

narrow strip of 6 km and Sinoe lake by a 19.8 km protection barrier). But the majority was built in the southern part of the coastline, where most of the coastal activities involving industry and tourism occur. In the last 55 years there have been built different protective hydro-technical works: drainage, consolidations, terraces and slopes to protect cliffs, and heavy-type solutions to protect beaches: dikes, barriers and breakwaters, groins, jetties. After 1991 this activity had considerably decreased.

In some parts of this section these protection works have had only a limited effect (if any). Nowadays, due to the degradation of 55% of the total littoral system of protection, the beach has retreated: 40m - Eforie Nord (1981-1992); 24m - northern Neptun; 36m - Venus-Saturn (1983-1992).

In the last decades a variety of factors has had detrimental effects and degraded in many ways the Romanian Black Sea coastal environment. Studies revealed that the Romanian shore is in a critical stage, as to erosion (about 60-70% from the entire shore length). This unstable equilibrium is the result of two actions with opposite effects. On one hand the drastic reduced Danube sand flow and consequently the transport of sediments on the beaches, and on the other hand the natural factors specific to the temperate area.

Sectoral development policy of the national/local government:

The development is based on the Government of Romania's official document "Strategy of the Environmental Protection 2001-2004", objective 9: "Rehabilitation and Protection of the Black Sea Coast and Marine Zone", point 9.4: "Measures and works of protecting the Romanian Black Sea coast against erosion".

Problems to be solved in the sector

In this area coastal resources are exploited for economic and social objectives: urbanization, industry, tourism and recreation, fisheries and maritime transport. The area is also under strong influence of general conditions prevailing in Black Sea region due to pollution, overexploitation and other negative phenomena. The sectoral activities produce combined environmental impacts resulting in marine and fresh water pollution, air pollution, loss of natural land resources and marine biodiversity, loss of public access to the coast.

Outline of the Project:

The project will permanently assess the biological communities changes under the condition of man made activities. It will also assess the present state of coastal erosion focused especially on the tourist areas. It will evaluate the condition of hydro-technical works, taking into

consideration some concrete measures for general shore protection, as well as rehabilitation of the sensitive areas along the Romanian coastline.

Purpose (short-term objective) of the Project:

The project is intended:

- to estimate the present state of the coastal biocoenosis mainly of sandy and hard bottom;
- to evaluate the erosion processes in the sensitive areas and assess the relative weight of the factors involved;
- to prevent coastal erosion effects in these areas by providing scientific background for immediate protection actions.

Also, medium term measures for the rehabilitation of these zones will be analyzed and forwarded to the decision making environmental authorities.

Goal (long-term objective) of the Project:

The project aims to reduce the impact of human activity on marine ecosystem in order to induce an increase of biological diversity in the shallow water, to contribute to protection of the ecosystems from shore erosion effects and develop long term management strategies and tools assisting these strategies. The projects aims to evaluate the changes of the terrestrial and aquatic habitats, which support a characteristic flora and fauna.

The overall long term objective of the project is to contribute to the process of restoration of the Romanian coastal zone and protection of its natural and man-made resources.

The most general purpose of the project is to help create the conditions for sound and sustainable development within the context of the ongoing economical growth process. This is to be achieved through the establishment of a cost-effective, efficient, and environmentally sound management system for Constanta and Tulcea County Coastal Area.

Prospective beneficiaries:

- local communities, through the improvement of living conditions, and the increase of marine resources stocks and increase the biological diversity of marine ecosystem;
- tourism agents, benefiting from a better rating of the beaches and of the bathing water quality;
- local authorities, due to better management plans and actual results in the administration.

The Project's priority in the National Development Plan / Public Investment Program:

The project constitutes one of the priorities in the Romanian Governmental Policy, regarding both the general protection of the environment and the industrial and tourist

development of region. It is also very important in the National Strategic Action for Protection and Rehabilitation of the Black Sea (as part of the Black Sea Strategic Action Plan). This is reflected in the National Plan for Research, Development and Innovation, where the first objective concerns the environment.

(5) Desirable or Scheduled time of the commencement of the Project:

The adequate duration of the project is 24 months (2002-2004), starting at the beginning of the year 2002.

(6) Expected funding source and/or assistance (including external origin) for the Project:

Demonstrative constituents of this project related to the rehabilitation of the coastal zones can result in the initiation of other international projects, funded by EU Programs such as FP5/FP6, PHARE, etc.

(7) Other relevant Projects, if any.

There are several national research projects concerning:

- the assessment of the ecosystem and coastal changes and also of the geo-dynamical processes responsible for these local and general evolutions;
- the integrated monitoring of coastal areas.

Similar projects have been proposed for FP5 (Energy, Environment and Sustainable Development Program – GerSed, Annex IIIa), Romanian National RDI Program (Subprogram Environment, Energy and Resources – Geomorphological Evolution of Romanian Littoral-Erosion and Protection, Annex IIIb) or finalized project with European Union (EROS 21- The Interaction between the Danube, Dnestr and Dnepr rivers and the North-Western Black Sea).

2. Terms of Reference of the proposed Study

(1) Necessity/Justification of the Study:

Taking into account the present situation of the Romanian shore, as well as the existing knowledge on this issue (ecosystem, topographic leveling, underwater surveys, data on wind, waves, currents and sea level, detailed design and construction information for the hydro-technical works), the study should aim at:

- assessing the benthic communities of the marine shallow waters;
- study the dune vegetation changes related to shoreline protection;

- collecting and updating the data (including the measurements of the parameters concerning waves, currents, sea level, sediment transport, submerged investigations on the protection works);
- set-up of the appropriate databases for continuous and complete observations;
- evaluation of the erosion processes in the sensitive areas and assessment of the relative weight of the factors involved;
- building of an overall (integrated) image of shore state;
- holistic and critical analysis of the protection solutions implemented until now;
- proposal of scientifically based actions for immediate protection measures ;
- medium term measures for the rehabilitation of these zones;
- long term policies for the overall shore protection.

(2) Necessity/Justification of the Japanese Technical Cooperation:

This cooperation is needed from the following points of view:

- logistic assistance for ecological monitoring of marine shallow water;
- logistic assistance for dune vegetation assesment for coastal restoration;
- logistic assistance for coastal monitoring and management;
- technical assistance for elaboration of the Master Plan on Integrated Coastal Management;
- technical assistance for elaboration of the Feasibility Study on Conservation of Littoral Ecosystem and Beach Management.

(3) Objectives of the Study:

Based on the present knowledge on the coastal processes, the objectives of the proposed study are:

- to ensure the basic information regarding the state of the shallow marine benthic communities and littoral dune vegetation;
- insurance of the necessary informational support for assessing the coastal erosion at the local and global scales;
- to setup of a coastal engineering database needed for shore protection solutions;
- to elaboration of regulatory proposals for local, national and regional environmental agencies.

(4) Area to be covered by the Study:

The study will cover the most part (about 200km) of the Romanian coast consisting both in natural (low laying beaches, cliff shore, biological communities from shallow marine waters, and vegetation dunes) and protected (coastal engineering structures) shore areas.