



## LAND-SEA PROJECT

“Sustainability of the Land-sea System for Ecotourism  
Strategies”

## PREPARATION PAPER



**SECOND STUDY VISIT**

15TH OF DECEMBER 2017

**VARNA, BULGARIA**



## INTRODUCTION

The main objective of the project is to favour a more inclusive, effective and efficient processes of regional governance so to increase and to encourage the creation of institutional competences and skills for the development of a sustainable coastal system, able to preserve natural habitats and contextually to support the development of regional ecotourism strategies.

For coastal areas, we mean a complex system identified not only with the coastline itself but also with its various subsystems and with its linked river basins. In fact, the EU coastal areas represent fragile and vulnerable systems in physical, territorial, anthropic, social and economic terms. Consequences are found in the emergencies of environmental degradation, scarcity of water, hydrogeological risks, loss of biodiversity and the effects related to the climate change. From here the need to cooperate for mutually learning how to conjugate the need to preserve and the need to develop a coastal territory.

The project sees the participation of the River Basin Authority of the rivers Liri – Garigliano and Volturno/ Southern Apennines River Basin District acting as Leader partner, the Molise Region (Italy), the Regional Administration Varna (Bulgaria), the Free and Hanseatic City of Hamburg – Senate Chancellery (Germany), the General Government of Catalonia and the Barcelona Urban Ecology Agency (Spain).



## VARNA REGION

Varna region is one of the twenty-eight regions of Bulgarian regions. There are 12 municipalities - Avren, Aksakovo, Beloslav, Byala, Varna, Vetrino, Valchi Dol, Devnya, Dolni chiflik, Dalgopol, Provadiya and Suvorovo. Within these limits it occupies 3 822,2 sq. km. or 3.5% of the country's territory. The population density is 123,7 per km<sup>2</sup>, which is significantly higher than the national average. The Varna region contains 159 urban zones, of which 10 are cities and the number of municipalities is 120.

The balance of region territory represents agricultural lands, which cover 60.0% of the whole area, 28.1% of forests, 6.8% of urban zones, 2.3% of roads and ports, 1.9% of water areas and 0.9% of mining extraction. The protected areas in the region occupy only about 1% of its territory. The length of the Coastal Line in Varna region is 79 km long.



On the territory of the Varna region are registered some of the biggest ancient and modern landslide processes. They cover almost the entire coastal zone: to the north of Varna to Kranevo (Frangen landslide complex, including the cirque "Long Yar", "Golden Sands", "Aladzha Monastery", Vinnitsa and Varna), in Varna city (Vazrazhdane residential area and Botev residential area), south of Varna (Galata, Fichoza, Sakamata dere, Pasha dere, Rodni balkani, Kamchia - camping Romantika, Byala), as well as in the town of Provadiya (Provadiyska river), Staro Oryahovo, Novo Oryahovo. The coastline has well-pronounced old and modern abrasive, landslide-abrasive, landslide and accumulation forms. The shore is



terraced by landslides. The morphology of the Frangen Plateau is closely related to the most extensive landslide complex on the Bulgarian coast.

Between Galata Cape and the Kamchiya River Valley, the shoreline is hilly-terraced on the slope, which is cut from the gullies and saturated with numerous small landslides. Modern abrasive and accumulating processes are occurring on the shore - with the accumulation of mobile sea and river beds.

- One of the main reasons for the activation of landslides is the intensified urbanization along the coastline, consisting of: additional loading with static and dynamic loads on the slopes; felling slopes; increasing water infiltration; obstruction of surface and underground runoff; construction of buildings and facilities not in accordance with the engineering-geological and hydro-geological conditions; lack of sewerage network; leakages in the water supply network, poor exploitation and poor maintenance of the drainage, anti-shrinkage, water-suppression and anti-abrasion facilities and others;

- In combination with the peculiarities of natural terrain, climatic conditions create favorable conditions for the development of agriculture (cereals, sunflower, sugar beet, vines and livestock);

- The tourism is a priority sector for the economy of Varna region. Varna region has some of the most attractive natural and anthropogenic tourist resources in the country with a unique combination of natural resources (beaches, mineral waters) and cultural heritage and traditions, which has led to a serious development of the tourist as a whole;

- The extensive network of protected natural areas represents a significant potential for the development of cognitive, ecotourism and other forms of alternative tourism;

- A valuable resource with recreational, spa and thermal energy significance is the mineral waters that allow the combination of climate and balneotherapy along the coast and the extension of the tourist season as well as the numerous valuable sites - monuments of the natural and cultural heritage along the coast and within the region as well as historical, cultural and entertainment sites of Varna, which offer a unique opportunity to enrich the holiday at sea and extend the tourist season. The natural and anthropogenic features and resources in the area create opportunities for the development of annual polyvalent tourist product - balneological, cultural, ecological and rural.



The ambition of the Regional administration Varna is to achieve results in the following directions through its project participation:

- ✓ counteraction of landslide processes by creating policies for the construction of new drainage, anti-shrinkage, water supply and anti-abrasion facilities in order to reduce threats to the development of coastal ecotourism;
- ✓ Stimulating the eco-tourism which will lead to a job creation in the future, will increase the local employment especially in the poorer municipalities of Varna region. Green tourism in return, would provide significant environmental benefits, including a reduction in water, electricity and CO2 consumption;
- ✓ The organization of meetings, events and forums, exchange of knowledge and experience to support decision-making at local and regional level by the state administration on activities to limit the negative impacts of the exploitation, production, consumption and destruction of natural resources.

The the final results will be formed in formal proposals by the Regional Governor of Varna region to the Managing Authority of the Operational Program "Regions in Growth", so that they can be subsequently extended with construction and construction activities. That is why the policy instrument is the Operational programme "Regions in Growth", because the fight against the landslide processes requires activities in its sphere of design / construction /.

## THE STUDY VISIT

Varna is the third largest city in Bulgaria, with an area of 205 sq. km. Its situation on the western shore of the Black Sea, along with its richness in natural resources make it one of the famous resorts Europe-wide, definitely the largest one in the Black Sea region.

### **Panorama area - resort Golden Sands**

In the area "Panorama" is located 18 km from Varna city in the northern part of the "Golden Sands" resort. A serious problem is the sinking of the road between resorts "Golden Sands" and the village of Kranevo, after the stop "Panorama", which could lead to the closure of the road link between Varna and Albena resort. The landslide covers territories of two of the municipalities of Varna region, namely the municipality of Varna and the municipality of Aksakovo. This fact creates difficulties in applying for projects with programs for realization



of activities for strengthening of anti-shrinkage and anti-abrasion activities, as it is necessary to thoroughly strengthen the terrain, including coasting works, construction of a deep drilling for mineral water extraction; drainage of the site and construction of a separate drainage system for collecting and removing rainwater, which is relevant for stabilization of the slope;

### **Shokarov channel**

Shokarov channel is the largest drainage gorge in Varna. Responsible institutions for water control in the gully, according to their competence are: **Regional Inspectorate of Environment and Waters-Varna, Regional Laboratory-Varna to Environmental Executive Agency, Varna Municipality, Regional Administration-Varna, Basin Directorate for Black Sea Region, Water Supply and Sewerage-Varna Ltd.** Each year, with a order of the Regional Governor of Varna region, a working group with representatives of all the institutions that have the power to resolve the crisis situation for monitoring is being formed to analyze the Shokarov Channel as well as gullies that flow into it in order to detect unregulated sources of pollution. In which there were discovered offenders who pour out the excavation pits and those that have discharged into the canal. All offenders are sanctioned and imposed administrative measures. But a lasting solution that solves the problem is not open, as every overcast rain overflows and then bad guys drop their pits into the gullies.

As the canals are discharged into the sea at the Officers' Beach in Varna, this leads to a strong pollution of the sea in the area, as there are deviations from microbiological indicators showing high levels of Escherichia coli and intestinal enterococci. In 2016, a project was launched to dismantle the Shakur River Channel at 430 meters deep into the sea, not to pollute the waters of the city's beaches. As before, it will be separated from two automatic grids and a Shark Channel overflow separator. More than BGN 2 million is needed to implement the project.



### Trifon Zarezan Landslide



One of the most serious problems for the development of the tourist infrastructure in the region is the landslide at the bus stop "Trifon Zarezan", which more than 10 years ago closed the panoramic road between Varna and „Golden Sands" resort. In the 80s of the last century due to the problem, all traffic to and from the major resorts north of Varna was transferred to the abandoned highway to Constance, Romania. The road is heavily loaded with traffic which carries risks of accidents and make the area unattractive. Moreover, the ongoing landslide in the area of Trifon Zarezan bus stop actually blocks the infrastructure development of "Golden Sands" resort in the south direction.

The measurements confirmed that the landslide is active, which is why Geoashtita Varna Ltd. should take special measures. The documentation from the surveys was analyzed by expert from the Ministry of regional development and then forwarded to Varna Municipality. The municipality administration must accept the expert regional development council's report and decide whether to build a facility to displace the landslide area. The solutions for the displacement is via a viaduct to step on the fortification facilities or through a low bridge, are the only ways to restore the road.



The main landslide circus is to be captured to determine the extent of the landslide processes and the boundaries of the risk zone. Engineering, geological and hydrological research will then be carried out to develop an investment project to decide on the sustainability of the slope and to restore the road.

An obstacle to the realization of this project is the claim of the owners of properties in the area in which the consolidation and the construction works must be carried out. Although their properties are under constant danger for years and are virtually unusable due to the continuous slump to the sea, property owners are demanding benefits that can hardly be met.

Municipality of Varna can apply for funding under the Operational Program "Environment" 2014-2020, where there are funds for strengthening of landslides.

### **Alley first**



The erosional landslide processes which should not be delayed, are on the slope of "Primorski park", on the First alley on the sea shore, over the 103 shoreline. The affected stretch is with length 80 to 50 meters and is located 300 meters from the slope of Alley First. The rocky slope is part of the Sea Garden and is state-owned.





The problem is resolved only in the fortified part above Alley First. For the last years the anti-erosion strengthening of the slope on the promenade in Varna is one of the most important consolidation events in the municipality of Varna and in the region. Emergency reinforcement of the slope consists of:

- Reinforcing wall, consisting of a highly reinforced rectangular reinforced concrete section 80 cm wide and 7.5 meters high, laid on reinforced concrete piles with a diameter of 80 cm and a depth of 7.5 meters, axially spaced 1 meter apart;
- Subsequently, the wall is clamped to the skeleton with steel anchors, injected with cement solution with 24 meters' length and a diameter of about 8.5 cm;
- The open slope from the front of the wall to the top edge of the bay is wearing special bridging steel grids and reinforced concrete grids that are grassed with hydropower, and separate sections and wooded with special erosion-strengthening plants for the landscaping task. The grids are intercepted for reinforced concrete piles with a length of 3 to 8 meters and a cross section of 35 to 60 cm drifting along the top edge of the slope to the panoramic alley.



### **The gully in Asparuhovo district**

Most dry gullies which are out of the Varna regional regulation are impoverished and are likely to cause flooding. The problem is that Regional Administration Varna has the obligation to support them, but for this purpose no funds are allocated. Legislative changes are needed - to have a financial budget for regional governors or municipalities to clean gullies.

On 19 June 2014, the disaster in the Asparuhovo district of Varna was the result of the heavy rain that caused the landslide to land. These earth masses have cluttered the gullies and formed pools that have overflowed and a tidal wave of two and a half meters high. Illegal logging, discarded waste and illegal houses have also contributed to the tragedy.

