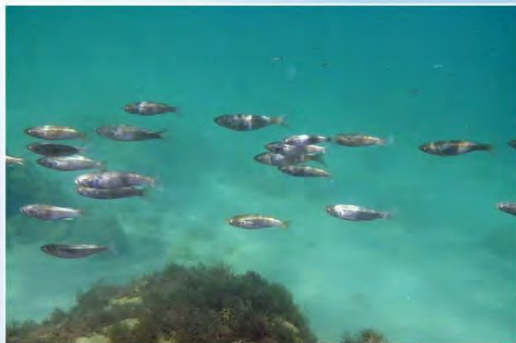
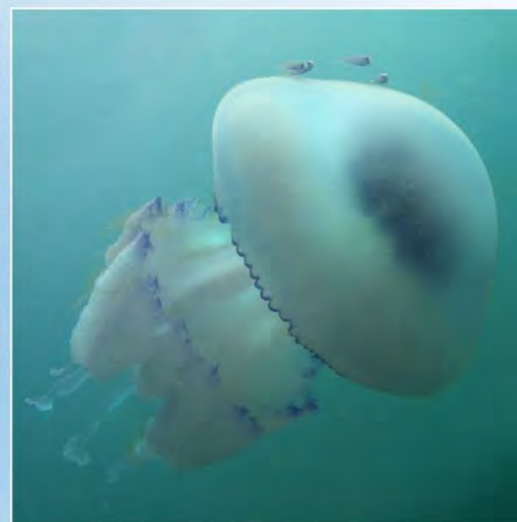


POSITION PAPER



BLACK SEA MONITORING COMPLIANCE to MARINE STRATEGY FRAMEWORK DIRECTIVE (MSFD)



POSITION PAPER

**BLACK SEA MONITORING COMPLIENCE
to MARINE STRATEGY FRAMEWORK DIRECTIVE (MSFD)**

This position paper is based on the activities of the MISIS project (MSFD Guiding Improvements in the Black Sea Integrated Monitoring System) with the financial support from the EC DG Env. Programme 'Preparatory action – Environmental monitoring of the Black Sea Basin and a common European framework programme for development of the Black Sea region/Black Sea and Mediterranean 2011'

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Years and years running, scientists, fisherman or simply people talked about the tragic decline suffered by the Black Sea ecosystem beginning in 70s.

What has happened?

“Inadequate management of marine resources and pollution destroyed the ecosystem”

Being the most isolated from the World Ocean, with a coastal zone densely populated, the Black Sea is extremely vulnerable to pressures from land based human activities. Due to the large European rivers (Danube, Dnieper and Don) which flow into this sea, its health is equally dependent on inputs from the states surrounding the basin and located in the catchment area. A few decades of inadequate management of marine resources and pollution destroyed the ecosystem and dramatically reduced its productivity and biological resources.

The most significant process degrading the Black Sea has been the massive over-fertilization of the coastal area by compounds of nitrogen and phosphorus, largely as a result of agricultural, domestic and industrial inputs. This over-fertilization produces a phenomenon called eutrophication, which has changed the structure of the Black Sea ecosystem. The recent history showed, more than elsewhere, a tight interdependence between fish stock status, eutrophication, pollution, climate change, habitat change and opportunistic settlers. Actually, all experts agree that the main historical feature can be described as “collapse of pelagic fisheries at the end of the 1980s, due to combined effect of successive overexploitation of the fish stock, increasing pollution and eutropication, population outburst of alien planktivore species, strong decadal-scale climate fluctuations”.

Other problems of major general concern were: the discharge of insufficiently treated sewage, oil pollution, other toxic substances such as pesticides and heavy metals, radioactive substances, and an unusual form of pollution via ballast waters from ships - the introduction of exotic species etc.

What was done?

As soon as these changes were observed, the first reaction came from the scientific community, which increased efforts to monitor the quality of the marine environment and of its components (water, sediments and biota), at all system levels: chemical (including level of pollution and radioactivity), physical, microbiological, biological and marine living resources. Monitoring

the health of the marine environment is essential because it helps us to measure and understand man-made changes against the background of natural variability. It also allows an assessment of whether measures taken to protect the environment are effective.

Over the years, a number of national institutional frameworks and regulatory measures were developed to monitor, control and reduce pressures on the Black Sea marine environment and related impacts. Most Black Sea countries conducted national monitoring programs which generally focused on the same priority parameters.

In the early 1990s, some signs of Black Sea ecosystem rehabilitation were observed, the first operational target for adaptive management of eutrophication appeared to have been partially achieved, though not by human interventions but by economic failures. Later on, in parallel with the WFD-process in Europe, some of the BS countries started developing management systems to enable further recovery of the BS and its sustainable use. These systems rely on sound and up-to-date scientific information.

The Convention on the Protection of the Black Sea against Pollution 1992 (<http://www.blacksea-commission.org>), its Protocols and the regional BS Strategic Action Plan (1996, amended in 2009) provided the legal basis for cooperation of the BS countries in protecting the Black Sea. Under these new circumstances, and with the support of governments, committed non-governmental entities, the United Nations Organizations, the European Union, NATO, WB, etc., the BS experts have been freely exchanging their data/information and were able to undertake new research where there were missing facts.

“The Bucharest Convention provided the legal basis for cooperation of the BS countries in protecting the Black Sea”

Exiting framework

By reason of the transboundary nature of the marine environment, coastal states realized that only through cooperation and coordination of their activities and developing and implementing common marine programs could ensure success of the rehabilitation and preservation of the Black Sea ecosystem.

Thus, all six Black Sea countries signed in Bucharest, in April 1992, the Convention on the Protection of the Black Sea against Pollution (the Bucharest Convention), ratified by all six Black Sea countries in early 1994. The signing of Bucharest Convention, followed closely by the first Black Sea Ministerial Declaration (the Odessa Declaration) in 1993, inspired the GEF to support the region in implementing the Odessa Declaration and to formulate the longer-term Black Sea Strategic Action Plan (BS SAP). The 1996 BS SAP was a groundbreaking document for the Black Sea region which established specific targets and timetables for implementing the objectives of the 1992 Bucharest Convention. The 2009 BS SAP has been formulated through careful consideration of inter alia the 1996 SAP, the

2007 BS TDA and the 2007 BS SAP Gap Analysis. It aims to help resolve the transboundary environmental problems of the Black Sea and is a joint effort between the six Black Sea countries.

In implementation of the Convention the Black Sea Commission (BSC) was established, which provided the basis for proper marine monitoring via an integrated monitoring and assessment program for the Black Sea region (BSIMAP).

The collection of data/information under the umbrella of the Bucharest Convention started in 2001. Presently the Black Sea Information System (BSIS) and Black Sea Integrated Monitoring and Assessment Program (BSIMAP) have the purpose to provide reliable and consolidated data for “state of environment” reporting, “impact assessment” of major pollutant sources, “transboundary diagnostic analysis” and Strategic Action Plan implementation reports in view of decision-making needs in the Black Sea region.

Later on a number of international, European and regional legislative documents entered into force. They also require monitoring, controlling and reducing pressures and impacts on the Black Sea environment.

One of them - Water Framework Directive (EC WFD) - establishes a framework for Community action in the field of water policy, which should “contribute to the progressive reduction of emissions of hazardous substances to water” with the ultimate aim “to achieve the elimination of priority hazardous substances (PHS) and contribute to achieving concentrations in the marine environment near background values for naturally occurring substances”. The WFD postulates achieving Good Ecological status of marine coastal environment by 2015.

Another two EC Directives - Birds Directive and Habitat Directive - are related to wildlife and nature conservation, including marine ones.

The Council Directive 2009/147/EC on the conservation of wild birds (Birds Directive) was adopted in November 2009. Replacing the Council Directive 79/409/EEC of 2 April 1979, this new Directive contains the most up to date annexes, adapted on a number of occasions in response to scientific and technical progress and to the successive enlargements of the European Union, including the accession of Bulgaria and Romania. The Directive recognizes that habitat loss and degradation are the most serious threats to the conservation of wild birds. It therefore places great emphasis on the protection of habitats for endangered as well as migratory species, especially through the establishment of a coherent network of Special Protection Areas (SPAs) comprising all the most suitable territories for these species. Since 1994 all SPAs form an integral part of the NATURA 2000 ecological network.

The Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora (Habitats Directive), adopted in 1992, fostered the setting up of a network of Special Areas of Conservation (SACs), which together with the existing SPAs form a network of protected sites across the European Union called NATURA 2000.

Marine Strategy Framework Directive (MSFD)

Three important reports produced by the Black Sea Commission, among them State of the environment of the Black Sea (2001-2006/7), recognized that the restoration of the ecosystem is a long-lasting process that depends on the accomplishment of the conservation, protection and related management measures both at national and regional level. Moreover, this study indicated some gaps in our knowledge due to the lack of sufficiently comprehensive monitoring data.

“The restoration of the ecosystem is a long-lasting process”

For all EU Seas, even though the European Commission appreciated that progress had been made in certain areas, e.g. in reducing nutrient inputs or pollution from hazardous substances, in particular inorganic trace elements (heavy metals), it was also clear that the state of the marine environment had been significantly deteriorating over recent decades (European Commission, 2005) and that the existing policy framework had not delivered the high level of protection of the marine environment that was expected.

After a long development and approval process, the European Commission issued a new Directive establishing a Framework for Community Action in the field of Marine Environmental Policy. On June, 17 2008, the Marine Strategy Framework Directive or MSFD (Directive 2008/56/EC) was adopted aiming to install a strong, integrated EU policy on marine protection in order to achieve a good environmental status of marine ecosystems by the year 2020 at the latest.

Therefore, in conformity with the provisions of this Directive, each Member State is to develop proper marine strategy for its marine waters in accordance with the plan of action. First step consists of an initial assessment of their marine waters, taking into account existing data (Chapter II: Art. 8).

By reference to the initial assessment, the next steps are: 1/ the determination of a set of characteristics for good environmental status (Article 9), 2/ the establishing a comprehensive set of environmental targets and associated indicators for their marine waters so as to guide progress towards achieving good environmental status in the marine environment (Article 10), and 3/ the establishing and implement coordinated monitoring programs for the ongoing assessment of the environmental status of their marine waters (Article 11).

In preparation of these documents the EU-member states have to take into account the qualitative descriptors listed in Annex I, the indicative lists of pressures and impacts set out in Table 2 of Annex III, and of characteristics set out in Annex IV, and the indicative lists of elements set out in Annex III and the list set out in Annex V of the Directive.

Finally, each Member State shall identify the measures which need to be taken in order to achieve or maintain good environmental status (Chapter III, Art.13). Those measures shall be devised both on the basis of the initial assessment as well as by reference to the environmental targets previously established, and taking into consideration the types of measures listed in Annex VI.

INTRODUCTION

MISIS Project

“The overall objective of MISIS is to support efforts to protect and restore the environment quality and sustainability of the Black Sea”



Involving three countries (Bulgaria, Romania and Turkey), “MSFD Guiding Improvements in the Black Sea Integrated Monitoring System” (MISIS) Project is funded by EC as an activity under the EC DG Env. Programme ‘Preparatory action – Environmental monitoring of the Black Sea Basin and a common European framework programme for development of the Black Sea region/Black Sea and Mediterranean 2011’.

The overall objective of MISIS is to support efforts to protect and restore the environment quality and sustainability of the Black Sea. Besides, three additional specific objectives were identified, the most important being imposed by the requirements of the Annex I and III of the MSFD, and it refers to improvement of the ability and quality of the chemical and biological data provided for integrated assessments of the Black Sea state of environment, including pressures and impacts.

A key requirement of MSFD is that Member States work together to implement each stage of the Directive, in a coherent and coordinated way, in order to ensure comparability across Europe. For the Black Sea, coordination between Romania and Bulgaria would not be sufficient to achieve GES. The regional cooperation includes non-Member States where the Bucharest Convention has been the key forum for coordination and harmonization processes. MISIS contributes to the latter, having Turkey as a beneficiary country of the project results and working closely with partner-institutions from Turkey.

Diagnostic Report II

The most important product of the MISIS project is the Diagnostic Report II. It is designed to guide a revision of national monitoring programs and improvements in data reporting and DPSIRR assessments in the MISIS beneficiary countries (Bulgaria, Romania and Turkey) based on the review of:

- National monitoring systems and data/information management tools for assessing data obtained from monitoring activities with particular focus on biological quality/biodiversity components in marine environment monitoring (Ref.: MSFD, Annex I and III);
- Data availability, analysis of the gaps in the initial improvements, including pressures (based on the compliance monitoring of municipal and industrial sources, rivers, atmospheric pollution).

Diagnostic Report II builds on the findings of the Diagnostic Report I (BSC, 2010), and utilizes also the findings of the EC SEAS-ERA Project on laboratory infrastructure, equipment and vessels available contributing to their more efficient use in the Black Sea region.

If the Diagnostic Report I evaluated the suitability of Black Sea data to apply/calculate EEA and BSC indicators, MISIS planned to further develop the EEA/BSC Diagnostic Report, analyzing in further detail the monitoring systems and data availability in Bulgaria, Romania and Turkey taking into consideration the requirements of the MSFD and WFD.

In order to fulfill these objectives, a special Questionnaire (in two parts), covering numerous issues, was translated into the national languages, distributed to a selection of stakeholders (identified based on certain criteria) and the responses were evaluated.

The responses to the two parts of the MISIS questionnaire include information on the policy/legal framework of monitoring, types of implemented monitoring, status of operational (real-time) monitoring, parameters measured, monitoring networks available, data management specifics, progress in water/ecological quality/GES classification systems, research infrastructure/equipment/vessels available, trainings and harmonization process identified, etc.

Eight organizations responded among the 39 stakeholders identified from Bulgaria, 24 stakeholders have responded among the 41 identified from Romania and 23 responded among 89 stakeholders identified from Turkey.

Based on the responses of the questionnaire and utilizing the findings of the EC SEAS-ERA Project on laboratory infrastructure, equipment and vessels available contributing to their more efficient use in the Black Sea region, the Report elaborates on the following topics:

- I. Monitoring (routine and operational)**
- II. Data management, data products, QA/QC, assessments**
- III. Progress in water quality/GES classifications**
- IV. Laboratory Infrastructure, Equipment, Vessels**
- V. Trainings**
- VI. Data availability to comply with the MSFD**

As well as the Diagnostic Report I, for each issue the gaps and missing requirements were identified and each sub-chapter is supplemented with conclusions. The recommendations produced take into consideration the requirements of the MSFD to provide for knowledge-based decision-making and the needs of the stakeholders contacted for strengthening of institutional frameworks, harmonization and capacity building.

The aim of this document is to present the findings of the MISIS Project, for each of the three beneficiary countries, and where possible to outline the progress since the Diagnostic Report I was issued, pointing out the identified gaps and finally formulating conclusions and recommendations.

Monitoring (routine and operational)



No proper management of environment protection is possible without a regular and integrated monitoring and without robust scientific understanding of pressures, state, impact and response of an ecosystem to the measures taken to prevent or mitigate undesirable change. Where there are gaps in monitoring, hence, in data, information and knowledge, there will be always gaps in environmental protection. Fortunately, this understanding in the Black Sea region existed long before, and regular interdisciplinary monitoring of the Sea dates back to the early 1950s (the history in Turkey only is shorter).

Legislation/Policy (national and international instruments)

The sustainability of each monitoring program lies in the acting legal/policy framework of the country implementing it. The Report gives in detail information on the monitoring-related legal and policy documents developed at international, European, regional, and national levels.

National policies of the beneficiary countries are based on the precautionary approach, use of low and non-waste technologies, integrated marine environmental protection with other areas of policy, development of economic incentives for environmentally-friendly industry and agriculture, as well as the polluter pays principle and user fees and application of environmental impact assessment procedures to all sectors. Licensing-monitoring-enforcement-compliance mechanism is well developed in the beneficiary countries. Any water use is subject to authorization in the form of a water management permit and water management license. Consequently the legal basis for compliance monitoring is in place.

“Regular interdisciplinary monitoring of the Sea dates back to the early 1950s”

Bulgaria

The regulations for the organization of monitoring activities in the Bulgarian Black Sea coastal waters have been available since 1998.

Additional regulations were introduced in 2005 and 2006 to have a wider scope and include biological quality elements in compliance to the WFD requirements.

There is a National Plan having a long-term strategic aim for the protection, recovery and sustainable management of biodiversity, but it is not specifically designed to address the biodiversity decline in the Black Sea.

The overall strategy is based on ecosystem approach and requires relevant monitoring. The Plan has been operational since 2000. All conservation measures and necessary actions for species, habitats and landscapes are considered within the Plan and coordinated by the Black Sea Basin Directorate (Ministry of Environment and Water)

Measures for protection of cetaceans, expansion of conservation areas etc. were also integrated in this Plan. The Ministry of Environment and Water has funded 2 Projects (2010-2012) for monitoring of stranded dolphins and currently a new project for cetaceans monitoring is initiated in 2014.

Romania

The Black Sea Water Routine Monitoring System is legally regulated and organized since the early 1980s.

The Integrated Marine Monitoring System was improved considering the WFD provisions, including land-based point sources discharges since 2000.

The National Strategy and Action Plan for the Biological Diversity Conservation and Sustainable Use of living resources in Romania (1996) is being implemented, and was improved in 2010.

There is also a National Plan on protection of marine mammals (2004).

NATURA 2000 and Emerald Site Networks are developed. To date, there is no unitary monitoring system throughout the entire country for natural protected areas. Within the project "Monitoring the Conservation State of Species and Habitats in Romania pursuant to Article 17 of the Habitats Directive" (funded by the Sectorial Operation Programme "Environment", Priority Axis 4), important guidelines have been developed: Synthetic Guidelines for Monitoring the Community Interest Marine Species and Coastal and Marine Habitats in Romania and Monitoring Plan of Marine Species and Habitats.

Turkey

The EU Directives governing environment protection have been considered to a possible extent. Turkey has been harmonizing national policy according to WFD and will fully implement the directive after the RBMPs will be operational in 2015. Monitoring in coastal waters has been going on including most of the biological elements. Starting from 2013 the content of the program was extended to include macro algae too. Coastal water bodies were identified in 2013 and the ongoing monitoring were revised (2014-2016) basing on new information and data analysis.

The Constitution together with various laws, by-laws and international conventions regarding nature conservation makes up the legal framework for the conservation and sustainability of biodiversity in Turkey.

Compliance with regional sea convention (Bucharest) has been achieved since 2004 as an integrated national monitoring program.

Bathing waters are monitored at swimming season by Ministry of Health according to the bathing water quality regulation (2006). Ministry of Environment and Urbanization is responsible of the overall implementation of the regulation.

The Black Sea National Action Plan (NAP) for land based pollutants has been approved in 2003.

Bulgaria

The Bird Monitoring is basically conducted by NGOs recently related to the wind parks activities as alternative energy source.

The European Habitat Directive has been implemented under NATURA2000. A Nationally funded Project for extension of Marine Protected areas resulted in 3 fold increase of the MPA. However, habitats monitoring is poorly regulated in practice.

The EU Common Fishery Policy (CFP) is implemented and EUROSTAT methods in the area of fisheries statistics are used.

In the field of inspection and control, resource and fleet management, the Bulgarian Fisheries and Aquaculture Act of 2001 was amended in 2005 and 2006 to provide the legal basis for granting fishing licenses and for the development of a vessel monitoring system (satellite-based fishing vessel monitoring is already in place).

The main strategic targets (but not environmental) for the Bulgarian fishery have been developed in the National Strategic Plan for Fisheries and Aquaculture for the period 2007-2013.

Romania

National Black Sea Strategic Action Plan has been prepared but is not yet adopted by any national law.

The Common Fisheries Policy (CFP) is implemented and national policies regulate the fishery inspections.

National Strategic Plan (NSP) for Fisheries and Aquaculture in Romania was prepared according art. 15 of Council Regulation (EC) nr.1198/2006 of 27 July 2006 on European Fisheries Fund and Law 192/2001 on fish, fisheries and aquaculture.

Order no 31 for the approval of the Manual (Handbook) of the Modernization and Development of the Integrated Monitoring System of Waters in Romania (SMIAR, 2006) has been an important milestone paving improvements in the Romanian monitoring programs.



Turkey

The river basin protection plans prepared (and some are still under preparation) by TUBITAK for the Ministry of Environment may be considered as further work complementing the NAP (2003) for the Black Sea.

Major gaps are still present in the field of fishery and habitats protection; however, monitoring, control and surveillance are well advanced, as demonstrated for the fishery sector.

The inspection and control of sources of pollution and in fishery are well developed.

List of Black Sea priority substances and specific pollutants is not fully developed. However, a national project is being run for the identification of specific pollutants and determination of EQSs.

Responsible organizations

The list of responsible organizations in the field of monitoring management is long in all the beneficiary countries. This does not mean that all of them are involved by a single uniform inter-departmental and approved monitoring program in a network, which would institutionally frame the integrated monitoring, including distribution of responsibilities and arrangement for data exchange

Bulgaria	Romania	Turkey
IO-BAS is the responsible organization for MSFD and WFD monitoring for protection of the environment in marine water and implementation of MSFD (Ministerial order since 2011). For WFD-related monitoring, IFR occasionally participated together with IO-BAS. The National Institute for Hydrometeorology is responsible for hydro physical parameters, including atmospheric pollution and sea level. The compliance monitoring for various sources of land-based pollution is conducted by the Environmental Agencies of the Ministry of Environment (in Varna and Bourgas). Fisheries research is conducted by 2 Institutions - IFR-Varna, affiliated to the Academy of Agriculture-Ministry of Agriculture and the Institute of Oceanology (IO-BAS, Varna) as a Bulgarian Academy of Science (BAS)-subordinated organization. The monitoring for fish stock assessment, coordinated by the National Agency for Fishery and Aquaculture is in place since 2007 but limited to 2 fish species only.	The responsibility for WFD monitoring is shared between NIMRD and WBA-DL. MSFD monitoring is conducting by NIMRD, presently affiliated to the Ministry of Education. NIMRD and WBA-DL also monitors the Danube River discharges. Compliance monitoring for sources of pollution is also under the Ministry of Environment and Climate Change and is conducted by its Environmental Agencies (EPA). WBA-DL trace waste water discharges of municipal and industrial sources. The GeoEcoMar Institute (Subordinated to Romanian Academy of Science) performs investigations in Romanian waters, marine geology and sedimentology, geo-ecology, bio-chemistry, physics, although it has not involved in a national monitoring program.	Istanbul University was the implementing organization of the Black Sea national monitoring activities during 2004-2011 that was connected with BSIMAP. The University also developed water quality monitoring in the Strait of Istanbul (Bosphorus) and its vicinity during 1996-2006. A slightly modified version of the integrated monitoring program was implemented in 2013 by a Consortium (as winner of the tender). The compliance monitoring for point sources of pollution is under the responsibility of Ministry of Environment. Many other organizations are responsible for the compliance monitoring (land-based sources of pollution), such as General Directorate of Environmental Management, Provincial Directorates, General Directorate of State Hydraulic Works, and Universities are involved. The fisheries-related monitoring-control-surveillance is fully under the responsibility of the Ministry of Food, Agriculture and Livestock.

Bulgaria	Romania	Turkey
Bathing water monitoring is under the responsibility of the Ministry of Health, and is implemented by its regional inspections.	Bathing water monitoring is under the Ministry of Health, conducted by its regional inspections in Constanta and Tulcea. Fisheries monitoring was previously under the Ministry of Agriculture, since 2013 is under the Ministry of Environment and Climate Change, under contract with NIMRD. The National Meteorological Administration has a lot of information stored in the National Fund of Meteorological Data. The Border Police General Inspectorate and Coast Guard conducts an operative surveillance system allowing early detection and identification of illegal fishing and discharges from ships or illegal traffic activities at the Black Sea.	Coast Guard Command performs inspections for enforcement having the tools to apply fines and reporting criminal cases to the prosecuting authorities. Some private companies (e.g. MEKE89 and SESMEKE90, KOSEQ91, MARE92) are involved in environment protection, and others deal with oil spill accidents in the Black Sea, participating in clean-up operations. Monitoring at bathing waters is under the responsibility of Ministry of Health and the full implementation of the related regulation (2006) is under the responsibility of Ministry of Environment and Urbanization.

Type of monitoring, geographical scope, stations, parameters

The following data summarize the information included in Tables13-57 and presented on Figures 3-21 from the Diagnostic report II.

Bulgaria	Romania	Turkey
Type of monitoring - environmental routine and compliance monitoring - eco-toxicological monitoring - surveillance monitoring/ bottom surveys and hydro acoustic - trawl surveys - operational (real-time) monitoring	Type of monitoring - compliance monitoring - surveillance monitoring (for - - bathing water quality) - socio-economic - environmental routine monitoring - operational (real-time) monitoring	Type of monitoring - integrated water and ecological quality monitoring - compliance monitoring - surveillance monitoring including hot spots monitoring - pelagic and demersal fishery monitoring (done on project basis)

Bulgaria

Geographical scope

- Bulgarian area (coastal, EEZ and open sea)
- western Black Sea
- Bourgas Bay, Cape Maslen and Sozopol

Number of stations

- monitoring network – 39 (IFR)
- IBER-BAS – 4-10 stations
- IO-BAS:
 - 69 stations physics, chemistry biology (some are research monitoring of IO-BAS)
 - 9 stations (under MSFD, 2012)
 - 20 stations under WFD (2007-ongoing)-
 - 23 stations for macrophytobenthos
 - 79 stations for fish (2012)
 - 94 stations for Bathing water quality monitoring (Regional Hygienic inspections, Ministry of health)

Parameters

- physical-chemical indicators, biological indicators, fishery investigations
- physical-chemical indicators, biological indicators - IBER-BAS – 6-9 parameters (local Burgas Bay)
- physical-chemical indicators, biological indicators, fishery investigations, marine mammals – 29 (IO-BAS)

Romania

Geographical scope

- Romanian coastal and transitional waters
- Continental shelf
- NW Black Sea
- Danube

Number of stations

- monitoring network – 45 stations (NIMRD)
- macroalgae sampling – 12 (NIMRD)
- WBA-DL – 34 stations under WFD
- monitoring network - 45 stations (GeoEcoMar)
- bathing water quality monitoring – 48 (County Department of Public Health Constanta)
- Fishery monitoring – 40 (NIMRD)
- Litter on coast monitoring – 5 (NGO Mare Nostrum)

Parameters

- general physical-chemical indicators, eutrophication, contaminants, biological indicators, cetacean by-catch and stranding – 20 (NIMRD)
- ballast water and sediment damping investigations
- bathing waters parameters - 16 (County Department of Public Health Constanta and Tulcea)
- radionuclides parameters (Environmental Protection Agency)
- Danube River waste water discharges – 15 (SC Aquaserv SA)

Turkey

Geographical scope

- Turkish coastal (from river mouths up to 5 nm) Black Sea waters
- Central Region (Sinop) and Eastern region

Number of stations

- Istanbul University – 71
- CFRI (Trabzon) - 1-8
- Sinop University – 1-8
- Karadeniz Technical University – 2
- IMS METU (Erdemli) – total 4922 (since 1985)

IMST (Izmir) – 76 (from previous research projects)

Parameters

- IMST (Izmir) – physical, chemical parameters
- CFRI (Trabzon) – physical-chemical indicators, biological indicators – 2-8
- Istanbul University – physical-chemical indicators, biological quality parameters (phytoplankton, benthic invertebrates), trace metals in sediments - 34
- Sinop University – physical-chemical indicator, biological indicators, fishery and dolphins - 10-20
- Karadeniz Technical University – physical-chemical indicators, biological indicators – 6
- IMS METU (Erdemli) – biodiversity, eutrophication, contamination, commercial fish, hydrological data - 70

Data Collection Framework for the Common Fisheries Policy

Bulgaria

The first Bulgarian National data collection program developed in relation with the Council Regulation (EC) No 199/2008 covered the period of 2009-2012.

The overall coordination of the implementation of the Program was ensured by the National Agency of Fisheries and Aquaculture (NAFA43) of the Ministry of Agriculture and Food of the Republic of Bulgaria.

Two scientific institutes have implemented the Program – IO-BAS and IFR-Varna. Coordination with Romania has been ensured.

The National program aimed to give an overview of the current state of the Bulgarian fisheries sector (fisheries, aquaculture and processing industry) and a part of that the recreational and commercial fishing in inland waters.

Both IFR and IO-BAS have historical data collected either via research activities or externally funded Projects

Romania

Fisheries monitoring was previously under the Ministry of Agriculture, since 2013 it will be under the Ministry of Environment and Climate Change

The National Agency for Fisheries and Aquaculture (NAFA) is designated for the implementation of the National Data Collection Program 2011-2013.

NIMRD Constanta is the scientific responsible for the Data Collection Program and is involved in the following activities:

- Data collection and processing on economic variables, on metier related variables, on recreational fisheries, on stock related variables and on transversal variables;
- Research surveys at sea;
- Evaluation of effects of the fishing sector on the marine ecosystem;
- Recommendations for fishery management.

Turkey

The fisheries-related monitoring-control-surveillance is fully under the responsibility of the Ministry of Food, Agriculture and Livestock (former Ministry of Agriculture and Rural Affairs, MARA).

Coast Guard Command performs inspections for enforcement having the tools to apply fines and reporting criminal cases to the prosecuting authorities.



Monitoring related to the Habitats and Birds Directives

Bulgaria

Along the Bulgarian coast systematic surveys for habitat mapping are still lacking, some preliminary studies have been performed under the BBI MATRA Project 2006 and within a national NATURA 2000 Project. Within these projects there were conducted studies and prepared inventory of Black Sea marine habitat subtypes in Bulgarian waters. They proved the boundaries of the currently existing sites under NATURE 2000 should be redefined to encompass the habitat types of Annex I and Annex II species occurring in the Bulgarian Black Sea.

The Common Bird Monitoring (CBM) scheme in Bulgaria started in 2004, following closely the methodology of Breeding Bird Survey in UK. It is the first nationwide program for assessing the condition of biodiversity in main habitat types across the country, including the BS coast. The scheme is based on a broad network of volunteers organized by the Bulgarian Society for the Protection of Birds (BSPB), the partner of BirdLife International in Bulgaria.

Romania

To date, there is no unitary monitoring system throughout the entire country for natural protected areas. However, starting with 2011, the Bucharest Biology Institute - the Romanian Academy, in partnership with the MECC - Biodiversity Directorate initiated the implementation of the national project *"Monitoring the Conservation State of Species and Habitats in Romania pursuant to Article 17 of the Habitats Directive"*, until 2015.

The competent authority for environment protection in Romania is the **National Environment Protection Agency (NEPA)**, which is a regulatory authority from the environment protection point of view (art. 8 of GEO no. 195/2005 on environment protection, approved as amended by Law no. 265/2006, as subsequently amended and supplemented.

In compliance with the provisions of Emergency ordinance 57/2007, seven protected natural areas were established, one of them ROSPA0076 Black Sea was directly designated as a protected Special SPA regarding the establishment of bird protection.

In November 2012 the Romanian Ornithological Society together with environmentalists from Bulgaria, Turkey and Greece, members of the BirdLife International, launched the project "Birds of the Black Sea".

This project aims to provide information on key areas for birds of southern Black Sea with relevance to many countries and species at regional and EU.

Turkey

The **Nature Conservation Center** deals with on-coast observations of flora and fauna (freshwater fish, mammals, birds, dragonflies, butterflies and herpetofauna). Their projects are under 4 national programs: Forest, Species Conservation, Climate Change and Systematic Conservation Planning.

Gaps:

- Many institutions, weak integration and lack of systematic approach characterize the institutional framework of monitoring in BG, RO and TR. Often inadequate fragmentation of responsibilities is in place, which hampers mobilization of resources. There are also areas of overlap, duplication of efforts and even conflict.
- Coordination between the organizations involved in monitoring/data collection in the beneficiary countries is in general poor, especially between those engaged in tracing pressures and those who study the state of the environment, not to mention the socio-economy and fishery statistics collections.
- Capacity building activities are poorly attended in the beneficiary countries, due to lack of funding almost no regular trainings take place.
- A major problem in the beneficiary countries is the constant change in governmental structures and redistribution of activities. Ministries not only change their names, but also their responsibilities and affiliated/subordinated bodies. Besides, staff changes, experienced professionals leave because working in governmental organizations is not an attractive option in view of the numerous responsibilities, stress and low salaries associated.
- Financing of routine monitoring is poor.

Operational (real-time) monitoring.

The aim of operational oceanography is to provide in “real time” reliable information and forecasts for the marine environment in order to support human activities at sea, exploitation of resources and the protection of the environment. The development of forecasting based on operational oceanography tools improves the understanding of the processes contributing to the actual state of the ocean in the short-term.



The last 30 years have seen an increasing number of actions dedicated to assess the ocean state or observe how climate change has unfolded in the ocean. International programs such as the GOOS and ARGO have been instrumental in spreading and making available the observational tools of operational oceanography on a global scale, and also at regional. Despite the Black Sea regional initiatives such as Black Sea GOOS and occasional uses of ARGO and other drifters in the Black Sea, as well as participation in the MyOcean program, there is still much ground to be covered through regional cooperation.



While all the three countries developed remote sensing techniques, there is no evidence the BS operational monitoring is part of the state-funded mandatory monitoring. This kind of monitoring is still developed through various projects only.

Bulgaria	Romania	Turkey
EMSA (European Maritime Security Agency) provides satellite images to BG. From the BS region only Bulgaria participates in EuroArgo, through a project funded by the Bulgarian National Science Fund of the Bulgarian Ministry of Education, Youth and Science. IO-BAS is involved in a number of Projects funded by NATO, and EC (My Ocean, PERSEUS, RIFI etc) advancing the technological and research capacity for operational monitoring.	The project IMAGIS states the following objectives: developing a complex information system, operational, dedicated application techniques GIS and remote sensing to support implementation of the ICZM process in Romania, reaching sustainability indicators, namely the sustainable use of coastal resources and the conservation /reconstruction Romanian coastal ecosystem. The Space Agency develops also satellite-based monitoring of land-based sources of pollution and accidental oil spills in the Black Sea.	Turkey develops actively satellite monitoring in support of environment protection and human safety. The Istanbul Technical University - Center for Satellite Communications and Remote Sensing is the first center established in Turkey to conduct application oriented projects in remote sensing and satellite communications technologies and serve national/international civil /military companies in their research, development, and educational activities. The IMS/METU (Erdemli) HRPT (high-resolution-picture transmission) station is an authorized station and was receiving SeaWiFS data since September 1997 till 2004.

Satellite based vessel monitoring system (VMS) in support of fisheries control is developed in all beneficiary countries, as well as vessel traffic monitoring system (VTMS) based on AIS (Automatic Identification System) is in place.

Procedures of QA/QC in monitoring

(Field and Laboratory works).

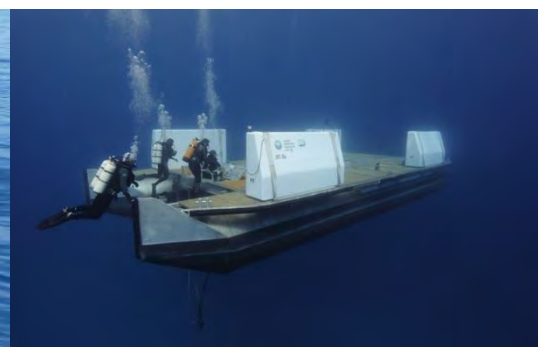
In all beneficiary countries, the regulators have defined quality control and quality assurance requirements for laboratories involved in marine monitoring programs. QA/QC in monitoring is well advanced in BG and RO; however, a few common guidelines are used in BG and RO in conducting monitoring. In TR the issue is either not paid due attention in all Institutions or the stakeholders insufficiently reflected their efforts.

Gaps:

- Proficiency tests in the field of chemistry are carried out on a relatively regular basis in all beneficiary countries, but not the case for the biological monitoring. In the latter, insufficient number of inter-calibration exercises have been organized by different projects only (e.g. phytoplankton and zooplankton) at the national and regional level.
- No Guidelines in the field of Marine Litter monitoring is mentioned, but the JRC Guideline was used in the MISIS Joint Cruise.

Marine research infrastructure

A research strategy for the Black Sea exists. Complex and modern research infrastructure is among the needs specified, though there are certain developments in the beneficiary countries. Marine research infrastructure, in general terms, include research vessels, submersibles and , research aircraft, moored instruments, tide gauges, Lagrangian observations facilities, coastal and marine observatories, marine laboratories, satellite oceanography centers, modeling and data centers, and ships of opportunity.





The inventory of equipment available in the Laboratories of the beneficiary countries shows a very high level of capacity to manage the various samplings and analyses required by the MSFD. Laboratory equipment can be shared with visiting scientists upon written request to the administrations of the institutes.

In the beneficiary countries there are in total 26 vessels of different classes (from coastal to global), which have the capacity to carry out monitoring. 9 of them are vessels over 35 m long and they can be used

for regional investigations. These vessels are available for rent and the terms of rental are specified for some of them. The fees per day vary a lot depending on the class of the vessel and services provided. However, the stakeholders contacted have poorly communicated on the issue of rent, for only 3 vessels the prices per day were specified: Akademik, IO-BAS, BG (6000 Euro); Prof. Valkanov, IFR-Varna, BG (1000 Euro) and Mare Nigrum, GeoEcoMar, RO (6800 Euro). Large exchangeable vessel equipment includes multibeam and side scan sonars, echosounders, underwater video cameras, and CTDs. In total 22 units of these have been identified in BG, RO and TR. There are also two underwater vehicles (one remotely operated in Erdemli, TR and the second one is manned submersible, belonging to IO-BAS, BG). The most new R/V is the R/V TUBITAK Marmara; 41.2 m length which is legally and technically capable of conducting research and sampling/measuring surveys in coastal, territorial and international waters and operational since July 2013.

Gaps:

Most of the vessels are old and most of the equipment was not specified in terms of sharing. At regional level and among the beneficiary countries there is insufficient practice and rules of conduct in terms of equipment sharing and exchange. There is no sufficient technologically advanced equipment for operational monitoring especially for biochemical parameters.

Capacity building

Many stakeholders mentioned the lack of regular trainings, though there are some nice exceptions in RO and TR. Widely distributed practice is the organization of trainings in the frames of different projects. Fortunately, during the last decade many projects have taken place in the Black Sea region, and correspondingly almost annually trainings have been carried out. The shortcomings in such a practice is that the trainings are for the partner-organizations in the projects (who have the budget to attend the trainings) and in very rare cases specialists from other organizations are invited or have the opportunity to join.

MISIS stakeholders identified the priority needs in training, regarding:

- Monitoring (i.e. Modern methods in monitoring, chemical oceanography, pollutants, biological elements (especially for macroalgae and angiosperms), Ecotoxicological monitoring, measuring toxicity of phytoplankton species, etc.
- Data processing and assessments
- Habitat mapping
- Communication of research, development of public awareness (e.g. for decision-makers, for beach users preparation of communications on water quality, etc.)



Regular assessments; data products; data management; reporting of data.

Regular assessments

Plenty of assessments are released internally within the projects, but in their majority they are accessible for the partner organizations only. The reason is rooted in the historical legacy of confidentiality in the field of environmental issues, and also in the habitual attitude of the scientific community to not disclose data which are not published in peer reviewed journals.

The generation of data in itself by various monitoring activities is not sufficient to provide for knowledge-based environment protection; there must be an associated data management, generation of data products, and communication infrastructure. This infrastructure needs to provide data/information freely and within certain time limit to both researchers and policy makers.

Data products

Often absent, even less are those which are publicly communicated, the questionnaire revealed that the stakeholders in the region and outside of the region poorly knew what data bases were available.

Data bases

The poor provision of data products is related to the lack of well-developed data bases. Of course, the scientific community provides in different reports statistical analysis and indicators, but the statistical processing is not embedded in the available data bases and the indicators are mostly not automatically derived. Graphs and maps of distribution of various parameters are also produced by manual input of data into the used software, such as Ocean Data View, ArcGIS, etc. Consequently, most of the data remain poorly managed, statistically unprocessed, insufficiently visualized and not included in the calculation of indicators. Much improvement is required in the field. Development of models (except hydrophysical) is poorly attended either.

“The scientific community provides in different reports statistical analysis and indicators”

The main reason would be in the lack of coordination arrangements between the various Ministries, their institutes, laboratories and agencies, including data/information/assessments exchange procedures, which are not covered by the existing environmental regulations in the beneficiary countries. This prevents the creation of an effective Data Management System at the national level, which may provide to decision makers reliable indicators of the environment status.

Bulgaria

- IO-BAS is the National Oceanographic Data Center (NODC).
- The Institutions do not have unified data bases, which would store all the various types of data collected.
- The data bases of different projects contain as accessible meta data only, not the data themselves (SeaDataNet is an exception).
- There is no national data base which would provide for free access to BS historical and recent environmental data.
- A special database is created within the VMS (fishery vessel monitoring system) to serve the operators an inspector, allowing faster identification of the fishing vessel.

Romania

- There are data bases in the different Institutions; however, they are with restricted access.
- Permanent databases were created on different themes: chemistry, geology, biology (IMAGIS, GIS, and SCADA), dolphins, litter coast watch, bathing waters, and radioactivity, noise (BD DHM).
- Many Institutions own proper data bases: NIMRD GeoEcoMar, WBA-DL, Constanta Maritime Hydrographic Directorate, NGO Mare Nostrum, etc.
- NIMRD is the National Oceanographic Data Center (NODC).
- The databases are for internal use only or with limited access (with password or upon request based on access flags).

Turkey

- All marine science institutes have their own data bases and IMS METU sustains a national data base (not updated recently).
- Ministry of Environment has its own database storing all monitoring data.
- All the organizations collecting marine related data have to annually submit data to the National Oceanographic Data center which is Office of Navigation, Hydrography and Oceanography (ONHO), which in practice is not taking place very effiently. ONHO is a partner to the SeaDataNet II Project as the subcontractor of the TUBITAK Marmara Research Center.
- Under the Project DeKoS (the TR national project for the WFD and MSFD transposition/initial implementation, funded by the Ministry of Environment and coordinated by TUBITAK-MRC) a special data base with mapping and reporting tools (ARC Marine Structure) is under preparation. It will include all data collected from monitoring projects, other projects carried out for the Ministry of Environment and Urbanization and data submitted by different institutes (already published).



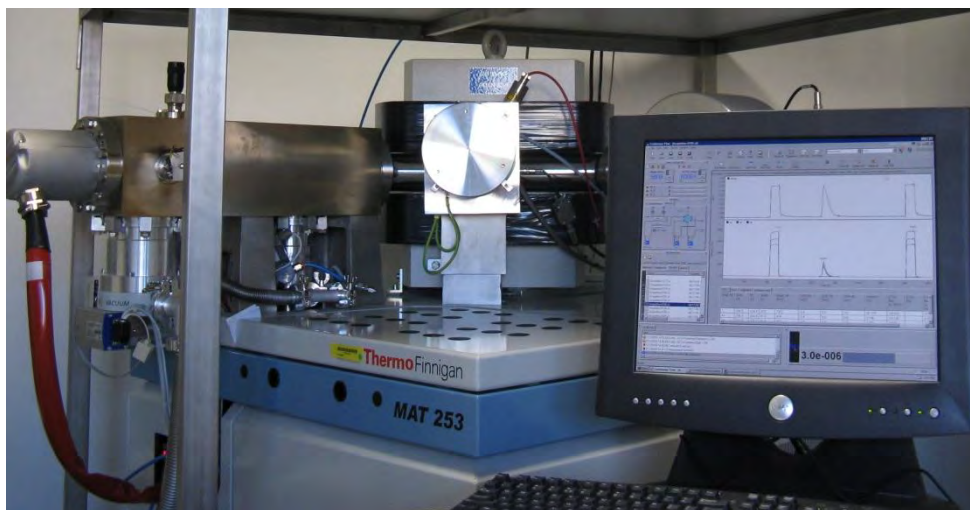
At Regional, European and International level, two EC DG Research Projects, namely, SeaDataNet and Black Sea Scene provide for inventories of data in the Black Sea region incorporating partner-institutions involved in monitoring of the Black Sea from the beneficiary countries. Bulgaria report data in Wise-EIONET and EEA (member state obligation through the Black Sea Basin Directorate-Ministry of Environment and water) in Romania NIMRD provides to it data. BSIS (Black Sea Information System, BSC data base) is well sustained by the beneficiary countries, however, it is not on-line and its data are not accessible or exchanged between the organizations providing data. IO-BAS is a partner in DG MARE initiative EMODNET (chemistry and geology lots) which is a step forward to structure the data in an EU unified mode, but only the meta data are available freely. The attempts to develop BSIS in the frames of several projects have actually failed. BSIS is neither operational, no providing data products which would support indicator-based reporting and consequent decision-making. Exception is the pollution domain of BSIS (PMA), where certain success was achieved in 2013. Presently the pollution data of the BSC are exchanged between the reporting organizations through a data base sustained by the PMA Activity Center of the BSC (UkrSCES, Odessa, Ukraine). However, the data are not accessible to organizations outside the BSC PMA network.

Gaps:

- Data products are often absent, even less are those which are publicly communicated.
- National data bases are poorly developed, they are not unified even at the level of a single institution so that to incorporate all the data/information generated in the course of monitoring.
- Most of the project data bases are not accessible for use other than by partner-organizations; they have never been incorporated into national data bases which would disclose the data to management authorities.
- A number of international data bases, created in the frames of different projects, are available, but are poorly nourished with new data.
- There is no regional on-line data base for the Black Sea (except the PMA one, which is not publicly accessible). The only regional free data bases are the **Upgrade Black Sea SCENE**, NATO –NATO Sfp ODBMS Black Sea Data base which contains historical data prior 1997 and SeaDataNet with partial data access
- The *Mnemiopsis leidyi* Data Base, created under the umbrella of the BSC, is also not completely free for access

Quality assurance and Quality control

Quality assurance and Quality control (QA/QC) in data management seem to be poorly attended in the beneficiary countries. Almost no specific information has been provided by the contacted stakeholders. It is not clear whether any control is in place. At the regional level there are three manuals dealing with QA/QC of data, they were produced under the project Upgrade Black Sea SCENE with the support of the BSC.



Reporting of data (to whom, kind of formats used)

The data of different organizations are reported to various end-users, however, the bulk of them remains for internal use only.

The reporting to international organizations, such as BSC, EEA, UNEP and FAO/GFCM is in Formats developed by these organizations. Usually, all EC FP7, EC DG Env, EC DG Mare, etc. projects develop their own formats as well, and the Institutions reporting have the obligation to comply with them. Most famous are the formats of the projects SeaDataNet (shared with Black Sea Scene and UpgradeBlackSeaScene), EmodNET, SESAME (shared with PERSEUS), etc.

Gaps:

- At the national level in the beneficiary countries, there was no real effort to create a single Data/Information Center where all Black Sea-related data would be stored and used for ecosystem-based management. The Black Sea data from SeaDataNet are restricted, under negotiation with the data providers.
- Harmonization of reporting is in its very early stage.

Data availability to comply with MSFD

Through innovation and exchange of good practices, MISIS provides support to testing of the monitoring programs in revision, for improved data management and reporting in line with the obligations stemming from the WFD and MSFD.

Chapter VI of the Diagnostic report II is referred to Data/information, and deals with the requirements of the MSFD related to the Initial assessment (IA), (Art.8, Annex III), GES identification (Art. 9, Annex I), setting of targets (Art. 10) and the process of regular reviews to propose any necessary amendments in the measures (Art. 13) taken to achieve GES.

The information provided by the stakeholders disclosed major deficiencies in the provisions for indicator-based reporting in line with the DPSIRR model, hence, with MSFD requirements. They are presented in details for each beneficiary country, but we realized the gaps were almost the same in all three countries. So, in the following we make a few general remarks:

Drivers (human activities) are relatively well mapped in all beneficiary countries. However, accessibility of data/information is dispersed in many different organizations, so it may be an issue.

“A lot of pressures, such as marine mining, dredging, shipping etc. are insufficiently well known”

Land-based pressures are defined in all beneficiary countries as part of pollution source monitoring programs. These programs are rather well financed and implemented. However, the methods and results of the pressures monitoring programs are seldom coordinated with, or used in, the ambient monitoring programs in the same areas. Hence, impacts are poorly related to pressures, and especially scarce is the knowledge on cumulative effects. Networking of institutions controlling pressures with those which deal with state and impacts observed in the Black Sea is crucial, yet obviously absent in the beneficiary countries.

Gaps:

The pressures related to the following human activities: aquaculture, port operations, submarine cables and pipeline operations, agriculture.

A lot of pressures, such as marine mining, dredging, shipping etc. are insufficiently well known.

Most poorly known pressures are: physical loss and damage, noise and marine litter, thermal and salinity regime change, and contamination by hazardous substances (especially for sediments and biota).

Recommendation:

More studies are needed to better understand what are the critical loads of nutrients and pollutants stemming from LBS (point sources) and to evaluate the contribution of diffuse sources. The enlisted above poorly known pressures need to be also attended.

Among them, priority should be given to:

Physical loss and damage

Marine Litter

Noise

Impacts - Little is known about the impacts related to physical loss and damage, marine litter, contamination by hazardous substances, while nothing is known about underwater noise and radionuclide.

Descriptors - In all beneficiary countries most limited is the data/information for Descriptors 4, 6-11. The future monitoring programmes should be improved to cover the following domains insufficiently studied.

Descriptor	Additional monitoring requirements
Descriptor 1, 4 and 6 - functional groups	Protozoa, ichthyoplankton, meiobenthos; Marine mammals: 5 yearly census of dolphins populations Birds: seabirds colonies and seabird by-catch
Descriptor 1, 4 and 6 - habitats	Deep sea biogenic structures Seabed, mapping of habitats, tracing of habitat change and loss, hot spots of habitat destruction/degradation
Descriptor 2 - NIS	Abundance and distribution of NIS, especially in high risk locations; introduce efficient ballast water management
Descriptor 3 - fish	Extend monitoring to cover all commercially exploited species and advanced modeling techniques
Descriptor 4 - food web	Energy flows through the food web/production, in situ experimental to advance the scientific knowledge
Descriptor 5 - eutrophication	Primary production (phytoplankton and macroalgae), areas of hypoxia, change in macroalgal communities
Descriptor 7 – hydrographical conditions	Changes in water temperature and salinity related to human activities
Descriptor 8 - contaminants	Screening for new pollutants
Descriptor 9 – contaminants in seafood	Commercial fish
Descriptor 10 – marine litter	Floating and seafloor litter and especially microplastics
Descriptor 11 – underwater noise	Underwater noise level

All gaps mentioned above should be taken into consideration in revision of monitoring programmes and improvement of existing practices.

A requirement of MSFD stipulates that the Member States sharing a marine region or subregion shall endeavor to ensure that monitoring methods are consistent across the marine region or subregion so as to facilitate comparability of monitoring results.

“The main problems are the lack of sufficient funding and coordination between the organizations involved”

All stakeholders contacted have confirmed the need for harmonization both at the national and regional level. Some of them pointed also the need to upgrade equipment, increase number of stations, geographical coverage and frequency of observations, having in mind that the insufficient harmonization between experts, organizations and states is not the only problem in the Black Sea region. The main problems are to be again stressed – the lack of sufficient funding and coordination between the organizations involved to sustain a regular, problem-oriented and integrated, cost-efficient and non-overlapping monitoring with consequent assessments to support knowledge-based decision-making in environment protection utilizing the principles of the ecosystem approach.



Despite the progress in BS monitoring in Bulgaria, Romania and Turkey since 2009-2010, when the **Diagnostic Report I** was drafted and issued, more changes were expected to happen in relation to the WFD and MSFD implementation in the years to come. Going back to the recommendations of the **Diagnostic Report I** regarding monitoring, the following important issues were found to be still insufficiently addressed:

1. Maintain frequency of observations – in line with WFD and MSFD;
2. Ensure proper geographical coverage – include open sea (usually missing in observations);
3. Sustain stations and transects with long-term observations (and create network of Reference stations);
4. Cover mandatory parameters and improve:
 - Fish and other marine living resources stock assessments;
 - Cetaceans surveys (including by-catch, interaction with fishery);
 - Marine Litter in the sea;
 - Contamination of sediments and biota;
 - Habitats mapping, biodiversity assessments, etc.
5. Provide for harmonization - inter-comparison exercises, further development of guidelines, common understanding of GES, indicators, etc;
6. Keep quality control and assurance – sustainable mode of implementation for monitoring and data management

Having in mind the gaps identified in all the issues discussed in the Diagnostic Report II, the team of the MISIS Project makes the following conclusions and recommendations for future improvements in the field on monitoring:

Regarding Legislation/Policy, much of the further work will involve building on, or adapting already existing monitoring arrangements. Though with delays GES identification and environmental targets for pressures, state and impact are under development. They will allow designing a full-body monitoring program in line with the requirements of the MSFD.

However, important regulations are missing, and it is recommended to address the gaps in policy, namely for:

- Monitoring NIS and ship ballast water in risk areas
- Control on the level of underwater noise
- Development of operational (real-time) monitoring
- Coordinated and regular monitoring of pressures/impacts
- Inter-sectorial cooperation in monitoring and data management
- Regular exchange of data between sectors

Referring to the institutional framework of monitoring, the Diagnostic Report II concluded that many institutions were involved, however, weak integration and lack of systematic approach characterize the institutional framework of monitoring in BG, RO and TR. Often inadequate fragmentation of responsibilities is in place, which hampers mobilization of

resources. There are also areas of overlap, duplication of efforts and even conflicts.

Thus, improvements of the institutional framework are needed in:

- competent authorities capacity (including monitoring capacity)
- mechanisms of interaction between state institutions responsible for monitoring
- arrangements for agencies to coordinate and cooperate effectively with an adequate degree of operational autonomy, adequate allocation of responsibility, avoiding overlaps.

Also,

1. There is an urgent need of a systematic approach to identify and effectively use the synergies that exist among the many institutions and actors involved in monitoring activities serving directly or indirectly environment protection.

2. There should be a stable networking between institutions dealing with governance, funding, and implementation of monitoring programmes. This will reduce the burdens placed on national authorities, promote the efficient use of resources and ensure that environmental laws and policies implementation is supported by adequate integrated monitoring program.

Taking into consideration the definition given by the WFD, which states that the **operational monitoring** is undertaken to assess the status of water bodies that are at risk of failing to meet the environmental objectives and to assess changes resulting from programmes of measures and that it is continuous and follows the same frequency as surveillance monitoring, the following recommendations are given for all of the three beneficiary countries:

3. The areas at risk beyond the 1-mile coastal zone should be well identified and specifically paid attention in the MSFD monitoring, with higher frequency of observations and problem-oriented sampling.

The monitoring needs to employ modern techniques and where possible real-time observations.

4. Further development of operational (real-time) observing systems and networks in the Black Sea is much needed to better address diagnosis and prognosis of circulation and ecosystem state, in general, under climate and anthropogenic forcing of various temporal and spatial scales.

5. VMS is a powerful tool for control over IUU fishing activities, its capacities should be further developed and integrated within MSFD monitoring programmes.

Although the **QA/QC** in monitoring is well advanced in Bulgaria and Romania, there are still many improvements to pursue in the field. Therein, the following recommendations are given:

6. QA/QC developments are especially needed in the field of biological/biodiversity studies. In all the fields the compliance with existing guidelines/manuals need to be strengthened.

7. The UNEP/IOC Guidelines on Survey and Monitoring of ML (2009) has been recommended by the BSC for use in the Black Sea states, however, neither this kind of monitoring is well attended, nor is quality control ensured. Recently a new Guideline was developed by JRC, it utilised best available practices, including those from the UNEP/IOC Guideline. MISIS recommends this new Guideline to be used in the BS countries in developing the ML monitoring.

In the section **Regular assessments; data products; data management; reporting of data**, the **Diagnostic Report II** concluded that various assessments were produced on a regular or irregular (for projects) basis, however, except in Romania, the reports stay largely unpublished and promoted/distributed for wider and public use. The reason for the latter is rooted in the historical legacy of secrecy in the field of environmental issues, and also in the habitual attitude of the scientific community to not disclose data which are not published in peer reviewed journals. The reports prepared by scientists are not qualified the same as the publications in journals with impact factor, which predetermines their keeping for internal use only.

Consequently, the following recommendations are given:

8. Create mechanism for exchange of data/information between the various organizations managing environment data.

9. Develop data management systems (to ensure indicator-based reporting and provision of diverse data products).

10. Provide for QA/QC in data management in all organizations dealing with generation of environment data.

11. Develop models, especially those with bio-chemical components, application of Ecosim and Ecospace.

12. Ensure transparency of reporting.

13. Provide for official status of the reports (e.g. registration as official electronic publications or publications as peer reviewed in hard copies).

14. Data accessibility should be increased, centralized databases development should be encouraged.

Finally, like **Diagnostic Report I**, the **Diagnostic Report II** identifies the poor financial assistance as the root cause of the existing gaps in all the issues. In the beneficiary countries the national funding for the routine monitoring in the Black Sea does not exceed annually 300,000€ per beneficiary country, on the average.

Besides, there are some other problems in the region related to the responsible organizations which provide the budget for monitoring and approve the programs, increasing the deficiencies in monitoring, such as:

- General overlapping between the monitoring activities in the Black Sea financed by different Ministries;
- The poor coordination between these ministries resulted in duplication of efforts of scientific institutions, which carried out observations in the same areas habitually and often at the same time.
- The expensive ship time is not efficiently managed;
- In Romania, funding for monitoring activities is provided, in general, on a regular basis, though sometimes with delays, which hampers the sustainability of the observations in terms of frequency per year;
- In Bulgaria the regular funding is provided for the WFD monitoring, also often with delays;
- In Turkey, funding is not always provided on a regular basis and is not sufficient to conduct an integrated monitoring with a required frequency.

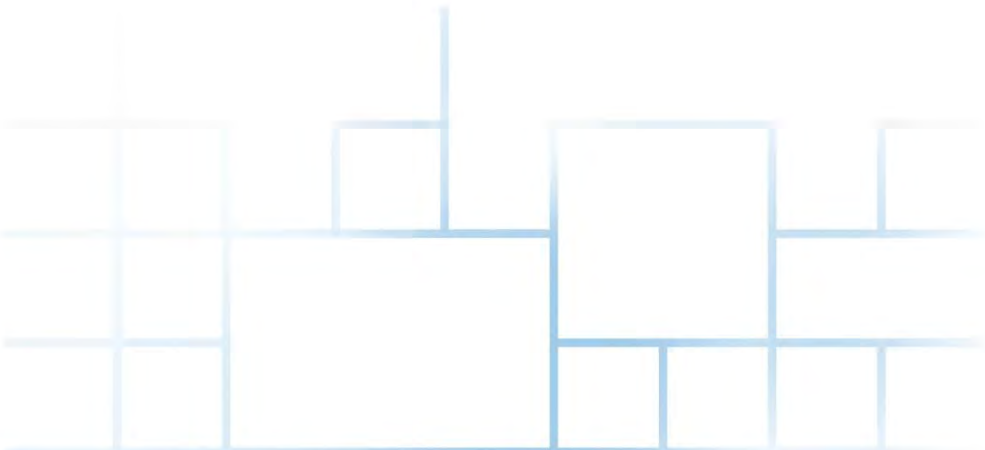
In these circumstances, there is a strong need for:

15. More resources targeted at developing appropriate approaches, tools and practices (education and training) to improve acquisition and management of monitoring data.

16. Substantially increased funding should be ensured on an annual basis and in time to cover the requirements of the MSFD, in all countries. This can be not only through governmental budgets dedicated to state monitoring, but also through the private sector, and through problem-oriented projects (different funding agencies from abroad, for instance, and of course, mostly national).

ABBREVIATIONS and ACRONYMS

ARGO	The broad-scale global array of temperature/salinity profiling floats.
BAS	Bulgarian Academy of Science
BG	Bulgaria
BS	Black Sea
BSC	Black Sea Commission (Commission on the Protection of the Black Sea Against Pollution),
BSIMAP	Black Sea Integrated Monitoring and Assessment Program
BSIS	Black Sea Information System
BS SAP	Black Sea Strategic Action Plan
CBM	Common Bird Monitoring
CFP	Common Fisheries Policy
CFRI	Central Fisheries Research Institute, Trabzon, Turkey
DPSIRR	Driver Pressure State Impact Response Recovery
EC	European Commission,
EEA	European Environment Agency
EIA	Environmental Impact Assessment
EPA	Environmental Protection Agency
EU	European Union
GeoEcoMar	National Research and Development Institute for Marine Geology and Geoecology
GES	Good Environment Status
GIS	Geographic Information System
GOOS	Global Ocean Observing System,
IBER-BAS	Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Science
ICZM	Integrated Coastal Zone Management
IFR	Institute of Fishing Resources, Varna, Bulgaria
IMS/METU	Institute for Marine Sciences/Middle East Technical University (Erdemli, TR)
IO-BAS	Institute of Oceanology - BAS, Varna, Bulgaria
MISIS Project	“MSFD Guiding improvements in the Black Sea integrated monitoring system“
ML	Marine Litter
MSFD	Marine Strategy Framework Directive
NAFA	National Agency for Fishery and Aquaculture
NAP	Black Sea National Action Plan
NSP	National Strategic Plan
NATO	North Atlantic Treaty Organization,
NIMRD	National Institute for Marine Research and Development
NODC	National Oceanographic Data Center
QA	Quality assurance
QC	Quality control
RO	Romania
SAC	Special Areas of Conservation
SPA	Special Protection Areas
TR	Turkey
TUBITAK	The Scientific and Technological Research Council of Turkey,
WFD	Water Framework Directive



POSITION PAPER

**BLACK SEA MONITORING COMPLIENCE
to MARINE STRATEGY FRAMEWORK DIRECTIVE (MSFD)**



MSFD Guiding Improvements in the Black Sea Integrated Monitoring System

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