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Newsletter no.2

The Current Environmental Status Of The Black Sea Basin

The State Of The Environment On The Romanian Coast

Project title: ***''Leave your Environmentalist Spirit Online for the Black Sea Basin'' - Spirit BSB online***

The project consortium consists of 4 parteners:
LP Coordinator – ***Association for the Protection of Human Being and Environment for a Sustainable Development in the World-ECOM, Romania***
P1- ***Sinop University, Sinop, Turkey***
P2- ***Of Chamber of Agriculture, Turkey***
P3-***International Center for Social Research and Policy Analysis in Tbilisi, Georgia.***

According to the Project Implementation Plan, within the activity ***T2.1 Development of "Pollution and solutions in BSB - Manual for everyone"*** we made a manual. This manual contains several topics. Through these newsletters we present these topics. Today we choose to present you:

The State Of The Environment On The Romanian Coast

The Report on the State of the Marine and Coastal Environment analyzes the following indicators regarding the state of the waters and ecosystems of the Black Sea of the Romanian coast.

A. Indicators for determining the state of the Black Sea waters

Water Quality

Physico-chemical indicators

A.1 General indicators

-temperature, transparency, salinity, Ph, dissolved oxygen;

A.2. Eutrophication indicators

-phosphate, nitrates, silicates, chlorophyll;

A.3. Contamination indicators

-heavy metals, total oil hydrocarbons, polynuclear aromatic hydrocarbons, organochlorine pesticides, microbiological load;

B. Conservation of nature and Biodiversity, Biosecurity.

B.1. Marine habitats
B.2. State of marine protected areas
B.3. Marine and coastal environment

C. State of the ecosystem and living marine resources. Situation of endangered species

C.1 State of the coast and coastal area

-Coastal processes

-Sea level

D. The state of the marine ecosystem

-Fitoplancton, Algal blooms, Zooplancton, Fitobentos, Zoobentos, Biodiversity indicators

E. Situation of endangered species

F. The state of the seabed

-Indicators for living marine resources

-Measures for solving critical problems

G. Maritime Spatial Planning

H. Anthropogenic pressures

State of the Marine and Coastal Environment, study made in 2011 INCD "Grigore Antipa"

General indicators

- The water temperature registered, along the Romanian coast, in the entire water column, values between 0.8°C and 27.8°C (median 7.50°C and standard deviation 8.92°C).

The minimum values belong to February exclusively on the surface, and the maximum ones to September, regardless of the type of water body analyzed, in accordance with the air temperature.

- Transparency ranged from 0.5 to 6.5 m (median 1.8 m, dev.std.2.2 m). The maximum was registered in May, in coastal waters, Est Constanţa 2 station, and the minimum in transitional waters, at Sulina 10 m, in March (Table 3). In all cases, the minimum values are below 2 m, the value allowed both for the ecological status and for the impact area of the anthropic activity of Order 161/2006 - „Norm on the classification of surface water quality in order to establish the ecological status of bodies of the water".

- The salinity of the transitional, marine and coastal waters in the area of the Romanian coast registered values between 0.50-18.63 PSU (median 16.93 PSU and standard deviation 3.359 PSU). The maximum value belongs to the marine waters, Sulina station 30 m (20 m), in March, and the minimum of transient waters, Sulina station 20 m (0 m), in the same month due to the influence of the river contribution.

- The pH of coastal waters in the Constanţa area recorded monthly average values between 8.10, in December, and 8.37, in January (median 8.24 and standard deviation s = 0.08) In 2010, the average monthly pH values were generally higher, a trend that does not confirm the acidification of coastal waters.

- Dissolved oxygen in the marine environment is a very important and representative variable in assessing the functionality and behavior of ecosystems, especially because it can be relatively easily measured by classical chemical methods (Winkler) or electrochemical techniques. Dissolved oxygen regime, as well as the factors influencing its fluctuations are of major importance in assessing the severity of the impact on marine ecosystems. The primary source of oxygen in the marine environment is the gas exchange at the air-water interface and its direct production through the photosynthesis of aquatic plants, algae and photosynthetic bacteria.

Eutrophication indicators

The main values of phosphate concentrations in the Romanian coastal waters between February and September. Between 1960-2009, the average annual values of phosphate

concentrations ranged between 0.13 µM (1967) - 12.44 µM (1987) (median 1.29µM, dev.std. 2.97µM), with a decrease in concentrations phosphates since 1987. The average value in 2010, 0.52µM, follows the slightly increasing trend of the last 4 years.

Regarding the general indicators, the following results:

- The average annual sea water temperature in Constanţa has increased significantly in the last 8 years compared to the period 1959-2002.
- The median values of sea water transparency increase from transitional to marine waters, but are lower than in 2009.
- Salinity is influenced by river input and climatic factors (especially wind and rainfall) and recorded in 2010 insignificant differences compared to the multiannual monthly averages of 1959-2009, although it is the year with the average annual value (13.94 PSU) that lowest in the last 19 years.
- The pH recorded, in 2010, higher values than in the period 1998-2009, especially in the cold season.
- The average monthly values of dissolved oxygen in the sea water in Constanţa were in the area of variation specific to the area, although they were lower in July and August, when hypoxia and mortality were recorded in fish fauna.
- Although it has not been found since 2001, the phenomenon of hypoxia was also found on the East Constanta profile, due to oxygen consumption in the process of oxidative degradation of organic matter resulting from reported flowering and climatic factors (air and water temperature, wind and precipitation).
- In general, in the long run, there is a slight decrease in the values of dissolved oxygen concentrations in the sea water in Constanţa, starting with 2007.

Eutrophication indicators indicate that:

- In the coastal area of Constanţa, phosphate concentrations recorded very low values, comparable to those of the '60s, but with a wider seasonal variability.
- Total phosphorus generally recorded normal values of concentrations, except for stations located in areas of influence of river input (transitional and marine waters) and anthropogenic influence (coastal waters), in which the maximum values exceeded the minimum value allowed by Order 161 / 2006.

Challenges in the Black Sea Basin

The major issues affecting the environmental status of pollution in the Black Sea are:
- loss of biodiversity
- coastal degradation.

Scientists have identified several serious problems for the Black Sea associated with various types of pollution.

1. In recent years, chemical pollution has been identified as the most serious cross-border problem. Oil pollution threatens Black Sea coastal ecosystems, and pollution levels are unacceptable in many coastal areas and river mouths.
2. Another major problem is the discharge of insufficiently treated wastewater, which leads to microbiological contamination and poses a threat to public health. Radioactive substances were introduced into the Black Sea in small quantities from nuclear power plants and in larger quantities after the 1986 Chernobyl nuclear power plant disaster.
3. The phenomenon of eutrophication or over-fertilization of the sea by nitrogen and phosphorus compounds (also called nutrients), largely due to pollution from agricultural, domestic and industrial sources is a major problem of transboundary pollution. This is a process that degrades the Black Sea.
4. An unusual form of pollution caused by ships is the introduction of exotic species,

largely through the exchange of ballast water or other wastewater. Introduced by accident into the Black Sea, they proliferate in the new environment, due to the lack of natural predators that can limit their number.

5. The last main type of problematic pollutants is solid waste, dumped into the sea by ships and in some coastal cities. Any floating or semi-submerged waste inevitably ends up on the coast. Therefore, the beaches of the Black Sea tend to accumulate a lot of garbage, which is unsightly and poses a risk to the health of humans and marine species.

General Challenges in the Black Sea Basin is compiled from Black Sea Commision 2019 report as below.

Water and Waste Water

The limited access to drinking water and to sewage systems is common for the coastal zones.

Solid Waste Management

Estimating the amount of solid waste processed is challenging because the Black Sea countries have various approaches for estimation and reporting. However, according to the national reports, at least the number of landfills has increased in Romania, Turkey and has decreased in Russia and Bulgaria. There is an incineration plant in Turkey and there are two in Romania.

Protected Areas

The number of protected areas did not change since the issuing of the previous SOE Report in Romania, Russia, and Turkey. There are 92 protected sites with a total area of 16,940 ha, 48 sites of Nature 2000 with a total area of 5,300 ha, and 31 marine protected areas of 302, 200 ha in Bulgaria.

Coastal Erosion

Coastal erosion is the common problem for all the Black Sea countries. Beach erosion/abrasion surveys were carried out in Bulgaria from 1983 to 2003. According to the reports of the surveys, the landslides and erosion terraces cover about 13% of the coastal line of the country.

Tourism

Tourism is one of the most important sectors of economy in the Black Sea countries. However, different reporting criteria of visitors used by the states make the results incomparable. Nevertheless, due to accommodation capacity increase there is an assumption that there is an increasing trend for the number of visitors except Romania.

Renewable energy sector is growing in the Black Sea countries: For example, there is a positive developments in a wind-energy field in Romania. Constanța County has the highest potential for wind-energy production in the country.

Transport

All Black Sea countries have harbors with different traffic capacity. There are oil terminals in the countries: Bulgaria has one, Georgia three, Romania -one, Russia four, Turkey eight terminals. Density of the public road network differs from country to country, with Romania (Constanta county) having the highest (0.35 km/km2) and Turkey having the lowest (0.115km/km2).

Joint Operational Programme Black Sea Basin 2014-2020
Association for the Protection of Human Being and Environment for a Sustainable Development in the World – ECOM
May 2021
Joint Operational Programme BlackSea Basin 2014-2020 is co-financed by the European Union through the European Neighbourhood Instrument and by the participating countries: Armenia, Bulgaria, Georgia, Greece, Republic of Moldova, Romania, Turkey and Ukraine.
„This publication has been produced with the financial assistance of the European Union. The contents of this publication are the sole responsibility of Association for the Protection of Human Being and Environment for a Sustainable Development in the World – ECOM and can in no way be taken to reflect the views of the European Union".