SHOQATA "MBROJTJA DHE RUAJTJA E UJRAVE TE EMBLA DHE BREGDETARE TË SHQIPËRISË

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IMPLICATION OF CONTINENTAL DISCHARGES OF ALBANIAN RIVERS ON ADRIATIC SEA HYDROLOGY AND LAND PROTECTION AND PRESERVATION OF ALBANIAN ADRIATIC LITTORAL

Tirana, December 2004

Title of the project (Draft):

IMPLICATION OF CONTINENTAL DISCHARGES OF ALBANIAN RIVERS ON ADRIATIC SEA HYDROLOGY AND LAND PROTECTION AND PRESERVATION OF ALBANIAN ADRIATIC LITTORAL

Proposers

	Proposers Names	**Institution**	**Country**	**Total Cost (ECU)**	**Requested EC Contribution**
Coor/ator 1			Italy		
Partners 2	Prof. Dr. Niko Pano Prof. Dr. Alfred Frasheri	1. Assoc. of Albanian Inland and Coastal Water Conservation and Protection. and by contracts: 1) Academy of Sciences. 2) Tirana Universities 3) Forest and Pasture research Institute.	Albania		
Partners 3					

SUMMARY OF THE JOINT RESEARCH PROPOSAL:

The aim of this project is to examine, demonstrate and disseminate the positive technical and financial aspects of the transfer of technology and methods for:

1. Oceanographic study of Eastern part of Southern Adriatic Sea

2. Hydrological, geological, hydrogeological and biological and environmental investigations of Albanian coastal areas.

The Albanian coastal area lies on the East Side of the Southern Adriatic Sea and Northern Ionian with a general coastal line of 447 Km long. This include the eastern side of Otranto straits which is considered one of the most complicated and interested oceanographic zone of Mediterranean Sea. Water continental flow which is formed in the general catchment area of 43 306 km^2 of Albanian hydrographic network discharging, is a intensive one and the long term average discharge in the sea is 1 308 m^3/sec. The volume of suspended matter, which is transported through river network, is

65.7 10^6 ton/year and the total volume of suspended matter discharging in the Mediterranean Sea is 10.3. 10^6 ton/year. Long term value of the variation coefficient C_v=0.34 is very high.

The region in Shkumbin- Seman-Vjosa- Vloa littoral is located in Central Albania, 40 km in longitude and 10 km in width. It expands in the western part of Ardenica and Divjaka hills range, which are nearly 190 meters high. Karavasta lagoon, the biggest in Albania and almost unique in Balkan is also part of the region. It covers 41.8 km². From the geological viewpoint, this territory represents a new soil, constituted at the end of Pliocene and during quaternary; quaternary sediments and the lowland by Pliocene ones constitute the western hilly part. The present relief is constituted of the solid alluviums of Shkumbin and Seman rivers. The coastline in this region has a very intensive dynamics. It accumulates, advancing on the sea in the delta of Shkumbin River, whereas the coast is abrasive in Seman River region flooding the zone. In ten last years, the coastline has advanced some hundred meters. In particular the process is accelerated by the intervention of the human hand. The river flows have grown, in particular after the massive construction of terraces in the hilly and mountainous regions of the country.

Of significant interest is the creation of Karavasta and Narta lagoons in the area of an old bay detached from the sea. In the western part of the Karavasta lagoon lies a godulla, named the same way. Its areas are nearly 8.5 hectares. It started to develop in the first decade of the XX century. In the particularity, it is very beautiful the old Monastery in Zverneci, near of the Narta vilage in the Vlora area.

The lands are alluvial, grey to brown and sandy. They are appropriate for the cultivation of cereals, industrial plants, vegetable and vineyards. In Divjaka region, on the edge of the forest, there lies a clean and beautiful beach. Archaeological objects of 2600 to 600 BC are found. Divjaka forest is the biggest massive in the whole region. The climate of the region is typically Mediterranean. The winter is mild and wet; the summer is hot and dry. The average annual temperature is 16.6°C. The average quantity of rainfalls is nearly 930 mm per year. Karavasta and Narta lagoons are also of the few reservoirs of pelicans in Europe. Its waters are rich in - levers, skate, mullets, and eels. In Divjaka forest pheasants (Phasianide) are cultivated.

As a conclusion to this brief overview stands that Shkumbin-Divjaka-Karavasta-Seman-Vlora region is of great importance in the modern development of agrotourism. It represents the most significant point in the littoral, from Vlora to Lezha coast, a pearl in the Adriatic. It is important for Albania and Europe as well.

PROJECT OBJECTIVES:

The Project objectives concern the fundamental issues regarding knowledge on oceanography, hydrography, geology-gemorphology-hydrogelology, biology, environment, programming of environment protection, the maintenance of the ecological equilibrium and programming of technical-administrative measures as regards agro-tourism, urban and transport planning.

1.A. Evaluation of the intensity of the Albanian hydrographical network discharging into the Mediterranean Sea, its long-term variation (river discharge, volume of suspended matter, etc.)

1.B. Influence of the water continental long-term variability discharging to the general circulation of the open Mediterranean Sea study. In particular deep-water mass formation and circulation and flow intensity of Levantine intermediate waters into the Adriatic Sea evaluation, and water exchange through Otranto Straits investigation.

2. Shallow offshore area

2.1. Morphodynamics processes in the Adriatic Shelf and coastal area.

2.2. Detailed bathymetric mapping of the sea bottom.

2.3. Geological-geophysical marine cartography of the sediments, their distribution.

2.4. Study on the sediments' degradation and pollution, and their movement due to water currents.

2.5. Study of the Wave State and their refraction processes, coastal waves and their influence on hydromorphological processes, convergence and divergence area of the wave energy, tides waves caused by storm, tidal and gradiental currents. The wind parameters evaluation.

2.5. General water currents study, in relation to the coast waves and wind. Albanian accumulative and eroded coastlines mapping, natural radioactivity investigation of the Albanian coastal area.

2.6. Hydrology: old and new yields

2.7. Modeling of the waves activity

3. On shore area:

3.1. Geological-geophysical, geomorphologic and geotechnical mapping in 1:25 000 scale, as well as 1: 5 000 scale in sectors with good prospects.

3.2. Hydrogeological conditions study.

3.3. Underground waters basins pollution estimation.

3.4. Slope stability investigations.

3.5. Identification of the old coastline, monitoring of the dynamics of present one.

4. Modeling of the POM (Princeton Oceanic Model). It will incorporate a turbulence closure sub-model to provide a realistic parameterization of the vertical mixing processes. The model gives the possibility that tides and storm surge events can be stimulated. The model also incorporates the coastline geomorphology and bottom topography.

5. Biological Studies

6.Laboratory Studies

6.1. Physical-mechanical properties determinations of littoral sediments, in particularly of the clays permeability and rheological properties.

6.2. Mineralogical study.

6.3. Paleontological study.

6.4. Chemical analysis.

7. Geological hazards of littoral area. Anthropogenic and non-anthropogenic environmental impact study.

Study on the ecosystems changes and their impact on the fauna and flora of the littoral area, in particular in Karavasta lagoon, in the beaches, in the pine forest of Divjaka forest etc.

8. Programming of the main issues related to geological environment and hydrogeological resources, regarding to the agro-tourism and urban planning.

9. Programming of the main technical issues for the protection of the coastline and the constructions in its vicinity.

SIGNIFICANCE OF THE PROPOSED RESEARCHS AND ITS EXPECTED ACHIEVEMENTS.

In the oceanographic studies, which refer to the Mediterranean Sea about the circulation and formation, processes of water masses the influence of the Albanian Continental Waters is not yet take into consideration. So, a possible investigation of these problems would be initiated under any appropriated project.

The integrative approach of this joint demonstrative research will give an impulse to the environmental geological investigations in general in Albania, in particular contribute for a sound geological knowledge of the littoral. This will lead to economic, social, technical and environmental benefits. The application of new technology systems for environmental studies will bring market penetration.

The European companies involved in the supply of the technologies promoted by this project, will benefit by the increase of their sales in the region.

The project data will recommend a further investigation of the evolution dynamics of the coastline, an critical problem of the littoral. It's a known fact, that only during the last 60 years, the mainland area of river Shkumbin delta has increased in several hectares, whereas the clean and attractive beach of Seman, is disappearing annually under water. In less than ten years, we have a very

different picture. One cannot define the ways and strategies for maintaining the mainland, without knowing the coastline dynamics. In the present situation no decisions can be taken where and what can be constructed at this coast.

These data analysis, in relation to the impact on the flora and fauna of the region, will lead to a scientific programming of the measures that should be actually taken, also in the future in order to maintain the region's ecological balance, rich in such natural assets. Agro-tourism can develop only under these conditions.

Albania is a country with a high seismic activity. In that view, there is a need for programming the technical measures, protecting human life as well as construction work.

The region's hydrographic net, in particular Shkumbin, Seman, and Vjosa river waters and the many streams have brought solid and dissolved waste of the metallurgical industry of Ferro-nickel in Elbasan, petrol industry in Kuçova, Marinza, Patos, Cakran and Gorishti, as well as herbicide and pesticide waste. This has heavily polluted the environment and the underground water resources. Research on the region's pollution, the cartography of polluted areas above acceptable norms, in particular those radioactive, as well as programming for the measures that should be taken for the elimination of harmful effects in the life of the people and ecological equilibrium protection,

The project that is being proposed has the aim of transferring modern technology of the integrative research for the environment protection as well as the methods of study for prevention of ecological catastrophes. This technology will serve even for the further study of other coast regions in Albania. The project is of relevance for the distribution of information and study of the environment geology, for the programming of the measures for the littoral environment protection and agro-tourism planning.

In particular, the system will provide the relevant data for the development of the geographic informative system GIS, which will summarize the study of the old coastline, its actual status and the necessary previsions of its dynamics in the future. Based on the study, various proposals will come out related to land protection, and construction work by the coastline. In this respect, the climate changes caused by ozone atmosphere distraction will be considered.

PROJECT DURATION

The project duration is three years

Tirana, November 12, 2003