BLACK SEA INTEGRATED MONITORING AND ASSESSMENT PROGRAM

for years 2017-2022

(BSIMAP 2017-2022)

Content

List of abbreviations **2**

Background **4**

1. Definitions **5**

2. Legal Basis **7**

3. Assessments **7**

4. Monitoring Program **10**

5. Quality Assurance/Quality Control (QA/QC) **13**

6. Black Sea Information System (BSIS) **13**

7. Timeframe for Implementation of the Black Sea Integrated Monitoring and Assessment Program for years 2017-2022 **14**

Annex 1 Black Sea Regional Monitoring Program 15
Annex 2 Relevant data-bases for possible future harmonization with BSIS 28
Annex 3 BSIMAP Reporting format 29
Annex 4 List of the Black Sea Guidelines and Manuals 38
Annex 5 List of Black Sea priority substances 39
Annex 6 Environmental Quality Standards for Priority Substances and certain other pollutants 45
Annex 7 Substances subject to review for possible identification as priority substances or priority hazardous substances 49
Annex 8 Priority thematic studies to be implemented in 2017-2022. Subjects for international and national research projects 50
Annex 9 BSC – ICPDR Reporting format 51

List of abbreviations

ACCOBAMS	Agreement on the Conservation of Cetaceans in the Black Sea Mediterranean Sea and Contiguous Atlantic Area
AG	Advisory Group
BS SAP	Strategic Action Plan for the Environmental Protection and Rehabilitation of the Black Sea
BS SAPIR	Black Sea Strategic Action Plan Implementation Report
BSC	Black Sea Commission or Commission on the Protection of the Black Sea against Pollution
BSC PS	Black Sea Commission' Permanent Secretariat
BSIMAP	Black Sea Integrated Monitoring and Assessment Program
BSIS	Black Sea Information System
CBD AG	Advisory Group on the Conservation of Biological Diversity
CBD Protocol	Biodiversity and Landscape Conservation Protocol
DPSIR	Drivers-Pressures-State-Impact-Response approach
EC	European Commission
EcoQ	Ecosystem quality objective
EEA	European Environmental Agency
EG	Expert Group
EIA	Environmental Impact Assessment
EMSA	European Maritime Safety Agency
ESAS AG	Advisory Group on the Environmental Safety Aspects of Shipping
FOMLR AG	Advisory Group on the Environmental Aspects of the Management of Fisheries and other Marine Living Resources
GEF	Global Environmental Facility
GES	Good Environmental Status
GFCM	UN FAO General Fisheries Commission for Mediterranean and Black Sea
HNS	Hazardous and Noxious Substances

HNS	Hazardous and Noxious Substances
IAEA	International Atomic Energy Agency (Monaco)
ICPDR	International Commission on the protection of Danube River
ICZM AG	Advisory Group on the Development of Common Methodologies for Integrated Coastal Zone Management
IMO	International Maritime Organization
IMO	International Maritime Organization
IUU	Illegal, Unreported and Unregulated Fishery
JTWG	Danube-Black Sea Joint Technical Working Group
LBS AG	Advisory Group on Control of Pollution from Land Based Sources
ML	Marine litter
MoU	Memorandum of Understanding
MPA	Marine Protected Area
MSFD	EC Marine Strategy Framework Directive
NFP	National Focal Point
OECD	Organization for Economic Cooperation and Development
PMA AG	Advisory Group on the Pollution Monitoring and Assessment
QA/QC	Quality assurance/Quality control
SoE	State of Environment Report
TAC	Total Allowable Catch
UNEP	United Nations Environmental Program

Background

Development and implementation of the Black Sea Integrated Monitoring and Assessment Program (BSIMAP) is stipulated in Article XV of the Convention on the Protection of the Black Sea Against Pollution (Bucharest Convention) and its Protocols. BSIMAP is based on national monitoring programs financed by the Black Sea states. Outside of national monitoring programs, thematic scientific surveys related to various environmental problems are carried out in the frames of different projects, financed by national authorities and/or donors (UNEP, UNDP/GEF, EC, UN FAO and others).

The Black Sea Integrated Monitoring and Assessment Program shall be an integral part of the monitoring and assessment programs of the Contacting Parties to the Bucharest Convention based on the following principles:

- Best available scientific knowledge on the state of the environment;
- Quality assurance and quality controlled data and validated information;
- Clearly described uncertainties and gaps;
- Cost efficiency and resource saving;
- Defined affordability for each Contracting Party to the Bucharest Convention;
- Mutual assistance and cooperation;
- Regularity and continuity (sustainability of monitoring).

The Black Sea Integrated Monitoring and Assessment Program shall introduce the regional dimensions in the monitoring and assessment programs of the Contacting Parties to the Bucharest Convention.

BSIMAP aims at provisioning of sound and scientific data and information flow for the Contracting Parties underpinning State of the Environment of the Black Sea (SoE) and Implementation of the Strategic Action Plan for Environmental Protection and Rehabilitation of the Black Sea (BS SAPIR). It also, contributes to, *inter alia*, information sharing and decision making for Contracting Parties.

BSIMAP employs the DPSIR (Drivers, Pressures, State, Impact, Response) approach allowing detection of negative impacts as well as the effects of measures taken, thereby enabling the necessary corrective actions to be decided on and introduced in a timely manner. The choice of parameters to monitor is related to the main environmental problems recognised in the Black Sea region and re-evaluated every 5 years based on BSC reports – State of the Environment of the Black Sea (SoE) and Report on Implementation of the Strategic Action Plan for Environmental Protection and Rehabilitation of the Black Sea (BS SAPIR).

The main environmental challenges, as defined in SAP2009, for the Black Sea are: (a) the preservation of the commercial marine living resources, (b) the conservation of Black Sea biodiversity and habitats, (c) eutrophication reduction and ensuring good water quality for human health, (d) recreational use and aquatic biota.

The policy questions to be answered under the Black Sea Integrated Monitoring and Assessment Program are as follows:

1. What is the level of nutrient enrichment/eutrophication? Are the national and regional efforts to combat eutrophication effective and do we see them reflected in the level of nutrient loads and change in eutrophication-related impacts?
2. Which are the Black Sea **specific priority pollutants** in the Black Sea and what is their impact on ecosystem and human health? Does pollution reduction occur? Are the measures introduced efficient?
3. Is **bathing water quality** safe for human health?
4. What is the **response of biodiversity** to pollution (including bio-pollution) and eutrophication, and what is the extent of habitats destruction/revitalization? Are the measures taken efficient?
5. Does **biota contamination** exceed the human consumption safety limits? Are the measures taken efficient?
6. How do overfishing, pollution (including bio-pollution) and eutrophication affect the **stocks** of major marine living resources?
7. What is the impact of **increasing oil/gas exploration and exploitation** activities in the Black Sea?
8. What are the effects of **climate change?** What are the measures taken and their efficiency?
9. How much are coast and sea-floor integrity destroyed and what is the Black Sea ecosystem response to this disturbance?
10. What are the long-term trends in hydrographical conditions and what will be the consequences for the Black Sea ecosystem?
11. What are the levels of marine litter in the Black Sea and how to minimize its impact on marine organisms, especially on cetaceans?
12. What are the levels of noise pollution in the Black Sea and how to reduce the risk from noise pollution for fish and cetaceans in the Black Sea?

Approaches of the UN Global Integrated Marine Assessment (Regular Process) and European Union' Marine Strategy Framework Directive (MSFD) as well as other best available practices are taken into consideration.

1. Definitions

For the purposes of this Black Sea Integrated Monitoring and Assessment Program the following definitions shall apply:

1. "marine waters" mean waters, the seabed and subsoil on the seaward side of the baseline from which the extent of territorial waters is measured extending to the outmost reach of the area of countries' jurisdiction (MSFD).

2. "coastal waters" mean surface waters on the landward side of a line, every point of which is at a distance of 1 (one) nautical mile on the seaward side from the nearest point of the baseline from which the breadth of territorial waters is measured, extending where appropriate up to the outer limit of transitional waters (WFD).

3. "environmental status" means the overall state of the environment in marine waters, taking into account the structure, function and processes of the constituent marine ecosystems together with natural physiographic, geographic, biological, geological and climatic factors, as well as physical, acoustic and

chemical conditions, including those resulting from human activities inside or outside the area concerned (MSFD).

4. “good environmental status" means the environmental status of marine waters where these provide ecologically diverse and dynamic sea which are clean, healthy and productive within their inherent conditions, and the use of the marine environment is at a level that is sustainable, thus safeguarding the potential for uses and activities by current and future generations, i.e. (a) the structure, functions and processes of the constituent marine ecosystems, together with the associated physiographic, geographic, geological and climatic factors, allow those ecosystems to function fully and to maintain their resilience to human-induced environmental change; (b) marine species and habitats are protected, human-induced decline of biodiversity is prevented and diverse biological components function in balance; (c) hydro-morphological, physical and chemical properties of the ecosystems, including those properties which result from human activities in the area concerned, support the ecosystems as described above; (d) anthropogenic inputs of substances, energy, including noise, and biological agents into the marine environment do not cause pollution effects (MSFD).

5. "criteria" means distinctive technical features that are closely linked to the qualitative or quantitative parameters of the state of Black Sea environment and are used in assessment of the environmental status.

6. “environmental target" means a qualitative or quantitative statement on the desired condition of the different components, pressures and impacts on marine waters in respect of the Black Sea.

7. “ecological quality objective” means a desired level of ecological quality relative to predetermined reference levels.

8. "pollution" means the direct or indirect introduction into the marine environment, as a result of human activity, of substances, energy, including human-induced marine underwater noise, or biological agents which results or is likely to result in deleterious effects such as harm to living resources and marine ecosystems, including loss of biodiversity, hazards to human health, the hindering of marine activities, including fishing, tourism and recreation and other legitimate uses of the sea, impairment of the quality for use of sea water and reduction of amenities or, in general, impairment of the sustainable use of marine goods and services (MSFD).

9. “DPSIR (drivers-pressures-state-impact-response)” - a general causal framework for organising information about state of the environment and describing the interactions between environment and the society. This framework has been adopted by the European Environment Agency (EEA) and is an extension of the pressure-state-response model developed by OECD.

2. Legal Basis

Article XV "Scientific and technical cooperation and monitoring" calls the Contracting Parties to the Bucharest Convention to:

- cooperate in conducting scientific research aimed at protecting and preserving the marine environment of the Black Sea and shall undertake, where appropriate, joint programs of scientific research, and exchange relevant scientific data and information;
- cooperate in conducting studies aimed at developing ways and means for the assessment of the nature and extent of pollution and of its effect on the ecological system in the water column and sediments, detecting polluted areas, examining and assessing risks and finding remedies, and in particular, they shall develop alternative methods of treatment, disposal, elimination or utilization of harmful substances;
- the Contracting Parties shall cooperate through the Commission in establishing appropriate scientific criteria for the formulation and elaboration of rules, standards and recommended practices and procedures for the prevention, reduction and control of pollution of the marine environment of the Black Sea;
- the Contracting Parties shall, *inter alia*, establish through the Commission and, where appropriate, in cooperation with international organizations they consider to be competent, complementary or joint monitoring programs covering all sources of pollution and shall establish a pollution monitoring system for the Black Sea including, as appropriate, programs as bilateral or multilateral level for observing, measuring, evaluating and analyzing the risks or effects of pollution of the marine environment of the Black Sea;
- each Contracting Party shall designate the competent national authority responsible for scientific activities and monitoring.

Aiming at the sustainable management of natural resources, these requirements are further elaborated and incorporated in the relevant documents of the Bucharest Convention, including its corresponding Protocols and BS SAP.

3. Assessments

The assessment of the state of the Black Sea Environment shall be carried out in line with European and global approaches to the assessment of the environment and, to the extent possible, be built upon clear, understandable and compatible and common indicators and assessment criteria.

Common indicators will be as much as possible used in the assessment,thus ensuring a coherent approcach for a harmonized way of assessment.

3.1. Black Sea environment assessment process of the Commission on the Protection of the Black Sea Against Pollution

The Black Sea Commission adopts and implements the indicator-based assessments as described below.

The Black Sea assessment process is defined as follows:

Black Sea marine environmental assessment is a process by which data/information are collected and evaluated and which is undertaken periodically to trace the state of knowledge and

to propose measures for improvement of the quality of environment and protection of ecosystems from impact of anthropogenic activities. Its product is an Assessment Report that is a document synthesizing data/information, presenting the findings of the assessment and making recommendations for actions for future work.

The Assessment shall take into acount, recommendations of the finalized projects and as far as possible comply with the recommendations of such works conducted in the Black Sea region explicitely dealing with assessment needs and gaps, such as using TRIX and BEAST for assessment tool for eutrophication. Thus ensuring continuity with the previous findings.

The purpose of assessments is to provide decision-makers and relevant stakeholders and public with:

- comprehensive summary of contemporary knowledge on the state of the Black Sea environment and efficiency of implemented policy and management measures;
- identified significant gaps in knowledge which can provide an authoritative basis for defining priorities for further scientific and other investigations; and
- a basis for judging the effectiveness and adequacy of environmental protection measures i.e. SAP2009 and for making any necessary adjustments in environmental policies.

For better assessment of the sate and to make in depth analyses, where possible, whole Black Sea marine region could be devided into subregions based on their hydro-morfological features, habitat types and/or special condition of that region. As defined in Section 4 of this document, BSIMAP shall be designed accordingly to deliver, coherent, compatible and common indicators.

Since some of the countries are working to implement MSFD, the assessment may take into account such approache to use this accumulated knowledge of the countries.

For controlling progress with GES the countries shall establish proper monitoring program.

The assessment products are the following corresponding reports:

State of the Black Sea Environment Report (SoE), Scientific Assessment	Every five years
State of the Black Sea Environment Report (SoE), Assessment for Policy Makers	Every five years
Black Sea Strategic Action Plan Implementation Report (BS SAPIR)	Every five years
Annual Report of the Black Sea Commission	Every year

The “State of the Black Sea Environment Report (SoE) Scientific Assessment” is shall contribute to:

a) Production of Black Sea indicators on the state of the Black Sea environment;
b) Identification of the good environmental status and other assessment criteria;
c) Identification of knowledge gaps and scenarios of environmental consequences of the human activities.

The BSC provides organizational support to the SoE EG and initial funding to start an assessment process and also additional funding might be sought for fulfilling the porpuse

The contributors to the State of the Black Sea Environment Report (SoE), are:

1) Black Sea scientific institutions;
2) Projects and Program of national and Black Sea regional levels provided they produce quality assured information;
3) Individual scientists and research teams with proven quality of investigations;
4) Other international agreements and organizations that have proven achievements in the Black Sea environmental studies.

3.2. Report on the Implementation of the Black Sea Strategic Action Plan for Environmental Protection and Rehabilitation of the Black Sea (BS SAPIR)

The Report on the Implementation of the Strategic Action Plan for Environmental Protection and Rehabilitation of the Black Sea (BS SAPIR) is produced to assess the efficiency of measures implemented by the Contracting Parties to the Bucharest Convention and Signatories of the Strategic Action Plan for Environmental Protection and Rehabilitation of the Black Sea versus the adopted environmental quality objectives (EcoQs) and recommend the necessary changes to the BS SAP.

3.3. Annual Report of the Commission on the Protection of the Black Sea Against Pollution

The purpose of the Annual Report of the Black Sea Commission is to share information on the Black Sea state and process of implementation of the BS SAP and identification of the regional activities to be included into respective BSC Work Program or requiring the urgent measures to be taken by the Black Sea Commission.

The Annual Reports of the Black Sea Commission shall be produced by the Permanent Secretariat of the Black Sea Commission in close cooperation with the BSC Advisory Groups. An outline of the Annual Report of the Black Sea Commission forms Annex of the BSIMAP and shall be elaborated and agreed by the Advisory Groups of the Black Sea Commission.

The format of reporting to the Bucharest Convention shall be revised and updated by the BSC Advisory Groups and approved by the Black Sea Commission.

3.4. Thematic assessments

The purpose of the thematic assessment is an in-depth study of a specific problem for which information and data are missing, contradictive, inaccurate or unknown.

Thematic assessments are initiated by the Black Sea Commission upon well justified proposals coming from:

- Any Contracting Party to the Bucharest Convention;
- BSC
- BSC Advisory Groups;
- International organizations upon the relevance of the proposal for the Black Sea;
- SoE Report

Financing of the thematic assessments could be done from the BSC Budget, national budgets, specific projects or donor contributions depending upon the agreed arrangements for such assessments.

The results of the thematic assessments shall contribute to the development of the indicators to assess the state of the Black Sea environment.

4. Monitoring Program

The main task of the Monitoring Program for 2017-2022 is to produce quality assured data for scientifically-based and validated indicators for policy-makers of the Contracting Parties of the Bucharest Convention consistent with the environmental quality objectives (EcoQs) of the BS SAP. The guiding document for the BSIMAP is the Strategic Action Plan for Environmental Protection and Rehabilitation of the Black Sea (BS SAP2009). The coherence with the European Marine Strategy Framework Directive (MSFD) and other international commitments/agreements dealing with the Black Sea environment protection to which the Black Sea states are Contracting Parties shall be sought in order to introduce the best available practices, accumulated knowaledge and harmonize approaches.

The satates are eoncouraged to take into account the main pillars of the Monitoring Program:

i. Geographical scope and distribution of sampling stations at coastal and marine waters: For marine waters designation States shall endeavoure to reflect habitats both pelagic and benthic beyond 1nm.
ii. Parameters: List of mandatory and optional parameters, as agreed by BSC, will be taken into account for water, sediment and biota. States are strongly encouraged to have same parameters and to revise their national monitoring as nessessary.
iii. Frequincy: The frequency of sampling will be as much as the same between the states,or at least complementary to each other. States are encouraged to decide on the frequency to have common ground. Indicators: Each state will monitor the parameters which are needed for building the common indicators. Thus, ensuring comparable results and coherent indicator calculation feeding to a common assessment. Reporting: When states are reporting to the BSC, the data provided, as minimum requirement, shall employ the main pillars described above.
iv. Methodology: States shall use coherent methodologies framing data gathering and management i.e. sampling analysis; data QA/QC. .

Stemmed from above montioned pillars, main principles to be followed in the BSIMAP are the following:

1. Utilization of the **capacities of all institutions** dealing with monitoring in the Black Sea;
2. **Avoidance of overlapping of activities and efforts;**
3. **Sustaining frequency of observations;**
4. **Harmonization** of monitored parameters and criteria for identification of monitoring stations;
5. **QA/QC;**
6. **Partnership** with international competent organizations using their capacity and/or methodological advice;

7. **Capacity building** – regular trainings, bringing best available practices to the region, strengthening the collaboration between different authorities engaged in monitoring, further development of inter-ministerial mechanism etc.;
8. **Continuity of the monitoring** and **sustainability of data flow.**

The Monitoring Program shall generate the sufficient quality assured data to enable quantification/description of BS SAP environmental objectives, targets, interim targets and indicators and identification of needs for the development of Black Sea Integrated Monitoring and Assessment Program (Annex l).

The Monitoring Program consists of the national monitoring programs of Black Sea states, the Black Sea Regional Monitoring Program and thematic scientific surveys and other relevant surveys.

4.1. National monitoring programs

The national monitoring programs are developed and implemented in line with the legislation of the Black Sea states and tailored to the specific national environmental requirements. Number and distribution of monitoring stations, parameters and frequencies, its financing and responsible institutions are regulated by the national legislation.

On the otherhand, national monitoring programs, shall at least include the list of mandatory parameters agreed by BSC.

National monitoring programs shall include and implement the Black Sea regional monitoring program and exercise mandatory reporting on its requirements to the Black Sea Commission. The countries are strongly encouraged to make the frequency seasonal: 4 times for water and for sediments once a year.

4.2. Regional component of monitoring program

Regional component ofmonitoring program constitutes integral part of BSIMAP, it shall be developed by the BSC institutional network and approved by the Black Sea Commission.

Regional component of monitoring program shall be comprised of monitoring stations of Black Sea importance, regionally agreed (i.e mandatory) biotic and abiotic parameters and frequencies.

The Monitoring stations of the Black Sea are designated based on the following principles:

- Relevance to the indentified Black Sea environmental problems;
- Availability of long-term observations;
- Afordability for the Black Sea states.

The monitoring stations of the Black Sea importance, regionally agreed biotic and abiotic parameters and frequencies are mandatory for financing and implementation at the national level. Revision of the choice of stations shall be envisaged every 5 years, depending on the timeframe of the BSIMAP evaluation when tracing the adequacy of the Program to the changing realities. Tentative timeframe for this revision is presented in Annex 3. Upon BSC approval of monitoring stations of Black Sea importance, regionally agreed biotic and abiotic parameters and frequencies, these requirements shall be introduced into the national monitoring programs and reporting of obtained data in formats established by the Black Sea Commission shall be mandatory for the Black Sea states.

Black Sea states shall designate the institutions responsible for the Black Sea Environmental Monitoring Program implementation. List of responsible institution and conact persons will be regularly reported to BSC.

The Regional component of Monitoring Program shall be periodically revised following the recommendations and information gaps identified in the State of the Environment Report (SoE); Report on the Implementation of the Strategic Action Plan for Environmental Protection and Rehabilitation (BS SAPIR) and upon proposal by relevant AGs. The revision of the Black Sea regional monitoring program shall be followed by revision of the Reporting format used for delivery of data/information. The revised Reporting format shall be an integral part of the BSIMAP.

The Guidelines developed for monitoring shall be also an integral part of BSIMAP. They have to be made available through the BSC webpage and officially recommended for use in the Black Sea states. In analysis of the BSIMAP performance the use of the Guidelines shall be traced to verify the comparability of data.

4.3. Thematic scientific surveys

Thematic scientific surveys are part and parcel of the BSIMAP and are designated for filling in data/information gaps (missing, contradictive, inaccurate or unknown facts).

Thematic scientific surveys of regional importance could be proposed by the Black Sea states, BSC Advisory Groups, donor organizations or individual scientific institutions.

Screening, evaluation and approval of the proposed scientific survey by the Black Sea Commission as well as participation of the Black Sea Commission in the projects shall be carried out according to the established procedure and criteria

The scientific surveys of regional importance could be financed/co-financed by BSC, donor organizations, individual states, private entities.

The Black Sea Commission through its Permanent Secretariat provides assistance in further refining project proposals and seeking potential donors for the proposed surveys.

The Black Sea Commission upon regular SoE assessments defines and approves the List of Potential Black Sea Environmental Surveys (Black Sea Surveys) to be carried out for the purposes of the Bucharest Convention and BS SAP which shall serve as a guidance document for donor organizations and national funding institutions in the sphere of the environmental protection of the Black Sea, as well as for coordinating national scientific surveys with the identified regional priorities. The List of Black Sea Surveys shall form an Annex to BSIMAP and shall be renewed/amended as it deems necessary. The rights on data/information obtained by regional environmental surveys for the Black Sea Commission shall be observed.

National thematic scientific surveys are initiated, implemented and financed nationally. When elaborating national scientific surveys the consideration of the List of Black Sea Surveys is advisable. The submission of the data and results of the nationally funded scientific surveys to the Black Sea Commission in agreed formats is invited. Upon availability of funds, the Black Sea Commission may finance/co-finance national surveys, if the subject of the national scientific survey reflects the regional challenges.

4.4. Innovative monitoring techniques

Taking into consideration the needs for sufficient spatial coverage, optimization and cost efficiency of the monitoring activities, the feasibility of following approaches shall be tested in the framework of the BSIMAP 2017-2022:

a) satellite observations and remote sensing;
b) ship opportunities;
c) public involvement (i.e. marine litter monitoring);
d) other innovative techniques.

5. Quality Assurance/Quality Control (QA/QC)

Quality Assurance/Quality Control (QA/QC) of the data and validity of information shall comply with strict BSC requirements (to be elaborated by the Black Commission institutional network).

The data and information submitted to the Black Sea Commission from any monitoring program shall meet the following requirements:

1. have proven records of compliance with national (QA/QC) systems. The Black Sea states, reporting to the Black Sea Commission, are solely responsible for the quality of submitted data and validity of provided information;
2. the data obtained in the frames of the Black Sea regional monitoring program shall be controlled through intercomparison exercises funded by the Black Sea Commission. The institutions designated for implementation of the Black Sea regional monitoring program must submit the results of the regular intercomparison exercises to the BSC PS in order to enable the planning of professional trainings and other capacity building in case of the existence of problems and to ensure the quality of the regionally important data/information;
3. QA/QC [regional intercomparison exercises] for the institutions other than designated for the Black Sea regional monitoring program implementation shall be carried out on the *ad hoc* basis. Institutions that fail to meet the quality requirements set by the Black Sea Commission will be denied of the possibility to submit their data to the Black Sea Commission (a procedure for intercomparison exercises to be elaborated);
4. use of the regionally agreed methodologies and guidelines is recommended (available or those in the process of adoption).

6. The Black Sea Information System (BSIS)

The objective of the Black Sea Information System (BSIS) is to serve for producing the regional data and information management tool relevant for the purposes of the Bucharest Convention, BS SAP and related policy documents.

Concept, principles and structure, content and usage of the BSIS shall be further developed considering compatibility and links with international and national databases and information systems for the Black Sea, and those created under different projects.

List of databases to which BSIS should be linked and harmonised with where relevant and possible are presented in the Annex 2 to this BSIMAP.

The main sources of data/information for the BSIS are the following:

- National monitoring Programs ;
- Black Sea regional component of monitoring program;
- Scientific surveys and projects;
- Black Sea scientific conference,;
- Relevant scientific publications.

Peer review of the information to be uploaded to the BSIS shall be performed by the Permanent Secretariat and Advisory Groups of the Black Sea Commission.

7. Timeframe for Implementation of the Black Sea Integrated Monitoring and Assessment Program 2017-2022

Action	Deadline
Quantify/describe and agree on assessment criteria, such as Good Environmental Status (GES), quality objectives, targets, etc. based on finalised SoE and BS SAPIR (2008/9-2014)	2018
Publish SoE (2008/9-2012/13) and BS SAPIR (2009 – 2013)	2017
Revise Black Sea environmental monitoring system and ensure its requirements are duly taken into consideration in national monitoring programs	2018-2021
Finalize development of the Black Sea Information System (BSIS)	2018
Develop mechanism for incorporation of data/information produced outside of the official reporting of states (under the Bucharest Convention) into BSIS	2018
Set up the operational BSIS (giving data products as per the needs for the SoE and BS SAPIR – indicators, graphs, maps, etc. with a regional representation)	2019
Start preparations for the next SoE and BS SAPIR (2017-2022)	2019
Carry out Black Sea thematic scientific surveys and produce corresponding thematic reports (e.g. on major issues concerning pressures/impacts, climate change etc.)	2019
Compile and publish SoE and BS SAPIR (2015 - 2020)	2022

DRAFT

BLACK SEA INTEGRATED MONITORING AND ASSESSMENT PROGRAM

for years 2017-2022

(BSIMAP 2017-2022)

Annex 1

Black Sea Regional Environmental Monitoring Program

EcoQO 1	**Preserve commercial marine living resources**
EcoQO 1a	***Sustainable use of commercial fish stocks and other marine living resources***
Descriptor	Populations of all commercially exploited fish and shellfish are within safe biological limits, exhibiting a population age and size distribution that is indicative of a healthy stock
Interim Target	Increasing number of fish stocks which are within safe biological limits
Ultimate Target	To reach and sustain maximum sustainable yield of all species for commercial interest, to increase stock of commercially-exploited fish and shellfish
Preparatory actions	- Regulary revise Annex 2 and Annex 4 to the Black Sea Biodiversity and Landscape Conservation Protocol; - Adopt and implement the stock assessment methodology on the regional level; - Adopt and implement fishery data collection framework in cooperation with WGBS / GFCM; - Periodically revising of recommendations regarding to fishing mortality indexes; - Assessment of impact of fishing practices on the stock status and reproducting capacity of fish species; - Development of control and compliance measures; - Mitigate of IUU-fishing; - Reduce the pressure of natural marine living resources through development of marine aquaculture; - Strenghtening of scientific cooperation in the field surveys both pelagic and demercal species.
Additional monitoring and data/information collection	- Total catches and landings; - Fishing efforts; - Stock biomass; - Fishing mortality; - Catches per unit of effort (CPUE); - Aquaculture and cultured species.
Data Products	Criteria for assessments, indicators, trends, manuals, guidelines, methodologies, indexes etc.
EcoQO 1b	***Restore/rehabilitate stocks of commercial marine living resources***

Descriptor	All elements of the marine food webs to the extent that they are known, occur at normal abundance and diversity and their reproductive capacity are ensure on long-term basis
Interim Target	Reach the better environmental conditions for improvement of structure funcion and productivity of food webs
Ultimate Target	Reach of sustainable stocks status of threatened / endangered species
Preparatory actions	- Increase the reproductive capacity of the stocks; - Assessment of fish population age, size and structure; - Assessment of impact of fishing activities on marine habitats and food webs (ecosystem models and scenarios); - Identify / Assessment of critical / sensitive habitats relevant for fish biological cycle (spowning, nursering, wintering); - Reducing by-catches of vulnerable and non-target species including cetaceans; - Implementation of ecosystem approach including criteria for the evaluation of habitats important for marine living resources; - Strenghtening of scientific cooperation on delination of fish stock boundaries distribution, population behaviour, climate anomalies etc.
Additional monitoring and data/information collection	- Spawning stock biomass; - Proportion of fish larger than the mean size of first sexual maturation; - Status of trophic base; - Recruitment and abundance of juveniles in different habitats; - Number and areas covered by fishing free zones; - Name and number of stock below biological safety limits.

Mandatory fisheries parameters to be annually reported to the Black Sea Commission

M- mandatory,

Parameter/Country	**Friquency of Reporting**						
	Status	**BG**	**GE**	**RO**	**RU**	**TR**	**UA**
Fish landing (annually)	**M**	**1**	**1**	**1**	**1**	**1**	**1**
Fishing effort	**M**	**1**	**1**	**1**	**1**	**1**	**1**
Fish stocks (annually)	**M**	**1**	**1**	**1**	**1**	**1**	**1**
Aquaculture production	**M**	**1**	**1**	**1**	**1**	**1**	**1**
Number of fishing free zones	**M**	**1**	**1**	**1**	**1**	**1**	**1**
Name and number of stocks below biological safety limits	**M**	**1**	**1**	**1**	**1**	**1**	**1**
Specimens of Black Sea bottlenose dolphins in							

captivity							

EcoQO 2	**Conservation of Black Sea Biodiversity and Habitats**
EcoQO 2a	***Reduce the risk of extinction of threatened species***
Descriptor	Biological diversity is maintained, The quality and occurrence of habitats and the distribution and abundance of species are in line with prevailing physiographic, geographic and climatic conditions
Target	Stabilized or increasing trends of the populations of the threatened species
Preparatory actions	Assess and determine the Good Environmental Status (GES) of threatened species Harmonize the IUCN status of species Agree on Black Sea Red Data Book list Update general CheckLists of Black Sea species
Additional monitoring and data/information collection	Threatened species temporal and spatial dynamics Initiate the process of habitat mapping for threatened species Pressures (e.g. physical loss or damage of habitats, proliferation of predators, contamination (harmful substances, pathogens, parasites etc.)
Data products	Maps of threatened species distribution/occurrence, changes of IUCN status etc.
EcoQO 2b	***Conserve coastal and marine habitats and landscapes***
Descriptor	Biological diversity is maintained. the quality and occurrence of habitats and the distribution and abundance of species are in line with prevailing physiographic, geographic and climatic conditions Sea-floor integrity is at a level that ensures that the structure and

	functions of the ecosystems are safeguarded and benthic ecosystems, in particular, are not adversely affected
	Permanent alteration of hydrographical conditions does not adversely affect marine ecosystems
Target	Decreasing of anthropogenic pressures on coastal zone
	Increasing number and area of marine protected areas (MPAs)
Preparatory actions	Assess initial status and determine Good Environmental Status (GES) of marine habitats
	Agree on classification of habitats [and landscapes]
	Revise the List of habitats of Black Sea importance (Annex 2 TDA, priority habitats for restoration and conservation)
	Compile Lists of opportunistic species
	Revise and adopt the regional Guideline on MPAs
	Adopt the ICZM Guidelines
	Develop set of ICZM Indicators
	Update ICZM Stock Taking
	Update ICZM Progress Markers
Additional monitoring and data/information collection	Status of Habitats and Landscapes parameters, including macrophytes depth distribution
	Coastal erosion, sea-floor integrity (silting, smoldering etc.), hydrological changes in areas of threatened habitats
	ICZM and spatial plans
	BATs on habitats status assessmentSatellite images
Data Products	Maps of indicated pressures, maps of habitats (reflecting the spatial and

temporal changes) etc.

EcoQO 2b	***Reduce and manage human mediated species introductions***
Descriptor	Non-indigenous species introduced by human activities are at levels that do not adversely alter the ecosystems
Target	No new man-made introduction of non-indigenous species Improvement of ballast water management (fouling)
Preparatory actions	Finalise the List of Black Sea non-indigenous species Develop and/or apply indicators (e.g. bio-pollution index) Map areas of non-indigenous species proliferation
Additional monitoring and data/information collection	Spatial distribution of non-indigenous species, vectors of introduction North-ward movement of species Ballast water monitoring Risk areas screening (i.e. ports), early detections Impacts of non-indigenous species Measures taken
Data Products	Indicators, maps, trends (to be specified)

Monitoring Sites, Parameters, Frequencies M - mandatory

	Frequency of onservations						
Parameters/State, BS State	**Status**	**BG**	**GE**	**RO**	**RU**	**TR**	**UA**
Chl a	**M**	**4**	**4**	**4**	**4**	**4**	**4**
Phytoplankton	**M**	**4**	**4**	**4**	**4**	**4**	**4**
Mesozooplankton	**M**	**4**	**4**	**4**	**4**	**4**	**4**
Biomass of Noctiluca	**M**	**4**	**4**	**4**	**4**	**4**	**4**

Macrophytobenthos	**M**	**1**	**1**	**1**	**1**	**1**	**1**
Macrozoobenthos	**M**	**1**	**1**	**1**	**1**	**1**	**1**
Marine protected areas	**M**	**1**	**1**	**1**	**1**	**1**	**1**
Number and names of introduced non-indigenous species	**M**	**1**	**1**	**1**	**1**	**1**	**1**
Number and names of newly introduced threatened species	**M**	**1**	**1**	**1**	**1**	**1**	**1**

EcoQO 3	**Reduce eutrophication**
Descriptor	Human-induced eutrophication is minimised, especially adverse effects thereof, such as losses in biodiversity, ecosystem degradation, harmful algae blooms and oxygen deficiency in bottom waters
Interim Target*	Decreasing nutrient loads into the Black Sea waters
Interim Target*	Decreasing nutrient concentrations in coastal waters (follow the trends)
Ultimate Target*	Minimize the human-induced eutrophication and mitigateadverse effects at the level that they don't affect the marine ecosystem
Preparatory actions	Identify Good Environmental Status (GES), indicators (PMA/LBS short reporting: 1) TRIX)
	Quantify targets for reduction of loads
	Harmonise methodologies for calculation of loads (LBS short reporting template and ICPDR methodology)
	Update the Black SeaList of Hot Spots based on agreed methodology
	Assess pressures (i.e. diffuse sources, atmospheric deposition etc.)
	Assess state and impacts (phytoplankton, Chl, blooms, etc.)
Additional monitoring and data/information collection	Cooperation with Convention on Long-range Transboundary Air Pollution (EMEP program) on atmospheric deposition dataQA/QC, Denga Index
	Remote sensing (use of satellite technics and images) for chlorophyll a distribution in basin scale

Data Products	Trends, distribution maps, thematic assessments, new indicators

Medium: water column

	Frequencies of observation												
Parameter/country	**Status**	**BG**		**GE**		**RO**		**RU**		**TR**		**UA**	
n- number of stations **f – frequencies**		**n**	**F**	**N**	**F**	**N**	**f**	**n**	**F**	**n**	**F**	**N**	**F**
T°	**M**	**6**	**4**	**5**	**4**	**21**	**4**	**9**	**4**	**82**	**2**	**14**	**4**
Salinity	**M**	**6**	**4**	**5**	**4**	**21**	**4**	**9**	**4**	**82**	**2**	**14**	**4**
O_2 (saturation and dissolved)	**M**	**6**	**4**	**5**	**4**	**21**	**4**	**9**	**4**	**82**	**2**	**14**	**4**
TSS (filter 0.45 µm)	**M**	**6**	**4**	**5**	**4**	**21**	**4**	**9**	**4**	**82**	**2**	**14**	**4**
Transparency Secchi	**M**	**6**	**4**	**5**	**4**	**21**	**4**	**9**	**4**	**71**	**2**	**14**	**4**
P (PO_4)	**M**	**6**	**4**	**5**	**4**	**21**	**4**	**9**	**4**	**71**	**2**	**14**	**4**
P total	**M**	**6**	**4**	**5**	**4**	**21**	**4**	**9**	**4**	**71**	**2**	**14**	**4**
N (NH_4)	**M**	**6**	**4**	**5**	**4**	**21**	**4**	**9**	**4**	**71**	**2**	**14**	**4**
N (NO_3)	**M**	**6**	**4**	**5**	**4**	**21**	**4**	**9**	**4**	**71**	**2**	**14**	**4**
N (NO_2)	**M**	**6**	**4**	**5**	**4**	**21**	**4**	**9**	**4**	**71**	**2**	**14**	**4**
N, Total	**M**	**6**	**4**	**5**	**4**	**21**	**4**	**9**	**4**	**71**	**2**	**14**	**4**
Si (SiO_4)	**M**	**6**	**4**	**5**	**4**	**21**	**4**	**9**	**4**	**71**	**2**	**14**	**4**
Cl a	**M**												
pH	**op (site specific)**												
BOD_5	**op (site specific)**												

EcoQO 4	**Ensure Good Water Quality for Human Health, Recreational Use and Aquatic Biota**
EcoQO 4a	*Reduce pollutants originating from land based sources, includingatmospheric emissions*
Descriptor	Concentrations of contaminants are at levels not giving rise to pollution

	effects
	Contaminants in fish and other seafood for human consumption do not exceed levels established by regionally agreed values or other relevant standards
	Properties and quantities of marine litter do not cause harm to the coastal and marine
Interim Target	Decreasing trend of pollutant content in discharges and emissions from all land-based sources and activities, reduction of marine litter originated from touristic activity (this stated as an interim target)
	1) discharge and concentration of contaminants are reduced to the level which doesn't affect the quality of water and sediments
	2) Ensure that the level of contaminants in tissue (fish and seafood) does not affect human health
	3) Impacts of litter on marine life are controlled to the maximum extent practible
Ultimate Target	Concentration of contaminants is kept within acceptable limit and does not increase
	Ensure that the level of contaminants in tissue (fish and seafood) does not affect human health
	Marine litter is reduced
	Common indicators: trends in the amount of litter in the water column incl. microplastics, floating litter and deposited on the sea-floor
	Trends in the amount of litter ingested by or entangling marine organisms focusing on selected mammals, marine birds, fish
Preparatory actions	Compile information on doze-effects and safety limits of biota contamination (both for marine organisms and for human health)
	Quantify targets
	Harmonise river monitoring programs, calculation of loads, standards for discharges (e.g. bacteriological pollution from sewage)
	Update the List of Hot Spots based on agreed methodology
	Agree on species to be studied for biota contamination
	Agree on methodologies for Marine Litter (ML) monitoring
	Screen for new pollutants

Revisit the List of BlackSea specific / priority pollutants

Map diffuse sources (i.e. for pesticides etc.)

Cooperate with Convention (EMEP program) on atmospheric deposition data

Additional monitoring and data

Biota contamination

Industrial and municipal point sources

Marine Litter

Diffuse sources

EIA information (especially for large-scale projects with transboundary impact, brief information on their purpose and findings)

Indicators, trends etc. (to be specified)

Medium: water, sediment

Parameter	**Status**	**BG[1]**		**GE**		**RO**		**RU**		**TR**		**UA**	
		N	**F**	**n**	**F**	**N**	**f**	**n**	**F**	**N**	**f**	**n**	**f**
Oil Pollution													
Petroleum Hydrocarbons	**M**	**6**	**4**	**5**	**4**	**28**	**2**	**9**	**4**	**71**	**2**	**14**	**4**
Oil slicks	**Op**												
Heavy Metals													
		5	**1**	**5**	**1**	**28**	**2**	**5**	**1**	**71**	**2**	**14**	**1**
Cd	**M**												
	M	**5**	**1**	**5**	**1**	**28**	**2**	**5**	**1**	**71**	**2**	**14**	**1**
Cu													
Hg	**M**	**5**	**1**	**5**	**1**	**21**	**1**	**5**	**1**	**71**	**2**	**1**	**1**

[1] BG has only 1 station for sediment and 5 stations for water

Parameter	Status	BG[1]		GE		RO		RU		TR		UA	
	M	5	1	5	1	28	2	5	1	71	2	14	1
Pb													
Fe	op												
Zn	op												
Cr	Op					28	2						
Ni						28	2						
Mn	op												
Co	op												
Lindane (organochlorine pesticides)	op					28	2						
Phenols volatile	op												
Phenol chlorinated	op												
Detergents	op												
PAHs	op					28	2						
^{137}Cs	op												
^{90}Sr	op												
Marine litter (specific)	To be developed												
Noise level (specific)	To be developed												
Others	To be developed												

Bathing Water Quality

Parameter	Status	BG	GE	RO	RU	TR	UA
Total Coliforms	M						

Fecal Coliforms	**M**	
Fecal Streptococci	**M**	
Visual Observations	**M**	
Number of samples		
% of samples that DO NOT comply with sanitary-chemical norms		
% of samples that DO NOT comply with microbiological norms		

EcoQO 4b	***Reduce pollutants originating from shipping activities andoffshore installations***
Descriptor	Concentrations of contaminants are at levels not giving rise to pollution effects
Interim Target	Control of illegal discharges from ships
Ultimate Target	Reduce ship-generated waste discharge at sea by introducing incentives for delivery of PRFs in the Black Sea region
Preparatory actions	Cooperation with relevant organizations on usage of satellite images of illegal discharges
Additional monitoring and data/information collection	Traffic (maps)
	Offshore installations, cables, pipelines and wind energy fields (maps)
	Accidents at offshore installations
	Pollution in port areas and along shipping routes
	Transportation and cargoes operation with HNS (location and types)
	Others to be specified by the ESAS AG
Data Products	Maps, trends, data-bases, images, reports etc. (to be specified)

Parameter[2]	Status	BG	GE	RO	RU	TR	UA
Accidental spills	**M**						
Illegal discharges (oil and others)	**M**						
Number, amounts and locations of accidental and illegal pollution / spills	**M**						
Actual load of PRFs (garbage, sewage and oil)	**M**						

[2] This table reflects the indicators from "Short ESAS annual reporting format" presented in Annex 4 to the BSIMAP

Annex 2

Relevant data-bases for possible future harmonizationwith BSIS

Eionet	Partnership network of the European Environment Agency (EEA)
EmodNET	European Marine Observation and Data Network (Project of EC DG MARE)
GEOSS	Global Earth Observation System of Systems
GMES	Global Monitoring for Environment and Security
GOOS	Global Ocean Observing System (Black Sea)
IMO GISIS	Global Shipping Information System of International Maritime Organization (IMO)
INSPIRE (SDI)	European Spatial Data Infrastructure for sharing of environmental spatial information
IODE	International Oceanographic Data and Information Exchange
ReportNet	Comprehensive and shared Eurooean data and information management system which supports MSFD 2008/56/EC
SEADATANET	Pan-European standardized system for managing the data sets collected by the oceanographic fleets and the automatic observation systems
THETIS EU	Information and monitoring system to support implementation of the PRFs and S-Directive of EU
UNEP WCMC	World Conservation Monitoring Centre - biodiversity information and assessment centre of the United Nations Environment Programme
WISE	Comprehensive and shared European data and information management system which supports WFD 2000/16/EC

The other relevant databases should be inventoried and linked to BSIS as appropriate.

Annex 4

BSIMAP Reporting format

INDICATORS
For annual reporting to Black Sea Commission

The tables below reflect the indicators for annual reporting to the Black Sea Commission:

1. Elaborated and agreed by the members of the all six Advisory Groups of the Black Sea Commission during their regular AGs meetings in 2015;
2. Adopted by BSC during 31st BSC Regular Meeting on 8th October, 2015;
3. Amended by AGs members during their regular AGs meetings in 2016;
4. Adopted by BSC during 32nd BSC Regular Meeting on 13th October, 2016.

The data is based on existing AG annual reporting formats, and also takes into account the new environmental challenges and legislation, as well as approaches introduced by relevant global and regional organizations (i.e. provisions of EU MSFD; GFCM; ACCOBAMS etc.).

PMA Regional Reporting Indicators/Tools

Agreed Indicators	Explanation	Comments
Trix	TRIX = [log (Chl × D%O_2 × Nmin × Ptot.) + k] / m *	K=1.5 and m=1.2 are constant use particularly for Northern Adriatic. For Black Sea could be necessarily to calculate another.
Oxygen Saturation level at critical depth	1) in bottom layer in coastal waters (up to 50m depth) in late summer times 2) for deep water column sigma-T equals to 15,4-15,5 in late summer times	
Inorganic N, P, Si in the surface layer	Maximum concentrations in surface layer end of winter-spring	
$N_{inorganic}$ /$P_{inorganic}$	**Inorganic N** per **Inorganic P** in surface layer	
$N_{inorganic}$/Si	**Inorganic N** per **Si** in surface layer	
BEAST (Black Sea Euthrofication Assessment Tool)	**Core set indicators grouped as causes - inorganic nitrogen, inorganic phosphorus (phosphates), direct effects - chlorophyll a , indirect effects - bottom**	To be defined by each country according to its reference values – within B2B each country had an expert who worked for BSC

	oxygen (where available), Secchi.	
Water transparency, where relevant		

* Chl: concentration of Chlorophyll – a, µg/L
$D\%O_2$: absolute deviation of oxygen saturation of 100% (in any direction)
Nmin : concentration of mineral nitrogen (nitrite + nitrate + ammonium) it is very important to specify u.m. (µg/L? – as in the original formula)
Total P : concentration of total phosphorus, u.m. (µg/L? – as in the original formula)

** Pegaso indicator for affected areas will be checked

LBS Regional Reporting Indicators

- Amount of Total discharge (point sources)
- Amount of Untreated discharges (point sources)
- Amount of insufficiently treated discharge (point sources)
- Number and amount(volume) of Accidents that impacted Black Sea (if any)
- Rivers

Parameters/Status, BS State	**BG**	**GE**	**RO**	**RU**	**TR**	**UA**
Annual Flow km^3/year						
TP Tonnes/year						
TN Tonnes/year						
Inorganic N (will be calculated) Tonnes/year						
Inorganic P discharge Tonnes/year						
Trace Metal (common ones will be selected*) Tonnes/year						
TSS Tonnes/year						
TPH Tonnes/year						
BOD5 Tonnes/year						

* copper is the only common trace metal reported by all 6 countries

CBD Regional Reporting indicators

Parameters/Status, BS State	**BG**	**GE**	**RO**	**RU**	**TR**	**UA**
Phytoplankton biomass (seasonal trends for the last 3 years)						
Phytoplankton abundance (seasonal trends for the last 3 years)						
Max concentration of blooming species						
Diatoms/Dinofflagelates biomass ratio (only for spring)						
H-Shannon 95 (biomass)						
Chl a (seasonal trends for the last 3 years)						

Mesozooplankton biomass (for 3 years)						
Biomass of *Noctiluca* (%)						
Mesozooplankton H-Shannon (biomass, abundance)						
Jellatinous macrozooplankton biomass and abundance						
Macrophytobenthos (EEIc *)						
Macrozoobenthos (M-AMBI*)						
Number of new introduced non-indigenous species (for each 6 years)						
Marine protected areas (in number and in % every 5 years)						

Some notes to table (Annex 1. CBD Regional Reporting indicators):

1. Reporting period for each country of CBD AG is 1 January-31 December of previous year before the date of reporting;
2. Only pelagic organisms need to inform seasonal data (spring, summer, autumn, winter);
3. Each year should be necessary to give the trend for some parameters (phyto- and zooplankton biomass, chlorophyll-a concentration, meso- and macrozooplankton seasonal biomass);
4. Maximal concentration (add the "abundance" and "biomass") of blooming species;
5. Excluded biomass data for calculation of mesozooplankton H-Shannon Index.

FOMLR Regional Reporting indicators

(have to be submitted annually before August, 01)

N	Parameters	BG*	GE*	RO*	TU*	UA*	RU*
1	TOTAL CATCH:						
	- Total landing	x	x	x	x	x	
	- Total landing per species	x	x	x	x	x	
	- Discards	x		x			
2	FISHING EFFORT:						
	- Fishing fleet by size: < 6 m, 6-12 m, 12-18 m, 18-24 m, > 24 m	x	x	x	x	x	
	- Fishing fleet by gears	x	x	x	x	x	
	- GT x Day	x	x	x			
	- kW x Day	x	x	x			
	- Number of fishing gears per type	x	x	x		x	
3	STOCK ASSESSMENT:						
	- Total biomass	x	x	x		x	
	- Spawning biomass	x	x	x		x	
4	RECRUITMENT	x	x	x		x	
5	FISHING MORTALITY	x	x	x		x	
6	By-CATCHES:						
	- Vulnerable species (sturgeons etc.)	x		x		x	
	- Cetaceans	x	x	x		x	

7	Catches per unit of effort (CPUE) on surveys	x	x	x		x	
8	MARICULTURE:						
	- Total production	x	x	x	x	x	
	- Total production per species	x	x	x	x	x	
	- Number of mariculture enterprises	x	x	x	x	x	
	- Restocking activities	x	x	x	x	x	
9	FISHING FREE ZONES						
	- Number and area (km^2)	x	x	x		x	
	- Area for temporary restriction (prohibition)	x	x	x	x	x	
10	NUMBER AND NAME OF STOCKS BELOW BIOLOGICAL SAFETY LIMITS (BSL)	x		x	x	x	
11	NUMBER OF BOTTELNOSE DOLPHINS IN CAPTIVITY (?)						
12	ADDITIONALLY:						
	- Fishing ground						
	- Legal framework						
	- Management measures						
	- National fisheries programs						
	- Employment in fishery						
	- Fish consumption						
	- Import/export of fish						
	- Number of landing ports						

** - Availability of the parameters, provisionally*

ICZM Regional Reporting indicators

ICZM Legislation		
ICZM Competent authorities		
ICZM mechanism and approach		
Maps, definition and description of coastal zone		

Parameters / BS State			
1.	**Population and geography**		**Administrative organization and population**
1.1.	Administrative organization of coastal zone, no.		Administrative organization of coastal zone, no.
1.1.1.	*a) total no. of cities*		*a) total no. of cities*
1.1.2.	*b) no. of cities over 100 000 inhabitants*		*b) no. of cities over 100 000 inhabitants*
1.1.3.	*c) no. of cities over 1000 000 inhabitants*		*c) no. of cities over 1000 000 inhabitants*
1.1.4.	*d) total no. of rural settlements*		*d) total no. of rural settlements**
1.2.	Total inland area of reported territory, km2		Number of population, thousands person
1.3.	Number of population, thousands		Population density in coastal regions,

	person		inhabitant/km2
1.4.	Population density in coastal regions, inhabitant/km2		Urbanization ratio, % (# of urban population, # of rural population)
1.5.	Urbanization ratio, %		**Geography**
1.6.	Total land use, ha		1.2.Total inland area of reported territory, km2 1.6.Total land use, ha
1.6.1.	*a) agriculture areas*		*agriculture areas* 9.1. Total area of agricultural lands, thousand ha
1.6.2.	*b) forest and other forest vegetation lands*		*b) forest and other forest vegetation lands*
1.6.3.	*c) waters and ponds*		*c) waters and ponds*
1.6.4.	*d) wetlands*		*d) wetlands*
1.6.5.	*e) urban area*		*e) urban area*
9.	Agriculture		
9.1.	Total area of agricultural lands, thousand ha		
9.2.	Area of irrigated lands / drainage, thousand ha		
			5. Coastal erosion
			5.1. Stretch of coast of vulnerable areas subject to erosion, %
			4. Biodiversity
			4.1. Number and square of protected areas (land and aquatic parts)
			3.Water and waste water
			3.1. Population connected to public water supply system
			3.2. Amount of water supplied
			3.3.Population connected to public sewage network system (PSNS), %
			3.4.Discharge of sewage waters (incl. untreated), (from LBS AG reporting)
			6.Economy
			6.1.Regional Gross Domestic Product (GDP), thousand Euro
			6.1.2.Sectoral distribution of production, %
			Agriculture
			Industry
			Transport
			Tourism
			Commerce etc.
2.	Energy		**2.Energy**
2.1.	Energy production, MW		2.1.Energy production, MW
2.2.	Energy consumption, MW		2.1.Energy consumption, MW
2.3.	Number, capacity and type of Power Stations		2.3.Number, capacity and type of Power Stations
			10.Industry

3.	Water and waste water		10.1.Number of enterprises (please specify types)
3.1.	Population connected to public sewage network system (PSNS), %		10.2.Total production of enterprises, Euro
3.2.	Discharge of sewage waters (incl. untreated), (from LBS AG reporting)		**11.Transport**
4.	Biodiversity		11.1.Density of public road network, km2
4.1.	Number and square of protected areas (land and aquatic parts)		11.2.Number of airports
5.	Coastal erosion		11.3.Length of rail ways, km
5.1.	Stretch of coast of vulnerable areas subject to erosion, %		11.4.Number of ports (from ESAS AG reporting)
6.	Economy		11.5.Port cargo turnover (from ESAS AG reporting)
6.1.	Regional Gross Domestic Product (GDP), thousand Euro		11.6.Number of oil terminals (from ESAS AG reporting)
6.2.	Sectoral distribution of production, %		11.6.Actual cargo turnover of oil terminals (from ESAS AG reporting)
6.2.1.	*Agriculture*		
6.2.2.	*Industry*		
6.2.3.	*Transport*		
6.2.4.	*Tourism*		
6.2.5.	*Commerce etc.*		
7.	Tourism		**7.Tourism**
7.1.	Touristic accommodation capacities, places		7.1.Touristic accommodation capacities, places
7.2.	Number of tourist arrivals		7.2.Number of tourist arrivals
8.	Solid Waste Management		**8.Solid Waste Management**
8.1.	Industrial waste produced, tones/year		8.1.Industrial waste produced, tones/year
8.2.	Industrial waste stored, tones/year		8.1.Industrial waste stored, tones/year
8.3.	Municipal wastes produced, tones/year		8.3.Municipal wastes produced, tones/year
8.4.	Municipal wastes stored, tones/year		8.4.Municipal wastes stored, tones/year
8.5.	Number of landfills and amount of waste, mln tones		8.5.Number of landfills and amount of waste, mln tones
10.	Industry		
10.1	Number of enterprises (please specify types)		
10.2	Total production of enterprises, Euro		
11.	Transport		
11.1.	Density of public road network, km2		
11.2	Number of airports		
11.3	Length of rail ways, km		
11.4	Number of ports (from ESAS AG		

	reporting)		
11.5	Port traffic capacity (from ESAS AG reporting)		
11.6	Number of oil terminals (from ESAS AG reporting)		
11.7	Actual capacity of oil terminals (from ESAS AG reporting)		
12.	Climate		**Climate**
12.1.	Precipitations, mm per year (min-max)		Precipitations, mm per year (min-max)
12.2.	Sea level rise*, mm		Sea level rise*, mm
12.3.	Number of floods		Number of floods
12.4	Average temperature (to be further elaborated)		Average temperature (to be further elaborated)

* further information may be found on following websites
http://pegasoproject.eu/images/stories/Factsheets/PEGASO_Sea%20level%20rise.pdf
and http://www.psmsl.org/data/obtaining/=

ESAS Regional Reporting indicators*

Parameter/BS State	**BG**	**GE**	**RO**	**RU**	**TR**	**UA**
Ship calls, inter alia:						
Tankers						
Chemicals						
Gas (LNG)						
Others						
Cargo turnover, mln tonnes, inter alia:						
General Cargo						
Oil, mln tonnes						
Chemical goods						
Gas, mln tonnes						
Others						
Number of ports						
Capacity of terminals, inter alia:						
Oil terminals, mln tonnes per year						
Gas terminals, mln tonnes per year						

Port reception facilities (PRF), actual load						
For oily waters, cub. M						
For garbage, cub. M						
For sewage, cub. M						
Number, volume, location and causes of accidental pollution/spills						
Number, volume and location of illegal pollution/spills						
Number of penalties imposed for marine pollution from ships						
Dumping of dredged materials, volume						

* issues covered by MARPOL Annex 6 and BWM indicators to be elaborated and added in the nearest future

Annex 5

List of the Black Sea Guidelines and Manuals

Available – finalized

1. Guidelines for Quality Control of Biological Data – Phytoplankton
2. Manual for Phytoplankton Sampling and Analysis in the Black Sea
3. Manual for Quantitative Sampling and Sample Treatment of Marine Soft-Bottom Macrozoobenthos - to be updated (2005)

Under finalization

1. Zooplankton manual (Meiozooplankton and microzooplankton)
2. Sampling and Sample Processing of the Invasive Ctenophores Mnemiopsis leidyi and Beroeovata in the Black Sea
3. Quality Assurance and Quality Control of Chemical Oceanographic Data Collections
4. Guidelines on Environmental Impact Assessment (EIA) in transnboundary context
5. Guidelines on identification of the Black Sea Hot Spots
6. Manual on Meiobenthos
7. Manual for Macroalgae
8. Manual techniques for nutrient and phytoplankton pigment analysis in seawater reference methods for marine pollution studies (draft, 2003)
9. Guidelines of the Establishment of Marine Protected Areas (MPAs) in the Black Sea (to be approved by the BSC, 2008)
10. Mesozooplankton
11. Marine litter Guidelines
12. ICZM Guideline
13. Conservation Plan for cetaceans
14. Guidelines for ML, nutrients (TR)
15. Environmental Indicators and indicators based reports for Europe

Draft Guidelines prepared in the framework of Projects

1. Black Sea Regional Guidelines on use of oil spill dispersants
2. Post Oil Spill Monitoring Guidelines
3. Draft Guidelines on oiled wildlife Impact assessment for the Black Sea region

Draft Guidelines which need to be elaborated:

1. River discharges manual (ICPDR, LBS from UNEP/MAP)

Annex 6

List of Black Sea Priority Substances

Following the decisions of the 5 Contacting Parties to Bucharest Convention (BG,GE,RO, TR,UA) to implement approaches and standards of the European Commission established by the 2013/39/EC, which amends Directive 2008/105/EC of the European Parliament and of the Council of 16 December 2008 on environmental quality standards in the field of water policy, tese standards are recommended to apply for the common use in the Black Sea. If a Contracting Party has reservations against proposed list, it is invited to identify a desired list in a separate column.

LIST OF PRIORITY SUBSTANCES IN THE FIELD OF WATER POLICY

Number	CAS number [1]	EU number [2]	Name of priority substance [3]	Identified as priority hazardous substance
(1)	15972-60-8	240-110-8	Alachlor	
(2)	120-12-7	204-371-1	Anthracene	X
(3)	1912-24-9	217-617-8	Atrazine	
(4)	71-43-2	200-753-7	Benzene	
(5)	not applicable	not applicable	Brominated diphenylethers	X [4]
(6)	7440-43-9	231-152-8	Cadmium and its compounds	X
(7)	85535-84-8	287-476-5	Chloroalkanes, C_{10-13}	X
(8)	470-90-6	207-432-0	Chlorfenvinphos	
(9)	2921-88-2	220-864-4	Chlorpyrifos (Chlorpyrifos-ethyl)	
(10)	107-06-2	203-458-1	1,2-dichloroethane	
(11)	75-09-2	200-838-9	Dichloromethane	
(12)	117-81-7	204-211-0	Di(2-ethylhexyl)phthalate (DEHP)	X
(13)	330-54-1	206-354-4	Diuron	
(14)	115-29-7	204-079-4	Endosulfan	X
(15)	206-44-0	205-912-4	Fluoranthene	

(16)	118-74-1	204-273-9	Hexachlorobenzene	X
(17)	87-68-3	201-765-5	Hexachlorobutadiene	X
(18)	608-73-1	210-168-9	Hexachlorocyclohexane	X
(19)	34123-59-6	251-835-4	Isoproturon	
(20)	7439-92-1	231-100-4	Lead and its compounds	
(21)	7439-97-6	231-106-7	Mercury and its compounds	X
(22)	91-20-3	202-049-5	Naphthalene	
(23)	7440-02-0	231-111-4	Nickel and its compounds	
(24)	not applicable	not applicable	Nonylphenols	X [5]
(25)	not applicable	not applicable	Octylphenols [6]	
(26)	608-93-5	210-172-0	Pentachlorobenzene	X
(27)	87-86-5	201-778-6	Pentachlorophenol	
(28)	not applicable	not applicable	Polyaromatic hydrocarbons (PAH) [7]	X
(29)	122-34-9	204-535-2	Simazine	
(30)	not applicable	not applicable	Tributyltin compounds	X [8]
(31)	12002-48-1	234-413-4	Trichlorobenzenes	
(32)	67-66-3	200-663-8	Trichloromethane (chloroform)	
(33)	1582-09-8	216-428-8	Trifluralin	X
(34)	115-32-2	204-082-0	Dicofol	X
(35)	1763-23-1	217-179-8	Perfluorooctane sulfonic acid and its derivatives (PFOS)	X
(36)	124495-18-7	not applicable	Quinoxyfen	X
(37)	not applicable	not applicable	Dioxins and dioxin-like compounds	X [9]
(38)	74070-46-5	277-704-1	Aclonifen	
(39)	42576-02-3	255-894-7	Bifenox	
(40)	28159-98-0	248-872-3	Cybutryne	
(41)	52315-07-8	257-842-9	Cypermethrin [10]	
(42)	62-73-7	200-547-7	Dichlorvos	

(43)	not applicable	not applicable	Hexabromocyclododecanes (HBCDD)	X [11]
(44)	76-44-8/ 1024-57-3	200-962-3/ 213-831-0	Heptachlor and heptachlor epoxide	X
(45)	886-50-0	212-950-5	Terbutryn	

[1] CAS: Chemical Abstracts Service.

[2] EU-number: European Inventory of Existing Commercial Substances (EINECS) or European List of Notified Chemical Substances (ELINCS).

[3] Where groups of substances have been selected, unless explicitly noted, typical individual representatives are defined in the context of the setting of environmental quality standards.

[4] Only Tetra, Penta, Hexa and Heptabromodiphenylether (CAS -numbers *40088-47-9*, 32534-81-9, 36483-60-0, 68928-80-3, respectively).

[5] Nonylphenol (CAS 25154-52-3, EU 246-672-0) including isomers 4-nonylphenol (CAS 104-40-5, EU 203-199-4) and 4-nonylphenol (branched) (CAS 84852-15-3, EU 284-325-5).

[6] Octylphenol (CAS 1806-26-4, EU 217-302-5) including isomer 4-(1,1',3,3'-tetramethylbutyl)-phenol (CAS 140-66-9, EU 205-426-2).

[7] Including benzo(a)pyrene (CAS 50-32-8, EU 200-028-5), benzo(b)fluoranthene (CAS 205-99-2, EU 205-911-9), benzo(g,h,i)perylene (CAS 191-24-2, EU 205-883-8), benzo(k)fluoranthene (CAS 207-08-9, EU 205-916-6), indeno(1,2,3-cd)pyrene (CAS 193-39-5, EU 205-893-2) and excluding anthracene, fluoranthene and naphthalene, which are listed separately.

[8] Including tributyltin-cation (CAS 36643-28-4).

[9] This refers to the following compounds:

7 polychlorinated dibenzo-p-dioxins (PCDDs): 2,3,7,8-T4CDD (CAS 1746-01-6), 1,2,3,7,8-P5CDD (CAS 40321-76-4), 1,2,3,4,7,8-H6CDD (CAS 39227-28-6), 1,2,3,6,7,8-H6CDD (CAS 57653-85-7), 1,2,3,7,8,9-H6CDD (CAS 19408-74-3), 1,2,3,4,6,7,8-H7CDD (CAS 35822-46-9), 1,2,3,4,6,7,8,9-O8CDD (CAS 3268-87-9)

10 polychlorinated dibenzofurans (PCDFs): 2,3,7,8-T4CDF (CAS 51207-31-9), 1,2,3,7,8-P5CDF (CAS 57117-41-6), 2,3,4,7,8-P5CDF (CAS 57117-31-4), 1,2,3,4,7,8-H6CDF (CAS 70648-26-9), 1,2,3,6,7,8-H6CDF (CAS 57117-44-9), 1,2,3,7,8,9-H6CDF (CAS 72918-21-9), 2,3,4,6,7,8-H6CDF (CAS 60851-34-5), 1,2,3,4,6,7,8-H7CDF (CAS 67562-39-4), 1,2,3,4,7,8,9-H7CDF (CAS 55673-89-7), 1,2,3,4,6,7,8,9-O8CDF (CAS 39001-02-0)

12 dioxin-like polychlorinated biphenyls (PCB-DL): 3,3',4,4'-T4CB (PCB 77, CAS 32598-13-3), 3,3',4',5-T4CB (PCB 81, CAS 70362-50-4), 2,3,3',4,4'-P5CB (PCB 105, CAS 32598-14-4), 2,3,4,4',5-P5CB (PCB 114, CAS 74472-37-0), 2,3',4,4',5-P5CB (PCB 118, CAS 31508-00-6), 2,3',4,4',5'-P5CB (PCB 123, CAS 65510-44-3), 3,3',4,4',5-P5CB (PCB 126, CAS 57465-28-8), 2,3,3',4,4',5-H6CB (PCB 156, CAS 38380-08-4), 2,3,3',4,4',5'-H6CB (PCB 157, CAS 69782-90-7), 2,3',4,4',5,5'-H6CB (PCB 167, CAS 52663-72-6), 3,3',4,4',5,5'-H6CB (PCB 169, CAS 32774-16-6), 2,3,3',4,4',5,5'-H7CB (PCB 189, CAS 39635-31-9).

[10] CAS 52315-07-8 refers to an isomer mixture of cypermethrin, alpha-cypermethrin (CAS 67375-30-8), beta-cypermethrin (CAS 65731-84-2), theta-cypermethrin (CAS 71697-59-1) and zeta-cypermethrin (52315-07-8).
[11] This refers to 1,3,5,7,9,11-Hexabromocyclododecane (CAS 25637-99-4), 1,2,5,6,9,10-Hexabromocyclododecane (CAS 3194-55-6), α-Hexabromocyclododecane (CAS 134237-50-6), β-Hexabromocyclododecane (CAS 134237-51-7) and γ- Hexabromocyclododecane (CAS 134237-52-8).'.

ENVIRONMENTAL QUALITY STANDARDS FOR PRIORITY SUBSTANCES AND CERTAIN OTHER POLLUTANTS

PART A: ENVIRONMENTAL QUALITY STANDARDS (EQS)

AA : annual average.

MAC : maximum allowable concentration.

Unit : [µg/l] for columns (4) to (7)
[µg/kg wet weight] for column (8)

(1)	(2)	(3)	(4)	(5)	(6)
No	**Name of substance**	**CAS number [1]**	**AA-EQS [2] Other surface waters**	**MAC-EQS [4] Other surface waters**	**EQS Biota [12]**
(1)	Alachlor	15972-60-8	0,3	0,7	
(2)	Anthracene	120-12-7	0,1	0,1	
(3)	Atrazine	1912-24-9	0,6	2,0	
(4)	Benzene	71-43-2	8	50	
(5)	Brominated diphenylethers [5]	32534-81-9		0,014	0,0085
(6)	Cadmium and its compounds (depending on water hardness classes) [6]	7440-43-9	0,2	≤ 0,45 (Class 1) 0,45 (Class 2) 0,6 (Class 3) 0,9 (Class 4) 1,5 (Class 5)	
(6a)	Carbon-tetrachloride [7]	56-23-5	12	not applicable	
(7)	C10-13 Chloroalkanes [8]	85535-84-8	0,4	1,4	

(8)	Chlorfenvinphos	470-90-6	0,1	0,3	
(9)	Chlorpyrifos (Chlorpyrifos-ethyl)	2921-88-2	0,03	0,1	
(9a)	Cyclodiene pesticides: Aldrin [7] Dieldrin [7] Endrin [7] Isodrin [7]	309-00-2 60-57-1 72-20-8 465-73-6	Σ = 0,005	not applicable	
(9b)	DDT total [7], [9]	not applicable	0,025	not applicable	
	para-para-DDT [7]	50-29-3	0,01	not applicable	
(10)	1,2-Dichloroethane	107-06-2	10	not applicable	
(11)	Dichloromethane	75-09-2	20	not applicable	
(12)	Di(2-ethylhexyl)-phthalate (DEHP)	117-81-7	1,3	not applicable	
(13)	Diuron	330-54-1	0,2	1,8	
(14)	Endosulfan	115-29-7	0,0005	0,004	
(15)	Fluoranthene	206-44-0	0,0063	0,12	30
(16)	Hexachloro-benzene	118-74-1		0,05	10
(17)	Hexachloro-butadiene	87-68-3		0,6	55
(18)	Hexachloro-cyclohexane	608-73-1	0,002	0,02	
(19)	Isoproturon	34123-59-6	0,3	1,0	
(20)	Lead and its compounds	7439-92-1	1,3	14	
(21)	Mercury and its compounds	7439-97-6		0,07	20
(22)	Naphthalene	91-20-3	2	130	
(23)	Nickel and its compounds	7440-02-0	8,6	34	
(24)	Nonylphenols (4-Nonylphenol)	84852-15-3	0,3	2,0	
(25)	Octylphenols	140-66-9	0,01	not applicable	

	((4-(1,1′,3,3′-tetramethylbutyl)-phenol))				
(26)	Pentachloro-benzene	608-93-5	0,0007	not applicable	
(27)	Pentachloro-phenol	87-86-5	0,4	1	
(28)	Polyaromatic hydrocarbons (PAH) [11]	not applicable	not applicable	not applicable	
	Benzo(a)pyrene	50-32-8	$1,7 \times 10^{-4}$	0,027	5
	Benzo(b)fluor-anthene	205-99-2	see footnote 11	0,017	see footnote 11
	Benzo(k)fluor-anthene	207-08-9	see footnote 11	0,017	see footnote 11
	Benzo(g,h,i)-perylene	191-24-2	see footnote 11	$8,2 \times 10^{-4}$	see footnote 11
	Indeno(1,2,3-cd)-pyrene	193-39-5	see footnote 11	not applicable	see footnote 11
(29)	Simazine	122-34-9	1	4	
(29a)	Tetrachloro-ethylene [7]	127-18-4	10	not applicable	
(29b)	Trichloro-ethylene [7]	79-01-6	10	not applicable	
(30)	Tributyltin compounds (Tributyltin-cation)	36643-28-4	0,0002	0,0015	
(31)	Trichloro-benzenes	12002-48-1	0,4	not applicable	
(32)	Trichloro-methane	67-66-3	2,5	not applicable	
(33)	Trifluralin	1582-09-8	0,03	not applicable	
(34)	Dicofol	115-32-2	$3,2 \times 10^{-5}$	not applicable [10]	33
(35)	Perfluorooctane sulfonic acid and its derivatives (PFOS)	1763-23-1	$1,3 \times 10^{-4}$	7,2	9,1
(36)	Quinoxyfen	124495-18-7	0,015	0,54	

(37)	Dioxins and dioxin-like compounds	See footnote 10 in Annex X to Directive 2000/60/EC		not applicable	Sum of PCDD+PCDF+PCB-DL 0,0065 µg.kg^{-1} TEQ ([14])
(38)	Aclonifen	74070-46-5	0,012	0,012	
(39)	Bifenox	42576-02-3	0,0012	0,004	
(40)	Cybutryne	28159-98-0	0,0025	0,016	
(41)	Cypermethrin	52315-07-8	8×10^{-6}	6×10^{-5}	
(42)	Dichlorvos	62-73-7	6×10^{-5}	7×10^{-5}	
(43)	Hexabromocyclododecane (HBCDD)	See footnote 12 in Annex X to Directive 2000/60/EC	0,0008	0,05	167
(44)	Heptachlor and heptachlor epoxide	76-44-8/1024-57-3	1×10^{-8}	3×10^{-5}	$6{,}7 \times 10^{-3}$
(45)	Terbutryn	886-50-0	0,0065	0,034	

([1]) CAS: Chemical Abstracts Service.

([2]) This parameter is the EQS expressed as an annual average value (AA-EQS). Unless otherwise specified, it applies to the total concentration of all isomers.

([3]) Inland surface waters encompass rivers and lakes and related artificial or heavily modified water bodies.

([4]) This parameter is the EQS expressed as a maximum allowable concentration (MAC-EQS). Where the MAC-EQS are marked as "not applicable", the AA-EQS values are considered protective against short-term pollution peaks in continuous discharges since they are significantly lower than the values derived on the basis of acute toxicity.

([5]) For the group of priority substances covered by brominated diphenylethers (No 5), the EQS refers to the sum of the concentrations of congener numbers 28, 47, 99, 100, 153 and 154.

([6]) For Cadmium and its compounds (No 6) the EQS values vary depending on the hardness of the water as specified in five class categories (Class 1: < 40 mg $CaCO_3$/l, Class 2: 40 to < 50 mg $CaCO_3$/l, Class 3: 50 to < 100 mg $CaCO_3$/l, Class 4: 100 to < 200 mg $CaCO_3$/l and Class 5: ≥ 200 mg $CaCO_3$/l).

([7]) This substance is not a priority substance but one of the other pollutants for which the EQS are identical to those laid down in the legislation that applied prior to 13 January 2009.

([8]) No indicative parameter is provided for this group of substances. The indicative parameter(s) must be defined through the analytical method.

([9]) DDT total comprises the sum of the isomers 1,1,1-trichloro-2,2 bis (p-chlorophenyl) ethane (CAS number 50-29-3; EU number 200-024-3); 1,1,1-trichloro-2 (o-chlorophenyl)-2-(p-chlorophenyl) ethane (CAS number 789-02-6; EU Number 212-332-5); 1,1-dichloro-2,2 bis (p-

chlorophenyl) ethylene (CAS number 72-55-9; EU Number 200-784-6); and 1,1-dichloro-2,2 bis (p-chlorophenyl) ethane (CAS number 72-54-8; EU Number 200-783-0).

(10) There is insufficient information available to set a MAC-EQS for these substances.

(11) For the group of priority substances of polyaromatic hydrocarbons (PAH) (No 28), the biota EQS and corresponding AA-EQS in water refer to the concentration of benzo(a)pyrene, on the toxicity of which they are based. Benzo(a)pyrene can be considered as a marker for the other PAHs, hence only benzo(a)pyrene needs to be monitored for comparison with the biota EQS or the corresponding AA-EQS in water.

(12) Unless otherwise indicated, the biota EQS relate to fish. An alternative biota taxon, or another matrix, may be monitored instead, as long as the EQS applied provides an equivalent level of protection. For substances numbered 15 (Fluoranthene) and 28 (PAHs), the biota EQS refers to crustaceans and molluscs. For the purpose of assessing chemical status, monitoring of Fluoranthene and PAHs in fish is not appropriate. For substance number 37 (Dioxins and dioxin-like compounds), the biota EQS relates to fish, crustaceans and molluscs, in line with section 5.3 of the Annex to Commission Regulation (EU) No 1259/2011 of 2 December 2011 amending Regulation (EC) No 1881/2006 as regards maximum levels for dioxins, dioxin-like PCBs and non-dioxin-like PCBs in foodstuffs (OJ L 320, 3.12.2011, p. 18).

(13) These EQS refer to bioavailable concentrations of the substances.

(14) PCDD: polychlorinated dibenzo-p-dioxins; PCDF: polychlorinated dibenzofurans; PCB-DL: dioxin-like polychlorinated biphenyls; TEQ: toxic equivalents according to the World Health Organisation 2005 Toxic Equivalence Factors.'

PART B: APPLICATION OF THE EQS SET OUT IN PART A

1.Columns 4 of the table: For any given surface water body, applying the AA-EQS means that, for each representative monitoring point within the water body, the arithmetic mean of the concentrations measured at different times during the year does not exceed the standard.

The calculation of the arithmetic mean, the analytical method used and, where there is no appropriate analytical method meeting the minimum performance criteria, the method of applying an EQS must be in accordance with implementing acts adopting technical specifications for chemical monitoring and quality of analytical results, in accordance with Directive 2000/60/EC.

2. Columns 6 of the table: For any given surface water body, applying the MAC-EQS means that the measured concentration at any representative monitoring point within the water body does not exceed the standard.

However, in accordance with section 1.3.4 of Annex V to Directive 2000/60/EC, Member States may introduce statistical methods, such as a percentile calculation, to ensure an acceptable level of confidence and precision for determining compliance with the MAC-EQS. If they do so, such statistical methods shall comply with detailed rules laid down in accordance with the regulatory procedure referred to in Article 9(2) of this Directive.

3. With the exception of cadmium, lead, mercury and nickel (hereinafter 'metals') the EQS set up in this Annex are expressed as total concentrations in the whole water sample. In the case of metals the EQS refers to the dissolved concentration, i.e. the dissolved phase of a water sample obtained by filtration through a 0,45 μm filter or any equivalent pre-treatment.

The Contracting parties may, when assessing the monitoring results against the EQS, take into account:

(a) natural background concentrations for metals and their compounds, if they prevent compliance with the EQS value; and

(b) hardness, pH or other water quality parameters that affect the bioavailability of metals.

---

(1) CAS: Chemical Abstracts Service.
(2) This parameter is the EQS expressed as an annual average value (AA-EQS). Unless otherwise specified, it applies to the total concentration of all isomers.
(3) Inland surface waters encompass rivers and lakes and related artificial or heavily modified water bodies.
(4) This parameter is the EQS expressed as a maximum allowable concentration (MAC-EQS). Where the MAC-EQS are marked as 'not applicable', the AA-EQS values are considered protective against short-term pollution peaks in continuous discharges since they are significantly lower than the values derived on the basis of acute toxicity.
(5) For the group of priority substances covered by brominated diphenylethers (No 5) listed in Decision No 2455/2001/EC, an EQS is established only for congener numbers 28, 47, 99, 100, 153 and 154.
(6) For cadmium and its compounds (No 6) the EQS values vary depending on the hardness of the water as specified in five class categories (Class 1: < 40 mg CaCO3/l, Class 2: 40 to < 50 mg CaCO3/l, Class 3: 50 to < 100 mg CaCO3/l, Class 4: 100 to < 200 mg CaCO3/l and Class 5: ≥ 200 mg CaCO3/l).
(7) This substance is not a priority substance but one of the other pollutants for which the EQS are identical to those laid down in the legislation that applied prior to 13 January 2009.
(8) DDT total comprises the sum of the isomers 1,1,1-trichloro-2,2 bis (p-chlorophenyl) ethane (CAS number 50-29-3; EU number 200-024-3); 1,1,1-trichloro-2 (o-chlorophenyl)-2-(p-chlorophenyl) ethane (CAS number 789-02-6; EU number 212-332-5); 1,1-dichloro-2,2 bis (p-chlorophenyl) ethylene (CAS number 72-55-9; EU number 200-784-6); and 1,1-dichloro-2,2 bis (p-chlorophenyl) ethane (CAS number 72-54-8; EU number 200-783-0).
(9) If Member States do not apply EQS for biota they shall introduce stricter EQS for water in order to achieve the same level of protection as the EQS for biota set out in Article 3(2) of this Directive. They shall notify the Commission and other Member States, through the Committee referred to in Article 21 of Directive 2000/60/EC, of the reasons and basis for using this approach, the alternative EQS for water established, including the data and the methodology by which the alternative EQS were derived, and the categories of surface water to which they would apply.
(10) For the group of priority substances of polyaromatic hydrocarbons (PAH) (No 28), each individual EQS is applicable, i.e. the EQS for Benzo(a)pyrene, the EQS for the sum of Benzo(b)fluoranthene and Benzo(k)fluoranthene and the EQS for the sum of Benzo(g,h,i)perylene and Indeno(1,2,3-cd)pyrene must be met.

ANNEX 8

SUBSTANCES SUBJECT TO REVIEW FOR POSSIBLE IDENTIFICATION AS PRIORITY SUBSTANCES OR PRIORITY HAZARDOUS SUBSTANCES

CAS number	**EU number**	**Name of substance**
1066-51-9	—	AMPA
25057-89-0	246-585-8	Bentazon
80-05-7		Bisphenol-A
115-32-2	204-082-0	Dicofol
60-00-4	200-449-4	EDTA
57-12-5		Free cyanide
1071-83-6	213-997-4	Glyphosate
7085-19-0	230-386-8	Mecoprop (MCPP)
81-15-2	201-329-4	Musk xylene
1763-23-1		Perfluorooctane sulphonic acid (PFOS)
124495-18-7	—	Quinoxyfen (5,7-dichloro-4-(p-fluorophenoxy)quinoline) Dioxins PCB

Annex 9

Priority thematic studies to be implemented in 2017-2022. Subjects for international and national research projects

1) **SoE Report**

2) **Development of GES and environmental targets for EQS 1-4/Definition and descriptors of GES for Black Sea basin**

EQS 1 Preserve commercial marine living resources:

a) coordinated stock assessments of fish species of Annex 4 Black Sea Biodiversity and landscape Conservation Protocol;

b) biological safety limits of fish species of Annex 4 Black Sea Biodiversity and landscape Conservation Protocol.

EQS 2Conservation of Black Sea Biodiversity and Habitats:

a) species conservation status and update of Annex 2 of Black Sea Biodiversity and landscape Conservation Protocol;

b) habitat mapping and classification.

EQS 3 Reduce eutrophication:

a) discharges of nutrients to the Black Sea;

b) BEAST tool application in the Black Sea;

c) zoning ;

d) diffuse sources assessment, atmospheric deposition;

e) remote sensing.

EQS 4 Ensure Good Water Quality for Human Health, Recreational Use and Aquatic Biota:

a) 5 years socio-economic analysis of drivers-pressures;

b) Assessment of Marine Litter from ships

c) Comparative analysis and assessment of emissions from ships and LBS of pollutionGuidance/Road Map on application of principles of Ballast Water Convention (IMO) in the Black Sea;

d) Port reception facilities (PRFs) and management of waste under MARPOL Annex VI.

Annex 10

BSC – ICPDR Reporting format

Given the fact that the Black Sea Commission and ICPDR have common goals and objectives with regard to prevention of pollution loads and conservation of riverine and marine environment and ecosystems and wish to collaborate in facilitation of these common goals and objectives within their respective mandates and governing rules and regulations, aimed at assessing the current status of monitoring and assessment of Danube loads on the Black Sea ecosystems, reinforcing the cooperation and developing appropriate mechanisms for the implementation of the MoU between the BSC and the ICPDR on common strategic goals (2001), the Commissions agreed to regularly exchange the necessary data flows.

Data from the Danube related to loads of Pollution is being presented each year based upon the TNMN water quality yearbook. This load assessment is generated based upon data collected at the Reni Water Quality station by Romania. Romania has made an assessment of the loads at Reni compared to a combination of loads from the three arms of the Danube and found that the loads at Reni are representative of the Danube loads. The official data presented to the Black Sea on the loads is the data from this station and is presented below:

Parameter	TNMN load	Unit
Suspended solids		x 1000 t/a
N-NH4		x 1000 t/a
N-NO3		x 1000 t/a
N-NO2		x 1000 t/a
N-inorg		x 1000 t/a
N-total		x 1000 t/a
P-PO4		x 1000 t/a
P-total		x 1000 t/a
BOD5		x 1000 t/a
Cd		t/a
Cu		t/a
Pb		t/a

Hg		t/a
Si		x 1000 t/a

heavy metals in a dissolved form

The annual summary report from the BSC showing data in selected stations from Bulgaria, Romania and Ukraine (with short explanation on the significance of selected indicators) reflecting the effect of the Danube loads on the marine ecosystem will be based on the set of indicators, using the data provided by PMA, LBS and CBD AGs, as provided below:

Provisional List of indicators to demonstrate changes over time

in Black Sea Ecosystems due to nutrient inputs

1. Nutrient concentrations in the water column - [N, P, Si (total/available)]
2. Secchi depth
3. Total suspended solids
4. Chlorophyll-a
5. Macro-algae (indicative species) presence/absence
6. Oxygen content
7. Phytoplankton (key groups in numbers, biomass, and average volume of cells)
8. Zooplankton –(biomass and percentage of key groups, number of Noctiluca)
9. Macro - zoobenthos (biomass, percentage of key groups)
10. Pollutants – inorganic and organic

A short written report assessing the Black Sea ecosystem together with selected data on the above indicators will be presented to the ICPDR by the end of the respective year. This report would be the official Black Sea report that would involve synthesis and interpretation of the data from the Advisory Groups of the Black Sea Commission on the ecosystem status of the Black Sea.