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MAritime REgion cooperation for MEDiterranean

Adaptation to Climate Change on Coastal Area

Diagnosis phase Report

February 2012

Thematic coordinated by

LAZIO REGION

ICZM Monitoring Centre

Introduction

This questionnaire was developed by Regione Lazio for MAREMED Project, diagnosis phase, theme: Adaptation to Climate Change (ACC) in Coastal Areas.

It is addressed to Maremed partners and Mediterranean public administrations directly involved in coastal zone management.

MAREMED – Maritime Regions cooperation for Mediterranean, is a project started in 2010 and co-funded by the MED Programme, that involves 15 partners among Regions and local administrations from France, Italy, Spain, Greece and Cyprus together with the Conference of Peripheral Maritime Regions (CPMR)

The project is dealing with the following themes: maritime policy governance, the integrated management of coastal and maritime areas, fisheries, climate change adaptation in coastal areas, efforts to reduce pollution and data management.

Its objective is to develop tools for enhancing and coordinating regional, European and Mediterranean policies on these six thematic strategies.

In the first work phase (the present one), an overview of the policies implemented and their governance by the project partners will be carried out. In the second phase the partners will identify pilot coastal zones where they will promote transnational management initiatives and share operational tools in order to aid the decision-making process for the six thematic strategies.

This questionnaire took inspiration from two works already started during BEACHMED-e project and Coastance project (MED programme).

During the Obsemedi sub-project of Beachmed-e - whose aim was to realize a feasibility study to set up a Mediterranean Interregional Observatory for coastal zone management -, the results led to the realisation of a list of about 40 public structures operating in coastal zone management and the publication of the activities and tools necessary to deal with the problem.

Coastance questionnaire, developed by Département de l'Hérault, coordinator of component 3 "Coastal Risk: Submersion and erosion" led to the comprehension of the state of the art of the activities linked to Mediterranean coastal risks and submersion management and forecasting. Eight public Administrations coming from Italy, France, Spain, Greece, Cyprus and Slovenia took part in this work.

Regione Lazio, Maremed ACC theme coordinator, is now requested to take a step ahead: to understand and encourage the development of tools and methods to counter the problem of climate change adaptation in coastal areas.

"...Floods are natural phenomena which cannot be prevented. However, some human activities (such as increasing human settlements and economic assets in floodplains and the reduction of the natural water retention by land use) and climate change contribute to an increase in the likelihood and adverse impacts of flood events..."

EU flood directive 2007/60/CE

"White paper" on Adapting to climate change

(http://www.medregions.com/pub/doc_travail/gt/66_en.pdf)

suggest the integration of climate change issues for the implementation of the Floods Directive 2007/60/CE. "...Full implementation of this Directive by the EU Member States will help increase resilience and facilitate adaptation efforts....

(COM(2009) 147, p. 11)"

This work must consider European flood directive as the point of reference to regulates the problem of flood risk evaluation, taking into account climate change adaptation in coastal area. This

directive states in a specific way the need to consider climate change effects during the evaluation flood risks future scenarios.

Eventually, we have a regulation explaining how to assess and manage flood risks in coastal areas and the European Commission fixes clear deadlines for Member States to comply with the requirements of the flood directive.

This directive, approved by most Mediterranean Member States

(http://ec.europa.eu/environment/water/flood_risk/timetable.htm), is reference point chosen by Regione Lazio for the development of this questionnaire.

Main Objectives of the questionnaire

- Understanding the knowledge level of the "flood directive" effectively demonstrated by the Maremed partners, and especially understanding the real capability of Mediterranean administrations to meet the milestones proposed by the European Commission.
- Research of tools and methods currently available to address the problem of risk map elaboration, also collecting some experiences and suggestions coming from MAREMED partners for the next financial programme (2013 - 2020).

EU Flood risk directive 2007/60/EC (Requirements and milestones).

The milestones fixed by the flood directive are reported below:

PRELIMINARY FLOOD RISK ASSESSMENT

Article 4

...4. Member States shall complete the preliminary flood risk assessment by
22December2011.

FLOOD HAZARD MAPS AND FLOOD RISK MAPS

Article 6

...8. Member States shall ensure that the flood hazard maps and flood risk maps are completed by
22December2013.

FLOOD RISK MANAGEMENT PLANS

Article 7

...5. Member States shall ensure that flood risk management plans are completed and published by
22December2015.

The Flood Directive gives Member States some suggestions for the development of flood risk maps. In particular, some detailed information is requested for the elaboration of hazard maps and risk maps.

Some of the main requirements set by the directive are the following:

FLOOD SCENARIOS...

Flood hazard maps shall cover the geographical areas which could be flooded according to the following scenarios:

- (a) floods with a low probability, or extreme event scenarios;
- (b) floods with a medium probability (likely return period ≥ 100 years);
- (c) floods with a high probability, where appropriate

ELEMENTS TO BE SHOWN...

For each scenario the following elements shall be shown:

- (a) the flood extent;
- (b) water depths or water level, as appropriate;
- (c) where appropriate, the flow velocity or the relevant water flow

FLOOD SCENARIOS SHOULD BE EXPRESSED IN TERMS OF:

- (a) the indicative number of inhabitants potentially affected;
- (b) type of economic activity of the area potentially affected;
- (c) installations as referred to in Annex I to Council Directive 96/61/EC of 24 September 1996 concerning integrated pollution prevention and control (1) which might cause accidental pollution in case of flooding and potentially affected protected areas identified in Annex IV(1)(i), (iii) and (v) to Directive 2000/60/EC;
- (d) other information which the Member State considers useful such as the indication of areas where floods with a high content of transported sediments and debris floods can occur and information on other significant sources of pollution.

FLOOD RISK MANAGEMENT PLAN...shall take into account relevant aspects such as:

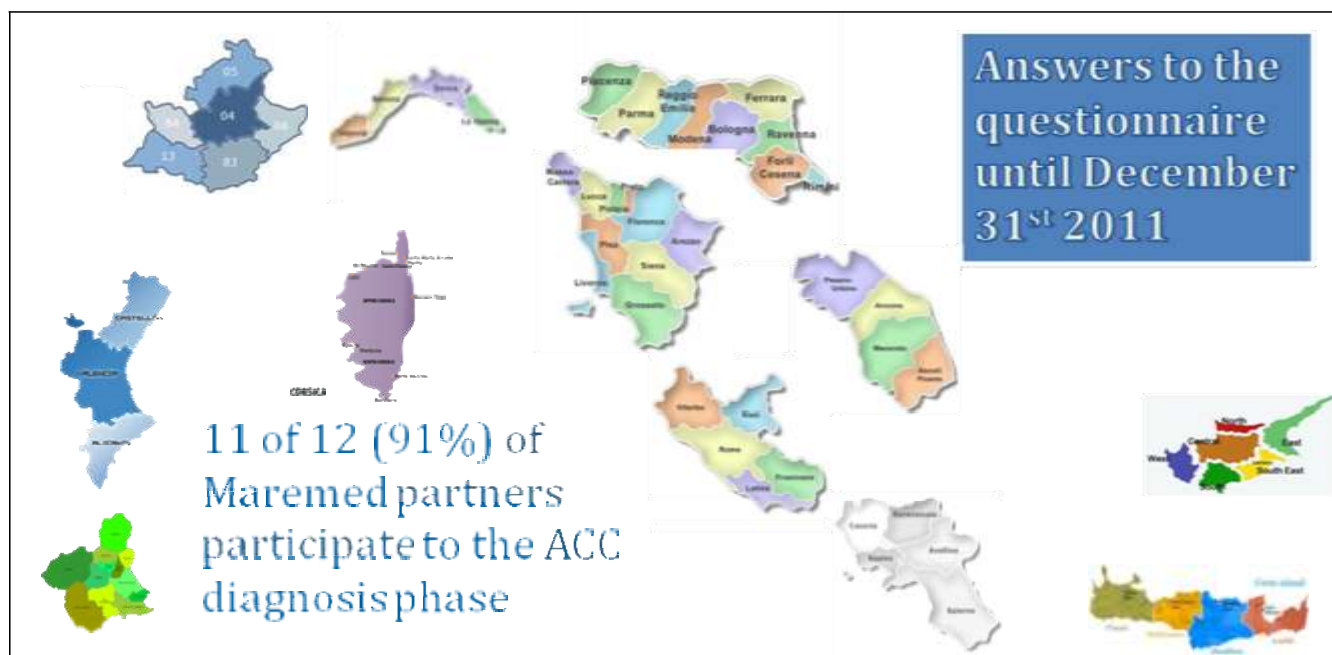
...costs and benefits, flood extent and flood conveyance routes and areas which have the potential to retain flood water, such as natural floodplains, the environmental objectives of Article 4 of Directive 2000/60/EC, soil and water management, spatial planning, land use, nature conservation, navigation and port infrastructure.

Flood risk management plans shall address all aspects of flood risk management focusing on prevention, protection, preparedness, including flood forecasts and early warning systems and taking into account the characteristics of the particular river basin or sub-basin.

Flood risk management plans may also include the promotion of sustainable land use practices, improvement of water retention as well as the controlled flooding of certain areas in the case of a flood event.

Adaptation to climate change on coastal area (DIAGNOSIS RESULTS)

This Adaptation to Climate Change Questionnaire represents the 91% of Maremed regional Partners.
Eleven partners of twelve have correctly answer to the questions.



The Questionnaire is subdivided on six different sections for a total of 22 questions:

SECTION 1 - State of the art: inventory of the cooperation projects on adaptation to climate change

SECTION 2 - State of the art: inventory of the atlases and databases regarding coastal risks: erosion, submersion, flood

SECTION 3 - Cartographic and morphological data

SECTION 4 - Meteorological and wave climate data, climate change effects

SECTION 5 - Social economic data, exposed values

SECTION 6 - Future scenarios

All the answers are synthesised and reported on the tables below. For the integral version see the annex A to this report.

Final considerations, emerged problems and the solution and suggestions to propose for the future ERDF financial period 2014-2020, are reported on the next paragraph.

SECTION 1

State of the art: inventory of the cooperation projects on adaptation to climate change

Question N°	1	2
Partner	Have you participated in former European programs on adaptation to climate change in coastal areas?	Could you describe the main Results, Experiences and Best Practices that you identified in these projects?
Creta	www.coastance.org , www.beachmed.eu , and also REGIOCLIMA	<p>In Beachmed-e the long term evolution of the erosion of the coastline of the a pilot site (Georgoupoli) was taken into consideration for the local urban and rural planning.</p> <p>In the Coastance project (in progress), component 4, for another pilot site (Keratokampos) methodologies and techniques are proposed for the protection of the coast from erosion mainly by beach nourishment and "soft" beach protection measures.</p> <p>The main results of the Coastance project is the identification of the main elements of Integrated Coastal Zone Management (considerations on climate change included) that have to be introduced into the planning procedures.</p> <p>For the component 5, of the Coastance project, guidelines are prepared for the Strategic Environmental Assessment including ICZM issues.</p> <p>The Decentralized Administration of Crete and the Energy Agency participate in the project Regional Cooperation towards adaptation to climate change – REGIOCLIMA , funded under the European Program INTERREG IVC. The objective of the project is to raise awareness and assist local societies and local authorities in adapting to the new climate conditions, by both minimizing the risk of damage and exploiting the new opportunities arising from a changing climate. More specifically, the project will focus on how the climate change influence the local societies and if there is a possibility to transform the disadvantages of climate change to advantages.</p> <p>8 organizations from 8 European countries (covering geographically the area of the European Union as a whole) participate in the project. 5 Regional Authorities (Decentralized Administration of Crete, Region of Veneto, Region of Valencia, Region of Bratislava –Slovakia-, Region of Aubagne -France-), an academic Marine Institute (Tartu-Estonia), the Regional Agency for Entrepreneurship & Innovation (Varna-Bulgaria) & Larnaca District Development Agency (Cyprus). The Energy Agency is the coordinator of the project for the Decentralized Administration of Crete.</p> <p>The project started in October 2008 and will be concluded by September 2011.</p>
Lazio	www.beachmed.eu www.coastance.eu	<p>BEACHKEEPER Web-Cam image registration and restitution system with automatic identification of coastline</p> <p>GNM Grainsize Nourishment Model</p> <p>SAND-MAP Map of sand quarries along Mediterranean platform</p> <p>SAND PROTOCOL Protocol for searching Sea bottom sand quarries methodologies</p> <p>ENV2 & TURB1 Environmental protocol for dredging and nourishment activities.</p> <p>Turbidity effects during dredging and nourishment activities and standardised method for turbidity/sedimentation rate measurement.</p> <p>ICZM ATLAS GIS tool for Integrated Coastal Zone Management</p> <p>BEACH NOURISHMENT Technical instrument for the dissemination of beach nourishment works</p>

		<p>DUNE CHARACTERIZATION Manual for the Characterization and management of coastal Dunes</p> <p>"BOLOGNA CHARTER" A document of understanding between local Administrations for the promotion of EURIOMCODE (EUROpean Interregional Observatory for the Mediterranean COastal DEfence)</p> <p>SiCoast Database of coastal infrastructures</p> <p>COASTAL SERVICES Operative and technical services for coastal monitoring</p> <p>LAW-COAST Proposal for an integration of coordinated text for the European Parliament directive's proposal for the theme "ground" and a modification of 2004/35/CE directive</p> <p>RISK MAP Model - A model for the Risk maps elaboration on coastal area</p>
Emilia-Romagna	<p>Beachmed-e (Interreg III C Sud): http://www.beachmed.eu</p> <p>PlanCoast (Interreg III B CADSES): www.plancoast.eu</p> <p>COASTANCE (MED): www.coastance.eu</p>	<p>Beachmed-e: identification and characterisation of a new off-shore deposit for beach nourishment, installation of a wave detection buoy for marine climate monitoring 3 miles off-shore from regional coast, good practices for consolidation of restored/reconstructed coastal dunes, through vegetation planting (that drove after to the "Bevano Protocol"), signature of a political document "European regions charter for littoral protection and for the promotion of an European interregional Observatory for Mediterranean coast protection (Bologna Charter)".</p> <p>PlanCoast: manual and practices for coastal area planning and integrate marine spatial planning, set up and tested within the Ferrara Province spatial planning process.</p> <p>COASTANCE: (ongoing) development of a regional action plan against coastal erosion and submersion risk for the adaptation to climate change effects, development of a costal information and managerial system based on 118 sedimentary cells, development of best practices for beach sediments management and of a program for the sustainable exploitation of sediments deposits for beach nourishment purposes.</p>
Toscana	<p>EUROSION (www.euroasion.org);</p> <p>BEACHMED and BEACHMED-e (www.beachmed.eu);</p> <p>CONSCIENCE (www.conscience-eu.net);</p> <p>RES MAR (www.resmar.eu); PERLA (www.progettoperla.eu)</p>	<p>Restoring the sediment balance and providing space for coastal processes; "Favourable sediment status" in order to promote coastal Resilience;</p> <p>Coastal sediment cell: a coastal compartment that contains a complete cycle of sedimentation including sources, transport paths, and sinks;</p> <p>Coastal and Offshore Sediment Management Plans.</p>
FEPORT	<p>Beachmed: Strategic management of beach protection for sustainable development of Mediterranean coastal zones http://www.beachmed.it/</p> <p>Rinamed: Drafting and execution of a common strategy between local players in the Western Mediterranean Arch regions in terms of information and awareness of the population before natural risks http://www.rinamed.net/</p>	<p>Beachmed: The results were the identification of measures to mitigate coastal erosion, acceptance of recommendations for land planning in the regions, improved management of coastal domains and the provision of innovative territorial technologies. Master plans and technical reports were also be drawn up for subsequent implementation. Moreover, the project also drew up guidelines and recommendations so that the results of the RFO could be included in policies and regulations in the participating regions.</p> <p>Rinamed:</p> <ul style="list-style-type: none"> Drafting of an educational package <ul style="list-style-type: none"> A role-play game A hypertext on CDROM A travelling exhibition and documentation thereof Complementary publications Development of an inter-disciplinary training programme focussing on the different sectors International exchange meetings and assessment of common practices among the players in the European Mediterranean <ul style="list-style-type: none"> Undertaking of awareness actions aimed at different citizens' groups and associations Creation of internal and external communication mechanisms <ul style="list-style-type: none"> Creation of a common space on the internet: Website International forum for communication agents

		• Drafting of assessment tools and fine tuning of a continuous assessment programme
Murcia	No	
PACA	No	
Liguria	No	
Marche	LIFESALT http://www.lifesalt.it/en.html	Application of a regional risk assessment methodology based on GIS for a sustainable use of groundwater considering climate change events – Application on Life+ SALT project.
Cypro	No	
Corse	Resmar (Ligurie Sardaigne Toscane Corse)	

yes percentage

63%

SECTION 2

State of the art: inventory of the atlases and databases regarding coastal risks: erosion, submersion, flood

Question N°	3	4	5	6	7	8	9
Partner	Have you already acquired information or been informed on floods and submersions which already occurred in the past, and which have significant adverse impact on coastal zones?	Have you already defined a methodology to identify priority areas of risks (erosion, submersion, flood)?	Have you already produced risk maps on coastal areas?	Did your risk maps refer to the EU flood directive (2007/60/EC) requirements?	Have you produced atlases and/or databases regarding coastal area management?	Have you adopted a specific guideline to produce these tools? / Should be shared and adopted by the MAREMED partnership?	Could you list some general surveys concerning erosion and submersion events carried out in your Region over the past five years?
Creta	no	no	no	Till the end of 2011 , the Greek General Secretariat for Water(Ministry of Environment, Energy and Climate Change) will present the preliminary risk maps	no	no	
Lazio	Yes. A publication on Coastal monitoring was made by ICZM monitoring Centre and is available on www.cmgizc.info	yes	no	no	ICZM Monitoring center of Lazio Region has published a WEB G.I.S. tool on marine and coastal area ecosystem management. This tool is available on www.cmgizc.info	no	Lidar campaign 2009/2010 80 km of coast in the north of Lazio; Shoreline evolution in the Pontino area after nourishment works.

Emilia-Romagna	Reports, maps, images, sea storm reports.	<p>The methodology is to be shared among regions and implemented to fulfill 2007/60/EC directive.</p> <p>Nowadays the sharing process is ongoing through technical meetings with regions of the same Hydrographic District. It is a statistical modelling method based on the calculation on water rising and ingression considering the worse scenario: run up + surge + tide (for 1, 10, 100 return time events).</p>	no	no	<p>Within the COASTANCE project we set up a subdivision of the regional coast in 118 littoral cells and classified them, for management purposes, by sedimentary balance, interventions realised, physical characteristics and dynamics. The system, named SICELL, will become a web tool available for technical regional offices and local Administrations. Its description and general maps can be accessed at the following link: http://www.ermesaambiente.it/difesasuolo/</p>	<p>yes, It could be</p> <p>LiDAR 2010 carried out after the sea storm of march 2010</p> <p>2009 data analysis for subsidence detection</p>
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Toscana	<p>GEOMORPHOLOGICAL AND SEDIMENTOLOGICAL FEATURES OF THE SHORELINE: The Geomorphological map: the adopted method involves performing the following operational stages: Exploratory stage and acquisition of material made available by the Public Administrations. Remote sensing using photointerpretation before and during direct surveys on the ground. Direct survey on the ground using GPS tools and Regional Design Paper mapping on a 1:10.000 scale. The comparison between the results of the geomorphological survey and the data obtained from the interpretation of the batimetric surveys carried out during the first stages of the study. Shoreline evolution maps from 1938 to 2005.</p>	yes	<p>Mapping HAZARDOUS AND INVARIANCE Areas: Hazardous areas means a portion of territory affected by extreme meteorological weather, and refer to a return period of 50 years. For the definition of hazardous areas the following data was used: • the survey of the shoreline (2005); • the results of the modelling calculation of the effects induced by the wave with a 50-year return period, considering: - The maximum set-up value, namely the rise in sea level caused by the wave compared to the average sea level; - The maximum run-up value, namely the highest elevation in relation to the set-up value, reached by the water as it rises up the beach. The flooding of the beach being surveyed and, consequently, delimiting the hazardous areas, was assessed on the basis of the coastline and the height of the overflow of the meteorological weather, with reference to current conditions and trends (provided by the model). Invariance area means the planimetric delimitation of the following urban invariances: urban</p>	no	<p>C. BARTOLINI, PRANZINI, and M. 1989. The Tuscan coast - winds, and wave Region of Tuscany 16 Tables. Study the implementation Tuscan coast in for Integrated Management for hydrogeological Geomorphological belt on a 1:5,000 of Italian beaches. C.N.R., S.E.L.C.A., Florence.</p>	<p>Technical specifications to assign feasibility studies at the level of physiographic units for the implementation of the profile of the Tuscan coast in the Regional Plan for Integrated Coastal Management for the hydrogeological provision. Could you list some general surveys concerning erosion and submersion events carried out in your Region over the past five years? Study of the sedimentary supply in main rivers; Geomorphologic (shoreline and emerged and submerged beach profiles) and sedimentological (grain size and petrography)</p>	<p>Study of the sedimentary supply in main rivers; Geomorphologic (shoreline and emerged and submerged beach profiles) and sedimentological (grain size and petrography) features of the coast; Drafting the Geomorphologic Map of the coastal belt on a 1: 5000 scale; Identification of hazardous and invariance areas; Inventory of marine works designed to defend the coast and coastal settlements.</p>
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			<p>areas, network infrastructures and areas of environmental and natural interest. The activities that were carried out consisted in the production of GIS files, by updating and standardizing the data provided by the regional SIT and the acquisition and digitization of municipal planning instruments (mapping out the PRGs). The risk from rising sea levels on the coast of northern Tuscany was also assessed (Coastal Studies No 6 - 2003)</p>			<p>features of the coast; Drafting the Geomorphologic Map of the coastal belt on a 1: 5000 scale; Identification of hazardous and invariance areas; Inventory of marine works designed to defend the coast and coastal settlements.</p>
FEPORT	<p>Information documenting events in the distant past is available. For more recent events there are satellite images, weather reports from the Instituto Nacional de Meteorología (National Weather Institute), information from the press, studies carried out by universities, etc. An example of the maritime storm studies affecting the coast is available through the following link: http://age.ieg.csic.es/boletin/40/14-TEMPORALES.pdf Very significant is the stormy weather that hit the Mediterranean coast in November 2001, producing six deaths and serious damage to</p>	<p>PATRICOVA is based on a methodology designed for priority identification of floodable areas. With regard to erosion, methodologies such as the proposal by the Instituto de Ecología Litoral (Coastal Ecology Institute) in the project "Sistema de monitorización de la erosión costera y sus efectos en las comunidades</p>	<p>In the case of flooding, the most significant initiative is being coordinated by the Ministry for the Environment, Rural and Marine Areas, through the so-called "National Cartography of Floodable Areas System". In this cartography a new delimitation of the Public Hydraulic Domain has been carried out. In order to do so, the following steps were followed:</p> <ul style="list-style-type: none"> • Compilation of previous studies: <ul style="list-style-type: none"> o Civil Defence Plans o Reservoir operation rules o Etc. 	<p>In July 2010 the Council of Ministers approved a Royal Decree for assessment and management of flooding risks, which signifies transposition of Directive 2007/60/CE</p>	<p>The studies of the floodable areas in the Valencian Community have been carried out by:</p> <ul style="list-style-type: none"> • PATRICOVA: Plan de Acción Territorial (Territorial Action Plan), at a sectorial level in reference to prevention of flood risks in the Valencian Community, which uses a risk management tool http://cma.gva.es/web/indice.aspx?nod 	<p>In the Valencian Community, directives such as PATRICOVA are interesting for further study. On the other hand, within the scope of the Sistema Nacional de Cartografía de Zonas Inundables (National Cartography of Floodable Zones System), the Ministry for the Environment and Rural and Marine Areas have</p> <ul style="list-style-type: none"> • PATRICOVA • Maps of natural risks in territorial and urban development planning (ICOG) 2008 • Sea storms and territorial regulation in the province of Alicante (Alicante University) 2005

	frontline beach and coastal infrastructures, and for which a large quantity of scientific and graphic information and press reports are available.	marinas de la Red Natura 2000" are used.	<p>Hydraulic Public Domain through the following criteria:</p> <ul style="list-style-type: none"> o Hydro-geological o Geomorphologic o Environmental <p>• Establishment of a preferential flow channel, which, if necessary, could be established as a policing zone</p> <p>• Definition of Avenues associated with different return periods, in natural or altered systems</p>	<p>• Acuamed:</p> <p>Acuamed is the main instrument of the Ministry of the Environment and Rural and Marine Areas for the development of the "A.G.U.A."</p> <p>Programme in the Mediterranean basins. Hence, the state company Aguas de las Cuencas Mediterráneas S.A. has the objective of contracting, constructing, purchasing and exploiting all manner of hydraulic works. Actions of general interest are currently being carried out in the hydrographical basins of the rivers Segura, Júcar, Ebro and the Andalusian Mediterranean Basin and the Inland Basins of Catalonia. The A.G.U.A. Programme action in the Mediterranean</p>	<p>commissioned CEDEX (Centro de Estudios y Experimentación de Obras Públicas) [Centre of Studies and Experimentation of Public Works], IGME (Instituto Geológico y Minero de España) [Geology and Mining Institute of Spain] INDUROT (Instituto de Recursos Naturales y Ordenación del Territorio de la Universidad de Oviedo) [Institute of Natural Resources and Land Planning of the Territory at Oviedo University], with the development of technical recommendations in a Methodological Guide discussing the basic aspects for the demarcation of Public Hydraulic</p>
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basins entrusted to the company seek three main objectives: to increase water resources, to improve the management of water and to restore the environment.	Domain and floodable areas in accordance with Royal Decree 9/2008 which amended the Public Hydraulic Domain Regulations. These technical recommendations are based on different practical examples carried out in different rivers in the Cantabrian, Douro and Júcar basins, and the first drafts will be available to the general public in the near future.
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- The Confederación Hidrográfica de del Júcar (Júcar Hydrographical Confederation)
- Private companies contracted for construction projects
- The Ministry for the Environment

More information:
http://www.mma.es/portal/secciones/acm/aguas_continent_zonas_asoc/prevision_inundaciones/cartografia_inundables/estudios.htm
 Cartographic viewer:
<http://sig.marm.es/snczi/visor.html?herramienta=DPHZI>

Murcia	no	no	no	no	SITMURCIA - Sistema de Información Territorial de la Región de Murcia	no	no
PACA	Yes (the national auth.)	yes	The Region financed, with the state and under the coordination of our 3 coastal Provinces, atlases of risks for erosion and flood (from land and sea). The evolution of the coastline was studied with old pictures and maps, models of local currents were calculated, maps of biocenosis were done. A consultation with public authorities was organized for their appropriation of the level of the risk that will appear on the maps. All data is free and available on the regional portal. The problem is that these atlases are not taken into account by the mayors for their planification of urbanism	no	A scientific project have atlases of the coastal structures and the evaluation of the artificialisation induced by the ports, coastal dikes... MEDAM project. The results are online; http://sigcol.unice.fr/website/MEDAM/site_medam/index.php They can be taken freely on the regional portal	yes, We think that we need to know how the other regions did their atlases and to built a common guideline to test it at the basin scale	For the necessity of some management plans, a survey was organized in the Alpes-Maritime and in the Var Province.
Liguria	Historical maps and photos	yes	Definition of run-up level for 1 year and 50 year return period	yes	http://www.ambienteinliguria.it/eco3/ep/CD_PTAMC/cartografiaC08.html	yes	Bathymetric, sedimentological and biological surveys
Marche	Rain gauge data, damages reports, water level data (fluvial), surveys to map the areas	yes	Historical and geomorphological criteria	no	http://www.autorita bacino.marche.it/pai/cartopai2.asp	yes	Between 8-10 sea storm with

Cypro	no	no	no	no	no	no	Some general surveys concerning erosion and submersion events in Cyprus carried out over the past years are as followed: Department of Public WorksLarnaca District:a. Oroklini – Larnaca regionb. Pervolia – Kiti – Zygi region Paphos District.a. Geroskypou bayb. Polis ChrysochousNicosia district:a. Kato Pyrgos – Pegeia regionNote: The Land and Survey Department is the appropriate department which deals with the coastline evolution.
Corse	Il s'agit d'études portant sur l'historique des inondations et submersions, notamment par la presse. Ces informations remontent jusqu'au 15° siècle.	no Ce sont les services compétents de l'Etat, à l'aide des outils fournis par l'OEC, qui définissent leur méthodologie pour identifier les zones prioritaires à risque et élaborent par la suite les moyens de prévention, de protection et d'intervention adaptés.	On peut distinguer deux types de cartographies des risques sur la zone côtière de l'érosion et la seconde des tempêtes.	Corine Land Cover et facies primaire et	no	no	Non, il y a un suivi global des cas d'érosion et de submersion mais pas d'étude concernant des cas spécifiques
yes percentage	73%	63%	54%	36%	73%	46%	

SECTION 3

Cartographic and morphological data

Question N°	10	11	12	13
		What kind of tools do you use for coastal monitoring?	Have you developed common cartographies together with your neighbor region?	Have you collected information evaluating the subsidence phenomenon along your coast?
Creta	Sand grain size available for Keratokampos and other sites from existing coastal engineering studies.	Aerophoto	no	no
Lazio	Shoreline acquisition; Equilibrium beach section acquisition; Erosion trend; Sand grain size; Chemical and Physical characteristics of sediments; Sand Dune acquisition	Webcam Airphoto Topobathimetric measurement Satellite images Lidar	no	Yes, on the coastal area of Fondi (Pontino littoral)
Emilia-Romagna	Shoreline acquisition; Equilibrium beach section acquisition; Erosion trend; Sand grain size; Chemical and Physical characteristics of sediments; Sand Dune acquisition	Webcam Topobathimetric measurement Satellite images Lidar SAR interpherometry	no	yes
Toscana	Shoreline acquisition; Equilibrium beach section acquisition; Erosion trend; Sand grain size; Chemical and Physical characteristics of sediments; Sand Dune acquisition; Morphology, texture and chemistry of continental shelf sand and gravel reservoirs	Webcam Topobathimetric measurement Satellite images Lidar Beach sediment grain size and colour measurements	yes	yes

FEPORT	Shoreline acquisition; Equilibrium beach section acquisition; Erosion trend; Sand grain size; Chemical and Physical characteristics of sediments; Sand Dune acquisition	Webcam Topobathimetric measurement Satellite images	Cartography being developed at a national level shows uniformity and continuity between neighbouring regions.	yes
	Murcia	no	satellite image	no
PACA	Shoreline acquisition; Erosion trend; Sand grain size; Chemical and Physical characteristics of sediments	Aerophoto; Lidar	yes	yes
Liguria	Shoreline acquisition Equilibrium beach section acquisition Erosion trend Sand grain size Chemical and Physical characteristics of sediments	Topobathimetric measurement; Aerophoto	no	no
Marche	Shoreline acquisition Erosion trend	Webcam	no	?
Cypro	Shoreline acquisition Erosion trend Sand grain size Physical characteristics of sediments	Topobathimetric measurement Satellite images	no	no

Corse	<p>Shoreline acquisition; Equilibrium beach section acquisition; Erosion trend; Sand grain size; Chemical and Physical characteristics of sediments. LIMA qui permet de cartographier les fonds sous marins de 0 à 100 mètres</p>	<p>Topobathimetric measurement Lidar Airphoto</p>	<p>Oui dans le cadre du Projet de Parc Marin International des Bouches de Bonifacio. (Corse Sardaigne) + programme GERER qui traite de la problématique d'érosion des plages</p>	no
yes percentage	91%	100%	36%	46%

SECTION 4

Meteorological and wave climate data, climate change effects.

Question N°	14	15	16	17	18
Partner	Have you collected information on high tide level in your region?	Have you collected information evaluating sea level evolution of your Region in the medium/long term (100÷200/500 years)?	Have you collected information evaluating offshore meteorological characteristics (wind speed, wind direction, atmospheric pressure, water and air temperature, ...) along your coasts?	Have you collected information evaluating offshore (about -100 m) wave characteristics (Wave height H, Wave period T and main direction) along your coasts?	Have you collected information evaluating nearshore (about -20 m) wave characteristics (Wave height H, Wave period T and main direction) along your coasts?
Crete	yes	no	> 20 years	> 20 years	> 20 years
Lazio	yes	no	> 20 years	> 20 years	5÷20 years
Emilia-Romagna	yes	no	> 20 years	> 20 years	< 5 years
Toscana	yes	yes	5÷20 years	< 5 years	< 5 years
FEPOR	yes	yes	< 5 years	< 5 years	< 5 years
Murcia	no	no	no	no	no
PACA	no	no	no	yes	no
Liguria	yes	no	no	> 20 years	no
Marche	no	no	5÷20 years	no	no
Cypro	yes	no	5÷20 years	5÷20 years	5÷20 years
Corse	yes	no	5÷20 years	5÷20 years	5÷20 years
yes percentage	73%	18%	73%	82%	64%

SECTION 5

Social economic data, exposed values

Question N°	19	20
Partner	Have you already developed land use maps for your coastal area?	Have you already assigned economic values to your coastal area?
Creta	<p>“Regional Plan of Urban and rural development and sustainable development: Region of Crete” (Περιφερειακό Σχέδιο Χωροταξικού Σχεδιασμού και Αειφόρου Ανάπτυξης: Περιφέρεια Κρήτης) Ministry of Environment and Climate Change 2003. (www.ypeka.gr)</p> <p>It is a context that gives directions/guidelines for making land use maps through the Open Cities Urban and Rural Plan (Σχέδια Χωρικής και Οικιστικής Οργάνωσης Ανοιχτών Πόλεων Σ.Χ.Ο.Ο.Α.Π.) Some municipalities in Crete have completed or they are preparing these plans.</p>	<p>The economic values of real estate are assigned from the Ministry of Economics for all Greece. It concerns all the areas and they are used for taxes.</p>
Lazio	<p>Yes, land use map are available on web GIS tool www.cmgizc.info</p>	<p>Taking account information about resident population size, typology recreation activities, typology of tourism, direct and indirect incoming, the objective is to determine a euro/m2 of beach value assigned to each typology of land use. See also www.beachmed.eu.</p>

Emilia-Romagna	<p>Please see the Land Use web GIS at the following: http://archiviocartografico.regione.emilia-romagna.it/bookshopfe/mappeonline.html</p> <p>The economic value of the coastal area has been estimated considering the GDP of the main sectors of the coastal economy: tourism industry, touristic and commercial harbours, fishery, aquaculture. Thus defined, the coastal system GDP is estimated to contribute up to 7% of total regional GDP. Further evaluations on real estate, infrastructures, industrial settlements, natural heritage are not structured.</p>	
Toscana	http://web.rete.toscana.it/sgr/webgis/consulta/viewer.jsp	no
FEPOR	<p>SIOSE: Sistema de Información de Ocupación del Suelo en España (Land Occupation Information System in Spain): http://terrasit.gva.es/es/ver?servicio=siose</p>	no
Murcia	Corine. " Cambios 1990-2000 Murcia IGN (Instituto Geográfico Nacional)	no
PACA	Not specifically for the coastal area but for all our territory	no
Liguria	no	no
Marche	http://www.autoritabacino.marche.it/costa/costa.asp	no
Cypro	<p>http://www.moi.gov.cy/moi/tph/tph.nsf/index_gr/index_gr?OpenDocument</p> <p>For the valuation of the economic benefits use is made of the differences in the productivity of the housing and agricultural sectors attributed to the coastal environment. This is a particular application of the more widely used economic appraisal technique of considering 'with' and 'without' situations.</p>	

Corse

Corine Land Cover

no

yes percentage

91%

36%

SECTION 6

Future scenarios

Question N°	21	22	22	22
Partner	Are there any key studies containing future scenarios for your area with a focus on:	Could you list some interventions in your Region concerning adaptation measures to climate change in coastal areas, realised over the past 10 years?	Could you identify problems that hinder the development of risk maps in coastal zones (budget; technical competences; technical tools; lack of data or lack of shared data...)?	What would you suggest to the European Regional Development Fund (ERDF) for the next financial program (2014-2020)?
Creta	<p>Changes in population size</p> <p>Population dynamics</p> <p>Economic evolution</p> <p>Land use changes</p> <p>Spatial planning</p>		<p>The budget issue is the most important.</p> <p>The Coastance project showed that the necessary data, technical competences and technical tools are available in the Greek market.</p>	<p>The development of a G.I.S. database including:</p> <ul style="list-style-type: none"> • Coastal works all around the Region of Krete, • land uses and existing structures in coastal areas, <ul style="list-style-type: none"> • coastal land values • protected coastal habitats • coastline evolution based on analysis of successive satellite images <p>A regional Coastal study to determine:</p> <ul style="list-style-type: none"> • Sedimentary cells • Erosion and accretion rates based on historical orthophotomaps <ul style="list-style-type: none"> • Coastal dynamics • Main trends of sediment transport • Main rivers sediment yield <p>• Main areas under erosion and submersion risk</p> <ul style="list-style-type: none"> • Coastal flood risk maps • Available off-shore sand deposits appropriate for sand nourishment

Lazio	no	<p>Nourishment defense work of Tarquinia (Nourishment protected by groynes, year 2004)</p> <p>Nourishment defense work of Terracina (only Nourishment, year 2006)</p> <p>Nourishment defense work of Fondi (Nourishment protected by groynes year 2006)</p> <p>Nourishment defense work of Formia (only Nourishment, year 2007)</p> <p>Nourishment defense work of Minturno (Nourishment protected by groynes year 2007)</p>	Administrative and Organisational	<p>The creation of an Interregional Observatory for Mediterranean coastal monitoring, as introduced and sustained by Bologna Charter. The suggested formula could be the creation of a network among regional observatories able to cover data acquisition, collection, elaboration at the Med basin scale.</p>
Emilia-Romagna	<p>Changes in population size</p> <p>Population dynamics</p> <p>Economic evolution</p> <p>Land use changes</p> <p>Spatial planning</p>	<p>Years 2002 and 2007 beach nourishment interventions with off-shore deposits sediments (1,7 Million of cubic meters along 10 km of critical coastal stretches) in order to widen and elevate the beach quota. "Da Vinci Gates" in Cesenatico harbour, completed in year 2005, in order to block marine ingression by events with water level up to 2,20 m, on medium sea level, accompanied by the realisation of artificial dunes "Giardini al mare" along inland promenade, with the same quota (+2,20 m), southward to the harbour, and a "managed retreat" intervention by the municipal Master Plan/ realignment of buildings in the area northward to the harbour.</p>		<p>To foresee a budget line for next financial period on erosion monitoring systems in the Mediterranean and a pilot action programme to finance demonstrations of best practices for adaptation of coastal zones to climate change.</p> <p>To re- launch the EUROSION Initiative, with a particular focus on the Med basin and giving the Regions a strong role in its definition and development.</p> <p>To foster the creation of an Interregional Observatory for the coast of the Med basin (as introduced within the "Bologna Charter" 2007), a network among regional observatories able to cover data acquisition, collection, elaboration at the Med basin scale.</p>

Toscana	no	Program of priority operations to reclaim and rebalance the littoral zone and the training activities under the integrated coastal management plan (Regional Council Resolution n. 47/2003).	Budget and lack of appropriate technical tools	The Development of Forecasting Models that are able to evaluate the morphologic response of the coastal plains to the rise in sea level (migration/changes in the beach-dune system).
FEPORT	Climate change Changes in population size Population dynamics Economic evolution Land use changes Spatial planning	<ul style="list-style-type: none"> • Application of Agendas 21 <ul style="list-style-type: none"> • Beach regeneration • Control of CO2 emissions • Air quality improvement plans <ul style="list-style-type: none"> • Flood risk plan 	Fortunately the risk maps have been carried out gradually and very intensely by different bodies (private companies, universities, regional government, central government, etc.) so that the requirements set by the European Commission for 2013 will be met. The major problems that have been encountered are mainly organisational and administrative.	<p>Bearing in mind that progress in the subject of Integrated Coastal Management or Adaptation to Climatic Change evolves very slowly and implementation in regions such as the Valencian Community where action is mainly due to short term political and economic interests, the enforcement of the Barcelona Convention needs to be promoted, and, where necessary, regulatory frameworks based on Directives or Regulations established. Similarly, the promotion of inter-regional agreements or agreements between states and regions for the uniform, harmonised implementation of the CZIM premises and the goals to be attained for a suitable adaptation to climatic change is required.</p> <p>Perhaps, through European project finance programmes, projects could be put forward aimed at establishing a clear, well-defined and differentiating CZIM policy in and between coastal regions.</p>

Murcia	Spatial Planning	no	Technical competences and Budget.	Monitoring Program of Mediterranean Coast
PACA	NO	<p>A lot of means to fight the lost of surface of the beaches and to protect the human constructions are developed by the local authorities since 20 years.</p> <p>The municipalities have the role to of small actions, principally of beach hydrosedimentary scale. The region try to atlases of risks, share of experiences and bathymetric lidar data.</p> <p>submarine dikes are done with good and interesting to share the results and experiences on these methods which are a reversible way of protection of our coasts against the waves.</p>	<p>The budget is a true problem because we must coordinate numerous sources of budget to arrive recurrent process.</p> <p>public managers to the use of the GIS and the For technical competences on the thematic of true that we need common guidelines for the</p>	<p>We would suggest</p> <ul style="list-style-type: none"> - that the regional ERDF envelops can be used to create data and atlases shared among the Mediterranean regions, especially between neighbor regions - that the methods used to protect the coastal zone, if they respect the orientations of the white book on adaptation to climate change must be financed by ERDF funds.
Liguria	no	no	Budget	Provide suitable financial resources to develop for all coastal areas risk mapping (erosion, submersion, flood)

Marche	no	Beach nourishment, hard defence structures.	Organizational regional structure and lack of human resources on that aspect	<ul style="list-style-type: none"> - To completely implement the EU Flood risk directive 2007/60/EC and its flood risk management plans (speaking from a regional point of view the directive appears as a good instrument but the real implementation structures from the National Government has to be done) - always dedicate a budget line to inform, to teach operative staff (es. Municipalities directly involved in civil protection on flood risk). - ameliorate prevention on urbanized coastal areas.
Cypro	Climate change	no		From the 2nd semester of 2011 Department of Environment has started to structure the National Plan on Adaptation to Climate Change.

Corse	<p>Commune de Calvi : un épis et deux brise-lame + un engraissement de 55 000 m³ de sable</p> <p>Ile Rousse : restauration d'un quai</p> <p>Ajaccio : Etude de réhabilitation et de protection de la Plage de Saint François</p> <p>Conseil général de Haute Corse : étude de faisabilité d'un programme de travaux de la plage de l'ospedale étude dans le cadre de la lutte contre l'érosion du littoral en Costa Verde. Réhabilitation de la plage de Caprona</p> <p>Communauté d'Agglomération du Pays Ajaccien : renforcement de la digue de la</p>	<p>La cartographie des risques nécessite une échelle fine.</p> <p>A partir de là, un budget doit être alloué afin d'acquérir les moyens techniques suffisants pour répondre à ce besoin.</p> <p>D'ici deux à trois ans on peut estimer que les cartes de risques dans la zone côtière de la région Corse seront achevées.</p> <p>Une prise en compte des prescriptions qui sont faites dans les Plan de Prévention des Risques.</p> <p>Il y a une connaissance des zones sensibles et tant au niveau économique qu'écologique il serait souhaitable d'acquérir les moyens pour intervenir sur la réduction de ces risques et de leurs impacts.</p>
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Final considerations

SECTION 1 - State of the art: inventory of the cooperation projects on adaptation to climate change

- A Good participation to the diagnosis activities is registered at the end of this work. 11 regions on 12 partner have answered to this questionnaire (91%). So the diagnosis on Climate Change adaptation on Coastal Area could be considered representative of Maremed Partnership.

SECTION 2 - State of the art: inventory of the atlases and databases regarding coastal risks: erosion, submersion, flood

- Maremed regions demonstrate a good level of knowledge of dangerous flood event occurred in the past. About 73% of them have already acquired information on floods and submersions which already occurred in the past which have significant adverse impact on coastal zones.
- 63% of Regions have already defined a methodology to identify priority areas of risks (erosion, submersion, flood), but only 54% have already produced risk maps on coastal areas, and only 3 Regions declare to meet the Flood Risk Directive 2007/60/EC requirements.
- 73% of Maremed Regions have produced atlases and/or databases regarding coastal area management. 5 regions adopted specific guidelines.

SECTION 3 - Cartographic and morphological data

- The level of knowledge of coastal morphology is very high. 91% of regions have already acquired morphological and cartographic data on their coastal zone. The methodologies adopted to survey this area are very heterogeneous. Some regions have already acquired information by advanced technologies such as Lidar, WebCam or Satellite images, and other regions utilize only air-photo. This could cause some problem for the harmonization of geographic digital data as requested by INSPIRE Directive.

SECTION 4 - Meteorological and wave climate data, climate change effects

- A good level of knowledge of climate data is demonstrated. 73% of regions have collected information on offshore meteorological characteristics (wind speed, wind direction, atmospheric pressure, water and air temperature, ...) and 82% have collected information evaluating offshore (about -100 m) wave characteristics (Wave height H, Wave period T and main direction), and 64% have collected the same wave characteristics nearshore (about -20 m). Only 18% of regions have collected information evaluating sea level evolution in the medium/long term (100÷200/500 years).

SECTION 5 - Social economic data, exposed values

- 91% of regions have already developed land use map on coastal area, but only 36% have assigned economic values to this areas.

SECTION 6 - Future scenarios

- Adaptation measures to climate change are already developed during last 10 years by 6 regions of 11 interviewed, but problems linked to budget availability and lack of technical competence and tools are emerged during the diagnosis.

Emerged Problems

- Med Regions are ready to meet the Flood Risk Directive deadlines only in part. They need to better understand economic values of their coasts and how to produce the risk maps. In particular how to represent the characteristics of inundation (as requested by EU flood Directive) and the impact of inundation on coastal area. A common methodology to produce the risk map of inundation on coastal area is not available.
- A deepen level of knowledge of sea level rise at regional level and climate change effect on coastal area did not emerge on this diagnosis phase.
- A gap of knowledge and experiences among med regions on coastal zone management is evident. Some Regions already acquired an high level of technologies for the monitoring of coastal area, other region are not prepared to the future challengers that climate change will propose.
- The production of geographic digital data necessary to the coastal management, it is guaranteed on grand part of the partnership, but a luck of harmonization of this data among partners is evident.
- A lack of budget and technical competence and tools is expressed by grand part of partners, a coordination of local administration at Mediterranean level is not evident.

Solution to propose:

- The creation of a Mediterranean Interregional Observatory of coastal zone is recommended in order to remove the gap actually registered among Med Regions in terms of technical competences, management tools and budgets.
- Follow European and extra EU realities with more experience on coastal risk evaluation and management (Netherlands, USA, etc..).
- Create a Spatial Digital Infrastructure of Harmonized geographic digital data among Mediterranean local administration.

Suggestions for the next ERDF financial period 2014-2020

Following suggestion have been expressed by Region surveyed:

- Demonstration of Bestpractices for adaptation of coastal zones to climate change;
- To re- launch the EUROSIONInitiative, with a particular focus on the Med basin;
- To foster the creation of an InterregionalObservatory for the coast of the Med basin;
- InvolvementofnorthernAfricaMedCountries on future Mediterranean policies;
- ForecastingModel to evaluate the morphologic response of the coastal plains to the rise in sea level;
- BarcelonaConvention needs to be promoted;
- Establishing a clear, well-defined and differentiating ICZMpolicybetweencoastalregions;
- MonitoringProgram of Mediterranean Coast;
- Create dataandatlasessharedamongtheMediterraneanregions, especially between neighbor regions;
- Methods used to protect the coastal zone, if they respecttheorientationsofthewhitepaper on adaptation to climate change must be financed by ERDF funds.
- To completely implementtheEUFloodriskdirective2007/60/EC and its flood risk management plans (speaking from a regional point of view the directive appears as a good instrument but the real implementation structures from the National Government has to be done).
- always dedicateabudgetlinetoinform,toteachoperativestaff (es. Municipalities directly involved in civil protection on flood risk).
- amelioratepreventiononurbanizedcoastalareas.
- obtain a method to reducetheriskoncoastalzone.

APPENDIX A

Answers to the questionnaire:

PACA Region:

PRELIMINARY INFORMATION

IN FRANCE THE COMPETENCE FOR THE TRANSCRIPTION OF FLOOD DIRECTIVE IS
DEVELOPED BY THE STATE NOT BY THE REGIONS

THE LOCAL AUTHORITIES WILL HAVE OBLIGATIONS TO DO TERRITORIAL
CLIMATE PLANS FOR MITIGATION AND ADAPTATION BEFORE 2013;

DIAGNOSTICS ON ADAPTATION TO CLIMATE CHANGE IN COASTAL AREAS

Partner	PROVENCE-ALPES CÔTE D'AZUR
Region	PROVENCE-ALPES CÔTE D'AZUR
Name of the person filling in the questionnaire (role)	LOCHET Corine, Maritime affairs Office
Name of the structure	Maritime affairs Office
E-mail address	clochet@regionpaca.fr
Date	June 2011

The questionnaire:

State of the art: inventory of the cooperation projects on adaptation to climate change

1. Have you participated in former European programmes on adaptation to climate change in coastal areas?

yes	<input type="checkbox"/>
no	<input checked="" type="checkbox"/>

If so, could you provide the names of these projects and any links to their websites?

2. Could you describe the main Results, Experiences and Best Practices that you identified in these projects?

.....

State of the art: inventory of the atlases and databases regarding coastal risks: erosion, submersion, flood

3. Have you already acquired information or been informed on floods and submersions which already occurred in the past, and which have significant adverse impact on coastal zones?

yes	X
no	

If so, what kind of information do you have in order to describe the characteristics of the floods already occurred in the past?

The State offices have these informations

4. Have you already defined a methodology to identify priority areas of risks (erosion, submersion, flood)?

yes	X
no	

5. Have you already produced risk maps on coastal areas?

yes	X
no	

If so, could you briefly describe the overall methodology that you have adopted to produce risk maps?

The Region financed, with the state and under the coordination of our 3 coastal Provinces, atlases of risks for erosion and flood (from land and sea).

The evolution of the coastline was studied with old pictures and maps, models of local currents were calculated, maps of biocenosis were done.

A consultation with public authorities was organized for their appropriation of the level of the risk that will appear on the maps.

All data is free and available on the regional portal.

The problem is that these atlases are not taken into account by the mayors for their planification of urbanism

6. Did your risk maps refer to the EU flood directive (2007/60/EC) requirements?

yes	
no	X

We cannot ensure it because these atlases were done before the transcription of the Directive

7. Have you produced atlases and/or databases regarding coastal area management?

yes	X
no	

If so, could you provide the names of these atlases and/or databases (in case of web tools, please specify the link to the web page)?

A scientific project permitted us to have atlases of the coastal structures and the evaluation of the artificialisation induced by the ports, coastal dikes... MEDAM project. The results are online;

http://sigcol.unice.fr/website/MEDAM/site_medam/index.php

They can be taken freely on the regional portal

8. Have you adopted a specific guideline to produce these tools?

yes	X
no	

If so, do you think your guideline should be shared and adopted by the MAREMED partnership?

We think that we need to know how the other regions did their atlases and to build a common guideline to test it at the basin scale

9. Could you list some general surveys concerning erosion and submersion events carried out in your Region over the past five years?

For the necessity of some management plans, a survey was organized in the Alpes- Maritime and in the Var Province.

Cartographic and morphological data

These data does exist but elaborated by the State or by the municipalities for their needs. It's not the competency of the region to produce it, we help financially some strategic actions to be shared among all the regional stakeholders.

10. Have you already acquired morphological data describing your coastal zone?

X	Shoreline acquisition?
	Equilibrium beach section acquisition?

X	Erosion trend?
X	Sand grain size?
X	Chemical and Physical characteristics of sediments? In the ports
	Sand Dune acquisition?
	Other...We are elaborating a project to produce bathymetric lidar data

11. What kind of tools do you use for coastal monitoring?

	Webcam
	Topobathimetric measurement
	Satellite images
X	Lidar
X	Other orthophotography comparisons.....

Suggests for the results: If the needs of bathymetric lidar is put in evidence during MAREMED project, we can suggest to the DG RESEARCH to constitute a European pool of bathymetric "heads" for lidar data

12. Have you developed common cartographies together with your neighbour region?

Yes	X
no	

With Liguria Region and with Languedoc Roussillon region

13. Have you collected information evaluating the subsidence phenomenon along your coast?

yes	X
no	

We help the searchers who are working on the "Camargue" case, in the Rhône river Delta to evaluate this phenomenon.

Meteorological and wave climate data, climate change effects.

14. Have you collected information on high tide level in your region?

yes	
no	

Not the region but the national meteorology institute and other state offices. In our region, we have 3 State's buoys to survey the levels of the waves. You can find it in ; (Screen copy at the end of the questionnaire).

<http://candhis.cetmef.developpement-durable.gouv.fr/>

http://candhis.cetmef.developpement-durable.gouv.fr/publications/doc/doccandhis_fr.pdf

15. Have you collected information evaluating sea level evolution of your Region in the medium/long term (100÷200/500 years)?

yes	
no	X

Yes in some points, (Camargue) but not for all the regional coastline (not the region, the State)...

16. Have you collected information evaluating offshore meteorological characteristics (wind speed, wind direction, atmospheric pressure, water and air temperature, ...) along your coasts?

yes	
no	X

If so, could you specify the period of time the data collected refers to?

	<5 years
	5÷20 years
	>20 years

Perhaps some research program in the CNRS but we are not really informed.

17. Have you collected information evaluating offshore (about -100 m) wave characteristics (Wave height H, Wave period T and main direction) along your coasts?

yes	X
no	

The national meteorology institute perhaps...

If so, could you specify the period of time the data collected refers to?

	<5 years
	5÷20 years
	>20 years

Unknown

18. Have you collected information evaluating nearshore (about -20 m) wave characteristics (Wave height H, Wave period T and main direction) along your coasts?

yes	
no	X

If so, could you specify the period of time the data collected refers to?

	<5 years
	5÷20 years
	>20 years

Social economic data, exposed values

19. Have you already developed land use maps for your coastal area?

yes	X
no	

If so, please indicate a reference below, or the website of publication.

Not specifically for the coastal area but for all our territory

20. Have you already assigned economic values to your coastal area?

yes	
no	X

If so, could you briefly describe the methodology adopted to evaluate the economic values of your coastal area?

This kind of study is just beginning in the Brittany region and we would want to do it in our region. We would want to work on it with other regions and do a pilot action in MAREMED for that.

The Plan Bleu organisation published a study on the value of marine ecosystems :
http://www.planbleu.org/publications/Cahier8_marin_EN.pdf

Future scenarios

21. Are there any key studies containing future scenarios for your area with a focus on:

	Climate change In course with the State
	Changes in population size Done by our national statistical institute INSEE

	Population dynamics Done by our national statistical institute INSEE
	Economic evolution we would want
	Land use changes; we would want
	Spatial planning Regional Scheme
	Other.....

22. Could you list some interventions in your Region concerning adaptation measures to climate change in coastal areas, realised over the past 10 years?

A lot of means to fight the lost of surface of the beaches and to protect the human constructions are developed by the local authorities since 20 years.

The municipalities have the role to manage their coastal line and they do a lot of small actions, principally of beach nourishment, without a global vision at the hydrosedimentary scale. The region try to give some tools to the local actors like atlases of risks, share of experiences and data, technical and financial help, bathymetric lidar data.

Different experiences of geotextile's submarine dikes are done with good and bad results and it would be really interesting to share the results and experiences on these methods which are a reversible way of protection of our coasts against the waves.

23. Could you identify problems that hinder the development of risk maps in coastal zones (budget; technical competences; technical tools; lack of data or lack of shared data...)?

The budget is a true problem because we must coordinate numerous sources of budget to arrive to constitute these atlases and it's not a recurrent process.

It seems necessary to implement trainings of public managers to the use of the GIS and the data management.

For technical competences on the thematic of erosion and technical tools it seems ok, but it's true that we need common guidelines for the creation of data and for doing the atlases.

- 24 What would you suggest to the European Regional Development Fund (ERDF) for the next financial program (2013-2020)?

We would suggest

- that the regional ERDF envelops can be used to create data and atlases shared among the Mediterranean regions, especially between neighbor regions

- that the methods used to protect the coastal zone, if they respect the orientations of the white book on adaptation to climate change must be financed by ERDF funds.

Print screen for Candhis website



Example of measures for Nice

Liste des dernières mesures Temps Réel de la campagne 00601 - Nice

Date et heure (T.U.)	H1/3 (mètres)	Hmax (mètres)	Th1/3 (secondes)	Dir au pic (degrés)	Etalement au pic (degrés)	Température mer (degrés C)
29/06/2011 11:00	0.2	0.4	4.1	193	38	24.2
29/06/2011 10:30	0.2	0.4	4.2	186	39	24.2
29/06/2011 10:00	0.2	0.5	4.0	150	59	24.0
29/06/2011 09:30	0.3	0.5	4.1	181	44	23.9
29/06/2011 09:00	0.2	0.6	3.8	192	29	23.8
29/06/2011 08:30	0.2	0.5	3.9	196	37	23.6
29/06/2011 08:00	0.3	0.5	3.7	196	28	23.8
29/06/2011 07:30	0.3	0.6	3.5	195	30	23.8
29/06/2011 07:00	0.3	0.5	3.4	195	31	23.8
29/06/2011 06:30	0.3	0.6	3.4	200	36	23.8
29/06/2011 06:00	0.3	0.6	3.6	192	32	23.8
29/06/2011 05:30	0.3	0.5	3.7	198	32	23.9
29/06/2011 05:00	0.4	0.7	3.6	200	33	24.0
29/06/2011 04:30	0.4	0.7	3.6	199	32	24.0
29/06/2011 04:00	0.4	0.8	3.6	199	37	24.1
29/06/2011 03:30	0.4	0.8	3.7	202	31	24.2
29/06/2011 03:00	0.4	0.8	3.7	205	23	24.2
29/06/2011 02:30	0.4	0.8	4.0	205	27	24.5
29/06/2011 02:00	0.4	0.8	4.0	203	21	24.5
29/06/2011 01:30	0.4	0.7	4.2	199	30	24.6
29/06/2011 01:00	0.5	1.2	4.4	206	23	24.6
29/06/2011 00:30	0.4	0.7	4.5	207	21	24.5
29/06/2011 00:00	0.4	0.7	4.6	209	23	24.5
28/06/2011 23:30	0.4	0.8	4.7	207	21	24.6

TOSCANA REGION

Partner	Tuscany Region
Region	Tuscany
Name of the person filling in the questionnaire (role)	Luigi E. Cipriani (Responsible for ICZM)
Name of the structure	Coastal belt and marine environment protection and upgrading sector
E-mail address	Luigi.cipriani@regione.toscana.it
Date	28/03/2011

The questionnaire:

State of the art: inventory of the cooperation projects on adaptation to climate change

1. Have you participated in former European programmes on adaptation to climate change in coastal areas?

yes	X
no	

If so, could you provide the names of these projects and any links to their websites?

EUROSION (www.euroSION.org); BEACHMED and BEACHMED-e (www.beachmed.eu); CONSCIENCE (www.conscience-eu.net); RES MAR (www.resmar.eu); PERLA (www.progettoperla.eu)

2. Could you describe the main Results, Experiences and Best Practices that you identified in these projects?

Restoring the sediment balance and providing space for coastal processes;

“Favourable sediment status” in order to promote coastal Resilience;

Coastal sediment cell: a coastal compartment that contains a complete cycle of sedimentation including sources, transport paths, and sinks;

Coastal and Offshore Sediment Management Plans.

State of the art: inventory of the atlases and databases regarding coastal risks: erosion, submersion, flood

3. Have you already acquired information or been informed on floods and submersions which already occurred in the past, and which have significant adverse impact on coastal zones?

yes	X
no	

If so, what kind of information do you have in order to describe the characteristics of the floods already occurred in the past?

GEOMORPHOLOGICAL AND SEDIMENTOLOGICAL FEATURES OF THE SHORELINE:

The Geomorphological map: the adopted method involves performing the following operational stages:

Exploratory stage and acquisition of material made available by the Public Administrations.

Remote sensing using photointerpretation before and during direct surveys on the ground.

Direct survey on the ground using GPS tools and Regional Design Paper mapping on a 1:10.000 scale.

The comparison between the results of the geomorphological survey and the data obtained from the interpretation of the batimetric surveys carried out during the first stages of the study.

Shoreline evolution maps from 1938 to 2005.

. Have you already defined a methodology to identify priority areas of risks (erosion, submersion, flood)?

yes	X
no	

4. Have you already produced risk maps on coastal areas?

yes	X
no	

If so, could you briefly describe the overall methodology that you have adopted to produce risk maps?

Mapping HAZARDOUS AND INVARIANCE Areas:

Hazardous areas means a portion of territory affected by extreme meteo-marine weather, and refer to a return period of 50 years.

For the definition of hazardous areas the following data was used:

- the survey of the shoreline (2005);

• the results of the modelling calculation of the effects induced by the wave with a 50-year return period, considering:

- The maximum set-up value, namely the rise in sea level caused by the wave compared to the average sea level;
- The maximum run-up value, namely the highest elevation in relation to the set-up value, reached by the water as it rises up the beach.

The flooding of the beach being surveyed and, consequently, delimiting the hazardous areas, was assessed on the basis of the coastline and the height of the overflow of the meteo-marine weather, with reference to current conditions and trends (provided by the model).

Invariancearea means the planimetric delimitation of the following urban invariances: urban areas, network infrastructures and areas of environmental and natural interest. The activities that were carried out consisted in the production of GIS files, by updating and standardizing the data provided by the regional SIT and the acquisition and digitization of municipal planning instruments (mapping out the PRGs).

The risk from rising sea levels on the coast of northern Tuscany was also assessed (Coastal Studies No 6 - 2003)

5. Did your risk maps refer to the EU flood directive (2007/60/EC) requirements?

yes	
no	X

6. Have you produced atlases and/or databases regarding coastal area management?

yes	X
no	

If so, could you provide the names of these atlases and/or databases (in case of web tools, please specify the link to the web page)?

C. BARTOLINI, L.E. CIPRIANI, E. PRANZINI, and M. SARGENTINI, 1989. The shoreline of coastal Tuscany between 1938 and 1985. In: Tuscan coasts - Studies on erosion, winds, and wave motion. The Region of Tuscany - Regional Council, 16 Tables.

Study and research for the implementation of the profile of the Tuscan coast in the Regional Plan for Integrated Coastal Management for the hydrogeological provision - Geomorphological map of the coastal belt on a 1:5,000 scale (2005).

Atlas of Italian beaches. C.N.R., S.EL.CA., Florence.

7. Have you adopted a specific guideline to produce these tools?

yes	X
no	

If so, do you think your guideline should be shared and adopted by the MAREMED partnership?

Technical specifications to assign feasibility studies at the level of physiographic units for the implementation of the profile of the Tuscan coast in the Regional Plan for Integrated Coastal Management for the hydrogeological provision.

Could you list some general surveys concerning erosion and submersion events carried out in your Region over the past five years?

Study of the sedimentary supply in main rivers;

Geomorphologic (shoreline and emerged and submerged beach profiles) and sedimentological (grain size and petrography) features of the coast;

Drafting the Geomorphologic Map of the coastal belt on a 1: 5000 scale;

Identification of hazardous and invariance areas;

Inventory of marine works designed to defend the coast and coastal settlements.

Cartographic and morphological data

8. Have you already acquired morphological data describing your coastal zone?

YES	Shoreline acquisition?
YES	Equilibrium beach section acquisition?
YES	Erosion trend?
YES	Sand grain size?
YES	Chemical and Physical characteristics of sediments?
YES	Sand Dune acquisition?
YES	Other (Morphology, texture and chemistry of continental shelf sand and gravel reservoirs)

9. What kind of tools do you use for coastal monitoring?

Yes	Webcam
Yes	Topobathimetric measurement
Yes	Satellite images

Yes	Lidar
yes	Beach sediment grain size and colour measurements

10. Have you developed common cartographies together with your neighbour region?

yes	X
no	

11. Have you collected information evaluating the subsidence phenomenon along your coast?

yes	X
no	

Meteorological and wave climate data, climate change effects.

12. Have you collected information on high tide level in your region?

yes	X
no	

13. Have you collected information evaluating sea level evolution of your Region in the medium/long term (100÷200/500 years)?

yes	X
no	

14. Have you collected information evaluating offshore meteorological characteristics (wind speed, wind direction, atmospheric pressure, water and air temperature, ...) along your coasts?

yes	X
no	

If so, could you specify the period of time the data collected refers to?

	<5 years
X	5÷20 years
	>20 years

15. Have you collected information evaluating offshore (about -100 m) wave characteristics (Wave height H, Wave period T and main direction) along your coasts?

yes	X
no	

If so, could you specify the period of time the data collected refers to?

X	<5 years
	5÷20 years
	>20 years

16. Have you collected information evaluating nearshore (about -20 m) wave characteristics (Wave height H, Wave period T and main direction) along your coasts?

yes	X
no	

If so, could you specify the period of time the data collected refers to?

X	<5 years
	5÷20 years
	>20 years

Social economic data, exposed values

17. Have you already developed land use maps for your coastal area?

yes	X
no	

If so, please indicate a reference below, or the website of publication.

<http://web.rete.toscana.it/sgr/webgis/consulta/viewer.jsp>

18. Have you already assigned economic values to your coastal area?

yes	
no	X

If so, could you briefly describe the methodology adopted to evaluate the economic values of your coastal area?

Future scenarios

19. Are there any key studies containing future scenarios for your area with a focus on:

Yes	Climate change
No	Changes in population size
No	Population dynamics
No	Economic evolution
Yes	Land use changes
No	Spatial planning
	Other.....

20. Could you list some interventions in your Region concerning adaptation measures to climate change in coastal areas, realised over the past 10 years?

Program of priority operations to reclaim and rebalance the littoral zone and the training activities under the integrated coastal management plan (Regional Council Resolution n. 47/2003).

21. Could you identify problems that hinder the development of risk maps in coastal zones (budget; technical competences; technical tools; lack of data or lack of shared data...)?

Budget and lack of appropriate technical tools

22. What would you suggest to the European Regional Development Fund (ERDF) for the next financial program (2013-2020)?

The Development of Forecasting Models that are able to evaluate the morphologic response of the coastal plains to the rise in sea level (migration/changes in the beach-dune system).

EMILIA-ROMAGNA REGION

Partner	Emilia-Romagna Region. Directorate General for Environment, Soil and Coast Protection
Region	Emilia-Romagna
Name of the person filling in the questionnaire (role)	Roberto Montanari - Officer, Coastal Protection Unit
Name of the structure	Soil and Coast Protection and Land Reclamation Service
E-mail address	rmontanari@regione-emilia-romagna.it
Date	25/03/2011

The questionnaire:

State of the art: inventory of the cooperation projects on adaptation to climate change

1. Have you participated in former European programmes on adaptation to climate change in coastal areas?

yes	<input checked="" type="checkbox"/>
no	<input type="checkbox"/>

If so, could you provide the names of these projects and any links to their websites?

Beachmed-e (Interreg III C Sud): <http://www.beachmed.eu>

PlanCoast (Interreg III B CADSES): www.plancoast.eu

COASTANCE (MED): www.coastance.eu

2. Could you describe the main Results, Experiences and Best Practices that you identified in these projects?

Beachmed-e: identification and characterisation of a new off-shore deposit for beach nourishment, installation of a wave detection buoy for marine climate monitoring 3 miles off-shore from regional coast, good practices for consolidation of restored/ reconstructed coastal dunes, through vegetation planting (that drove after to the "Bevano Protocol"), signature of a political document "European regions charter for littoral protection and for the promotion of an European interregional Observatory for Mediterranean coast protection (Bologna Charter)".

PlanCoast: manual and practices for coastal area planning and integrate marine spatial planning, set up and tested within the Ferrara Province spatial planning process.

COASTANCE: (ongoing) development of a regional action plan against coastal erosion and submersion risk for the adaptation to climate change effects, development of a costal information and managerial system based on 118 sedimentary cells, development of best practices for beach sediments management and of a program for the sustainable exploitation of sediments deposits for beach nourishment purposes.

State of the art: inventory of the atlases and databases regarding coastal risks: erosion, submersion, flood

3. Have you already acquired information or been informed on floods and submersions which already occurred in the past, and which have significant adverse impact on coastal zones?

yes	<input checked="" type="checkbox"/>
no	<input type="checkbox"/>

If so, what kind of information do you have in order to describe the characteristics of the floods already occurred in the past?

Reports, maps, images, sea storm reports.

4. Have you already defined a methodology to identify priority areas of risks (erosion, submersion, flood)?

yes	<input checked="" type="checkbox"/>
no	<input type="checkbox"/>

The methodology is to be shared among regions and implemented to fullfill 2007/60/EC directive. Nowadays the sharing process is ongoing through technical meetings with regions of the same Hydrographic District. It is a statistical modelling method based on the calculation on water rising and ingression considering the worse scenario: run up + surge + tide (for 1, 10, 100 return time events).

5. Have you already produced risk maps on coastal areas?

yes	<input type="checkbox"/>
no	<input checked="" type="checkbox"/>

If so, could you briefly describe the overall methodology that you have adopted to produce risk maps?

.....

6. Did your risk maps refer to the EU flood directive (2007/60/EC) requirements?

yes	<input type="checkbox"/>
no	<input type="checkbox"/>

7. Have you produced atlases and/or databases regarding coastal area management?

yes	<input checked="" type="checkbox"/>
no	<input type="checkbox"/>

If so, could you provide the names of these atlases and/or databases (in case of web tools, please specify the link to the web page)?

Within the COASTANCE project we set up a subdivision of the regional coast in 118 littoral cells and classified them, for management purposes, by sedimentary balance, interventions realised, physical characteristics and dynamics. The system, named SICELL, will become a web tool available for technical regional offices and local Administrations. Its description and general maps can be accessed at the following link: <http://www.ermesambiente.it/difesasuolo/>

8. Have you adopted a specific guideline to produce these tools?

yes	<input checked="" type="checkbox"/>
no	<input type="checkbox"/>

If so, do you think your guideline should be shared and adopted by the MAREMED partnership?

Yes, it could

9. Could you list some general surveys concerning erosion and submersion events carried out in your Region over the past five years?

LiDAR 2010 carried out after the sea storm of march 2010

SAR Interferometry 2002-2009 data analysis for subsidence detection

Cartographic and morphological data

10. Have you already acquired morphological data describing your coastal zone?

<input checked="" type="checkbox"/>	Shoreline acquisition?
<input checked="" type="checkbox"/>	Equilibrium beach section acquisition?
<input checked="" type="checkbox"/>	Erosion trend?
<input checked="" type="checkbox"/>	Sand grain size?
<input checked="" type="checkbox"/>	Chemical and Physical characteristics of sediments?
<input checked="" type="checkbox"/>	Sand Dune acquisition?
<input type="checkbox"/>	Other.....

11. What kind of tools do you use for coastal monitoring?

X	Webcam
X	Topobathimetric measurement
X	Satellite images
X	Lidar
X	Other SAR Interferometry.....

12. Have you developed common cartographies together with your neighbour region?

yes	
no	X

13. Have you collected information evaluating the subsidence phenomenon along your coast?

yes	X
no	

Meteorological and wave climate data, climate change effects.

14. Have you collected information on high tide level in your region?

yes	X
no	

15. Have you collected information evaluating sea level evolution of your Region in the medium/long term (100÷200/500 years)?

yes	
no	X

16. Have you collected information evaluating offshore meteorological characteristics (wind speed, wind direction, atmospheric pressure, water and air temperature, ...) along your coasts?

yes	X
no	

If so, could you specify the period of time the data collected refers to?

	<5 years
--	----------

	5÷20 years
X	>20 years

The Emilia-Romagna has its rain gauge and climatic monitoring network, inland and on the coast. Moreover along the coast there are 3 anemometric stations.

17. Have you collected information evaluating offshore (about -100 m) wave characteristics (Wave height H, Wave period T and main direction) along your coasts?

yes	X
no	

If so, could you specify the period of time the data collected refers to?

	<5 years
	5÷20 years
X	>20 years

Buoys of the national network (RON) are active and located off-shore from Ancona and from Delta Po (Punta della Maestra) since more than 20 years, but not always with continuous data collection.

18. Have you collected information evaluating nearshore (about -20 m) wave characteristics (Wave height H, Wave period T and main direction) along your coasts?

yes	X
no	

If so, could you specify the period of time the data collected refers to?

X	<5 years
	5÷20 years
	>20 years

NAUSICAA regional buoy, installed within Beachmed-e project, is active since 2007, 3 miles off-shore from Cesenatico coast.

Social economic data, exposed values

19. Have you already developed land use maps for your coastal area?

yes	X
no	

If so, please indicate a reference below, or the website of publication.

Please see the Land Use web GIS at the following:

<http://archiviocartografico.regione.emilia-romagna.it/bookshopfe/mappeonline.html>

20. Have you already assigned economic values to your coastal area?

yes	<input checked="" type="checkbox"/>
no	<input type="checkbox"/>

If so, could you briefly describe the methodology adopted to evaluate the economic values of your coastal area?

The economic value of the coastal area has been estimated considering the GDP of the main sectors of the coastal economy: tourism industry, touristic and commercial harbours, fishery, aquaculture. Thus defined, the coastal system GDP is estimated to contribute up to 7% of total regional GDP. Further evaluations on real estate, infrastructures, industrial settlements, natural heritage are not structured.

Future scenarios

21. Are there any key studies containing future scenarios for your area with a focus on:

<input type="checkbox"/>	Climate change
<input checked="" type="checkbox"/>	Changes in population size
<input checked="" type="checkbox"/>	Population dynamics
<input checked="" type="checkbox"/>	Economic evolution
<input checked="" type="checkbox"/>	Land use changes
<input checked="" type="checkbox"/>	Spatial planning
<input type="checkbox"/>	Other.....

For population and economic evolution scenarios 2014-2024, please see the following document:

http://www.regione.emilia-romagna.it/wcm/statistica/progetti/progetti/previsioni/attivita/pag/scenari/descr/Documentazione/RER_s cenari_base.pdf

For spatial and urban planning, please see the relative WebGIS: <http://archiviocartografico.regione.emilia-romagna.it/bookshopfe/mappeonline.html> "DB Regionale Piani strutturali Comunali PSC"

For land use, please see the relative WebGIS

<http://archiviocartografico.regione.emilia-romagna.it/bookshopfe/mappeonline.html> "Uso del Suolo"

22. Could you list some interventions in your Region concerning adaptation measures to climate change in coastal areas, realised over the past 10 years?

Years 2002 and 2007 beach nourishment interventions with off-shore deposits sediments (1,7 Million of cubic meters along 10 km of critical coastal stretches) in order to widen and elevate the

beach quota. “Da Vinci Gates” in Cesenatico harbour, completed in year 2005, in order to block marine ingression by events with water level up to 2,20 m, on medium sea level, accompanied by the realisation of artificial dunes “Giardini al mare” along inland promenade, with the same quota (+2,20 m), southward to the harbour, and a “managed retreat” intervention by the municipal Master Plan/ realignment of buildings in the area northward to the harbour.

23. Could you identify problems that hinder the development of risk maps in coastal zones (budget; technical competences; technical tools; lack of data or lack of shared data...)?

----- no comment .

24. What would you suggest to the European Regional Development Fund (ERDF) for the next financial program (2013-2020)?

To foresee a budget line for next financial period on erosion monitoring systems in the Mediterranean and a pilot action programme to finance demonstrations of best practices for adaptation of coastal zones to climate change.

To re- launch the EUROSION Initiative, with a particular focus on the Med basin and giving the Regions a strong role in its definition and development.

To foster the creation of an Interregional Observatory for the coast of the Med basin (as introduced within the “Bologna Charter” 2007), a network among regional observatories able to cover data acquisition, collection, elaboration at the Med basin scale.

LAZIO REGION

Partner	Lazio Region
Region	Lazio (IT)
Name of the person filling in the questionnaire (role)	Paolo Lupino (CM-GIZC Manager)
Name of the structure	CM-GIZC (ICZM Monitoring Center of Lazio Region)
Email address	paololupino@beachmed.eu
Date	10 th January 2011

The questionnaire:

State of art: inventory of the cooperation projects on adapting to climate change

1. Did you participate to former European programs about adapting to climate change on coastal area?

yes

2. If yes could you name these projects and give eventually links to website?

RFO BEACHMED-e www.beachmed.eu

Subprojects: OPTIMAL, NAUSICAA, RESAMME, MEDPLAN, POSIDUNE, OBSEMED

3. Could you describe main Results, Experiences and Best Practices you identified in these projects?

BEACHMED-e results and best practices are published on the section tools of the beachmed-e internet official site.

A list of BEACHMED-e best practices is reported below, for detailed description the link is:

<http://www.beachmed.eu/Beachmede/BEACHMEDeTOOLS/tabid/120/Default.aspx>

- Software BEACHKEEPER (Web-Cam image registration and restitution system with automatic identification of coastline)
- Model GNM Grainsize Nourishment Model (Forecasting model for nourishment Project)
- SAND-MAP of sand quarries along Mediterranean platform

- A methodological protocol SAND PROTOCOL (Protocol for searching Sea bottom sand quarries methodologies)
- Methodological and experimental protocol ENV2 & TURB1 (Environmental protocol for dredging and nourishment activities) (Turbidity effects during dredging and nourishment activities and standardised method for turbidity/sedimentation rate measurement)
- DUNE CHARACTERIZATION (Manual for the Characterization and management of coastal Dunes)

State of art: inventory of the atlases and databases regarding coastal risks: erosion, submersion, flood

4. Have you already acquired information or be informed on floods and submersion which have already occurred in the past, and which have significant adverse impact on coastal zone?

no

5. If yes, what kind of information do you have in order to describe characteristics of floods already occurred in the past?
6. Have you already defined a methodology to identify priority areas of risks (erosion, submersion, flood)?

yes

7. Did you already produced risk maps on coastal area?

No

8. If yes, could you briefly describe the overall methodology you've adopted to produce risk maps?
9. Did your risk maps refer to EU flood directive (2007/60/EU) requirements?

10. Did you produce atlases and/or databases regarding management of coastal area?

yes

11. If yes could you name these atlases and/or databases (in the case of web tools, please specify the link to the web page)?

ICZM Monitoring center of Lazio Region has published a WEB G.I.S. on marine and coastal area ecosystem management.

This tool is available on www.cmgizc.info

12. Did you adopted a specific guideline to produce these tools?

no

13. If yes do you think your guideline would be shared and adopted by MAREMED partnership?

14. Could you list some general surveys concerning erosion and submersion realized in the past five years in your Region?

Topobathimetric survey of Montalto Sud (Multibeam tchnology year 2005; LIDAR technology year 2009)

Topobathimetric survey of Tarquinia (LIDAR technology year 2009)

Topobathimetric survey of Ladispoli (Multibeam tchnology year 2004)

Topobathimetric survey of Fiumicino (Multibeam tchnology year 2004)

Topobathimetric survey of Ostia Lido Rome (Multibeam tchnology year 2005)

Topobathimetric survey of Latina/Sabaudia (Multibeam tchnology year 2005; LIDAR technology year 2009)

Topobathimetric survey of S.Felice, Terracina, Fondi (Multibeam tchnology year 2004)

Topobathimetric survey of Sperlonga (Multibeam tchnology year 2005)

Topobathimetric survey of Gaeta (Multibeam tchnology year 2005)

Topobathimetric survey of Formia (Multibeam tchnology year 2005)

Topobathimetric survey of Minturno (Multibeam tchnology year 2005)

Cartographic and morphological data

15. Have you already acquired morphological data describing your coastal zone?

Yes

- Shoreline acquisition?

Yes

- Equilibrium beach section acquisition?

Yes

- Trend of erosion?

Yes

- Grain size characteristic of sand?

Yes

- Chemical and Physic characteristics of sediment?

Yes

- Sand Dune acquisition?

Yes

- Other.....

16. What kind of tools do you use to proceed to coastal monitoring (Webcam, Topobathymetric measurements, Satellite images, Lidar, etc.)?

17. Have you developed common cartographies with your neighbor region?

Webcam (www.cmgizc.info), Topobathymetric measurement, Satellite images, Lidar

18. Have you got information evaluating the subsidence phenomenon in your coasts

Meteorological and wave climate data, climate change effects.

19. Have you got information on the measure of high tide level for your region?

yes

20. Have you got information evaluating sea level evolution at medium/long term (100÷200/500years) for your Region?

Not for my region, only at Mediterranean basin scale

21. Have you got information evaluating offshore meteorological characteristics (wind speed, wind direction, atmospheric pressure, water and air temperature, ...) along your coasts? If yes, could you specify the period time that represents the collection of these data (<5 years; 5÷20 years; or >20 years)?

22. Have you got information evaluating offshore (about -100 m) wave characteristics (Wave height H, Wave period T and main direction) along your coasts? If yes, could you specify

the period time that represents the collection of these data (<5 years; 5÷20 years; or >20 years)?

yes

23. Have you got information evaluating nearshore (about -20 m) wave characteristics (Wave height H, Wave period T and main direction) along your coasts? If yes, could you specify the period time that represents the collection of these data (<5 years; 5÷20 years; or >20 years)?

yes

Social economic data, exposed values

24. Have you already developed land use map for your coastal area? Please indicate reference below or web site of publication.

Yes, land use map are available on web gis www.cmgizc.info

25. Have you already assigned economical values to your coastal area?

Yes

26. If yes, could you briefly describe the methodology adopted to evaluate economical values of your coastal area?

Taking account informations about resident population size, typology recreation activities, typology of tourism, direct and indirect incoming, the objective is to determine a euro/m² of beach value assigned to each typology of land use. See also www.beachmed.eu.

Future scenarios

27. Is there any key studies containing future scenarios for your area with a focus on:

- Climate change?

no

- Changes in population size?

No

- Population dynamics?

no

- Economic evolution?

no

- Land use changes?

no

- Spatial planning?

no

Where appropriate, please indicate reference below

28. Could you list some intervention concerning adaptation measures to climate change on coastal area in your Region, realized in the past 10 years?

Nourishment defence work of Tarquinia (Nourishment protected by groynes, year 2004)

Nourishment defence work of Terracina (only Nourishment, year 2006)

Nourishment defence work of Fondi (Nourishment protected by groynes year 2006)

Nourishment defence work of Formia (only Nourishment, year 2007)

Nourishment defence work of Minturno (Nourishment protected by groynes year 2007)

29. Can you identify problems that hinder the development of risk map on coastal zone (budget; technical competences; technical tools; lack of data or lack of sharing data...)?

30. What would you suggest for the next financial program (2013 2020) for your "regional" ERDF?

MURCIA REGION

Partner	DIRECCIÓN GENERAL DE TRANSPORTES Y PUERTOS.
Region	MURCIA
Name of the person filling in the questionnaire (role)	FRANCISCO MARIN ARNALDOS.
Name of the structure	JEFE DE SERVICIO DE COSTAS.
E-mail address	francisco.marin3@carm.es
Date	10/05/2011.

The questionnaire:

State of the art: inventory of the cooperation projects on adaptation to climate change

1. Have you participated in former European programmes on adaptation to climate change in coastal areas?

yes	
no	X

If so, could you provide the names of these projects and any links to their websites?

.....

2. Could you describe the main Results, Experiences and Best Practices that you identified in these projects?

.....

State of the art: inventory of the atlases and databases regarding coastal risks: erosion, submersion, flood

3. Have you already acquired information or been informed on floods and submersions which already occurred in the past, and which have significant adverse impact on coastal zones?

yes	
no	X

If so, what kind of information do you have in order to describe the characteristics of the floods already occurred in the past?

.....

4. Have you already defined a methodology to identify priority areas of risks (erosion, submersion, flood)?

yes	
no	X

5. Have you already produced risk maps on coastal areas?

yes	
no	X

If so, could you briefly describe the overall methodology that you have adopted to produce risk maps?

.....

6. Did your risk maps refer to the EU flood directive (2007/60/EC) requirements?

yes	
no	X

7. Have you produced atlases and/or databases regarding coastal area management?

yes	X
no	

If so, could you provide the names of these atlases and/or databases (in case of web tools, please specify the link to the web page)?

[SITMURCIA - Sistema de Información Territorial de la Región de Murcia](#)

8. Have you adopted a specific guideline to produce these tools?

yes	
no	X

If so, do you think your guideline should be shared and adopted by the MAREMED partnership?

.....

9. Could you list some general surveys concerning erosion and submersion events carried out in your Region over the past five years?

No

Cartographic and morphological data

10. Have you already acquired morphological data describing your coastal zone?

<input type="checkbox"/>	Shoreline acquisition?
<input type="checkbox"/>	Equilibrium beach section acquisition?
<input type="checkbox"/>	Erosion trend?
<input type="checkbox"/>	Sand grain size?
<input type="checkbox"/>	Chemical and Physical characteristics of sediments?
<input type="checkbox"/>	Sand Dune acquisition?
<input type="checkbox"/>	Other.....

11. What kind of tools do you use for coastal monitoring?

<input type="checkbox"/>	Webcam
<input type="checkbox"/>	Topobathimetric measurement
X	Satellite images
<input type="checkbox"/>	Lidar
<input type="checkbox"/>	Other.....

12. Have you developed common cartographies together with your neighbour region?

yes	<input type="checkbox"/>
no	X

13. Have you collected information evaluating the subsidence phenomenon along your coast?

yes	<input type="checkbox"/>
no	X

Meteorological and wave climate data, climate change effects.

14. Have you collected information on high tide level in your region?

yes	<input type="checkbox"/>
no	X

15. Have you collected information evaluating sea level evolution of your Region in the medium/long term (100÷200/500 years)?

yes	
no	X

16. Have you collected information evaluating offshore meteorological characteristics (wind speed, wind direction, atmospheric pressure, water and air temperature, ...) along your coasts?

yes	
no	X

If so, could you specify the period of time the data collected refers to?

	<5 years
	5÷20 years
	>20 years

17. Have you collected information evaluating offshore (about -100 m) wave characteristics (Wave height H, Wave period T and main direction) along your coasts?

yes	
no	X

If so, could you specify the period of time the data collected refers to?

	<5 years
	5÷20 years
	>20 years

18. Have you collected information evaluating nearshore (about -20 m) wave characteristics (Wave height H, Wave period T and main direction) along your coasts?

yes	
no	X

If so, could you specify the period of time the data collected refers to?

	<5 years
	5÷20 years
	>20 years

Social economic data, exposed values

19. Have you already developed land use maps for your coastal area?

yes	X
no	

If so, please indicate a reference below, or the website of publication.

Corine. "Cambios 1990-2000 Murcia IGN (Instituto Geográfico Nacional)

20. Have you already assigned economic values to your coastal area?

yes	
no	X

If so, could you briefly describe the methodology adopted to evaluate the economic values of your coastal area?

.....

Future scenarios

21. Are there any key studies containing future scenarios for your area with a focus on:

	Climate change
	Changes in population size
	Population dynamics
	Economic evolution
	Land use changes
X	Spatial planning
	Other.....

22. Could you list some interventions in your Region concerning adaptation measures to climate change in coastal areas, realised over the past 10 years?

No

23. Could you identify problems that hinder the development of risk maps in coastal zones (budget; technical competences; technical tools; lack of data or lack of shared data...)?

Technical competences and Budget.

24. What would you suggest to the European Regional Development Fund (ERDF) for the next financial program (2013-2020)?

Monitoring Program of Mediterranean Coastal.

FREPORTS (GENERALITATA VALENCIANA)

Partner	FREPORTS
Region	COMUNIDAD VALENCIANA
Name of the person filling in the questionnaire (role)	David Incertis (Project Manager)
Name of the structure	
E-mail address	dincertis@feports-cv.org
Date	May 2011

The questionnaire:

State of the art: inventory of the cooperation projects on adaptation to climate change

1. Have you participated in former European programmes on adaptation to climate change in coastal areas?

yes	X
no	

If so, could you provide the names of these projects and any links to their websites?

Beachmed: Strategic management of beach protection for sustainable development of Mediterranean coastal zones <http://www.beachmed.it/>

Rinamed: Drafting and execution of a common strategy between local players in the Western Mediterranean Arch regions in terms of information and awareness of the population before natural risks <http://www.rinamed.net/>

2. Could you describe the main Results, Experiences and Best Practices that you identified in these projects?

Beachmed: The results were the identification of measures to mitigate coastal erosion, acceptance of recommendations for land planning in the regions, improved management of coastal domains and the provision of innovative territorial technologies. Master plans and technical reports were also be drawn up for subsequent implementation. Moreover, the project also drew up guidelines and recommendations so that the results of the RFO could be included in policies and regulations in the participating regions.

Rinamed:

- Drafting of an educational package
 - A role-play game
 - A hypertext on CDROM
 - A travelling exhibition and documentation thereof
 - Complementary publications
- Development of an inter-disciplinary training programme focussing on the different sectors
- International exchange meetings and assessment of common practices among the players in the European Mediterranean
- Undertaking of awareness actions aimed at different citizens' groups and associations
- Creation of internal and external communication mechanisms
- Creation of a common space on the internet: Website
- International forum for communication agents
- Drafting of assessment tools and fine tuning of a continuous assessment programme

State of the art: inventory of the atlases and databases regarding coastal risks: erosion, submersion, flood

3. Have you already acquired information or been informed on floods and submersions which already occurred in the past, and which have significant adverse impact on coastal zones?

yes	<input checked="" type="checkbox"/>
no	<input type="checkbox"/>

If so, what kind of information do you have in order to describe the characteristics of the floods already occurred in the past?

Information documenting events in the distant past is available. For more recent events there are satellite images, weather reports from the Instituto Nacional de Meteorología (National Weather Institute), information from the press, studies carried out by universities, etc. An example of the maritime storm studies affecting the coast is available through the following link: <http://age.ieg.csic.es/boletin/40/14-TEMPORALES.pdf>

Very significant is the stormy weather that hit the Mediterranean coast in November 2001, producing six deaths and serious damage to frontline beach and coastal infrastructures, and for which a large quantity of scientific and graphic information and press reports are available.



4. Have you already defined a methodology to identify priority areas of risks (erosion, submersion, flood)?

yes	X
no	

PATRICOVA is based on a methodology designed for priority identification of floodable areas. With regard to erosion, [methodologies](#) such as the proposal by the Instituto de Ecología Litoral (Coastal Ecology Institute) in the project "[Sistema de monitorización de la erosión costera y sus efectos en las comunidades marinas de la Red Natura 2000](#)" are used.

5. Have you already produced risk maps on coastal areas?

yes	
no	X

If so, could you briefly describe the overall methodology that you have adopted to produce risk maps?

In the case of flooding, the most significant initiative is being coordinated by the Ministry for the Environment, Rural and Marine Areas, through the so-called "National Cartography of Floodable Areas System".

In this cartography a new delimitation of the Public Hydraulic Domain has been carried out. In order to do so, the following steps were followed:

- Compilation of previous studies:
 - Civil Defence Plans
 - Reservoir operation rules
 - Etc.
- Establishment of the Hydraulic Public Domain through the following criteria:
 - Hydro-geological
 - Geomorphologic
 - Environmental
- Establishment of a preferential flow channel, which, if necessary, could be established as a policing zone
- Definition of Avenues associated with different return periods, in natural or altered systems

6. Did your risk maps refer to the EU flood directive (2007/60/EC) requirements?

yes	X
no	

In July 2010 the Council of Ministers approved a [Royal Decree for assessment and management of flooding risks](#), which signifies transposition of Directive 2007/60/CE

7. Have you produced atlases and/or databases regarding coastal area management?

yes	X
no	

If so, could you provide the names of these atlases and/or databases (in case of web tools, please specify the link to the web page)?

In 2009, the Official Society of Geologists published the book ["Mapas de Riesgos Naturales en la Ordenación Territorial y Urbanística"](#) ([Maps of Natural Risks in Territorial and Urban Development](#)), which compiles contributions by different university specialists, research organisations, insurance companies, public administration departments and town planners, about how to drive the cartography of natural risks in processes or territorial and urban development. Among other conclusions, there was a recommendation made that once progress had been made in the

availability of risk maps, urban development planning should be reviewed or modified in those areas where allowed uses were not in accordance with the degree of hazard and vulnerability identified.

The Ministry for the Environment, Rural and Marine Areas, while following the principles of Directive 2007/60 has established the Sistema Nacional de Cartografía de Zonas Inundables “National Cartography System for Floodable Zones” (SNCZ), which is a support tool for the management of fluvial areas, risk prevention, territorial planning and administrative transparency. The central pillar of SNCZ is the “cartographic display of floodable zones”, a computer application that permits all interested parties to view on this website the demarcation studies of the Dominio Público Hidráulico (DPH) [Public Hydraulic Domain] over cadastre maps and aerial photographs, among other options, and the flood hazard maps on the whole of Spanish territory.



The studies of the floodable areas in the Valencian Community have been carried out by:

- PATRICOVA: Plan de Acción Territorial (Territorial Action Plan), at a sectorial level in reference to prevention of flood risks in the Valencian Community, which uses a risk management tool <http://cma.qva.es/web/indice.aspx?nodo=733&idioma=C>
- Acuamed: Acuamed is the main instrument of the Ministry of the Environment and Rural and Marine Areas for the development of the “A.G.U.A.” Programme in the Mediterranean basins. Hence, the state company Aguas de las Cuencas Mediterráneas S.A. has the objective of contracting, constructing, purchasing and exploiting all manner of hydraulic works. Actions of general interest are currently being carried out in the hydrographical basins of the rivers Segura, Júcar, Ebro and the Andalusian Mediterranean Basin and the Inland Basins of Catalonia. The A.G.U.A. Programme action in the Mediterranean basins entrusted to the company seek three main objectives: to increase water resources, to improve the management of water and to restore the environment.
- The Confederación Hidrográfica de del Júcar (Júcar Hydrographical Confederation)
- Private companies contracted for construction projects
- The Ministry for the Environment

More information:

http://www.mma.es/portal/secciones/acm/aguas_continent_zonas_asoc/prevencion_inundaciones/cartografia_inundables/estudios.htm

Cartographic viewer: <http://sig.marm.es/snczi/visor.html?herramienta=DPHZI>

8. Have you adopted a specific guideline to produce these tools?

yes	X
no	

If so, do you think your guideline should be shared and adopted by the MAREMED partnership?

In the Valencian Community, directives such as PATRICOVA are interesting for further study.

On the other hand, within the scope of the Sistema Nacional de Cartografía de Zonas Inundables (National Cartography of Floodable Zones System), the Ministry for the Environment and Rural and Marine Areas have commissioned CEDEX (Centro de Estudios y Experimentación de Obras Públicas) [Centre of Studies and Experimentation of Public Works], IGME (Instituto Geológico y Minero de España) [Geology and Mining Institute of Spain] INDUROT (Instituto de Recursos Naturales y Ordenación del Territorio de la Universidad de Oviedo) [Institute of Natural Resources and Land Planning of the Territory at Oviedo University], with the development of technical recommendations in a Methodological Guide discussing the basic aspects for the demarcation of Public Hydraulic Domain and floodable areas in accordance with Royal Decree 9/2008 which amended the Public Hydraulic Domain Regulations.

These technical recommendations are based on different practical examples carried out in different rivers in the Cantabrian, Douro and Júcar basins, and the first drafts will be available to the general public in the near future.

9. Could you list some general surveys concerning erosion and submersion events carried out in your Region over the past five years?

- PATRICOVA
- Maps of natural risks in territorial and urban development planning (ICOG) 2008
- Sea storms and territorial regulation in the province of Alicante (Alicante University) 2005

Cartographic and morphological data

10. Have you already acquired morphological data describing your coastal zone?

Yes	Shoreline acquisition?
Yes	Equilibrium beach section acquisition?
Yes	Erosion trend?
Yes	Sand grain size?
Yes	Chemical and Physical characteristics of sediments?
Yes	Sand Dune acquisition?
	Other.....

11. What kind of tools do you use for coastal monitoring?

X	Webcam
X	Topobathimetric measurement
X	Satellite images

	Lidar
	Other.....

12. Have you developed common cartographies together with your neighbour region?

yes	X
no	

Cartography being developed at a national level shows uniformity and continuity between neighbouring regions.

13. Have you collected information evaluating the subsidence phenomenon along your coast?

yes	X
no	

Meteorological and wave climate data, climate change effects.

14. Have you collected information on high tide level in your region?

yes	X
no	

15. Have you collected information evaluating sea level evolution of your Region in the medium/long term (100÷200/500 years)?

yes	X
no	

16. Have you collected information evaluating offshore meteorological characteristics (wind speed, wind direction, atmospheric pressure, water and air temperature, ...) along your coasts?

yes	X
no	

Source: <http://www.ceam.es/ceamet/>

If so, could you specify the period of time the data collected refers to?

X	<5 years
	5÷20 years

	>20 years
--	-----------

Source: <http://www.ceam.es/ceamet/>

17. Have you collected information evaluating offshore (about -100 m) wave characteristics (Wave height H, Wave period T and main direction) along your coasts?

yes	X
no	

Source: <http://www.ceam.es/ceamet/>

If so, could you specify the period of time the data collected refers to?

X	<5 years
	5÷20 years
	>20 years

Source: http://calipso.puertos.es/BD/informes/NIVEL_MAR_3652.pdf
http://calipso.puertos.es/BD/informes/INT_REDMAR.pdf

18. Have you collected information evaluating nearshore (about -20 m) wave characteristics (Wave height H, Wave period T and main direction) along your coasts?

yes	X
no	

If so, could you specify the period of time the data collected refers to?

X	<5 years
	5÷20 years
	>20 years

Social economic data, exposed values

19. Have you already developed land use maps for your coastal area?

yes	X
no	

If so, please indicate a reference below, or the website of publication.

SIOSE: Sistema de Información de Ocupación del Suelo en España (Land Occupation Information System in Spain):

<http://terrasit.gva.es/es/ver?servicio=siose>

20. Have you already assigned economic values to your coastal area?

yes	
no	X

If so, could you briefly describe the methodology adopted to evaluate the economic values of your coastal area?

Isolated sector studies exist. The Valencian Regional Government is currently carrying out integrated, economic assessment studies that are to be published in the near future.

Future scenarios

21. Are there any key studies containing future scenarios for your area with a focus on:

X	Climate change
X	Changes in population size
X	Population dynamics
X	Economic evolution
X	Land use changes
X	Spatial planning
	Other.....

22. Could you list some interventions in your Region concerning adaptation measures to climate change in coastal areas, realised over the past 10 years?

- Application of Agendas 21
- Beach regeneration
- Control of CO2 emissions
- Air quality improvement plans
- Flood risk plan

23. Could you identify problems that hinder the development of risk maps in coastal zones (budget; technical competences; technical tools; lack of data or lack of shared data...)?

Fortunately the risk maps have been carried out gradually and very intensely by different bodies (private companies, universities, regional government, central government, etc.) so that the

requirements set by the European Commission for 2013 will be met. The major problems that have been encountered are mainly organisational and administrative.

24. What would you suggest to the European Regional Development Fund (ERDF) for the next financial program (2013-2020)?

Bearing in mind that progress in the subject of Integrated Coastal Management or Adaptation to Climatic Change evolves very slowly and implementation in regions such as the Valencian Community where action is mainly due to short term political and economic interests, the enforcement of the Barcelona Convention needs to be promoted, and, where necessary, regulatory frameworks based on Directives or Regulations established. Similarly, the promotion of inter-regional agreements or agreements between states and regions for the uniform, harmonised implementation of the CZIM premises and the goals to be attained for a suitable adaptation to climatic change is required.

Perhaps, through European project finance programmes, projects could be put forward aimed at establishing a clear, well-defined and differentiating CZIM policy in and between coastal regions.

REGION OF CRETE

Partner	
Region	CRETE
Name of the person filling in the questionnaire (role)	AIKATERINI TSOUKALA Director of the ENVIRONMENTAL & SPATIAL PLANNING
Name of the structure	DECENTRALIZED ADMINISTRATION OF CRETE
E-mail address	tsoukala@crete-region.gr
Date	12/4/2011

The questionnaire:

State of the art: inventory of the cooperation projects on adaptation to climate change

24. Have you participated in former European programmes on adaptation to climate change in coastal areas?

yes	x
no	

If so, could you provide the names of these projects and any links to their websites?

www.coastance.org, www.beachmed.eu,

and also REGIOCLIMA

25. Could you describe the main Results, Experiences and Best Practices that you identified in these projects?

In Beachmed-e the long term evolution of the erosion of the coastline of the a pilot site (Georgoupoli) was taken into consideration for the local urban and rural planning.

In the Coastance project (in progress), component 4, for another pilot site (Keratokampos) methodologies and techniques are proposed for the protection of the coast from erosion mainly by beach nourishment and "soft" beach protection measures.

The main results of the Coastance project is the identification of the main elements of Integrated Coastal Zone Management (considerations on climate change included) that have to be introduced into the planning procedures.

For the component 5, of the Coastance project, guidelines are prepared for the Strategic Environmental Assessment including ICZM issues.

The Decentralized Administration of Crete and the Energy Agency participate in the project Regional Cooperation towards adaptation to climate change – REGIOCLIMA, funded under the European Program INTERREG IVC. The objective of the project is to raise awareness and assist local societies and local authorities in adapting to the new climate conditions, by both minimizing the risk of damage and exploiting the new opportunities arising from a changing climate. More specifically, the project will focus on how the climate change influence the local societies and if there is a possibility to transform the disadvantages of climate change to advantages.

8 organizations from 8 European countries (covering geographically the area of the European Union as a whole) participate in the project. 5 Regional Authorities (Decentralized Administration of Crete, Region of Veneto, Region of Valencia, Region of Bratislava –Slovakia-, Region of Aubagne -France-), an academic Marine Institute (Tartu-Estonia), the Regional Agency for Entrepreneurship & Innovation (Varna-Bulgaria) & Larnaca District Development Agency (Cyprus). The Energy Agency is the coordinator of the project for the Decentralized Administration of Crete.

The project started in October 2008 and will be concluded by September 2011.

Till now the Region of Crete-Energy Agency has carried out the following activities:

- Raised awareness for changing climate, for the need to adapt, broad understanding of opportunities and risks of a changing climate and the relation with the issue of Energy.
- Exchange activities for measures and best practices to climate change adaptation strategies.
- Identify the required resources and capacities and set up a mechanism to facilitate adaptation to climate change.
- Develop the capacities (in terms of knowledge, skilled staff, policy tools and access to EU wide regional cooperation mechanisms) to facilitate adaptation to climate change.
- Formulation of regional strategies / policies on climate change adaptation for North Europe with a consolidated adaptation strategy report focus on five policy sectors, (1) Health and Social policy, (2) Agriculture and Forests, (3) Biodiversity, Ecosystems and Water. (4) Coastal and Marine areas, (5) Production Systems and Physical infrastructure, in line with the European Framework for Adaptation Action/ 2009 White Paper).
- Cooperation with local authorities, directorates and policy makers for diffusion of activities and results in the framework of the project and for policy formulation to tackle impacts of climate change in sector of their interest.

State of the art: inventory of the atlases and databases regarding coastal risks: erosion, submersion, flood

26. Have you already acquired information or been informed on floods and submersions which already occurred in the past, and which have significant adverse impact on coastal zones?

yes	
no	x

If so, what kind of information do you have in order to describe the characteristics of the floods already occurred in the past?

Only habitants testimonies and visual damages on buildings and infrastructure, no database available.

27. Have you already defined a methodology to identify priority areas of risks (erosion, submersion, flood)?

yes	
no	x

A methodology has been elaborated for other regions participating in the Coastance project

28. Have you already produced risk maps on coastal areas?

yes	
no	x

If so, could you briefly describe the overall methodology that you have adopted to produce risk maps?

A methodology has been elaborated for other regions participating in the Coastance project.

29. Did your risk maps refer to the EU flood directive (2007/60/EC) requirements?

yes	x
no	

Till the end of 2011 , the Greek General Secretariat for Water(Ministry of Environment, Energy and Climate Change) will present the preliminary risk maps

30. Have you produced atlases and/or databases regarding coastal area management?

yes	
no	x

If so, could you provide the names of these atlases and/or databases (in case of web tools, please specify the link to the web page)?

.....

31. Have you adopted a specific guideline to produce these tools?

yes	
no	x

If so, do you think your guideline should be shared and adopted by the MAREMED partnership?

.....

32. Could you list some general surveys concerning erosion and submersion events carried out in your Region over the past five years?

.....

Cartographic and morphological data

33. Have you already acquired morphological data describing your coastal zone?

<input type="checkbox"/>	Shoreline acquisition?
<input type="checkbox"/>	Equilibrium beach section acquisition?
<input type="checkbox"/>	Erosion trend?
<input type="checkbox"/>	Sand grain size?
<input type="checkbox"/>	Chemical and Physical characteristics of sediments?
<input type="checkbox"/>	Sand Dune acquisition?
<input type="checkbox"/>	Other.....

Sand grain size available for Keratokampos and other sites from existing coastal engineering studies.

34. What kind of tools do you use for coastal monitoring?

<input type="checkbox"/>	Webcam
<input type="checkbox"/>	Topobathimetric measurement
<input type="checkbox"/>	Satellite images
<input type="checkbox"/>	Lidar
<input type="checkbox"/>	Other.....

No coastal monitoring available.

(We measure occasionally the differences in time through aerial photography)

35. Have you developed common cartographies together with your neighbour region?

yes	<input type="checkbox"/>
no	<input checked="" type="checkbox"/>

36. Have you collected information evaluating the subsidence phenomenon along your coast?

yes	
no	x

Meteorological and wave climate data, climate change effects.

37. Have you collected information on high tide level in your region?

yes	x
no	

Data available from Port Authorities

38. Have you collected information evaluating sea level evolution of your Region in the medium/long term (100÷200/500 years)?

yes	
no	x

39. Have you collected information evaluating offshore meteorological characteristics (wind speed, wind direction, atmospheric pressure, water and air temperature, ...) along your coasts?

yes	x
no	

If so, could you specify the period of time the data collected refers to?

Not specially along the coasts but usually for wider areas in which coasts are included

	<5 years
	5÷20 years
x	>20 years

Data Available from the Hellenic Meteo Service

40. Have you collected information evaluating offshore (about -100 m) wave characteristics (Wave height H, Wave period T and main direction) along your coasts?

yes	x
no	

If so, could you specify the period of time the data collected refers to?

	<5 years
	5÷20 years
x	>20 years

Data Available from the Hellenic Centre for Marine Research

41. Have you collected information evaluating nearshore (about -20 m) wave characteristics (Wave height H, Wave period T and main direction) along your coasts?

yes	x
no	

If so, could you specify the period of time the data collected refers to?

	<5 years
	5÷20 years
x	>20 years

Data available sporadically from existing coastal engineering studies.

Social economic data, exposed values

42. Have you already developed land use maps for your coastal area?

yes	x
no	

If so, please indicate a reference below, or the website of publication.

"Regional Plan of Urban and rural development and sustainable development: Region of Crete"
(Περιφερειακό Σχέδιο Χωροταξικού Σχεδιασμού και Αειφόρας Ανάπτυξης: Περιφέρεια Κρήτης)
Ministry of Environment and Climate Change 2003. (www.ypeka.gr)

It is a context that gives directions/guidelines for making land use maps through the Open Cities Urban and Rural Plan (Σχέδια Χωρικής και Οικιστικής Οργάνωσης Ανοιχτών Πόλεων Σ.Χ.Ο.Ο.Α.Π.)
Some municipalities in Crete have completed or they are preparing these plans.

43. Have you already assigned economic values to your coastal area?

yes	x
no	

If so, could you briefly describe the methodology adopted to evaluate the economic values of your coastal area?

The economic values of real estate are assigned from the Ministry of Economics for all Greece. It concerns all the areas and they are used for taxes.

Future scenarios

44. Are there any key studies containing future scenarios for your area with a focus on:

	Climate change
x	Changes in population size
x	Population dynamics
x	Economic evolution
x	Land use changes
x	Spatial planning
	Other.....

These factors are taken in consideration both in “Regional Plan of Urban and rural development and sustainable development: Region of Crete” (Περιφερειακό Σχέδιο Χωροταξικού Σχεδιασμού και Αειφόρας Ανάπτυξης: Περιφέρεια Κρήτης) and in Open Cities Urban and Rural Plan (Σχέδια Χωρικής και Οικιστικής Οργάνωσης Ανοιχτών Πόλεων Σ.Χ.Ο.Ο.Α.Π.)

Could you list some interventions in your Region concerning adaptation measures to climate change in coastal areas, realised over the past 10 years?

.....

45. Could you identify problems that hinder the development of risk maps in coastal zones (budget; technical competences; technical tools; lack of data or lack of shared data...)?

The budget issue is the most important.

The Coastance project showed that the necessary data, technical competences and technical tools are available in the Greek market.

46. What would you suggest to the European Regional Development Fund (ERDF) for the next financial program (2013-2020)?

The development of a G.I.S. database including:

- Coastal works all around the Region of Krete,
- land uses and existing structures in coastal areas,
- coastal land values
- protected coastal habitats

- coastline evolution based on analysis of successive satellite images

A regional Coastal study to determine:

- Sedimentary cells
- Erosion and accretion rates based on historical orthophotomaps
- Coastal dynamics
- Main trends of sediment transport
- Main rivers sediment yield
- Main areas under erosion and submersion risk
- Coastal flood risk maps
- Available off-shore sand deposits appropriate for sand nourishment

LIGURIA

The questionnaire:

State of the art: inventory of the cooperation projects on adaptation to climate change

1. Have you participated in former European programmes on adaptation to climate change in coastal areas?

yes	
no	x

If so, could you provide the names of these projects and any links to their websites?

.....

2. Could you describe the main Results, Experiences and Best Practices that you identified in these projects?

.....

State of the art: inventory of the atlases and databases regarding coastal risks: erosion, submersion, flood

3. Have you already acquired information or been informed on floods and submersions which already occurred in the past, and which have significant adverse impact on coastal zones?

yes	x
no	

If so, what kind of information do you have in order to describe the characteristics of the floods already occurred in the past?

Historical maps and photos

4. Have you already defined a methodology to identify priority areas of risks (erosion, submersion, flood)?

yes	x
no	

5. Have you already produced risk maps on coastal areas?

yes	x
no	

If so, could you briefly describe the overall methodology that you have adopted to produce risk maps?

Definition of run-up level for 1 year and 50 year return period

6. Did your risk maps refer to the EU flood directive (2007/60/EC) requirements?

yes	x
no	

7. Have you produced atlases and/or databases regarding coastal area management?

yes	x
no	

If so, could you provide the names of these atlases and/or databases (in case of web tools, please specify the link to the web page)?

http://www.ambienteinliguria.it/eco3/ep/CD_PTAMC/cartografiaC08.html

8. Have you adopted a specific guideline to produce these tools?

yes	x
no	

If so, do you think your guideline should be shared and adopted by the MAREMED partnership?

yes

9. Could you list some general surveys concerning erosion and submersion events carried out in your Region over the past five years?

Bathymetric, sedimentological and biological surveys

Cartographic and morphological data

10. Have you already acquired morphological data describing your coastal zone?

x	Shoreline acquisition?
x	Equilibrium beach section acquisition?
x	Erosion trend?
x	Sand grain size?
x	Chemical and Physical characteristics of sediments?
	Sand Dune acquisition?
	Other.....

11. What kind of tools do you use for coastal monitoring?

	Webcam
x	Topobathimetric measurement
	Satellite images
	Lidar
x	aerophotography

12. Have you developed common cartographies together with your neighbour region?

yes	
no	x

13. Have you collected information evaluating the subsidence phenomenon along your coast?

yes	
no	x

Meteorological and wave climate data, climate change effects.

14. Have you collected information on high tide level in your region?

yes	x
no	

15. Have you collected information evaluating sea level evolution of your Region in the medium/long term (100÷200/500 years)?

yes	
no	x

16. Have you collected information evaluating offshore meteorological characteristics (wind speed, wind direction, atmospheric pressure, water and air temperature, ...) along your coasts?

yes	
no	x

If so, could you specify the period of time the data collected refers to?

	<5 years
--	----------

	5÷20 years
	>20 years

17. Have you collected information evaluating offshore (about -100 m) wave characteristics (Wave height H, Wave period T and main direction) along your coasts?

yes	x
no	

If so, could you specify the period of time the data collected refers to?

	<5 years
	5÷20 years
x	>20 years

18. Have you collected information evaluating nearshore (about -20 m) wave characteristics (Wave height H, Wave period T and main direction) along your coasts?

yes	
no	x

If so, could you specify the period of time the data collected refers to?

	<5 years
	5÷20 years
	>20 years

Social economic data, exposed values

19. Have you already developed land use maps for your coastal area?

yes	
no	x

If so, please indicate a reference below, or the website of publication.

.....

20. Have you already assigned economic values to your coastal area?

yes	
no	x

If so, could you briefly describe the methodology adopted to evaluate the economic values of your coastal area?

.....

Future scenarios

21. Are there any key studies containing future scenarios for your area with a focus on:

<input type="checkbox"/>	Climate change
<input type="checkbox"/>	Changes in population size
<input type="checkbox"/>	Population dynamics
<input type="checkbox"/>	Economic evolution
<input type="checkbox"/>	Land use changes
<input type="checkbox"/>	Spatial planning
<input type="checkbox"/>	Other.....

22. Could you list some interventions in your Region concerning adaptation measures to climate change in coastal areas, realised over the past 10 years?

.....

23. Could you identify problems that hinder the development of risk maps in coastal zones (budget; technical competences; technical tools; lack of data or lack of shared data...)?

budget

24. What would you suggest to the European Regional Development Fund (ERDF) for the next financial program (2013-2020)?

Provide suitable financial resources to develop for all coastal areas risk mapping (erosion, submersion, flood)

MARCHE

The questionnaire:

State of the art: inventory of the cooperation projects on adaptation to climate change

1. Have you participated in former European programmes on adaptation to climate change in coastal areas?

yes	<input checked="" type="checkbox"/>
no	<input type="checkbox"/>

If so, could you provide the names of these projects and any links to their websites?

LIFESALT <http://www.lifesalt.it/en.html>

2. Could you describe the main Results, Experiences and Best Practices that you identified in these projects?

Application of a regional risk assessment methodology based on GIS for a sustainable use of groundwater considering climate change events – Application on Life+ SALT project.

State of the art: inventory of the atlases and databases regarding coastal risks: erosion, submersion, flood

3. Have you already acquired information or been informed on floods and submersions which already occurred in the past, and which have significant adverse impact on coastal zones?

yes	<input checked="" type="checkbox"/>
no	<input type="checkbox"/>

If so, what kind of information do you have in order to describe the characteristics of the floods already occurred in the past?

Rain gauge data, damages reports, water level data (fluvial), surveys to map the areas

4. Have you already defined a methodology to identify priority areas of risks (erosion, submersion, flood)?

yes	<input checked="" type="checkbox"/>
no	<input type="checkbox"/>

5. Have you already produced risk maps on coastal areas?

yes	<input checked="" type="checkbox"/>
no	<input type="checkbox"/>

If so, could you briefly describe the overall methodology that you have adopted to produce risk maps?

Historical and geomorphological criteria

6. Did your risk maps refer to the EU flood directive (2007/60/EC) requirements?

yes	
no	X

7. Have you produced atlases and/or databases regarding coastal area management?

yes	X
no	

If so, could you provide the names of these atlases and/or databases (in case of web tools, please specify the link to the web page)?

<http://www.autoritabacino.marche.it/pai/cartopai2.asp>

Have you adopted a specific guideline to produce these tools?

yes	X
no	

If so, do you think your guideline should be shared and adopted by the MAREMED partnership?

No, because they are not aligned with the EU Flood risk directive 2007/60/EC even if the process is started.

8. Could you list some general surveys concerning erosion and submersion events carried out in your Region over the past five years?

Between 8-10 sea storm with damages results.

Cartographic and morphological data

9. Have you already acquired morphological data describing your coastal zone?

X	Shoreline acquisition?
	Equilibrium beach section acquisition?
X	Erosion trend?
	Sand grain size?
	Chemical and Physical characteristics of sediments?
	Sand Dune acquisition?
	Other.....

10. What kind of tools do you use for coastal monitoring?

<input checked="" type="checkbox"/>	Webcam
<input type="checkbox"/>	Topobathimetric measurement
<input type="checkbox"/>	Satellite images
<input type="checkbox"/>	Lidar
<input type="checkbox"/>	Other.....

11. Have you developed common cartographies together with your neighbour region?

yes	<input type="checkbox"/>
no	<input checked="" type="checkbox"/>

12. Have you collected information evaluating the subsidence phenomenon along your coast?

yes	<input type="checkbox"/>
no	<input type="checkbox"/>

Meteorological and wave climate data, climate change effects.

13. Have you collected information on high tide level in your region?

yes	<input type="checkbox"/>
no	<input checked="" type="checkbox"/>

14. Have you collected information evaluating sea level evolution of your Region in the medium/long term (100÷200/500 years)?

yes	<input type="checkbox"/>
no	<input checked="" type="checkbox"/>

15. Have you collected information evaluating offshore meteorological characteristics (wind speed, wind direction, atmospheric pressure, water and air temperature, ...) along your coasts?

yes	<input checked="" type="checkbox"/>
no	<input type="checkbox"/>

If so, could you specify the period of time the data collected refers to?

	<5 years
X	5÷20 years
	>20 years

16. Have you collected information evaluating offshore (about -100 m) wave characteristics (Wave height H, Wave period T and main direction) along your coasts?

yes	
no	X

If so, could you specify the period of time the data collected refers to?

	<5 years
	5÷20 years
	>20 years

17. Have you collected information evaluating nearshore (about -20 m) wave characteristics (Wave height H, Wave period T and main direction) along your coasts?

yes	
no	X

If so, could you specify the period of time the data collected refers to?

	<5 years
	5÷20 years
	>20 years

Social economic data, exposed values

18. Have you already developed land use maps for your coastal area?

yes	X
no	

If so, please indicate a reference below, or the website of publication.

<http://www.autoritabacino.marche.it/costa/costa.asp>

19. Have you already assigned economic values to your coastal area?

yes	
no	X

If so, could you briefly describe the methodology adopted to evaluate the economic values of your coastal area?

.....

Future scenarios

20. Are there any key studies containing future scenarios for your area with a focus on:

<input type="checkbox"/>	Climate change
<input type="checkbox"/>	Changes in population size
<input type="checkbox"/>	Population dynamics
<input type="checkbox"/>	Economic evolution
<input type="checkbox"/>	Land use changes
<input type="checkbox"/>	Spatial planning
<input type="checkbox"/>	Other.....

21. Could you list some interventions in your Region concerning adaptation measures to climate change in coastal areas, realised over the past 10 years?

Beach nourishment, hard defence structures.

22. Could you identify problems that hinder the development of risk maps in coastal zones (budget; technical competences; technical tools; lack of data or lack of shared data...)?

Organizational regional structure and lack of human resources on that aspect

23. What would you suggest to the European Regional Development Fund (ERDF) for the next financial program (2013-2020)?

- To completely implement the EU Flood risk directive 2007/60/EC and its flood risk management plans (speaking from a regional point of view the directive appears as a good instrument but the real implementation structures from the National Government has to be done)

- always dedicate a budget line to inform, to teach operative staff (es. Municipalities directly involved in civil protection on flood risk).

- ameliorate prevention on urbanized coastal areas.

CYPRO

The questionnaire:

State of the art: inventory of the cooperation projects on adaptation to climate change

47. Have you participated in former European programmes on adaptation to climate change in coastal areas?

yes	
no	√

If so, could you provide the names of these projects and any links to their websites?

.....

48. Could you describe the main Results, Experiences and Best Practices that you identified in these projects?

.....

State of the art: inventory of the atlases and databases regarding coastal risks: erosion, submersion, flood

49. Have you already acquired information or been informed on floods and submersions which already occurred in the past, and which have significant adverse impact on coastal zones?

yes	
no	√

If so, what kind of information do you have in order to describe the characteristics of the floods already occurred in the past?

.....

50. Have you already defined a methodology to identify priority areas of risks (erosion, submersion, flood)?

yes	
no	√

51. Have you already produced risk maps on coastal areas?

yes	
no	√

If so, could you briefly describe the overall methodology that you have adopted to produce risk maps?

.....

52. Did your risk maps refer to the EU flood directive (2007/60/EC) requirements?

yes	
no	✓

53. Have you produced atlases and/or databases regarding coastal area management?

yes	
no	✓

If so, could you provide the names of these atlases and/or databases (in case of web tools, please specify the link to the web page)?

.....

54. Have you adopted a specific guideline to produce these tools?

yes	
no	✓

If so, do you think your guideline should be shared and adopted by the MAREMED partnership?

.....

55. Could you list some general surveys concerning erosion and submersion events carried out in your Region over the past five years?

56. Some general surveys concerning erosion and submersion events in Cyprus carried out over the past years are as followed: [Department of Public Works \(Mr Iasonas Sofos\)](#)

Larnaca District:

- a. Oroklini – Larnaca region
- b. Pervolia – Kiti – Zygi region

Paphos District

- a. Geroskypou bay
- b. Polis Chrysochous

Nicosia district:

- a. Kato Pyrgos – Pegeia region

Note: The Land and Survey Department is the appropriate department which deals with the coastline evolution.

Cartographic and morphological data

57. Have you already acquired morphological data describing your coastal zone? [Department of Public Works \(Mr Iasonas Sofos\)](#)

√	Shoreline acquisition?
	Equilibrium beach section acquisition?
√	Erosion trend?
√	Sand grain size?
√	Chemical and Physical characteristics of sediments?
	Sand Dune acquisition?
	Other.....

58. What kind of tools do you use for coastal monitoring? [Department of Public Works \(Mr Iasonas Sofos\)](#)

	Webcam
√	Topobathimetric measurement
√	Satellite images
	Lidar
	Other.....

59. Have you developed common cartographies together with your neighbour region? [Department of Environment](#)

yes	
no	√

60. Have you collected information evaluating the subsidence phenomenon along your coast? [Department of Environment](#)

yes	
no	√

Meteorological and wave climate data, climate change effects.

61. Have you collected information on high tide level in your region? [Department of Public Works \(Mr Iasonas Sofos\)](#)

yes	√
no	

62. Have you collected information evaluating sea level evolution of your Region in the medium/long term (100÷200/500 years)? [Department of Public Works \(Mr Iasonas Sofos\)](#)

yes	
no	√

63. Have you collected information evaluating offshore meteorological characteristics (wind speed, wind direction, atmospheric pressure, water and air temperature, ...) along your coasts? [Oceanographic Centre of the University of Cyprus](#)

yes	√
no	

If so, could you specify the period of time the data collected refers to?

	<5 years
√	5÷20 years
	>20 years

64. Have you collected information evaluating offshore (about -100 m) wave characteristics (Wave height H, Wave period T and main direction) along your coasts? [Oceanographic Centre of the University of Cyprus](#)

yes	√
no	

If so, could you specify the period of time the data collected refers to?

	<5 years
√	5÷20 years
	>20 years

65. Have you collected information evaluating nearshore (about -20 m) wave characteristics (Wave height H, Wave period T and main direction) along your coasts? [Oceanographic Centre of the University of Cyprus](#)

yes	√
no	

If so, could you specify the period of time the data collected refers to?

	<5 years
√	5÷20 years
	>20 years

Social economic data, exposed values

1. Have you already developed land use maps for your coastal area? [Department of Environment](#)

yes	√
no	

If so, please indicate a reference below, or the website of publication.

http://www.moi.gov.cy/moi/tph/tph.nsf/index_gr/index_gr?OpenDocument

2. Have you already assigned economic values to your coastal area? [Department of Environment](#)

yes	√
no	

If so, could you briefly describe the methodology adopted to evaluate the economic values of your coastal area?

For the valuation of the economic benefits use is made of the differences in the productivity of the housing and agricultural sectors attributed to the coastal environment. This is a particular application of the more widely used economic appraisal technique of considering 'with' and 'without' situations.

Future scenarios

3. Are there any key studies containing future scenarios for your area with a focus on: from the part of [Oceanographic Centre Cyprus](#)

√	Climate change
	Changes in population size
	Population dynamics

	Economic evolution
	Land use changes
	Spatial planning
✓	Other.....

4. Could you list some interventions in your Region concerning adaptation measures to climate change in coastal areas, realised over the past 10 years? We don't have.

Measures on adaptation to climate change in coastal areas have not been taken until now. Please find attached a policy "Country Overview and Assessment".

5. Could you identify problems that hinder the development of risk maps in coastal zones (budget; technical competences; technical tools; lack of data or lack of shared data...)?

Please find attached a policy "Country Overview and Assessment".

6. What would you suggest to the European Regional Development Fund (ERDF) for the next financial program (2013-2020)?

From the 2nd semester of 2011 Department of Environment has started to structure the National Plan on Adaptation to Climate Change.

CORSE

Le questionnaire:

Etat de l'art : inventaire des projets de coopération sur l'ACC

1. Avez-vous déjà participé à un programme de l'UE sur l'ACC dans les zones côtières ?

Oui	X
Non	

Si tel est le cas, veuillez indiquer les noms de ces projets, ainsi qu'un lien vers leur site web.

Resmar (Ligurie Sardaigne Toscane Corse)

2. Pouvez-vous décrire les principaux résultats, expériences et meilleures pratiques identifiées dans ce projet ?

L'Axe un de ce programme « côte et littoraux » traite largement des problèmes liés à l'érosion côtière

Etat de l'art : inventaire des atlas et bases de données concernant les risques côtiers : érosion, inondation, submersion.

3. Avez-vous déjà acquis des informations ou été informé sur les inondations et submersion qui ont déjà eu lieu dans le passé, et qui ont eu des répercussions négatives significatives sur la zone côtière ?

Oui	X
Non	

Si tel est le cas quel genre d'informations avez-vous afin de décrire les caractéristiques des inondations qui ont eu lieu dans le passé ?

Il s'agit d'études portant sur l'historique des inondations et submersions, notamment par la presse. Ces informations remontent jusqu'au 15^e siècle.

4. Avez-vous déjà défini une méthodologie pour identifier des zones prioritaires à risque (érosion, inondation, submersion) ?

Oui	
Non	X

A l'échelon régional, l'Office de l'Environnement de la Corse avec ses partenaires, notamment le Bureau de Recherches Géologiques et Minières (BRGM), réalise des diagnostics, des suivis, etc.

Ce sont les services compétents de l'Etat, à l'aide des outils fournis par l'OEC, qui définissent leur méthodologie pour identifier les zones prioritaires à risque et élaborent par la suite les moyens de prévention, de protection et d'intervention adaptés.

5. Avez-vous déjà produit des cartes des risques sur les zones côtières ?

Oui	X
Non	

Si tel est le cas, veuillez décrire brièvement la méthodologie globale que vous avez adoptée pour produire ces cartes des risques ?

On peut distinguer deux types de cartographies des risques sur la zone côtière insulaire. La première traite de l'érosion et la seconde des tempêtes.

L'érosion : Un état des lieux a été dressé en 1996 grâce à des données datant depuis 1949. En 1999, un Réseau d'Observation du Littoral de la Corse a été mis en place et comprend (depuis 2002) 15 sites totalisant 29 profils de plage et 41 km de côte. Ce réseau de base est représentatif de l'ensemble du littoral Corse grâce à ses sites témoins et ceux à fort impact économiques ainsi que ceux soumis à des aménagements.

Les actions de ce Réseau d'Observation ont permis de mettre en place un outil de suivi des morphologies littorales et de leur évolution, de développer des outils d'information et de gestion des séries de données indispensables à une meilleure compréhension des phénomènes. Les acquisitions de données réalisées alimentent des bases et systèmes géographiques qui demeurent nécessaires au développement d'outils de prévision de l'évolution morphologique du littoral.

L'étude tempête: qui porte sur les événements extrêmes (tempêtes/surcotes) dont l'impact peut entraîner des modifications irréversibles du trait de côte et du système sédimentaire littoral sur le littoral de la plaine orientale corse (90km de côte sableuse basse).

Programme de trois ans sur quatre tâches :

- État de l'art : Analyse des données existantes et des connaissances des phénomènes ; levé topobathymétrique à haute résolution
- Modélisation hydrodynamique mise en œuvre des modèles et réalisation d'un atlas hydrodynamique
- Cartographie de l'aléa submersion et de la vulnérabilité du littoral
- Synthèse régionale

le rendu final avec l'ensemble des cartographies est prévu d'ici la fin de l'année 2011.

6. Vos cartes de risques font-elles référence à la Directive Inondations (2007/60/CE),

Oui	X
Non	

Corine Land Cover et facies primaire et secondaire pour la mer

7. Avez-vous produit des atlas et/ou des bases de données concernant la gestion des zones côtières ?

Oui	
Non	X

Si tel est le cas, veuillez indiquer les noms de ces atlas et données, ainsi qu'un lien vers leur site web (s'il existe) ?

8. Avez-vous adopté des lignes directrices spécifiques pour produire ces outils ?

Oui	
Non	

Si tel est le cas, pensez-vous que ces lignes directrices devraient être partagées et adoptées par les partenaires de MAREMED ?.....

9. Pouvez-vous établir une liste d'études concernant des cas d'érosion et de submersion ayant eu lieu dans votre région ces 5 dernières années?

Non, il y a un suivi global des cas d'érosion et de submersion mais pas d'étude concernant des cas spécifiques

Données cartographiques et morphologiques

10. Avez-vous déjà acquis ce type de données concernant votre zone côtière ?

X	Trait de côte? Depuis 1947
X	Equilibre des plages? 15 point du Réseau d'observation du Littoral de la Corse
X	Tendance à l'érosion?
X	Granulométrie?
X	Caractéristiques chimiques et physique des sédiments? 15 point du Réseau d'observation du Littoral de la Corse
	Evolution des dunes?
	Autre..... LIMA qui permet de cartographier les fonds sous marins de 0 à 100 mètres

11. Quel type d'outils utilisez-vous pour la surveillance des côtes ?

	Webcam
X	Mesures Topo bathymétriques
	Images satellite
X	Lidar
	Autre photographies aériennes

12. Avez-vous développé des cartographies communes avec certaines régions voisines ?

Oui	X
Non	

Oui dans le cadre du Projet de Parc Marin International des Bouches de Bonifacio. (Corse Sardaigne) + programme GERER qui traite de la problématique d'érosion des plages.

13. Avez-vous collecté des informations évaluant le phénomène de subsidence le long de vos côtes ?

Oui	
Non	X

Données météorologiques, vagues, et effets du changement climatique :

14. Avez-vous des informations concernant le niveau des fortes vagues dans votre région ?

Oui	X
Non	

Données qui existent à l'échelle mondiale à partir du satellite NOAA.

Présence d'un site sur la Région où un houllographe fictif permet de d'estimer environ un mois de simulation de houle.

15. Avez-vous des informations concernant l'évolution du niveau de la mer dans votre région sur les moyen et long termes (100÷200/500 ans)?

Oui	
Non	X

16. Avez-vous des informations permettant d'évaluer les caractéristiques météorologiques au large (vitesse du vent, direction du vent, pression atmosphérique, température de l'eau et de l'air) le long de vos côtes ?

Oui	
Non	X

On ne dispose pas d'informations précises dans ce domaine. Les navires de commerce effectuent des mesures au cours de leur traversée, et la station de Météo-France Toulouse (DP service) réalise des modèles numériques, notamment à partir de données satellites, qui sont très proches de la réalité et dont le cout d'acquisition est élevé.

Ainsi que quatre stations pour relever la température au niveau des réserves naturelles des Bouches de Bonifacio et de Scandola (de 0 à 45m de profondeur)

Si tel est le cas, veuillez spécifier la période à laquelle ces données font référence ?

	<5 ans
X	5÷20 ans
	>20 ans

17. Avez-vous des informations concernant les caractéristiques des vagues au large de vos côtes (environ -100 m) (taille, période, direction)?

Oui	X
Non	

Si tel est le cas, veuillez spécifier la période à laquelle ces données font référence ?

	<5 ans
X	5÷20 ans
	>20 ans

A l'aide d'un courantomètre

18. Avez-vous des données concernant les caractéristiques des vagues au bord de vos côtes (environ -20 m) (taille, période, direction)?

Oui	X
Non	

Si tel est le cas, veuillez spécifier la période à laquelle ces données font référence ?

	<5 ans
X	5÷20 ans
	>20 ans

A l'aide d'un courantomètre

Données économiques et sociales, montant des risques

19. Avez-vous déjà des cartes de l'usage des sols pour votre zone côtière?

Oui	X
Non	

Si tel est le cas, veuillez indiquer une référence, ou un site web de publication

Corine Land Cover

20. Avez-vous déjà assigné des valeurs économiques à votre zone côtière ?

Oui	
Non	X

Si tel est le cas, veuillez brièvement décrire la méthodologie adoptée pour évaluer ces valeurs économiques ?

Probablement dans la politique future

Scénarios futurs

21. Y a-t-il des études clés contenant un scénario possible pour votre zone et se concentrant sur :

	Changement climatique
	Changement de la taille de la population
	Dynamique de la population
	Evolution économique
	Changement d'usage des sols
	Planification spatiale
	Autre.....

22. Pouvez-vous indiquer une liste des interventions réalisées ces 10 dernières années dans votre Région concernant l'ACC dans les zones côtières ?

Commune de Calvi : un épis et deux brise-lame + un engraissement de 55 000 m³ de sable

Ile Rousse : restauration d'un quai

Ajaccio : Etude de réhabilitation et de protection de la Plage de Saint François

Conseil général de Haute Corse : étude de faisabilité d'un programme de travaux de la plage de l'ospedale
étude dans le cadre de la lutte contre l'érosion du littoral en Costa Verde.
Réhabilitation de la plage de Cagnano

Communauté d'Agglomération du Pays Ajaccien : renforcement de la digue de la station d'épuration des sanguinaires

23. Pouvez-vous identifier des problèmes qui freinent le développement des cartes des risques dans les zones côtières (budget, compétences techniques, outils techniques, manque de données, manque de partage des données)

La cartographie des risques nécessite une échelle fine.

A partir de là, un budget doit être alloué afin d'acquérir les moyens techniques suffisants pour répondre à ce besoin.

D'ici deux à trois ans on peut estimer que les cartes de risques dans la zone côtière de la région Corse seront achevées.

24. Que suggéreriez-vous pour la prochaine programmation des fonds FEDER (2013-2020)?

Une prise en compte des prescriptions qui sont faites dans les Plan de Prévention des Risques.

Il y a une connaissance des zones sensibles et tant au niveau économique qu'écologique il serait souhaitable d'acquérir les moyens pour intervenir sur la réduction de ces risques et de leurs impacts.