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## Balkan-Mediterranean HERMES

A HarmonizEd fRamework to Mitigate coastal EroSion promoting ICZM protocol implementation

December 2018

## Newsletter # 2



View of a beach in Ammolofi ( Paggaios Municipality )

### Pilot sites in Greece

#### *1. Name and location of pilot sites*

The pilot sites in Greece are situated within the boundaries of Paggaios Municipality in Thracian Sea–North Aegean Sea. Kariani beach is approximately 16.3 km long with a maximum width of 76 m at the western part near the Strymonas river delta. Adjacent to Kariani beach, at its eastern boundary, the coastline continues forming Ammolofi, the sandy beach and the dunes' system extend up to 50 m in width, covering approximately 20 km.

#### *2. Importance for local economy*

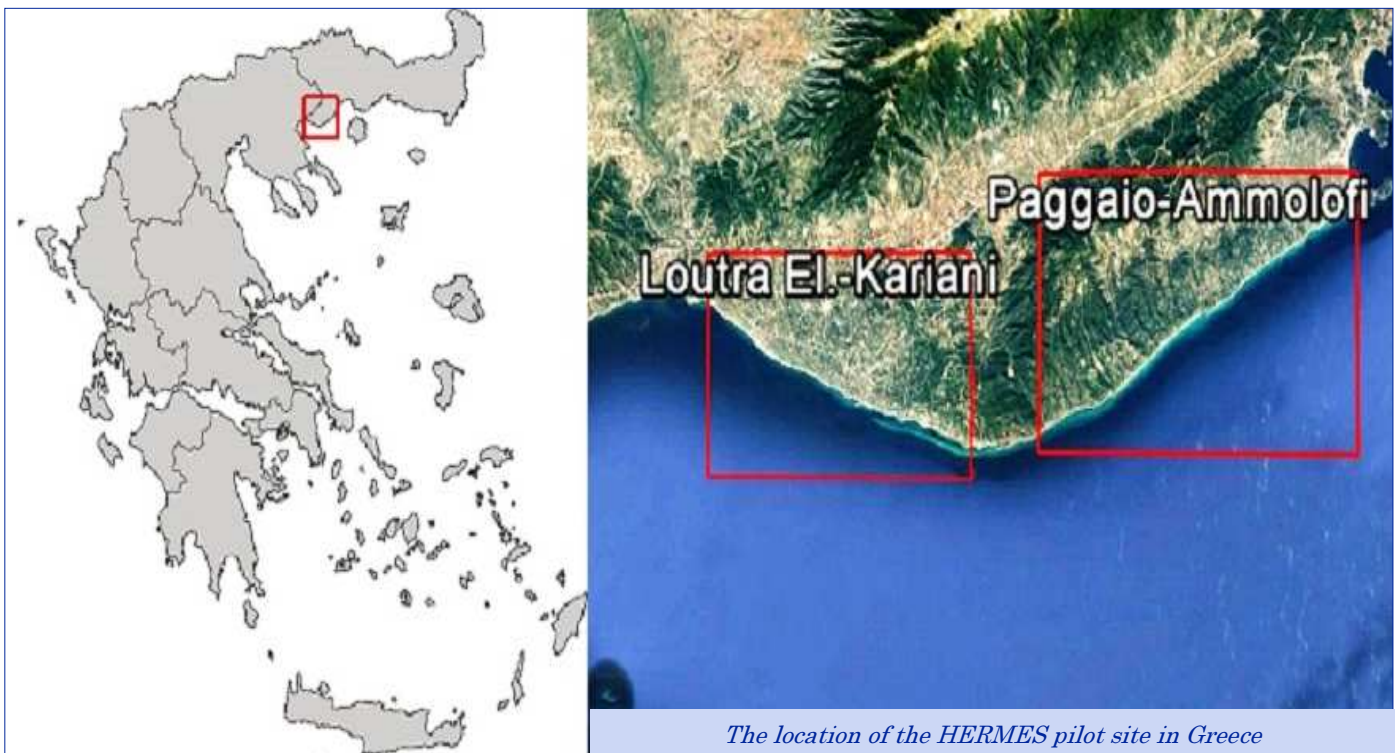
The coastal zone of the Municipality of Paggaios represents the single largest source of employment and the basic perspective for the local economy. Being the main asset of one of the rising tourist destinations in Northern Greece, the sound and efficient environmental management of the coastal zone has become a top priority for the Municipality.

### *3. Coastal erosion problem and its impact on the community*

In the Greek pilot sites, coastal erosion is a process that is largely driven by anthropogenic pressures and the existence of constructions with clearly negative environmental impact. Yet the coastal zone is the hotspot of business activity and therefore the most important source of economic growth. Consequently, any further deterioration of the environmental status of the coastal zone will have an immediate negative impact on real economic activity.

### *4. The contribution of HERMES Project*

The transnational approach introduced by the HERMES project facilitates the development of knowledge and the use of new methods to develop and implement tested solutions that combine cutting-edge technologies with the mobilization of local know-how.



## Pilot sites in Cyprus

### *1. Name and location of pilot sites*

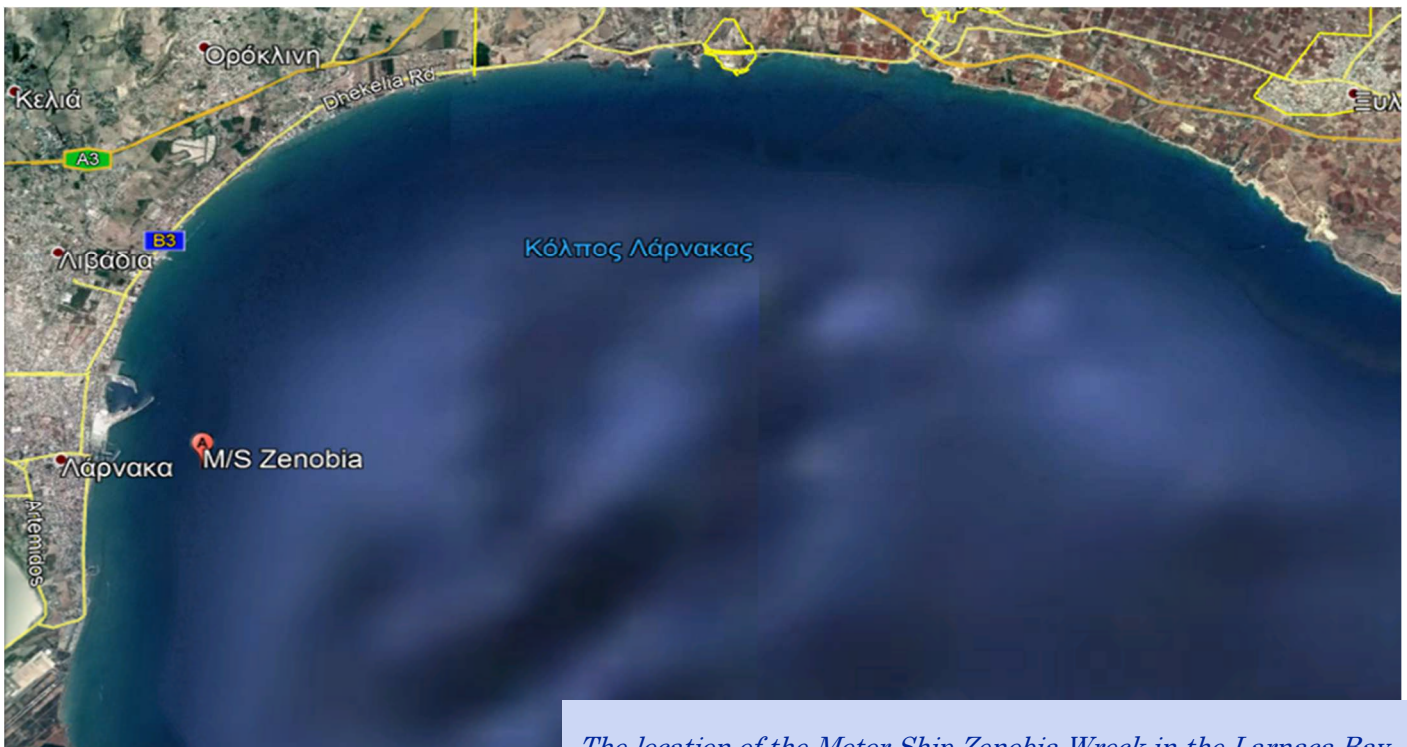
The selected pilot sites are the northeast coastline of the Larnaca Bay, particularly the Oroklini one and the coastline in Zygi. Both areas are faced with serious coastal erosion, especially the coastline of Oroklini.

### *2. Importance for local economy*

The Oroklini coastline is known as a recreational place with many relevant facilities, while the Zygi is known as an area with a large fishing shelter. Oroklini plays an important role in the tourist industry of Larnaca, while Zygi is connected primarily to the local fisheries economy.

### *3. Coastal erosion problem and its impact on the community*

Along the urbanized northern coastline of Larnaca Bay, the Oroklini beach erosion is vividly seen along few km together with offshore wave breakers. In order to protect the coastline from further erosion hard structures are constructed on the beach, while more construction works are currently in progress. In Zygi, after the building of a large fisheries shelter, offshore wave breakers were constructed to protect the coastline.



*The location of the Motor Ship Zenobia Wreck in the Larnaca Bay*

### *4. The contribution of HERMES Project*

Within the frame of the HERMES project a network of four monitoring platforms will be deployed to monitor the sea currents, waves, sea level variation and suspended particles. One of these platforms will be deployed in the western part of the Larnaca bay at a depth of around 30 m, not far from the well know “Zenobia Wreck”, which constitutes one of the 10 top most popular scuba diver wreck in the world. The data will be delivered in real time via the mobile phone network (GSM) for the HERMES project needs and will inform scuba divers in the area of “Zenobia Wreck” about marine safety issues . Moreover, forecasting data (sea currents, waves, winds, Sea surface temperature (SST) , sea level) from a downscaled high resolution numerical model in a dedicated domain to cover both Larnaca bay and Zygi areas.

## Pilot sites in Bulgaria

### *1. Name and location of pilot sites*

The selected pilot sites are coastal stretches of the northern and the southern shore of the Municipality of Varna. Both areas are affected by coastal erosion. Along the northern part quite some coastal works were done in the past 40 years, while in the southern part the coast is not affected by coastal works.

A notable effect of climate change is accelerated coastal erosion during the last decade. Urban waterfront and untouched coast are both affected by stronger impacts due to storms. Therefore, systematical monitoring and data acquisition shall take place in order to find new trends in coastal processes.



*The two locations for the Oceanographic Station in Varna*

*Eroding coast to the south of Varna (beach Galata-South)*



### *2. Importance for local economy*

Beach recreation in the vicinity of Varna has started as early as in the beginning of the 20th century. A remarkable for that time beach recreation infrastructure was built in 1926. Beach front development was accompanied with massive landscaping and plantation of rare plants that resulted in the so-called Sea Garden which is backing the Varna municipal beaches along approximately 5 km of shoreline.

The share of the Bulgarian economy produced by direct, indirect and induced tourism is significantly higher than the share in Europe - respectively about 14% and about 9%. This means that for the Bulgarian economy, tourism has 50% higher weight. It is clear that the role of our beach resorts is of utmost importance for the sustainability of Bulgarian tourism. Having in mind that the Municipality of Varna is housing the oldest Bulgarian Black Sea resorts since 1903, the future of our beaches shall be top priority issue.

### *3. Coastal erosion problem and its impact on the community*

Along the urbanized northern coast, beach erosion is increasing. Chronic erosion was a fact already 20 years ago because of drastically reduced discharge of terrigenous beach material. During last decade, a few, but extreme storms caused change in the probability of exceedance of storm wave parameters, which may constitute new trends for accelerated coastal erosion in the near future. The coastal structures built would be exposed to higher impacts than presumed by the design and therefore damage becomes more likely.

To the south of Cape Galata, where the coast is not urbanized and coastal structures do not exist, signs of erosion are visible everywhere. For about 50 years this part of the coast was more or less in dynamic equilibrium. There are clear signs that the status is changing and thorough observation and monitoring of the coast is a must.

### *4. The contribution of HERMES Project*

The HERMES project is piloting a systematical approach to learn, monitor, and mitigate coastal erosion which will be implanted in the administrative systems of coastal communities. Having this in mind, the first monitoring station in Bulgaria shall take place in an area where the information and data gathered is expected to be beneficial on the short run. The shore of the Municipality of Varna is a suitable coastal stretch in that respect.

An oceanographic station located at the entrance of Varna Bay sufficiently far offshore would provide useful information and data to serve both areas. Because of the existing infrastructure, the northern area is more suitable for the first installation of the station. This is the location HERMES BG1. At the second stage, the station will be relocated to position HERMES BG2. Besides that, sharing information and experience between the partners will improve the understanding of climate change impacts on coastal erosion and will help to build confidence in predicting changes that might take place in the coming decades.

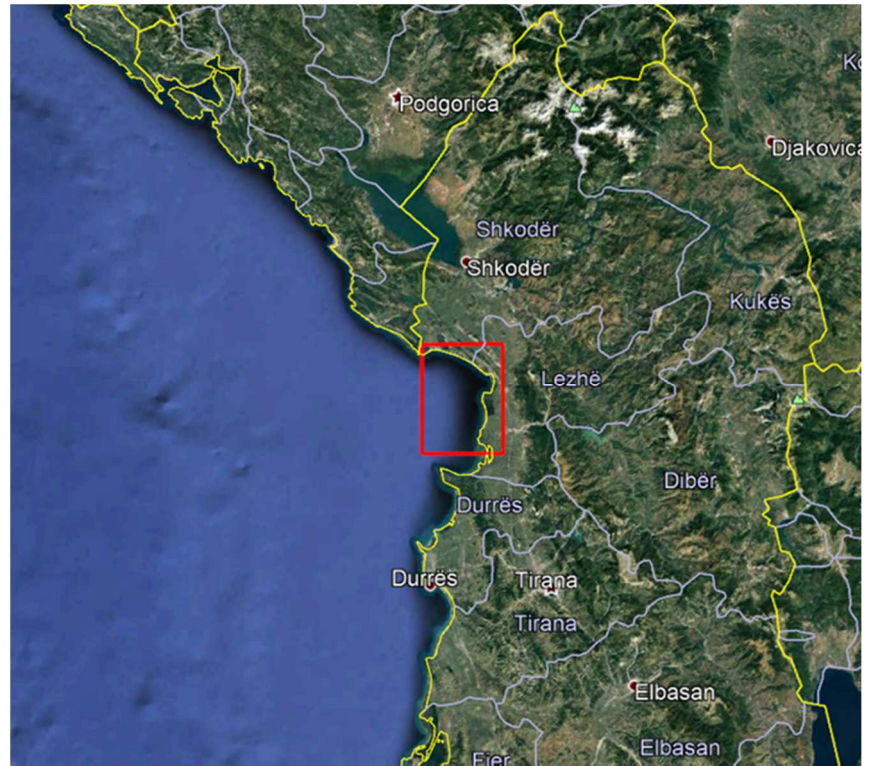


*Storm waves attacking the northern shore of Varna Municipality  
(Sts. Constantine and Helena Resort)*

## Pilot sites in Albania

### *1. Name and location of pilot sites*

The selected pilot sites are in north-west Albania near the Shëngjin city and Buna River mouth. The variation of transported sediment volumes caused by human activities and the evolution of the river is strongly affecting the sediment dynamic along the littoral zone of these areas. In order to take actions, the starting point is the knowledge of the complex phenomena governing the coastal dynamic.



*Location of the pilot sites in Albania*

### *2. Importance for local economy*

The whole area has got a great natural value and is characterized by the presence of lagoons, salt marshes, lowlands and dunes belts. These belts are both near the coast, with heights close to 1-2 m, and in the internal part of the coastline. The coastal zone is divided into sectors with sandy areas or alluvial deposits and lagoons. Both areas are very important location for tourism and habitats. Kune Vain lagoon is a natural protected area located in the most part most exposed to coastal erosion.

### *3. Coastal erosion problem and its impact on the community*

The form of a shoreline depends strongly on the climate of wave conditions it is exposed to. As a large number of beaches is characterized by low values of height, the coastline is very sensitive to variations of the average sea level and it is at serious risk with its increase due to future climate change. In recent years, the dunes and the vegetation have been significantly damaged by human actions, such as the creation of small villages and the opening of roads to facilitate access to beaches. The picture is further complicated in the hilly areas, close to the alluvial plain, where in recent years many small reservoirs for irrigation have been built causing a reduction of sediments carried to the sea. The consequence is a sediment deficit which is associated to coastal erosion. Processes of erosion have characterized almost all the coastal area from the mouth of River Mati to the area of beach near the port of Shëngjin.

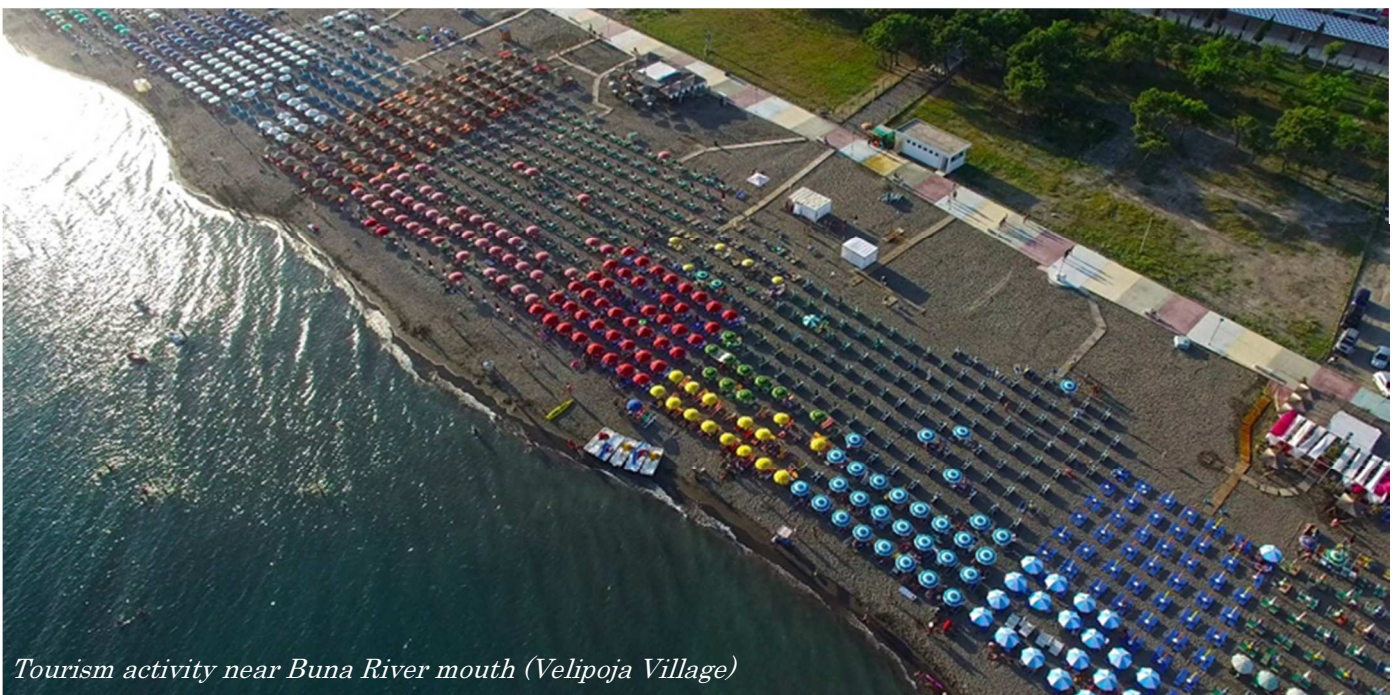
*Coastal erosion near Kune vain Lagoon*



#### *4. The contribution of HERMES Project*

Global warming causes sea-level rise as oceans expand and makes storm patterns more energetic. Consequently, it will affect most of the world's coastlines through inundation and increased erosion. Sound predictions of the development of these hazards over the future are needed in order to manage the resulting risks. In this context, a proper planning for the coastline development and for targeted interventions, such as the preservation and reconstruction of the dunes systems, are of fundamental importance for the protection of the coast and lowlands.

The HERMES project is raising the knowledge of this phenomena in the most risked areas. The use of the science and technology will contribute in a better understanding of the risk now and into the future. Sharing the information with other countries that are facing similar problems will lead to evaluate the best way to address the possible solutions.



*Tourism activity near Buna River mouth (Velipoja Village)*



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