

Conflict reduction among stakeholders, Tuscany - IT

1. Policy Objective & Theme

- SUSTAINABLE USE OF RESOURCES: Preserving coastal environment (its functioning and integrity) to share space
- SUSTAINABLE ECONOMIC GROWTH: Balancing economic, social, cultural development whilst enhancing environment

2. Key Approaches

- Participation
- Technical

3. Experiences that can be exchanged

The approach adopted aims to involve citizens in policy making and implementation of an integrated management plan. The new strategy propose the use of “soft” solutions to respond to coastal erosion rather than building “rigid” structures.

4. Overview of the case

Marina di Massa was selected as a pilot site. All stakeholders were aware about the erosion problem. It was a common consensus that the existing coastal defence system could not be considered as a final solution but it was necessary to build a new plan to safeguard the coastal area from erosion. In fact, a number of different structures were placed in the past along the coast, without a specific coastal management plan and appropriate studies of the morphological characteristics of the Marina di Massa beach. These hard structures caused, during the years, severe erosion problems along neighbouring beaches. The new strategy proposes to quit hard structure construction and promote the use of soft engineering (mainly beach nourishment), also reducing in number or in height the existing hard structures.

5. Context and Objectives

a) Context

Marina di Carrara and Marina di Massa are located in northern Tuscany, Italy. A longshore potential net sediment transport (150,000 m³/yr) is estimated to be directed southwards. The main sediment input for the beach in Marina di Carrara and Marina di Massa is the Magra River, flowing out at the northern margin of the physiographic unit and feeding beaches down to Forte dei Marmi (18 km southward). The construction of the industrial harbour at Marina di Carrara in the early 1920's caused the interception of the southward longshore drift, inducing rapid accretion in the updrift beach and erosion downdrift. Marina di Carrara beach has undergone shoreline accretion for ca. 300m since the harbour construction, even if in recent years (1985-1998) the trend has changed and the shoreline retreated due to a strong reduction in the Magra River sediment load. Marina di Massa, which is located downdrift, instead, experienced severe erosion phenomena since the early 1930's, even if in those years the harbour updrift jetty was 400 m long against the present 900 m. In 1930, the first seawall barrier was constructed to protect the coast and in 1957 a set of breakwaters was added, even though the beach had already vanished, in a line for 2 km south of the harbour. In the meantime, shoreline retreat was gradually shifting southwards, and a series of hard structures, such as seawalls, breakwaters, groynes and submerged breakwaters, were built along the coast by the Ministry of Public Works. This was done, because of the demand made by the holders of concessions for bathing establishments to the Municipality of Massa, even if there had been proof that these would have induced erosion at the neighbouring beach of Forte dei Marmi, one of the most popular and trendy beach resorts in Italy. As a consequence, a 6.7 km long stretch of coast south of the harbour was protected by 9.3 km of hard structures (1.4 km of hard structures per km of coast). At the end of the 1990's with the shift of competencies to the regional government, new research performed by public institutions addressed the

identification of the causes of beach erosion and the failure of “archaeo-structures”; in addition, the need for studies and projects at a sedimentary cell scale was promoted by Regione Toscana.

b) Objectives

The objective of the approach was to develop mitigation options to fight erosion based on soft solutions, coastal management plan and appropriate study of the morphological characteristics of the littoral cell, involving stakeholders, with the specific aim of fostering the economic sustainable development of the coast.

6. Implementation of the ICZM Approach (i.e. management, tools, resources)

a) Project Management

Coastal zone management in Tuscany has, in recent years, undergone a slow but effective process of change, due to new legislation and to the effort of technicians and researchers belonging to Regione Toscana, local Administrations and University Institutes. In 1998, the Italian legislation shifted the responsibility of coastal zone management and defence from the State to the Regional Administrations. The different administrations responsible for coastal management started new projects in a more integrated way, planning at a cell scale and considering river sediments management as a fundamental part of ICZM. Regione Toscana elaborated a Regional Plan for ICZM in co-operation with local Authorities (Provincial and Municipal Administrations) and River Basin Authorities.

b) ICZM tools

The Integrated Regional Coastal Zone Management Plan, approved in 2001, contains also the guidelines for coastal defence and restoration actions to be undertaken in the next few years. Each intervention has an order of priority and the actual interventions must be defined in accordance with Provincial and Municipal Administrations, and River Basin Authorities. On November 2002, a protocol of agreement was signed by Regione Toscana and the Provincial Administrations of the coast to define a concerted strategy as an instrument to address sustainable economic and social development at a regional scale. A Technical Board was established in order to guarantee homogeneity and quality in the design activities. The Technical Board is made of two Regional coastal experts, two expert members from the Universities of Florence and Pisa and one coastal expert from each Provincial Administration. In March 2003, the Tuscany Regional Council approved the Programme of the urgent coastal defence and restoration actions, to be financed for approximately €109 Million in the period 2003-2012.

Public participation in the decision-making process in shore protection has a long history in this area. It was explored by the involvement of local stakeholders in decision-making processes, the knowledge and accessibility to the existing information by stakeholders, the mechanisms of both communication among stakeholders and dissemination to society, as well as the possibilities to implement ICZM practices. Social perception of the erosion problem in the coastal area has been investigated through beach-user interviews. The two step methodology adopted consisted of direct observations with a checklist, and interviews using a questionnaire, in the high tourist season (July-August). The different kinds of coastal defence structures (“hard” and “soft”) have been investigated. The social perception analysis has been completed with the opinions of the local population (technicians, ecologist groups, tourist office, etc.) and the institutional stakeholders (Town Hall, Regional government, Central government, University/research centres, etc.). In addition, an agreement (Memorandum of Understanding) among several local administrations in Liguria and Tuscany is in progress to be signed in order to use sediments stored upstream of the dam at Santa Margherita Vara in the upper course of the Magra river. This agreement was strongly encouraged by the Magra river Inter-regional Basin Authority, who is willing to apply the strategy in order to prevent any unauthorised river bed quarrying (gravel mining) and therefore further decreasing the sediment input to the coast. If sediment extraction is necessary to favour river discharge and to reduce the risk of flooding, the gravel and sand will be carried to, and used at, the coast. This is a bold goal opposing the traditional procedure to pay for river maintenance works (flood control by restoration of river channel sections) with the sediment extracted, one of the main causes of sediment loss after the official closure of quarries in the rivers.

7. Cost and resources

Following this concerted strategy, different local administrations started new projects. In 2001, Regione Toscana and Regione

Liguria signed an agreement for a concerted action in order to find a solution for the sediment deficit and consequent problem of coastal erosion in the stretch of coast between Bocca di Magra and Marina di Carrara. Regione Liguria financed a preliminary project of the entire sub-cell and Regione Toscana financed the study of the effectiveness of the project through numerical model simulation. This new project, now under execution, was financed with ca. €3 Million by Regione Liguria and implemented by the Municipalities of Sarzana and Ameglia. In the Tuscan sector, north of the Marina di Carrara harbour, another coastal restoration project is in progress. Financed by Regione Toscana with approximately €10 Million within its ICZM Plan, the project is being divided into two phases; the first phase is concluded and the second one will start in 2010. A preliminary project for the restoration of the stretch of coast between Marina di Carrara harbour and the Versilia river outlet was designed by the Provincia di Massa Carrara in 2006. The project has been later completed by a team of researchers and technicians belonging to Regione Toscana, Massa Carrara Province, Massa and Montignoso Municipalities and the University of Florence. Funding for approximately €30 Million was granted by Regione Toscana in 2003 within its ICZM Plan. The first phase of the project of restoration of the coastal area between Frigido river and Versilia river is now under execution for a cost of approximately €20 Million.

8. Effectiveness (i.e. were the foreseen goals/objectives of the work reached?)

Information sharing and stakeholder participation was an important element of this strategy. Beach evolution monitoring was performed and discussed in open meetings and people expectancies and suggestions were carefully considered. It is crucial to underline that each coastal restoration project undertaken in the study area during the last decade has been characterised by a detailed monitoring programme of the morphological and sedimentological (texture, mineralogy, colour) evolution of the beach (backshore and nearshore).

9. Success and Fail factors

The Northern Tuscany Physiographic Unit hosts many conflicting economic activities and is managed by different administrations at several levels. When beach erosion started to hit this area, conflicts made it difficult to adopt due solutions for shore protection strategies and for harbour expansion. The new role acquired by regional administrations in shore protection matters, after the transfer of competencies to them from the national government, together with the collaboration with research institutes and the involvement in some EU-financed projects, brings a "New Phase" in ICZM. Neighbouring and downdrift coastal sector stakeholders, in particular from the famous beach of Forte dei Marmi, are still sceptical about the restoration measures adopted along the Marina di Massa coastline. The monitoring programme adopted by Regione Toscana, including the entire littoral cell will allow an evaluation in the near future of the effectiveness and eventual unpredicted impacts of the project.

10. Unforeseen outcomes

New shore protection projects are now well known by the communities affected; their pros and cons are discussed and accepted so that each of the different administrations involved can play its role in a participative and shared manner.

11. Prepared by

Michael Assouline, CORILA, and Luigi E. Cipriani, Regione Toscana, Italy

12. Verified by


Enzo Pranzini, University of Florence, Italy

13. Sources

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MedCoast2003 EUROSION Marina di Massa (841.18 KB) 



MedCoast99 marina di Massa (76.88 KB) 