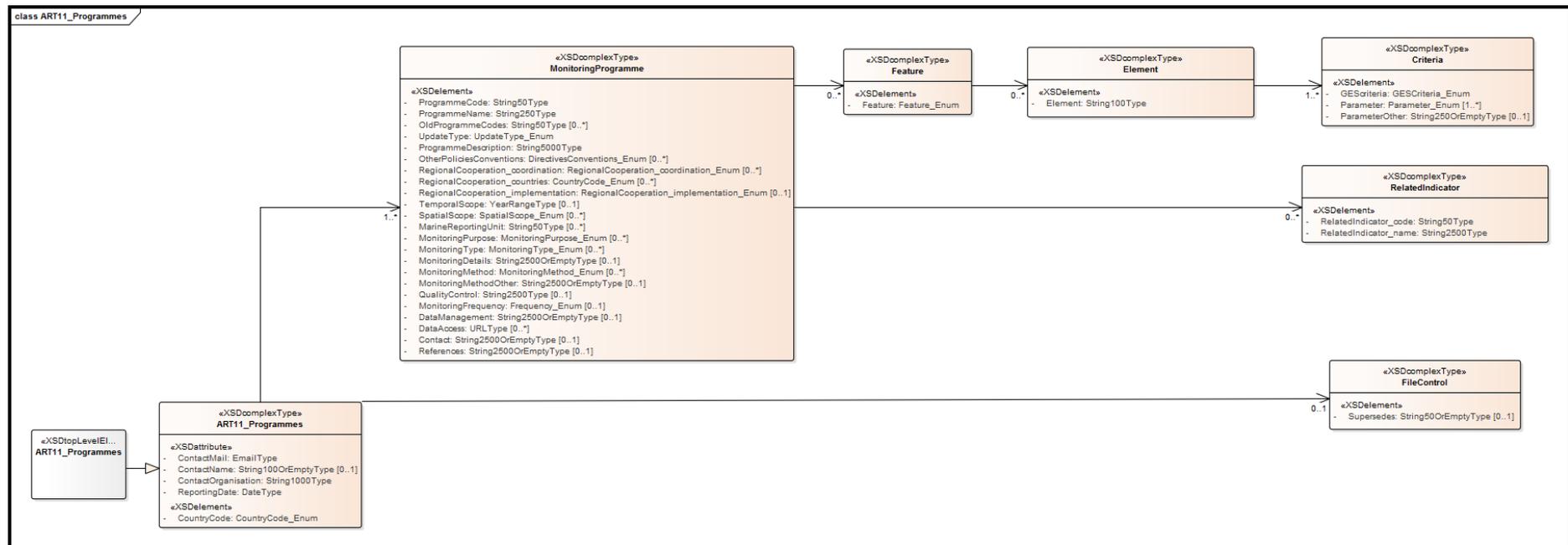


Table 5 'Monitoring programmes' schema fields and guidance

Schema class	Schema field	Description	Property	Guidance
ReporterInfo	CountryCode	Country reporting	Required	Enter corresponding two-letter ISO country code from 'CountryCode_Enum'.
ReporterInfo	ContactName	Name of the reporter	Optional	Free text (max. 100 characters).
ReporterInfo	ContactMail	Email of the reporter or functional email of the organisation	Required	Enter corresponding email (max. 50 characters).
ReporterInfo	ContactOrganisation	Name of the reporter's organisation and address	Required	Free text (max. 1000 characters).
ReporterInfo	ReportingDate	Date when the reporting has been done	Required	YYYY-MM-DD
File control	Supersedes	File name that is superseded by the present file	Required, where applicable	If the 'Monitoring programmes' XML is updated and a new version is to be released, enter here the old file name that this new version supersedes.
MonitoringProgramme	ProgrammeCode	Unique identifier for the monitoring programme (former 'sub-programme')	Required	Enter sub-programme code reported in 2014. In case of new programmes, use MS code plus MS-defined alpha-numeric code (e.g. IT-D08-01).
MonitoringProgramme	ProgrammeName	Name of monitoring programme	Required	Short name that reflects main focus of the programme, such as the ecosystem elements, pressures and associated policy, e.g. OSPAR CEMP contaminants monitoring, Habitats Directive <i>Posidonia</i> monitoring. An indicative list of names is provided in Annex III.
MonitoringProgramme	UpdateType	Report on whether the programme was reported in 2014 (as a sub-programme), modified from the 2014 report, is a new programme or	Required	Enter: 'Same programme as in 2014', 'Modified from 2014', 'New programme' OR 'Programme no longer in place'. All sub-programmes reported in 2014 need to be accounted for in the 2020 report.

Schema class	Schema field	Description	Property	Guidance
		is no longer in place		<p>Use 'Same programme as in 2014' when the programme remains essentially the same (i.e. it has the same purpose, features/elements/parameters, spatial scope and monitoring frequency, type and method, or with only minor changes). If these aspects are modified use 'Modified from 2014' and provide an explanation of the changes in 'ProgrammeDescription'.</p> <p>In cases where the value 'Modified from 2014' involves a change of the codes, enter all the codes from the corresponding 2014 sub-programmes in the field 'OldProgrammeCodes'.</p> <p>In cases where 'Programme no longer in place' is selected, provide a reason in 'ProgrammeDescription'.</p>
MonitoringProgramme	OldProgrammeCodes	Codes from the old sub-programmes related to the reported programme	Required, where applicable	Enter as many old (2014) sub-programme codes as needed. This field is required whenever codes have changed and 'Modified from 2014' is selected under the field 'UpdateType'.
MonitoringProgramme	ProgrammeDescription	Description of the monitoring programme	Required	<p>Free text (max. 5000 characters).</p> <p>Provide an introduction/overview of the programme, its purpose, aims and policy context, any (sub)regional cooperation, and the overall strategy including addressing risk (of failing to achieve GES or deteriorating from a GES situation). Include whether there are plans for implementing innovative monitoring. Describe here whether the programme will end before 2024 if replaced by innovative monitoring.</p> <p>Specific details on how the monitoring is undertaken should be described in 'MonitoringDetails'.</p>
MonitoringProgramme	MonitoringPurpose	Main purpose(s) for collecting the data and information	Required	<p>Select one (or more) option(s) from list:</p> <ul style="list-style-type: none"> • 'Environmental state and impacts' • 'Pressures in the marine environment' • 'Pressures at source' (land-based, riverine, sea-based and

Schema class	Schema field	Description	Property	Guidance
				<p>atmospheric sources)</p> <ul style="list-style-type: none"> • ‘Human activities causing the pressures’ • ‘Effectiveness of measures’ <p>The categories provided are related to the DPSIR model and are intended to reflect the main focus of the programme. As programmes should be defined separately according to the main elements being monitored (e.g. particular species/species groups or habitats, specific pressures), it is expected that typically only one category will be relevant per programme. However, monitoring of certain naturally occurring elements (e.g. nutrients, underwater sound) is sometimes considered as ‘state monitoring’, whilst the reason for this monitoring is to assess whether the levels are raised above natural levels (i.e. whether it is acting as a pressure) – in these cases, the category ‘pressure in the marine environment’ should be selected. Where the elements monitored are being changed due to a pressure (e.g. oxygen levels resulting from nutrient enrichment), they should be categorised as ‘state/impact monitoring’.</p> <p>Sea-based ‘Pressures at source’ refers to monitoring pressures from sea-based activities where the monitoring is directly at the activity rather than at a distance from or time period after it is generated by the activity (e.g. D1 incidental by-catch when fishing, D2 ballast water discharges, D6 use of bottom fishing gear, D8 contaminant discharges and pollution events from a vessel or pipeline, D11 impulsive sound events from a vessel or platform).</p>
MonitoringProgramme	OtherPoliciesConventions	Monitoring for other Union legislation or international agreements that contributes to the programme	Required, where applicable	In addition to the MSFD, state to which other EU policies and international agreements (including Regional Sea Conventions), this programme contributes. Enter as many Directives and Conventions as necessary from list ‘DirectivesConventions_Enum’.

Schema class	Schema field	Description	Property	Guidance
MonitoringProgramme	RegionalCooperation_coordination	Corresponding Regional Sea Convention or other coordinating body	Required, where applicable	Select one (or more) option(s) from list: 'HELCOM', 'OSPAR', 'BARCON', 'BSC', or 'Other'. If 'Other' is selected, give the name of the coordinating body in 'ProgrammeDescription'.
MonitoringProgramme	RegionalCooperation_countries	Which other countries are involved in practical implementation of this monitoring programme	Required, where applicable	Provide a list of countries involved in the programme (from List 'CountryCode_Enum'). No need to complete this field if 'RegionalCooperation_coordination' has been filled in.
MonitoringProgramme	RegionalCooperation_implementation	Indicate the degree of cooperation among countries within the same (sub)region for this monitoring programme	Required, where applicable	Indicate the level of implementation by selecting one of the following: <ul style="list-style-type: none"> • Agreed data collection methods • Common monitoring strategy (spatial and temporal design of programme) • Coordinated data collection (delivered separately by each country) • Joint data collection (multinational delivery using same platform and/or algorithms)
MonitoringProgramme	MonitoringDetails	General description of how the monitoring is undertaken (how the data are collected)	Optional	Free text (max. 2500 characters). This field is required for countries that plan to use the 'Export to PDF/RTF' application. Provide a description of what is monitored (features, elements, parameters), where (spatial scope), when (start date, frequency) and how (methods for data collection and sample handling/QA, QC).
Feature	Feature	Feature(s) monitored (ecosystem components, pressures, activities)	Required	Enter the codes of the feature(s) from list 'Feature_Enum'. This list includes four sections, each intended for particular aspects of monitoring and assessment, but not confined to these: <ul style="list-style-type: none"> • Ecosystem components (relevant for monitoring and assessment for Article 8(1a) for D1C2-C5, D3, D4, D6C3-C5, D7C2) • Pressures and impacts in the marine environment (relevant for

Schema class	Schema field	Description	Property	Guidance
				<p>monitoring and assessment for Article 8(1b) for D1C1, D2, D5, D6C1-C2, D7C1, D8, D9, D10, D11)</p> <ul style="list-style-type: none"> • Pressure inputs to the marine environment (relevant for monitoring and assessment for Article 10) • Uses and human activities (relevant for monitoring and assessment for Article 8(1c) and 13) <p>For features related to ‘Ecosystem components’ or ‘Pressures and impacts in the marine environment’, at least one element has to be provided (see features marked in bold blue in the list ‘Feature_Enum’, Annex IIc).</p> <p>For features related to ‘Pressure inputs to the marine environment’ and ‘Uses and human activities’, no elements are reported, but parameters may be reported.</p> <p>A summary of the features and elements to be used per descriptor and criterion is given in Annex V.</p>
Element	Element	Element(s) monitored (e.g. specific species, habitats, contaminants, litter categories)	Required, where applicable	<p>Whenever needed, enter the specific element(s) that are expected to be monitored (at least one element needs to be entered for features marked in bold blue in ‘Feature_Enum’):</p> <ul style="list-style-type: none"> • species (D1C2-C5, D2C2, D3, D5C3, D8C2, D10C4) • species group (D2C3) • habitat (D1C6, D2C3, D6C3-C5, D7C2, D8C2) • trophic guild, physical, hydrological and chemical characteristics (D4) • eutrophication-related elements (D5) • hydrographical elements (D7C1) • contaminants (D8C1, D9C1)

Schema class	Schema field	Description	Property	Guidance
				<ul style="list-style-type: none"> litter category (D10C1-C3) frequency band (D11C2) <p>The elements are to be selected from the MSFD Reporting Reference List (http://cdr.eionet.europa.eu/help/msfd). If the list does not contain the elements needed, contact msfd.helpdesk@eionet.europa.eu.</p> <p>For criteria D1C1, D2C1 and D8C4 the elements monitored cannot be predefined, so enter 'Not applicable'. For criteria D6C1, D6C2, D8C3 and D11C1 no elements are defined for the relevant features, so enter 'Not applicable'. The relevant parameters monitored for all these criteria can be entered in the field 'Parameter' or 'ParameterOther'.</p> <p>For features in the lists 'Pressure inputs to the marine environment' and 'Uses and human activities' no elements are defined. Relevant parameters may be reported in the field 'Parameter' or 'ParameterOther' by entering 'Not applicable' for the element.</p> <p>For some monitoring methods the elements present (e.g. species, habitats) will vary between locations and sampling times; in such cases enter the main target elements for the programme at a suitable resolution (e.g. phytoplankton communities).</p> <p>A summary of the features and elements to be used per descriptor and criterion is given in Annex V.</p>
Criteria	GEScriteria	GES criteria monitored	Conditional (when Element is provided)	For each element, enter as many criteria codes as relevant from list 'GEScomponent_Enum'. Enter 'Not relevant' whenever parameters are to be reported for features from the 'activities' or 'pressure inputs' lists.
Criteria	Parameter	Parameter monitored	Conditional (when GES criteria is provided)	For each criterion, enter the relevant parameter(s) monitored from list 'Parameters_Enum'. If the parameter monitored is not in the list, enter 'Other' and provide the parameter in 'ParameterOther'. The species monitored under D8C1 are supposed to be included at the

Schema class	Schema field	Description	Property	Guidance
				Parameter level. Please use 'ParameterOther' to report the tissue and species: e.g. 'CONC-B-xx - Spp name' (xx being the corresponding tissue, as in the Parameters list).
Criteria	ParameterOther	Parameter monitored	Conditional (if Parameter is 'Other')	Free text (max. 250 characters). Use this field for species and tissues used for D8C1 monitoring, or if the parameter monitored is not in the 'Parameter_Enum' list.
MonitoringProgramme	SpatialScope	Spatial coverage of the programme according to the jurisdictional zones of marine waters	Required	<p>Select one (or more) option(s) from list:</p> <ul style="list-style-type: none"> • 'Terrestrial part of MS' • 'Transitional waters (WFD)' • 'Coastal waters (WFD)' • 'Territorial waters' • 'EEZ (or similar) (e.g. Contiguous Zone, Fishing Zone, Ecological Protection Zone)' • 'Continental shelf (beyond EEZ)' • 'Beyond MS Marine Waters' <p>This question is intended to give only a coarse categorization of the areas (zones) covered by the programme. If only a proportion of the selected category is covered by the programme; this can be described in 'MonitoringDetails'.</p> <p>'Terrestrial part of MS' refers to any monitoring above the high water mark.</p> <p>'Continental shelf (beyond EEZ)' refers to monitoring of MS seabed/subsoil beyond the zone where the Member State has jurisdiction over the water column (e.g. beyond 200nm of EEZs or the Territorial Waters/Contiguous Zone of some Mediterranean states).</p> <p>'Beyond MS Marine Waters' refers to monitoring in Areas Beyond</p>

Schema class	Schema field	Description	Property	Guidance
				National Jurisdiction (ABNJ), including monitoring in the water column/air above MS Continental Shelf areas (i.e. high seas). It can also be used for monitoring in waters of neighbouring countries.
MonitoringProgramme	MarineReportingUnit	Area(s) where the programme takes place	Required	<p>Enter all relevant Marine Reporting Units for the MS marine waters (or entire monitoring programme for multinational programmes) where the programme takes place (MarineUnitID, as reported by MS in 4geo.xml file).</p> <p>The MRUs reported should be compatible (with same boundaries) with those used for the associated Article 8 assessments (e.g. the same MRUs or a single MRU covering all the related Article 8 MRUs).</p>
MonitoringProgramme	TemporalScope	Start (and end) date of the programme	Required	<p>YYYY-YYYY (if the end date is unknown, provide '9999' as end-date).</p> <p>Only one start date and end date is permitted.</p> <p>The start date should be the earliest date that the programme started, going back as many years as possible before 2014. Whilst data quality issues may have improved over time (i.e. data from long past may be of lesser quality) such past data nevertheless can usefully contribute to a time-series dataset for this programme.</p> <p>It is expected that most programmes reported in the 2014 reporting cycle will at present have no planned end date – in such cases, enter 9999. This situation may change in future reporting cycles to reflect changing needs of the monitoring.</p> <p>There will be cases where the earliest start date varies amongst elements/parameters of the same programme. Here, the earliest starting date of a particular element/parameter of the programme should be used. If additional detail or clarification is required, this should be provided in 'MonitoringDetails'.</p>
MonitoringProgramme	MonitoringFrequency	Frequency of the monitoring	Required	Enter corresponding frequency from list 'Frequency_Enum'.

Schema class	Schema field	Description	Property	Guidance
MonitoringProgramme	MonitoringType	Type of monitoring (in-situ, remote sensing, etc.)	Required	<p>Select relevant options from list:</p> <ul style="list-style-type: none"> • 'In-situ sampling offshore' • 'In-situ sampling coastal' • 'In-situ sampling land/beach' • 'Remote surveillance' (e.g. buoys) • 'Remote satellite imagery' (satellite observations) • 'Remote flight imagery' (orthoimages) • 'Numerical modelling' • 'Ecological modelling' • 'Administrative data collection' • 'Visual observation' • 'Other'
MonitoringProgramme	MonitoringMethod	Guidelines/protocols describing the method for monitoring	Required	Enter corresponding method code(s) from list 'MonitoringMethod_Enum'. If 'Other' is selected, provide details in 'MonitoringMethodOther'.
MonitoringProgramme	MonitoringMethodOther	Guidelines/protocols describing the method for monitoring	Conditional (if MonitoringMethod is 'Other')	Free text (max. 2500 characters) or URL web link. Additional information on methodology can also be entered, if needed, to complement the information provided under 'MonitoringMethod' (e.g. adjustments to the published methodology).
MonitoringProgramme	QualityControl	What type of Quality Control is used?	Required	<p>Free text (max. 2500 characters) or URL web link.</p> <p>QC refers to the systems or checks put in place to ensure the monitoring is undertaken according to the methodological guidelines (i.e. as reported under 'MonitoringMethod').</p>

Schema class	Schema field	Description	Property	Guidance
MonitoringProgramme	DataManagement	General description of the data management (post data collection)	Optional	Free text (max. 2500 characters). Provide a description of the data storage (where, how), quality control (on data), processing/analysis, access and reporting (where the data are sent).
MonitoringProgramme	DataAccess	Link to where monitoring data can be accessed (Art. 19(3))	Required	Provide URL link(s) to the server(s) where the datasets from the monitoring programmes are (or will be made) available.
MonitoringProgramme	Contact	Institute (responsible/coordinator), contact email (functional)	Optional	Free text (max. 2500 characters).
MonitoringProgramme	References	Reference(s) to publications about the monitoring programme	Optional	Provide URL link (s) or free text (max. 2500 characters).
RelatedIndicator	RelatedIndicator	Indicator(s) to which the programme contributes	Required (where available)	Enter as many indicator codes as necessary (as reported by MS under the schema 'Indicators' used in the 2018 update of Articles 8 and 10). For new indicators: use sub(region) code <u>plus</u> RSC/MS code <u>plus</u> defined alpha-numeric code (e.g. ABI-OSPAR-Nutrients2017) (max. 50 characters).
RelatedIndicator	RelatedIndicator_name	Indicator name	Conditional (when Related Indicator is provided)	Enter name of the indicator (max. 250 characters). Not needed when the indicator has been reported under the schema 'Indicators' in the 2018 update of Articles 8 and 10.

ANNEX II: Enumeration lists

a) CountryCode_Enum

Code	Lable: Country name
AT	Austria
BE	Belgium
BG	Bulgaria
CY	Cyprus
CZ	Czechia
DE	Germany
DK	Denmark
DZ	Algeria
EE	Estonia
EG	Egypt
EL	Greece
ES	Spain
FI	Finland
FR	France
GE	Georgia
HR	Croatia
HU	Hungary
IE	Ireland
IL	Israel
IS	Iceland
IT	Italy
LB	Lebanon
LT	Lithuania
LU	Luxembourg
LV	Latvia
LY	Libya
MA	Morocco
MT	Malta
NL	Netherlands
NO	Norway
PL	Poland
PS	Palestine
PT	Portugal
RO	Romania
RU	Russian Federation
SE	Sweden
SI	Slovenia
SK	Slovakia
SY	Syria
TN	Tunisia
TR	Turkey
UA	Ukraine
UK	United Kingdom

b) GEScomponent_Enum

Primary criteria are in bold.

GEScomponent	Code	Label: Descriptor or criterion
Descriptor	D1.1	D1 Biodiversity - birds
Descriptor	D1.2	D1 Biodiversity - mammals
Descriptor	D1.3	D1 Biodiversity - reptiles
Descriptor	D1.4	D1 Biodiversity - fish
Descriptor	D1.5	D1 Biodiversity - cephalopods
Descriptor	D1.6	D1 Biodiversity – pelagic habitats
Descriptor	D2	D2 Non-indigenous species
Descriptor	D3	D3 Commercial fish and shellfish
Descriptor	D4/D1	D4 Food webs/D1 Biodiversity - ecosystems
Descriptor	D5	D5 Eutrophication
Descriptor	D6/D1	D6 Sea-floor integrity/D1 Biodiversity - benthic habitats
Descriptor	D7	D7 Hydrographical changes
Descriptor	D8	D8 Contaminants
Descriptor	D9	D9 Contaminants in seafood
Descriptor	D10	D10 Marine litter
Descriptor	D11	D11 Energy, including underwater noise
Criterion	D1C1	D1C1 Mortality rate from incidental by-catch
Criterion	D1C2	D1C2 Population abundance
Criterion	D1C3¹¹	D1C3 Population demographic characteristics
Criterion	D1C4¹²	D1C4 Population distributional range and pattern
Criterion	D1C5¹³	D1C5 Habitat for the species
Criterion	D1C6	D1C6 Pelagic habitat condition
Criterion	D2C1	D2C1 Newly-introduced NIS
Criterion	D2C2	D2C2 Established NIS
Criterion	D2C3	D2C3 Adverse effects of NIS
Criterion	D3C1	D3C1 Fishing mortality rate (F)
Criterion	D3C2	D3C2 Spawning stock biomass (SSB)
Criterion	D3C3	D3C3 Population age/size distribution
Criterion	D4C1	D4C1 Trophic guild species diversity
Criterion	D4C2	D4C2 Abundance across trophic guilds
Criterion	D4C3	D4C3 Trophic guild size distribution
Criterion	D4C4	D4C4 Trophic guild productivity
Criterion	D5C1	D5C1 Nutrient concentrations
Criterion	D5C2	D5C2 Chlorophyll-a concentration

¹¹ Primary criterion for commercial fish and cephalopods

¹² Primary criterion for mammals, turtles and Habitats Directive fish

¹³ Primary criterion for mammals, turtles and Habitats Directive fish

GEScomponent	Code	Label: Descriptor or criterion
Criterion	D5C3	D5C3 Harmful algal blooms
Criterion	D5C4	D5C4 Photic limit
Criterion	D5C5	D5C5 Dissolved oxygen concentration
Criterion	D5C6	D5C6 Opportunistic macroalgae of benthic habitats
Criterion	D5C7	D5C7 Macrophyte communities of benthic habitats
Criterion	D5C8	D5C8 Macrofaunal communities of benthic habitats
Criterion	D6C1	D6C1 Physical loss of the seabed
Criterion	D6C2	D6C2 Physical disturbance to the seabed
Criterion	D6C3	D6C3 Adverse effects from physical disturbance
Criterion	D6C4	D6C4 Benthic habitat extent
Criterion	D6C5	D6C5 Benthic habitat condition
Criterion	D7C1	D7C1 Permanent alteration of hydrographical conditions
Criterion	D7C2	D7C2 Adverse effects from permanent alteration of hydrographical conditions
Criterion	D8C1	D8C1 Contaminant in environment
Criterion	D8C2	D8C2 Adverse effects of contaminants
Criterion	D8C3	D8C3 Significant acute pollution events
Criterion	D8C4	D8C4 Adverse effects of significant acute pollution events
Criterion	D9C1	D9C1 Contaminants in seafood
Criterion	D10C1	D10C1 Litter (excluding micro-litter)
Criterion	D10C2	D10C2 Micro-litter
Criterion	D10C3	D10C3 Litter ingested
Criterion	D10C4	D10C4 Adverse effects of litter
Criterion	D11C1	D11C1 Anthropogenic impulsive sound
Criterion	D11C2	D11C2 Anthropogenic continuous low-frequency sound
	NotRelevant	GES component not relevant

c) Feature_Enum

This enumeration includes the ecosystem components and characteristics, the anthropogenic pressures, and the uses and human activities listed in MSFD Annex III tables (Commission Directive (EU) 2017/845), as well as the features corresponding to the pressure levels and impacts in the marine environment that are used for the GES assessments under Article 8 (also listed in Annex VI of the 2018 reporting guidance¹⁴). The features, where applicable, for which elements should be provided are highlighted in bold blue. Elements do not need to be provided for criteria D1C1, D2C1, D6C1, D6C2, D8C3, D8C4 and D11C1. The specific benthic and pelagic broad and other habitat types are to be reported as Elements.

¹⁴ [GD14_MSFD2018ReportingGuidance_Art8-9-10_rev20191015](#)

Subject	Theme	Sub-theme	Label: Feature	Code		
Ecosystem components (relevant for monitoring and assessment for Article 8(1a) for D1, D2C3, D3, D4, D6C3-C5, D7C2)	Species	Birds	Grazing birds	BirdsGrazing		
			Wading birds	BirdsWading		
			Surface-feeding birds	BirdsSurfaceFeeding		
			Pelagic-feeding birds	BirdsPelagicFeeding		
			Benthic-feeding birds	BirdsBenthicFeeding		
		Mammals	Small toothed cetaceans	MamCetacSmall		
			Deep-diving toothed cetaceans	MamCetacDeepDiving		
			Baleen whales	MamCetacBaleenWhales		
			Seals	MamSeals		
		Reptiles	Turtles	RepTurtles		
		Fish	Coastal fish	FishCoastal		
			Pelagic shelf fish	FishPelagicShelf		
			Demersal shelf fish	FishDemersalShelf		
			Deep-sea fish	FishDeepSea		
			Commercially exploited fish and shellfish	FishCommercial		
	Cephalopods	Coastal/shelf cephalopods	CephaCoastShelf			
		Deep-sea cephalopods	CephaDeepSea			
	Habitats	Benthic habitats	Benthic broad habitats	HabBenBHT		
			Other benthic habitats	HabBenOther		
		Pelagic habitats	Pelagic broad habitats	HabPelBHT		
Other pelagic habitats			HabPelOther			
Ecosystems	Physical and hydrological characteristics		CharaPhyHydro			
	Chemical characteristics		CharaChem			
	Ecosystems, including food webs	Coastal ecosystems	EcosysCoastal			
		Shelf ecosystems	EcosysShelf			
Oceanic/deep-sea ecosystems		EcosysOceanic				
Pressures and impacts in the marine environment (relevant for monitoring and assessment for Article 8(1b) for D1C1, D2C1-C2, D5, D6C1-C2, D7C1, D8, D9, D10, D11)	Biological	Newly introduced non-indigenous species		PresEnvNISnew		
		Established non-indigenous species		PresEnvNISestablished		
		Species affected by incidental by-catch		PresEnvBycatch		
	Physical and hydrological	Hydrographical changes		PresEnvHydroChanges		
		Physical disturbance to seabed		PresPhyDisturbSeabed		
		Physical loss of the seabed		PresPhyLoss		
	Substances, litter and energy	Eutrophication		PresEnvEutrophi		
		Contaminants - non UPBT substances		PresEnvContNonUPBTs		
		Contaminants - UPBT substances		PresEnvContUPBTs		
		Contaminants – in seafood		PresEnvContSeafood		
		Adverse effects on species or habitats		PrevEnvAdvEffectsSppHab		
		Acute pollution events		PresEnvAcuPolluEvents		
		Litter in the environment		PresEnvLitter		
		Micro-litter in the environment		PresEnvLitterMicro		
		Litter and micro-litter in species		PresEnvLitterSpp		
		Impulsive sound in water		PresEnvSoundImpulsive		
		Continuous low frequency sound		PresEnvSoundContinuous		
		Pressure inputs to the marine environment (relevant for monitoring and assessment for Article 10)	Biological	Input or spread of non-indigenous species		PresBioIntroNIS
				Input of microbial pathogens		PresBioIntroMicroPath
Input of genetically modified species and translocation of native species				PresBioIntroGenModSpp		
Loss of, or change to, natural biological communities due to cultivation of animal or plant species				PresBioCultHab		
Disturbance of species (e.g. where they breed, rest and feed) due to human presence				PresBioDisturbSpp		
Extraction of, or mortality/injury to, wild species (by commercial and recreational fishing and other activities)				PresBioExtractSpp		

Subject	Theme	Sub-theme	Label: Feature	Code	
	Substances, litter and energy		Input of nutrients – diffuse sources, point sources, atmospheric deposition	PresInputNut	
			Input of organic matter – diffuse sources and point sources	PresInputOrg	
			Input of other substances (e.g. synthetic substances, non-synthetic substances, radionuclides) – diffuse sources, point sources, atmospheric deposition, acute events	PresInputCont	
			Input of litter (solid waste matter, including micro-sized litter)	PresInputLitter	
			Input of anthropogenic sound (impulsive, continuous)	PresInputSound	
			Input of other forms of energy (including electromagnetic fields, light and heat)	PresInputOthEnergy	
			Input of water – point sources (e.g. brine)	PresInputWater	
Uses and human activities (relevant for monitoring and assessment for Article 8(1c) and 13)	Physical restructuring of rivers, coastline or seabed (water management)		Land claim	ActivRestrucLandClaim	
			Canalisation and other watercourse modifications	ActivRestrucCanalisation	
			Coastal defence and flood protection	ActivRestrucCoastDef	
			Offshore structures (other than for oil/gas/renewables)	ActivRestrucOffshStruc	
			Restructuring of seabed morphology, including dredging & depositing of materials	ActivRestrucSeabedMorph	
	Extraction of non-living resources			Extraction of minerals (rock, metal ores, gravel, sand, shell)	ActivExtrNonLivingMinerals
				Extraction of oil and gas, including infrastructure	ActivExtrNonLivingOilGas
				Extraction of salt	ActivExtrNonLivingSalt
				Extraction of water	ActivExtrNonLivingWater
	Production of energy			Renewable energy generation (wind, wave and tidal power), including infrastructure	ActivProdEnerRenew
				Non-renewable energy generation	ActivProdEnerNonRenew
				Transmission of electricity and communications (cables)	ActivProdEnerCables
	Extraction of living resources			Fish and shellfish harvesting (professional, recreational)	ActivExtrLivingFishHarv
				Fish and shellfish processing	ActivExtrLivingFishProcess
				Marine plant harvesting	ActivExtrLivingPlantHarv
				Hunting and collecting for other purposes	ActivExtrLivingHunt
	Cultivation of living resources			Aquaculture – marine, including infrastructure	ActivCultivAquaculMarine
				Aquaculture – freshwater	ActivCultivAquaculFreshwa
				Agriculture	ActivCultivAgri
				Forestry	ActivCultivFores
	Transport			Transport infrastructure	ActivTranspInfras
				Transport – shipping	ActivTranspShip
				Transport – air	ActivTranspAir
				Transport – land	ActivTranspLand
	Urban and industrial uses			Urban uses	ActivUrbIndUrban
				Industrial uses	ActivUrbIndIndustrial
				Waste treatment and disposal	ActivUrbIndWaste
	Tourism and leisure			Tourism and leisure infrastructure	ActivTourismInfras
				Tourism and leisure activities	ActivTourismActiv
	Security/defence			Military operations (subject to Article 2(2))	ActivMilitary
	Education and research			Research, survey and educational activities	ActivResearch

d) Parameters_Enum

CODE	Parameter label
ABU	Abundance (number of individuals)
ABU-REL	Relative abundance within community (of pelagic and benthic habitats)
AGE-D	Age distribution
AMO-B	Amount in biota (ingested)
AMO-C	Amount on coastline
AMO-SB	Amount on seabed
AMO-WC	Amount in water column
AMO-WS	Amount on water surface
BATH	Bathymetric depth
BIOM	Biomass
BIOM-SSB	Biomass of Spawning Stock (SSB)
BREED	Breeding success
BROOD	Brood size
CELL-C	Cell counts
CO2	pCO ₂ - alkalinity
CONC-B	Concentration in biota (total)
CONC-B-FA	Concentration in biota – fat
CONC-B-LI	Concentration in biota – liver
CONC-B-MU	Concentration in biota – muscle
CONC-B-OT	Concentration in biota – other
CONC-S	Concentration in sediment (total)
CONC-S-20	Concentration in sediment (fraction below 20 µm)
CONC-S-2000	Concentration in sediment (fraction below 2000 µm)
CONC-S-63	Concentration in sediment (fraction below 63 µm)
CONC-S-OT	Concentration in sediment – other
CONC-SM	Concentration in suspended matter
CONC-W	Concentration in water
COV	Coverage (e.g. of a species within a habitat or area)
DEP	Deposition
DIST-DEPTH	Maximum depth
DIST-P	Distribution (pattern)
DIST-R	Distribution (range)
DIST-S	Distribution (spatial)
DUR	Duration
EMI	Emission

CODE	Parameter label
EXT	Extent
FEC	Fecundity (breeding rate)
FRE	Frequency
FRESH	Freshwater input rates from rivers
HAB-STRUCT	Physical structure of habitat (e.g. sediment characteristics, topographic structure)
HYDRO	Hydrological conditions of habitat
INC	Incidence
INDEX	Index value (parameters calculated as complex indices)
LEN	Length
LEV-N	Level of sound
MASS	Mass
MOR	Mortality (weight/volume; number of individuals)
F	Mortality rate
OTH	Other
OXY	Oxygen debt
PH	Ph
PRE	Presence
PP	Primary production
PROD	Productivity
SAL	Salinity
SEX-D	Sex distribution
SHELL	Shell thickness
SIZE-D	Size distribution
SPL	Underwater sound level
SPP-C	Species composition
SUR	Survival rate
TEM	Temperature
THICK-BLU	Blubber thickness
TID	Tidal range/level
TRA	Transparency of water
TURB	Transparency / turbidity of water column
VEL	Current velocity
WAV	Wave action

e) MonitoringMethod_Enum

Code	Title
HEL-001	HELCOM Guidelines for the annual and periodical compilation and reporting of waterborne pollution inputs to the Baltic Sea (PLC-Water)
HEL-002	HELCOM Guideline for the determination of heavy metals in sediment
HEL-003	HELCOM Guideline on the determination of perfluoroalkylated substances (PFAS) in seawater
HEL-004	HELCOM Guidelines for sampling and determination of dissolved oxygen
HEL-005	HELCOM Guidelines for determination of chlorinated hydrocarbons in sediment
HEL-006	HELCOM Guidelines for determination of PAH in sediment
HEL-007	HELCOM Guidelines for determination of POPs in seawater
HEL-008	HELCOM Guidelines for determination of salinity and temperature using CTD
HEL-009	HELCOM Guidelines for measuring chlorophyll a
HEL-010	HELCOM Guidelines for measuring Secchi depth
HEL-011	HELCOM Guidelines for measuring turbidity
HEL-012	HELCOM Guidelines for monitoring of mesozooplankton
HEL-013	HELCOM Guidelines for monitoring of non-indigenous species by eRAS
HEL-014	HELCOM Guidelines for monitoring of radioactive substances
HEL-015	HELCOM Guidelines for monitoring phytoplankton species composition, abundance and biomass
HEL-016	HELCOM Guidelines for monitoring seal abundance and distribution in the HELCOM area
HEL-017	HELCOM Guidelines for monitoring reproductive status of seals in the HELCOM area
HEL-018	HELCOM Guidelines for sampling and determination of ammonium
HEL-019	HELCOM Guidelines for sampling and determination of hydrogen sulphide
HEL-020	HELCOM Guidelines for sampling and determination of nitrate
HEL-021	HELCOM Guidelines for sampling and determination of nitrite
HEL-022	HELCOM Guidelines for sampling and determination of pH
HEL-023	HELCOM Guidelines for sampling and determination of phosphate
HEL-024	HELCOM Guidelines for sampling and determination of silicate
HEL-025	HELCOM Guidelines for sampling and determination of total alkalinity
HEL-026	HELCOM Guidelines for sampling and determination of total nitrogen
HEL-027	HELCOM Guidelines for sampling and determination of total phosphorus
HEL-028	HELCOM Guidelines for coastal fish monitoring
HEL-029	HELCOM Guidelines for coordinated monitoring of wintering birds
HEL-030	HELCOM Recommendations and guidelines for benthic habitat monitoring in the Baltic Sea
HEL-031	HELCOM Manual on co-operation in response to marine pollution
HEL-032	HELCOM Manual for monitoring in COMBINE programme
HEL-033	HELCOM guideline for Seal Abundance Monitoring
HEL-034	HELCOM Guidelines for monitoring of biological effects - imposex and intersex

Code	Title
HEL-035	HELCOM Guidelines for monitoring beach litter
HEL-036	HELCOM Guidelines for monitoring continuous noise
OSP-001	OSPAR Guidelines on Quality Assurance for Biological Monitoring in the OSPAR Area (Agreement 2002-15)
OSP-002	OSPAR CEMP Guideline: Common Indicator - Marine Bird Abundance (B1) (Agreement 2016-09)
OSP-003	OSPAR CEMP Guideline: Common Indicator - Marine Bird Breeding Success/Failure (B3) (Agreement 2016-10)
OSP-004	OSPAR CEMP Guideline: Common Indicator - Seal Abundance and Distribution (M3) (Agreement 2016-11)
OSP-005	OSPAR CEMP Guideline: Common Indicator - Grey Seal Pup Production (M5) (Agreement 2016-12)
OSP-006	OSPAR CEMP Guidelines Common Indicator: BH3 Extent of Physical damage to predominant and special habitats (Agreement 2017-09)
OSP-007	OSPAR CEMP Guideline: Common Indicator - Changes to non-indigenous species communities (NIS3) (Agreement 2018-04)
OSP-008	OSPAR CEMP Guideline: Combined guideline for the common indicators FC1, FC2, FC3 and FW3 for fish and food webs (Agreement 2018-05)
OSP-009	OSPAR CEMP Guideline: Common indicator: Condition of benthic habitat communities (BH2) – common approach (Agreement 2018-06)
OSP-010	OSPAR CEMP Guideline: Common Indicator: PH1/FW5 Plankton lifeforms (Agreement 2018-07)
OSP-011	OSPAR CEMP Guideline: Common indicator: Abundance at the relevant temporal scale of cetacean species regularly present (M4) – Interim version (Agreement 2018-09)
OSP-012	OSPAR CEMP Guideline: Common indicator in Region IV: Change in average trophic level of marine predators (FW4) (Agreement 2018-08)
OSP-013	OSPAR CEMP Guidelines for the assessment of dumping and placement of waste or other matter at sea
OSP-014	OSPAR CEMP Guidelines for monitoring marine litter washed ashore and/or deposited on coastlines (beach litter)
OSP-015	OSPAR CEMP Guidelines on Litter on the Seafloor
OSP-016	OSPAR CEMP Guidelines for Monitoring and Assessment of loud, low and mid-frequency impulsive sound sources in the OSPAR Maritime Region
OSP-017	OSPAR Coordinated Environmental Monitoring Programme (CEMP) Guidelines for Monitoring and Assessment of plastic particles in stomachs of fulmars in the North Sea area
OSP-018	OSPAR CEMP Guidelines for Monitoring Contaminants in Sediments (Agreement 2002-16). Revision 2018
OSP-019	OSPAR JAMP Guidelines for Monitoring Chemical Aspects of Ocean Acidification (Agreement 2014-03e)
OSP-020	OSPAR Revised JAMP Eutrophication Monitoring Guideline: Oxygen (Agreement 2013-05) (Replaces Agreement 1997-03)
OSP-021	OSPAR Revised JAMP Eutrophication Monitoring Guideline: Nutrients (Agreement 2013-04) (Replaces Agreement 1997-02)
OSP-022	OSPAR JAMP Eutrophication Monitoring Guidelines: Chlorophyll a in Water (Agreement 2012-11) (Replaces Agreement 1997-04)

Code	Title
OSP-023	OSPAR CEMP Eutrophication Monitoring Guidelines: Phytoplankton Species Composition (Agreement 2016-06)
OSP-024	OSPAR JAMP Eutrophication Monitoring Guidelines: Benthos (Agreement 2012-12) (Replaces Agreement 1997-06)
OSP-025	OSPAR JAMP Guidelines for General Biological Effects Monitoring. Revised technical annexes 2007 (Agreement 2007-07)
OSP-026	OSPAR JAMP Guidelines for Contaminant-Specific Biological Effects (Agreement 2008-09) (Replaces Agreement 2003-10)
OSP-027	OSPAR JAMP Guideline on the analysis of PFCs in Seawater (Agreement 2010-08)
OSP-028	OSPAR CEMP Guidelines for Monitoring Contaminants in Biota (Agreement 1999-02). Revision 2018
OSP-029	OSPAR CEMP guidelines for coordinated monitoring for eutrophication, CAMP and RID (Agreement 2016-05), Revised in 2018
AMP-001	AMAP Trends and Effects Monitoring Programme (ATEMP)
WFD-007	WFD Guidance document n.° 7 - Monitoring under the Water Framework Directive (monitoring framework)
WFD-019	WFD Guidance document n.° 19 - Monitoring under the Water Framework Directive (surface water chemical monitoring)
WFD-025	WFD Guidance document n.° 25 - Chemical Monitoring of Sediment and Biota
WFD-032	WFD Guidance document n.° 32 - Biota Monitoring
WFD-033	WFD Guidance document n.° 33 - Analytical Methods for Biota Monitoring
CWS-001	Wadden Sea - Trilateral Monitoring and Assessment Programme Handbook
BC-001	UNEP/MAP Integrated Monitoring and Assessment Guidance (2016)
BSC-001	Black Sea: Guidelines for quality control of biological data - Phytoplankton
BSC-002	Black Sea: Manual for phytoplankton sampling and analysis
BSC-003	Black Sea: Manual for quantitative sampling and sample treatment of marine soft-bottom macrozoobenthos
CFP-001	International bottom trawl survey in the Mediterranean Manual (Version 9)
CFP-002	Common protocol for the Pan-Mediterranean Acoustic Survey (MEDIAS) (v. 2017)
CFP-003	SISP 6 - Manual for mackerel and horse mackerel egg surveys, sampling at sea
CFP-004	SISP 15 - Manual of the IBTS North Eastern Atlantic Surveys
CFP-005	SISP 7 - BITS Manual for the Baltic International Trawl Surveys
CFP-006	SISP 8 - IBAS Manual for the International Baltic Acoustic Surveys
CFP-007	SISP 10 - Manual for the International Bottom Trawl Surveys, Revision IX
CFP-008	SISP 9 Manual for International Pelagic Surveys (IPS) - Version 1.00
CFP-009	Manual for the Offshore Beam Trawl Surveys (WGBEAM)
BWD-001	Bathing Water Profiles: Best Practice and Guidance (2009)
UWW-001	Urban Waste Water Treatment Directive: Annex 1
NFC-001	NEAFC: Recording of Catch and Fishing Effort

Code	Title
NFC-002	NEAFC: Vessel Monitoring System
BON-001	Bonn Agreement Aerial Operations Handbook, 2009
BON-002	Bonn Agreement Aerial Operations Handbook, 2017
BON-003	Bonn Agreement Counter Pollution Manual (BACPM)
CPH-001	Copenhagen Agreement manual for cooperation on pollution control
ICC-001	ICCAT Manual: Data for Assessment and Research
EC-001	Guidance on Monitoring of Marine Litter in European Seas [note: to be updated with specific guidance for beaches, water, seabed and micro-litter when available from TG Litter]
EC-002	Guidance on monitoring impulsive underwater noise
EC-003	Guidance on monitoring continuous underwater noise
OTH	Other monitoring method

f) DirectivesConventions_Enum

Code	Description	Legislation or Convention
AC-AMAP	Arctic Council Monitoring and Assessment Programme	Arctic Council
BC-IMAP	UNEP-MAP Integrated Monitoring and Assessment Programme	Barcelona Convention
BONN	Bonn Aerial surveillance for prevention of pollution	Bonn Agreement
BS-IMAP	BSC Integrated Monitoring and Assessment Programme	Bucharest Convention
CPH	Copenhagen Agreement	Copenhagen Agreement
CWS-MAP	Trilateral Monitoring and Assessment Programme (TMAP)	Trilateral Wadden Sea Cooperation
EU-BD	Birds Directive	European Commission
EU-BWD	Bathing Water Directive	European Commission
EU-EIA	Environmental Impact Assessment Directive (2011/92/EU)	European Commission
EU-FSR	Foodstuffs Regulation	European Commission
EU-HD	Habitats Directive	European Commission
EU-IASR	Invasive Alien Species Regulation	European Commission
EU-CFP-DCF	Data Collection Framework Multi-Annual Plan (Common Fisheries Policy)	European Commission
EU-MSP	Maritime Spatial Planning Directive	European Commission
EU-ND	Nitrates Directive	European Commission
EU-NEC	National Emission Ceilings Directive	European Commission
EU-Sev	Seveso Directive	European Commission
EU-UWWD	Urban Waste Water Treatment Directive	European Commission
EU-WFD	Water Framework Directive	European Commission
EU-WaFD	Waste Framework Directive	European Commission

Code	Description	Legislation or Convention
GFCM	General Fisheries Commission for the Mediterranean	GFCM
HEL-MON	HELCOM Monitoring programmes	Helsinki Convention
ICCAT	International Commission for the Conservation of Atlantic Tunas	ICCAT
IMO-BWM	International Convention for the Control and Management of Ships' Ballast Water and Sediments	International Maritime Organisation
IMO-OPRC	International Convention on Oil Pollution Preparedness, Response and Co-operation	International Maritime Organisation
IMO-OPRC-HNS	Protocol on Preparedness, Response and Co-operation to pollution Incidents by Hazardous and Noxious Substances	International Maritime Organisation
NEAFC	NEAFC Monitoring of Fisheries	NEAFC
OSP-CEMP	OSPAR Coordinated Environmental Monitoring Programme	Oslo-Paris Convention
CMS	Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention)	United Nations
C-POP	Stockholm Convention on persistent organic pollutions (POPs)	United Nations
CLRTAP	Convention on Long-Range Transboundary Air Pollution	United Nations
C-Hg	Minamata Convention on Mercury	United Nations
MARPOL	International Convention for the Prevention of Pollution from Ships	United Nations
National	Monitoring programme targeting at national legislation	National

g) Coverage_Enum

Value	Observation
Adequate monitoring was in place in 2014	Year of implementation of Art. 11
Adequate monitoring was in place by 2018	Year implementation was previously reported for some programmes
Adequate monitoring is in place by July 2020	Date for updating monitoring programmes
Adequate monitoring will be in place by 2024	Year for next updates of Art. 8, 9, 10
Monitoring is not being put in place for this descriptor due to a low risk	
Monitoring for this descriptor is not relevant	E.g. does not occur in MS waters (note this option is not relevant for targets or measures, where monitoring is expected to enable progress with the targets or measures to be assessed).

h) Frequency_Enum

Code	Name
6-yearly	Every 6 years
3-yearly	Every 3 years
2-yearly	Every 2 years
Yearly	Yearly
6-monthly	6-monthly
3-monthly	3-monthly
2-monthly	2-monthly
Monthly	Monthly
4-weekly	4-weekly
2-weekly	2-weekly
Weekly	Weekly
Daily	Daily
Hourly	Hourly
Continually	Continually
One-off	One-off
As needed	As needed
Other	Other (specify)
Unknown	Unknown

ANNEX III: Indicative list of monitoring programme names

The indicative list of monitoring programmes provided below was included as Annex 3 of [GD09 Reporting on Article 11 monitoring programmes \(2014\)](#). It is provided to promote consistency between Member States in how to define the scope or level of detail of an individual monitoring programme (i.e. the level of aggregation or disaggregation). This is because, in 2014 reporting, there was wide variation across Member States in the level at which monitoring programmes were defined. For example, some Member States reported programmes at a highly aggregated policy level (e.g. Common Fisheries Policy monitoring, Habitats Directive monitoring) whilst others reported at a more disaggregated level (e.g. bottom trawl surveys for CFP, pelagic stock surveys for CFP, monitoring of fish for Habitats Directive, monitoring of marine habitat condition for Habitats Directive).

Note the following:

- The programmes are formulated in a generic way and should thus have wide applicability across the regions; the titles could be made more specific for the Member State if required via the Programme name;
- The list is unlikely to be definitive and Member States can add further programmes as needed;
- Not all programmes are relevant for every Member State;
- In some cases, Member States may wish to define several programmes within the ones listed – perhaps to reflect different target elements (functional groups/species/habitats), differing areas/intensity of monitoring (e.g. MPAs, outside) or differing methods or internal organisation (e.g. inshore by a Member State agency, offshore through an international programme);
- As the list is intended to provide structure to the reporting to assist comparison and cooperation across Member States it is recommended that these programmes are not aggregated.

The list of programmes below has been categorised according to the main purpose of the monitoring, the main elements and parameters monitored, the relevant GES Descriptors and criteria from Commission Decision (EU) 2017/848 and the ecosystem components, parameters, pressures and activities from MSFD Annex III (Directive (EU) 2017/845).

Monitoring programmes	Purpose	Features/elements monitored		Parameter(s)	Descriptor	Criteria
Mobile species – distribution, abundance and/or biomass	State/impacts	Highly mobile species	Species groups or individual species of:	Species composition of the group	D1, D2, D3, D4	D1C2, D1C4, D2C2, D3C2, D4C1, D4C2
Mobile species – population characteristics			Birds, mammals, reptiles, fish, cephalopods (including commercial species)	Species abundance (numbers of individuals and/or biomass)		
				Size, age and sex structure; fecundity, survival and mortality/injury rates	D1, D3, D4	D1C3, D3C3, D4C3, D4C4
				Behaviour including movement and		

Monitoring programmes	Purpose	Features/elements monitored	Parameter(s)	Descriptor	Criteria	
			migration			
Mobile species – health status				D8	D8C2	
Mobile species – state of habitats			Habitat for the species (extent, suitability)	D1	D1C5	
Mobile species – mortality/injury rates from fisheries (targeted and/or incidental)			Rates of mortality, injury or other adverse effects from anthropogenic activities	D1, D3	D1C1, D3C1	
Mobile species – mortality/injury rates from other human activities				D1, D8, D10	D1C2, D8C4, D10C4	
Seabed habitats - distribution and extent		Seabed habitats/ sea-floor	Seabed habitats, incl. habitat-forming species and biogenic reefs	Habitat distribution Habitat extent (mapping) - for single (targeted) habitat(s), or for all habitats Habitat volume	D6, D7	D6C3, D6C4, D6C5, D7C2
Seabed habitats - physical and chemical characteristics			Seabed habitats (physical/chemical characteristics)	Substrate type and morphology, bathymetry, organic carbon, oxygen levels	D5, D6, D7	D5C5, D6C3, D6C5, D7C2
Seabed habitats - community characteristics			Seabed habitats (biological characteristics), specific benthic species (including commercial species)	Species composition, abundance (numbers of individuals or coverage of seabed) and/or biomass Size and age structure of species	D2, D3, D4, D5, D6, D7, D8	D2C3, D3C2, D3C3, D4C1, D4C3, D5C6, D5C7, D5C8, D6C3, D6C5, D7C2, D8C2, D8C4
Benthic species – abundance and/or biomass						
Benthic species – health status						D8
Water column – physical characteristics	Water column		Oceanography – physical/hydrological	Temperature, salinity, turbidity, transparency, sound	D1, D5, D7	D1C6, D5C4, D7C1
Ice cover				Ice cover, duration, thickness		
Water column – hydrological characteristics				Wave and current regimes, upwelling. Mixing, residence time, freshwater input, sea level	D1, D7	D1C6, D7C1
Water column – chemical characteristics		Oceanography – chemical	Nutrients, O ₂ , pH/pCO ₂	D1, D5	D1C6, D5C1, D5C5	
Pelagic habitats – community characteristics		Oceanography – biological (phytoplankton, zooplankton)	Species composition, abundance and/or biomass	D1, D2, D4	D1C6, D2C3, D4C1, D4C2	

Monitoring programmes	Purpose	Features/elements monitored		Parameter(s)	Descriptor	Criteria
Plankton blooms (biomass, frequency)				Chlorophyll-a levels, plankton bloom frequencies and extent	D4, D5	D4C4, D5C2, D5C3
Non-indigenous species inputs - from specific sources	Pressures	Level of pressure at source	Nutrients, Litter, [noise], contaminants, [pathogens], non-indigenous species	Input quantity per area per time	D2	D2C1
Nutrient inputs - land-based sources					D5	
Nutrient inputs - from atmosphere					D5	
Nutrient inputs - sea-based sources					D5	
Contaminant inputs - from atmosphere					D8	
Contaminant inputs - land-based sources					D8	
Contaminant inputs - sea-based sources					D8	
Contaminant inputs – acute pollution events, incl. oil spills					D8	D8C3
Litter inputs - land-based (riverine) sources					D10	
Non-indigenous species - abundance and/or biomass					Level of pressure in marine environment	Nutrients, Litter, noise, contaminants, pathogens, physical loss, physical damage, [extraction of species incl. by-catch]
Nutrient and organic matter levels - in water column		D5	D5C1			
Physical loss - distribution and extent (from e.g. infrastructure, coastal protection)		D6	D6C1			
Physical disturbance - from bottom-contacting fishing gear		D6	D6C2			
Physical disturbance - from dredging and disposal of dredged material		D6	D6C2			
Physical disturbance - from sand and gravel extraction		D6	D6C2			
Contaminant levels - in water/sediment		D8	D8C1			
Contaminant levels - in species, including seafood		D8, D9	D8C1, D9C1			
Microbial pathogen levels - in water column (bathing waters)						
Microbial pathogen levels - in biota (seafood)						
Litter - characteristics and abundance/volume on coast, water surface, seabed		D10	D10C1			
Litter micro-particles - abundance/volume in water, sediment		D10	D10C2			
Litter/micro-litter in biota		D10	D10C3			
Impulsive underwater noise - distribution, frequency and levels	D11	D11C1				
Continuous underwater noise - distribution, frequency and levels	D11	D11C2				
Activities extracting living resources (fisheries including recreational, marine plant harvesting, hunting and collecting)	Activities	Activity	See list for 2018 reporting	Distribution/extent in space and time, intensity	All	All

Monitoring programmes	Purpose	Features/elements monitored		Parameter(s)	Descriptor	Criteria
Activities extracting non-living resources (sand, gravel, dredging)						
Activities extracting non-living resources (desalination)						
Activities producing food (aquaculture)						
Activities with permanent infrastructures (e.g. renewable energy, oil & gas, ports) or structural changes (e.g. coastal defences)						
Sea-based mobile activities (shipping, boating)						
Coastal human activities (e.g. tourism, recreational sports, ecotourism)						
Land-based activities	Measures	Measures	Existing measures		All	All
[Effectiveness of measures]						

ANNEX IV: Quality control procedures

Schema	Class	Schema element	Type of check	Validation	Error level
ART11_Strategies	ReporterInfo	ReportingDate	Element check	ReportingDate can't be smaller than 2020-07-15	WARNING
ART11_Strategies	FileControl	Supersedes	Conditional check	Supersedes must be provided if an ART11_Strategies file has been already reported in a previous envelope	BLOCKER
ART11_Strategies	Metadata	ResponsibleCompetentAuthority	Element check	Competent Authorities must have been reported under MSFD Article 7	BLOCKER
ART11_Strategies	MonitoringStrategy	Descriptor	Within-schema check	All the Descriptors must be reported in the file	BLOCKER
ART11_Strategies	MonitoringStrategy	Descriptor	Within-schema check	Duplicated Descriptor under the schema ART11_Strategies gives back a blocker	BLOCKER
ART11_Strategies	MonitoringStrategy	RelatedTargets	Element check	The RelatedTargets codes must have been reported under ART10_Targets schema within the Article 17 update of Articles 8,9 and 10)	BLOCKER
ART11_Strategies	MonitoringStrategy	RelatedMeasures	Element check	The RelatedMeasures codes must have been reported under MSFD13_1p0 schema within the Article 13 reporting (2016) or ART18 schema within the Article 18 reporting (2019)	BLOCKER
ART11_Strategies	MonitoringStrategy	MonitoringProgrammes	Within-schema check	MonitoringProgrammes has to be filled in, except when under Coverage_GEScriteria the values 'Monitoring is not being put in place for this descriptor due to a low risk' or 'Monitoring for this descriptor is not relevant' are provided.	BLOCKER

Schema	Class	Schema element	Type of check	Validation	Error level
ART11_Strategies	MonitoringStrategy	MonitoringProgrammes	Cross-schema check	All the MonitoringProgrammes listed have to be provided under the ART11_Programmes schema	BLOCKER
ART11_Programmes	ReporterInfo	ReportingDate	Element check	ReportingDate can't be smaller than 2020-07-15	WARNING
ART11_Programmes	FileControl	Supersedes	Conditional check	Supersedes must be provided if a ART11_Programmes file has been already reported in a previous envelope	BLOCKER
ART11_Programmes	MonitoringProgramme	ProgrammeCode	Cross-schema check	All the codes entered have to be reported as well in the field 'MonitoringProgrammes' under ART11_Strategies schema.	BLOCKER
ART11_Programmes	MonitoringProgramme	RegionalCooperation_implementation	Conditional check	RegionalCooperation_implementation has to be provided when RegionalCooperation_coordination or RegionalCooperation_countries have been filled in.	WARNING
ART11_Programmes	MonitoringProgramme	Feature	Within-schema check	Duplicated Feature for a MonitoringProgramme gives back a blocker	BLOCKER
ART11_Programmes	MonitoringProgramme	Element	Element check	The reported Elements must be in the "MSFD Reporting Reference List (Elements)" and match the corresponding feature.	BLOCKER
ART11_Programmes	MonitoringProgramme	Element	Conditional check	Element must be provided for the features indicated (see Features_Enum in reporting guidance).	BLOCKER
ART11_Programmes	MonitoringProgramme	Element	Within-schema check	Duplicated Element for a Feature gives back a blocker	BLOCKER
ART11_Programmes	MonitoringProgramme	GESCriteria	Conditional check	GESCriteria must be provided when Element is provided	BLOCKER

Schema	Class	Schema element	Type of check	Validation	Error level
ART11_Programmes	MonitoringProgramme	GEScriteria	Conditional check	GEScriteria must be selected among those corresponding to the element (see “MSFD Reporting Reference List (Elements)”).	BLOCKER
ART11_Programmes	MonitoringProgramme	GEScriteria	Within-schema check	Duplicated GEScriteria for an Element gives back a blocker	BLOCKER
ART11_Programmes	MonitoringProgramme	Parameters	Conditional check	Parameter must be provided when GEScriteria is provided	BLOCKER
ART11_Programmes	MonitoringProgramme	MarineReportingUnit	Element check	The MarineUnitID must have been reported under the schema 4geo	BLOCKER
ART11_Programmes	MonitoringProgramme	MonitoringMethodOther	Conditional check	MonitoringMethodOther must be provided when MonitoringMethod is 'Other'	BLOCKER
ART11_Programmes	MonitoringProgramme	RelatedIndicator_name	Conditional check	RelatedIndicator_name must be provided when a new Indicator code is entered (not reported under the schema 'Indicators' within the Article 17 update of Articles 8,9 and 10)	BLOCKER
ART11_Programmes	MonitoringProgramme	OldProgrammeCode	Conditional check	OldProgrammeCode must be provided when 'Modified from 2014' is provided as 'UpdateType'	WARNING

ANNEX V: Features and elements to be used for the descriptors and criteria reported

See Annex II for GES component (descriptors and criteria) and Feature enumerations lists. See the MSFD Reporting Reference List for available elements (<http://cdr.eionet.europa.eu/help/msfd>). If the list does not contain the elements needed, contact msfd.helpdesk@eionet.europa.eu. In the table, primary criteria are in bold.

GES component (descriptor)	Feature	Elements	GES component (criteria)
D1 Biodiversity – birds, mammals, reptiles, fish, cephalopods	Species affected by incidental by-catch	Not applicable ¹⁵	D1C1
D1 Biodiversity – birds, mammals, reptiles, fish, cephalopods	Species groups for birds, mammals, reptiles, fish and cephalopods	Species list	D1C2; D1C3¹⁶; D1C4¹⁷; D1C5¹⁸
D1 Biodiversity - pelagic habitats	Pelagic broad habitats	Pelagic broad habitats list	D1C6
D1 Biodiversity - pelagic habitats	Other pelagic habitats	Other pelagic habitats list	D1C6
D2 Non-indigenous species	Newly introduced non-indigenous species	Not applicable	D2C1
D2 Non-indigenous species	Established non-indigenous species	NIS list	D2C2
D2 Non-indigenous species	Adverse effects on marine species or habitats	Benthic broad habitats list; Pelagic broad habitats list; Species groups	D2C3
D3 Commercial fish and shellfish	Commercially exploited fish and shellfish	Commercial species list	D3C1;D3C2;D3C3
D4 Food webs/D1 Biodiversity - ecosystems	Coastal ecosystems; shelf ecosystems; oceanic/deep-sea ecosystems	Trophic guilds list	D4C1;D4C2 ;D4C3;D4C4
D4 Food webs/D1 Biodiversity - ecosystems	Physical and hydrological characteristics; chemical characteristics	Physical, hydrological and chemical elements list (from MSFD Annex III Table 1)	D4C1;D4C2 ;D4C3;D4C4
D5 Eutrophication	Eutrophication	DIN; TN; DIP; TP; organic carbon ¹⁹	D5C1
		Chlorophyll-a	D5C2

¹⁵ Elements are not applicable, since the species affected by incidental by-catch cannot be predefined. After the implementation of the monitoring programmes, those elements (species) can be specified under the next Article 8 report.

¹⁶ Primary criterion for commercial fish and cephalopods

¹⁷ Primary criterion for mammals, turtles and Habitats Directive fish

¹⁸ Primary criterion for mammals, turtles and Habitats Directive fish

¹⁹ Organic carbon is an element from MSFD Annex III Table 1a that is of possible relevance for criterion D5C1

GES component (descriptor)	Feature	Elements	GES component (criteria)
		Harmful algal bloom species list	D5C3
		Photic limit (Transparency)	D5C4
		Dissolved oxygen (O ₂)	D5C5
		Benthic habitats - opportunistic macroalgae	D5C6
		Benthic habitats - macrophyte communities	D5C7
		Benthic habitats - macrobenthic communities	D5C8
D6 Sea-floor integrity/D1 Biodiversity - benthic habitats	Physical loss of the seabed	Not applicable	D6C1
D6 Sea-floor integrity/D1 Biodiversity - benthic habitats	Physical disturbance to the seabed	Not applicable	D6C2
D6 Sea-floor integrity/D1 Biodiversity - benthic habitats	Benthic broad habitats	Benthic broad habitats list	D6C3;D6C4;D6C5
D6 Sea-floor integrity/D1 Biodiversity - benthic habitats	Other benthic habitats	Other benthic habitats list (e.g. habitats from EUNIS and Habitats Directive)	D6C3;D6C4;D6C5
D7 Hydrographical changes	Hydrographical changes	Physical, hydrological and chemical elements list (from MSFD Annex III Table 1)	D7C1
D7 Hydrographical changes	Benthic broad habitats	Benthic broad habitats list	D7C2
D7 Hydrographical changes	Other benthic habitats	Other benthic habitats list (e.g. habitats from EUNIS and Habitats Directive)	D7C2
D8 Contaminants	Contaminants - non UPBT substances	Contaminants list	D8C1
D8 Contaminants	Contaminants - UPBT substances	Contaminants list	D8C1
D8 Contaminants	Adverse effects on marine species and habitats	Benthic broad habitats list; Other benthic habitats list; Species list	D8C2
D8 Contaminants	Acute pollution events	Not applicable	D8C3
D8 Contaminants	Adverse effects on marine species and habitats	Not applicable ²⁰	D8C4
D9 Contaminants in seafood	Contaminants - in seafood	Contaminants list (from Foodstuffs Regulation)	D9C1
D10 Marine litter	Litter in the environment	10 litter categories of GES Decision	D10C1

²⁰ Elements are not applicable, since the species or habitats affected by acute pollution events cannot be predefined. After the implementation of the monitoring programmes, those elements (species and habitats) can be specified under the next Article 8 report.

GES component (descriptor)	Feature	Elements	GES component (criteria)
D10 Marine litter	Micro-litter in the environment	2 litter categories of GES Decision	D10C2
D10 Marine litter	Litter and micro-litter in species	2 litter categories of GES Decision	D10C3
D10 Marine litter	Adverse effects on marine species or habitats	Species list	D10C4
D11 Energy, including underwater noise	Impulsive sound in water	Not applicable	D11C1
D11 Energy, including underwater noise	Continuous low frequency sound	Sound frequency categories	D11C2
Any	Features in list 'Pressure inputs to the marine environment'	Not applicable	Any
Any	Features in list 'Uses and human activities'	Not applicable	Any