

BEACHMED – e INTERREG IIIC Sud

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

Subproject 3.2

“Concerted actions, tools and criteria for the implementation of the Integrated Coastal Zones Management (ICZM) in the Mediterranean”



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Collaboration with PAP/RAC

- The organization Priority Actions Programme/Regional Activity Centre (PAP/RAC) is working on the **ICZM Protocol for the Mediterranean**, in the framework of the Barcelona Convention, with the view to be adopted in 2008.
- The possibility of cooperation with PAP/RAC was discussed during the meeting of the subproject partners in Genoa (February 2007).
- It was decided that the collaboration with PAP/RAC can contribute to the **integration** of the results from the stakeholders and users interviews from the 3 countries (Greece, Italy and France) and **promote** the outputs of the project towards a better ICZM implementation in the Mediterranean.
- In the framework of this collaboration MoU's between the Region Lazio, 3.2 subproject partners and PAP/RAC were signed.



- **Standardization of Methodology**
- **ICZM– Coastal erosion– Defence systems perception:**
 - **Public Stakeholders' Survey**
 - **Beach Users' Survey**
- **Tools towards ICZM implementation:**
 - **CZ Indicators**
 - **GIS**
 - **Coastal Monitoring System**
 - **Economic Tools: Cost Benefit Analysis (CBA)**
 - **Public Awareness**
- **Common problems- Proposals for future actions**



Standardization of Methodology

ICZM & Costal Defense Perception

- Different aspects of the beach management in the pilot sites of the countries involved, such as Costal Zone and ICZM perception, Economic evaluation of benefits about beach management, were decided to be investigated.
- Common questionnaires were created for all partners and addressed to local and Regional **stakeholders** (public & private), but also to **beach users** of the coastal zones and the beaches.
- Minimum 25 stakeholders' and 150 beach users' questionnaires were decided to be filled by face-to-face interviews.
- These face-to-face surveys will also act a **promotional tool** of ICZM and Beachmed-e project to public stakeholders and beach users.

BeachMed-e - Measure 3.2: ICZM-MED
Questionnaire for Stakeholders

You have been identified as one of the main stakeholders in the field of coastal zone management in your region. We would value your comments, observations, and suggestions and kindly ask you to complete this questionnaire. The results of this evaluation shall assist the Region to review the Coastal Zone Management. The questionnaire is anonymous and all information will be treated with strict confidentiality. For more information please contact:

A) Information
 Gender: M F. Age: 18-28 29-49 50-65 >65
 Education and degrees: obligatory high school
 university (degree) other.....
 What is your institution?
 What is your position in your institution?
 In which way are you involved with coastal zone management?

B) ICZM PERCEPTION

1. Please give a short definition of the "Coastal Zone"
2. Do you know what "Integrated Coastal Zone Management" is?
 A. No
 B. Yes
3. Do you know any organization dealing with the "Integrated Coastal Zone Management"?
 A. No
 B. Yes

Questionnaire for Beach Users
(Common questions to be used by all partners and instructions)

The aim of this questionnaire is to collect information related with beach management in the Region in the framework of an EU Project called Beachmed-e, in collaboration with local and regional authorities. We would value your comments, observations, and suggestions and kindly ask you to answer the following questions. The results of this evaluation shall assist the Region to review the Coastal Zone Management. The questionnaire is anonymous and all information will be treated with strict confidentiality.

Date,..... Beach,.....

A) IDENTIFICATION

i) Gender M F
 ii) Age 18-28 29-49 50-65 >65
 iii) Household

1 Single	5 Married with children, both working
2 Married without any children, only one working	6 Divorced / Widow
3 Married without any children, both working	7 Retired couple
4 Married with children, only one working	8 Retired Widow / Divorced

iv) Education and degrees: obligatory high school university

v) Profession of the household head (French National Institute for Statistics and Economic Studies (INSEE) classification)

1 Farmer, fisherman	10 Unemployed
2 Private enterprise owner (Shopkeeper, craftsman, etc.)	11 Unemployed
3 Managers / Higher professions	12 Student
4 Informal date professions	13 Retired
5 Employee - (a) Public - (b) Private	14 Other

vi) Type of User: Resident Daily visitor Secondary house
 Tourist

B) ICZM PERCEPTION

1. Do you know what a "coastal zone" is?
 beach coastal water and beach swash zone
 integration of sea and land

- During the meeting of the partners held in **Alexandroupolis** (November 2006), it was decided the implementation of common methodology by all the partner of the 3.2 ICZM-MED subproject, in order to have the ability to compare the final results from each pilot site.



- During the meeting in **Genoa**, Italy (February 2007), the common questions for the stakeholders' and users' questionnaires were formulated.



- During the meeting of the partners in **Barcelona** (June 2007), the final corrections on the questionnaires were made, after the gathering of comments from the pilot questionnaires implementation.
- In **Montpellier** (Nov 2007) the elaboration and integration methodology was discussed and decided.

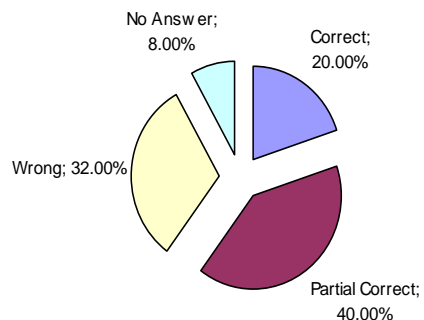




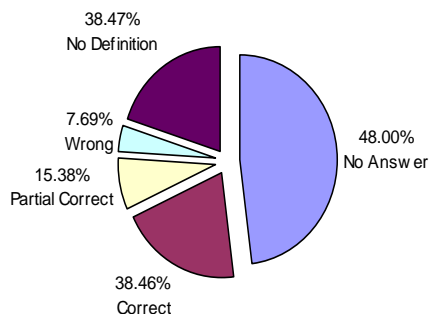
ICZM – Coastal erosion – Defence systems perception Public Stakeholders' Survey

ICZM PERCEPTION

Coastal Zone Definition



ICZM Definition

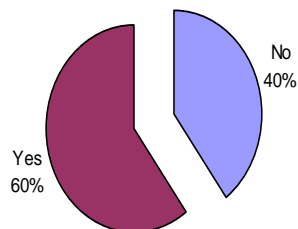


In total 25 interviews with local and regional stakeholders were carried out.

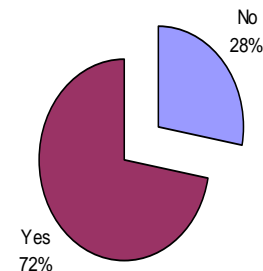
- There is lack of knowledge regarding coastal zones (20% correct definition) and ICZM (38% correct).

- There was increased knowledge of organizations (60%) and legislation (72%) related to ICZM.

Do you know any organization dealing with ICZM

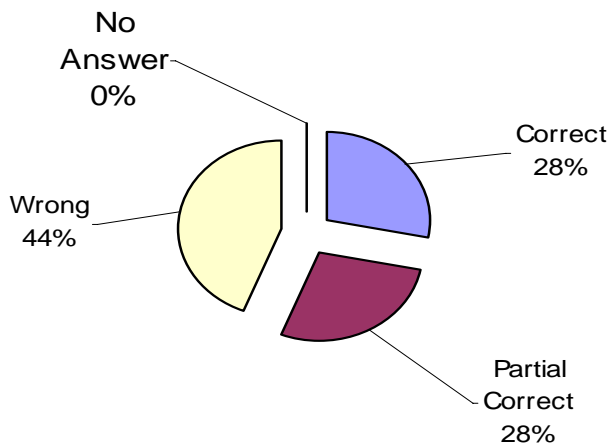


Are you aware of any relevant legislation concerning the management of the Coastal Zone in your country?



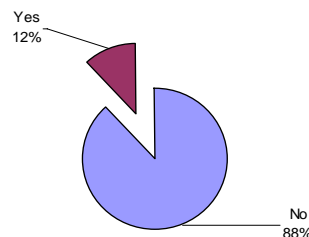
COASTAL EROSION PERCEPTION

Do you know what “Coastal Erosion” is?

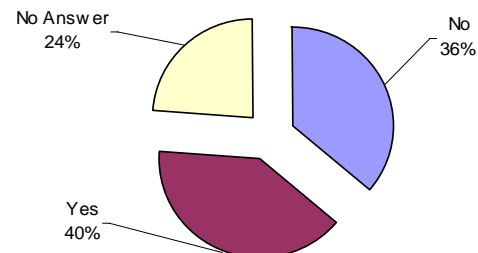


- There is lack of knowledge concerning the Coastal Erosion (only 28% correct) due to lack of information from other organizations or institutions.

Did any organization/institution inform you about the Coastal Zone condition?



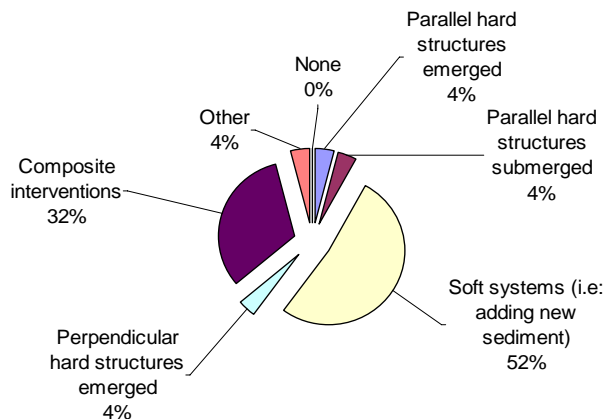
Do you think that the collaboration between the stakeholders is efficient?



- There is problematic or absence of cooperation between the stakeholders on ICZM issues.

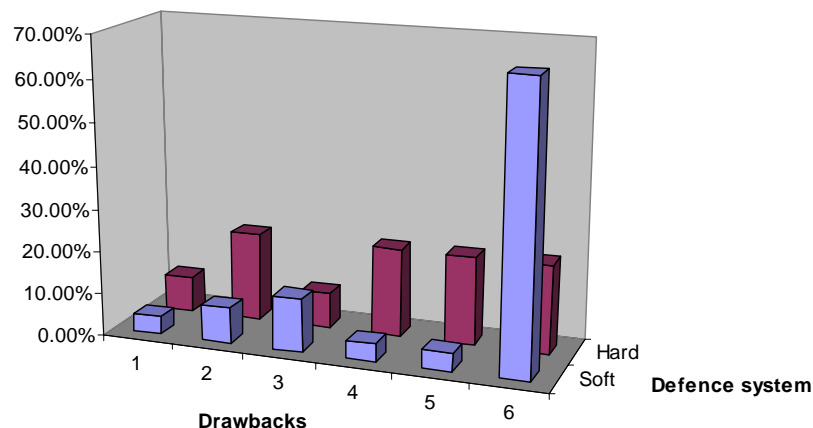
COASTAL DEFENCE PERCEPTION

Which Defence system would you suggest



- The majority of the stakeholders knew the existence of the various types of defence systems but most of them were not aware of the type of system that can be applied in their area.
- They majority of the interviewees preferred the soft system and the composite interventions and less the hard structures.

Drawbacks of the defence systems



- They believe that the soft system has no drawbacks (67%).
- Concerning the hard structures the main drawbacks are the “**cost**” (5), the “**pollution**” (1) and the “**alteration of the landscape**” (4) and secondly the “**impact on animals and plants**” (2) and the “**sand quality**” (3).

ICZM & COASTAL DEFENCE PERCEPTION

Future Activities

- Due to the low awareness of the public stakeholders on Coastal Zone issues, a training course was proposed to the interviewees.
- However, due to the low participation, an online course (COASTLEARN & MEDOPEN) was proposed and also it was decided to organize a workshop with all involved stakeholders.

120 interviews carried out in total.

The **majority** of sunbathing establishment managers (Riccione/Misano beach):

- is satisfied about the ICZM of the area;
- is aware of erosion problems, mainly loss of sand;
- is familiar with defence structures;
- prefers **parallel submerged breakwaters**;
- believes that the **cost** of defending the beach from erosion is **justified**.

Main **drawbacks** are:

- soft structures: sand quality, pollution, and impact on plants and animals;
- hard structures: aesthetics/landscape, high implementation costs, and pollution.

Moreover:

- 27.5% of managers state they are willing to do some maintenance work.
- 9.2% are willing to pay an unspecified amount of money.



The Riccione/Misano beach before the implementation of the defence project



The Riccione/Misano beach after the implementation of the nourishment project

In total **25 interviews** with local and regional stakeholders were carried out.

- 71,4% knows what **ICZM** is, but can't explain it correctly.
- Many stakeholders (57%) feel existent laws are insufficient and there is a need of new **legislation** and new actions to be taken.
- A high percentage (76%) believes that **collaboration** between stakeholders is not efficient and more information is necessary.
- The majority of the interviewees (67%) gives a correct definition about **coastal erosion** and problems caused in their and other areas. But 76% of them believed that erosion doesn't cause any problem in the region apart from tourism.
- More than 70% is aware of a **defence system** in their own area, but 81% of them thinks it is better to strengthen collaboration and synergy between parts.
- They propose the **increase of participation** on these issues by involving also the general public through school education and forum discussions.



21 face-to-face interviews with key institutional coastal stakeholders were carried out.

Main results are:

Optimum level of knowledge

Awareness of local problems

Lack of coordination
Insufficient actions



FUTURE ACTIVITY

Meeting with coastal institutional stakeholders to present results, highlight and discuss critical issues and to propose and evaluate, through a participatory approach, possible future interventions for improving the implementation of ICZM at a regional level

Do you know...	YES	NO
...what ICZM is?	100%	0%
...what Coastal Erosion is?	100%	0%
...methods to defend the beach from erosion?	100%	0%

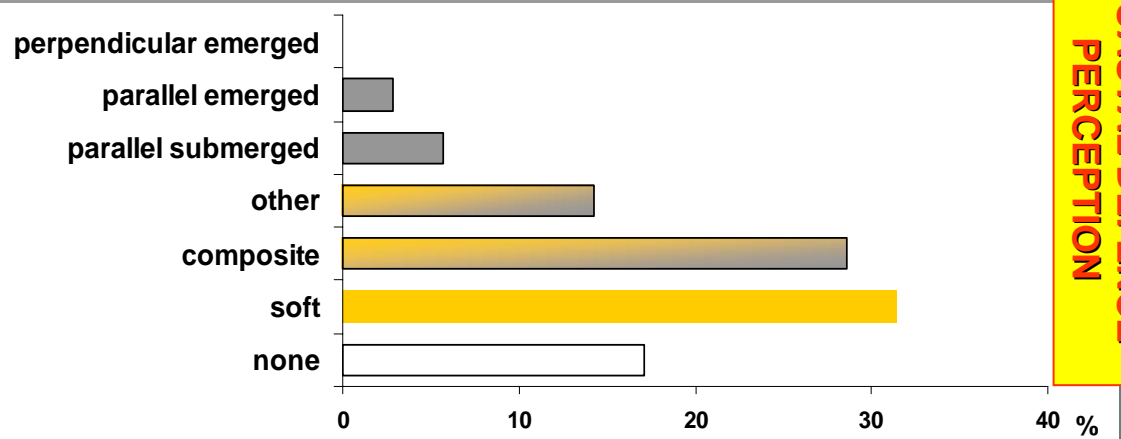
Are you aware...	YES	NO
...of Coastal Erosion problems in your area?	100%	0%
...if Coastal Erosion affected professionals in your area?	91%	5%

In your opinion...	YES	NO
...the actions taken in your area for ICZM are sufficient?	25%	75%
...the collaboration between stakeholders that work on the ICZM is efficient?	29%	71%
...the actions taken in your area for the protection of the coastal from erosion are sufficient?	38%	62%

57% correct

Bathing tourism

Which coastal defense system do you suggest?



COASTAL DEFENCE PERCEPTION

The interviewees: *local* stakeholders (Institutional: municipality, Portovenere Park Authority, Environmental education centre, Coastal Guard, Others: beach concessionaires, aquaculture operators, fishermen, maritime transport operators, marinas and tourist mooring areas operators, tourism operators, shopkeepers,)

Problems encountered with non-institutional stakeholders:

- fear of interference of public administration into their business and mistrust towards “outsiders”.
- refusal to get directly involved into management issues.

Results of the questionnaires

In general scarce and often misled knowledge of:

- **coastal management** both from the environmental and from the normative point of view, even if most stakeholders are aware of the regulations and laws specific for their activity.
- **coastal erosion**, that is perceived as a general problem, even if it actually is a marginal issue for the area.
- **coastal defence** systems.

Perceived problems:

- inadequate institutions and charged bodies work.
- scarce stakeholders involvement also in terms of information and awareness.
- stakeholders consider their own activities relevant for the coastal organisation, but they are not involved in any management action.

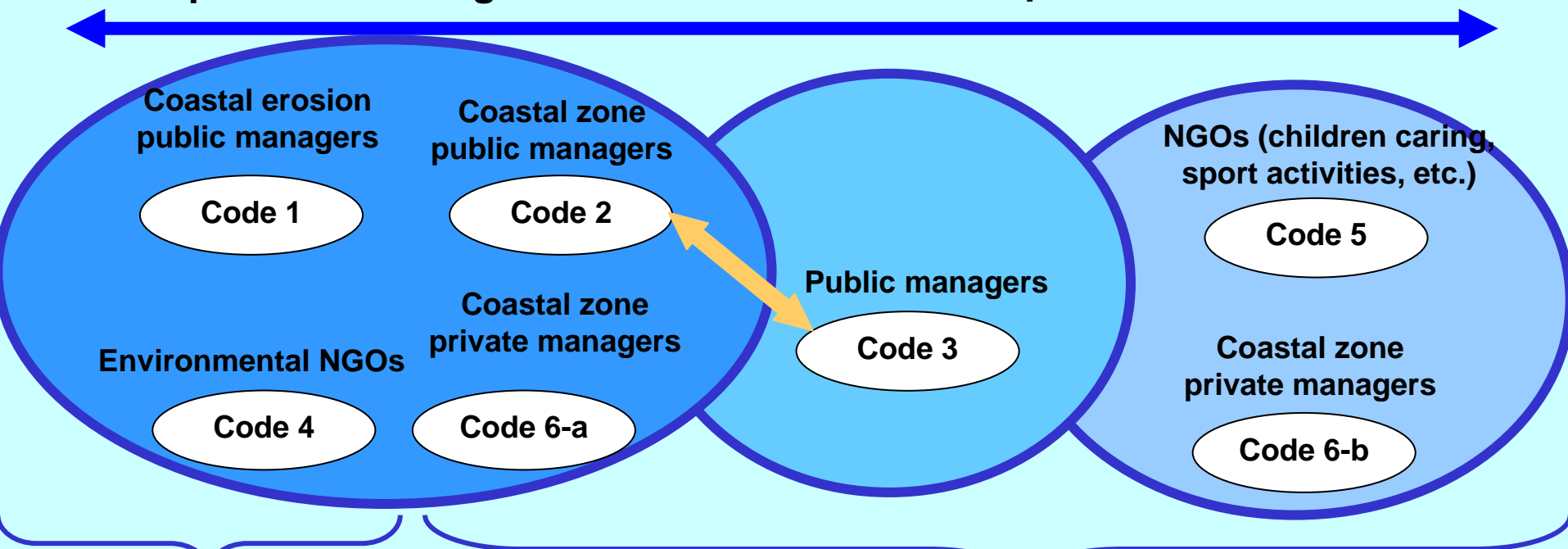
- In total 20 interviews with local and regional stakeholders were carried out.

Coastal erosion definition is directly linked to the stakeholder involvement in the erosion process:

- Codes 1, 2, 4 stakeholders define coastal erosion through the sedimentary cells and through its driving forces.
- Codes 3, 5, 6 stakeholders unlike define coastal erosion through its consequences on beaches.
- Public stakeholders and NGOs (codes 1, 2, 4) describe beaches as a damaged natural asset.
- On the other hand private stakeholders, municipal councillors and other NGOs (codes 3, 5, 6) describe beaches as an attractive coastal area for leisure.

Beach protection / long-term view

Beach exploitation / short-term view



Beaches = damaged natural asset

Beaches = leisure and distractions places, attractiveness

Technical analysis of coastal erosion

Pragmatic analysis of coastal erosion regarding its consequences; environmental risk

“Fatalistic” view with regards to its consequences

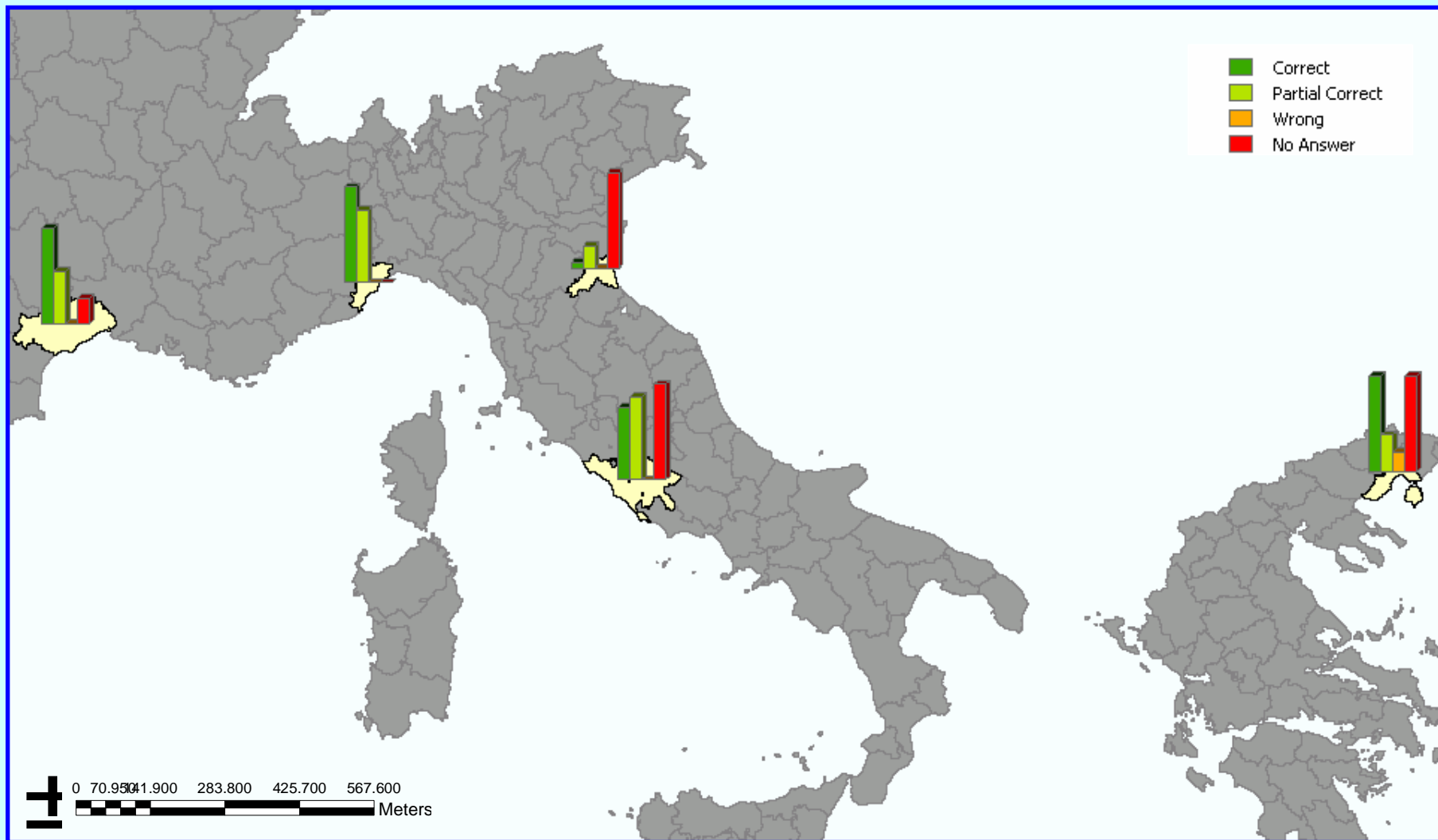
Stages identification in the coastal erosion process and public policies

Continuous perception, coastal erosion is underestimated

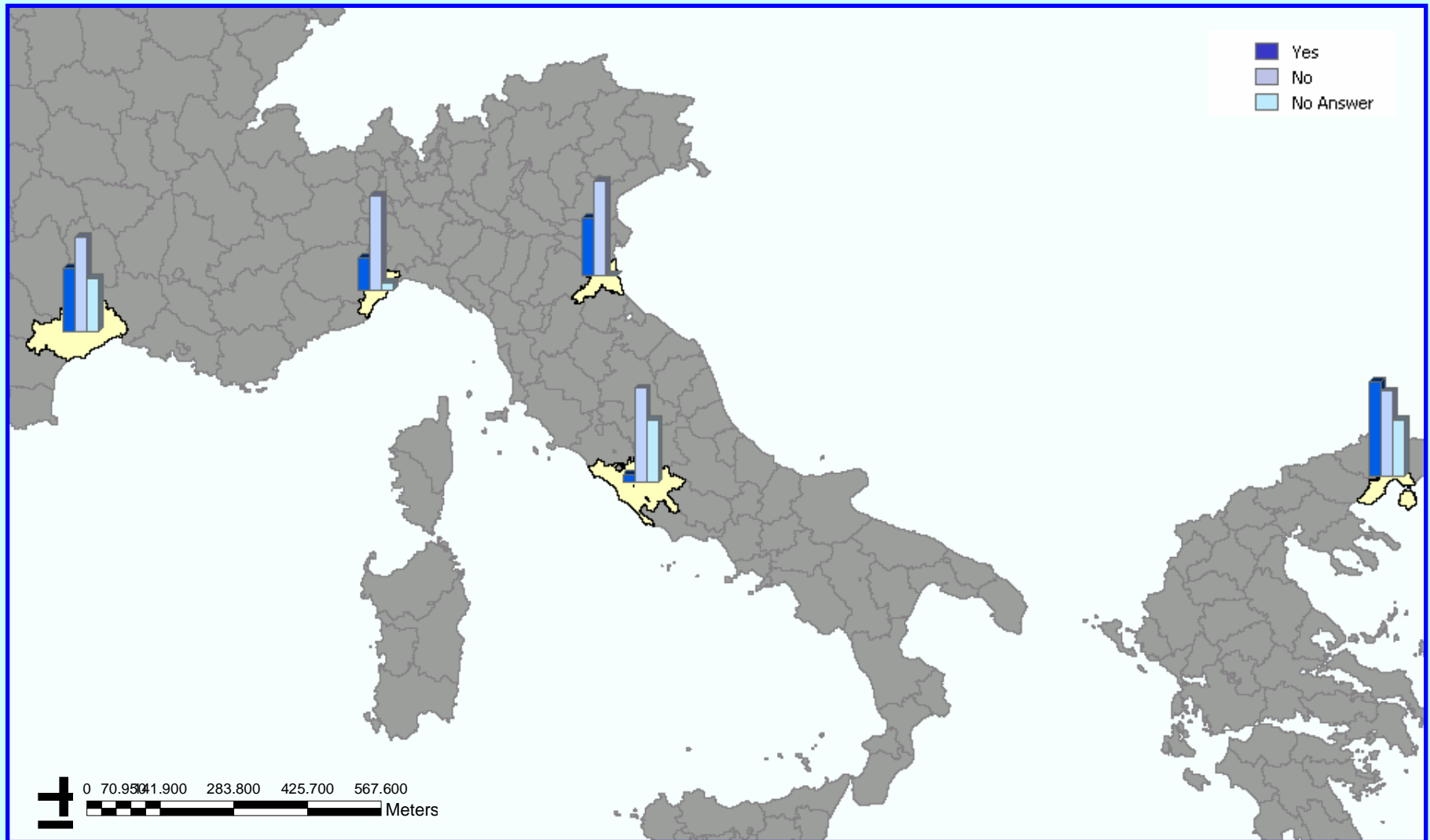
Preliminary Integration of Public Stakeholders' survey

	GREECE	ITALY			FRANCE
	P1	P2	P3 - P4	P5	P7
	FRI	DISTART (defence structures)	Litorale SPA & DECOS (defence structures)	DIPTERIS (defence structures)	UM1 (defence structures)
Definition of the "Coastal Zone"	Correct / Partial correct: 60%	Correct / Partial correct: 95%	Correct / Partial correct: 100%	Correct / Partial correct: 100%	Correct / Partial correct: 100%
Definition of the ICZM	Correct / Partial correct: 53.9%	Correct / Partial correct: 96.7%	Correct / Partial correct: 61.9%	Correct / Partial correct: 100%	Correct / Partial correct: 85%
Knowledge of "Coastal Erosion"	Correct / Partial correct: 56%	Correct / Partial correct: 100%	Correct / Partial correct: 95.27%	Correct / Partial correct: 100%	Correct / Partial correct: 100%
Knowledge of defence systems	Yes: 68%	Yes: 100%	Yes: 90.4%	Yes: 100%	Yes: 100%
Knowledge of the drawbacks	Yes: 28%	Yes: 100%	Yes: 68%	Yes: 90.5%	Yes: Hard 90% Soft 10%

Awareness of ICZM



COLLABORATION EFFICIENCY





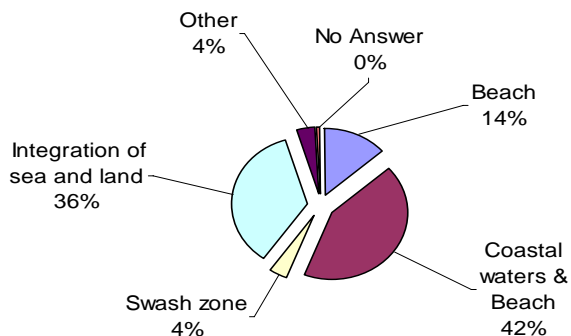
**ICZM – Coastal erosion – Defence systems perception
Beach Users' Survey**

ICZM PERCEPTION

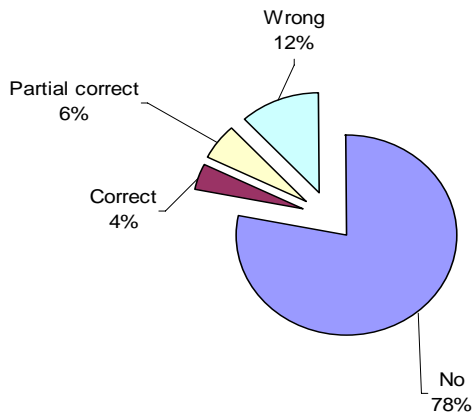
Results: 201 interviews were carried out in 10 different beaches (7 managed by private stakeholders and 3 not).

- Most of the visitors are aware of the issues related to coastal zone, but they are not aware of the ICZM (78%).
- Moreover, most of them are **not** satisfied with the way the regional and local authorities manage the coast.

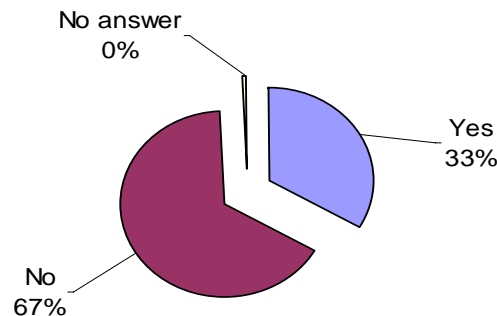
What is Coastal Zone?



Do you know what ICZM is?

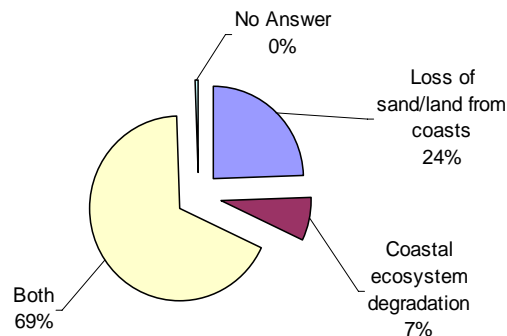


Are you satisfied with the way the regional and local authorities manage the coast?

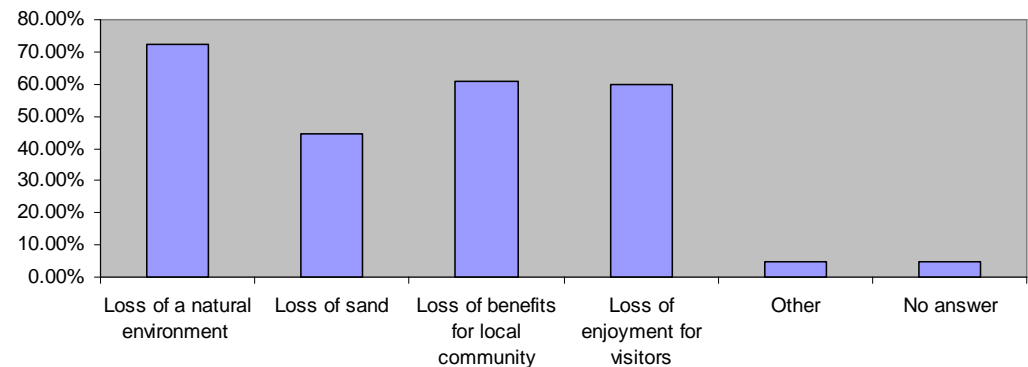


COASTAL EROSION PERCEPTION

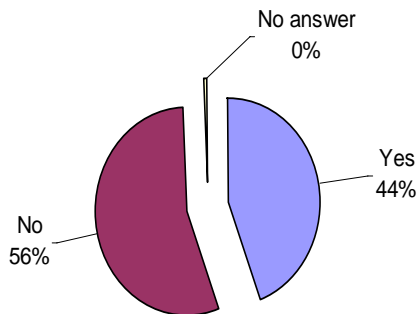
Do you know what “coastal erosion” is?



What do you think are the main problems caused by coastal erosion?



Have you ever noticed any problem linked to coastal erosion problem in this area?

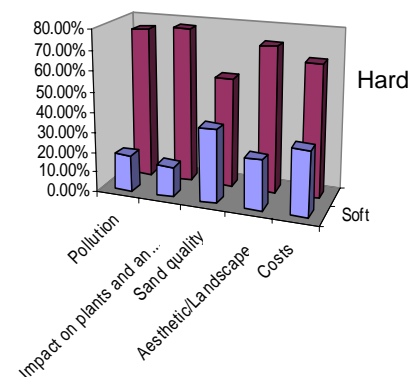


- Most of the visitors are aware of what coastal erosion is (69%) and the possible problems that causes.
- In contrast they are not aware the existence of problems caused by erosion in their area.

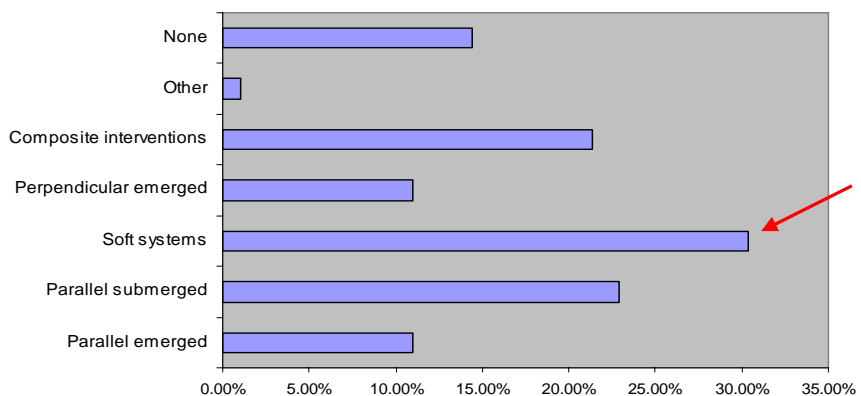
COASTAL DEFENCE PERCEPTION

- Photos of the coastal defence systems were shown to the interviewees.
- 50% of the interviewees were not aware of any coastal defence system.
- The majority of the interviewees preferred the soft system and the submerged hard structures, as the best systems to protect coastal zone from erosion.
- They believe that “pollution” and the “alteration of the landscape” and the “impact on animals and plants” are the main drawbacks of the hard structures.

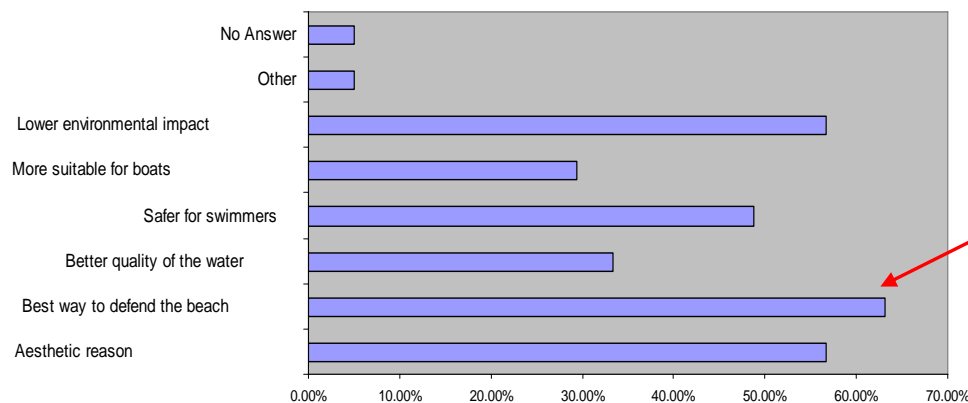
Which of the two methods (Soft and Hard) has a greater impact?



Which of the following coastal defence system do you prefer?



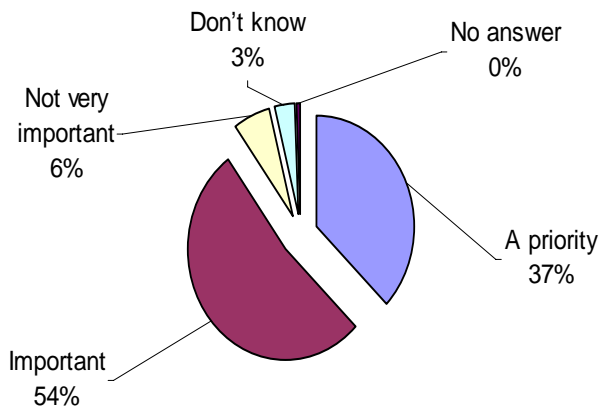
Why do you prefer it?



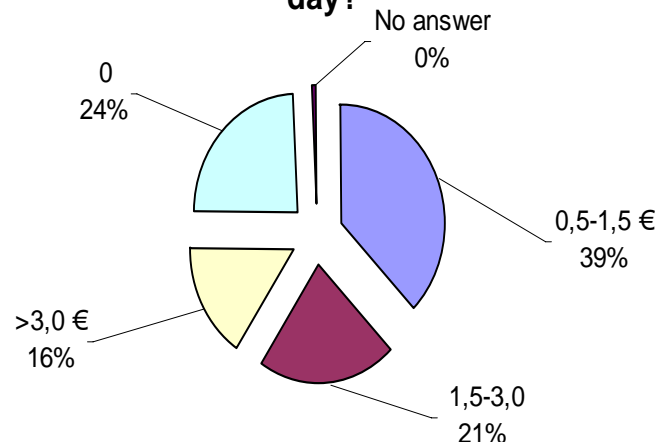
WILLINGNESS TO PAY (WTP)

- The majority of the interviewees believe that the protection of the coastal zone is of high importance or a priority (91%).
- The majority of the users (75.1%) are willing to pay from 0.5 to >3 €, and there is also the suggestion that only bathing visitors should pay for the protection of the beach.

According to you, beach protection towards coastal erosion is



How much would you pay to protect and save beaches from coastal erosion, as a maximum per day?



Results: 606 interviews were carried out

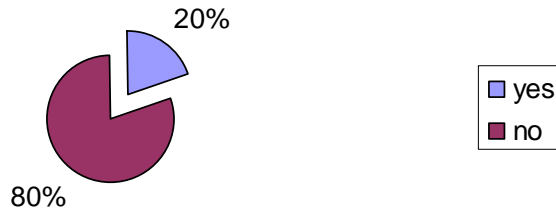
The majority of beach visitors (Riccione/Misano):

- is satisfied about the coastal management of the area,
- is aware of erosion problems,
- is familiar with defence structures,
- prefers *parallel submerged breakwaters*,
- believes that the cost of defending the beach from erosion is justified.

Main drawbacks are:

- hard structures: pollution, aesthetics, and high cost;
- soft structures: quality of sand, pollution, and high cost.
- **WTP Results**: 45.2% positive to contribute every 5 years at €2.5.
- For **1 million** visitors, the **aggregate donation** is about €2.5 million every 5 years.
- The **cost** of the project (renourishment) is about €3.5 million every 5 years.
- The voluntary donation of beach visitors would cover more than 2/3 of the cost of the project.

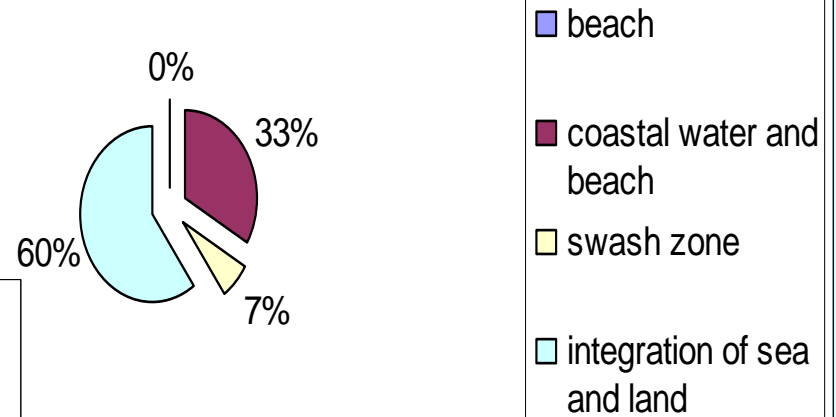
Knowledge of ICZM



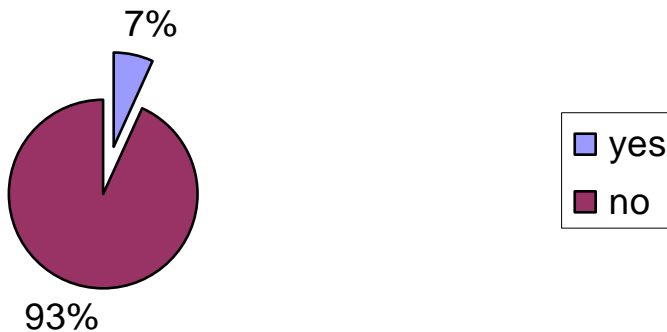
- 84 interviews were carried out
- 20% declared to have an idea of what is an integrated management, but none gave a definition.

Only (33%) thinks coastal zone is the area between water and beach. People have a limited perception of what is the coastal zone.

Knowledge of coastal zone



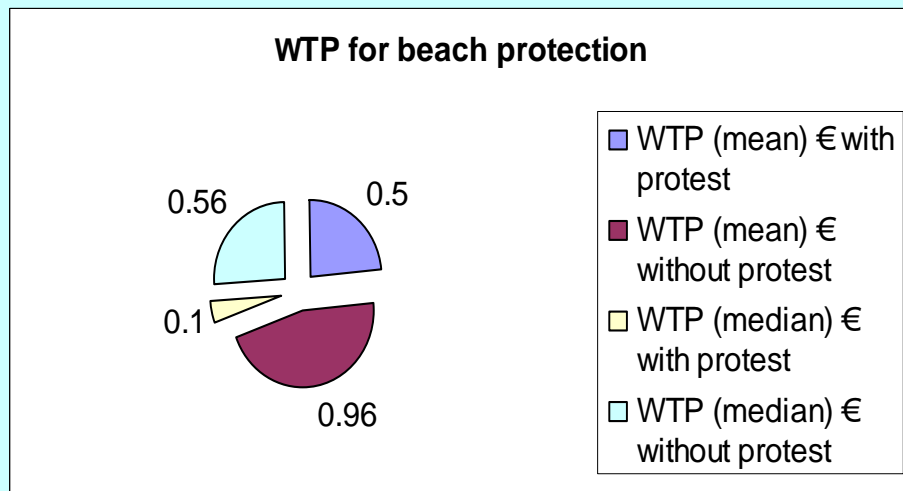
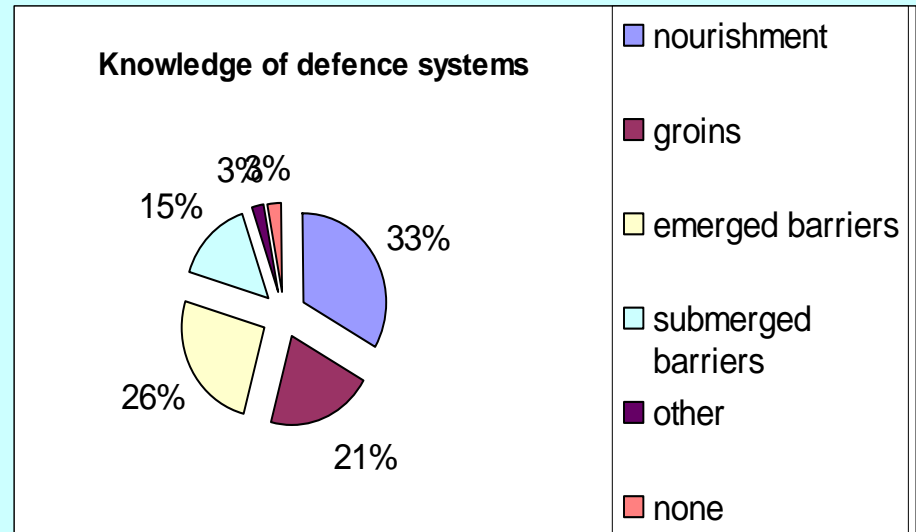
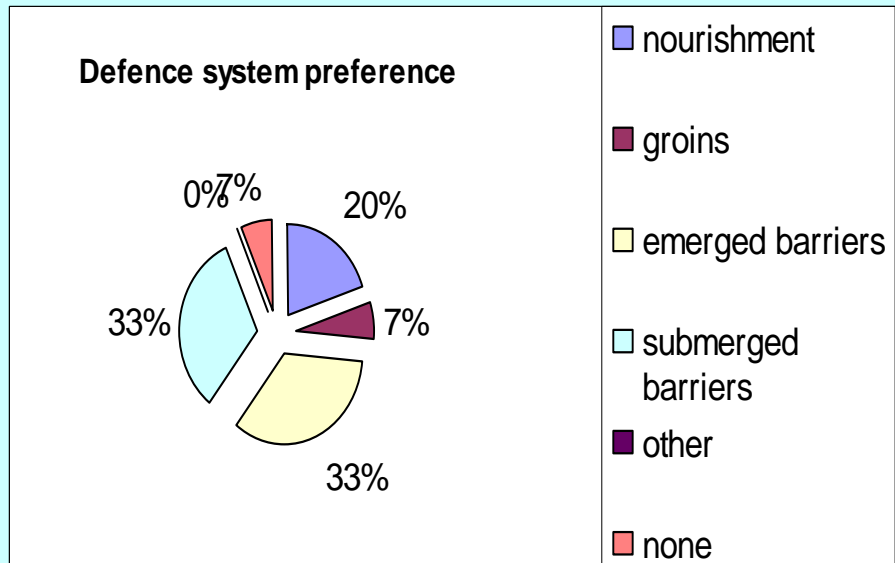
Beach management satisfaction



People consider not satisfying the way to manage the beach (93%), even though no one provided any idea to better improve the management.

Hard structures (especially emerged and submerged breakwaters, 33%) are considered to have a better performance in terms of sand retention and environmental impact

There is a good knowledge of the different defence systems



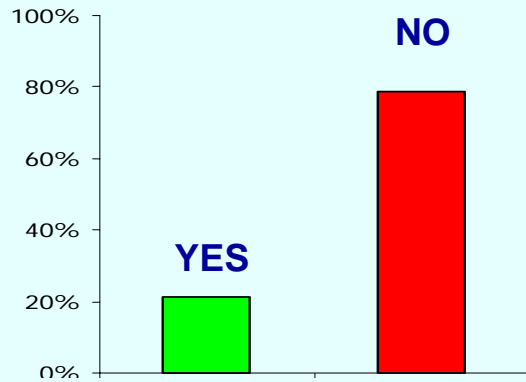
Nourishment is considered to have a great impact on the quality of the beach (37%), water (20%) and flora and fauna (20%). Conversely **hard structures** are considered to impact on the landscape (41%), while being more sustainable for flora and fauna (16%) and for water quality (19%).

The average maximum per day WTP is 0.5 € while the median is quite lower, €0.10, considering that the majority of the people protested/were negative (WTP= 0 for 36 persons).

270 questionnaires has been administered to beach users by means of face to face interviews. The main results are:

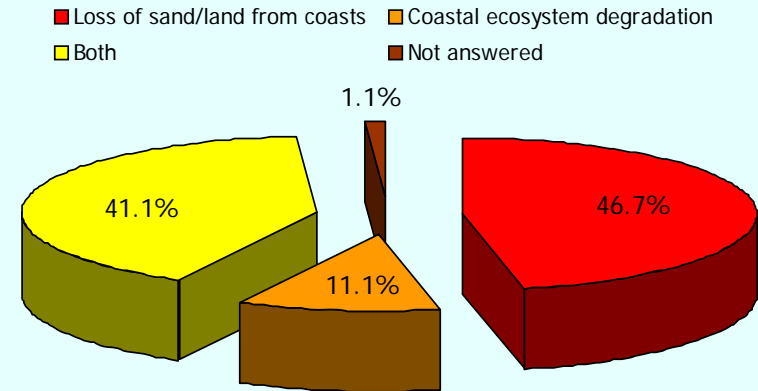
Do you know what ICZM is?

ICZM PERCEPTION



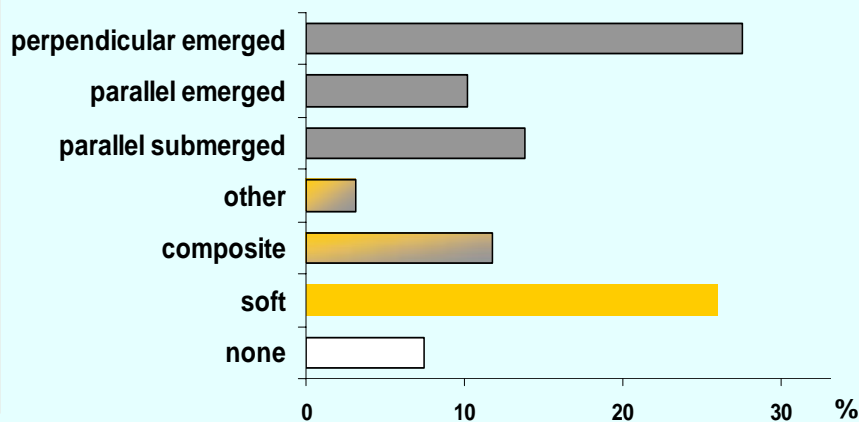
Do you know what "coastal erosion" is?

COASTAL EROSION PERCEPTION



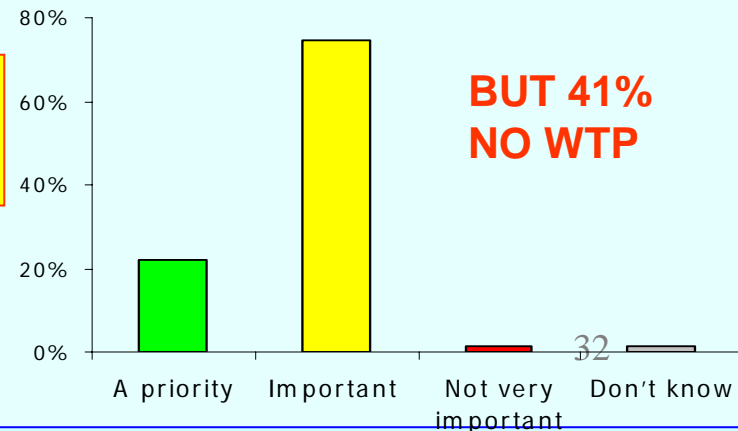
Which of the following coastal defense system do you prefer?

COASTAL DEFENCE PERCEPTION



Beach protection towards coastal erosion is...

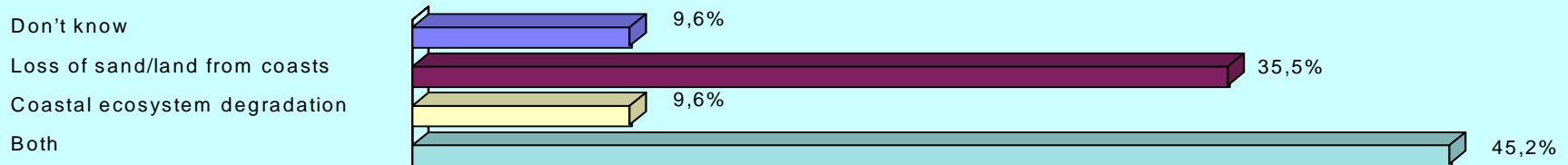
WTP



- 301 interviews were carried out
- Individuals between 29 and 49 years old are overstated (43,2%). Tourists are overstated (41,9%) following the high number of questionnaires carried out during the summertime

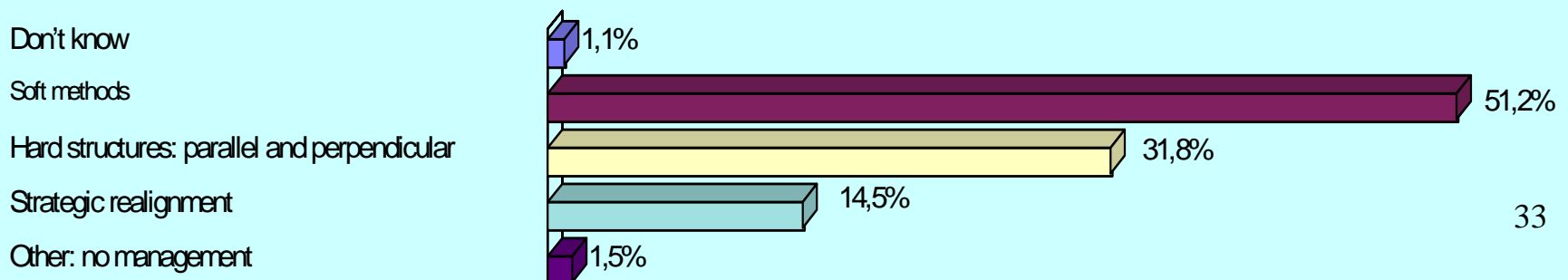
Do you know what coastal erosion is?

COASTAL EROSION

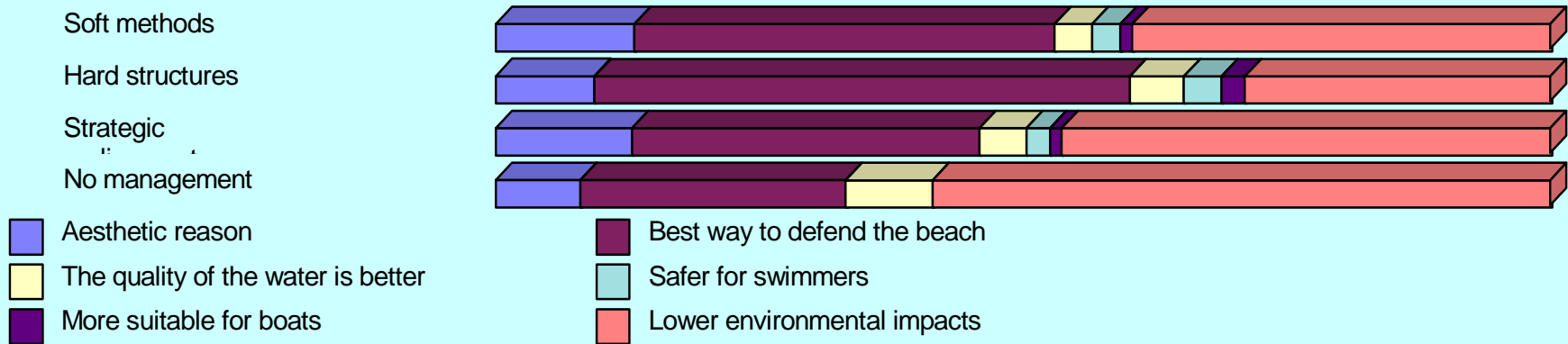


Which of the following coastal defence system do you prefer?

Defence system



Defence systems and preference

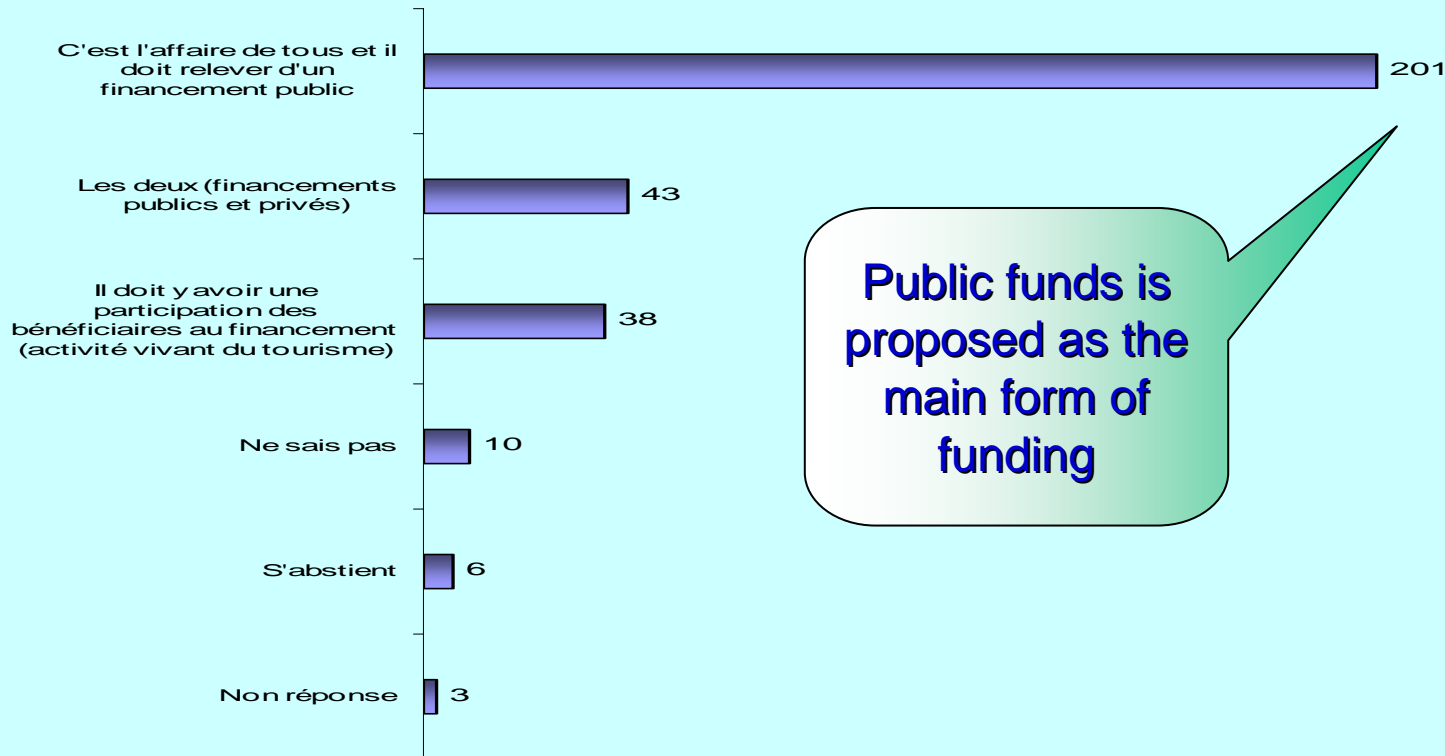


- Beach users define coastal erosion as a « coastal ecosystem degradation and a loss in sand and coastal land » (45%). Coastal erosion is primarily perceived by its consequences on beach surfaces; driving forces are not really identified, with climate change cited as the main driver.
 - 47% of users say that groynes do not expand coastal erosion.
 - 51,2% of people prefer soft methods: beach nourishment, dunes reconstruction, etc.
- People social identity is not a determinant factor regarding risk perception. There is a need to design communication tools between public stakeholders and local population towards a greater risk acceptability and realignment public policies.

Do you know what ICZM is?

GIZC	Nb. cit.	Fréq.
Oui	17	5,6%
Non	284	94,4%
TOTAL CIT.	301	100%

According to you, which kind payment could involve users' participation to protect beaches?



Preliminary Integration of Users' survey

Total n° Questionnaires : 1462	GREECE	ITALY			FRANCE
	P1: FRI	P2: DISTART	P3-P4:Litorale & DECOS	P5: DIPTERIS	P7: UM1
	201	606 (defence systems)	84 (defence systems)	270 (defence systems)	301 (defence systems)
Definition of the "Coastal Zone"	Correct / Partial correct: 77.6%	Correct / Partial correct: 52.7%	Correct / Partial correct: 93%	Correct / Partial correct: 90%	Correct / Partial correct: 100%
Definition of the ICZM	Correct / Partial correct: 9.9%	Correct / Partial correct: 96.7%	Correct / Partial correct: 20%	Correct / Partial correct: 57.9%	Correct / Partial correct: 5.6%
Satisfaction of management by authorities	Yes: 33.3%	Yes: 71.3%	Yes=7%	Yes: 43.7%	
Beach protection towards coastal erosion:	A priority: 37.3% Important: 52.7%		A priority: 47% Important: 53%	A priority: 22.2% Important: 74.8%	A priority: 37.3% Important: 52.7%
WTP	75.1%	45.2%		53.2%	38.2%



Tools towards ICZM implementation: CZ Indicators

Land planning

From the previous phases has emerged a very complex outline of the area:

- a very peculiar and valuable area.
- many different activities on a “small” area.
- many planning tools are operational depending from different bodies, with different spatial coverage and often with some problems in coordination.

How can a valid contribution to this situation be given?

finding and testing a methodology that:

- do not add further elements to an already complicate situation (*not another plan!!!*)
- is actually feasible
- supply a useful contribution to the dissemination of ICZM

What tools can be used?

ICCOPS has decided to deepen the *indicators calculation*, by choosing a list of 19 indicators from DEDUCE project, Blue Plan, IOC-UNESCO sets, in order to get:

- a synthetic and ICZM-oriented description of the study area.
- a methodology that can be exported to different Mediterranean coastal areas, creating in such a way a “best practice”.

Ouputs

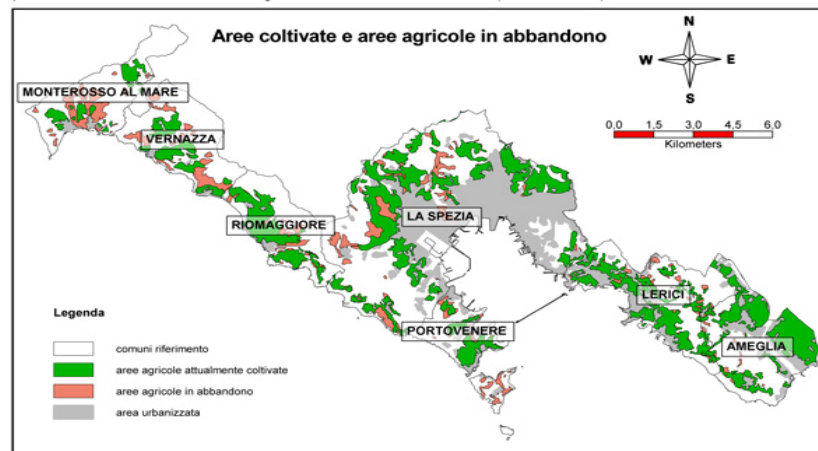
A set of *information sheets* reporting for each indicator:

- the calculation results
- the calculation methodology
- some information about the actual utility of the indicator and of its possible interaction with other ones, above all as regards tourism and landscape management.

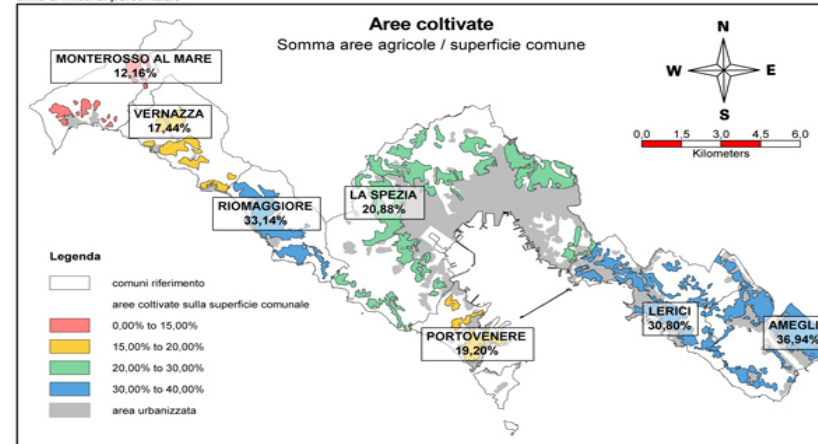
INDICATORE: "Loss of arable land" diminuzione delle aree agricole

Riferimento geografico: Comune
Formula di calcolo: aree agricole abbandonate / aree attualmente coltivate
Unità di misura: percentuale

1. Rappresentazione aree coltivate e aree agricole abbandonate sul territorio comunale
aree agricole attualmente coltivate
 come indicate nella "Carta dell'uso e copertura del suolo" escludendo le aree indicate come 2.1.1.2 "Prato sfalcabile in uso o in abbandono o vegetazione erbacea in ambiente urbano" e 2.2.3.2 "Oliveti abbandonati"
aree agricole in abbandono
 aree terrazzate che ricadono in aree boscate
 oliveti abbandonati (codice OA 2.2.3.2)
 prati sfalcabili in uso o in abbandono o vegetazione erbacea in ambiente urbano (codice Sf 2.1.1.2)



1. Calcolo area coltivata rispetto alla superficie comunale
Somma delle aree agricole come definite nella "Carta dell'uso e copertura del suolo" / superficie totale
 Dalla somma vengono escluse le aree indicate come 2.1.1.2 "Prato sfalcabile in uso o in abbandono o vegetazione erbacea in ambiente urbano" e 2.2.3.2 "Oliveti abbandonati" perchè si riferiscono ad aree in cui l'attività agricola non è più praticata
 unità di misura: percentuale



The main tool both for the analysis phases and to calculate the selected indicators and to represent the results is GIS

How?

- **Displaying and overlaying** cartographic data
- storing and ordering attribute alphanumeric data
- performing specific **spatial operations** (i.e. spatial aggregation, intersection and other operation on areas)
- creating **thematic maps**.

In order to facilitate the usability of the project outputs also by non GIS skilled users, such as local administrators or stakeholders, the resulting cartographic data and their alphanumeric attributes will be published as **Web Map Services**, that means they will be viewable in the web by any Geo-viewer

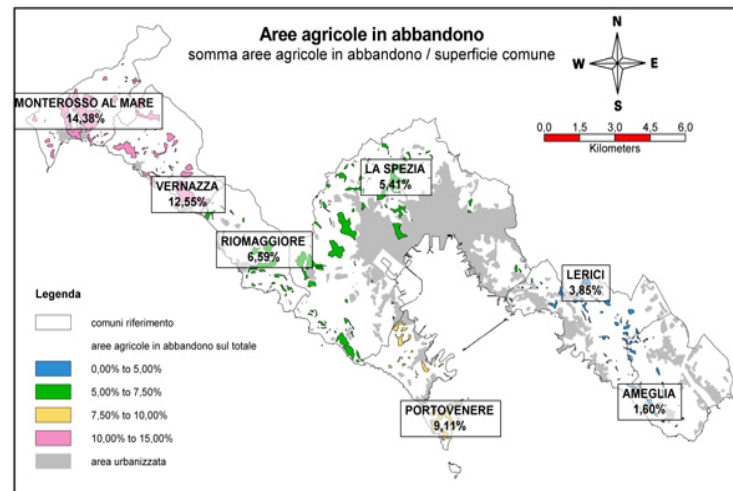
3. Calcolo aree agricole in abbandono rispetto alla superficie comunale =>

Somma delle aree agricole in abbandono / superficie totale

Per il calcolo dell'indicatore si definiscono aree agricole in abbandono:

- aree terrazzate che ricadono in aree boscate
- oliveti abbandonati (codice OA 2.2.3.2)
- prati sfalcibili in uso o in abbandono o vegetazione erbacea in ambiente urbano (codice Sf 2.1.1.2)

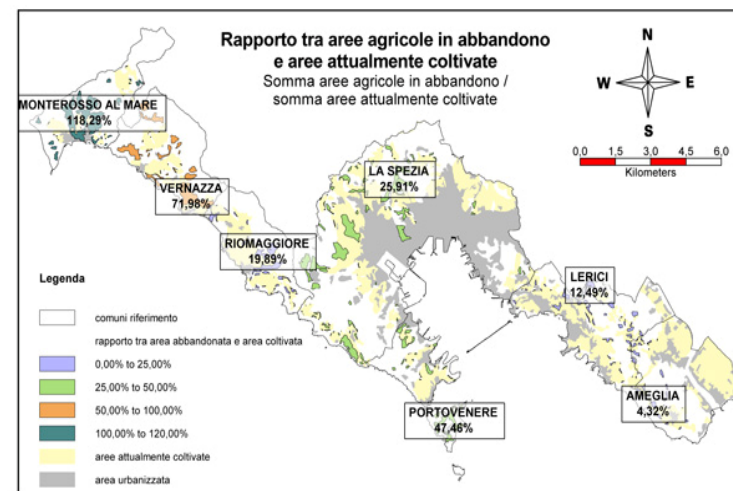
unità di misura: percentuale



4. Rapporto tra aree agricole in abbandono e aree attualmente coltivate =>

Somma aree agricole in abbandono / somma aree attualmente coltivate

unità di misura: percentuale



Development of a specific set of indicators for the assessment of beach management performances in a municipality level: evaluating and monitoring the existence and the level of implementation of specific tools for beach related issues (regulations, data collection efforts and monitoring, planning and management tools).

		Regulation	Data collection	Monitoring	Economic evaluation	Beach planning	Management tools	Communication	Participatory approaches
Environmental Area	Physical features								
	Ecological features								
	Environmental quality								
	Landscape features								
Socio-economic Area	Beach uses								
	Tourism								

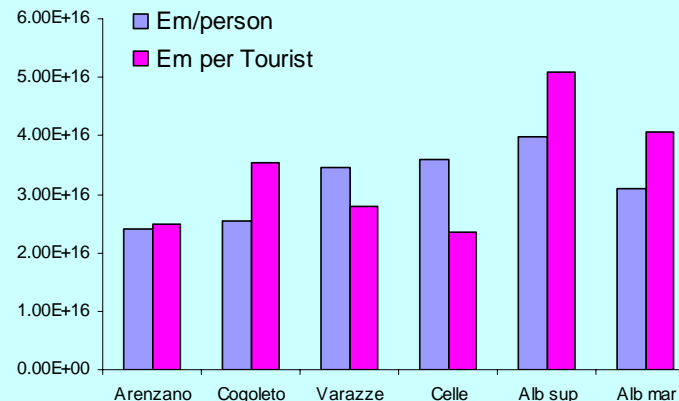
Simplification in a synthetic and user-friendly check list

→ specific evaluation tool easy to apply and able to fit with local institutional needs

Discussion with local institutional stakeholders and application to the case study area, to highlight main problems related with local beach management → definition of priority actions to support local governance policies.

Proposed as an integrative evaluation tools to be included in the Environmental Management Systems of the Riviera del Beigua (**EMAS**).

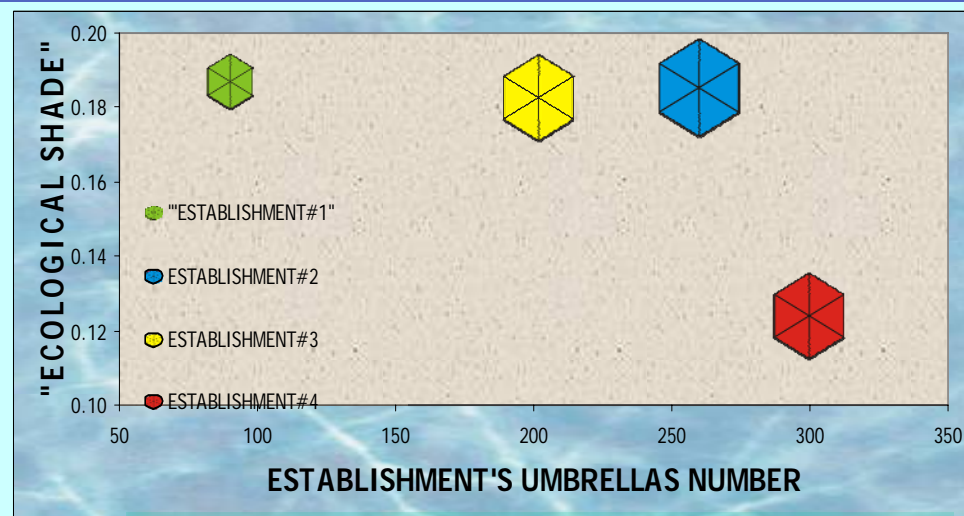
The **Emergy analysis** to RdB resulted in a misuse of local and renewable resources and poor efficiency, (weaknesses in **red** and strenghts in **green**)



Beach Sustainability Analysis

Ecological footprint proved to be a valid tool to evaluate beach management from a sustainability perspective.

It allows to classify different kinds of structures and to formulate suggestions to improve sustainability level in term of intervention on establishments' critical compartments and their spatial assessment



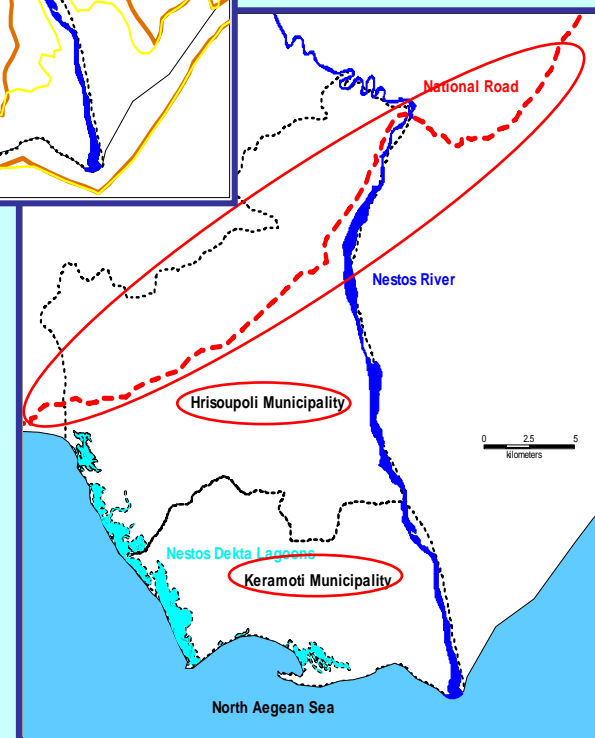
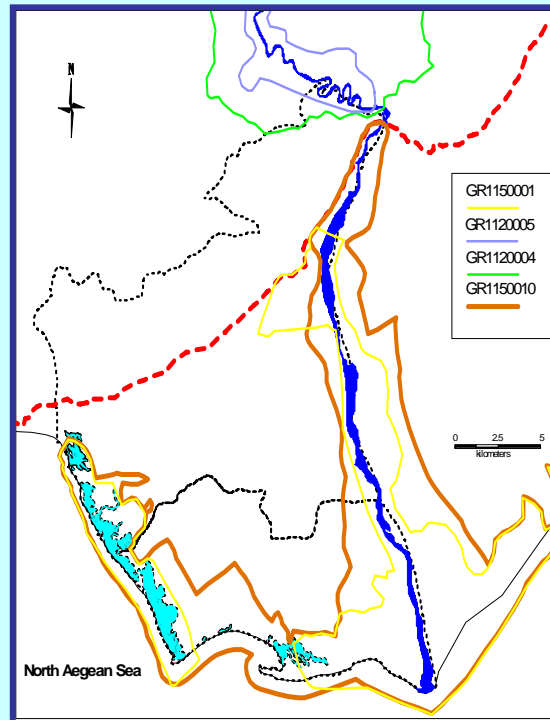
\emptyset UMBRELLA \propto ECOLOGICAL DEBT



Tools towards ICZM implementation: GIS

Greece – Region of East Macedonia and Thrace

- Protected areas according to National and International legislation (% to the region).
- Zonation of the protected areas.
- Municipalities and other urban areas.
- Road Networks.
- Fishing and aquaculture activities.
- Agricultural uses & irrigation network.
- Quality of bathing water: Blue flag beaches.
- Photos of Beaches and other areas.
- Shoreline erosion by presenting historic coastlines (1920, 1940, 1970).



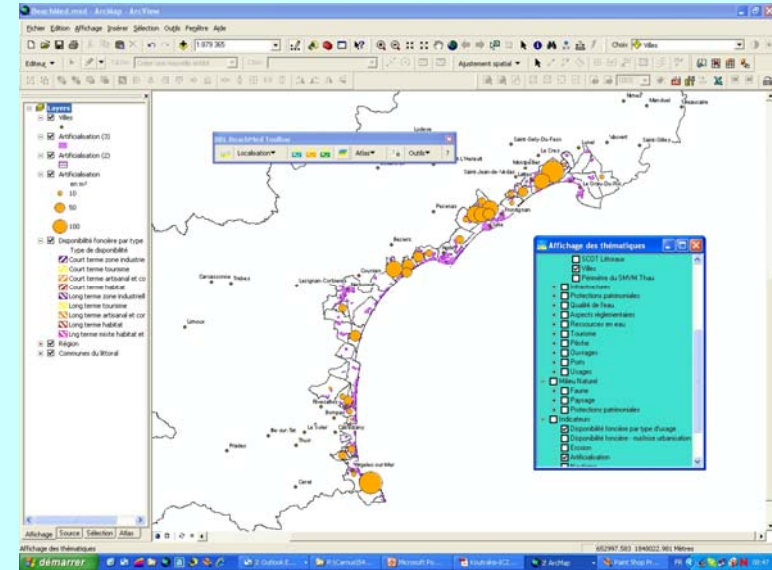


Tools towards ICZM implementation: Coastal Monitoring System

Finalising the various features

➤ Atlas Menu, Image menu, improved interface

- Easiest graphic interface : forms and drop down menu,
- System administrator can customize the system adding data and menu,
- Source code has been rewritten in Visual.net language.

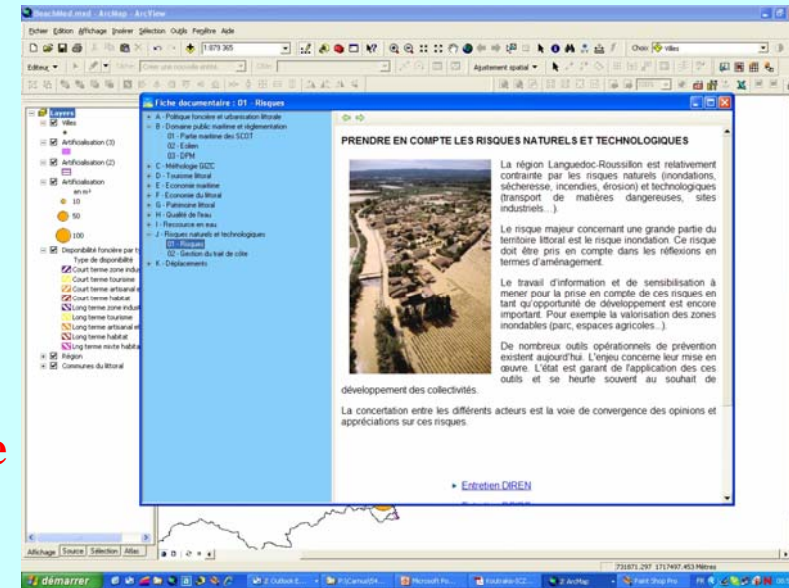


Forms and drop down menu

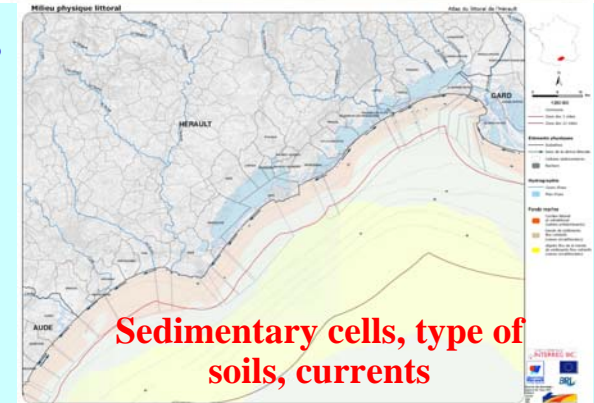


A new toolbar in ArcGis

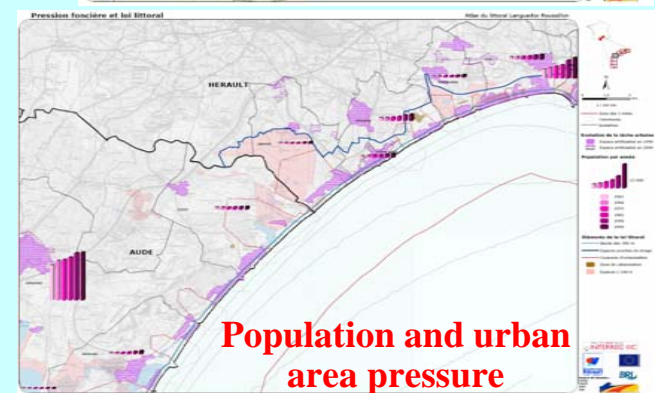
Documentation database on ICZM themes



- Coastal atlas :** A support for those involved in the ICZM in Languedoc region. Includes:
- Physical environment : sedimentary cells,
 - Maritime regulation area,
 - Cultural heritage,
 - Landscape and natural protected areas, classified site etc.,
 - Coastal erosion risk, marine submersion, river flood risk,
 - Human pressure : population trends, urban extension 1990-2000,
 - Coastal tourism activities : hosting capacity, number of ports,
 - Quality of bathing water, sewage treatment plants, water resource.



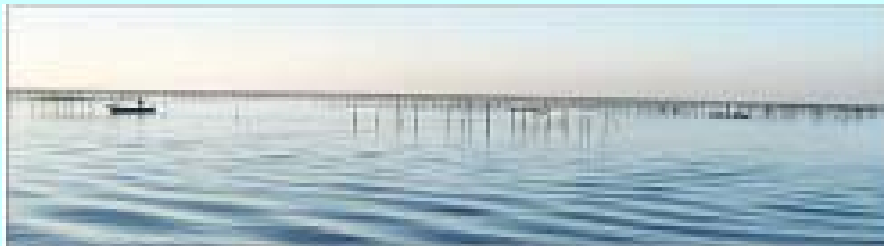
74 maps – Some examples :



Coastal indicators

The most relevant indicators, easy to update according to the data available and those emerged from discussions with EU partners, have been integrated into the system :

- Shoreline erosion, accretion or stability (based on EuroSION),
- Natural area transformed into urban area,
- Pressure of water sports activities: places of boats per harbour,
- Tourism accommodation capacity: number of beds per commune,
- Quality of bathing water : quality index from the administration,
- Protection of Biodiversity : part of the municipal territory in protected area



Future activities

- The INSPIRE directive forces the implementation of metadata tools for the distribution and sharing of data within a standardized framework for all EU MS.
- The directive will be applied in 2009 in the EU MS, forcing the governments to adapt their existing system.

In this context, the end of the phase C treats about the:

- Development of a metadata tool for geographical data
- Development of a webmapping application for dissemination of ICZM information





Economic Tools

Cost Benefit Analysis (CBA)

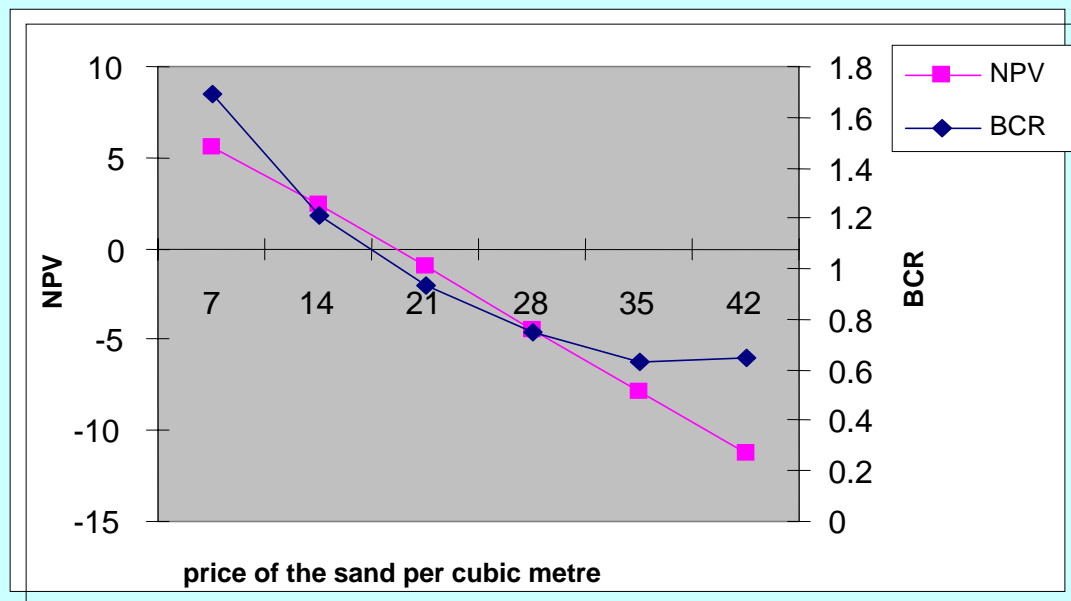
Economic results: CBA analysis

- Two CBA scenarios :
 - 25 years: lifespan of the project (1 nourishment)
 - 45 years: lifespan of the project (1 nourishment and 2 recharges)
- For each scenario is proposed a CBA (financial and a social)
 - **Financial:** just direct cost of construction and benefits to the sunbathing managers
 - **Social:** other externalities, such as recreational values, and Posidonia bed damages
- Net Present Value (NPV) is **positive** for both financial (6 million €) and social (50 million €) CBA.
- Discount rate is 6%.

Economic results: CBA sensitivity analysis

- Sensitivity analysis to sand price
- Just financial CBA is sensitive to the sand price, but not social CBA.
- Equilibrium price at €19.

Sand price - €	NPV (€M)	BCR
7	5.55	1.69
14	2.36	1.21
21	-1.03	0.93
28	-4.43	0.75
35	-7.82	0.63
42	-11.22	0.65





PRIORITY
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PROGRAMME



Public Awareness: Coast Day



Financially supported by the European Union



- **Coast Day** is the central event of the awareness raising campaign on the value of the coasts and on **Integrated Coastal Zone Management (ICZM)** and a way to promote the sustainable development on our coasts.
- This campaign is implemented within the framework of the **SMAP III MAP/METAP** project, financed by the EU and carried on by **PAP/RAC of UNEP-MAP**.
- The initiative aims to raise concerns about the threats to which the coastal areas are exposed to.



TV advert for the promotion of Coast Day

- The 60-second advert has been commissioned by **PAP/RAC of UNEP MAP** in the framework of the **SMAP III MAP/METAP** project financed by the European Union.
- Through the eyes of a child, the advert takes us on a journey to a coastal future in which we have failed to tackle the worst problems of pollution, development and climate change.
- But the message is one of hope as we are brought back to a vision of the **sustainable coast** we want and can achieve.
- Everybody has to be involved if we want to have, and to leave to our children, a coast, which is **resilient, productive, diverse, distinctive, attractive, and healthy**.







Common problems

- Lack of collaboration among stakeholders
- Weak coordination
- Weak integration
- Lack of information exchange between stakeholders
- Low participation in the decision making
- Low public awareness on ICZM
- Lack of knowledge on erosion in some regions.

Proposals for future

- Monitoring of the implementation of the Protocol on Mediterranean ICZM.
- Regional ICZM committee/agency/forum?
- Establishing mechanisms and tools for integration, participation, etc.
- Regional Clearing house
- Coastal Agenda 21
- Training, workshops, online training, conferences...
- Awareness campaigns, open doors, public exhibitions. 58



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Efharisto!
Thank you!
Merci!
Grazie!
Gracias!



Financially supported by the European Union

