

BEACHMED – e

Strategic management of beach protection measures for the sustainable development of the Mediterranean coastal areas

INTERREG IIIC Sud Phase B of Measure 3.2

“ICZM-MED: Concerted actions, tools and criteria for the Integrated Coastal Zone Management of the Mediterranean”

“Actions concertées, outils et critères pour la mise en oeuvre de la Gestion Intégrée des Zones Côtières (GIZC) Méditerranéennes”



Dr. Manos Koutrakis
National Agricultural Research Foundation
Fisheries Research Institute
Nea Peramos 640 07, Kavala, Greece
E-mail: koutrman@otenet.gr

3.2. ICZM-MED Partners



P1. Fondation Nationale de Recherche Agronomique, Institut de Recherche Halieutique (NAGREF-FRI), Greece, Contact: Manos Koutrakis, A.Sapounidis



P2. UNIBO / DISTART, Italy Contact: Silva Marzetti



P3. Litorale SPA, Italy, Contact: Valentino Giuliani



P4. Département d'Ecologie et développement économique supportalbe (DECOS), Italy, Contact: Giuseppe Nascetti, Simone Martino, Fulvio Cerfolli



P5. Università degli Studi di Genova, Dipartimento per lo Studio del Territorio e delle Sue Risorse (DIPTERIS), Italy, Contact: Prof. Mauro Fabiano, Valentina Marin, Chiara Paoli



P6. ICCOPS-Landscape, Natural and Cultural Heritage Observatory, Italy, Contact: Dr. Emanuele Roccatagliata, Paola Salmona



P7. Univ. de Montpellier 1, Faculté des Sciences Économiques (UM1), France, Contact: Hélène Rey Valette, Sebastien Roussel



P8. BRL, France, Contact: Franck Bellet

External Collaborator: PAP/RAC-Priority Action Programme/Regional Activity Centre, Contact: Ivica Trubic, Daria Povh

Subproject 3.2. ICZM-MED Objectives

- The various efforts on ICZM have been carried out at a local district level, therefore a system that ensures a coordinated approach on a regional level in the Mediterranean is needed. The **objectives** of this sub-project are:
- The collection of existing studies in this sector in order to create a structure for ICZM on a regional level, to select study areas in each region that participate in the project (East Macedonia and Thrace, Lazio, Liguria, Emilia- Romagna and Languedoc-Roussillon), where different approaches to ICZM will be evaluated in a pilot approach to different sites (**PHASE A**).
- The description of the methodology to be used (**PHASE A**).
- The use of different **tools** (e.g. **GIS, indicators, economic tools, Cost Benefit Analysis**, etc.) that will contribute to the Integrated Coastal Zone Management (ICZM) of each pilot site (**PHASE B**).
- These activities will be finalised and conclusions towards the ICZM of the Mediterranean, will be implemented during **PHASE C**.

Subproject 3.2. ICZM-MED Methodology (1)

- At the beginning of the project it was proposed that each partner should investigate different aspects of the **beach management**, such as **ICZM perception**, **economic evaluation** and **benefits** of beach nourishment projects.
- However, **common** activities for ICZM and coastal zone erosion perception was decided (Alexandroupolis, Nov 2006) and formulated in questionnaires (Genoa, Feb 2007) to be applied by all partners.
- In order to investigate the perception of ICZM and coastal zone erosion, **questionnaires** with **common questions** for all partners was decided to be applied to **Beach Users** and public **Stakeholders** in each pilot site.
- it was decided that these questionnaires will include **12 common questions** related with the “perception” of different parameters related with ICZM and with the “Willingness To Pay” (WTP) aspect. The “**perception**” aspect will be described in **4 different sections**:
 - a) Coastal Zone perception,
 - b) Integrated Coastal Zone Management perception,
 - c) Coastal erosion perception and
 - d) Coastal Defence Systems perception.

Subproject 3.2. ICZM-MED Methodology (2)

- The public Stakeholders' questionnaires were decided to be used in face-to-face interviews with people from the a) **Region**, b) **Prefecture** c) **Municipality**; It was also decided to apply a **minimum number** of questionnaires (**20**) till the end of Phase B, and to present preliminary results.
- The Users questionnaire common questions were developed in collaboration with all partners, but only a pilot application has been decided to be applied during Phase B. The survey (at least 150 questionnaires) will be implemented during the summer months when most visitors go to the beaches.
- Apart from the above common questionnaires, **NAGREF-FRI (P1-GR)** has started the creation of a GIS database that will include all data related with ICZM and coastal erosion in the pilot site.
- **DISTART (P2-IT)** has created two specific questionnaires with the aim to collect data about the **voluntarily willingness to contribute** of beach visitors and sunbathing establishment managers for coastal defense projects.
- An integrated economic approach on the benefits generated from beach nourishment has been investigated by **Litorale SPA (P3-IT)** & **DECOS (P4-IT)**.

Subproject 3.2. ICZM-MED Methodology (3)

- Another part of the project consists in the proposal and first application of specific indicators for the assessment of the coastal state. Particularly, **DIPTERIS (P5-IT)** applied two different approaches, one referred to specific indicators for beach management assessment and the other one focused on the environmental sustainability level of coastal municipalities (emergy) and bathing activities (Ecological Footprint).
- As regards the indicators with local relevance **ICCOPS (P6-IT)** calculated them for the municipalities of the "enlarged" study area in order to allow a comparison. To better fit the specific features of the selected coastal area, some of the indicators have been customized, introducing also slight changes to the indicator's measurement.
- A methodology for value assessment related to the uses was designed by **UM1 (P7-FR)**.
- Finally **BRL (P8-FR)** (which does not participate in the questionnaires survey) is developing a Coastal Zone Monitoring System, using a GIS database.

Subproject 3.2. ICZM-MED Preliminary results

ICZM– Coastal erosion–Defence systems perception (Tool: questionnaires)

- The public stakeholders' survey was carried out by **NAGREF-FRI (P1-GR)** during May – June 2007 in the **East Macedonia and Thrace Region** using the common questionnaires.
- These questionnaires were addressed to key **institutional stakeholders** involved in CZ management that were identified in the **three-tier administrative structure**, based on "General Regional Secretariats" ("the Regions"), "Prefectural Authorities" ("the Prefectures") and the Municipalities.
- As **preliminary results** the general impression is that the majority of the public servants knew in general what coastal zone and coastal erosion are, but on the other hand the majority of them don't know what ICZM is or which organization is working on ICZM and there is little knowledge on the existence of legislation relative to the ICZM. Almost none, knew techniques related to the Coastal Zone Defense Systems.

ICZM – Coastal erosion – Defence systems perception (Tool: questionnaires)

- The survey about public stakeholders in the **Emilia-Romagna Region** was administrated by **DISTART (P2-IT)** in May/June 2007. 20 interviews were made by a well-trained person.
- As preliminary results we highlight that the great majority of respondents know what ICZM is, and they are aware that a more adequate legislation (at national level too) on the topic is needed.
- A certain number of these respondents highlight the need of more coordination amongst the Emilia-Romagna Region and local policy-makers.
- In addition, about 40% of respondents state that private stakeholders could give monetary contributions, and about 30% state that private stakeholders, such as sunbathing establishment managers, should also contribute by doing some maintenance work.

ICZM – Coastal erosion –Defence systems perception (Tool: questionnaires)

- **DIP.TE.RIS (P5-IT)** carried out two surveys: the first one targeted Beach Users and the second one institutional Coastal stakeholders.
- As preliminary results for Coastal stakeholders is it possible to highlight an optimum level of knowledge and awareness about the topics investigated.
- All the respondents said to know what ICZM is, even if the definitions given vary a lot in terms of completeness and contents; to know what coastal erosion is and to be aware of the presence of problems caused by coastal erosion in their area and of the existence of methods to defend the beach from erosion.
- The majority of the respondents knew the existence of several laws and regulations concerning the management of different aspect of the coastal zone, but they often highlighted the need for a better coordination among different sectoral laws, suggesting a unique framework regulation.
- A lack of coordination between the stakeholders that work on the CZM has been highlighted that the actions that have been taken are insufficient.

ICZM – Coastal erosion –Defence systems perception (Tool: questionnaires)

- The stakeholders perception on ICZM and coastal erosion issues is going to be applied in Portovenere by **ICCOPS (P6-IT)** although the pilot site is characterized by a mostly high and rocky coast and where beach tourism, even if is an important issue, is not the main resource of local economy.
- The questionnaire is going to be submitted to public and private, commercial or not operators from the municipality of Portovenere or from its outskirts, without considering agencies or bodies with a larger territorial competence (Regione Liguria, Province of La Spezia, etc.).
- This is because, dealing with a small and extremely peculiar area, they seemed the most suitable to supply a correct outline. At this regard, ICCOPS has asked the Portovenere local administration to supply a list of those stakeholders more interested in the issue and it is presently contacting the suggested people.

ICZM – Coastal erosion – Defence systems perception (Tool: questionnaires)

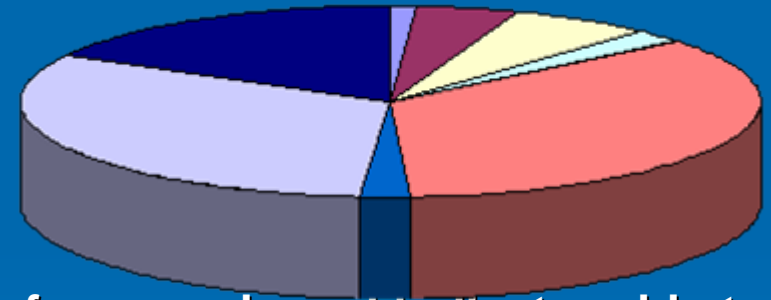
- The survey carried out by **UM1 (P7-FR)** tried to investigate public and stakeholder awareness of coastal risks, and studies how public policies fall under the requirements of an Integrated Coastal Zone Management (ICZM).
- It was also the opportunity to collect stakeholder representations of coastal risks, ICZM and sustainable development.
- This survey was carried out with key stakeholders and public administration representatives.
- The stakeholders were questioned on various scales, i.e., local and regional. About ten or so stakeholders per site were surveyed and in addition ten more key stakeholders on the regional scale.
- For the stakeholders implied in the steering committees and operations, quantitative information on the costs and a retrospective assessment of the coastal defence structures were also collected. Moreover, the individual and the institutional position of the interviewee were also recorded.

Indicators: Identification of indicators for beach management assessment

- Considering the central importance of indicators in ICZM, **DIPTERIS (P5-IT)** identified a possible set of indicators to be specifically adopted for beach management assessment, selected on the basis of results from general coastal management literature (deeply analyzed in Phase A) and previous local projects.
- Particular attention has been given to indicators referring to management and planning activities, able to identify weaknesses and vulnerabilities in beach management, in order to support local policies on beaches and bathing activities. Data collection in the pilot area has been carried out for a first test of the indicators.

Indicators: Environmental sustainable analysis

➤ **Energy** evaluates the work directly or indirectly needed to maintain a system and it is based on an accurate inventory of resources requested in a fixed time period. The analysis has been applied to the six municipalities of the Riviera del Beigua by **DIPTERIS (P5-IT)**.



TOURISM RELATED EMERGY FLUXES



Ecological footprint foresees the calculation of an area-based indicator able to measure the demand of natural capital needed for human activities. This evaluation is achieved by the count of resources consumption and waste assimilation in terms of biologically productive land required to support these flows. **DIPTERIS (P5-IT)** applied it to **bathing activities – private beach establishments**, calculating typological assessment of requested territories and bathing activities contribution to municipality Ecological Footprint

Land planning and GIS

- Ordinary maps, adapted by various public services, and orthophotomaps were used by **NAGREF-FRI (P1-GR)** in order to represent the current status of the study area (Nestos River Delta with emphasis in the west part of the Delta). The GIS maps were digitized and several layers were created such as coastline, contour lines, River Nestos, lagoons, residence areas, municipality borders, roads, Natura 2000 and Ramsar Site zonation. A Greek coordinate system (Greek EGSA GRS 80) was used in order to register and digitize the maps.

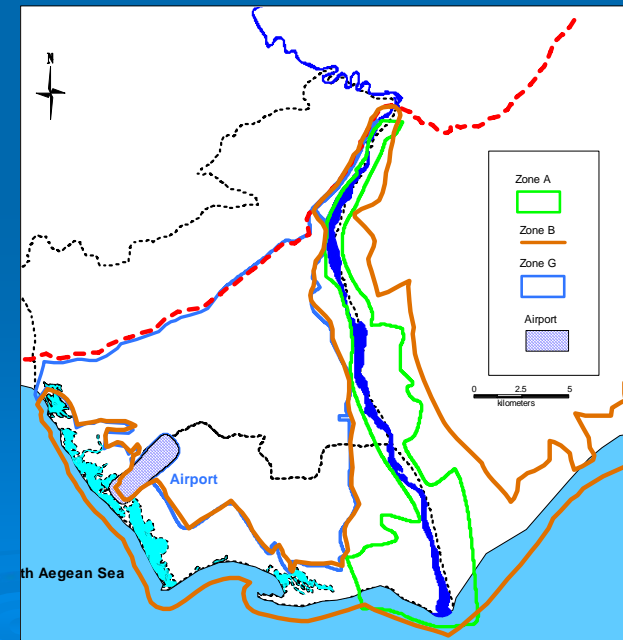
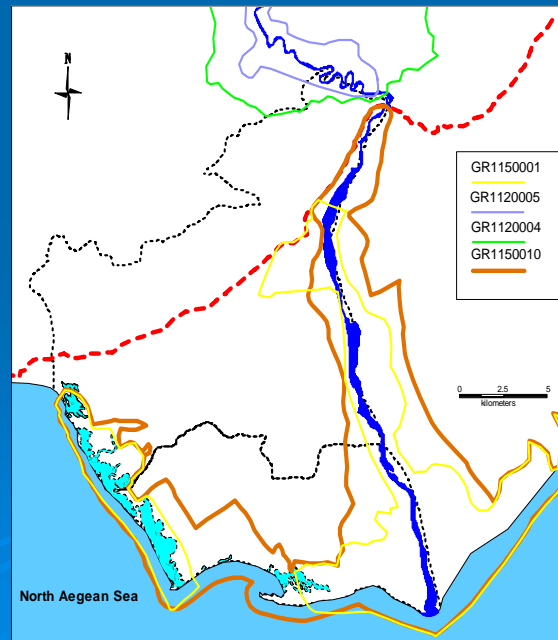
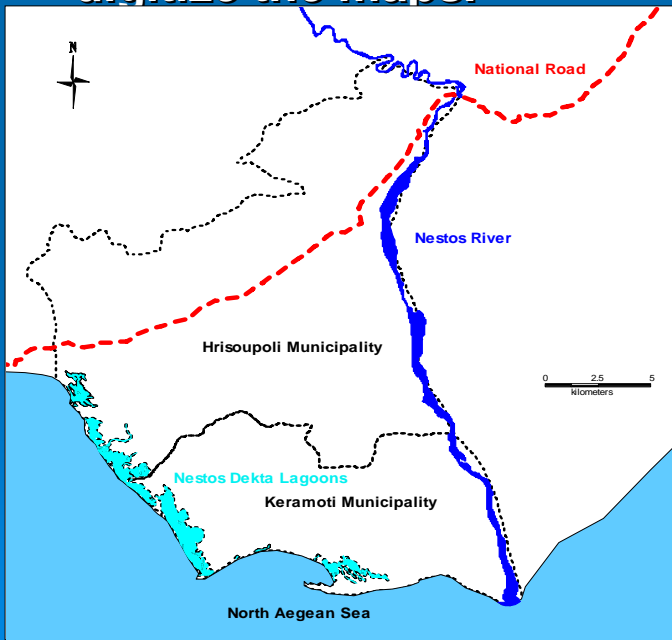


Figure 1. Overview of the study area

Figure 2. Natura 2000 sites

Figure 3. Land use areas according to Greek legislation

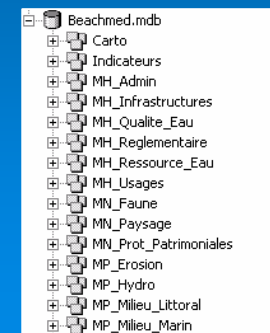
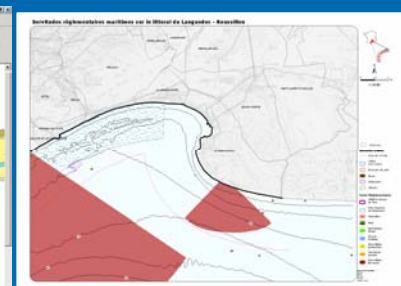
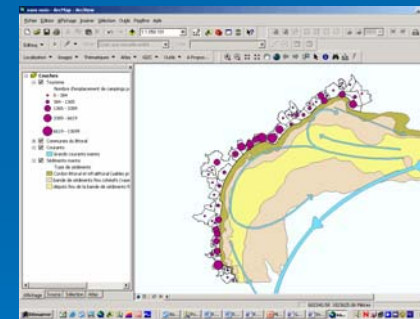
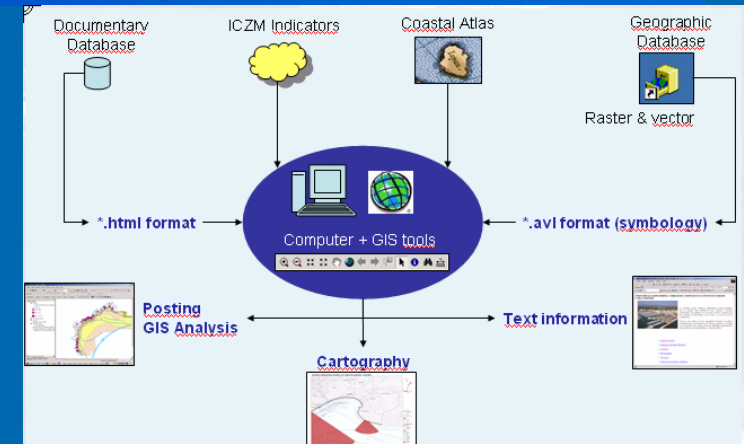
Coastal analysis and GIS

- Another study area that was chosen to use GIS for coastal analysis is the Regional Park of Portovenere, Palmaria, Tino and Tinetto, within the **Municipality of Portovenere (ICCOPS) (P6-IT)**.
- However, in order to have a clear view / understanding of the actual issues it is necessary to extend the analysis to a larger area. Whilst in territorial planning administrative boundaries are usually the base units for interventions, in ICZM more general criteria are needed in order to delimitate the intervention areas.
- Geomorphological, ecological and human features were considered and boundaries drafted, according with catchment basins, altimetry, ridges, coastal ecosystems (natural and semi-natural), coastal settlements, administrative boundaries and maritime jurisdictional boundaries.
- In order to facilitate the visualisation and comparison of the acquired information, a GIS has been set up, using the software Geomedia Professional by Intergraph (in order to conform with the information system used by the Regione Liguria administration, and to support the subsequent use and diffusion, also via web, of the project's results).

Development of a Coastal Zone Monitoring System

based on geographic and documentary data

1. Collection of complementary data related to the pilot site (Languedoc-Roussillon Region) by BRL (P8-FR).
2. Organization and standardization of geographic and documentary data.
3. The data collected in phase A were harmonized geographically and in their structure. ICZM documentation base was developed starting from an important bibliographical study.
4. Preliminary analysis before the creation of the CZ Monitoring System (functional needs). Meetings were held with the institutional actors of the littoral to define main functionalities.
5. Creation of GIS and documentary data base.
6. Development of the beta version of the Coastal Zone Monitoring System.



Economic values: benefits generated from beach nourishment

Litorale SPA (P3-IT) and **DECOS (P4-IT)** were involved in the estimation of the benefits generated by a nourishment project (**Tarquinia beach**) by using Economic values.

In order to achieve the aims set by the project, it was important to implement, within the instrument for the planning of beaches (P.U.A.), the parameters for obtaining the Blue Flag.

- The blue flag awards for the Tarquinia beach would represent a first indication of the implementation of the methodology of integrated coastal management policies.
- The analysis highlights that the system of beach concessionaries has a greater observance of the Blue Flag parameters than public beaches. The local administration has to reinforce the system of sustainable mobility in the territory, including the coastlines and consolidate the safety and the right to use the public beaches according to the existing P.U.A.

Perception by end users and customers of satisfaction level

- During the summer 2006 **Litorale spa (P3-IT)** carried out a survey in the **Tarquinia** area, with regards both to concessionaries and to tourists. The survey aimed at disclosing the level of satisfaction of both residents and tourists with regards to policies for the use and the nourishment of shores and highlighted problems and critical points.
- **Level of preference for beaches.** The analysis of the interviews highlights a trend which points preferences towards beaches with facilities, both by tourists and locals, the latter having a higher propensity towards public beaches.
- **Level of beach facilities.** More than 66,6% of respondents find the level of facilities to be good or excellent and only 10% find the facilities unsatisfactory
- **Level of perception of inconvenience factors.** According to the survey, the main factors of inconvenience perceived by beach users, are mainly concerned with two variables: the cost of services and the lack of entertainment offer
- **Degree of knowledge concerning beaches.** The survey indicated a high degree of ignorance concerning the methods of beach use and relative applicable laws both in tourists and residents.

Economic Benefits of Defense from Coastal Erosion

The three main benefits achieved by **DECOS (P4-IT)** through direct and indirect economic methods are:

1. the bathing establishment producer surplus;
2. the prevention of loss of assets (fixed asset on the beach);
3. the beach access value and the WTP to maintain a wide beach.

- Methodology used is the **analysis of producer and consumer surplus**.
- As regards the financial values, the direct benefit of the project (just the direct beach economy) is 10-16 million €
- Summing the present value of the producer and consumer surplus, a total benefit of 49-80 million € is obtained. This estimate is obtained assuming from one to three nourishment projects in 45 years. The discount rate used is 6%.
- Conversely, the average concession cost is equal to 4,88 €/m²/y. The total income for the concession of the beach is just 80 000 €

Future Activities

- During **Phase C** the work will be finalised to meet the actual needs of each area.
- The main activities of the ICZM-MED partners will be:
 1. Users' face-to-face interview with Questionnaire with common questions in summer 2007 in each pilot area;
 2. Use of common methodology for data treatment of the results from both users' and stakeholders survey;
 3. Designation of a common contribution for the definition of specific indicators on ICZM performance.
 4. General guidelines for beach management, with the support PAP/RAC.
- Results will be divulged and discussed with key local stakeholders in order to identify future policies and possible management interventions.



Thank you!
Efharisto!
Grazie!
Merci!
Gracias!