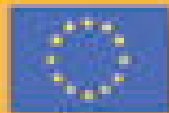




REGIONE LAZIO

Amministrazione Ambiente e Cooperazione tra i Popoli
Direzione Regionale Ambiente e
Cooperazione tra i Popoli
Area Difesa del Suolo - Osservatorio del Mare



World Bank EMD Grant
INTERREG III C

Framework Regional Operation

BEACHMED-e

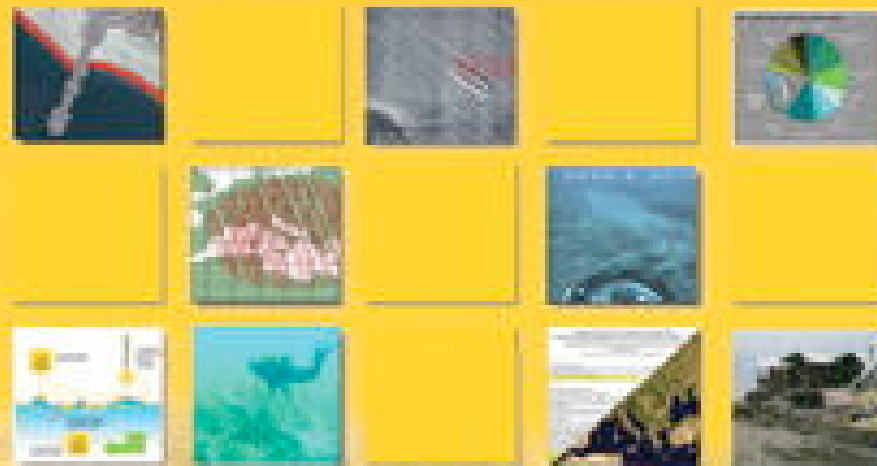
Strategic management of beach protection measures for the sustainable development of Mediterranean coastal areas

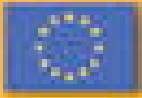


World Bank EMD Grant
INTERREG III C



Secrétariat Beachmed-e
Viale del Caravaggio, 99
00147 Roma (IT)
Tel. +39 06 5168 8142
Fax +39 06 5168 8312
E-mail: secretariat@beachmed.it;
www.beachmed.it





THE MOTIVATIONS OF OPERATION

Sandy coastal stretches of the industrial countries are territory of special interest for sustainable strategic development. In these areas social and economic interests and the protection of natural ecosystems must meet the target of **Integrated Coastal Zone Management (ICZM)**. However, beaches are delimited along the coastline, by a demarcating line (shoreline). From the morphologic point of view this line is an area of delicate equilibrium between sea action and availability of sand along the coast.

This territory is especially delicate in respect of phenomenon that have now achieved global relevance and that are structurally linked to our modern development model:

- Vulnerability to the consequences of CO² increasing in the atmosphere (increasing mean sea level, greater intensity of meteoric marine events);
- Vulnerability to reduced river sediment load transport (dams, river defence & river training measures, erosion control measures, extensive presence of paved area in river catchments);
- Vulnerability to the loss of natural protection areas due to uncontrolled urban development (posidonia fields, dune systems, autochthon coastal vegetation);
- Vulnerability to coastal infrastructures affecting sediment transport along the coastline (ports, piers, dams, breakwaters, reefs).

It is necessary to define global strategies and long term measures in regards to each of the above issues of vulnerability, each one involving remarkable erosion to the coastline and consequent economic and environmental damage.

The erosion phenomenon of low coasts is still more exalted by the request of coastal spaces that, for the high potentialities of development, is more and more strong and pressing, putting in evidence a sensibility also regarding the coast periodic or seasonal regressions.

The BEACHMED-e Operation has been structured in three lines of action, called COMPONENTS, finalised to the identification of location of specific instruments. The aim of the project is to fight induced vulnerabilities and to make such instruments available to public Administrations:

1. Design & construct technical instruments to characterise erosion at European scale and for the sustainable use of resources;
2. Set up of management instruments - for relation between urban-land development and morphologically fragile areas, related to ordinary and exceptional sea storms;
3. Set up of normative and organisational instruments – to define, regulate and manage coastal defence by all parties involved (private and public).

PHENOMENON, VULNERABILITY AND THE OPERATION ACTIONS

PHENOMENA LINKED TO THE DEVELOPMENT	VULNERABILITIES ON THE COASTAL ZONES	ACTIVE TYPES OF ACTIONS	PASSIVE TYPE OF ACTIONS
CO ² increase	- increase of medium sea level - meteo-marine event of major intensity	(NOT CONSIDERED IN BEACHMED-E)	Increase of coastal areas due to sand nourishment
Diminished contribution of the rivers transport load	- coastal erosion - deepening of sea bottom - sea bottom denaturalisation along the coastline	Total or partial restoration of natural solid load transportation	Total or partial restoration of natural solid load transportation
Breaking down of natural defence structures	- sea bottom erosion - denaturalisation of sea bottom	Reconstruction of dune zones and of sea-grass prairies	Protection measures for dune zones and sea-grass prairies
Construction of coastal infrastructures	- coastal erosion - denaturalisation of the coastal sea bottom	Planning with special attention to the induced erosive phenomenon	Coastal protection by means of soft and protected nourishment Re-use of intersected sandy material



THE RFO PARTNERS



	Regione Lazio (Italia) Direzione Regionale Ambiente e Cooperazione tra i Popoli Chief de File Technical Responsible: Ing. Paolo Lupino	Address: Viale del Caravaggio, 99-00147 Rome (Italia) tel. +39(0)65168162 fax +39 1782273511 e-mail: paolo.lupino@tiscali.it
	Conseil Général de l'Hérault (Francia) Direction de l'Emploi ed du Développement Technical Responsible: ing. Philippe Carbonnel	Address: 1000 rue d'Alco 34087 Montpellier Cedex 4 (Francia) tel. +33(0)4 6767 7083 fax +33(0) 4 6767 6007 e-mail: p-carbonnel@cg34.fr
	Generalitat Catalunya (Spagna) Departament de Política Territorial i Obres Publicas Technical Responsible: Dott. Miriam Moyes Polo	Address: Av. Josep Tarradellas, 2-4-6-08029 Barcelona (Spagna) tel. 0034 93 495 80 00 fax 0034 93 495 81 96 e-mail: wmoney@gencat.net
	Regione Liguria (Italia) Dip.to Pianificazione Territoriale, Paesistica e Ambientale Technical Responsible: Arch. Corinna Artom	Address: Via D'Annunzio, 113-16121 Genova (Italia) Tel. +39 010 548425 fax +39 010 5879109 e-mail: corinna.artom@regione.liguria.it
	Regione Toscana (Italia) Dir. Gen. Politiche Territoriali e Ambientali Technical Responsible: Dott. Luigi Enrico Cipriani	Address: Via dei Novoli, 26-50127 Firenze (Italia) tel. +39 055 4383835 fax +39 055 4383063 e-mail: luigi.cipriani@regione.toscana.it
	Regione Emilia Romagna (Italia) Direzione Generale Ambiente, Difesa del Suolo e della Costa Technical Responsible: Ing. Roberto Montanari	Address: Via dei Mille, 21-40121 Bologna (Italia) tel. +39 051 6396880 fax +39 051 6396941 e-mail: montanari@regione.emilia-romagna.it
	Regione di Creta (Grecia) Segretariato Generale Technical Responsible: Arch. Alkmini Minadaki	Address: Kountourioti Place 71202-Héraklion Grecia/Hellas tel. +30 281 0 278 102-3 fax +30 281 0 244 520 e-mail: alkmini@oanak.org.gr
	Service Maritime et Navigation du Languedoc-Roussillon (Francia) Technical Responsible: Dott. Pierre-Yves Valantin	Address: 7 rue Richer de Belleval-34000 Montpellier, France tel. +33(0)4-99-61-47-62 fax +33(0)4-99-61-47-62 e-mail: pierre-yves.valantin@equipement.gouv.fr
	Regione Macedonia dell'Est e Tracia (Grecia) Technical Responsible: Dott. Maria Valasaki	Address: 1. G. Kakoulidou Str. 69100 Kormotini, Grecia/Hellas tel. +30 25310-81833 fax +30 25310-81121 e-mail: mvalasaki@remth.gr

	Generalitat Valenciana (Spagna) Conselleria De Obras Publicas Technical Responsible: Ing. Vincente Cerda	Address: Blasco Ibanez., 50-46010-Valencia (Spagna) tel. 0034 963862164 fax 0034 963865737 e-mail: vincente.cerda@coput.m400.gva.es
	Drapor, Société de Dragage des Ports (Marocco)	Address: 5, rue Chajarat Addor-20100 Casablanca-Marocco/Marocco tel. +212 22 959100 fax +212 22 232600 e-mail: drapor@drapor.com
	APAL, Agence de Protection et d'Aménagement du Littoral (TUNISIA) Technical Responsible: Ing. Mehdi Ben Haj	Address: 2, rue Mohamed Rachid Ridha-1002 le belvédère Tunis/TUNISIA e-mail: mehdi1@webmails.com
	Regione del Veneto (Italia) Direzione Difesa del Suolo Technical Responsible: Roberto Piazza	Address: Calle Priuli - Cannaregio 99-30121 Venezia (Italia) tel. +39 041 2792357/361 e-mail: luigi.fortunato@regione.veneto.it roberto.piazza@regione.veneto.it
	Marevivo (Italia) Associazione Ambientalista Technical Responsible: Dott. Laura Gentile	Address: Lungotevere A. da Brescia, Scalo de Pinedo-00196 Roma (Italia) tel. 06 3202949 3222565 fax 06 3222564 e-mail: laura.gentile@marevivo.it
	Ordine degli Ingegneri della Provincia di Napoli (Italia) Technical Responsible: Ing. Eduardo Pace	Address: Via del Chiostro, 9-80134 Napoli (Italia) tel. 081 5114260 fax 081 5522126 e-mail: ingpace@thna.pol.it
	Centro di Educazione Ambientale (Italia) Technical Responsible: Dott. Maria Gabriella Villani	Address: Via del Martin Pescatore, 66 Castel Fusano - loc. Pantano 00124 Roma (Italia) tel./fax 06 50 917 817 e-mail: cea@riservatoraleromano.it
	Regione Marche (Italia) Servizio Governo del Territorio, Mobilità ed infrastrutture Technical Responsible: Ing. Vincenzo Marzialetti	Address: Via Palestro, 19-60110 Ancona (Italia) tel. 071 50117303/43 fax 071 50117351 e-mail: vincenzo.marzialetti@regione.marche.it
	F.A.I.C.T. Forum delle Città Adriatiche e Ioniche cio Comune di Ancona (Italia) Technical Responsible: Ing. Pier Roberto Remitti	Address: Piazza XXIV Maggio, 60100 Ancona (Italia) tel +39 071.2222671 e-mail : piero.remitti@comune.ancona.it
	Acqua SPA Società per l'approvvigionamento idrico della Basilicata (Italia) Technical Responsible: Dott. Giovanni Caputo	Address: V.le della Regione Basilicata 4, 85100 Potenza (Italia) tel +39 0971.668581 fax +39 0971.668580 e-mail : acquaSPA@regione.basilicata.it
	Parco Regionale del Delta del Po (Italia) Technical Responsible: Arch. Lucilla Previali	Address: Via Cavour 11, 44022 Comacchio - FE (Italia) tel +39.0533.314003 fax: +39.0533.318007 e-mail : parcodeltapo@parcodeltapo.it

BUDGET TABLE

PARTNER OCR	Component 1		Component 2				Component 3				Component 4	Component 5	Total budget
	Management and coordination		2.1. Emission Monitoring	2.2. Climate and Emission	2.3. Energy Demand Research	2.4. Sustainable Exploitation	3.1. The Coastal Zone	3.2. MZM	3.3. Sediment Cycle	3.4. Natural Defence Systems	4.1 Regulatory and Organizational Aspects	Promotion	
Regione Lazio	286909.00		229920.00	183418.00	24000.00	189189.00	191310.00	50000.00	86924.00	189796.00	100838.00	186579.60	1'846'794.60
Regione Toscana	47500.00		440000.00	0.00	0.00	143750.00	0.00	0.00	105000.00	142500.00	80000.00	47500.00	866250.00
Regione Liguria	36500.00		41500.00	0.00	235625.00	71280.00	340125.00	82000.00	0.00	9720.00	91500.00	40500.00	848750.00
Regione Emilia Romagna	61000.00		49000.00	124000.00	200000.00	120000.00	66000.00	76000.00	74000.00	60000.00	52000.00	60260.00	811260.00
Département de l'Hérault	42000.00		205000.00	0.00	110000.00	5000.00	20000.00	100000.00	140000.00	40000.00	20000.00	35000.00	717000.00
Amnoliki Makronisi, Thrali	37500.00		153000.00	94200.00	121000.00	74900.00	48100.00	86400.00	118000.00	0.00	72500.00	45000.00	860000.00
Generalitat Catalunya	28000.00		50000.00	0.00	100000.00	0.00	0.00	0.00	287000.00	0.00	10000.00	25000.00	500000.00
SMNLR	19822.00		100000.00	475000.00	0.00	0.00	0.00	6000.00	0.00	0.00	8000.00	20000.00	625822.00
Creta	37617.60		169700.00	0.00	66000.00	0.00	58900.00	0.00	84900.00	38200.00	71066.00	8327.50	482600.00
TOTAL	€ 686848.60		€ 1'439'020	€ 886'618	€ 807'126	€ 565'619	€ 723'035	€ 400'400	€ 904'534	€ 417'216	€ 483'884	€ 486'167	7'188'511.60



THE OBJECTIVES

The BEACHMED-e Operation previews the development of 9 subprojects through the participation of University, Institutes and local Administrations that are candidates through public Call expired on December the 9th 2005 (www.beachmed.it). The 9 subprojects are reported to the measures of three Components (2, 3 and 4) previewed from the Operation.

COMPONENT 2

PROJECT PLAN AND IMPLEMENTATION OF TECHNICAL TOOLS REQUIRED FOR THE CHARACTERIZATION OF THE EROSION PHENOMENON ON A MEDITERRANEAN SCALE AND FOR SUSTAINABLE DEVELOPMENT OF RESOURCES. RESPONSIBLE PARTNER TOSCANA REGION

2.1 MEASURE. EROSION MONITORING

quantitative monitoring of erosive phenomenon on a regional and local scale (evaluation of coastal parameters, systematic recording of shoreline using satellite technology, shrinking shorelines as a result of beach nourishment projects, shoreline monitoring, profiles and sand prisms using innovative technology)

Measure responsible: Dr. Luigi Cipriani (Regione Toscana)



MESURE 2.1

OBJECTIVE N° 2.1.1

Systematic assessment of coastlines using satellite technology

General objective:

Development of morphological beach survey methodologies aimed at monitoring their evolution based on various timescales, and assessing precision based on sample sites which are characterized by different morphological and sedimentary dynamics

OBJECTIVE N° 2.1.2

Use innovative methods to create a monitoring network using an integrated approach to erosion management and assessment of overall sand movements, on a scale which uses several sedimentary cells

General objective:

Define, verify and illustrate new methods for the assessment, of coastal sand movements on a scale which uses several sedimentary cells.

OBJECTIVE N° 2.1.3

Methodology for the assessment of coastline retreat and sediment redistribution after beach nourishment activities

General objective:

Tools for determining coastline operational position after beach nourishment interventions and distribution of dumped sediments on emerged and underwater beaches have taken place in relationship with sand granulometry characteristics.

2.2 MEASURE. CLIMATE AND EROSION

Assessment, monitoring and coastal wave movement forecast (relationship between recorded erosive phenomena and medium wave climates, interaction between coastal wave climates and different types of seabeds with and without vegetation, definition of fundamental and essential parameters)

Measure Responsible: Dr. Pierre-Yves Valantin (SMNLR)



MESURE 2.2

OBJECTIVE N° 2.2.1

Monitoring and forecasting along the coast wave climate

General objective

Development of systems for wave climate awareness in proximity of coastlines in order to obtain models of erosive phenomena

OBJECTIVE N° 2.2.2

Study the relationship between coastal wave climates and the presence of Oceanic Posidonia grasslands.

General objective

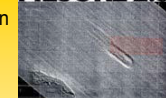
Study, determine and assess the Posidonia grasslands' ability to mitigate the wave climate along the coast.

2.3 MEASURE. SANDY DEPOSIT RESEARCH

Natural sand resources on the continental shelf (estimate potential, exploitation systems, cost assessment)

Measure responsible: Ing. Roberto Montanari (Regione Emilia Romagna)

MESURE 2.3



OBJECTIVE N° 2.3.1

Natural sand resources on the continental shelf

General objective:

Assess the potential of sub-marine sand deposits on the continental shelf and search for new deposits

OBJECTIVE N° 2.3.2

Methodology focus, improve and share guideline studies for sea sand research aimed at finding sand which can be used for beach nourishment activities at eroding coastal sites

General objective:

Improve and circulate guidelines to all partners involved in the field concerning search of sea sand to be used in beach nourishment activities along the coasts.

2.4 MEASURE. SUSTAINABLE EXPLOITATION

Environmental compatibility of dredging and beach nourishment (identification of environmentally sensitive components, definition of protected zones, effects of impact studies)

Measure responsible: Ing. Paolo Lupino (Regione Lazio)

MESURE 2.4



OBJECTIVE N° 2.4

Sustainable exploitation.

General objective:

Improvement of Protocol ENV1 with specific programs (turbidity, pelitic coulters) to evaluate the feasibility of interventions in this sector.

COMPONENT 3

INTERACTION BETWEEN URBAN DEVELOPMENT AND AREAS WHICH ARE MORPHOLOGICALLY SENSITIVE IN RELATIONSHIP TO EROSION AND STORM RISK.

RESPONSIBLE PARTNER DÉPARTEMENT DE L'HÉRAULT

3.1 MEASURE. THE COASTAL ZONE

Recovery of coastal area and its territorial and urban management (risk evaluation, socio-economic considerations in the choice of intervention prioritization or with regards to constraints, naturalization processes, long term scenarios for the rise of marine tidal datum levels)

Measure Responsible: Arch. Corinna Artom (Regione Liguria)

MESURE 3.1



OBJECTIVE N° 3.1.1

Risks of coastline flooding.

General objective:

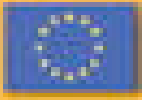
Assessment of the risks of coastal flooding caused by meteo-marine phenomena, climate change, morphological variations and criteria for pinpointing the areas at risk. Verification of integrated planning systems aimed at reducing or eliminating flood risk.

OBJECTIVE N° 3.1.2

Integration of coast defences in territorial and urban planning-Recovery of coastline and territorial Management

General objective:

Integrate concerns and criteria for coastline erosion defence into territorial and urban plans. Verify the necessity of specific solutions based on characteristics of the various territories.



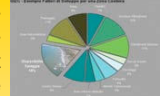
THE OBJECTIVES

3.2 MEASURE. ICZM

Setting up of operational strategic studies for beach maintenance and reconstruction (ICZM) (report on coast evolution, socio-environmental and land analysis, coastal integrated management scenario proposals, proposal for a management master plan, development of precise intervention programs, beach economic value and intervention costs.)

Measure responsible: Dr. Maria Valasaki (Région Est Macedonie et Thrace)

MESURE 3.2



OBJECTIVE N° 3.2.1

Implementation of operational strategic studies for beach reconstruction

General objective:
Collection of existing studies in this sector in order to create a structure for integrated coastal zone management on a regional level.

OBJECTIVE N° 3.2.2

Cost/benefit analysis for coastal area defence and beach economic value.

General objective:
Development of a cost-benefit analysis model for the comparison of different types of coastline defence interventions and economic value of beaches resulting from specific socioeconomic analyses.

OBJECTIVE N° 3.2.3

Applicability of integrated management criteria

General objective:
Verify applicability of the Recommendation and Protocol at a local level using a pilot zone which includes more than one local authority and that corresponds to at least one physiographic unit.

3.3 MEASURE. SEDIMENTARY CYCLE

Management of sand deposits collected by infrastructure along the coast and recovery of sediment transport flowing from riverbeds (estimate of affected volumes, options and methodologies for the reuse of partially contaminated material, management of deposits found in artificial reserves, protection of compatible soil, monitoring and control methods for the sedimentary cycle)

Measure responsible: Dr. Miriam Moyes Polo (Generalitat Catalunya)

MESURE 3.3



OBJECTIVE N° 3.3.1

Implementation of operational strategic studies for beach reconstruction

General objective:
Collection of existing studies in this sector in order to create a structure for integrated coastal zone management on a regional level

OBJECTIVE N° 3.3.2

Cost/benefit analysis for coastal area defence and beach economic value.

General objective:
Development of a cost-benefit analysis model for the comparison of different types of coastline defence interventions and economic value of beaches resulting from specific socioeconomic analyses

3.4 MEASURE. NATURAL DEFENSE SYSTEMS

Potential for costal protection provided by Posidonia and dunes (methodology for the mapping and identification of seed plant grasslands, methods for artificial replanting

and recovery of seed plant grasslands, naturalisation or reconstruction methods for dune systems including scenarios occurring within an infrastructure)

Measure responsible: Ing. Philippe Carbonnel (Conseil Général de l'Hérault).

OBJECTIVE N° 3.4

Management of sand deposits intercepted by coastal infrastructure

General objective

Identify sand, sedimentary deposits and geographical units along the coast in order to effectively manage sand reserves along the coast using controlled beach nourishment processes.

MESURE 3.4



COMPONENT 4

DETERMINE REGULATORY AND ORGANIZATIONAL TOOLS FOR THE DEFINITION, REGULATION AND MANAGEMENT OF COASTAL PROTECTION MECHANISMS FOR ALL PUBLIC AND PRIVATE PARTIES INVOLVED.

RESPONSIBLE PARTNER REGIONE LIGURIA

4.1. MEASURE. REGULATION AND ORGANIZATION ASPECTS

Define European Regulations for the exploitation of underwater deposits and beach nourishment processes, Study aimed at promoting a European Observatory for the Defence of Mediterranean Coasts (protection and recovery regulations for dune systems, protection and recovery regulations for seed plant grasslands and regulations for extraction of underwater deposits), (evaluate common interests, monitoring of erosive and incident wave climate phenomena, involvement of private sector, database for natural resources and available tools, contribution towards regulatory tool definition)

Measure responsible: Dr. Alkmini Minadaki (Région de Crête)

MESURE 4.1



OBJECTIVE N° 4.1.1

General objective:
Proposal for a protocol/procedure at European level to regulate the exploitation of the continental shelf's underwater sand deposits which are used for beach nourishment

OBJECTIVE N° 4.1.2

General objective:
Definition of tools useful for implementation of observatories, national archives and European systems with the aim of data production for the integrated coastal management of the Mediterranean at European level.

BEACHMED-e
Budget for each partner OCR

