

# ENVIRONMENTAL DATA COLLECTION WITHIN THE BLACK SEA COMMISSION



3rd meeting of the UNECE Joint Task  
Force on Environmental Indicators  
Geneva, July 11-13, 2011

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[www.blacksea-commission.org](http://www.blacksea-commission.org)

# Content

- Legal framework
- Institutional framework
- Monitoring
- Reporting
- Challenges & future plans

# LEGAL FRAMEWORK

# Bucharest Convention

In April 1992 six Black Sea countries (Bulgaria, Georgia, Romania, Russian Federation, Turkey and Ukraine) signed and shortly thereafter ratified the **Convention on the Protection of the Black Sea Against Pollution** (Bucharest Convention) with its (three) integrated protocols.



Bulgaria



Georgia



Romania



Russian  
Federation



Turkey



Ukraine

# Obligations of Contracting Parties

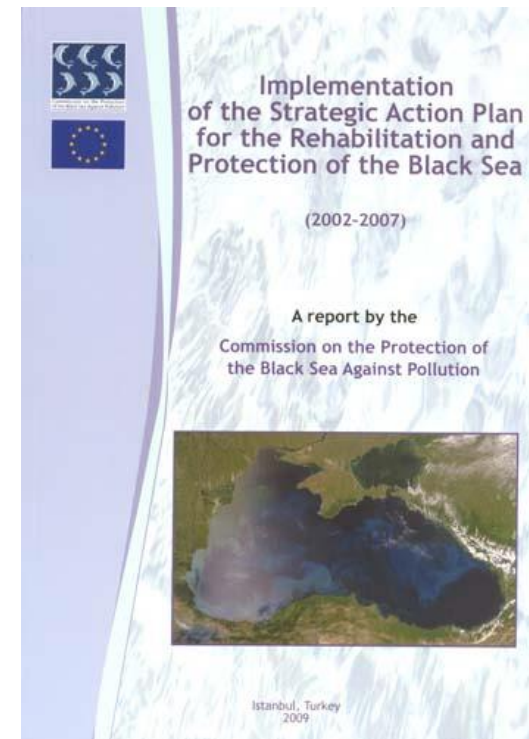
**General obligation:** to prevent, reduce and control the pollution in the Black Sea in order to protect and preserve the marine environment and to provide legal framework for co-operation and concerted actions to fulfill this obligation.

To protect the biodiversity and the marine living resources;

To provide framework for scientific and technical co-operation and monitoring activities.

# The Strategic Action Plan for the Rehabilitation and Protection of the Black Sea

- Signed on October 31, 1996 (commemorated as the **Black Sea Day**)
- Adopted by all Black Sea countries
- Updated in 2009
- Ecosystem approach



## **SAP-1996:** *Assessment and monitoring of pollutants*

- A Black Sea Monitoring System, based upon biological effects measurements and measurements of key contaminants, will be established in compliance with the Bucharest Convention.
- A “State of Pollution of the Black Sea” report will be prepared and published every five years, beginning 2006. It will be based on the data collected through the coordinated pollution monitoring and assessment programmes.
- Data regarding actual and assessed contaminant discharge measurements for point sources, rivers, and, where possible, diffuse sources, shall be compiled and freely exchanged beginning 2002 on an annual basis. It is advised that the Advisory Group Control of Pollution from Land Based Sources make these compilations in future.

**SAP-2009:** Develop/improve the existing monitoring system to provide comparable data sets for pollutant loads (from direct discharges and river inputs) and for other parameters.

# INSTITUTIONAL FRAMEWORK



# Black Sea Commission

- Intergovernmental body for promoting the implementation of the provisions of Bucharest Convention, its protocols and Strategic Action Plan
- The regional focal point for any aspects of the coastal and marine environment of the Black Sea
- Made up of 6 Commissioners (one for each coastal country) and a chairman`
- Chairmanship for one year and rotates between coastal countries

# BSC Structure




## The Commission for the Protection of the Black Sea Against Pollution

### Permanent Secretariat

### Advisory Groups

AG ESAS	AG PMA	AG LBS	AG ICZM	AG CBD	AG FOMLR	AG IDE
Environmental Safety Aspects of Shipping (AG ESAS)	Pollution Monitoring and Assessment	Control of Pollution from Land Based Sources	Development of the Common Methodologies for Integrated Coastal Zone Management	Conservation of Biological Diversity	Environmental Aspects of Fisheries and Other Marine Living Resources Management	Information and Data Exchange

### Regional Activity Centers

Environmental Safety Aspects of Shipping (AC ESAS), <u>Varna</u> , Bulgaria	Pollution Monitoring and Assessment (AC PMA), Odessa, Ukraine	Control of Pollution from Land Based Sources (AC LBS), Istanbul, Turkey	Development of Common Methodologies for Integrated Coastal Zone Management (AG ICZM), <u>Krasnodar</u> , Russian Federation	Conservation of Biological Diversity (AC CBD), <u>Batumi</u> , Georgia	Environmental Aspects of Fisheries and Other Marine Living Resources Management (AG FOMLR), <u>Constanta</u> , Romania	Information and Data Exchange (AC IDE), Permanent Secretariat, Istanbul, Turkey
						

### National Focal Points

Bg, Ge, Ro, Ru, Tr, Ua	Ua, Bg, Ge, Ro, Ru, Tr	Tr, Bg, Ge, Ro, Ru, Ua	Ru, Bg, Ge, Ro, Tr, Ua	Ge, Bg, Ro, Ru, Tr, Ua	Ro, Bg, Ge, Ru, Tr, Ua	Bg, Ge, Ro, Ru, Tr, Ua
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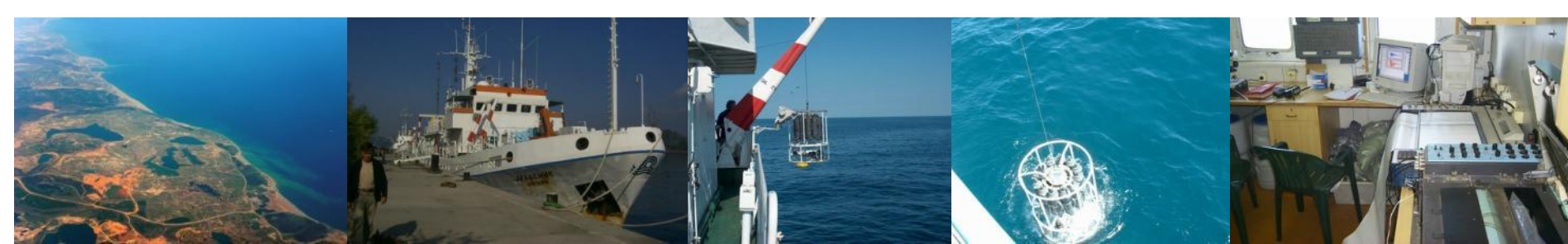
# SAP implementation

- Conducted by countries
- Regional monitoring program
- Annual reporting to BSC
- Periodical assessment (5 years)
  - State of Environment Report
  - Assessment of SAP implementation and SAP revision

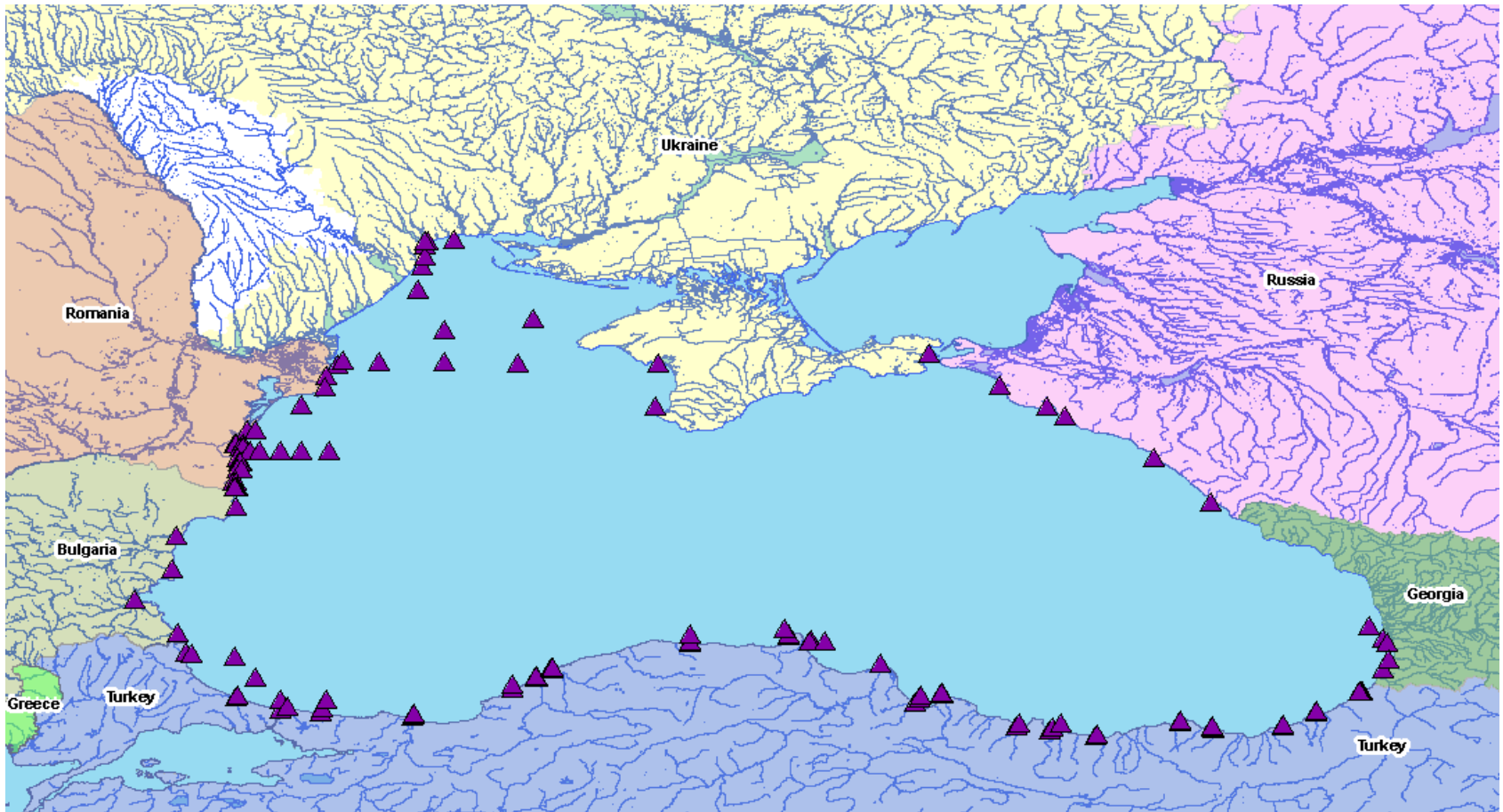
# MONITORING

# Black Sea Integrated Monitoring and Assessment Programme (BSIMAP)

- Implemented since 2001.
- Build on established national monitoring programmes
- Operational
- Last version of BSIMAP was adopted in 2006.



# BSIMAP Pollution Monitoring Network



# National institutions involved

<b>Bulgaria</b>	Regional laboratories in Varna and Burgas
<b>Georgia</b>	Environment Pollution Monitoring Department, MoEP
<b>Romania</b>	National Institute for Marine Research & Development; Water Directorate Dobrogea Litoral – Constanta
<b>Russian Federation</b>	Socchi Hydrometeorological Centre, Tuapse Roshydromet Monitoring Laboratory, Southern Branch of SIO RAS
<b>Turkey</b>	MoEF, Istanbul University
<b>Ukraine</b>	UkrSCES , State Ecological Inspection of the North-West region of the Black Sea (MENR)



# BSIMAP monitoring requirements



## Sampling media: water

*Parameters:* nutrients, oxygen, physical & chemical parameters, petroleum hydrocarbons, suspended solids

*Frequency:* 4 times per year

## Sampling media: sediments

*Parameters:* organic contaminants, heavy metals

*Frequency:* 1 time per year



## Sampling media: biota

*Parameters:* organic contaminants, heavy metals

*Frequency:* 1 time per year



# BSIMAP monitoring requirements (1)

**Problem: *Eutrophication*. Sampling media: *Water***

Mandatory parameters	Frequency	Optional parameters	Frequency
<b>T°</b>	4	pH (site-specific)	
<b>Salinity</b>	4	BOD5 (site-specific)	
<b>O2 (saturation and dissolved)</b>	4	TOC	4
<b>TSS (filter 0.45 µm)</b>	4	H2S	4
<b>Secchi</b>	4		
<b>P (PO4)</b>	4		
<b>P total</b>	4		
<b>N (NH4)</b>	4		
<b>N (NO3)</b>	4		
<b>N (NO2)</b>	4		
<b>N, Total</b>	4		
<b>SiO4</b>	4		

# BSIMAP monitoring requirements (2)

**Problem: *Pollution*. Sampling media: *Water***

Mandatory parameters	Frequency	Optional parameters	Frequency
<b>Oil pollution</b>			
<b>TPH (Total Petroleum Hydrocarbons)</b>	<b>4</b>	Oil slicks	
<b>Heavy Metals</b>			
<b>Cd</b>	<b>1</b>	Fe	
<b>Cu</b>	<b>1</b>	Zn	
<b>Hg</b>	<b>1</b>	Cr, Co	
<b>Pb</b>	<b>1</b>	Mn, Ni	
		Pesticides, Phenols	
		Detergents	
		PAHs, PCBs	
		$^{137}\text{Cs}$ , $^{90}\text{Sr}$ , Tr	

# BSIMAP monitoring requirements (3)

**Problem: *Pollution*. Sampling media: *Sediments***

Mandatory parameters	Frequency	Optional parameters
<b>Particle size</b>	<b>1</b>	Granulometry
<b>Description of BS</b>	<b>1</b>	Calcination losses
<b>Cd, Cu, Hg, Pb</b>	<b>1</b>	Al, Co, Cr, Fe, Ni, Zn
<b>DDT, DDD, DDE</b>	<b>1</b>	TOC
<b>Lindane</b>	<b>1</b>	P total
<b>PCBs</b>	<b>1</b>	Phenols
<b>Hydrocarbons Total</b>	<b>1</b>	$^{137}\text{Cs}$ , $^{90}\text{Sr}$
<b>PAHs</b>	<b>1</b>	Total radioactivity

# BSIMAP monitoring requirements (4)

## Problem: *Contamination of Biota*

Media: Bivalves, Anchovies, Sprat, Turbot, Horse mackerel - meat

Mandatory parameters	Optional parameters
<b>Cd</b>	Phenols
<b>Cu</b>	Co
<b>Hg</b>	Zn
<b>Pb</b>	Fe
<b>DDT</b>	Ni
<b>DDD</b>	Cr
<b>DDE</b>	PAHs
<b>Lindane</b>	Cs
<b>PCBs</b>	Tr
	Sr
	Total radioactivity

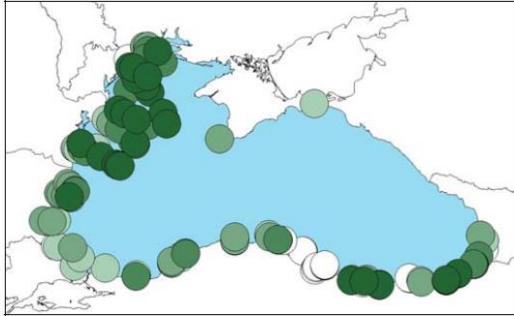
# BSIMAP monitoring requirements (5)

**Problem: *response of biodiversity on pollution and destruction of habitats.* Sampling media: *Biota***

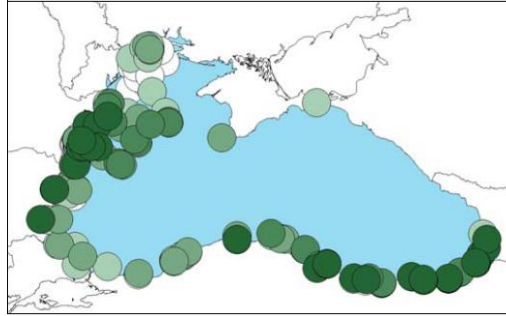
Mandatory parameters	Frequency
<b>Chl a</b>	<b>4</b>
<b>Phytoplankton</b>	<b>4</b>
<b>Mesozooplankton</b>	<b>4</b>
<b>Biomass of Noctiluca</b>	<b>4</b>
<b>Macrophytobenthos</b>	<b>1</b>
<b>Macrozoobenthos</b>	<b>1</b>
<b>Fish landing (annually)</b>	<b>1</b>
<b>Fish stocks (optional, annually)</b>	<b>1</b>

# Chemical pollution

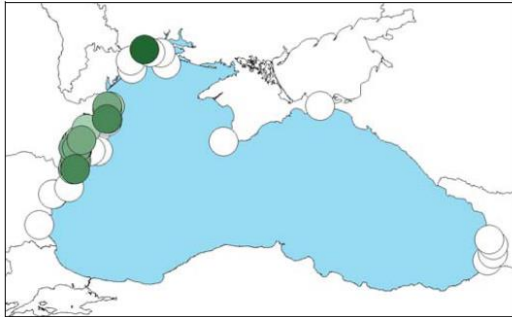
**Chromium**



**Copper**



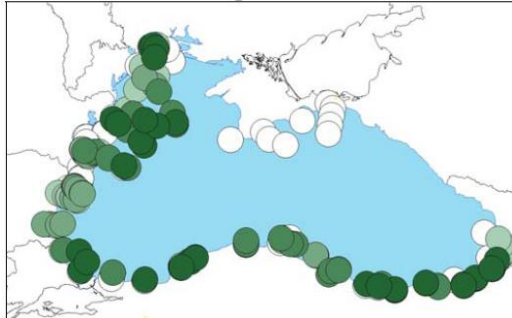
**DDT**



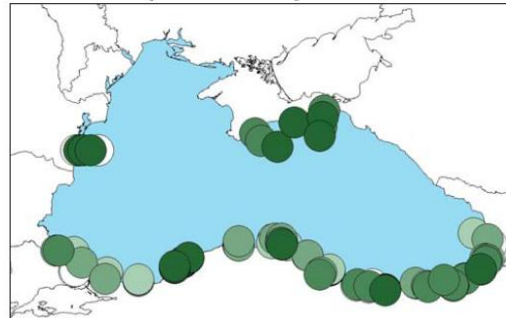
**Total HCHs**



**Total organic carbon**



**Total petroleum hydrocarbons**



**Mean concentrations  
of selected  
parameters in  
sediments  
of the Black Sea,  
1996-2005 (TDA 2007)**

Colour	Chromium (mg/kg)	Copper (mg/kg)	DDT (µg/kg)	Total HCHs (µg/kg)	Total organic carbon (mg/g)	Total petroleum hydrocarbons (µg/g)
	<40.00	<21.21	<3.12	<1.12	<0.85	<5.51
	40.00-64.00	21.21-32.00	3.12-9.87	1.12-2.31	0.85-1.40	5.51-26.00
	>64.00-89.00	>32.00-43.00	>9.87-35.62	>2.31-34.00	>1.40-1.94	>26-60.72
	>89.00-112.00	>43.00-68.50	>35.61-106.04	>34.00-54.00	>1.94-4.32	>60.72-190.00
	>112.001	>68.501	>106.04	>54.00	>4.32	>190.00

# REPORTING

# Reporting

**Who:** National Focal Points / Members of Advisory Groups

**What:** Different parameters of the Black Sea ecosystem state, pressures, impacts, measures, changes in legislation/policy, programs, investments, etc.

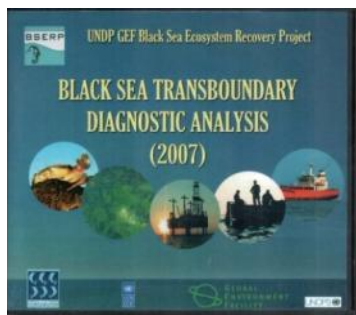
1. PMA (pollution in water, sediments, biota)
2. LBS (pollution loads)
3. CBD (phyto- and zoo-plankton, conservation status...)
4. ESAS (ship traffic, oil spilled during accidents, fines...)
5. ICZM (state of the coast and management)
6. FOMLR (stocks, landings, fishing fleet, measures...)

**When:** annually (in Autumn), data for previous year

**How:** in standardized formats



# Usage of monitoring data & information



Transboundary  
diagnostic  
analysis

State of  
Environment  
reporting (SoE)

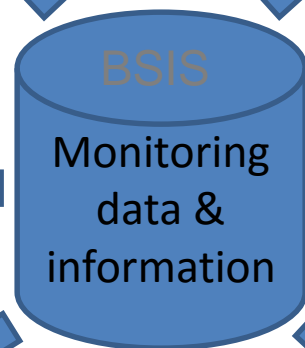
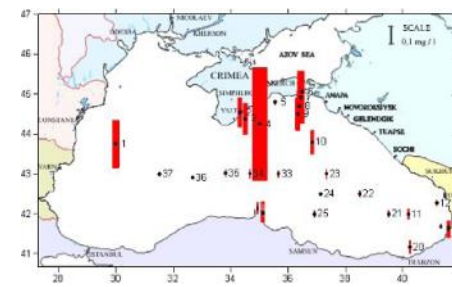
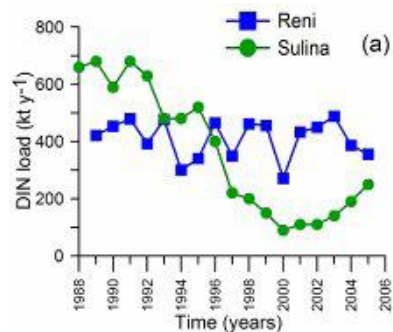


Impact  
assessments of  
major pollutant  
sources

Assesment of SAP  
implementation  
and SAP revision

Trend  
analysis

GIS,  
mapping



# **CHALLENGES, RECOMMENDATIONS, FUTURE PLANS**

# Challenges (monitoring)

- Gaps in countries' monitoring programs: **the monitoring is mainly not integrated.**
- Mandatory parameters are often not covered
- Recommended frequency of observations is not always observed
- Difference in sampling and sample analysis techniques
- Different approach in assessment of environmental status
- Pure coordination between responsible authorities
- Insufficient financial support of monitoring

# Challenges (reporting)

- Gaps in data availability (i.e. data have not been collected due to some reasons)
- Gaps in data reporting (i.e. data are available in the country but due to lack of inter-agency coordination did not become available to AG members for including in reports)
- Insufficient data for indicator-based assessment (datasets are not consistent)
- Insufficient time-series data for trend analysis

# Data availability & needs in details

Indicator group	Indicators/Parameters	In BSIS
Eutrophication	Nutrients	Y
	Chl-a (in-situ)	limited
	Transparency	limited
	Hypoxia (dis. oxygen)	Y
	Alga blooms	Y
	Macroalgae	limited
Contamination	Concentrations in sea water	Y
	-:- in biota	limited
	-:- in sediments	limited
	Biological effects	not considered yet
Biodiversity	Species composition (zooplankton, phytoplankton, benthos, fish, seagrass)	limited
	Population abundance & biomass	limited
	Non-indigenous species	Y*

# Major targets in improvement of monitoring

- Strengthening of existing program: mandatory parameters covered, monitoring frequencies observed
- Further harmonization – to meet requirement of new SAP and LBS protocol, common understanding of Good Environmental Status (GES) and indicators, further development of guidelines, inter-comparison exercises, etc.
- Improving the “List of Black Sea-specific priority pollutants”
- Standardization of sampling and sample analysis techniques
- Proper geographical coverage, networks development
- Sustain stations and transects with long-terms observations
- Sustainable quality control and assurance

# Supporting activities

- Utilization of the capacities of all Institutes dealing with monitoring in the region
- Avoiding overlapping of activities and efforts
- Partnership with international organizations – EEA, IMO, ESA, EMSA, HELCOM, utilizing their experience
- Capacity building – regular trainings, bringing BAP to the region, strengthening the collaboration between different authorities engaged in monitoring
- Sharing data and metadata. Further development of BSIS to make its data and metadata services accessible online, and to make sure that the special information needs of stakeholders are met.

# Near-term tasks

- Development of the Regional Database on Pollution with GIS based Web interface providing public access to metadata and data products (maps, charts)
- Elaboration of the Black Sea reference and target concentration levels of eutrophication parameters
- Elaboration of a regional methodology on identification of water quality classes for eutrophication
- Development of implementation plan on setting up a modelling tool, linking pollutants triggering eutrophication in the Black Sea with requirements for reducing input of nutrients, including riverine loads



# Thank you for your attention

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