

## Annex 5: BSIMAP priority parameters, actions, implementation

Priority parameters to be monitored	Issue to be addressed (Policy questions)	Monitoring	Initial Actions	Status of implementation	Improvements needed
	<p>What are the loads of trace metals from land-based sources of pollution?</p> <p>Are agreed measures effective in reducing pollution?</p>	<p>monitor discharges and estimate riverine, direct industrial and municipal loads</p>	<ul style="list-style-type: none"> <li>• compile national meta data on all riverine, industrial and municipal sources of pollution in the coastal zone</li> <li>• develop set of indicators to be reported</li> <li>• harmonize monitoring strategies and networks</li> </ul>	<p>Monitored, reported for rivers and 50 Hot Spots, most of them WWTP. Specific indicators are not developed, LBS Reports contain Figures showing trends. Data of states can be compared. Methods to measure trace metals harmonized.</p>	<p>Hg rarely measured. Indicators need to be developed. River monitoring strategies are not harmonized.</p>
<p>Trace metals: Cd, Hg, Pb, Cu, others (mandatory in BSIMAP)</p>	<p>What are the concentrations in water, sediments and biota?</p>	<p>monitor concentrations</p>	<ul style="list-style-type: none"> <li>• develop background values and assessment criteria for environmental quality</li> <li>• sustain the regional quality assurance and quality control system</li> <li>• develop set of indicators for reporting on the state of the Sea environment</li> <li>• outline trends in historical data</li> <li>• harmonize the methods used and national monitoring strategies and networks</li> </ul>	<p>Monitored with gaps, basically in water, rarely in sediments and biota. QA/QC sustained. Trends outlined. Methods harmonized.</p>	<p>Background values absent in TU and GE. Assessment criteria for water quality need to be harmonized. Set of indicators to be developed.</p>
<p>Pesticides (mandatory in BSIMAP for sediments, optional for water)</p>	<p>What are the levels of pesticides in the water, sediments and biota?</p>	<p>monitor concentrations</p>	<p>assess the scope of the problem for the Sea by random sampling or based on available data in the vicinity of major sources of organotin pollution (say major ship routes, nearby river mouths, etc.)</p>	<p>Monitored with gaps. Data available. Last assessment SoE, 2008.</p>	<p>Not monitored on a regular basis in BG and GE. Rarely measured in sediments and, especially, in biota. Better monitoring and assessments needed.</p>
<p>PCBs (optional in BSIMAP for water, mandatory for)</p>	<p>What are the loads of PCBs into the Sea?</p>	<p>monitor loads</p>	<p>compile national data if available: inventory of PCBs sources and preliminary assessment of loads, including riverine</p>	<p>Not monitored, not reported to BSIS. Inventory of sources and</p>	<p>Pilot monitoring to identify the sources, assess the problem with consequent decision on PCBs</p>

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sediments and biota <sup>1</sup>			inputs	assessment of loads missing.	loads relevance for the regional monitoring program
	What are the concentrations of PCBs in marine biota (including mammals) and bottom sediments?	monitor concentrations	pilot monitoring of PCBs levels in bottom sediments and biota (or analyses of available data) and decision on their relevance for regional monitoring program	Not monitored. Not reported to BSIS. Data available outside of BSIMAP and BSIS, but scarce (UA, RO, for instance).	Pilot monitoring to assess the problem with consequent decision on PCBs relevance for the regional monitoring program
PAHs (not included in BSIMAP for land-based sources)	Which are the major sources and how large are the inputs?	monitor loads	<ul style="list-style-type: none"> <li>quality check the existing information on PAHs concentrations in water and</li> <li>further compile and quality check data on PAHs loads where available</li> <li>list of pollution sources</li> </ul>	Not monitored, not reported to BSIS, no list of pollution sources.	Pilot monitoring: Sources to be identified, loads assessed, decision on their relevance for the regional monitoring program to be taken
	What are the concentrations in water and sediments(optional)	measure concentrations of PAHs in water and sediments	Include PAHs measurements in programs of cruises (projects) to check if the problem exists	Monitored with gaps, mainly in water. No harmonization of methods.	Pilot monitoring: screening of the levels of PAHs in bottom sediments, with consequent decision on PAHs relevance for the regional monitoring program. Harmonization needed.
	Do PAHs affect fish and shellfish(optional)	measure concentrations of PAHs in fish and shellfish	Incorporate random sampling where possible to address the problem (feasibility study)	Monitored randomly in UA	Better screening needed, pilot monitoring recommended.
Noxious and Harmful Substances	What chemicals are transported via the Sea?	collect data on transportation	<ul style="list-style-type: none"> <li>compile meta data on regular transportations</li> <li>illegal discharges, accidents occurrence</li> </ul>	Not collected	Pilot project/feasibility study recommended
Phenols (not included	What are the loads of	monitor loads and	<ul style="list-style-type: none"> <li>assess levels of phenol pollution in the</li> </ul>	Not monitored, not reported	Pilot project: Inventory of sources,

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for LBS loads, optional for water and mandatory for sediments in the Sea)	phenols coming from land-based sources of pollution? What are their concentrations in water? Do phenols pose risk to human health and Sea environment?	concentrations	marine environment <ul style="list-style-type: none"> <li>• assess impact of phenol pollution on coastal waters</li> <li>• outline trends in historical data</li> <li>• inventory of pollution sources of phenols</li> </ul>		assessment of loads and concentrations in water and sediments, decision on Phenols relevance for the regional monitoring program.
Detergents (mandatory for loads, optional for sea water)	What are the concentrations in Sea waters? What are the loads from rivers and other land-based sources of pollution?	monitor loads and concentrations	<ul style="list-style-type: none"> <li>• assess the level of detergents in coastal waters</li> <li>• outline trends in historical data</li> </ul>	Concentrations in the Sea monitored with gaps, reported basically by RU, TU and UA	Better assessment of the problem needed (loads). For water concentrations improvement of the monitoring in coastal waters.
Oil pollution, petroleum hydrocarbons (TPHs, mandatory)	What are the pollution sources of oil	monitor loads and concentrations	<ul style="list-style-type: none"> <li>• assess pollution loads of oil from land based sources and offshore installations, illegal discharges and accidents</li> <li>• outline trends</li> </ul>	LBS monitored	Offshore installations and illegal discharges. Updated assessment of trends for LBS needed.
	What are the values of total petroleum hydrocarbons in water, sediments and biota?	monitor concentrations	<ul style="list-style-type: none"> <li>• identify background values</li> <li>• assess trends</li> </ul>	Monitored with gaps, especially in BG, GE. Mainly concentrations in water and loads are measured. No harmonization of methods.	Better monitoring of TPH in sediments and biota needed. Harmonization of methods needed.
Radionuclides (optional)	What are the trends of radionuclides in the Sea? Do they pose risk to human health and Black Sea biota?	1. monitor concentrations of radionuclides in water, sediments and biota 2. assess risk to	assess trends	Not reported to BSIS, classified information. Available scientific assessment in the SoE, 2008.	The data to be reported to BSIS

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		human health and biota			
Nutrients (mandatory)	Are agreed measures effective in reducing eutrophication? What are the levels of nutrients in water and sediments, what are the loads from rivers and other land-based sources of pollution?	monitor concentrations and discharges, assess loads of nutrients	outline indicators and trends for loads and concentrations, introduce monitoring of nutrients in sediments (where possible) to assess the level of secondary eutrophication processes. TRIX index for estimation of eutrophication processes.	Monitored loads and water concentrations. Data available for sediments. Indicators developed.	Monitoring of sediments and open sea waters
Phytoplankton (mandatory)	How often phytoplankton blooms occur? What are the areas of most frequent phytoplankton blooms? What are the consequences for the Black Sea flora and fauna?	monitor chlorophyll, phytoplankton abundance, biomass and species composition	outline indicators, background values, trends	Monitored, reported with gaps. Indicators, background values, trends known.	Open-sea monitoring
Zoobenthos (mandatory)	What are zoobenthos communities structure and abundance? Is their state improving in comparison to previous periods?	monitor abundance, species composition	habitats classification and mapping, outline of trends	Monitored. Habitats classification available.	Mapping pending.
State of other communities, endangered species (mandatory)	What is the state of macrophytes? Do numbers of endangered species increase?	monitor abundance	Red data book update, Assess natural habitats state, trends	Monitored, Red Data Book available	Habitats state needs to be better reported to BSIS

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Sources and occurrence of Marine Litter (ML) on beaches and in the sea (floating, on the bottom)	What are the sources of litter, its amount/type, and areas of its occurrence? Marine litter in the Sea amount/type, areas of accumulation.	UNEP guidelines	assess the scope of the problem in the Sea bottom, coast, on the surface, major sources	Not attended in BSIMAP. Randomly monitored by NGOs, not reported to BSIS. Last assessment 2007	To incorporate this kind of monitoring into BSIMAP with relevant reporting formats prepared
Effects of ML on birds and marine organisms	What are the effects of ML on birds and marine organisms		Compile information	Scarce data not reported to BSIS, not attended in BSIMAP	Search for available information, involve NGOs
Impact of fisheries on ecosystem (mandatory)	What are the trends in fish catches? Which species are overfished? By catches and discards levels? Strandings? Bioaccumulation of toxic substances? Increase in fishing fleet?	monitor ichthyoparameters, assess stocks, catches, by-catches, etc.	<ul style="list-style-type: none"> <li>• harmonization of methodologies</li> <li>• trends</li> </ul>	Monitored, harmonization in progress	By-catch, illegal fishery poorly monitored, needs improvement. Stock assessments further harmonized, relevant surveys organized.
Genetic disturbance	What are the trends in aquaculture development? What species are cultivated? Are their escapes from farms?	Compile data, monitor nutrients in aquaculture farms	track the eutrophication effect of mariculture	Trends in aquaculture development and species cultivated are reported to BSIS.	Eutrophication effect of aquaculture not known, feasibility study needed. Genetic effects not known.
Transfer of diseases	What diseases are reported?			Not reported to BSIS	Compile information
Chemicals used in aquaculture	What chemicals are used for treatment?		Assess possible negative effects	Not reported to BSIS	Compile information, assess possible effects

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Habitats destruction (mandatory)	Are destructive techniques used in the Black Sea region? What are the reasons for habitats destruction in the Black Sea?	Benthos investigations, monitor via sonars and underwater video as well, etc.	<ul style="list-style-type: none"> <li>• assess most threatened habitats at present</li> <li>• identify habitats of Sea importance to designate them as protected areas</li> <li>• identify threatened species and species which should be regulated</li> </ul>	Monitored with gaps	Improve this kind of monitoring
Non-native species composition, abundance (mandatory)	What exotic species are intentionally and non-intentionally introduced	monitor exotic species	list of exotic species, vectors of introduction, impacts	Monitored, Lists available	Assessments of risk, Ballast water monitoring
	What are risks and vectors of introduction of new exotic species				
Microbiological indicators (mandatory)	What is the quality of bathing waters in terms of bacteriological pollution	monitor bacteriological parameters	list of beaches to be reported	Monitored, list of beaches available	Better reporting to BSIS needed
Atmosphere: Greenhouse gases, particulate matter, chemical pollution (optional)	What is the level of atmospheric pollution? Which areas are mostly polluted?	monitoring of gases , deposition and precipitation	Improve reporting format, become end-user of PROMOTE project	Monitored, poorly reported to BSIS	Contract with EMEP, end-users of Promote and similar projects. Development of stations for measurements of deposition.
Nutrients and pollutants from diffuse sources	What is the level of nutrients and pollutants entering the Sea from diffuse sources of pollution, including atmosphere?	Collection of data to be used in relevant models (MONERIS, SWAT, others)	Develop guideline for inventory, classification and assessment of diffuse sources of pollution, starting with nutrients. Development of models or adoption of available ones.	Not attended in BSIMAP	Priority issue, needs to be attended