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| **MONITORING FACT SHEET**  |  |
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| **MONITORING FACT SHEET TEMPLATE** | **This column is for information only and should be removed when the sheet has been filled in.** |
| **Title: Monitoring programme D1, 4 Water Column Habitats** |  |
| **1. General** | **Reporting sheet questions (ref. DIKE\_9-2014-03 for additional guidance on questions) and comments on template suggestions presented below** |
| 1.1 Subject area | *What is monitored – programme ID (BLKXX-DY)*Biodiversity – water column habitats**;****BLKBG-D1,D4-WaterColumnHabitats** | Q4: Programme name (4d); Programme ID (exchange XX with BG or RO; exchange Y with relevant descriptor no.) (4e) |
| 1.2 Definition/Description | *Definition of items monitored/description of general approach***Microbial pathogens**The monitoring of the microbial pathogens (total and faecal coliform bacteria and faecal streptococci) is conducted in the bathing waters by the Regional health inspectorates (RHI) of Dobrich, Varna and Burgas. It is required by the [Marine Strategy Framework Directive](http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32008L0056) (MSFD) (see: [Zampoukas et al., 2012](http://publications.jrc.ec.europa.eu/repository/handle/111111111/23169)), although not related to any descriptor.**Phytoplankton**Total number of phytoplankton cells (103 cells/litre) and biomass (mg/m3), chlorophyll-a (mg/m3), taxonomic structure (taxonomic based indexes). Concentration of chlorophyll-a (μg/litre)**Zooplankton**The programme measures the biomass of the mesozooplankton, biomass of the *Noctiluca scintillans* and *Mnemiopsis laydii* and the non-parametric index (Shannon-Wiener species diversity index). The available long-term data (1966-2005) allowed to test the Copepods to total zooplankton ratio (CP%) the as an indicator of the status of the marine environment during the 2012 monitoring programme.The present monitoring programme addresses primarily the state/impact rather than pressure within the framework of the [DPSIR](http://ia2dec.ew.eea.europa.eu/knowledge_base/Frameworks/doc101182) model. The pressures are addressed in the monitoring programmes under D2 (non-indigenous species), D5 (eutrophication), D7 (hydrographical conditions) and D8 (concentration of contaminants). | Q4: Programme description (4f). Free text or URL link. What is monitored by the programme (state/impact, pressure, activities, measures) and why. How does it adapt to new and emerging environmental problems |
| 1.3 Competent authority/ies | *Which authorities are responsible (links to www)***Ministry of Environment and Waters (MOEW)** **Web:** <www.moew.government.bg>**Black Sea Basin Directorate, Varna (BSBD)** **Web**: <http://www.bsbd.org/> | Q4: Responsible Competent Authority (4a)If more than one – put contact to the EU Commission |
| 1.4 Monitoring institutions | *Which institutions carry out the monitoring etc (links to www)***Monitoring of sea waters** ‑ Institute of Oceanology, Bulgarian Academy of Sciences (IO-BAS). Web: [www.io-bas.bg](http://www.io-bas.bg) . BSBD - IO-BAS relationship is contract-based.**Monitoring of microbial pathogens in the bathing waters** RHI Dobrich: [http://rzi-dobrich.org/](http://rzi-dobrich.org/index.php?node=home)RHI Varna: <http://www.rzi-varna.com/>RHI Burgas: <http://www.rzi-burgas.com/>**Monitoring on the pressure from the atmospheric deposition of nutrients** (nitrates in rainwater) – National Institute of Meteorology and Hydrology (<http://www.meteo.bg/en>) | Q4: Responsible institutions; relationship to Competent Authority (4b) +(4c) |
| 1.5 Additional information | *Where can additional information be found (e.g. via a web link)**Regarding regional coordination remember this project and other relevant joined projects*Black Sea Commission – Black Sea Integrated Monitoring and Assessment Programme (BSIMAP)<http://www.blacksea-commission.org/_bsimap.asp>MSFD Guiding Improvements in the Black Sea Integrated Monitoring System (MISIS) project<http://www.misisproject.eu> Integrated Regional monitoring Implementation Strategy in the South European Seas (IRIS -SES) project<http://iris-ses.eu/>Technical and administrative support for joint implementation of MSFD in Bulgaria and RomaniaNo link available yetTowards Integrated Marine Research Strategy and Programmes (SEAS-ERA) project - Strategic Research Agenda for the Black Sea Basin<http://www.seas-era.eu/> | Q3: Additional information on: Regional coordination; consideration of transboundary impacts; ability of programme to identify major changes in environment and new and emerging issues; (3a-c) |
| 2. Monitoring requirements and purpose |  |
| 2.1 Necessity | *Listed below are direct references to the monitoring requirements – EU directives, Black Sea Commission agreements, national plans, research programme requirements, other.**Delete/add rows*  | The purpose of this section is to give an overview of existing monitoring requirements related to this programme and to help coordinate already existing monitoringQ8a: Existing monitoring programmes deliver data to other directives etc. This part of the monitoring fact sheet helps to give an overview of how and where the specific monitoring is used for many purposes/requirements (8a). State where relevant monitoring is already carried out (or should be/is required)  |
| MSFDArticle 11Article 8 Annexes .. | *Comments***Article 11**On the basis of the initial assessment made pursuant to Article 8(1), Member States shall establish and implement coordinated monitoring programmes for the ongoing assessment of the environmental status of their marine waters on the basis of the indicative lists of elements set out in Annex III and the list set out in Annex V, and by reference to the environmental targets established pursuant to Article 10. | Which parts of MSFD requirements does the programme fulfil? Refer to the articles and annexes of the Directive that require that monitoring is carried out. |
| Habitat DirectiveArticle 11 | *Comments***Art. 11**Member States shall undertake surveillance of the conservation status of the natural habitats and species referred to in Article 2 with particular regard to priority natural habitat types and priority species. | Which parts of HD requirements does the programme fulfil? |
| WFDArticle .. | *Comments***Art. 8****Water Framework Directive**According to Article 8 of the WFD, MS shall establish monitoring programmes within each river basin district for assessment of the surface water body ecological status, chemical status and ecological potential. This applies to the coastal and transitional waters. The monitoring of marine waters seawards from the coastal waters is implemented within the MSFD. However, the MSFD takes into account the coastal and transitional waters in Art. 8, point 2.Under the WFD, biological quality elements (BQE) are to be monitored as one of the physico-chemical quality elements every three months in coastal waters that are subject to ecological assessment. The mandatory parameters are total nitrogen, total phosphorus, NO3and PO4. See also Annex V, 1.3.4. **Annex V - 1.2.4** The WFD requires that the assessment of the phytoplankton quality element considers composition, abundance, biomass and planktonic blooms.The phytoplankton tool for coastal waters is formed of three separate indices:(i) Chlorophyll 90th percentile metric(ii) Elevated count multi-metric(iii) Seasonal succession multi-metric**Annex V – 1.3** Member States shall monitor parameters which are indicative of the status of each relevant quality element. In selecting parameters for biological quality elements. Member States shall identify the appropriate taxonomic level required to achieve adequate confidence and precision in the classification of the quality elements.The following parameters should be monitored (adopted from Craglia et al., 2010a, cited in Zampoukas et al., 2012):Phytoplankton AbundancePhytoplankton BiomassPhytoplankton Bloom Frequency / IntensityPhytoplankton CompositionPhytoplankton Diversity | Which parts of WFD requirements does the programme fulfil? |
| Black Sea CommissionBlack Sea SAP | *Comments***Convention on the Protection of the Black Sea Against Pollution****Art. 15.**1. The Contracting Parties shall cooperate in conducting scientific research aimed at protecting and preserving the marine environment of the Black Sea and shall undertake, where appropriate, joint programmes of scientific research, and exchange relevant scientific data and information.

Protocol on the Protection of the Marine Environment of the Black Sea from Land-Based Sources and Activities (2009)Art. 111. Within the framework of the provisions of, and the monitoring programmes provided for in Art. 15 of the Convention, and if necessary in cooperation with competent international organisations, the Contracting Parties shall: a) Collect information and data on the conditions of the marine environment and coastal areas of the Black Sea as regards its physical, biological and chemical characteristics;c) Systematically asses the state of the marine environment and coastal areas of the Black Sea;2. The Contracting Parties shall collaborate in establishing a regional monitoring programme as well as compatible national monitoring programmes, and in facilitating data and information storage, retrieval and exchange.Strategic Action Plan for the Environmental Protection and Rehabilitation of the Black Sea (2009)A set of preliminaryMonitor and Evaluate indicators are proposed in Annex IV (process, stress and environmental state indicators). Monitoring and Evaluation (M&E) indicators are tools to monitor and verify SAP implementation (it is necessary to elaborate an indicator set that will measure progress towards the successful outcome of the EcoQOs and the short and long term management targets. | Does the programme fulfil any formal obligations to the BSC? |
| Other plans and/or programmesBWDArticle 3 | *Comments***Bathing Waters Directive**Article 3 – Member states are required to conduct monitoring of the bathing waters within the coastal waters of the parameters set in Annex I, column A: Intestinal enterococci (cfu/100 ml) and Escherichia coli (cfu/100 ml). Member states assess the bathing waters quality, according to the values provided in Annex I and determine the bathing waters quality as either “poor”, “sufficient”, “good” or “excellent”. Member states also establish and maintain “bathing water profiles” to keep account of the bathing water quality and to prevent exposure to contamination, including information to the public. | Does the programme fulfil any formal obligations to other plans and programmes? |
| 2.2 GES criteria | *Li*st *relevant GES Criteria and characteristics [indicators]* (see *Commission Decision of 1. September 2010)*Criteria:1.6 Species composition, abundance and/or biomass— Relative abundance and/or biomass, as appropriate (1.6.2)4.3 Abundance/distribution of key trophic groups/species— Abundance trends of functionally important selected groups/species (4.3.1) | Which GES criteria are addressed/monitored by the programme (5a). Select the relevant criteriaWhich characteristics [indicators] are addressed/monitored (5b) |
| 2.3 Features, pressures and impacts | *List relevant features and pressures from MSFD Annex III*Predominant habitats* Water column habitats

Pressures* Pressures on the will be addressed in the relevant monitoring programmes under D2 and D5

*Refer to section 6 regarding gaps and plans* | Which elements of Annex III (ecosystem components, pressures/impacts) are addressed/monitored by the programme (5c) |
| 2.4 GES | *Assessment of GES (GES as defined in the article 9 reporting)*Good Environmental Status (GES) definition:Overall GES definition: the trophic phytoplankton and zooplankton species are abundant and support stable and/ or increasing fish communities without negatively affecting the physical, chemical or hydrographical conditions of the marine environment. The populations of non-trophic (gelatinous) zooplankton do not trigger strong (statistically significant) positive feedback loops, leading to population decline of the upper trophic levels. The bathing waters are at least at “good” water quality and there are no signs of water contamination or fish (and other seafood) contamination, giving rise to health effects in the human population.1.6 The abundance and biomass of the trophic phytoplankton and zooplankton are within the GES threshold values and do not negatively affect the physical, chemical and hydrographic conditions.4.3 The functionally important trophic groups of mesozooplankton (e.g. Copepods), expressed by their biomass and relative importance (Shannon-Wienner Index), show stable and/or increasing trend in their abundance. The trend in the non-trophic gelatinous zooplankton (*Mnemiopsis leydii, Noctiluca scintillans*) and other jellyfish species does not trigger strong (statistically significant) positive feedback loop, leading to population decline of the dependant higher trophic level – planktivorous fish.Describe how the programme:1. addresses assessment needs for the relevant Descriptor(s) and targets – the monitoring programme addresses the assessment needs by stating a GES definition in coherence with S. M. A. R. T. (Specific, Measurable, Achievable, Realistic, Timely) targets and, if necessary, by updating the GES definitions and targets to be able to provide assessment of the current environmental status and determine the distance from GES. The monitoring programme also defines targets addressing the pressure from human activities, state and impact of the marine environment.
2. meets the needs of providing data/ information to support assessment of the Descriptor (or particular biodiversity component programme for D1, 4, 6) – the existing monitoring programme does not provide data/information for assessment of the Descriptor 1, 4. Specific plans for assessment of GES and targets are designed to make the programme adequate in providing data and information for assessment of Descriptor 1, 4;
3. contributes to determining distance from GES and trends in status – the existing monitoring programme does not fully meet the requirements of the MSFD and does not contribute in determining the distance from GES and trends in status. By updating the GES definitions, threshold or trend-based targets, and implementing plans for data and information on GES and targets, the programme will be able to provide information on the distance from GES and trends in status;
4. addresses natural and climatic variability and distinguish this from the effects of anthropogenic pressures – the existing monitoring programme does not provide information to distinguish the effect of natural and climatic variability from the anthropogenic pressures. The problem should be addressed in the Plans for information on GES.
5. responds to risks of not achieving GES – the minimum requirement is to make the existing monitoring programme adequate to the requirements of the MSFD (in accordance with the Plans for information on GES and targets, listed below).The monitoring programme responds to the risk of not achieving GES by updating GES definition and targets to be able to detect if GES is achieved. GES targets should be reviewed and updated annually to reflect new information on GES, acquired from the yearly monitoring programme of the Bulgarian marine waters.
 | State the definition of GES reported for the relevant descriptor and describe how the programme: addresses assessment needs for the relevant descriptor; contributes to determining distance from GES and trends in status; addresses natural and climatic variability; responds to risk of not achieving GES (5f) |
| 2.5 Environmental targetsMSFD | *Relevant MSFD targets defined in the article 10 reporting**State relevant targets from other obligations (see section 2.1) that are addressed by the monitoring*PRESSURE TARGETSRelevant pressure targets are defined under the D2 – Non-indigenous species, D8 – Concentration of contaminants water, D5 - Eutrophication and D10 - Marine litter monitoring programmesSTATE TARGETS1.6.2. Target: 90th percentile of the samples show that phytoplankton biomass do not exceed the thresholds values in 10 % of the summer observations for the last 6 years. Thresholds (Source: Table I.3.1.2, MSFD Article 9 GES report):Spring:Coastal assessment area (GES threshold: 2.2 - 3.0 mg/m^3);Shelf assessment area (GES threshold: 0.6 - 1.0 mg/m^3);Open sea assessment area (GES threshold: 0.15 - 0.22 mg/m^3).Summer: Coastal assessment area (GES threshold: 0.55 - 0.8 mg/m^3);Shelf assessment area (GES threshold: 0.46 - 0.6 mg/m^3);Open sea assessment area (GES threshold: 0.10 - 0.15 mg/m^3).1.6.2. Target: Mesozooplankton biomass (mg/m^3) GES threshold (Source: Table I.3.2.2, MSFD Article 9 GES report): Coastal assessment area: 20-550 mg/m^3; Shelf assessment area: 15-300 mg/m^3; Open sea assessment area: 10-200 mg/m^3.4.3.1 Maintain the CP % ratio (Copepods biomass/ mesozooplankton biomass) > 42% (Source: Figure I.3.2.1, MSFD Article 9 GES report).The concentrations of microbial pathogens (Annex I, Bathing Waters Directive) in the bathing waters are within the values indicative of “good” water quality by 2020. | Q6: State the targets addressed by the monitoring. Which reported targets are addressed (6a)?Will the programme provide adequate data to assess progress towards achievement of target and will the collected data enable updating of targets (6b-c)?Explain how the programme will contribute to the assessment of progress with targets (6d)Add targets relevant to other directives and commitments |
| BWD | **Bathing Waters Directive (Directive 2006/7/EC)**Member States shall ensure that, by the end of the 2015 bathing season, all bathing waters are at least ‘sufficient’ (see Annexes I and II – BWD). The concentrations of microbial patogens (Annex I, Bathing Waters Directive) in the bathing waters are within the values indicative of “good” or “very good” water quality.  |  |
| HD | **Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora**Article 2The aim of HF shall be to contribute towards ensuring bio-diversity through the conservation of natural habitats and of wild fauna and flora in the European territory of the Member States.**Water Framework Directive (Directive 2000/60/EC)**According to Article 4 of the Water Framework Directive, Member States shall implement the necessary measures to prevent deterioration of the status of all bodies of surface water, including the coastal waters, by 2015 (15 years after the adoption of the Directive). |  |
| WFD | **Water Framework Directive (Directive 2000/60/EC)**According to Article 4 of the Water Framework Directive, Member States shall implement the necessary measures to prevent deterioration of the status of all bodies of surface water, including the coastal waters, by 2015 (15 years after the adoption of the Directive). |  |
| BSC | (50). Harmonise environmental quality standards throughout the Black Sea region and elaborate regionally agreed criteria for assessment of the state of the Black Sea environment. |  |
| 2.6 Spatial allocation | *Table of where monitoring is required*

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| --- | --- | --- | --- | --- |
|  | EEZ | 12-nm zone | Coastal waters | Transitional waters |
| MSFD | x | x | x | - |
| HD | x | x | x | x |
| WFD | - | - | x | x |
| BSC | x | x | x | - |

 | Q4: Geographical coverage by reference to the 4 zones in table 1 of the "concept paper" (4i) |
| **3 Monitoring concept** |  |
| 3.1 General description of relevant subprogrammes in monitoring programme | List subprogrammes monitored under this programme (only general description)**Subprogramme 1: Water column**Subprogramme criteria:**1.1 Pelagic community composition and species abundance** Parameters: Species composition, abundance (number of individuals and/or biomass)Subprogramme criteria:**1.2 Plankton biomass**Parameters: Species composition, abundance (number of individuals and/or biomass - chlorophyll a)**Subprogramme 2: Activities**Subprogramme criteria:**2.1 Distribution, extent & frequency of relevant activities**Parameters: Distribution in space & time, intensity**Subprogramme 3: Measures**Subprogramme criteria: **3.1 Effectiveness of measures**Parameters: To be developed | Use list In document DIKE\_9-2014-03\_Art11ReportingPackage.doc and BS-CBE Jan\_MFS Pgm Subpgm\_list\_rev.xls for subprogramme names. New ones may be added if necessary. Use BS-CBE Jan\_MFS Pgm Subpgm\_list\_rev.xls to see/check parameters measured in subprogramme |
| 3.2 Description of monitoring network | *Description + maps (describing the spatial resolution of the entire programme)*Figure 1 – Map of the 2014 monitoring network of the water column and seabed habitats.The monitoring framework in 2013 and 2014 comprises 20 sampling stations in the coastal waters. The water column habitat parameters (phytoplankton and zooplankton species composition, abundance, biomass and chlorophyll-a concentration) are measured seasonally. The current monitoring programme is conducted only within the coastal waters and is not adequate to the requirements of the MSFD. The spatial resolution and temporal density are not determined based on statistically robust methods. The data cannot be considered representative for assessing the status of the marine environment and the distance from and the progress towards GES.The monitoring of microbial pathogens is conducted by the Regional Health Inspectorates (Ministry of Health) of Dobrich, Varna and Burgas in the bathing waters, according to the Bathing Waters Directive. Monitoring parameters: intestinal Enterococci and Escherichia coli. The monitoring includes also contaminants: petroleum, PAHs, phenols, dissolved oxygen.  | Spatial resolution (density op sampling). Show sampling network on map. Describe the rationale for the geographical scope of the programme ("4j") |
| 3.3 Threats, activities and measures | *Which threats are identified**Which human activities will be measured by the programme**Which measures will be measured by the programme***Relevant human activities:** AgricultureIndustryUrbanizationTourism and recreationalMaritime traffic (in relation to non-indigenous species) | Q7: Relevant activities (7a); |
|  | Agriculture - see: Monitoring programme D5 EutrophicationIndustry - see: Monitoring programme D5 EutrophicationUrbanization - see: Monitoring programme D5 EutrophicationTourism and recreational activities - see: Monitoring programme D5 EutrophicationMaritime traffic (in relation to: non-indigenous species) - see: Monitoring programme D2 Non-indigenous species (NIS). | describe the nature of activity or pressure (7b) |
|  |  | relevant existing measures (if any) (7c) |
|  |  | how are existing measures monitored (7d) |
| 3.4 Data management | *How and where are data managed? How and where can data be accessed? (General description – programme level)* | Q10 (+Q3): Access to data; use rights; INSPIRE standards; when will data become available; updates when; how will data be made available to the EEA |
| **4. Assessment** |  |
| 4.1 Assessments | *Existing assessments*National text based reports on the Initial assessment of the marine environment (Art. 8, MSFD) is uploaded on the EIONET Common Data Repository.*Provide information about or URL links to existing assessments (eg. Initial Assessment)*URL: <http://cdr.eionet.europa.eu/bg/eu/msfd8910/msfd4text/envubapw> | This is for information purpose only. Where can stakeholders etc find existing assessments on issues relevant to the programme  |
| 4.2 Assessment of GES | *Will assessment of GES be carried out by the programme*The current programme will not provide adequate data and information enabling periodic assessment of environmental status and distance to progress towards GES. Necessary changes and recommendation outlined in Section 6. | Q5: Will the programme enable periodic assessment of environmental status and distance to and progress towards GES (5d). Describe how and refer to section 6 to describe if programme is not considered fully adequate. |
| **5. Literature** |  |
|  | *List of relevant literature*Biovolumes and size classes of phytoplankton in the Baltic Sea 2006. HELCOM. Baltic Sea Environment Proceedings, No. 106. 142 pp. (Web: <http://helcom.fi/Lists/Publications/BSEP106.pdf>)GuidanceDocument No. 7 Monitoring under the Water Framework Directive. Web: <http://ec.europa.eu/environment/water/water-framework/facts_figures/guidance_docs_en.htm>Manual for Marine Monitoring in the COMBINE Programme of HELCOM. Annex C-6. Phytoplankton species composition, abundance and biomass. 21 pp. Web: <http://helcom.fi/action-areas/monitoring-and-assessment/manuals-and-guidelines/combine-manual>Moncheva S., B. Par. 2005 (updated-2010). Manual for Phytoplankton Sampling and Analysis in the Black Sea. GEF/UNDP Black Sea Ecosystem Recovery Project (BSERP)-RER/01/G33/A/1G/31 & UPGRADE BLACK SEA SCENE Project, GA 226592, FP7, EC, BSC electronic publication. 68 p.Moncheva, S., 2010. Guidelines for Quality Control of Biological Data Phytoplankton, UPGRADE BLACK SEA SCENE, 18 pp.Moncheva, S., 2010. Guidelines for Quality Control of Biological Data Phytoplankton, UPGRADE BLACK SEA SCENE, 18 pp.Ordinance No. N-4 of 14/09/2012 on the characterization of surface waters. Naredba No. N-4 of 14/09/2012 za harakterizirane na povarhnostnite void (in Bulgarian).Web: <http://www3.moew.government.bg/>Zampoukas, N., H. Piha, 2011. Review of Methodological Standards Related to the Marine Strategy Framework Directive Criteria on Good Environmental Status. Publications Office of the European Union, 53 pp. Web: < http://publications.jrc.ec.europa.eu/repository/handle/111111111/16069>;Zampoukas, N., H. Piha, E. Bigagli, N. Hoepffner, G. Hanke, A. Cardoso, 2012. Monitoring for the Marine Strategy Framework Directive: Requirements and Options. Publications Office of the European Union, 42 pp. Web: <http://publications.jrc.ec.europa.eu/repository/handle/111111111/23169>Intestinal enterococci БДС EN ISO 7899-1Escherichia coli БДС EN ISO 9308-3 |  |
| **6. Activities required to implement the concept** |  |
| 6.1 Changes to the current monitoring programme | *Necessary changes and recommendations**Describe necessary changes for the programme to cover the requirements of MSFD. Description in general terms.*Adequate data: NoEstablished methods for assessment: YesAdequate understanding of GES: YesAdequate capacity to perform assessments: NoAddresses activities/pressures: NoAddresses effectiveness of measures: No | Which changes are necessary to the current/existing monitoring programme to secure adequacy with regards to MSFD (eg. changes in monitoring network)Q7: Will the programme provide necessary data and information to enable identification of relevant activities/pressures that are causing environmental degradation and will the programme identify suitable new measures and the effectiveness of existing measures (7e) |
| 6.2 Gaps: GES information  | *If not yet adequate for data and information needs to assess GES, describe when the programme will be considered fully adequate*The programme is expected to provide adequate information on GES in time for next assessment in 2018. | Select when the programme is expected to be adequate: In 2014; in time for next assessment in 2018; in time for updating of monitoring programme in 2020; later than 2020 (5g) |
| 6.3 Plans: Plans for GES information | *If the programme is not considered fully adequate for data and information needs to assess GES, describe what plans are in place to make it fully adequate (eg. to fill gaps in data methods, understanding or capacity). Describe timeframe, priorities and obstacles.***General recommendations:****Spatial scope of the monitoring programme**. Expand the current monitoring network to provide data for the pressure from the drivers (human activities and natural changes), state and impact in the coastal waters, territorial waters and exclusive economic zone, according to the requirements of the Marine Strategy Framework Directive.**Design a statistically sound monitoring programme**. Robust statistical methods should be used to determine the minimum sampling size, spatial frequency and temporal resolution of the monitoring network. Software tools like [DISTANCE](http://www.ruwpa.st-and.ac.uk/distance/) and [AD Model Builder](http://admb-project.org/) can be used to support the design of statistically sound and economically feasible monitoring programme.**Integration across Black Sea Member States (at minimum, Bulgaria and Romania)** ([Zampoukas et al., 2012](http://publications.jrc.ec.europa.eu/repository/handle/111111111/23169))**.** Joint cruises with Romania will help minimizing the costs and ensure that the data are acquired in a similar and comparable manner thus allowing a comparable assessment and classification of the Bulgarian and Romanian marine areas. The benefit of using common sampling methods and common parameters will result in having regionally agreed indicators, and consequently setting regionally coherent targets and definitions of GES.**Integration across legislative requirements and Regional Sea Conventions (RSCs)** ([Zampoukas et al., 2012](http://publications.jrc.ec.europa.eu/repository/handle/111111111/23169)). Both Bulgaria and Romania can use the data generated in fulfillment of the obligations under the related environmental legislation of the EU (e.g. Water Framework Directive, Bathing Waters Directive and Habitats Directive) and the [Black Sea Commission](http://www.blacksea-commission.org/) to acquire information on GES .**Integration across descriptors and indicators (**[Zampoukas et al., 2012](http://publications.jrc.ec.europa.eu/repository/handle/111111111/23169))**.** The coordinated monitoring programme on D1,4 – Marine mammals can be integrated with the monitoring of all the other descriptors, because chance encounters of marine mammals can happen during offshore, nearshore and coastal monitoring surveys.**Distinguish between the natural and climatic variability and human pressure** (in relation to MSFD Art. 11 reporting question 5f) – Data on natural and climatic variability (e.g. from the IPCC Data Distribution Centre and the National Institute of Meteorology and Hydrology – Bulgarian Academy of Sciences), and anthropogenic pressure (e.g. land-based point sources of pollution) should be made available to the monitoring institution to be able statistically analyse and distinguish between the pressure from global teleconnections and regional sources of anthropogenic pressure. In addition, data on the Danube river nutrient discharge and the role of the Black Sea Rim current should be made available, because they are of particular relevance for distinguishing the pressure of the Danube River from the pressure from the Bulgarian Rivers on Bulgarian marine waters. Data should be made available in time for the next assessment in 2018.Distinguish between the natural and climatic variability and human pressure (in relation to MSFD Art. 11 reporting question 5f) – Data on natural and climatic variability (e.g. from the IPCC Data Distribution Centre and the National Institute of Meteorology and Hydrology – Bulgarian Academy of Sciences), and anthropogenic pressure (e.g. land-based point sources of pollution) should be made available to the monitoring institution to be able statistically analyse and distinguish between the pressure from global teleconnections and regional sources of anthropogenic pressure. In addition, data on the Danube river nutrient discharge and the role of the Black Sea Rim current should be made available, because they are of particular relevance for distinguishing the pressure of the Danube River from the pressure from the Bulgarian Rivers on Bulgarian marine waters. Data should be made available to the monitoring institution in time for the next assessment in 2018.**Programme-specific requirements:**Start in 2015 (if not already started in 2014) the implementation of coordinated with Romania monitoring programme on Descriptor D1, 4 – Water Column Habitats to provide information on the distance from GES and update the GES definition, if necessary, for the next Article 8 reporting on assessment of environmental status and Article 9 reporting on GES in 2018.* Institute of Biodiversity and Ecosystem Research - Bulgarian Academy of Sciences – experience in modelling the marine food web;
* Institute of Fisheries Resource – Ministry of Agriculture – research expertise in fish and long dataset on different characteristics in the marine environment;

**Increasing temporal frequency of the monitoring and conducting year-round sampling**. The temporal frequency of the phytoplankton should be at least 12 times a year (monthly) (See: [Zampoukas et al., 2012](http://publications.jrc.ec.europa.eu/repository/handle/111111111/23169), referring to the Water Framework Directive, [Guidance No 07 - Monitoring](https://circabc.europa.eu/faces/jsp/extension/wai/navigation/container.jsp)). The monitoring frequency of zooplankton should be at least 4 times a year (seasonally). This also means early start of the yearly monitoring activities – at the beginning of the year. The increased temporal frequency for these biological quality elements is required to validate the assessment system for every season and to allow year-round assessment of the status of the marine environment.**Further develop and validate the classification systems of the environmental status for all the biological quality elements**. It is necessary to further develop and validate the classification system for phytoplankton and zooplankton. The state of the phytoplankton community (particularly during the summer months) directly depends on the nutrient loads (riverine, urban, industrial, and atmospheric). Therefore, data from the land-based point and diffuse sources of pollution and the atmospheric input are required to adequately assess the state of the phytoplankton community. Data of the point sources of pollution (riverine, urban, industrial and aquaculture) should be made available from the [Black Sea Basin Directorate](http://www.bsbd.org/uk/). Data from the diffuse pollution (nitrates in the rainwater) should be requested by the [Ministry of Environment and Waters](http://www.moew.government.bg/?lang=en) from the [National Institute of Meteorology and Hydrology](http://www.meteo.bg/en).The 2013 monitoring programme identifies new monitoring parameters (jellyfish species) and related classification system. The monitoring data should be gathered at increased sampling frequency (at least 4 times a year) to provide seasonal assessment of the status of the marine environment. The monitoring should take place in the coastal waters, territorial waters and Exclusive Economic Zone, according to the requirements of the MSFD.**Bulgaria and Romania should revise and further develop together** coherent GES definitions and assessment methods for their marine waters, taking into account the assessment and the recommendations of the Commission, as much as possible, in 2014.**Bulgaria and Romania should revise and further develop together coherent targets** based on agreed, if not harmonized, indicators for their marine waters taking into account the assessment and the recommendations of the Commission, as much as possible, in 2014.**Bulgaria and Romania should develop together agreed indicators** (based on common parameters) and/or **harmonised indicators** (based on common parameters and common methods) for their marine waters, taking into account the assessment and the recommendations of the Commission , as much as possible, in 2014.**Use modelling to fill in the knowledge gaps on Descriptor 4 of the MSFD**. Use the available monitoring data and open-source ecosystem models (e.g. [Ecopath with Ecosim (EwE)](http://www.ecopath.org/)) to fill in the knowledge gaps on the functioning of the marine food webs (Descriptor 4, MSFD) and determine the distance from GES.**Using consistent sampling and assessment methodologies across Member States (Bulgaria and Romania)**.**Take advantage in 2015 (if not already taken in 2014) of the available co-funding opportunities (LIFE, Horizon 2020, EMFF) and/or International Financial Institutions (European Bank for Reconstruction and Development (EBRD), European Investment Bank (EIB), The World bank (WB)), if necessary to fulfil the requirements of the MSFD**. Spatial scope and the monitoring requirements pose significant burden to the national budgets of all the EU countries. Therefore, both Bulgaria and Romania should advantage of the relevant EU funds to support the implementation of the MSFD. | Free text or URL link to relevant information (5h) |
| 6.4 Gaps: Target information  | *If not yet adequate for data and information needs to assess targets, describe when the programme will be considered fully adequate*The programme is expected to provide adequate information on GES in time for next assessment in 2018. | Select when the programme is expected to be adequate: In 2014; in time for next assessment in 2018; in time for updating of monitoring programme in 2020; later than 2020 (6e) |
| 6.5 Plans: Plans for information on targets | *If the programme is not considered fully adequate for data and information needs to assess targets, describe what plans are in place to make it fully adequate (eg. to fill gaps in data methods or capacity). Describe timeframe, priorities and obstacles.***Bulgaria and Romania should revise and further develop together coherent targets** based on agreed, if not harmonized, indicators for their marine waters, taking into account the assessment and the recommendations of the Commission, as much as possible, in 2014.**Develop threshold values and/or trends for the relevant indicators of the monitoring programme D1, 4 – Water Column habitats** for the marine waters (coastal waters, territorial sea and Exclusive Economic Zone) in time for next assessment in 2018.**Review and regularly update the targets** to reflect the improved knowledge of the relevant indicators and related threshold values (if applicable), produced during the yearly coordinated monitoring programmes, established according to Article 11 of the MSFD. | Free text or URL link to relevant information (6f) |
| 6.5 Plans: Plans for information on measures | *If relevant: If the programme is not considered fully adequate for data and information needs to assess measures describe what plans are in place to make it fully adequate (eg. to fill gaps in data methods or capacity). Describe timeframe, priorities and obstacles.*The monitoring programme is considered adequate to assess the measures on:Industrial activities – monitoring data on the application of potential measures are currently available to the Black Sea Basin DirectorateUrban activities – WWTP - monitoring data on the application of potential measures are currently available to the Black Sea Basin DirectorateAgriculture – monitoring data on the application of potential measures are not directly available to the Black Sea Basin Directorate these data could be obtained from the Executive Environment Agency (EEA). Web: <http://eea.government.bg/>Aquaculture – data from self-monitoring is currently available to the Black Sea Basin DirectorateShipping – monitoring data on the application of potential measures are currently available to the Black Sea Basin Directorate. Data on measures shipping discharges from nutrients and marine litter in the water column habitats are available from the Executive Agency Maritime Administration. Web:< http://www.marad.bg/index.php> | Free text or URL link to relevant information (7f) |