

Couverture

Intérieur couverture

Coastatlantic. Integrated Coastal Zone Management: Towards an Atlantic Vision. / Oviedo / 2006 / pub. mimeo. 75 cop. University of Oviedo-CeCodet, the Environment, Land Planning and Infrastructures Ministry. Principality of Asturias and General Council of Gironde. Edition coordination: F. Rodriguez, C. Moreno, M.Carrero, A. Cuisinier.

Web site (Coastatlantic):

<http://www.coastatlantic.org/>

Publisher: The University of Oviedo - CeCodet, the Environment, Land Planning and Infrastructures Ministry as well as the General Council of Gironde.

The Government of the Principality of Asturias, the University of Oviedo, the Cooperation and Territorial Development Centre have carried out, under the Collaboration Agreement Framework signed on 11/19/2003, the scientific coordination and administrative management of the “Coastatlantic. Integrated Coastal Zone Management” project entitled “Towards an Atlantic Vision”. This project is included in the Interreg IIIB Atlantic Area programme, co-financed with FEDER funds.

Oviedo, June 2006.

D.L. AS-02640-2006

ISBN (pendiente)

Printed. Reprografía Morés

Coastatlantic - Integrated Coastal Zone Management: Towards an Atlantic Vision

Co-financed by the European Union under the community initiative programme Interreg IIIB Atlantic Area.

PARTNERSHIP



ALENTEJO



AQUITAINE



CORNWALL COUNTY COUNCIL



GIAHSA



CONSEIL GENERAL GIRONDE



HIGHLAND COUNTY COUNCIL



NASC - IRELAND



AREA METROPOLITANA DE LISBOA



SEVERN ESTUARY PARTNERSHIP



XUNTA DE GALICIA



UNIVERSIDAD DE OVIEDO



GOBIERNO DEL PRINCIPADO DE ASTURIAS

COORDINATION

IZQUIERDO, Javier – (**Lead partner**) – Environment, Land Planning and Infrastructures Ministry (E.L.P.I.M.) – Principality of Asturias - ES

RODRÍGUEZ, Fermín – (**Project manager**) – University of Oviedo (U.O.)-CeCodet - ES

TEAM OF EXPERTS

ÁLVAREZ, Rosario – (**Cultural Heritage leader**) – Desenvolvimento Comarcal. Xunta de Galicia - ES

ARAÚJO, Dalíla – (**Natural Heritage leader**) – Metropolitan Area of Lisbon - PT

BACHAREL, Fátima – (**Urban-rural interdependences leader**) CCDRA - Alentejo - PT

BARKER, Natasha – (**Stakeholder involvement leader**) – Severn Estuary Partnership - UK

BARDSLEY, Stuart – (**Researcher**) - Severn Estuary Partnership - UK

BENNET, John – (**Researcher**) - NASC - IRL

BLANCO, Jacobo – (**Technical coordination**) – U.O – CeCodet - ES

CARRERO, Manuel – (**Researcher**) - (E.L.P.I.M.) - ES

CUISINIER RAYNAL, Arnaud – (**Dissemination leader**) – Conseil Général de la Gironde - FR

CONWAY, Catherina – (**Researcher**) – NASC – IRL

CULLÍA, Antonio – (**Researcher**) - (E.L.P.I.M.) – Principality of Asturias - ES

DOMÍNGUEZ, Luis – (**GIS leader**) GIAHSA – ES

DOUGLAS, Ian (**Coastal Access leader**) – NASC – IRL

FERNANDES, Ricardo – (**Researcher**) - Metropolitan Area of Lisbon - PT

FIGUEIRA de Sousa, João – (**Researcher**) – Metropolitan Area of Lisbon - PT

GONZÁLEZ, Rafael – (**Technical coordination**) – CeCodet - ES

GUCHAN, Anne – (**Environment officer**) – Conseil Régional d'Aquitaine- FR

IGLESIAS, Elena – (**Technical coordination**) – U.O. – CeCodet - ES

IZQUIERDO, Javier – (**Lead partner**) – (E.L.P.I.M.) – Principality of Asturias – ES

KNOWLES, Steve – (**Researcher**) - Severn Estuary Partnership - UK

MALLET, Cyril (**Researcher**) – Aquitaine Coast Observatory - FR

MARIE, Caroline – (**European cooperation officer**) Conseil Régional d'Aquitaine- FR

MARTINS, Maria João – (**Researcher**) – Metropolitan Area of Lisbon - PT

McGINTY, Carina – (**Researcher**) - NASC – IRL

MENÉNDEZ, Rafael – U.O - CeCodet – ES

MITCHELL, Jim – (**Researcher**) - Severn Estuary Partnership - UK

MORENO, César – (**Technical coordination**) – U.O – CeCodet - ES

OSGOOD, Richard – (**Researcher**) Severn Estuary Partnership - UK

OTERO, Concepción – (**Researcher**) – Desenvolvimento Comarcal. Xunta de Galicia - ES

RODRÍGUEZ, Fermín – (**Scientific Coordination**) - CeCodet – ES

SAMUEL, André – (**Researcher**) – Aquatic Environment Institute - FR

STREET, Charlotte – (**Researcher**) - Severn Estuary Partnership - UK

SHIPMAN, Brian – (**Researcher**) - Cornwall County Council – UK

TOLMOS, Elena – (**Researcher**) - GIAHSA – ES

WISHART, Colin (**Governance leader**) – Highland County Council - UK

SECRETARIAT

ALONSO, Luisa (**Financial coordination**) – U.O – CeCodet - ES

BLANCO, Jacobo (**Technical coordination**) – U.O – CeCodet - ES

GONZÁLEZ, Rafael (**Technical coordination**) – U.O – CeCodet - ES

IGLESIAS, Elena (**Technical coordination**) – U.O – CeCodet - ES

MONTES, Sylvia (**Technical coordination**) – U.O – CeCodet - ES

MORENO, César (**Technical coordination**) – U.O – CeCodet - ES

VILLANUEVA, Susana (**Financial coordination**) – (E.L.P.I.M.) – Principality of Asturias – ES

PARTNERSHIP	4
COORDINATION	5
TEAM OF EXPERTS	5
SECRETARIAT	5
Summary	10
1. Understanding Integrated Coastal Zone Management	11
1.1. Definition of coastal zone	11
1.2. Definition of ICZM	11
1.3. Principles of Integrated Coastal Zone Management.....	12
1.3.1. A Broad "Holistic" Perspective (Strands and Geography).....	13
1.3.2. A Long Term Perspective.....	13
1.3.3. Adaptive Management during a Gradual Process	14
1.3.4. Reflect Local Specificity	14
1.3.5. Work with Natural Processes	14
1.3.6. Participatory Planning	15
1.3.7. Support & Involvement of all Relevant Administrative Bodies	15
1.3.8. Use of a Combination of Instruments.....	15
2. Project Background	16
2.1. The Atlantic Coast as a common space	16
2.2. The need for an Atlantic Vision on ICZM	16
2.2.1. Coastal issues.....	17
Exposure	18
Marine and Coastal Resources	19
Demographics.....	19
Tourism and recreation.....	19
Natural Resources.....	20
Water Quality	20
Environmental degradation	21
2.3. State of the art of the ICZM in the Atlantic Coast.....	21
3. Methodology of the project	23
3.1. Organizational diagram	25
<i>Functional flowchart</i>	25
3.2. Steering Committee	26
4. Actions involved.....	28
4.1. Coastal Access	30
4.2. Cultural Heritage	30
4.3. Natural Heritage	30
4.4. Urban rural interdependences.....	31
4.5. Geographical Information Systems	31
4.6. Stakeholder involvement	32
4.7. Governance.....	32
4.8. Dissemination.....	32
5. Project objectives.....	33
6. Conceptual model.....	34
6.1. Coastal Access.....	36
6.1.1. Coastal access issues	37
6.1.2. Coastal access in the European Union.....	37
6.1.3. Objectives	38

6.1.4. Development of sustainable coastal access networks and coastal interpretation.	
Region d'Aquitaine	42
a) Description of the working area	42
Erosion type	43
b) Methodology	45
c) Results and proposals	47
d) Problems and solutions	47
6.1.5. Beach management plans. Principality of Asturias	49
a) Description of the working area	49
b) Methodology	51
c) Proposals	52
d) Problems and solutions	55
6.1.6. Development of sustainable coastal access networks and coastal interpretation.	
Severn Estuary Partnership	58
a) Description of the working area	58
b) Methodology	60
c) Summary and proposals	65
6.1.7. Beach management, development of sustainable coastal access and coastal interpretation. NASC	66
a) Description of the working area	66
b) Methodology	67
c) Results	70
d) Proposals	70
e) Conclusions	72
6.1.8. Outputs	78
a) Common tools	78
b) Specific tools	79
c) Success and failures	79
6.1.9. Conclusions	81
6.1.10. Recommendations	82
6.2. Natural Heritage	84
6.2.1. Natural heritage issues	84
6.2.3. Natural Heritage in the European Union	86
6.2.4. Objectives	87
6.2.5. Study of the Natural Resources of the Atlantic Coast. Metropolitan Area of Lisbon	90
a) Description of the Great Metropolitan area of Lisbon	90
b) Methodology	97
c) Results	98
6.2.6. Improving spatial planning and sustainable development decisions in the coastal zone, focusing on the Nature Conservation Dimension. Severn Estuary Partnership	101
a) Description of the working area	101
b) Methodology	104
c) Summary	110
a) Description of the working area	111
b) Methodology	116
c) Results	126
d) Proposals	128

d) Problems and solutions	129
6.2.8. Outputs	129
6.2.9. Conclusions	130
6.3. Cultural Heritage	136
6.3.1. Cultural heritage issues.....	137
6.3.2. Cultural Heritage in the European Union.....	137
6.3.3. Objectives	140
6.3.4. Improving sustainable development decisions in the coastal zone, focusing on the cultural conservation dimension. <i>Severn Estuary Partnership</i>	143
a) Description of the working area	143
6.3.5. Cultural and natural itineraries along the coast. <i>Xunta de Galicia</i>	147
6.3.6. Outputs	157
6.3.7. Conclusions	158
6.3.8. Recommendations	159
6.4. Urban-Rural Interdependences	163
6.4.1. Urban rural interdependences issues	163
6.4.2. Urban rural interdependences in the European Union.....	164
6.4.3. Objectives	164
6.4.4. Asturias Coastal Zone Protection Plan. Principality of Asturias.....	167
a) Description of the working area	167
b) Methodology	170
6.4.5. Alentejo Coastal Zone: Recent and Present Territorial Planning Policies – the PROTALI (Regional Land Management Plan of Alentejo Coastal Zone) experience.....	171
a) Description of the working area	171
b) Methodology	174
Phases	174
c) Proposals	176
6.4.6. Achieving the conservation and enhancement of valued landscapes and habitats through the realization of their economic potential – the Severn Estuary Partnership experience.....	177
a) Description of the working area	177
b) Methodology	182
6.4.7. RESULTS	184
6.4.8. CONCLUSIONS	185
6.5 Stakeholder Involvement.....	218
6.5.1. Objectives	218
a) Stakeholder Involvement.....	218
b) Broad & Specific Actions	219
6.5.2. Methodology.....	220
a) COASTATLANTIC Partnership – Working Together.....	220
b) Partner Actions in Stakeholder Involvement	221
c) Severn Estuary Stakeholder Group Network.....	222
6.5.3. Results	222
a) COASTATLANTIC Partnership	222
b) Partner Actions – Delivering Local Stakeholder Engagement.....	223
c) Severn Estuary – Developing and Sustaining the Network.....	225
6.5.4 Conclusions	226

6.5.5.	Recommendations	227
6.6	Improvement in Governance	234
6.6.1.	Improved governance meaning in a coastal management context	234
6.6.2.	Overview of the Coastatlantic sub-projects and key lessons learned.....	239
6.6.3.	Key principles and lessons drawn from projects.	245
6.6.4.	Asturias Coastal Zone Protection Plan – the POLA in Asturias.	247
4.4.	Specific issues	251
6.6.5.	Design and implementation of integrated coastal zone plans at local level- the Atlantic Coast (Wester Ross) project in Highland.	253
5.3	Key challenges faced; achievements and shortcomings	265
6.7.	Geographical Information Systems	268
6.7.1.	Concepts related to GIS	268
6.7.2.	Objectives	271
	Improvement on the local management	271
6.7.3.	Integrating Geographic Information Systems data in a multi-authority, cross regional context. Severn Estuary partnership	272
a)	Background	272
b)	Methodology	274
6.7.4.	Geographic Information System. GIAHSA.....	277
a)	Background	277
b)	Methodology	279
6.7.5.	Outputs	286
a)	Common and specific tools.	286
b)	Achievements and failures.	286
6.7.6.	Conclusions	287
6.7.7.	Recommendations	288
7.	Conclusions	290
7.1.	Protection of the Atlantic Space	291
7.2.	Integrated development of the Atlantic Coastline	292
7.3.	Atlantic resources inventory	293
7.4.	Overseeing spatial planning for the Atlantic Coastal Zone.....	293
7.5.	Participation.....	294
a)	Key Achievements for Stakeholder Involvement	294
7.6.	Progressing ICZM across the Atlantic Arc	295
8.	Strategic Guidelines for Management	297
8.1.	Conservation towards sustainable use	297
8.2.	Better integration on current legislation	297
8.3.	Ensuring the sustainability of public policies for coastal areas.....	297
8.4.	Manage the information for the stakeholders	298
8.5.	Establishment of institutionalized participation mechanism	298
8.6.	Common instruments on coastal management	299
9.	Recommendations	301
10.	Epilogue	305

Summary

This report collects existing information, to inform the European Commission about issues regarding the approach to the Integrated Coastal Zone Management (ICZM) in the Atlantic Area. The report should provide increased understanding of the process of ICZM to facilitate future policy development.

Integrated Coastal Zone Management is described within a regional, international, and European context to set the scene. Particular attention is given to the EU level, which is focused on the lessons learned from the EU Demonstration Programme in the late 1990s to provide concrete examples of ICZM. The outcome was the publication of the EU strategy for Integrated Coastal Zone Management. EU Recommendations for the implementation of ICZM were subsequently issued to Member States.

The regions facing the Atlantic Coast share a number of unifying issues that deserve common consideration, therefore they can combine their knowledge and experience to solve similar problems. A common vision of the ICZM for the Atlantic Area helps identify the specific characteristics of this area, inform the development of National Strategies for ICZM and facilitate future exchanges and actions to be taken by the States. Additionally, it facilitates long-term spatial planning and sustainable management of economic activities as well as of natural resources of this zone. It also provides a coherent framework for coastal zone initiatives that link the different sectors working at the coast. Stakeholder involvement is at the heart of this initiative to provide a sound basis for actions.

This is the framework in which case studies from the UK, Ireland, France, Spain and Portugal were selected within the COASTATLANTIC project included in the community initiative Interreg IIIB “Atlantic Area”.

The report points out the need of implementing ICZM as a mechanism for ensuring the sustainable future of the coastal area resources. To do this, this report intends to evaluate the outcomes of the different actions carried out by the participants in the COASTATLANTIC project. The thematic and cross-cutting actions chosen by the partners address a wide range of transnational challenges and issues. Improvement in the availability of such information will assist the ICZM policy formulation process.

The implementation of the recommendations addressed in the report to achieve best practices in ICZM, depends on improved governance structures and share of responsibilities between the different levels of administration involved. Consequently, the long-term sustainability of ICZM is outlined as an objective which needs to be taken into account at all levels of the process.

1. Understanding Integrated Coastal Zone Management

1.1. Definition of coastal zone

Compared with other continents, Europe has a large continental shelf and a relatively long coastline (89000 km) in relation to its land area. There is a wide variety of types of coastal zone, with different natural, economic and social conditions.

The coastal zone provides special conditions of space, living and non-living resources for human activities. At the same time, the coastal zone is a multi-user system. Private and public bodies use the natural resources (water and food), economic activities (space, living and non-living resources, energy) and recreation (beaches and water areas). It constitutes therefore a focal point in many national economies where a large number of social and economic activities and their impacts are concentrated.

For the purposes of the COASTATLANTIC project, the coastal zone is defined as a strip of land and sea of varying width depending of the nature of the environment and management needs. It seldom corresponds to existing administrative or planning units. The natural coastal systems and the areas in which human activities involve the use of coastal resources may therefore extend well beyond the limit of territorial waters, and many kilometres inland.

1.2. Definition of ICZM

Faced with the absence of land use planning, industrialization, commercial development and steadily growing population, pressure in many places have resulted in an increase of erosion and flooding, loss of wetlands, pollution, and over-exploitation of land and water resources in the coastal zone.

It is accepted that the development of the coastal zone should be based on a proper understanding of the processes with the zone itself. Conflicts between users are becoming more and more obvious. They will grow in scope and size with increasing population density and related increase in the use of the earth's resources.

There is a need for a common methodology which can be used to describe the complex interactions between the resource system and its potential users. There is a need, therefore, to plan and control this process in a systematic and sustainable way. This process is called Integrated Coastal Zone Management (ICZM) and requires having in place a previous correct land use planning which allows, subsequently, an integrated management of coastal areas.

Based on these developments, Europe, with its relatively long coastline and diverse natural, social and economic conditions, started to work on ICZM in 1996. The European Commission defines ICZM as a continuous process of administration the general aim of which is to put into practice sustainable development and conservation in coastal zones and to maintain their biodiversity. To this end, ICZM seeks, through more efficient management, to establish and maintain the best use and sustainable levels of development and activity (use) in the coastal zone, and, over time, to improve the physical status of the coastal environment.

Growing awareness about the finiteness of resources, the environmental degradation and its resulting problems to mankind, has led to the generation of numerous studies the objective of which was to provide a long term solution to the resources problem. Such studies are based on the concept of carrying capacity in terms of guidelines for socio-economic activities to achieve long term conservation of vital elements and areas of the environmental system.

The concept of sustainable development, was introduced as a means to guarantee acceptable living conditions for present and future generations.

1.3. Principles of Integrated Coastal Zone Management

Integrated Coastal Zone Management (ICZM) is a dynamic, multi-disciplinary and iterative process to promote sustainable management of coastal zones. It covers the full cycle of information collection, planning (in its broadest sense), decision making, management and monitoring of implementation. ICZM uses the informed participation and co-operation of all stakeholders to assess the societal goals in a given coastal area, and take actions towards meeting these objectives.

ICZM seeks, over the long-term, to balance environmental, economic, social, cultural and recreational objectives, all within the limits set by natural dynamics.

"Integrated" in ICZM refers to the integration of objectives along with the integration of the many instruments required to meet these objectives. It means integration of all relevant policy areas, sectors, and levels of administration. It means integration of the terrestrial and marine components of the target territory, in both time and space.

Successful coastal zone management is based on the following principles:

1.3.1. A Broad "Holistic" Perspective (Thematic and Geographic)

Coastal zones and landscapes results are complex; they are influenced by a myriad of inter-related forces related to hydrological, geomorphologic, socio-economic, institutional and cultural systems. Successful planning and management of the coastal zone must eschew piecemeal decision making in favour of more strategic approaches looking at the bigger picture, including indirect and cumulative causes and effects; there is a need to accept the inalienable long-term interdependence between maintaining the integrity of natural and cultural systems, and the provision of economic and social options.

The close links (through both human and physical processes) between the marine and terrestrial components of the coastal zone imply that coastal zone management should always consider both the marine and terrestrial portions of the coastal zone, as well as the river basins draining into it. Since the extent of the zone over which the land and the sea interact is area specific, it is not appropriate to give a general *a priori* geographic definition of the "coastal zone". Indeed, frequently important driving forces or areas of impact are located in other administrative units and possibly far away from the coastline as many of the systems influencing the coastal zone (transportation networks, demographic flows, changes in terrestrial land use and landscape, pollution transport systems, etc) are physically dispersed. In the case of small islands, coastal zone management will normally be synonymous to planning and management of the entire island and its surrounding marine area.

1.3.2. A Long Term Perspective

The needs of both present and future generations must be considered concurrently and equally, ensuring that decisions respect the "precautionary principle", and do not foreclose options for the

future. Successful planning and management for the coastal zone must acknowledge the inherent uncertainty of the future, and must be set in an institutional framework that looks beyond the present political cycle.

1.3.3. Adaptive Management during a Gradual Process

Integrated planning and management is a process that develops and evolves over the course of years or decades. ICZM does not guarantee the immediate resolution of all coastal zone problems, but rather works towards and together with land planning to the integration of policies, programs and activities for the management of the coastal zone, as a basis for resolving or avoiding specific problems.

Good information provision is a basis to building understanding, which develops motivation and mutual trust, which in turn lead to co-operation and collaboration, and eventually shared responsibilities and true integration. The ICZM process requires monitoring so that it can be adjusted through adaptive management, as problems and knowledge evolve.

1.3.4. Reflect Local Specificity

There is a wide diversity among the coastal zones of Europe, including variations in physical, ecological, social, cultural, institutional and economic characteristics. ICZM must be rooted in a thorough understanding of the specific characteristics of the area in question, including an appreciation of the specific pressures and driving forces that are influencing its dynamics. Specific solutions to coastal zone problems must address specific needs.

This principle also implies a need to ensure the collection of appropriate data and relevant information, including informal traditional knowledge, concerning both the terrestrial and marine components of the coastal zone in question and make them available to decision-makers.

1.3.5. Work with Natural Processes

The natural processes and dynamics of coastal systems are in continual, and sometimes sudden, flux. By working with these natural processes, rather than against them, and by respecting the limits (or ‘carrying capacity’) and dynamic imposed by natural processes, we make our activities more environmentally sustainable and more economically profitable in the long run.

1.3.6. Participatory Planning

Participatory planning works to incorporate the perspectives of all of the relevant stakeholders (including maritime interests, recreational users, and fishing communities) into the planning process. Collaborative involvement helps to ensure identification of real issues, harnesses local knowledge, and builds commitment and shared responsibility. It can reduce conflict among stakeholders and generate solutions that can be implemented. Extensive information campaigns may be necessary to convince certain stakeholders of their personal interest in participation. The time and effort involved in participatory planning should not be underestimated, and would be translated in a continuous process that may begin in the early years of education.

1.3.7. Support & Involvement of all Relevant Administrative Bodies

Administrative policies, programmes and plans (land use, energy, tourism, regional development, etc.) set the context for the management of coastal areas and their natural resources that belong and depend functionally to bigger landscape units integrating their hinterland territory. A strictly voluntary, non-governmental approach to ICZM will thus tend to run into serious limitations, particularly when the process moves into the implementation phase of consensual decisions.

While it is essential to engage local authorities from the start of the coastal zone management process, there is an equal need for commitment from all levels and sectors of administration.

Addressing the full set of problems in a coastal zone will often require a nested set of planning and management actions at different scales. The development of mutually supportive actions and linkages between levels and sectors of administration, and the co-ordination of their policy, is essential; there is a need to ensure that the various individual administrative, financial and legal instruments influencing the coastal zone are mutually compatible and coherent. The collaboration and involvement of different administrative bodies do not necessarily imply the need for new institutional structures, but rather the adoption of procedures or methods allowing the existing structures and institutions to cooperate.

1.3.8. Using a combination of tools

Coastal zone management requires the use of multiple tools, including law, economic instruments, voluntary agreements, information provision, technological solutions, research and education.

Regulations and economic interventions can be important tools for resolving conflicts between activities; however, the correct mix in a specific area will depend on the issues at hand and the institutional and cultural context. In all cases, however, coastal zone management should be the result of the coherence between legal instruments and administrative objectives, as well as between planning and management.

2. Project Background

2.1. The Atlantic Coast as a common space

Although some of the problems of the coastal zones are common to any coast in Europe, other problems are specific from concrete geographical areas. The similarities of certain areas are therefore less related to national borders than to the regional sea that bathes the coast. The regions facing the Atlantic Ocean can put together their knowledge and experience to solve similar issues.

2.2. The need for an Atlantic Vision on ICZM

The western coastal fringe of the European Union, the Atlantic coast extends through more than 20° of latitude, over 3000km, from Gibraltar in the south to Shetland in the north. Despite the diversity and contrasts within this vast geographic range, the regions of the Atlantic coast share a number of unifying issues that deserve the common consideration given to coastal areas on Europe's other Regional Seas - the Baltic, the North Sea and Mediterranean.

There are three reasons for the Union's interest in the fate of the coastal zones:

The fact that problems are of a European dimension and cannot be solved by the Member States separately (common natural and cultural heritage, transfers of pollutants and sediments, tourist flows, maritime safety);

The influence of the European Union's policies and action on the development of the coastal zones (regional, transport, fisheries, environment, agriculture, energy and industrial policy);

The need for an exchange of experience and know-how in a field where successes are still rare and where there is substantial public and political demand for the conservation of the coastal zones and their sustainable development.

This need for action has been taken into account in the European environmental, regional and fisheries policies:

The fifth Community program of policy and action in relation to the environment and sustainable development provides for an initiative in response to the Council's request for an overall Community strategy on integrated coastal zone management;

Work on the European aspects of regional planning, in particular the Commission Communication "Europe 2000+" and the preparation of a European Spatial Development Perspective, confirmed the need to devote particular attention to pressures on the fragile environment of coastal zones.

2.2.1. Coastal issues

At the interface between sea and land, life forms adapted to the special environmental conditions have evolved. The natural habitats of the shoreline are very varied but also very small in area, and have been shrinking fast for several decades.

Eight of the forty priority habitats listed in the Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora are coastal. Approximately a third of the Union's wetlands are located on the coast, as well as more than thirty per cent of the Special Protection Areas designated under the Directive on the Conservation of Wild Birds. Coastal ecosystems tend to have very high biological productivity due to their interface character. The reproduction and nursery grounds of most fish and shellfish species of economic value are in the coastal strip, and a significant proportion of the catch of these species comes from this area, which accounts for almost half of the jobs in the fisheries sector.

The quality of coastal waters is a major cause of concern. The two most spectacular phenomena in recent years, oil slicks and algal blooms, are illustrations of the fact that coastal communities frequently suffer the consequences of events of developments occurring inland or offshore and therefore beyond their control. Human settlement of the coastal zones and utilization of their natural

resources since early times have created unique and balanced forms of rural and urban landscapes, reflecting cultures centered on trade and largely oriented towards the external world. Unfortunately, urbanization and uniform agricultural and industrial developments have considerably reduced the biological diversity and cultural distinctness of the landscapes in most parts of Europe.

These known problems are likely to be compounded in future as a result of the general trend in environmental and socioeconomic conditions. Recent research shows that climate change could involve a rise in sea level of several millimetres per year, and an increase in the frequency and intensity of coastal storms. Depending on where they occur, the combined effects of these two phenomena will have serious repercussions, such as major floods. At the same time, the expected growth, both in urban areas – in the European Coastal Area is taking place in large Metropolitan Areas – and in tourism in particular, will increase human pressure on natural, rural and urban environments.

A wide range of human activities take place in the coastal zones (industry, tourism, fishing, aquaculture, etc). They are not necessarily more diverse than in other areas. When these activities occur together on the narrow coastal strip, problems tend to arise, creating conflicts between activities and the goal of conservation of the habitats.

Features on the coastal area deserving common consideration were categorized as:

Exposure

The exposure to the Atlantic with its high oceanic energy and tidal range, creates common circumstances and challenges for coastal management not found elsewhere in EU. The impact of rising sea levels resulting from climate change in such a dynamic environment are compounded by issues such as increased storminess and wave height, habitat and species shift. Responses to these pressures will be common across the Atlantic area, but may significantly differ from the approach on the other Regional Seas.

Peripherality

The high concentration of regions eligible for objective 1 & 2 Structural Funds confirms the peripheral nature of the Areas coastal regions and their disproportionate dependence on economic sectors in decline such as rural economies of agriculture and fisheries, or on relatively low paying and seasonal tourism. Of the 20 European regions most dependent on fishing, 8 are located in the Atlantic Rim. The Atlantic coastal regions are still poorly integrated into the European road and rail networks of their commercial hinterland. They share common problems of maintaining competitiveness and achieving added value to their products.

Cultural identity

The Atlantic coast includes regions with a distinctive and linked identity reflected in language, landscape, architecture and culture. The Atlantic sea-ways have provided a broad corridor for the spread of knowledge and beliefs over several millennia. The great megalithic tombs, at their peak 5,000 years ago, represent one of the major points of the Atlantic culture. These ancient remains, the churches and other sites of early Christianity, distinctive maritime settlements and infrastructure, maritime wrecks and evidence of trading along the Atlantic Arc together with similar patterns of agriculture create a common, binding cultural landscape and identity. This common cultural heritage is still obvious today in the increasingly popular gatherings, from the very local feasts to international music, maritime festivals, and archaeological finds. The modern communities of the Atlantic coast share a vigorous and innovative culture embracing contemporary arts, architecture and water sports.

Marine and Coastal Resources

The sustainable exploitation of the resources of the Atlantic Ocean and their in-shore and on-shore impact are of common concern. The Atlantic coast contains the highest untapped potential in Europe for the exploitation of renewable energy, both wind and tidal. Seabed aggregates are of increasing interest as land based sources become exhausted; their exploitation raises issues of common interest. Coastal communities across the area face common problems from the drastic decline in fisheries and rural coastal economies, and there is an awareness of the need to find common solutions for the improved management of the resources, research and innovation efforts, and the mitigation of on-shore consequences. The questions of aquaculture in the rias, sea lochs and estuaries, involving other users, together with the maintenance of water quality and the importance of avoiding to damage the environment are issues of common concern that need to be addressed.

Demographics

As in other coastal areas of Europe, the Atlantic coastal regions are experiencing the classic phenomenon of movement to the coastal towns in parallel with a rural exodus and lack of economic base to sustain rural communities and landscapes. The coast is experiencing an over growth in population resulting from mitigation of the middle-aged and elderly from the metropolitan areas in the centre of Europe, accompanied by a loss in the younger economically active age groups.

Tourism and recreation

The majority of the coastal regions of the Atlantic Rim are heavily connected and sometimes dependent in tourism and recreation. Coastal tourism across the Atlantic Rim shares many common characteristics, patterns of development and concerns such as the decline of traditional resorts, the

growth of water sports and the drive for new forms of tourism and increased recreation. They have common problems related to the control of tourism development, the maintenance of environmental quality, diversifying and improving the tourism product, providing sustainable access to the undeveloped coast, and managing tourist traffic.

Natural Resources

The Atlantic waters between France, Ireland, Portugal, Spain and the UK, are one closely linked habitat. They contain for example a high diversity of whales and dolphins, with more than 20 species recorded, from harbour porpoises, Europe's smallest cetacean, to blue whales. The Atlantic coast also provides one of the main European bird migration corridors, critically dependent on the good management of habitats and guarantees each feeding and roosting area along the corridor.

Despite the distance from north to south of the Atlantic coast and the temperate Atlantic waters, common patterns of high precipitation and winds reduce climatic differences. Coastal habitats such as estuaries, salt marshes, dunes, beaches and cliffs, along with near-shore landscapes of exposed grazing land and moor, create a rich, common landscape and ecological identity.

Exposure and peripherality have combined to reduce development pressures reflected in the high number of designated Natural 2000 sites. The sustainable management of this environmental capital is of common and interdependent concern across the Atlantic Rim.

Water Quality

High sea and river water quality is one of the key strengths of the Atlantic coast compared to enclosed seas. Nevertheless the area has a number of distinctive problems relating to diffuse pollution and sedimentation namely related to the huge differences of amount and precipitation distribution between North and South. Maintaining water quality, particularly through the Waste Water, Bathing Water, Shellfish and Water Framework Directives will involve many shared issues and common practice linked to the integrated management of catchments with similar land use and climatic characteristics.

The dynamic nature of the Atlantic, combined with the increasing volumes of maritime traffic also make the Atlantic coast most vulnerable to maritime disaster and its resulting pollution. The high number and importance of common issues make a strong case for the consideration of the Atlantic as a single entity comparable to the coast of other Regional Seas. Sub-divisions to allow closer focus on issues may occur along the north-south axis, but, these should be defined within an overall spatial vision that recognizes the special and distinctive features of Europe's Atlantic coast.

Environmental degradation

This is a common concern across the Atlantic Arc and apparent for the terrestrial and marine resources of the coastal zones in this region. The concentration of population, demands for coastal resources, unsustainable development and lack of an integrated approach to spatial planning have contributed to environmental degradation that needs to be addressed to safeguard the full potential of the coastal zone for the environmental, economic, social and cultural well-being.

Fuel oil pollution caused by several ship accidents that have occurred in the area during the last decade is of special concern. The dramatic impact of the fuel oil spills from the tanker “Prestige” that affects wider coastal areas of some project partners like Galicia, Asturias, Aquitaine and Gironde has emphasized the need, in the project framework, of stronger co-operation and means to prevent such events and, if incidents occur, to handle eventualities of this nature..

2.3. State of the art of the ICZM in the Atlantic Coast

From 1996 to 1999 the European Commission’s Environmental, Fisheries and Regional Policies Offices developed a demonstration program on Integrated Coastal Zone Management. The program consisted of 35 pilot projects that were financed through TERRA and LIFE.

On the other hand, the European Environment Agency carried out studies on the environmental problems of seas and oceans and published reports on the matter, which include: Marine and Coastal Environment Annual Topic update 2000. As they are of a more general nature and related to the knowledge of the environmental problems that affect the European Atlantic coast, among other areas, reference to this research should be made.

Among the conclusions obtained from the study, the following are the most outstanding:

- Additional data is needed to cover the necessary information and make it more comprehensive and compatible between countries.
- Cause-effect relations should be established and clarified
- The development of strategies and the monitoring of themes to be covered have to be performed in a harmonious and standardized manner by European countries.

It is important to develop standardized methodologies in different European countries in order to improve the environmental conditions of the oceans.

With regard to the most specific perspective of the initiatives carried out over the last few years in Europe, it should be mentioned that the Demonstration Program promoted by the Commission was designed to:

- Provide specific technical information about the factors and mechanisms that either did or did not promote the sustainable management of coastal zones.
- Encourage a broad debate and exchange of information between the different representatives who are involved in the planning, management or use of European coastal zones.
- From the 35 projects, a series of analyses, studies and evaluations were obtained that inspired both the Commission's Communication and the Recommendation by the European Parliament and Council.
- From these documents it is inferred that although each coastal zone has different specific problems, they may be due to the same causes, including, among others:
- Existence of a lack of vision in coastal management, based on a very limited understanding of the process and the dynamics of the coast.
- Scientific research and data collection have been kept from the end users.
- In the formulation and application of solutions for coastal problems, the participation of stakeholders has not been appropriate.
- The sectorial policy and legislation have been inappropriate and not well coordinated, and have often been in opposition to the long-term interests of the sustainable management of coastal zones.
- The inflexible bureaucratic systems and the lack of coordination between the relevant administrative bodies have limited the creativity and local adaptability.
- Local initiatives for sustainable management of coasts have lacked adequate resources and the political support from high government levels.

To avoid this and to guarantee an effective application of many specific sectorial objectives on a Community level, it would be better to apply an integrated territorial approach. With this approach the three dimensions of sustainable development are protected (economic, environmental, social and cultural). In addition it recognizes that integrated solutions for specific problems can only be found and applied on a local and regional level; however the integration of local and regional policies is only possible if the high governmental levels offer an integrated legal and institutional context and if they adopt measures that permit local and regional actions.

Therefore, it is necessary to initiate actions that are going to gradually correct the problems that have been explained here. This is why this project has been established; it intends to tackle some of

the issues that affect the different territories along the Atlantic Arc coast, and to try to coordinate all the partners to carry out experiments that serve as good practices for each and every one of these territories.

It would not be viable to tackle all the problems that exist at the moment together, and for this reason, and as part of the same program a series of these problems (including those that cause the most concern for the project partners are going to be worked on.

Regarding Interreg II C, this Community Initiative was launched in recognition of the need for the Member States to get involved in a more operational way in co-operation on regional & spatial planning. The projects submitted for the Atlantic Arc touched particular elements that are also presented in the Atlantic Vision project such as the environmental issues, the coastal access or the managing of tourism pressure. The Atlantic Vision will take into account the results of these experiences but trying to integrate them into a common perspective following the principles of the ICZM.

3. Methodology of the project

The proposal for the “Integrated Coastal Zone Management: towards an Atlantic vision” project was elaborated by the DG Urbanism with the collaboration of the Land Development and Cooperation Centre (CeCodet)¹ of the University of Oviedo, and presented by the Land Promotion and Management Company S.A. (Sogepsa)² on behalf of the Government of the Principality of Asturias before the European Commission for its participation in the first phase of the first official announcement (until the 10th January 2003) of the aforesaid program.

This proposal was approved by the Program Monitoring Committee in a meeting on April 1st 2003, a decision taken following the existence of “a solid and geographically diverse partnership, having a territorial impact in the Atlantic Area in accordance with the programme objectives”.

The participating members of the action commit themselves to its realization on signing the Partnership Agreement; this document reached the Program International Secretariat by the November 1st (which lacked the signatures of Gironde and Lisbon’s representatives) for its

¹ Centro de Cooperación y Desarrollo Territorial

² Sociedad Mixta de Gestión y Promoción del Suelo S.A.

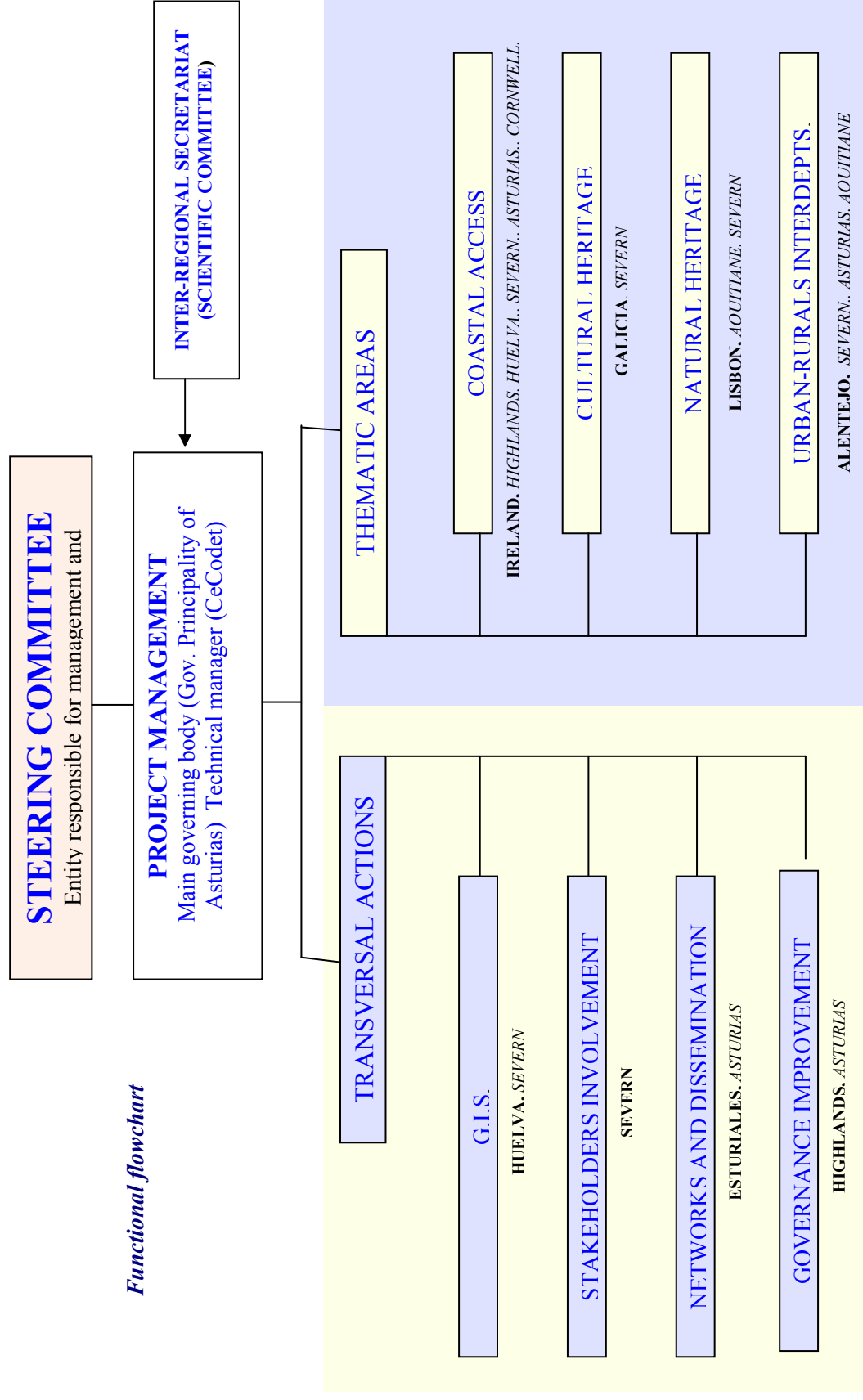
verification prior to the Letter of Intent being issued; this will certify the effective start-up of the project.

The Principality of Asturias, as the official body responsible for the project before the European Commission and under the protection stipulated in the second paragraph of the second clause of the Collaboration Agreement Framework between the Administration of the Principality of Asturias and the University of Oviedo, signed on September 23rd, 1996 (BOPA 14/10/1996), required the management and technical and administrative coordination of the project from the University of Oviedo and from the Land Development and Cooperation Centre in particular.

The commitment to CeCodet's participation as the project's management and coordination body will be formalized in the Protocol soon to be signed.

The project has been conceived based on the idea of contributing to the formation of a transnational vision of the Integrated Coastal Zone Management for the Atlantic Area. The partners will test together the implementation of ICZM, particularly in the context of spatial planning and achieving sustainable development, and in promoting its environmental, social and economic well being. The results from the project will contribute towards the development of national strategies for the ICZM while implementing specific aspects of the ICZM, in accordance with the EP and Council Recommendation of May 30th 2002.

3.1. Organizational diagram



3.2. Steering Committee

Description

The *Steering Committee* is a management and decision element of the project.

Composition

The Committee is made up of the coordinator of each participating group in the project, where the Lead Partner contributes as an extra representative in technical and administrative secretarial functions (with voice but no vote in final decisions).

The *Steering Committee* is composed of the following people who are the representatives of the different regional members:

Tasks to fulfil

The Committee will be in charge (always with the support of the *Technical Secretariat*) of all tasks relevant to the definition of action policies, decision taking, project follow-up and evaluation of the results. Its control will extend to technical aspects of the project as well as to the economic-financing ones too. In general, it will be directly responsible for the following tasks:

Revision and if necessary, approval of working plans (in its material and temporal distribution) proposed by the coordinators of different thematic parties or by support entities (*Technical Secretariat and Inter-regional Secretariat*).

Control of project execution basing itself on the information provided periodically by members after being screened by the *Technical Secretariat* in coordination with the *Inter-regional Secretariat*.

Receipt and assessment of results. Discussion and decision making with regards to the dissemination of the results and participation of interested parties.

Overall responsibility for the initialisation of the project before the Program Secretariat and before the Commission. Representative functions of all the members in decision making and communication methods.

In particular, in the initial stages of the project running, the following specific activities must be carried out:

Revision of the proposed initial application to the Commission in order to propose possible improvements.

A study of the project management structure initially proposed and ratification. Proposal for a possible extension to working parties.

Control of initial activity of working parties to ensure a good start-up of the project.

Definition and agreement of general lines to follow by members in the economical and accounting area.

Calendar planning of activities and dates and places to hold following general meetings.

Meetings

The *Steering Committee* will meet in sessions separately before each General Meeting in order to facilitate discussion and to adopt agreements such as determining the course of action to follow in open sessions.

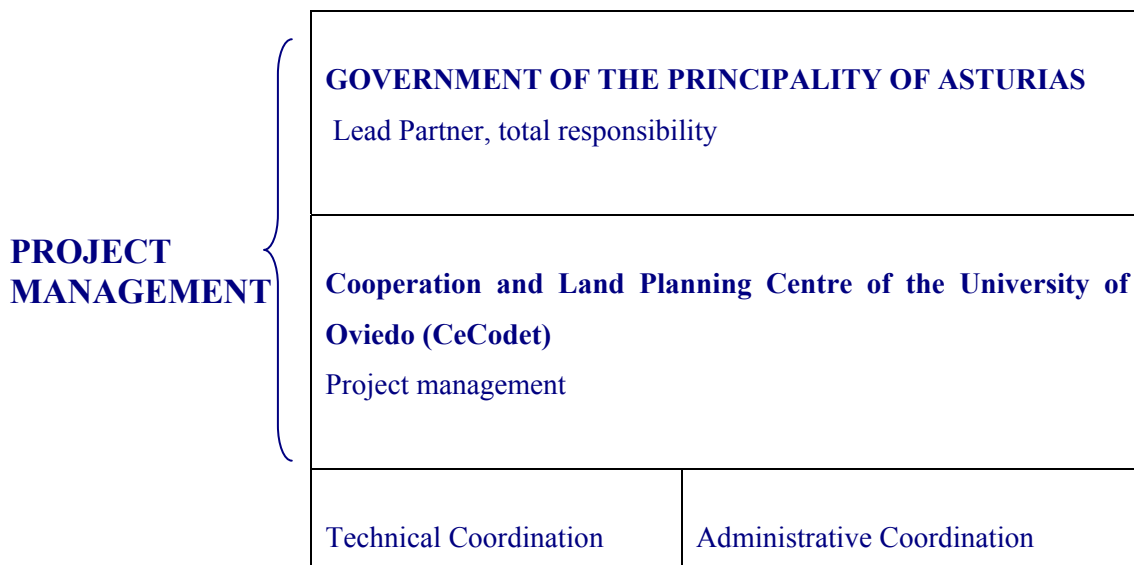
Project Management Team.

Description

The project *Management Team*, dependent on the Lead Partner, is responsible for all of its management.

Composition

The Cooperation and Territorial Development Centre of the University of Oviedo (CeCodet), as the project's Lead Partner representative, is in charge of the scientific and administrative management, adopting the condition of Project manager and secretariat under the collaboration agreement framework on 19/11/2003



Tasks to fulfil

- a) Contact with the 10 members and with the project leader; technical support and information body for members, including periodic contact with the Madrid and Poitiers Interreg offices.
- b) Creation and maintenance of a management system of specific documentation for the project. This will hold all the necessary material for a correct functioning of the technical and administrative coordination.
- c) Elaboration of technical documentation for the project provided by various members.
- d) Preparation, planning and organisation of meetings and actions required, acting as a logistic support for members as well for the project's Lead Partner.
- e) Translation of documents for members of different nationalities so as to ease the understanding. These translations will mainly be in English and Spanish, although French may also be included if considered necessary for the project's progress.
- f) Coordination and transfer of all economic documentation between members and the economic management entity.

4. Actions involved

The fundamental idea behind the project is that each of the Atlantic territories that implement the project assume and specialize in one of the multiple aspects including integrated coastal zone management. There have been 4 aspects of the ICZM that have been selected as thematic actions and 3 other aspects to be developed as cross-cutting actions. The project may be compared to an 'umbrella', whereby the individual thematic action areas are co-ordinated and mutually supportive. These are the following:

- Coastal Access,
- Cultural Heritage,
- Natural and Environmental Heritage,
- Urban-rural interdependencies.

Asturias is to provide overall project leadership and different regions will lead each of the thematic action areas. The participants chose the thematic actions in which they would like to participate. For each of the thematic actions a pilot project will be developed by the participants. Results from the 4 thematic actions will be put together and incorporated into the Atlantic Vision.

Key to the successful application of the ICZM principles would be the cross-cutting actions including and involving all project partners and regions. This would give coherence to the whole project. The specific actions will be:

- The co-ordination of information and access to it via GIS (cartography),
- Stakeholder involvement,
- Simplification and improvement of governance
- Dissemination of the results of the project and a horizontal work package in the project

Overall Co-ordination



THEMATIC AREAS

Coastal Access Cultural Heritage Natural Heritage Urban/Rural Interdependencies

CROSS – CUTTING ACTIONS

GIS (Geographic Information Systems)

Stakeholder Involvement

Simplification & improvement of governance

Dissemination



Through the 4 thematic actions and the 3 cross-cutting actions selected by the partners, a wide range of issues will be addressed:

4.1. Coastal Access

With regard to coastal access, measures will be implemented covering the following aspects:

- The identification of communications between the coastal and the inland areas,
- The evaluation of the efficiency of coastal access networks and the analysis of the impact of the disorderly use of coasts,
- The logical construction of systems used in a sustainable manner on the coastline are favoured,
- Setting up management programs for unique locations (estuaries, swamp areas, dunar systems).

4.2. Cultural Heritage

The cultural heritage is subject to a variety of actions, all of them are aimed at increasing the value of elements of interest and at trying to fit them into sustainable development models. In this respect it is worth mentioning the following sections:

- Identification of the relationship between natural and cultural heritage,
- Development of educational and interpretative material,
- Production of cultural and natural itineraries along the coast.

4.3. Natural Heritage

The natural and environmental heritage action also aims to provide added value to the existing resources. Some ideas to be developed are:

- An analysis of the contribution of natural protected areas to the social-economic development in the surrounding area.
- The planning of the coastal strip, identifying guidelines for land use, fluvial flows, estuaries and swamps as well as beach and cliff areas.
- The protection of species associated to the coast and the recuperation of degraded spaces.
- The stocktaking of the natural and environmental coastal resources.

4.4. Urban rural interdependences

The last thematic action refers to the inter-dependency between rural and urban economies. The change in the social and economic structure of the Atlantic area territories requires an analysis of different issues, all of which are related to the activities that were traditionally carried out in the rural environment. Likewise, the repercussion on the coast is examined as well as the potential of the new aspects of the productive offering and those that maintain the relevant ecological values. The actions to be developed within the project's framework are linked to the needs for:

- Updating the framework of traditional activities adapted to the new market conditions and to the social value of the environment identifying the ecosystems and essential species for traditional activities.
- Providing a boost in the economic exploitation of activities associated to products required by the urban functions and consumption.
- Guidance on the use of the territory for tourism with sustainability criteria.
- Assessment of the efficiency of the present land planning and landscape planning tools.

4.5. Geographical information systems

In order to tackle such a wide, diverse and complex area, in spite of the common elements that encourage cooperation between partners, it is essential to have the tools available that enable us to link alphanumeric information and topological references.

The great technical progress of geographical information systems and the capacity and the readiness of the different regions to work together in this respect, means that it would be advisable to consider the construction of a GIS (Geographical Information System) for the Atlantic coast, initially conceived for the areas that take part in this project. This means that enquiries have to be made into existing GIS developments, basic common references have to be established, a logical system has to be determined on which the GIS can be developed, procedures have to be defined to obtain information and guidelines have to be set up to access data and to coordinate any implementation of the aspects that can be integrated in the GIS.

4.6. Stakeholder involvement

Within the transversal axis for action, the stakeholder involvement gains great importance. It will be necessary to provide the mechanisms to favour a smooth dialogue among the different administrative levels and with the NGOs, associations and citizens. Above all, the idea is to make the local communities aware of the possibilities to cooperate with other areas in the Atlantic Arc and promote the opportunity of forming partnerships. This has to strengthen the local authorities' competences.

4.7. Governance

It will be studied how to improve the governance and the share of responsibilities between the different levels of the administration involved in achieving a sustainable and integrated management of the Atlantic Coasts.

4.8. Dissemination

Finally, the project partners are willing to share their experiences with the EU Institutions, with the States and with other regions from the Atlantic Area and other regional seas, including existing networks of coastal management. Therefore, the dissemination work package will also have a decisive role with activities such as:

- Informing the EU institutions about issues related to the Atlantic coast,
- Recommending action initiatives based on experiences and exchange management experiences,
- Drafting of a report summarizing acquired experiences,
- Broadcasting of experiences by means of publications,
- Organization of scientific seminars,
- Production of combined educational and interpretative material,
- Creation of a WEB page,
- Development of a relation with other ICZM initiatives.

5. Project objectives

The main objective of the project to be reached is to stimulate a healthy and sustainable development of coastal areas from an environmental, social and economical standpoint via integrated spatial planning and the implementation of an efficient management. The project collaborators cooperate to achieve the final goal: the realisation of the recommendations to produce a common vision of Integrated Coastal Zones Management in the Atlantic Area. There has been a need for such a vision for the Atlantic Coast in comparison with other zones (North Sea, Baltic Sea, and the Mediterranean Sea) where a homogenous approach to the problem already exists.

Despite the diversity and contrast within this vast geographical zone, the Atlantic coast regions share a large number of common aspects which should be considered as a whole. The regions on the Atlantic coast can combine their knowledge and experience in order to resolve similar problems. A common vision regarding the ICZM for the Atlantic Area will help to reinforce specific characteristics of this area, and will serve as a basis for the development of national strategies for the ICZM and will ease future actions by the States. The project will reveal regional specificities and the great diversity of the Atlantic coast from a general standpoint, which will increase the scientific basis for future actions, by identifying and involving different interested parties. The need to claim for unity of political officers of local, regional and European authorities as well as other interested parties whose activities impact coastal regions is a fundamental aspect of this integrated strategy.

The identification of an Atlantic vision for ICZM is quite in line with the European Spatial Development Perspective (EDSP), the Commission for Communication to the European Council and Parliament regarding integrated coastal zone management relevant to the implementation of the ICZM strategy in Europe.

A common vision for the ICZM will be both cause and effect for long-term spatial planning and will facilitate the sustainable management of the economic activities and the natural resources of this zone. It will also provide a coherent framework for coastal zone initiatives that link different sectors working at the coast so there is both horizontal and vertical integration of ideas and actions.

Stakeholder

- Outcome of the Integrated Coastal Zone Management Best Practice

- To keep on influencing and encouraging the participation of local communities as well as people and entities with the capacity to influence the improvement of the integral management of the coast.

6. Conceptual model

Once the background, objectives, philosophy, methodology and structure of the project are established, the results of the work which was carried out are presented.

First, the reports of the thematic and cross-cutting actions. All of them follow a similar structure:

- a) A brief presentation of the issue and how it was tackled.
- b) Background and issues.
- c) Description of each project, including their conclusions.
- d) As a resume, conclusions are drawn up and common recommendations regarding each thematic and cross-cutting action are made.

The report concludes with a chapter on general recommendations, resulting from various work axes, obtained from the partners ‘contributions to the thematic and cross-cutting actions’, as well as a general synthesis of the project



Coastal Access

6.1. Coastal Access

The coastline, and in particular its estuaries, has long been a prime location for human settlement. Along with human settlement, however has come great pressure from industry, pollution, harbours, land reclamation and recreational demand. On the other hand, the sheltered nature of many estuaries, together with a range of habitat types, has resulted in them being of considerable wildlife value.

This area of the project aims at implementing a public coastal access program for the Atlantic coastline by improving and creating public access to the coastal area.

In considering development proposals in or adjacent to the coast, attention will be paid to the retention of existing public accesses and coastal walkways. In providing access to the coastline, proposals should only be considered where there are no adverse impact on any areas of nature conservation, geological or landscape value or the man-made heritage.

The development of strategies for the maintenance and enhancement and creation of public access to the coastal zone need to be sensitive to issues such as:

- Increasing tourism/ recreation numbers.
- Increasing leisure activities on the coast.
- Anthropomorphic impact on protected habitats.
- Threats to ecology and fragility of coastal ecosystems.
- Development pressure and carrying capacity.
- Infrastructure associated with providing physical access.
- User conflicts.

Coastal access means managing the coastal zone, the control of access, through management plans of the coastal zone.

6.1.1. Coastal access issues

Coastal development

Development pressure on the coastal area continues as a result of social and economic driving forces such as urban expansion, retirement, second homes and the tourism industry. For example, coastal tourism has led to an increase in the number of marinas, golf courses and residential buildings near the coast.

Coastal Erosion and Flooding

It is now recognized that the regional impact of climate change are becoming more severe (IPCC, 2001). Climate studies in CMRC and the Department of Geography, University College Cork, indicate that increased impact from storminess are likely to be significant in Ireland. If sea level rises in tandem with greater and more frequent storms, coastal flooding and erosion problems will become more exacerbated in vulnerable coastal areas (Devoy, 2000)

Tourism and Recreational Use

Coastal tourism depends on the quality and diversity of the coastal environment; increase in tourist numbers have proved to threaten areas of high ecological and resource value in our coastal marine environment. Furthermore, tax relief on property investment schemes aimed at generating economic activity in seaside resorts (section 48, in the case of Ireland), has resulted in ad hoc development without significantly boosting revenues in coastal locations.

6.1.2 Coastal access in the European Union

Public Rights of way

Many traditional routes to the shore cross privately owned land and have acquired the status of rights of way. Some of these have legal protection (termed a ‘public’ right of way in UK and Irish law), and the right of way is marked on deed maps.

Today rights of way are generally under threat and particularly so in the coastal zone where coastal property has become increasingly sought after and therefore more valuable. The result of this trend is that members of the public are often denied access to the shore across private property.

Environmental damage caused by trampling and unwise parking

Trampling of dune vegetation occurs mainly because pedestrians and vehicles tend to take the shortest route to the beach. The main species present in European Dune systems is marram grass (*Ammophila arenaria*). Marram is a tough species with remarkable adaptations to its harsh sand dune environment, but its Achilles heel is its vulnerability to trampling.

The creation of paths to traverse the dunes causes vegetation to die back and areas of bare sand are created. Strong winds, and in the case of frontal dunes, storm waves, can attack the areas of exposed loose sand. The paths erode into gullies and, in time, the gullies may develop into substantial blowouts where the entire vegetation cover has been destroyed.

Access to information

The lack of access to coastal information and data is one of the primary factors that impede the progress of integrated coastal zone management.

The Marine Irish Digital Atlas (MIDA) aims at meeting these needs by developing an internet-based atlas that provides a straightforward primary means to access and view Irish coastal information using maps, text and imagery. The atlas is centered on a web GIS system, which enables users to visualize and query spatial data from a wide variety of organizations across Ireland. There is a need to agree on common methods of collecting statistics and a common definition of the coastal area throughout Europe to allow meaningful comparisons to be made.

Interpretation

Providing information awareness tools to the public such as visitor panels, leaflets, displays on site.

6.1.3. Objectives

Towards an integrated and common management

- Identification of sustainable communication links between the coastal and the inland areas.
- Evaluation of the sustainability and efficiency of existing coastal access networks and analysis of the impact of the disorderly use of coasts.
- Logical construction of systems used in a sustainable manner on the coastline,
- Spatial planning of coastal routes, networks and beaches.
- Setting up action/management plans and programs for locations that are representative of the Atlantic coast (e.g. estuaries, swap areas, dune systems, and cliffs).

- Implementation of concrete and innovative actions to test and promote the application of the ICZM policy on the ground.
- Use of interpretation associated with coastal access to promote awareness and understanding of the local, regional and Atlantic context, and particularly promoting the environment, social and economic well-being.

Exchange of good practices

- **Development of sustainable coastal access networks and coastal interpretation Nasc-Ireland, Severn and Asturias**

This action addresses the need for sustainable routes and networks along and through the coastal zone and between regions. It would enhance the creation of sustainable walking, cycling and other networks through special management and action plans and pilot projects. An integral part of this will promote awareness and understanding of the natural and cultural heritage, as well as promoting wider Atlantic context and local economy.

- **Beach Management Plans (Asturias, NASC-Ireland, Aquitaine)**

Setting up of special measures, which help promote a more sustainable use of the beaches, by preserving the environment and considering the conditions of special sites.

Improvement of local management

a) Aquitaine

The following are principal actions of the Aquitaine Coast Observatory working towards an improvement of the local management:

- **Expertise** - Expertise can be requested by local councils or Observatory's partners. Technical institutions (BRGM, ONF) and scientific experts can deliver a technical and neutral opinion about the elaboration of a coastal management project or a local erosion problem.
- **Communication**- The main partners of the Aquitaine coast Observatory have created an editorial committee to organize the communication action. Two actions are carried out: a website (littoral.aquitaine.fr) and a newsletter (Lettre de l'Observatoire de la Cote Aquitaine) edited between 2 and 4 times a year with 1000 copies and online on the

website. The objective of the communication is to release both the results and actions of the observatory.

- **GIS** - A GIS has been developed to collect, archive and analyze all pertinent geographical information about the Aquitaine coastline. It also allows the dissemination of data to the main partners thanks to a metadata catalogue.

b) Asturias

The following actions were undertaken by the Government of the Principality of Asturias to improve local management:

- Local Authorities have been recently entitled by the Regional Assembly to draw up their own local development plans. But the regional government keeps statutory powers on planning for coastal areas, regarded as a territory of regional significance. These powers are exerted via the Asturias Coastal Zone Protection Plan (POLA)
- In order to put the POLA into practice, local plans have been drawn up on specific coastal areas such as crowded beaches, places of natural interest, threatened ecosystems, etc. Agreements are signed by the local authorities and the regional government to establish targets, measures and procedures.

c) Severn Estuary partnership

The following actions were undertaken by the Severn Estuary Partnership:

- **Local and Strategic stakeholder access forum** - Estuary wide access forum has been set up, with three meetings held in 2004 and 2005. In the four project areas regular meetings were held with existing stakeholder groups, e.g. at the community and parish level.
- **Participation in workshops and conferences**- Organized by the ICZM project theme leader. Sharing expertise, information and learning as well as translating principles agreed with Atlantic partners who are addressing issues related to the spatial planning and implementation of sustainable access.
- **Website** - Used to promote the Severn and an understanding of its local, regional, trans-regional and trans-Atlantic Arc perspective, including issues relating to spatial planning, including key landmarks, land uses and businesses, natural and cultural heritage.

d) NASC

- **ICZM Stakeholder Involvement, Clew Bay Co. Mayo** - Seminars and workshops entitled ‘Clew Bay Coastal Zone Management - Responsibility towards consensus’ was held in October 2004. People from the Clew Bay region attended the workshop representing the various sectorial groups to highlight their issues and concerns through the ‘wishing wall’ and discussing period. The wishing wall covered six areas namely: Tourism & leisure; aquaculture; fisheries; community groups/services & the islands; heritage and culture.
- **Appointment of Development Officer** - Assigned to work on various projects within Donegal County Councils Marine and Water Leisure Programme. The Development Officers work involves assisting with the preparation of feasibility studies and development proposals for various marine and water leisure projects, including the development of a coastal research centre.
- **Integrated Pilot Programme in Beach management** - Donegal County Council’s Marine and Water Leisure Program, in partnership with Limeade Borough Council and the University of Ulster’s Coastal research has initiated this pilot project to develop a beach management strategy that can be tailored to any beach anywhere. If this model proves successful, proposals will be made to the Council for similar management arrangements at other beaches in the county.
- **Coastal research centre** - The establishment of a cross-border, Coastal research and Interpretative centre is being initiated. The proposed facility would have combined functions in commerce, public education and marine research in support of coastal management.
- **Effects of Future Sea Level rise in NASC Region** - The main aim of this project is to assess the effects of future sea level rise on the NASC region.

6.1.4. Development of sustainable coastal access networks and coastal interpretation. Region d'Aquitaine

a) Description of the working area

Coastal erosion is the encroachment upon the land by the sea and is measured by averaging over a period, which is long enough, to eliminate the impacts of weather, storm events and local sediment dynamics.

Coastal erosion results in three different types of impacts (or risks):

- Loss of land with economical, societal or ecological value
- Destruction of natural defenses (usually a dune system) as a result of a single storm event, which is turn results in flooding of the hinterland.
- Undermining of artificial sea defenses, potentially also leading to flood risk.
-

Natural environment

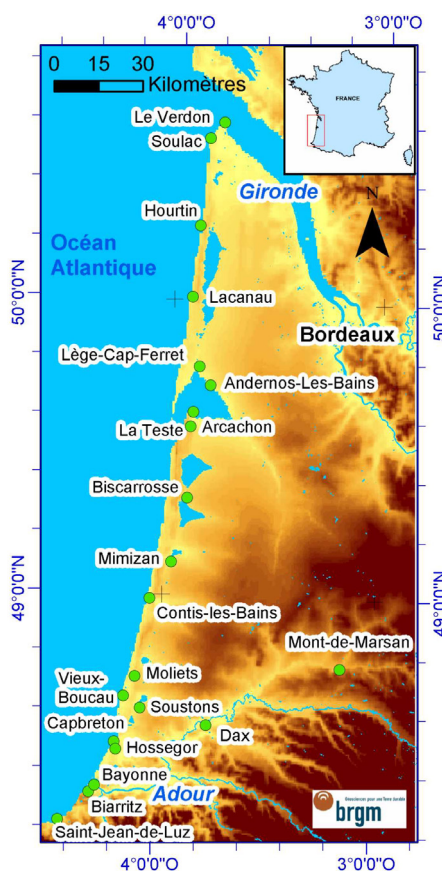


Figure 1. Morphology of the coast

The Aquitaine basin is located in the Southwest of France, and forms a vast triangular basin surrounded to the north-east by the hercynian terrains of the Massif Armoricaïn and the Massif Central, which join with the Pyrenees to the south through the Montagne Noire. On a geological basis, Aquitaine is a coastal plain composed of quaternary sediment.

Morphology of the coast

1) Along the Atlantic Ocean, the 230 km-long sandy coast is limited to the south by the Adour River and to the north by the mouth of the Gironde estuary issued from the junction between the Garonne and Dordogne rivers, which drain respectively the Massif Central Mountains, and the Pyrenees. The only interruption in this linear coast, which is oriented south to north, comes from the presence of the Arcachon lagoon.

The main geological coastal formations of the sandy coast are sand dunes. The sand granularity is medium to fine well sorted. The continental shelf forms a wide plateau of the "depositional type".

Along the South of the littoral, geological formations are varied, from the Trias formation of gypsum to the actual sand dunes.

Physical environment

The Aquitaine Basin is under the influence of the temperate oceanic climate characteristic of middle latitude coasts adjacent to the Atlantic Ocean. The regime is characterized by frequent and prolonged rainfall of relatively low intensity. The maximum rainfall occurs in autumn during which the polar front descends to the middle latitudes, and the perturbations are directly centered toward France; the minimum rainfall occurs in summer.

The tidal range varies from 2m to 5.5m between neap and spring periods. The tidal waves propagate from the south to the north along the coast.

The mean annual significant wave's height in Biscarrosse (SW of Arcachon lagoon) is 1.4m and the mean annual period is 6.5s, associated with long distance swells travelling mainly from N-NW directions.

Erosion type

In Aquitaine, the erosion is due to the global trend of detritus sediments lack along the coast (decreasing river inputs) and to the action of dynamics agents (waves activities, aeolian transport, tidal currents).

Under the dominant waves, the littoral drift is mainly southward oriented and has been estimated roughly around 500 000m³/m/y, depending on the authors. In the North of the Médoc, south of the Gironde estuary, the littoral drift is oriented toward the North-east.

From 1966 to 1998, the evolution of the coastline has been calculated along the sandy coast showing sedimentary accretion, erosion, and stable areas:

Trend	1825-1966 (%)	1966-1998 (%)
Offshore	49	30
Onshore	51	70

Table 1: General tendencies of long term evolution of the Aquitaine sandy coast

The table 1 resumes the general trends of the Aquitaine coast evolution from 1825 to 1998 in % of coastline, showing that erosion (onshore movement) dominates from 1966 to 1998. But if we discard low significant values (movement < ± 20 m for 1825-1966 and < ± 10 m for 1966-1998)

then the “stable” areas represent 14% of the total coastline during the first period and 21% during the second.

The mean aeolian sand transport occurring on Aquitaine’s beaches is estimated by Pedreros (2001) between 6 and 7.4m³/m/y. These volumes are mainly transported from the beach and deposited at the limit between the beach and the dune.

Along the rocky coast (Basque Country in the South of Aquitaine), the mean coastline erosion is estimated around 30 cm per year (± 10 cm/y) over the period 1829-2000 (171 years) with a maximum of 80 cm/year in the Erromardie Baye where rocky cliffs are altered.

Social environment

In Aquitaine, 420 000 habitants are spread out around 105 city councils along the coast or in the proximal neighbor. The coastal population is distributed by environment:

- Basque country: 42%
- Arcachon lagon: 25%
- South of Landes: 16%
- North of Landes: 9%
- Médoc (North of Gironde): 8%

The population annual growth rate exceeds 1% and is twice larger than the Aquitaine Region’s one. The demographic dynamic has generated an important housing development. The number of principal houses has drastically increased between 1975 and 1999 (2% annually). Meanwhile, the growth rate of secondary houses for the same period is 3.5%.

The increasing rate of the active population along the coast is twice higher than in the Aquitaine Region with an annual progression of 1.4% during the 1990’s.

147 000 people are wage earners and residents along the coast, with only 142 000 jobs offered, which translate therefore in a deficit of activity.

Economic environment

In 1999, the tertiary sector employs three quarters of the active population, which is 4 points bigger than in the Aquitaine Region. Seasonal work is notably important in the tourism activity (18 000 salaried people in July and August). The aeronautic, wood industry and food industry are mainly centered over the Landes coast and represent 25% of the work offered. Primary sector corresponds to only 4% of the coast activities, which is twice smaller than in the region. Maritime activities (fishing, aquaculture, transport, construction...) represent only 3% of the coastal activity.

b) Methodology

Phases

- 2000-2004
 - Sandy and rocky coast: data gathering and analysis concerning geology, oceanography, geotechnic, and geomorphology
 - Communication: website and newsletter
 - SIG: collect, archive, analysis, metadata, diffusion
 - Expertise; around 20 delivered. Also specific study concerning the pollution from the “Prestige” shipwreck.
- 2005-2007
 - Same actions including 2 other main actions: Arcachon Lagoon investigation (hydrology, morphology, etc...) and the cleaning operation of any pollutant on beaches.

Data collection

Main data of the Aquitaine Coast Observatory are directly collected from field observations (field surveys), but can also be provided by external partners and external databases (such as the EuroSION project).

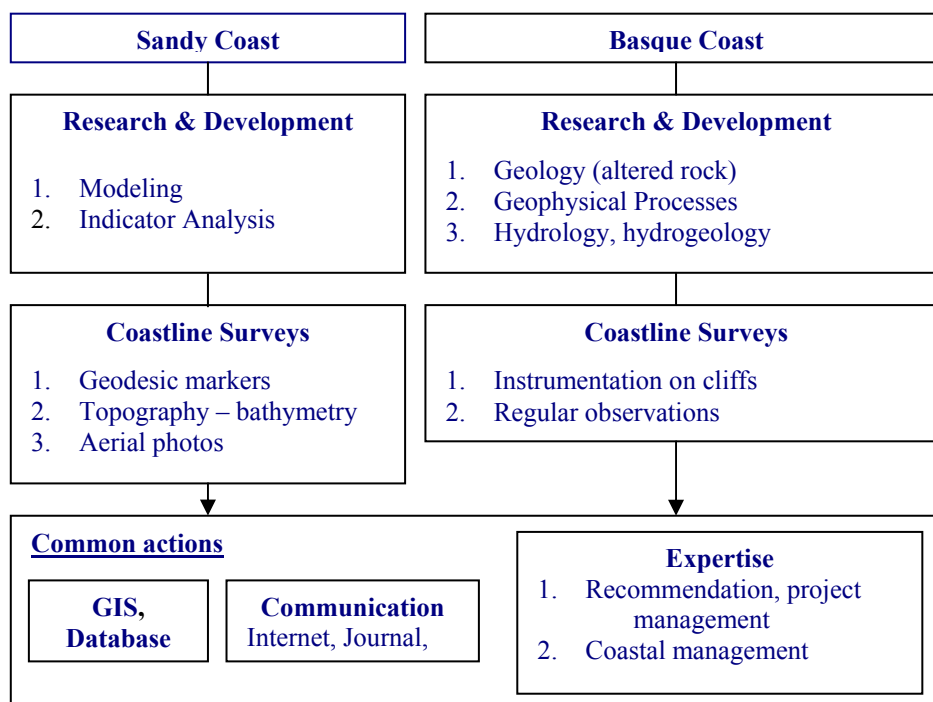


Figure 2. Methodology

Regular field surveys are performed to measure coastline movements (topography, geomorphology of beaches and dunes), and specific observations are made along the rocky coast (geology, hydrology, geotechnical data of cliff collapse)

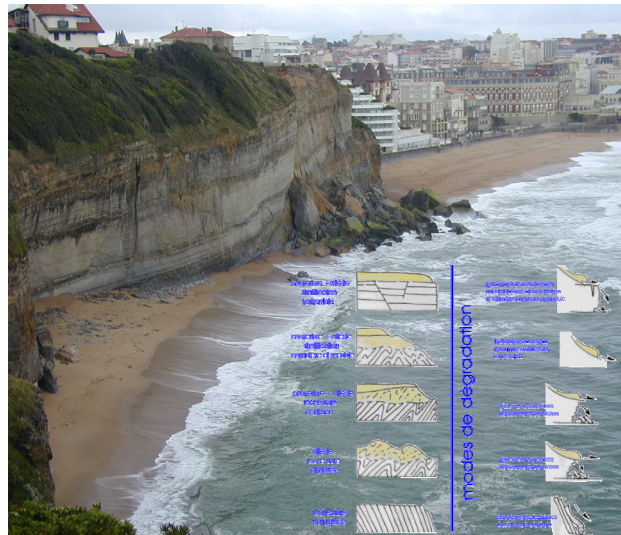


Figure 3. Example of cliff collapse along the Basque Coast, Biarritz

The coastal regional monitoring consists in the following data types:

- Geology: mainly along the rocky coast, maps, field observations...
- Geotechnic: mainly along the rocky coast, determination of cliff collapse parameters (permanent electric captors along an experimental site)

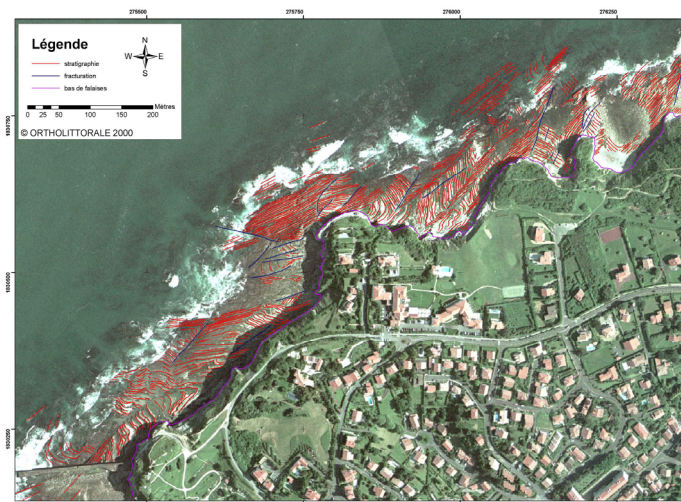


Figure 4. Example of geological investigation along the Basque Coast: structures, stratigraphy, alteration cartography

- Hydrology: mainly along the rocky coast, permanent waters levels measures along an experimental site

- Topographic: D-GPS measures of the coastline evolution beach profiles
- Geomorphologic: regular measures of dune and beach types, erosion events using GPS, aerial photo analysis, remote sensing
- Hydrodynamic: wave or current measurements
- Weather: data collection

All geographical data are included in the GIS and analyzed. Statistical information is produced (erosion rate, etc).

c) Results and proposals

The Aquitaine Coast Observatory is a specific tool designed for decision-makers of coastal management, mainly concerned by coastal erosion.

Direct applications of the data analysis are made through the expertise applied to the management projects. Indicators of coastline evolution allow taking into account the erosion process in the decision-making.

d) Problems and solutions

In Aquitaine, coastal management regarding erosion protection is decided locally, in particular by municipalities. Most of the funding is provided by the government, the Aquitaine Region or by the Departments. Absence of orientations for coastal management in the mid-term period is a problem. The result is for example the non-consideration of the effective cost of protection works against erosion compared to the effective value of items to be preserved. At the present time, the solution comes from the technical expertise given by the Aquitaine Coast Observatory. In the near future, the Aquitaine Coast GIP (public interest group) – public structure, which represents the majority of decision makers, should give more effective orientations and policies.

Sub action	Issues/problems	Solutions
<p>1. Expertise –</p>	<ul style="list-style-type: none"> ➤ In Aquitaine, coastal management concerning erosion protection is decided locally, in particular by municipalities. ➤ Most of the funding is provided by the government, the Aquitaine Region or by the Departments. ➤ The result of absence of orientations for coastal management in the mid-term is the non-consideration of the effective cost of protection works against erosion compared to the effective value of items to be preserved. 	<ul style="list-style-type: none"> ➤ Technical expertise provided by the Aquitaine Observatory can be requested by local councils or Observatory's partners. ➤ Aquitaine Coast GIP (public interest group), representing the majority decision makers, should give more effective orientation and policies.
<p>2. Communication</p>	<ul style="list-style-type: none"> ➤ The lack of access to coastal information and data is one of the primary factors that impede the progress of ICZM. ➤ All information is available in French only ➤ All information is available in French only 	<p>The main partners of the Aquitaine Coast Observatory have created and editorial committee to organize the communication action</p> <ul style="list-style-type: none"> ➤ Information available in others languages
<p>2.1. Website</p>	<ul style="list-style-type: none"> ➤ All information is available in French only 	<ul style="list-style-type: none"> ➤ Information available in others languages
<p>2.2. Newsletter – Lettre de l'Observatoire de la Cote Aquitaine</p>	<ul style="list-style-type: none"> ➤ All information is available in French only 	<ul style="list-style-type: none"> ➤ Collection, archive and analysis of all pertinent geographical information about the Aquitaine coastline. ➤ Dissemination of data to the main partners thanks to a metadata catalogue.
<p>3. GIS</p>	<ul style="list-style-type: none"> ➤ Need of data integration on a Geographical Information System tool. 	<ul style="list-style-type: none"> ➤ Information available in others languages

6.1.5. Beach management plans. Principality of Asturias

a) Description of the working area

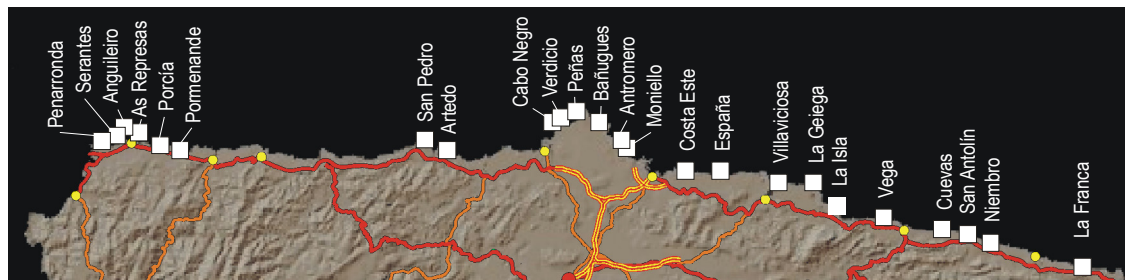


Figure 5. Park-beaches located along the coastline of Asturias.

Natural environment

The Principality of Asturias has a gully coastal line with many cliffs whose length exceeds 500 kms from the eastern to the western ends but only 200 kms far away in line straight. In it, 208 beaches have been registered. The coastline is about 10 km far away from mountain ranges which height goes up to 1.350 ms. Along the coastal line there are two cities of 275.000 inhabitants (Gijón) and 120.000 inhabitants (Avilés) as well as 16 colorful villages and fishing towns. In the coastal countryside there are more than 200 rural villages with a dispersed habitat integrated within a very high quality landscape and some protected natural areas included in *Natura 2000* network.

The climatic features of the coast trip of Asturias can be roughly divided into three great macro zones:

	Characteristic annual temperature average	Characteristic annual rainfall
Coastal trip	12-13°	900 – 1.000 mm.
Central depression and mid basin of interior valleys	8 – 13°	1.000-1.500 mm.
Mountainous area	4-8°	Larger than 1.400 mm.

Table 2. climatic features of the coast trip of Asturias

One can distinguish three main strips along the 500 km coastline (200 km straight line):

Occidental coast: it covers from Vegadeo to Valdés council; because of its deficient road networks both within the central region and the boundary regions, it enjoys an acceptable environmental conservation degree.

Central coast: it supports most of the coastal land use pressure of the population of Asturias that is concentrated in the central area (around Gijón, Oviedo, Avilés, Mieres and Langreo), and the biggest environmental deterioration degree because of the industrial and port facilities located in this area.

Oriental coast: it is concentrated around the Llanes council, that gathers 75% of the beaches within this strip (with the subsequence tourism concentration), together with better road networks, being a threat to the average of physical transformations.

Social-economic environment

The socio-economic issues are focussed mainly on the analysis of the population, its development and current features, employment, the housing classification as well as significant figures related to the sector of tourism.

In general, the population has been concentrating in the central councils. At sub regional level, the population regression regarding the oriental stripe is bigger than in the oriental that is related to an acute population ageing. This is basically a consequence of a birth rate drop that affects both strips and the oriental one in a special manner. The central region is the only one to keep a larger young population compared to the oriental and occidental although the population is still aged.

In the same period, one can notice a progressive and almost uniform concentration of the population in the capitals of the councils and in the main cores of the coastal councils. The mayor rapidly detected it in Avilés, Piedras Blancas, Llanes, Ribadesella, Villaviciosa, Candás, Luanco and Vegadeo (priority order).

On the other hand, it has produced classic correlations between population dynamic and productive specialization of the population. Thus, one clearly observes the scarcity of specialization regarding the primary sector in the central strip especially in the councils with a bigger population growth such as Avilés, Castellón and Gijón where the primary sector is much lower than the average, constituting the bulk of employment of the industrial sector and, to a large extent, of the tertiary sector.

Regarding the oriental zone, although it presents a high level of primary sector employment, it also presents a clear development of the services sector, higher than the coastal total average, even regional total average especially in Llanes and Ribadesella.

The councils located in the occidental coast are strongly specialized in agriculture and fishing. It presents however a specialization level lower than the average regarding the services sector.

Concerning the distribution of the housing areas, it can be noticed that the secondary residence is taking importance in the last years, mainly in those councils with a higher percentage of social housing such as Gozón, Ribadesella and Llanes.

b) Methodology

Phases

Since its establishment in 1981, the Autonomous Government of Asturias has developed an active policy in order to preserve and enhance the environment. A number of actions have been implemented to harmonize the protection and enjoyment of our natural and cultural resources:

- The Network of Protected Areas, which covers a wide extension (30% of the total surface), many of them located on the coastal fringe.
- Planning instruments, including Regional Spatial Planning Guidance (1991), Planning Guidance for the Coastal Fringe (1993) and the Coastal Areas Protection Plan (POLA) (2005)
- Water management plans, wastewater treatment and sewage.

At the early 1990's, the Principality of Asturias pioneered regional integrated planning in Spain through the design of a plan-led system from regional to local level. Local plans should be consistent with, and take into account the regional and sub-regional guidance.

The Planning Guidance for the Coastal Fringe includes a number of measures to preserve the seaboard (an area of about 500 m in width) from development. The aims of the POLA are to specify the extent of this protected area at local scale and to achieve a balance between recreation and protection of the natural and cultural values. This active-protection policy intends to reduce the pressure over the sensitive areas diverting it to carefully-designed leisure areas.

The elaboration of the Asturias Coastal Zone Protection Plan started in 1998 by the Government of the Principality. In 2000, there was already a draft that was discussed with each of the 21 Local Authorities and other agents. After this, a progress report was elaborated which was completed in November 2002. Concurrently, in the course of 2003 there was a second round of consultations with the same agents, with Public Information which lasted 2 months and was adapted to the existing legality in Spain. From this basis, the Special Plan has been transformed by integrating a selection of possible observations and carrying out all minor modifications. The final approval of this

document took place by mid 2005. Because of its peculiar approach, several foreseen sub-actions were implemented and became effective at the same time the plan was being implemented.

Data collection

The data base consist of the official cartography of the Principality of Asturias at 1:5000 scale, in digital format, taken from a flight in 1993.

Subsequently ortho-photographs at 1:5000 scale dated in 2004 were added.

For development studies in particular, aerials photograph from previous years were used. This study was completed with oblique aerial photographs, visits and surveys on the ground.

Also, it has been necessary to manage cartography of the municipal urbanism planning and statistical data as:

Sophisticated information management, such as GIS, was not used. A proposed method based on a “territory project” idea was selected, from a landscape point of view: the project of a coastal landscape. The planning was elaborated in digital (Microstation) and PDF format for its divulgation.

c) Proposals

- Park-beach model

Because of the narrowness of the beaches in Asturias and the width of the tidal range, the lowlands and meadows in the vicinity are traditionally occupied by beach lovers. In places of great public turnout, environmental impacts can occur, such as over-crowding or parking in unsuitable places. For crowded beaches, the POLA proposes the establishment of about twenty beach-parks, a new concept that updates the traditional, spontaneous practice providing carefully-designed leisure and parking areas. These are located in places at walking-distance from the sand, but where the visual and environmental impacts are reduced to the minimum.

See below examples of good practice:

- Penarronda Park-beach (Castropol and Tapia de Casariego)

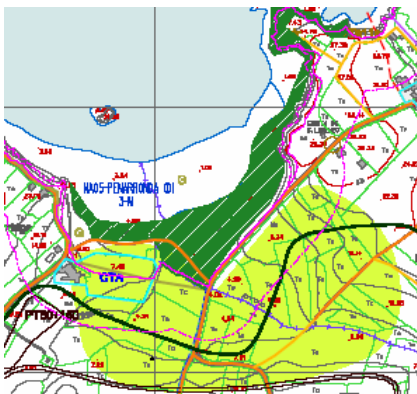


Figure 6: park-beach planning



Photo 1: car parking facilities

This project allows experimenting and checking the results regarding the park-beach model. The car parking facilities although vast, has been integrating rapidly in the landscape (it looks like a meadow when it is not used).

It also allows switching the traffic, forbidding car parking on the dunes and concentrated it in the car parking facilities designed for it.

- Coastal footpath system

With the objective of encouraging the public use and enjoyment of the coast, the Asturias Coastal Zone Protection Plan develops a footpath system network that covers the entirely coastline of Asturias, connecting the different park-beaches and the main rural settlements.

The Coastal Footpath System comprises the already existing 459 Km long network of access ways with the purpose of preserving the environment. They will eventually be made pedestrian and complemented with 150 km of newly created sections that will in most cases serve links to the former.

The system can be conceptualized as one formed by individual layouts, each to join a particular village of interesting site (beach, park-beach, natural area, archaeological area) and is configured in different shapes that respect the singularities of the surrounding landscape at every specific location. In addition, the Asturias Coastal Zone Protection Plan proposes a total of 3.000 permanent parking capacity and additional 5.500 seasonal parking facilities. The latter already includes current capacity potential that will be re-located in more suitable areas for a better integration of the landscape.

Special importance is given to the kind of construction and materials used that should match the surroundings. Furthermore, suitable landmarks, sign and direction panels should be integrated in the landscape along the route.

With the purpose of reducing its impact, the footpath between Salinas and Arnao moves toward inland, ascending to higher relief that allows perceiving a wider view of the littoral. It promotes coastal accessibility by following the footpath guidelines; such a priority should be given to the re-use of existing paths; new paths should create a network connecting villages and landscapes amenities, visual and environmental impacts should be minimized and straight, linear walks should be avoided.

See below examples of good practices:

- Cueva footpath system



Figure 7: Cueva footpath location

This project is part of a recovery project from the Cueva beach (Valdés council). The objective is to reduce the environmental impact produced by the car parking at the beach by:

- Creating an alternative car parking facilities 660 m from the shoreline:



Photo 2: car parking facilities

- Recovering an existing pedestrian pathways as an alternative access to the beach:



Photo 3: detail of a pathway stretch



Photo 4: detail of a pathway stretch

Specific issues

Some of the provisions of the Asturias Coastal Zone Protection Plan have turned out not to be very suitable to the real needs. In the document, it was pointed out that the proposals were indicative and should be developed in a more detailed way using a planning instrument of a higher scale.

However, one can note that the provision of the number of parking spaces in most of cases exceeds the real needs. Therefore, this number has been included during the drafting process of specific projects.

All the rest, the routes of the proposed footpath system have turned out quite probable and the projects fit quite well. In some aspects, the developing actions regarding coastal environment turned out to be more conservationist. For instance, accessibility has been experimented with a pioneer method consisting in using rights of way for the pathways design. This allows not to pave them and preserve their natural look (meadows). This system, generalized in U.K (called “footpaths”) is still unknown here and goes beyond the Asturias Coastal Zone Protection Plan forecasting, allowing the opening of news pathways.

d) Problems and solutions

The main difficulty in developing projects is not the lack of economic resources but the lack of human resources. Thanks to the agreement signed with the Environment Ministry for the Asturias Coastal Zone Protection Plan development, money from the State has been used to carry out the projects. But this is not much effective if there is not enough staff to manage it.

As a result, the projects drafting process is slow; the construction works is being done and the necessary terrain management procedure carried out.

The Asturias Coastal Zone Protection Plan is an ICZM instrument even though it does not include aspects such as sanitation, water quality, fishing resources. The Asturias Coastal Zone Protection Plan deals with others issues such as tourism but in a tangential manner.

The Asturias Coastal Zone Protection Plan is mainly about conservation and valuables landscape protection. In this regard, its results are unquestioned. The “red line” that restricts the development of rural towns and cities is quite effective.

The positive aspects are:

- The effectiveness of the protection based on this “red line”, which keeps preserving the littoral from urban development.
- The collaboration with other competent authorities such as the State Administration that has skills in the maritime-terrestrial domain zone through an agreement put in place.

- An overview of the actions (park-beaches, pathways networks) with homogeneous criteria and a need to make the stakeholder involved aware of the need of conservation and the value of this littoral as a landscape heritage.

Sub action	Issues/problems	Solutions
<p>1. Legal Directives - Since 1993, the Government of Asturias has been able to protect coastal areas through the application of legal directives. They have recently been revised and these directives are integrated into the urban development planning of the 21 coastal counties</p>		<p>Coordination and common vision on littoral by integrating others departments with competences on coastal territory such as agriculture, fishing and environment.</p>
<p>2. POLA (Special Plan of the physical environment) – The elaboration of the Asturias Coastal Zone Protection Plan started in 1998; the plan is adapted to the soil laws in Spain and the Principality of Asturias, and integrates a very high number of measures.</p>	<p>Asturias Coastal Zone Protection Plan does not include aspects such as sanitation, water quality, fishing resources and agriculture</p> <ul style="list-style-type: none"> ➤ Lack of human resources to carry out projects. ➤ Delay on project drafting process. ➤ Delay on construction works contracts. ➤ Delay on field management procedure. 	<ul style="list-style-type: none"> ➤ Increase of the number of people in charge of specific training on ICZM. ➤ Training of interdisciplinary technical teams who are able to tackle the demand of littoral-related projects. ➤ To speed up the administrative procedures on contracting and environment impact assessment. ➤ More cooperation with the town councils on the field management procedure for project execution.
<p>2.1. Park- beach model</p> <p>2.2. Coastal Footpath system</p>	<ul style="list-style-type: none"> ➤ Lack of human resources to carry out projects. ➤ Delay on project drafting process. ➤ Delay on construction works contracts. ➤ Delay on field management procedure 	<ul style="list-style-type: none"> ➤ Increase of the number of people in charge and specific training on ICZM. ➤ Training of interdisciplinary technical teams who are able to tackle the demand of littoral-related projects. ➤ To speed up the administrative procedures on contracting and environment impact assessment. <p>More cooperation with the town councils on the terrain management procedure for the project execution would be required.</p>

6.1.6. Development of sustainable coastal access networks and coastal interpretation. Severn Estuary Partnership

a) Description of the working area



Figure 8. Designated conservation areas.

Natural Environment

The Severn Estuary is the largest example of a coastal plain estuary in the United Kingdom and one of the largest estuaries in Europe with an area of 24,700 ha.

The Estuary supports a wide array of habitats and species of international importance for nature conservation. The Severn Estuary was classified as a Special Protection Area (SPA) in 1995. The Severn Estuary is also a Ramsar site and a possible Special Area of Conservation (pSAC). Where a SPA, such as the Severn Estuary, or Special Area of Conservation (SAC) incorporate sub-tidal and/or intertidal areas, they are referred to as European marine sites (EMS).

The Estuary is a Site of Special Scientific Interest (SSSI) under UK law, as are many of the levels areas around the Estuary. It has numerous national and local designations such as national and local nature reserves around its shores. See figure X for nature conservation designations.

Many estuaries in the UK are of great importance to migratory and wintering wildfowl and waders. The Severn Estuary forms part of the complex chain of estuary sites along the western coast of the UK that provide habitats for migratory waterfowl. The relatively mild winter weather conditions found here compared to continental Europe at similar latitudes can be of additional importance to the survival of wintering waterfowl during periods of severe weather. It is especially important when there is severe weather affecting other sites further north and on the east coast of Britain. The Severn Estuary ranks amongst the top ten British estuaries for the size of visiting waterfowl populations that it supports over winter (Musgrove *et. al.*, 2001). Outside of this period, it is of particular importance as a staging area in autumn and spring for migratory waterfowl species as it lies on the East Atlantic Flyway route.

Social Environment

Humans were first attracted to the estuary and the surrounding areas for its wildlife, natural resources and access. With easier personal transport came recreational use of the estuary - evidenced by such Victorian seaside resorts as Weston-super-Mare and Penarth. This interest in recreation has now expanded to millions of people who enjoy and appreciate the estuary and wildlife for its own sake.

The natural environment of the estuary and surrounding land, including the coal and iron ore of the adjacent South Wales valleys and the Forest of Dean, were the basis of the economy for centuries. With improved communications and globalization of the economy the links have become less obvious but the economy and local environment are still intimately related. Archaeological excavations have reinforced evidence already available of the importance of the Severn lowlands for settlement and farming at least from the Iron Age.

The social structure of the growing population reveals the large number of households in the highest social class categories, as well as high proportions of heads of households who are retired. Taken together, these characteristics show the existing of a growing population around the estuary, especially in those social groups with both the time and resources to take part in outdoor leisure pursuits, and the highest levels of concern for environmental issues as well as the involvement of environmental interest groups.

The tourist industry illustrates the importance of the estuary and see it more as something to gaze at, live by and work by, but as a formal part of the present-day working economy. The ports and harbours around the estuary continue to play vital economic and social roles. Whilst the Severn Estuary itself is a single physical system from a social and economic perspective it separates its two shores both socially and economically. Although the Second Severn Crossing enhances communication between southern England and South Wales, day-to-day contact specifically between the two sides of the estuary region is limited. Less tangible but no less significant is the lack of a feeling of community identity across the estuary.

Access around the estuary is patchy, with areas where there is little public access. Many other areas are only frequented by local communities in a recreational way. There are a number of Victorian seaside towns around the estuary. Tourism tends to be associated with these, with the exceptions of the Quantocks coastal strip in Somerset and the Vale of Glamorgan Heritage Coast.

b) Methodology

Phases

a. Setting up access forum

An estuary-wide access forum was set up to act as a guide for the project, and allow key stakeholder involvement. Invitations were sent out to each of the local access forums around the estuary, and also to major landowner bodies and agencies. Each forum had two seats available - one for an officer and one for a member of the local access forum. Meetings were scheduled three times a year for the duration of the project.

b. Running access forum

The estuary-wide access forum agreed on some Terms of Reference. During each meeting a speaker gave a speech on a topic of interest. The forum offered advice on developing a toolkit, and on the progress of the pilot projects. Problems were encountered due to the

difficulty of promoting access near and on a European Protected Marine site, but through careful liaison with the Nature Conservation Agencies a toolkit was developed and recommendations made.

c. Pilot projects

Four pilot projects were undertaken

Newport, Monmouthshire, Forest of Dean, South Gloucestershire.

Data collection

A number of methods were used to gather data and information throughout the project

Meetings/Forums – e.g. access 1 to 1 meeting January - May 2004. Also sat on the European Marine Site Advisory group.

Workshops - e.g. recreation and nature conservation workshop - April 28th 2005

Questionnaires – Interpretation questionnaire

Email data requests - for the access and nature conservation GIS

Informal discussions – with community groups, interest groups and individuals.

a. Pilot projects

Each pilot project had different objectives and output. Together they show the variety and extend of the different types of coastal access around the Severn Estuary.

Newport - produced two interpretation panels and two leaflets to take away. Together they are designed to help protect the valuable coast by informing visitors of responsible options to take and behaviours to adopt.

Monmouthshire - infrastructure installed along footpath on coast. Kissing gates, suitable for disabled users were set and a circular trail was created. Counters were installed to monitor use.

Forest of Dean - Link footpath was designed between coast and town, suitable for disabled and cycles and was part of a larger regeneration project.

South Gloucestershire - Installation of infrastructure to improve quality of access on Severn Way. Also interpretation panels to inform visitors of the importance of wildlife. A

survey from visitors was carried out to determine the frequency of use together with the type of activity.

b. Access survey

The access survey was carried out in a face-to-face interview with highways authorities and revolved around issues related to the estuary, as well as opportunities and priorities to access the coast. The results of the survey were then integrated into both a written report and a GIS system produced by the GIS strand.

c. Interpretation survey

The interpretation survey was carried out by sending out questionnaires to visitor attractions / event organizers around the estuary.

d. Recreation and access GIS

This database was a main output of the GIS strand. Information was gathered from highways authorities and combined with the existing nature conservation information and additional information collected on site during visits to the coast.

Sub action	Issues/problems	Solutions
<p>1. Run and administer local and strategic stakeholder Access Forums: 1 Estuary-wide plus 2 per year in each of 4 LA areas piloting infrastructure projects</p>	<p>Estuary wide access forum has been set up, with three meetings held in 2004 and 2005. In the four project areas regular meetings have been held with existing stakeholder groups- e.g. at the community and parish level. Main problem is the longevity of the project with funding for the main estuary-wide access forum ending</p>	<p>Seeking funding from Countryside Council for Wales and Countryside Agency to continue Estuary wide access forum.</p>
<p>2. Participate in workshops & conference sessions organized by ICZM project theme leader, and contribute to news articles to share expertise, information and learning. Translate principles agreed with Atlantic partners who are addressing issues related to the spatial planning and implementation of sustainable access.</p>	<p>Attended workshops and conferences and assisted in the organization of the Cardiff sessions held January '05. Sharing expertise with partners has proved difficult due to varied nature of projects.</p>	<p>Useful sessions held at the Cardiff 05 meeting. Contact with trans-national partners slowly increased over course of project</p>
<p>3. Coordinate with Stakeholders to produce spatial analysis including assessment of constraints and opportunities for sustainable coastal access along the Severn, including identification of existing problem areas.</p>	<p>Information gathered through a variety of methods. Problems arose with potential conflict of nature conservation interests with increased access to the estuary. Full identification of these problem areas were sought and resolved by changing ambitions of access around the estuary.</p>	<p>Stakeholder involvement resulted in agreement on different role of access forum- mainly in the management of exiting access, rather than the promotion of or extension of access round the estuary.</p>
<p>4. Develop and agree with stakeholders on the Action Plans related to: Strategic Access & Networks</p>	<p>Meetings held with all access authorities, information collated into a report and into the Recreation and Nature Conservation GIS (see GIS strand). Action plans could not be developed due to issues (see 3 above).</p>	<p>Development of an online access toolkit.</p>
<p>5. Contribute to ICZM dissemination, exchange of learning including producing 2 articles on access project findings (1 local, 1 transnational) as well as to publications and interpretive material from the Severn to quarterly ICZM</p>	<p>Three local walks published to highlight access. Contributed to reports for the lead partner,</p>	<p>Using existing publications (Severn Tidings) to disseminate message.</p>

<p>project web site updates</p>	<p>6. Web, on site and paper based Interpretation / information to promote the Severn Way and understanding of its local, regional, trans-regional and trans-Atlantic Arc perspective, including issues related to spatial planning, including key landmarks, land uses and businesses, natural and cultural heritage .</p> <p>7. Infrastructure to provide improvement and management of access - including missing links</p>	<p>Develop interpretation - 2 leaflets and larger Severn Tidings and also re-launched website with added and public friendly content. Could not centre this on the Severn Way due to constraints found in 3. above</p> <p>Infrastructure implemented in four pilot areas. Missing links could not be addressed due to 3. above.</p>	<p>Looked at raising awareness of the Severn Estuary generally with theme of 'the Dynamic Severn' .</p> <p>Concentrated on replacing old access infrastructure with easy access ones and on installing four panels interpreting the estuary.</p>
---------------------------------	--	---	--

c) Summary and proposals

The main objective of this project was to improve the management of sustainable development decisions around the Severn Estuary, focusing on access and interpretation.

The project identified a need to participate in trans-national and local forums to establish common approaches to coastal and estuarine access and best practices in managing these approaches to minimize impact.

The project successfully engaged a wide range of stakeholders who contributed to the process of identifying activities, producing an Access toolkit for managers and decision makers around the estuary.

A major benefit of involving a wide range of organizations was that their awareness of the importance of nature conservation of the Severn Estuary has significantly improved, as well as their understanding of how their activities and projects may impact the nature conservation resource. The access project worked closely with the COASTATLANTIC nature conservation strand and the COASTATLANTIC GIS strand on this objective.

6.1.7. Beach management, development of sustainable coastal access and coastal interpretation. NASC

a) Description of the working area



Figure 9. Designated conservation areas.

Natural Environment

The NASC partnership brings together organizations for which the conservation of the cultural fabric of Gaeltacht, including its distinct linguistic language, is a shared objective. It seeks to improve communications and develop link with the institutions of the European Union and other regions of Europe.

Bartraw Strand is located on the southern shore of Clew Bay in County Mayo and connects the mainland to Bartraw Island. It is approximately of two kilometers long and varies in width. In geological terms the strand at Bartraw is described as a tombolo and defined as a site where sand is deposited in a narrow connection between the mainland and an island.

Gurteen Bay and Dog's Bay Beach is located on the southern shore of County Galway. It is designated in County Development Plan as 'unique Landscape sensitivity'.

Social Environment

Westport is the largest town within the area of Clew Bay and is situated in the shadow of Croagh Patrick. It is the most important tourist centre in the county and has a host of facilities to cater for this growth in tourism. Its population has grown from 4,253 in 1996 to 5,314 in 2002.

Bartraw Strand lies adjacent to the reek (Croagh Patrick) and provides a recreational and amenity location for the public and tourists throughout the year. It is well known as a clean beach and the length of the shore attracts walkers.

Mayo County Council has been effectively replanting the dunes and fighting blow-outs and storm events for over ten years. The positive effects of this work are evident in the increasing stability of the fragile dune environment.

b) Methodology

Phases

- **Image Analysis Study**

From the images collected it can be seen that the geographical features of Bartraw have been evolving over time. There has been an overall increase in sedimentation on the spit resulting in a visible increase in vegetative densities in the last 40 years. The methodology involved map and aerial photograph images arranged chronographically, dating from ca. 1850 to 2002, in order to present a timeline over which the morphology of the beach at Bartraw can be assessed:

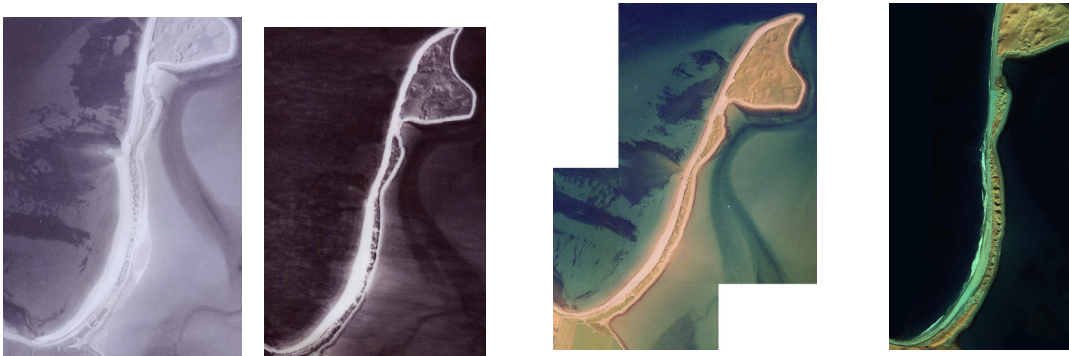


Photo 5. Vegetation development. Years 1974, 1992, 2000, 2001 (from the left to the right)

- **Bathymetric and topographical study**

Aqua- Fact carried out a localized bathymetric survey around Corrawee on the western side of the Bartraw Strand. The survey was completed using a Sonarlite Portable Echo Sounder with Trimble NT300D Differential Global Positioning System (DGPS).

- **Wave Climate Study**

The aim of this wave climate study is to predict the maximum wave height likely to occur in the future at Bartraw beach, based on predicted storm winds. As well as wind speed, there are other factors, which contribute to surface wave generation. These include water depth, fetch and bottom friction.

- **Wind Data**

There is no absolute maximum wind speed at a given location, as it is always possible that a stronger wind may occur in the future. The most commonly used wind for wave climate studies is a 50-year return period wind. This represents the steady wind speed that is likely to be exceeded once in 50 years. For the current study, this was also adopted.

- **Dune Management**

Dune sands are readily moved and shaped by wind and water action. Consequently, disturbed dunes revert rapidly to unstable conditions, regardless of their stage of development at the time of disturbance. A series of recommended procedures for the stabilization of dunes and sandy shores is outlined below.

Projects.

Effects of erosion

- **Action Plan 1: Planting for stability:** Dune restoration usually begins with the establishment of pioneer plants. Vegetation is critical to dune formation and stabilization.
 - Site suitability- it is evident that the choice of site is basic to the success of any marram-planting project.
 - Marram- Choose the leeward side of well-established dunes as a supply site for plants.
 - Sand surface stabilization- Recommended for the most exposed locations
 - (iv) Protection- All marram planting projects require protection from public access.

- After Care
- **Action Plan 2: Wave barriers:** Wave barriers can be used to reduce the wave energy before it reaches the dune. In general, sand moves offshore during storm events and onshore during periods of low wave energy. Therefore, a reduction in wave energy will lead to a reduction in sand being drawn offshore. It must be stressed that this technique is a stopgap measure designed to reduce erosion levels at the dune face. Different wave barriers include:
 - Brushwood barrier
 - Straw bales
 - Railway sleepers
- **Action Plan 3: Sand Stabilization:** Sand stabilization as a technique is used in conjunction with a number of other complementary techniques. These include:
 - Grass Planting
 - Dune recontouring
 - Sand Trap Fencing
- **Action Plan 4: Sand Trap Fencing:** The effect of installing sand-trap fencing is to break the natural flow of sand within the dune transport system and allow for some stability to provide a basis for vegetative colonization.
- **Action Plan 5: Walkways:** Specified access routes can be used to protect major portions of dunes, especially those under repair. These routes must have a firm base so as to avoid the creation of serious blowouts. This is most easily provided by installing timber paths or boardwalks.
- **Action Plan 6: Beach sediment studies and sand replenishment:** Where there has been significant sand erosion or in the case of Bartraw where a traditionally sandy beach has been replaced in parts with stones and cobble material, it is important to ascertain the rate of removal of sand or the accretion of stones to the beach.

When the processes of erosion or accretion have been determined at the site an effective management plan can be put in place to prevent stone accumulation or sand erosion.

- **Action Plan 7: Do nothing approach:** Although doing nothing may appear like irresponsible abandonment in the face of difficult coastal erosion problems. It is a deliberate, logical, strategy. It is designed to facilitate a degraded coastline to rebuild its natural defenses and achieve a state of reasonable dynamic equilibrium.

However, this approach can only be undertaken where there is no obvious danger to property or where cognizance of the value of the property has been considered. Doing nothing will mean

allowing coastal erosive processes a free reign in recovering sediment. This will only continue as long as it is necessary to balance the local sediment budget.

c) Results

Bartraw Strand is considered an important physical feature geographically, as it bears the brunt of the most severe winter storms from the northwest. This allows for a measure of shelter for the inner reaches of southern Clew Bay. Without the tombolo at Bartraw the marine environment and habitats within Clew Bay would be significantly altered, as would the species composition. For this reason, it is considered important that the integrity of Bartraw Strand be maintained in order to preserve the recognized wealth of biodiversity within inner Clew Bay.

Existing works at Bartraw Strand have proved extremely beneficial and the increase in vegetative cover over time reflects this. The commitment to an ongoing management rehabilitation and restoration is essential to ensure long-term stabilization and possible improvement of Bartraw Strand.

While carefully applied dune management measures can help to counteract severe erosion, which may threaten the existence of a dune, engineered defense systems usually reduce the biodiversity inherent in the natural dynamism of dune systems, and may cause sediment starvation down-drift.

An important aspect of any dune management procedure is the necessity to fence off the project site from amenity access using sheep wire fencing or something similar and the use of well designed signs describing the proposed work and the importance of public support for its success.

d) Proposals

- Increased installation of sand trap fencing using brush at critical location on seaward side of dunes. This fencing should also be used to prevent public access to the dunes.
- Continued Marram grass planting of all blowouts, the bare sand between the spit at Bartraw Island and also behind the sand trap fencing following accumulation of sand.
- Gabions at Corrawee to be covered with jute and planted with marram grass.
- Works on the sandy area at the neck of the spit joining Bartraw Island.
- Public awareness signs to inform public of ongoing works and sensitivity of dune habitats; restriction of access to the dunes.
- Public access and dedicated walkways from the car park to the strand. No walkways should go through the dunes except to access beach from the car park.

- A desk study on the possibility of carrying out a sand replenishment exercise by pumping sand from offshore areas onto the beach.
- Carry out a study to examine erosion rates removing all the stones.
- Continued aerial photography on an annual basis to facilitate the monitoring of dune replenishment or erosion.
- Removal of the intertidal section of stones at Corrawee following consultation with NPWS.
- A finer resolution wave climate model would be recommended to establish the local wave climate at the grid (grid spacing 110m)

Effects of Future Sea Level Rise

The issue of coastal access here will be dealt with in the context of impact on the natural environment, baring in mind the significant natural coastal defense role of the beaches, dunes and cliff areas.

It is well established that humans and their related activities can have a significant impact on the coastline particularly in sandy and dune coastal areas.

The kind of human activities that cause problems include trampling which results in vegetation loss particularly on dunes leading to their de-stabilization and can lead to large blowout features and increased erosion and problems with blown sand.

All kinds of vehicular activity (dune buggies and driving onto and parking on beaches) can also cause the same problem as outlined above but at a much faster rate.

In addition, the removal of beach sand and cobbles for construction and other purposes poses a major threat to beaches and sand dunes. In the case of beaches this can lead to the complete loss of sand as natural erosion can be speeded up as beaches are lowered and can also occur when the rate of extraction exceeds the natural replacement. This type of activity whether legal or illegal should be banned and assorted with heavy penalties.

In the context of rising sea-levels and probable increased storminess the issue becomes much more crucial. The implication of these climate induced changes is that the coastal environment will come to be under increasing pressure from higher water levels, more destructive storms irrespective of human activities unless large coastal defense works take place. These are obviously not financially feasible for most of the coastline of Ireland.

These changes will put the coastline and in particular sandy coasts under increased pressure. This will lead to increased rates of erosion and coastal retreat. Much of the coastline of Co. Wexford, which consists of sandy and other unconsolidated sediments, is currently under retreat at the rate of

1-2m per annum with even bigger retreats as a result of major storms, which happen every few years.

Clearly all areas suffering from significant coastal erosion and coastal retreat should have management plans drawn up to deal with this problem and to set out parameters for coastal access. Obviously in areas where significant coastal erosion, sand dune de-stabilization, blown sand and coastal retreat is occurring then restrictions on coastal access will have to be imposed depending on the severity of the problem. This could vary from no access to limited access (with or without quotas) to unlimited pedestrian access only along designated zones and a whole series of other possible management strategies.

In addition, any removal of material from these stressed environments has to be stopped.

e) Conclusions

The main point being made is that with rising sea-levels and probable increased storminess, more and more of the sandy coastlines are going to show signs of stress through erosion, sand dune de-stabilization and blown sand events. As a result a much more pro-active approach to coastal access needs to be taken (including unpopular decisions where necessary). The fundamental issue here is that these sandy features operate as a first line of defense against significant coastal erosion, coastal flooding and sand movements. Without them the impact of rising sea-levels and probable increased storminess will lead to significant land loss and impact on infrastructure and human activities within the coastal zone.

Water Leisure Program projects

- **Integrated Pilot Project in Beach Management**

Donegal County Council's Marine and Water Leisure Programme, in partnership with Limavady Borough Council and the University of Ulster's Coastal Research Centre have initiated this pilot project to develop a beach management strategy that can be tailored to a beach anywhere. If this model proves successful, proposals will be made to the Council for similar management arrangements at other beaches in the County.

Progress to date:

A beach manager and 4 beach wardens were put in place in Rosstown Beach. The wardens as a visible presence on the beach, worked to promote the various beach management initiatives.

- **Erne Canal Extension Proposal**

As a member of the MAYA2 Partnership (Marinas and Yachting in the Lower North Sea, the channel and the Irish Sea), the Marine and Water Leisure Program was awarded funding from the EU Interreg IIIB Programme to examine the feasibility of extending the Irish Inland Waterway sailing routes to the Atlantic Ocean at Ballyshannon.

Progress to date:

In phase 1, a Technical Assessment, has been completed and in phase 2, a socio-economic assessment is currently underway. If the proposal is feasible, Interreg funding is available for the design of the canal-maritime link. Phase 3 will start with an Environmental Impact Statement.

- **Coastal walks**

The Marine and Water Leisure Programme are developing a coastal walking product for Co. Donegal. Tourists would be invited to ‘Walk Donegal’, incorporating unique scenic attractions.

Progress to date:

Donegal County Council has established a Walking and trails Forum for the County.

- **Coastal Research Centre**

The establishment of a cross-border, Coastal Research and Interpretative Centre is being initiated. The proposed facility would have combined functions in commerce, public education and marine research in support of coastal management.

Progress to date:

Buncrana Town Council and Donegal County Council have agreed to fund an appointment of consultants to undertake a scoping study for the development of such a centre on the shores of Lough Swilly.

- **CZM Forum**

The CZM Forum will include representatives from the relevant agencies that is to say fishing, aquaculture, education, heritage, tourism and leisure. The objective is to encourage the exchange of information between the various user groups and provide a platform for debate for working towards

the agreement, adoption and implementation of coastal management strategies and promote a better understanding of all sectors associated with Co. Donegal's coastal zone.

- **Sea-Life Centre**

The Sea-Life will function as an aquarium with a focus on education and interpretation of marine life aimed at engaging public interest and imagination, whilst acting as a gateway to Donegal's natural coastal environment.

Progress to date:

Suitable locations for the centre have been identified and investors have been invited to make proposals for its development.

Sub action	Issues/problems	Solutions
<ul style="list-style-type: none"> • 1. ICZM Stakeholder Involvement, Clew Bay Co. Mayo- • Bartraw Beach pilot project. • Planning for stability • Wave barriers • Sand stabilization • Sand trap fencing • Walkways • Beach sediment studies and sand replenishment 	<ul style="list-style-type: none"> • Bartraw Strand is considered an important physical feature geographically, as it bears the brunt of the most severe winter storms from the northwest. This allows for a measure of shelter for the inner reaches of southern Clew Bay. • Without the tombolo at Bartraw the marine environment and habitats within Clew Bay would be significantly altered, as would the species composition. For this reason, it is considered important that the integrity of Bartraw Strand be maintained in order to preserve the recognized wealth of biodiversity within inner Clew Bay. • Existing works at Bartraw Strand have proved extremely beneficial and the increase in vegetative cover over time reflects this. The commitment to an ongoing management rehabilitation and restoration is essential to ensure long-term stabilization and possible improvement of Bartraw Strand. 	<ul style="list-style-type: none"> • Increased installation of sand trap fencing using brush at critical location on seaward side of dunes. This should be used to prevent public access to the dunes. • Continued Marram grass planting of all blowouts, the bare sand between the spit at Bartraw Island and also behind the sand trap fencing following accumulation of sand. • Gabions at Corrahee to be covered with jute and planted with marram grass. • Works on the sandy area at the neck of the spit joining Bartraw Island. • Public awareness signs to inform public of ongoing works and sensitivity of dune habitats and to restrict access to the dunes. • Public access and dedicated walkways from the car park to the strand. No walkways should go through dunes except to access beach from the car park. • A desk study on the possibility of carrying out a sand replenishment exercise by pumping sand from offshore areas onto the beach. • Carry out a study to examine erosion rates removing all stones from area ca 100 wide from high to low water. • Continued aerial photography on an annual basis to facilitate monitoring of dune replenishment or erosion. • Removal of the intertidal section of stones at Corrahee. • A finer resolution wave climate model would be recommended in order to establish the local wave climate at the grid (grid spacing 110m)
<ul style="list-style-type: none"> • 2. Appointment of Development Officer- Marine and water Leisure Projects: • development of a coastal Research centre. 		
<ul style="list-style-type: none"> • 3. Integrated Pilot Program in 	<ul style="list-style-type: none"> ➤ Develop a beach management strategy that can be 	<ul style="list-style-type: none"> ➤ A beach manager and 4 beach wardens were put in place in Rosnowlagh Beach.

<p>Beach management-</p> <ul style="list-style-type: none"> • Integrated Beach Management pilot project • Erne Canal Extensión Proposal • Coastal Walks • Coastal Research centre • CZM Forum • Sea-Life Centre 	<p>tailored to a beach anywhere.</p> <ul style="list-style-type: none"> ➢ Examination of the feasibility of extending the Irish Inland Waterway sailing routes to the Atlantic Ocean at Ballyshannon. ➢ Coastal walking product for Co. Donegal incorporating unique scenic attractions. ➢ The establishment of a cross-border, Coastal Research and Interpretative Centre (commerce, public education and marine research). ➢ The CZM Forum will include representatives from the relevant agencies- fishing, aquaculture, education, heritage, tourism and leisure. The objectives are to encourage the exchange of information between the various user groups of the Co Donegal’s coastal zone and provide a platform for debate for working towards the agreement, adoption and implementation of coastal management strategies ➢ The Sea-Life will function as an aquarium with a focus on education and interpretation of marine life 	<p>The wardens as a visible presence on the beach, worked to promote the various beach management initiatives.</p> <ul style="list-style-type: none"> ➢ Phase 1, a Technical Assessment, has been completed and Phases 2, a socio-economic assessment is currently underway. If the proposal is feasible, Interreg funding is available for the design of the canal-maritime link and Phase 3 will start with an Environmental Impact Statement. ➢ Donegal County Council has established a Walking and trails Forum for the County ➢ Buncrana Town Council and Donegal County Council have agreed to fund an appointment of consultants to undertake a scoping study for the development of such a centre on the shores of Lough Swilly. ➢ Suitable locations for the centre have been identified and investors have been invited to make proposals for its development.
<ul style="list-style-type: none"> • 4. Coastal research centre- (combined functions in commerce, public education and marine research). 	<ul style="list-style-type: none"> • Trampling and vehicular activity which results in vegetation loss particularly on dunes leading to their destabilization and can lead to large blowout features and 	
<ul style="list-style-type: none"> • 5. Effects of Future Sea Level rise in NASC Region- Assessing the effects of future sea level rise on the NASC region. 	<ul style="list-style-type: none"> • Trampling and vehicular activity which results in vegetation loss particularly on dunes leading to their destabilization and can lead to large blowout features and 	<ul style="list-style-type: none"> • Trampling, vehicular activities and removal of sand and cobbles should be banned and assorted with heavy penalties. • All areas suffering from significant coastal erosion and coastal retreat should have

<p>Understand the nature of coastal erosion in NASC area</p> <p>Establish a baseline of extent of erosion</p> <p>Data collected using aerial photographs and field-work</p> <p>Data is compiled into a Geographic Information System to map nature and extent of the problem</p>	<p>increased erosion and problems with blown sand.</p> <ul style="list-style-type: none"> Removal of beach sand and cobbles for construction can lead to the complete loss of sand as natural erosion can be speeded up as beaches are lowered and can also occur when the rate of extraction exceeds the natural replacement. The implication of these climate induced changes is that the coastal environment will come under increasing pressure from higher water levels, more destructive storms irrespective of human activities unless large coastal defense works take place. 	<p>plans drawn up to set out parameters for coastal access and have to be imposed depending on the severity of the problem.</p> <ul style="list-style-type: none"> This could vary from no access to limited access (with or without quotas) to unlimited pedestrian access only along designated zones and a whole series of other possible management strategies.
--	---	--

6.1.8. Results

a) Common tools

- COMMUNICATION/INTERPRETATION

Aquitaine, the Severn Estuary Partnership and Donegal County Council use communication as an effective tool in their coastal access projects. Aquitaine use a website and newsletter, The Severn Estuary Partnership use meetings/forums, workshops, questionnaires, email data requests and informal discussions. Donegal County Council (NASC), have set up a CZM forum.

- STAKEHOLDER INVOLVEMENT

As a sub-action, S.E.P develops and agrees with stakeholders action plans relating to Strategic Access and networks. Mayo County Council (NASC) set up a workshop, which provided the opportunity for the wide variety of stakeholders in the coastal zone of Clew Bay to get actively involved in discussions concerning the key issues in the area of Clew Bay and provide their views on the sustainable future of the coastal zone.

- EXPERTISE

Aquitaine requested expertise from Technical institutions and scientific experts to deliver a technical and neutral opinion on coastal zone management and local erosion problems. Mayo County Council (NASC) commissioned Aqua-Fact International Services Ltd (Environmental Consultants) to survey and assess the tombolo at Bartraw Co, Mayo in order to establish the existing hydrographic and coastal environmental conditions at the site.

- GIS

Aquitaine used GIS (geographic information system), to collect, archive and analyze all relevant geographical information about the Aquitaine coastline. The Severn Estuary Partnership created a recreation and access GIS Database as a main output of the GIS strand. Galway County Council compiled data into a GIS to map nature and extent of the problem.

- PARK BEACH MODEL

Asturias developed a park-beach model whilst Donegal County Council (NASC) initiated a pilot project to develop a beach management strategy that can be tailored to a beach anywhere. If this model proves successful, proposals will be made to the Council for similar management arrangements at other beaches in the County.

- **COASTAL TRAILS/ACCESS ROUTES**

Donegal County Council through its Marine and Leisure Programme are developing a coastal walking product for Co. Donegal. Mayo County Council have an Action Plan 5, which aims at specifying access routes to protect major portions of sand dunes, especially those under repair. Asturias through their Asturias Coastal Zone Protection Plan project has developed a Coastal footpath system with the purpose of preserving the environment.

- **ORTHO-PHOTOGRAPHY**

Asturias used aerial photographs from previous years whilst Mayo County Council (NASC), through Aquafact Consultants, used map and aerial photograph images chronographically dating from ca 1850 to 2002. Aquitaine also uses photo aerial analysis.

- **TOPOGRAPHY**

Aquitaine collected data from a topographic study, whilst Aquafact on behalf of Mayo County Council compiled a Bathymetric and topographical study.

b) Specific tools

- WAVE CLIMATE STUDY
- WIND DATA

Both mentioned in Aquitaines report, but no indication of how measurements were collected.

- ACTION PLAN 7: “Do nothing approach”

The above are specific tools used by Aquafact consultants on behalf of Mayo County Council.

- PARQUE- PLAYA MODEL

This model was adopted by Asturias to include two different zones to adapt the strong seasonal nature of their potential utilization.

c) Success and failure

- **Success**

The following coastal access partners have been successful in achieving the following objectives through their projects:

All partners

- Implementing concrete and innovative actions to test and promote the application of ICZM policy on the ground.

Asturias, S.E.P

- Spatial planning of coastal routes and networks.
- Evaluation of the sustainability and efficiency of existing coastal access networks and analysis of the impact of the disorderly use of coasts.

Severn Estuary Partnership

- The use of interpretation associated with coastal access to promote awareness and understanding of the local, regional and Atlantic context, with a specific focus on the social and economic environment.

NASC-WEST Ireland

- Setting up action/management plans and programmes for locations that are representative of the Atlantic coast (e.g. estuaries, swap areas, dune systems, cliffs).

The use of interpretation associated with coastal access to promote awareness and understanding of the local, regional and Atlantic context, with a specific focus on the social and economic environment

Limitations

- Aquitaine states that one of the problems they have encountered so far is that all information is available in French only.
- Asturias states the lack of human resources as a reason for the delay in projects. Also the Asturias Coastal Zone Protection Plan (Environmental Plan) does not include all aspects of the ICZM, such as sanitation, water quality, fishing resources and agriculture.
- Severn Estuary Project states that ‘shared experience’ of projects with the European partners has proved difficult due to the varied nature of the projects. Also a lack of funding and infrastructure can delay projects.
- NASC-WEST Ireland: Aqua-fact, states that beach management policies can be difficult to implement because the shape and morphology of the shore is constantly changing in response to varying forces acting upon it, therefore short term data is not as effective. For further study it is vital that long-term coastline change can be assessed. The NASC

partnership includes several partners. This means resources were thinly spread and the plethora of projects at times complicated the main focus of the project.

6.1.9. Conclusions

- The Atlantic Coastline is a dynamic and distinctive space. Activities on the coast are often reflected by this with high energy sports such as windsurfing and Cliff walking. The sustainable management of the dynamic nature of the coast can be achieved using ICZM principles when considering access, recreation, tourism and other uses.
- Options for the development of the Atlantic coast must not only recognize ICZM principles but also the value of the remote Atlantic space to communities and the dependence of this value on promoting its distinctiveness.
- Spatial Planning of coastal routes/networks is essential to ensure managed protection on the coastline
- For coastal access management to be successful along the Atlantic coast, decision makers must facilitate the development and implementation of an integrated management strategy for the coastal area, by adopting a broad perspective and a multisectoral approach.
- The involvement of community and stakeholders is very important in the identification of ICZM issues. Their active involvement at an early stage provides local knowledge, encourages dialogue, fosters support and raises awareness of the programme.
- To further implement recommendations drawn up in the coastatlantic report, funding must be continued to each partner, through local and regional authorities or central government funds, so that all projects can be completed.
- The final stage of the ICZM process involves the monitoring and evaluation of a programme once it has been implemented.
- The whole coastal access plan should be reviewed periodically to establish whether or not it is achieving its objectives and overall aims. This review should take changing circumstances into account e.g. increase in visitor numbers, and amend the plan in the light of these.
- There is a need to agree on the common methods of collecting statistics and a common definition of the coastal area throughout Europe so that meaningful comparisons be made.

6.1.10. Recommendations

1. Planning and Management of coastal Areas

A long term vision is required and encompasses the fact that everyone has the right to enjoy the Atlantic coast in a sustainable manner. This needs to be developed, with specific attention to how coastlines will evolve in the future, both in planned and unplanned ways.

2. Participation and Governance

An Atlantic Awareness raising and promotion program could be set up to identify opportunities to market the regions distinctiveness, reflecting local communities.

3. Assessment and Monitoring

Coastal observatories for the Atlantic Arc should be set up, specially designed for their regional distinctiveness. An Atlantic network of observatories can share and desktop data to monitor the Atlantic Arc Coast.



Natural Heritage

6.2. Natural Heritage

The Natural Heritage refers to the natural places that belong to everyone, including indigenous species, habitats, ecosystems, geological and physiographical elements, features and systems, as well as:

- natural features consisting of physical and biological formations or groups of such formations, which are of outstanding universal value from the aesthetic or scientific point of view;
- geological and physiographical formations and precisely delineated areas which constitute the habitat of threatened species of animals and plants of outstanding universal value from the point of view of science or conservation;
- natural sites or precisely delineated natural areas of outstanding universal value from the point of view of science, conservation or natural beauty.

6.2.1. Natural heritage issues

Estuary

Estuaries are bodies of water and wetlands that are formed in the inlets of the land and which have contact with the sea. The continual movement of the tides and the mixture of fresh water and salt water, as well as the continual entrance, retention and recycling of sediments and nutrients make the estuaries the most complex, variable, fertile and productive ecosystems in the world. (Davidson, *et al*:1991).

An estuary is a partially closed-off body of water, open to the salt water from the ocean and receiving fresh water from rivers, runoffs or infiltrations from land (NATURAL ENVIRONMENT RESEARCH COUNCIL: 1975 e GRABROVAZ: 1993).

Protected Landscape

An area with natural, semi-natural, and humanized landscapes, of regional or local interest, resulting from the harmonious interaction between Man and Nature, with a great aesthetic or natural value (Decree-Law n.º19/93, of 23 January). The municipalities are responsible for the management of these areas.

National Park

An area containing one or more ecosystems unchanged, or only slightly changed, by human intervention, including representative samples of characteristic natural regions, natural or humanized landscapes, plant and animal species, geomorphologic locations or habitats of species having ecological, scientific and educational interest (Decree-Law n.º19/93, of 23 January).

Nature Park

An area noted for its natural, semi-natural, and humanized landscapes of national interest, being an example of the harmonious integration of human activity in Nature and which contains samples of a biome or natural region (Decree-Law n.º19/93, of 23 January).

The nature park can include areas with various degrees of protection: Integral or partial nature reserves, areas of protected landscapes, classified sites, or other types of regulated features.

Nature Reserve

An area designated for the protection of the habitats of flora and fauna that are of great scientific interest and have national and international significance. (Decree-Law nº 19/93, of 23 January).

A nature reserve may be integral or partial. In the first case, the reserve applies to all aspects of nature and the presence of man is only permitted for administrative or scientific reasons. On the other hand, a Partial Nature Reserve is set up to protect certain aspects of nature, and may be biological, botanical, zoological in nature, among others. Human presence may be allowed within certain limits.

Sapal

According to MOREIRA (1987) an amphibious and azonal ecosystem that develops on the platforms of pelitic or areno-pelitic sediments in the intertidal strip, only in areas protected from agitation by the sea. Alternately emergent and submerged, in accordance with the rhythm of the tides, it is marked by low, close vegetation (0.3 metres to 1 metre), made up of higher halophytic and halotolerant species, eurihaline and xeromorphic, which withstand rapid variations in salinity, temperature and evapotranspiration, as well as the impulse of strong currents (both tidal and fluvial) and permanent, or nearly permanent, hydromorphy in the root zone.

The composition of the flora is dominated by Chenopodiacea, Poacea, Asteracea or Plumbaginacea, and varies locally and regionally. Thus, local variations depend on the micromorphologically-formed tidal platforms and the texture of the soils, while regional variations are due to climatic and hydrological features of the biotope. The sapal classification has three subdivisions: low sapal, high sapal, and transition sapal (or ecotonal sapal).

6.2.3. Natural Heritage in the European Union

Traditional approaches to the planning and management of activities at the coast and adjacent sea areas are often limited. This is because it tends to focus on individual interests and sectors. Involvement can be very difficult for local people and communities because there is often a lack of awareness of initiatives, and no obvious way of exposing views, concerns and issues to the process. More recently the ICZM approach has provided a mechanism for bringing together interest groups and communities to resolve conflicts and produce policy frameworks. Experience from around the world has shown that stakeholder involvement is essential to the success of any ICZM program. It is also fundamentally important that ICZM handles local needs and deals with local, as well as regional, national and international issues and obligations.

LIFE demonstrator projects and The Severn Estuary Partnership have provided examples where stakeholder involvement has been key to the generation of policies for sustainable development (Strategy for the Severn Estuary: 2001). Other regions have similar policy documents, e.g. the Sub regional Plan for the Coast of Asturias.

The challenge now is to build on this and extend these principles to other coastal and inshore water areas, and to apply these principles to the implementation phase of ICZM including the spatial planning dimension. All partners along the Atlantic Arc face these challenges.

One of the main issues regarding the conservation of the natural heritage is related to the apprehension of its content by the populations – it is necessary to include the citizen in the participative process of protection-utilization of the natural heritage to create the need of protection by, all.

It is necessary to promote the divulgation of information and rely on the sensitivity of the population, directly involved in the process – public participation – infusing responsibility in the decisions.

One of the main problems in preserving the natural heritage is related to the very understanding of its content by the public; as long as the citizens are not included as participants in the process for the protection and use of the natural heritage, its worth will never be truly appreciated. This inclusion is achieved not only by informing and raising the awareness of the public but also by including them directly in the process – public participation – thereby by instilling in them a sense of responsibility.

6.2.4. Objectives

The natural heritage embraces the nature areas, which includes the nature parks and nature reserves, whether protected and/or classified or not, as well as the coastal zones.

The importance of preserving the natural heritage appears in the Maastricht Treaty of 1992, which provided a legal and formal basis for Community action in the domain of environment, defining its objectives and principles, the foremost of which includes the Principle of Sustainable Development. This imposed a new development model that safeguards the environmental, social and economic components, and responds to the present needs while safeguarding the needs of future generations at the same time. In this sense, the natural heritage in general and, in particular, that of the Member-States must be protected, as well as used in a way that is compatible with sustained and sustainable development.

The principal objective of the Natural Heritage thematic action was to help planners and decision makers take into account the potential impact of development and activities on the natural conservation resources of the Atlantic Coast as well as to encourage and facilitate the involvement of stakeholders in the implementation of ICZM policy and pilot this through concrete actions on the field.

Consequently, the overall objectives of this project are:

- To improve understanding and awareness of the potential of spatial planning development decisions that might impact the nature conservation resources;
- To empower decision-makers in the making of sustainable development decisions, and
- To ensure that activities, plans and projects contribute to the conservation of the natural heritage of protected areas.

In order to outline good practice methods, involving agents and actors in the implementation of ICZM, and to define actions directed towards achieving the main objective of the thematic action Natural Heritage, three specific actions were defined under the leadership of three distinct partners. These partners worked in close collaboration and structured the thematic action through joint efforts with the end goal of producing principles and guidelines for the protection/conservation of the Natural Heritage.

The thematic action Natural Heritage is divided, therefore, in three specific projects:

1. Study of the natural resources of the Atlantic Coast, by the Metropolitan Area of Lisbon, Portugal;

2. Improvement of spatial planning and sustainable development decisions in the coastal zone, focusing on the Nature Conservation Dimension, by the Severn Estuary Partnership, United Kingdom;
3. Project on the location and collection of floating waste, by the Region d' Aquitaine, France.

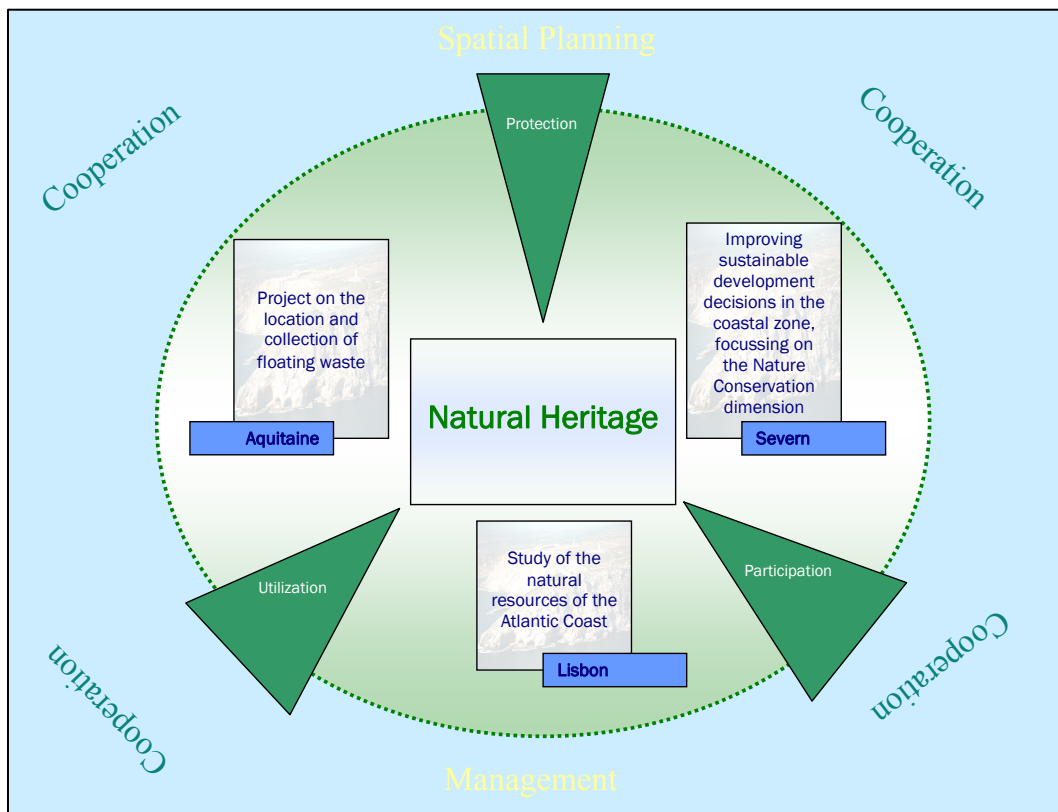


Figure 10 – Approach of the Natural Heritage thematic Action.

Common goals of the Natural Heritage thematic action are:

- I. To create a database that will make it possible to bring information together; to assess the state of conservation and identify the socio-economic activities that negatively impact the resources; to monitor (looking at methods of making assessments in advance rather than after the fact) – Databases that inform, describe, and monitor the natural and coastal resources;
- II. To diagnose the situation, projecting the impact of the conservation/utilisation of the resources on the development of the regions, with a view to promoting the socio-economic development of the regions, foreseeing mechanisms that ensure, simultaneously, the protection and the use of the natural heritage – to use resources in a sustainable manner, harmonising their use with their protection – Involving the organisations in a common work group;

III. To increase the participation of the actors/agents – channelled public participation: awareness-raising; information; involvement of the inhabitants – Participatory approach.

The objective is to develop and distribute guidelines to the planners and decision-making bodies and disseminate these guidelines to the public so that there is a greater awareness and an increased participation in the pursuit of a sustainable development of the territory and in particular the Natural Heritage.

These three specific projects are complementary; they follow three essential phases of the thematic action:

Phase 1 – Analysis/ diagnostic / recommendations for achieving the preservation of the natural resources - Project *Study of the natural resources of the Atlantic Coast*;

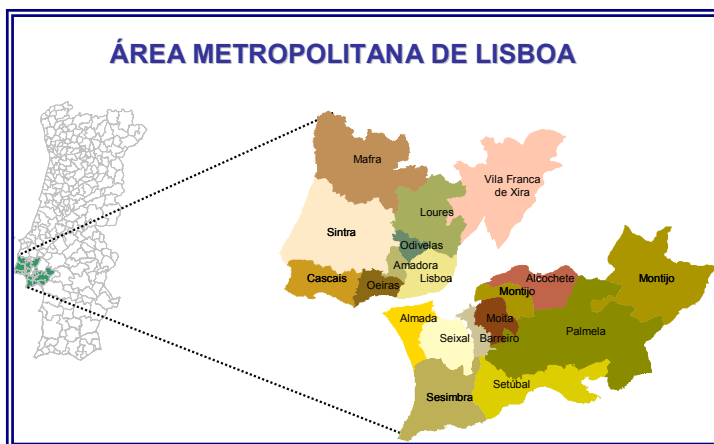
Phase 2 - Participation: the importance to a sustainable development / stakeholder involvement – Project *Improving spatial planning and sustainable development decisions in the coastal zone with a focus on the Nature Conservation Dimension*;

Phase 3 – Pilot-project – example of stakeholder involvement in the conservation of the coastal resources: exchange of information and experiences – *Project on the location and collection of floating waste, by the Region d' Aquitaine*.

6.2.5. Study of the Natural Resources of the Atlantic Coast. Metropolitan Area of Lisbon

a) Description of the Great Metropolitan area of Lisbon

The Lisbon Metropolitan Area is comprised of 18 municipalities – Alcochete, AGAMLda, Amadora, Barreiro, Cascais, Lisboa, Loures, Mafra, Moita, Montijo, Odivelas, Oeiras, Palmela, Sesimbra, Setúbal, Seixal, Sintra and Vila Franca de Xira – and seeks to further the interests of the inhabitants of the member municipalities.



In analyzing the preliminary data from the last general census of the population (2001), we find that the residents of the GAML totalled 2,662,949 (corresponding to ¼ of the country's population), of which 20.9% live in the city of Lisbon.

Figure 11 – Greater Lisbon Metropolitan Area: location and municipalities.

The 3,128 km² area of the GAML (3.3% of Portugal's mainland territory) is home to 27.1% of the population of mainland Portugal, with a working population of about 1.3 million. Approximately 30% of the national companies have their headquarters in the GAML.

The GAML is basically a littoral region, with about 150 km of Atlantic coastline: two major estuaries – Tagus (325 km² in area) and Sado – and five protected areas, integrated in the Natura 2000 Network – the Sado Estuary Nature Reserve; the Tagus Estuary Nature Reserve; the Arrábida Nature Park; the Costa da Caparica Protected Landscape; the Sintra-Cascais Nature Park.

The metropolitan territory includes two large ports – Lisbon and Setúbal – and three medium-size fishing ports – Sesimbra, Cascais and Ericeira. The former have become increasingly important internationally due to their position as a link between the north of Europe, the Mediterranean and Africa, and to the great historical and landscape worth of the areas surrounding the ports.

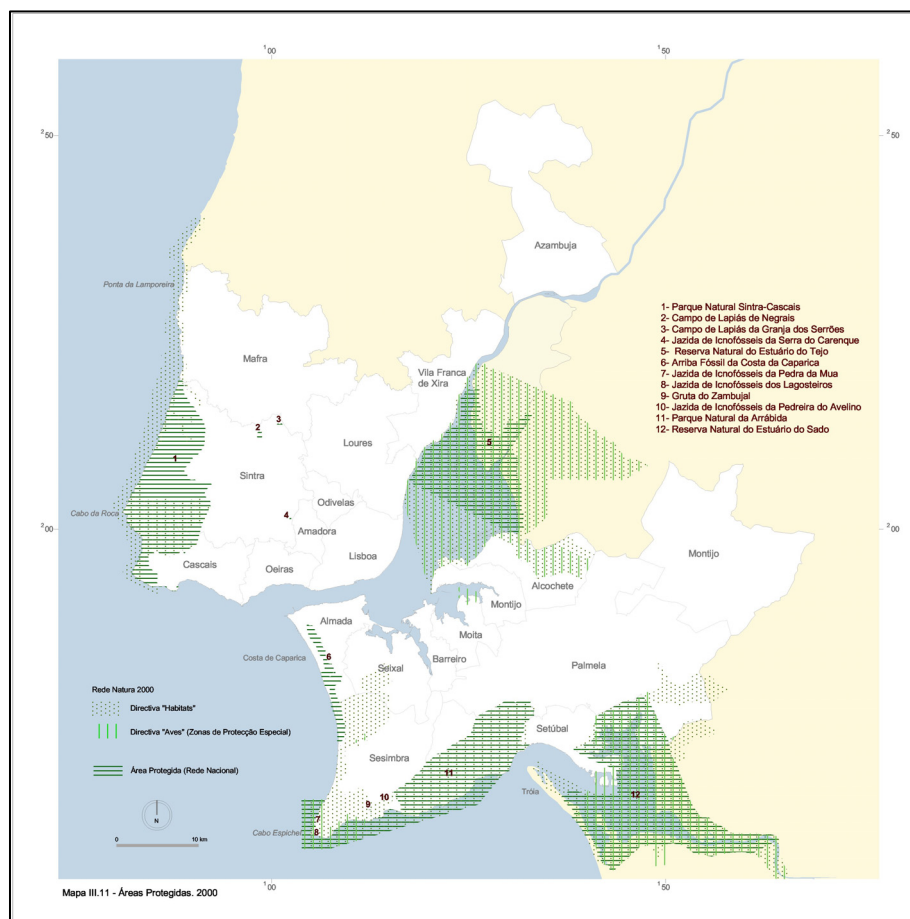
The region has a great variety of landscape, with an abundant richness of nature and great contrasts, from the lush landscape of the mountain ranges of Sintra and Arrábida to the vast open spaces of the fens of the Tagus and the cliffs of the Costa da Caparica, as well as the habitats of the wetlands of the two estuaries. We can therefore conclude that we are dealing with an area of great

environmental, landscape, economic, and leisure potential that needs to be preserved and whose worth should be recognized.

Urban growth and rapid generalization of certain social patterns of behaviour, such as the growing use of the automobile and the greater affluence of people to the beaches and coastal zones and to other areas suited for tourism or recreation have brought a greater pressure with regard to the natural resources. For this reason, there is a growing need to encourage/promote protective measures for these areas and their natural resources.

The protection of landscapes and areas of special interest is aimed at maintaining and preserving their worth as a heritage by using actions that condition human intervention.

Figure 12 – Protected Areas of the Greater GAML 2000.



Source: TENEDÓRIO, J.A., 2003. *Atlas of the Metropolitan Area of Lisbon*. Lisbon: AML.

The Institute for the Conservation of Nature (ICN)³ is the body responsible for the national activities related to the conservation of nature and the management of protected areas.

³ Created by Decree-Law n°193/93, of 24 May, operating under the auspices of the Ministry of Environment

The management of protected areas is essential for their efficient and orderly operation, and for this reason legislation exists that makes it compulsory to draw up plans for the use of the land as planning tools that are fundamental to conservation; however, a great part of the protected areas of national interest are still lacking this instrument.

The Land Use Plans for Protected Areas are special land use zoning plans and are, therefore, normative documents that guide the State and private entities, establishing preferential, conditioned and prohibited uses, as determined by criteria for the conservation of nature and biodiversity.

Law n 9/70, of 19 June, introduced the notions of national park and national reserve, beginning a process of accompanying the international evolution of the protection of Nature, by classifying the areas that best represent our natural heritage.

Under that law, the National Park of Peneda-Gerês was created, and various reserves were set up.

The protection of Nature, meanwhile, benefited from a significant expansion with the appearance of Decree-Law n.º 613/76, of July 27, which added the aesthetic and cultural value of the protected areas as a factor in influencing the classification.

The publication of Law n.º 11/87, of April 7 — Fundamental Law of the Environment — besides maintaining the national protected areas, added to our legal system the concepts of protected areas of regional and local scope which reflect in the initiative of classification, regulation and management of those areas by the local governments or associations of municipalities.

It also provided for the possibility of creating protected areas with private status, upon request of the interested property owners. The conventional designation for this was «site of biological interest», for the purpose of protecting wild fauna and flora species and their natural habitats that are of ecological and scientific interest.


However, it was only through Decree-Law n.º19/93, of January 23, that the legal regime of the Protected Areas was defined, to establish the conservation of Nature, the protection of the nature areas and the landscape, the preservation of the species, the fauna and the flora and their natural habitats, the maintenance of the ecological balance and the protection of the natural resources against all forms of degradation. This law established this as a matter of public interest to be pursued through the implementation and regulation of a national system of protected areas – *Rede Nacional de Áreas Protegidas* (the National Network of Protected Areas).

According to FERREIRA DOS SANTOS (1990) the protected areas of the Portuguese littoral make up about half of the total number of protected areas in the country. Within the GAML, the following are noteworthy:


▪ Sintra-Cascais Nature Park


1

SINTRA-CASCAIS

METROPOLITAN AREA OF LISBON	<p>CLASSIFICATION (1) Sintra-Cascais Site (Natura 2000 Network)</p> <p>AREA 16 632 ha</p> <p>COMPOSITION 9 Habitats prioritários e 25 não-prioritários.</p>	
-----------------------------	--	--

Natura 2000 Network in the Metropolitan Area of Lisbon





L: 748 690

Location

The littoral strip presents diversified situations, namely the dune complexes from Cresmina/Guincho to the high cliffs with rocky beaches at Cabo da Roca.

Composition

An area important for the value of its flora, where there are various local, national and Iberian endemisms and priority species.

It also has a great diversity of priority habitats and simultaneously, it includes a grotto that shelters a breeding colony of the Mediterranean horseshoe bat *Rhinolophus euryale*. Some of the streams are important for the Portuguese bogue *Chondrostoma lusitanicum*.

Threats

- Harvesting of threatened plant species;
- Pressure from urban growth and tourism;
- Infestation by species of flora;
- Illegal capture of tortoises.

FLORA

Ionopsidium acaule (prioritarie specie), *Coicya cintrana*, *Silene cintrana*, *Dianthus cintranus* ssp. *cintranus*, *Asplenium hemionitis*, *Armeria pseudarmeria*, lírio-amarelo (*Iris Lusitanica* Ker), Azevinho, pica-folha (*Ilex aquifolium* L.)

FAUNA

Colónias de morcego-de-ferradura-mediterrânico. Important site to the birds, particularly to the nidification of falcão-peregrino and águia Bonelli.

SPECIFICITIES

Some rivulet has a significance value to the Portuguese-Boga.

- Tagus Estuary Nature Reserve

2 TAGUS ESTUARY

METROPOLITAN AREA OF LISBON

CLASSIFICATION

(1) Tagus Estuary Site (Natura 2000 Network)
 (2) Tagus Estuary Special Protection Area

International protection status granted by the Ramsar Convention, covering 33%.



Natura 2000 Network in the Metropolitan Area of Lisbon





(1) TAGUS ESTUARY SITE (NATURA 2000 NETWORK)

AREA 44 610 ha

It includes the largest continuous extensions of marshes and the most important in the country. In biogeographical terms, it lies in the transition zone between the littoral with distinctly Atlantic features and the littoral that is predominantly Mediterranean in nature.

DESCRIPTION The biodiversity is high and there is a remarkable diversity in the landscape, with a large intertidal expanse, which plays an essential role in the maintenance of the estuary ecosystems and the adjoining littoral zone. It is important for migratory fish, the common otter (*Lutra lutra*) and for water birds.

COMPOSITION 19 tips of natural habitats, including 2 considering priorities.

FAUNA lontra, mouse of *Cabrerae*, sável, savelha and lampreia. International importance, in particular the avifauna migratory aquatic habitat.

(2) TAGUS ESTUARY SPECIAL PROTECTION AREA

AREA 45071.1 ha

THREATS Its location, next to the urban and industrial areas in expansion, cause problems with the edifications and with the streets.

SPECIFICITIES An international importance in the winter and in the passage of the birds that depend on wetlands.

The Tagus Estuary site is located in the transition zone between the littoral, with distinctly Atlantic features, and the interior which is Mediterranean in nature, forming the Portuguese wetlands with the greatest international importance for the wintering and passage of birds that depend on wetlands.

- The Costa da Caparica Fossil Cliff Protected Landscape
- Arrábida Nature Park

5

ARRÁBIDA/ESPICHEL

METROPOLITAN AREA OF LISBON

CLASSIFICATION

(1) Arrábida/Espichel Site
(2) Cabo Espichel Special Protection Area



Natura 2000 Network in the Metropolitan Area of Lisbon

(1) ARRÁBIDA/ESPICHEL SITE (NATURA 2000 NETWORK)

 <p style="text-align: center; font-size: 0.8em;">1: 392 110</p>	<p>AREA 20 663 ha</p> <p>DESCRIPTION Marked by the presence of species of flora from Macaronesia and containing about 36 types of natural habitats, including nine that are considered priority habitats, the site is outstanding for the importance of the landscape in the supra-national sphere.</p> <p>COMPOSITION 36 natural habitats tip, including 9 priority.</p> <p>FLORA Cabo Espichel is the only location where <i>Convolvulus fernandesi</i> has been recorded. (This is a priority species, being an endemism of Lusitania and considered to be "at risk".) The Arrábida mountain range is a fundamental location for calcicolous species and for plant communities on "terra rossa". Some of these species are priority species, as in the case of <i>Thymus camphoratus</i> (an endemism of Lusitania, considered "vulnerable"). It is also one of the two known locations for <i>Chaenorhinum serpyllifolium</i> ssp. <i>lusitanicum</i> (an endemism of Lusitania, considered "vulnerable").</p> <p>FAUNA It serves as a shelter for breeding bats, which is very important for the bent-wing bat (a species classified as "vulnerable"), being equally important for other species of Chiroptera during the rest of the year, and one of the two sites where the presence of the Lepidoptera <i>Callimorpha quadripunctata</i> (a priority species) occurs. It is a Site that is important for the breeding of populations representing rupicolous avifauna, including some species listed in Annex I of Directive 79/409/CEE.</p> <p>THREATS</p> <ul style="list-style-type: none"> ▪ Harvesting of threatened plant species; ▪ Extraction of sand and gravel; ▪ Pressure from tourism and urban growth; ▪ Forest fires; ▪ Spread of infestation by species of flora.
--	--

Status of international Protection, confer by the biogenetic Reserve, embrace 52% of the area.

Conservation actions
Cataloguing of the ichthyofauna of the rocky substrata of the Coast of Arrábida/Espichel, monitoring of the effects of the creation of the Marine Park on the fish population, the reassessment of the conditions for the occupation of the Maritime Public Domain, the study of the aromatic and medicinal plants, the recuperation of degraded areas with species autochthonous to Arrábida, the study of the geotechnical stability of the grotto at Zambujal and the assessment of the waste waters produced in the Arrábida Nature Park and the suitability of their destination.

(2) ZONA DE PROTECÇÃO ESPECIAL DE CABO ESPICHEL

<p>AREA 3 415,78 ha</p> <p>FAUNA An important area for migratory species passing through, as well as having well-preserved cliffs and moors.</p> <p>TREATS</p> <ul style="list-style-type: none"> ▪ Intense and permanent pressure from man; ▪ Exploration of sand and gravel nearby; ▪ Project for tourist housing development in the surrounding area.
--

▪ Sado Estuary Nature Reserve


6


ESTUÁRIO DO SADO

METROPOLITAN AREA OF LISBON

CLASSIFICATION


(1) Sado Estuary Site (Natura 2000 Network)
(2) Sado Estuary Special Protection Area





(1) SADO ESTUARY SITE (NATURA 2000 NETWORK)

	AREA	30 888 ha
	DESCRIPTION	Internationally important wetlands, with a remarkable diversity of landscapes, in large part supported by low intensity activities in agriculture, forestry, and livestock grazing. International protection status granted by the Ramsar Convention, covering 70%. It is an important location for plant species typical of marshlands and freshwater cultivation, with a large number of endemic species, mainly psammophilic. 34 distinct types of natural habitats, including 7 priorities.
COMPOSITION	FLORA	We underscore the existence of communities on the dunes that are rich in priority species, such as <i>Armeria rouyana</i> and <i>Linaria ficaihoana</i> , among others, supporting a resident population of porpoises, <i>Tursiops truncatus</i> , with features that are unique in Portugal.
	FAUNA	The Sado Estuary is also notable as a location for the passage or wintering of the avocet (<i>Recurvirostra avosetta</i>) or the flamingo (<i>Phoenicopterus ruber</i>). As for the rest of the fauna, the common otter (<i>Lutra lutra</i>) is in evidence, and the only resident population of bottlenose dolphin (<i>Tursiops truncatus</i>) in the country, various species of invertebrates, and the ichthyofauna that includes species with significant biological and commercial value, namely the Lusitanian toadfish (<i>Halobatrachus didactylus</i>) and the sole (<i>Bolea vulgaris</i> and <i>S. senegalensis</i>).



Natura 2000 Network in the Metropolitan Area of Lisbon

According to MOREIRA (1987) "the heavy use of the marshes of the Sado, from Antiquity, contributed to modification of its area, progressively reduced by the successive projects for the recuperation of the upper marshes, destined for the building of salt pools (tanks for concentration and crystallisation), pastures, rice fields, ports, and space for urban and industrial construction.

However, the flora of the marshes has also been modified in its composition, and especially, in its phytosociological relationships and the area of distribution of some species"

(2) SADO ESTUARY SPECIAL PROTECTION AREA

	AREA	24 832,5 ha
	DESCRIPTION	International protection status granted by the Ramsar Convention, covering 82%. A large number of breeding birds with the status of threatened are present, as for example purple heron (<i>Ardea purpurea</i>), black-winged stilt (<i>Himantopus himantopus</i>), marsh harrier (<i>Circus aeruginosus</i>), and little tern (<i>Sterna albifrons</i>). The area is also noted for being a point in passing or wintering for the avocet (<i>Recurvirostra avosetta</i>) and the flamingo (<i>Phoenicopterus ruber</i>).
THREATS		Large projects for the development of industry and tourism; clandestine constructions; Alteration of the banks and the degradation of bird habitats; Industrial, urban and agricultural pollution;

Overall, these areas are marked by an intense activity in the tertiary sector, due to their proximity to very densely populated urban areas; in relation to the secondary sector, however, the values are close to the national average. The rather high levels recorded in the nature reserves of the Sado and the Tagus stand out, a fact related to their location surrounding important industrial poles.

Thus, it is important to mention the case of the wetlands and their great ecological productivity, due to their prominent position as a support base for the survival of a number of species of fauna and flora (Sado Estuary Nature Reserve and Tagus Estuary Nature Reserve); the Costa da Caparica Fossil Cliff Protected Landscape, Sintra-Cascais Nature Park and Arrábida Nature Park, where important landscape; geological, and geomorphologic features are found, to be associated, in that case, to particularly rich fauna and flora.

The importance of the ecological processes that are found in the coastal regions, together with the degree of threat resulting from the overexploration

of the natural resources existing there, led to the classification of these areas as habitats of interest for conservation, in accordance with the World Strategy for Conservation, as defined by IUCN – UNEP – WWF in 1980.

According to the National Water Plan, the marshes found within the same zone as the salt lagoons, may also be considered as non-cultivated areas, although they do have useable resources, such as the mountainous wastelands. The marshes and salt lagoons with the largest areas are found in the Tagus and Sado estuaries.

The vegetation in the marshes contains a high amount of dead biomass, the regular decomposition of which continually produces humid acids that play an important role in the elimination of certain potentially toxic metallic ions. This constitutes in a very positive feature in decontamination, which in itself justifies their protection.

Therefore, these wetlands have become areas to be conserved, due to the importance of conserving the sea life.

b) Methodology

The project was based on the study and comparative assessment of the natural resources of the regions of Lisbon and Severn through the gathering of information from the bodies in charge and through a photographic survey that established a pattern of evolution. We could then make a diagnosis of these areas and point out problems and solutions for their protection and utilisation, with a view to encouraging the integrated and sustainable management of the natural resources of the Atlantic Coast.

Development of a methodology for the study of the natural resources of the Atlantic Coast, using a systemic perspective that integrates the Biophysical, Ecological, Social, Economic, Political and Institutional components, and their relations and interconnections.

Thus, a survey on the natural resources and the impact of activities was conducted, along with an analysis of the contribution of the protected areas to the socio-economic development, as well as the effects of planning on the coastal zone, listing the directives for land use, the water courses, estuaries and marshes, as well as the beaches and cliffs. This allowed us to identify the fundamental areas for recuperation, protection and promotion of the habitats and coastal species, components that are essential to the natural heritage of the Atlantic coast in land planning and development decisions.

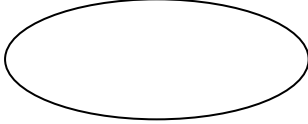
Concluding:

- Identification and stocktaking of the natural and environmental coastal resources (type of resources and planning and management tools).
- Promotion of an **integrated and sustainable management** of the natural and environmental coastal resources, regarding, simultaneously, their **protection** and their **contribution to the social-economic development** in the surrounding area.
- Formulation of concrete **recommendations** and measures aimed at the reduction of the negative impact of human activities and the protection of natural coastal resources at local, regional, national or community levels.
- Promotion of the awareness of local communities regarding the importance of an integrated management and protection of natural resources.

c) Results

While conducting the analysis of the natural resources, the identification of the actors and entities in charge of the conservation and management of the coastal zone/ natural resources took place. This resulted in consultations with some entities and public organizations involved in the conservation/management of natural resources trying to identify the issues and solutions related to the protection of the natural resources and the Natural Heritage.

DIAGNOSTIC OF THE NATURAL RESOURCES		
	Positive points	Issues detected
NATURAL HERITAGE	<ol style="list-style-type: none"> 1. Vast natural diversity 2. Wealth of natural heritage and of natural values 3. International value of natural areas 4. Great potential: <ul style="list-style-type: none"> - development with compatible uses - reconciliation between different uses with sustainable use and protection 	<ol style="list-style-type: none"> 1. Competencies in the coastal zone are divided between different administrative levels - many entities and public organizations with skills in the coastal zone <ul style="list-style-type: none"> - Attributions and skills of the different entities involved - The management is divided between the municipalities and the natural reserves. 2. Insufficient public information (for all citizens) 3. No exploitation of the potential use with the compatible uses – including the principles: to protect and to use.

Sectors	Areas	Risks – Impact
Natural Areas Protected sites Coastal Zones	<p style="text-align: center;">Conservation</p> <div style="text-align: center;">  </div> <div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <p style="text-align: center;">Use Participation</p> </div>	<p style="text-align: center;">Urban pressure</p> <p style="text-align: center;">Activities</p> <p style="text-align: center;">Accessibility</p>
<p><u>Operational Mechanisms</u></p> <p>Increase the value of the natural heritage</p> <p>IZCM Principles – sustainable development</p> <p>Integrate Protection</p> <p>Management criteria</p> <p>Organizational Cooperation</p>		
<p><u>Strategy Design</u></p> <p>Principles and uses</p>		

6.2.6. Improving spatial planning and sustainable development decisions in the coastal zone, focusing on the Nature Conservation Dimension. Severn Estuary Partnership

a) Description of the working area

Natural environment

The Severn Estuary is the largest example of a coastal plain estuary in the United Kingdom and one of the largest estuaries in Europe with an area of 24,700 ha.

The Estuary supports a wide array of habitats and species of international importance for nature conservation. The Severn Estuary was classified as a Special Protection Area (SPA) in 1995. The Severn Estuary is also a Ramsar site and a possible Special Area of Conservation (pSAC). When a SPA, such as the Severn Estuary, or Special Area of Conservation (SAC) incorporate subtidal and/or intertidal areas, they are referred to as European marine sites (EMS).

The Estuary is a Site of Special Scientific Interest (SSSI) under UK law, as are many of the levels areas around the Estuary. It has numerous national and local designations such as national and local nature reserves around its shores. See figure 1 for nature conservation designations.

The Severn Estuary is important for its immense tidal range, which affects both the physical environment and the diversity and productivity of the biological communities. The mean tidal range is the second largest in the world, reaching 12.3 m at Avonmouth. There are five major rivers which feed into the estuary causing changes in salinity which may be from brackish to fully saline, depending on the season and rainfall. Fine sediments from erosion of the intertidal zone and suspended sediments in river water entering the estuary create high turbidity, which has its highest average level between Avonmouth and the outer part of Bridgwater Bay (British Geological Survey, 1996). The strong tidal currents create a highly dynamic environment and the resultant scouring of the seabed and high turbidity give rise to low diversity communities, some uncommon in Britain and unusual in their distribution. The Severn has an extreme type of hydrodynamic and sedimentary regime which distinguishes it from other estuaries and which puts its fingerprint on the whole system. It is estimated that the estuary carries 10 million tons of suspended sediments on spring tides.

The extreme hydrodynamic and sedimentary conditions determine the type of habitats and species present and result in characteristic animal and plant communities. The Severn Estuary comprises many different habitats including saltmarsh, intertidal and subtidal mud and sand, mixed mud and sand, rock outcrops, boulder and shingle shores as well as *Sabellaria* biogenic reefs. There are sandy beaches on the southern shores, backed by sand dunes. The predominant unconsolidated sediments are mud and sands. The intertidal habitats include saltmarsh, mud and sandflats, mixed

mud and sand, rock outcrops, boulder and shingle shores. The predominant unconsolidated sediments are mud and sands but a substantial area is rock. The presence of extensive areas of sand in low salinity conditions, distinguishes the Severn Estuary from other estuaries in the same biogeographic zone. Beds of eelgrass occur on some of the more sheltered mud and sand banks around the Welsh side of the Severn Crossing. All three species of eelgrass, *Zostera marina*, *Z. angustifolia* and *Z. noltii* have been recorded in the estuary. These, last two species especially, are of restricted distribution in British estuaries. It is unusual to have all three species in one location. The estuarine fauna includes internationally important populations of waterfowl, important invertebrate populations and large populations of fish.

The intertidal zone of mudflats, sandbanks, rocky platforms and saltmarsh is one of the largest and most important in Britain. The extensive mudflats and sandflats cover an area of 20,958 ha, the fourth largest area in the UK. Whilst the diversity of species is often low, in places the mudflats and sandflats support dense populations of marine invertebrate species, which provide a food source for the large populations of waterfowl and the many species of fish.

The Severn Estuary is fringed by saltmarsh and holds the largest aggregation of saltmarsh in the south and south-west of the UK. It covers approximately 1,400 ha representing about 4% of the total area of saltmarsh in the UK (Dargie, 2000). The grazed saltmarsh is dominated by common saltmarsh-grass *Puccinellia maritima* and red fescue *Festuca rubra*. Saltmarshes have an important role to play in estuarine processes, both through the recycling of nutrients within the estuary and through their role as soft sea defenses, dissipating wave energy. They are highly productive biologically, providing nutrients that support other features within the marine ecosystem. They also have an important physical role, acting as a sediment store to the estuary as a whole and providing feeding and roosting sites for waders and wildfowl particularly at high tide.

The fish fauna of the Severn Estuary is very diverse (Potts & Swaby, 1994). More than 110 species of fish have been identified and include seven different species of migratory fish, more than any other British estuary. The estuary is one of the most important British estuaries for several rare species, including river lamprey *Lampetra fluviatilis*, sea lamprey *Petromyzon marinus*, twaite shad *Alosa fallax* and allis shad *Alosa alosa*. The river and sea lamprey are a primitive type of fish having a distinctive suckered mouth but no jaws. Although numbers of lamprey have declined over the last 100 years, the UK is still one of their strongholds. Sea and river lampreys spend their adult life in the sea or estuaries but spawn and spend the juvenile phase in rivers. They use the Severn Estuary as a migratory passage to and from their spawning and nursery grounds in the rivers. Allis and twaite shad are the only two members of the herring family found in fresh water in the UK. The estuary serves as a nursery area for juvenile fish where they feed heavily on small items of plankton. The Severn Estuary supports a run of migratory salmon. These fish pass through the

estuary on their way to and from their spawning grounds in the upper reaches of the rivers and the open sea. The Estuary also has the largest eel run in the country.

Many estuaries in the UK are of great importance to migratory and wintering wildfowl and waders. The Severn Estuary forms part of the complex chain of estuary sites along the western coast of the UK that provide habitats for migratory waterfowl. The relatively mild winter weather conditions found here compared to continental Europe at similar latitudes can be of additional importance to the survival of wintering waterfowl during periods of severe weather. It is especially important when there is severe weather affecting other sites further north and on the east coast of Britain. The Severn Estuary ranks amongst the top ten British estuaries for the size of visiting waterfowl populations that it supports over winter (Musgrove *et. al.*, 2001). Outside of this period, it is of particular importance as a staging area in autumn and spring for migratory waterfowl species as it lies on the East Atlantic Flyway route.

Social environment

Humans were first attracted to the estuary and the surrounding areas of its wildlife, natural resources and access. With easier personal transport came recreational use of the estuary - evidenced by such Victorian seaside resorts as Weston-super-Mare and Penarth. This interest in recreation has now expanded to millions of people who enjoy and appreciate the estuary and wildlife for its own sake.

The natural environment of the estuary and surrounding land, including the coal and iron ore of the adjacent South Wales valleys and the Forest of Dean, was the basis of the economy for centuries. With improved communications and globalization of the economy the links have become less obvious but the economy and local environment are still intimately related. Archaeological excavations have reinforced evidence already available of the importance of the Severn lowlands for settlement and farming at least from the Iron Age.

The social structure of the growing population reveals the large number of households in the highest social class categories, as well as high proportions of heads of households who are retired. Taken together, these characteristics reveal a growing population around the estuary, and particularly so in those social groups with both the time and resources to take part in outdoor leisure pursuits, as well as showing the highest levels of concern for environmental issues and of membership of environmental interest groups.

The tourist industry illustrates the importance of the estuary as more than just something to gaze at, live by and work by, but as a formal part of the present-day working economy. The ports and harbours around the estuary continue to play vital economic and social roles.

Whilst the Severn Estuary itself is a single physical system from a social and economic perspective, it separates its two shores both socially and economically. Although the Second Severn Crossing enhances communication between southern England and South Wales, day-to-day contact specifically between the two sides of the estuary region is limited. Less tangible but no less significant is the lack of a feeling of community identity across the estuary.

b) Methodology

PHASES

- a) Collect information on the types of activities being undertaken around the Severn Estuary.
- b) Collect information on the potential impact of activities on habitats and species.
- c) Set up and maintain a Working Group to develop guidance notes (guidance notes for spatial planners and decision-makers to improve understanding and awareness of the potential for spatial planning development decisions to affect the nature conservation resource.). A Working Group of planners and statutory nature conservation staff was formed (minutes from these meetings are attached as appendix1). This group is served by an Advisory Group of land owners, NGOs and user group representatives to ensure the process of developing the guidance is as inclusive as possible.
- d) Organize workshops to promote awareness of guidance notes and distribute them – the main members of the above mentioned working group, along with the SEP, will organize workshops to help raise awareness of the guidance notes and distribute them.
- e) Bring together a Working Group to submit an application for funding to the ‘Aggregates Levy Sustainability Fund’ to implement Severn Estuary Biodiversity Action Plans (bid attached as appendix 2).

Data

- a) To collect information on the types of activities being undertaken around the estuary, a number of stakeholder workshops were held with different groups of organisations around the estuary. The information was collated into a matrix (this information was collated into the ‘Study of the Natural Resources of the Atlantic Coast’ prepared by Area Metropolitana de Lisboa).
- b) For all the activities identified, organizations around the estuary identified where, when and how these activities were managed and reported this information on a standard form. Research was then undertaken into UK & EU studies to ascertain the type of impact the main activities could have on the species and habitats designated on the Severn Estuary and best practice techniques to manage these impacts (this information was collated into the ‘Study of the Natural Resources of the Atlantic Coast’ prepared by Area Metropolitana de

Lisboa). The nature conservation agencies in England & Wales then provided their advice on the best way to address activities that were thought to be causing damage and this was developed into an action plan for the organizations around the estuary.

SPECIFIC ISSUES

Sub action	Issues/problems	Solutions
<p>1. Use and develop existing Stakeholder Forums, networks, documentation and initiatives, to input to actions below:</p>	<ul style="list-style-type: none"> The project has a specific nature conservation focus. The Severn Estuary divides two different countries, Wales & England, and therefore any stakeholder Forums need to include two different nature conservation organizations, as well as two different planning systems and different interpretation of legislation. <ul style="list-style-type: none"> Many statutory and non-statutory organizations have an interest in the nature conservation of the Severn Estuary, especially as it is a Special Protection Area. There are consequently many perspectives to take into account. There was a need to identify best practice techniques that were relevant to the activities and habitats and species on the Severn Estuary. 	<ul style="list-style-type: none"> It is necessary to gain the support and involvement of all relevant administrative bodies and user groups in a transparent and participatory approach. <ul style="list-style-type: none"> Specific workshops, including all statutory organisations, with advice from non-statutory organisations, collaborated to identify activities undertaken around the estuary.
<p>2. Research local, EU and other sources for the implementation of best practices designed to manage a range of activities to preserve wildlife (including Access)</p>		<ul style="list-style-type: none"> A previous EU funded project, co-ordinated by English Nature, had provided information on best practice techniques for managing activities to conserve wildlife, and specifically related to coasts and estuaries. <ul style="list-style-type: none"> Other coastal and estuarine SPA sites in the UK have undertaken studies in this area and the best examples of these were adopted.

<p>3. Use local and transnational sources and expertise to inform and produce draft guidance on the impact of activities and development of wildlife, for review locally and with transnational partners.</p>	<ul style="list-style-type: none"> • Due to the groups being set up specifically to identify the activities and impact for the Severn Estuary, it was difficult to use transnational sources in the drafting of the recommendation. 	<ul style="list-style-type: none"> • Once the recommendation had been drafted, it was possible to provide this to our lead partners in the natural heritage theme and incorporate it into the ‘‘Study of the Natural Resources of the Atlantic Coast’’ prepared by Area Metropolitana de Lisboa.
<p>4. Prepare and distribute user friendly recommendations, to move forward best practices used by spatial planners and decision makers taking account the potential impact of the various activities and the development on wildlife.</p>	<ul style="list-style-type: none"> • The site is very large and involves many statutory organizations. The estuary as a whole therefore is sometimes of minor interest to some of the statutory organizations in comparison to other priorities they have. • Planning departments receive a great deal of ‘supplementary planning guidance’ of which this project will only be a small part. It may prove difficult for these recommendations to become regularly used by the main target audience. • Potential issue is that engineers and developers are often focused on the socio-economic aspects of development and not on the nature of the conservation. • These recommendations and directives may become out of date due to changes in 	<ul style="list-style-type: none"> • A specific working group for this thematic action was set up in March 2004. The group consisted in all appropriate organizations and met approximately 3-4 times per year to work on the draft of the recommendation. The group will continue to meet until the recommendations are distributed, and coordinate a series of presentations to different planning departments, including engineers. • It is necessary to reflect local specificity in the process and product, as this will help maintain involvement and focus. • There should be sufficient effort in the process to raise awareness on the recommendations for the identified target audiences. • These notes (see appendix 3), along with other

<p>5. Develop user friendly and standardized format to present relevant information to manage the impact of activities which potentially impact marine Natura 2000 sites.</p>	<p>legislation, nature conservation designations etc. The cost of revising these notes may be a problem in the future.</p>	<p>efforts made by the SEP, attempt to encourage all organizations around the estuary to consider the whole estuary as an ecological and political unit i.e. take a broad, holistic approach.</p> <ul style="list-style-type: none"> • These guidance notes should identify and simply explain the natural processes that developers and planners need to take account to work with; they should additionally encourage them to think about the long term effects of development.
<p>5. Develop user friendly and standardized format to present relevant information to manage the impact of activities which potentially impact marine Natura 2000 sites.</p>	<ul style="list-style-type: none"> • There are a great many activities undertaken around the estuary that may have a wide range of impacts. 	<ul style="list-style-type: none"> • To collect information on the types of activities being undertaken around the estuary, a number of stakeholder workshops were held with different groups of organizations around the estuary. The information was collated into a matrix (this information was collated into the 'Study of the Natural Resources of the Atlantic Coast' prepared by Area Metropolitana de Lisboa). • For all activities identified, organizations around the estuary identified where, when and how these activities were managed and reported this information on a standard form. Research was then undertaken into UK & EU studies to ascertain the type

<p>6. Contribute to ICZM dissemination; exchange of learning and recommendations & vision including producing 2 articles (1 local 1 transnational) on findings of natural heritage actions, as well as recommendations and proforma for the quarterly ICZM project web site update.</p>		<p>of impact the main activities could have on the species and habitats designated on the Severn Estuary and best practice techniques to manage these impacts (this information was collated into the 'Study of the Natural Resources of the Atlantic Coast' prepared by Area Metropolitana de Lisboa).</p> <ul style="list-style-type: none"> Articles produced for Severn Estuary Partnership newsletter (see appendix 3). Final report prepared for lead partner.
<p>7. The preparation of a phase 2 bid leading to the implementation of Severn Estuary BAPs.</p>	<ul style="list-style-type: none"> Application for funding requires match from the applicant. Many organizations within the Severn Estuary Partnership do not have the ability to match fund projects of an estuary-wide nature. For this particular funding stream there is a need to demonstrate a link between aggregate extraction and impact on the terrestrial environment. 	<ul style="list-style-type: none"> One particular partner of the Severn Estuary Partnership was able to find match funding to the sum of £60000. We were unable to identify a link between extraction of sand from the estuary sandbanks and intertidal habitat loss. Consequently we have been unsuccessful in this bid.

c) Summary

The main objective of this project was to improve spatial planning and sustainable development decisions around the Severn Estuary, focusing on the nature conservation dimension. The project identified a need to participate in transnational and local forums to establish common threats to the nature conservation resource and best practices in managing these to minimize any potential impact. To provide output from the participatory approach undertaken, the project identified a need to;

- Draw up a stocktaking of the main activities taking place around the Severn Estuary, their management and known impact;
- Research and identify best practices to manage these activities to conserve wildlife;
- Produce user friendly recommendation notes for those planning and regulating the development.

The project successfully engaged a wide range of stakeholders who contributed to the process of identifying activities, identifying appropriate management techniques and drafting recommendation notes. The main benefit of involving a wide range of organizations has meant that their awareness of the nature conservation on the Severn Estuary has significantly improved as has their understanding of how their activities and projects may impact the nature conservation resource.

It can be argued that managing nature conservation is really about managing the people that can impact on nature conservation. It is hoped that this project has contributed significantly to this process.

6.2.7. Project on the location and collection of floating waste. Region d'Aquitaine

a) Description of the working area



Figure 13– Map of Aquitaine

Natural environment

The Aquitaine coastline is 265 km long. It is located at the bottom of the Bay of Biscay. It extends from the Gironde estuary to the North of the Spanish border to the South.

Two areas can be distinguished:

- The sandy shore between the Gironde estuary and the Adour river mouth (230 km). The coastline is made of sandy beach, sandhill and forest. These systems are interdependent and very movable because of geological factors, dynamical factors (swell, wind, tide) and anthropogenic factors (photo 1).

The rocky shore between the Adour river mouth and the Spanish border, delimited by the Bidassoa river (35 km). It corresponds to the Basque coastline and, unlike the sandy shore, it is irregular with a serie of cliffs and small bays (photo 2).



Photo 6: Sandy shore of Mimizan in Landes.



Photo 7: Cliffs of Bidart in Pyrénées-Atlantiques.

Social environment

Three departments have a coastal line in Aquitaine: Gironde, Landes and Pyrénées-Atlantiques.

Population

420 000 inhabitants live on the coastal zone, with uneven distribution. The annual growth rate of population is 1%. Areas densely populated are the Arcachon basin, the Basque coastline and the Southern part of Landes. The mean density of population is about 80 inhabitants / km², which is less than the average for the whole coastal zone in France. One accommodation out of three is a holiday home.

Tourism

Accommodation capacity is based on holiday home (60% of beds). There are more than 1 500 000 bed-nights in hostels (9 220 bedrooms in 2003) and camping (74 780 locations) in the coastal zone of Aquitaine.

Yachting is also important, 62 500 boats are registered. About 150 new sailing boats and 1 300 new motorboats are registered per year.

Maritime traffic and fishing

Two commercial ports are located in Aquitaine: Bordeaux and Bayonne. Maritime traffic in 2003 was about 8 400 000 tons in Bordeaux and about 4 150 000 tons in Bayonne.

Fishing activity is developed around the harbours of Hendaye, Saint-Jean-de-Luz, Capbreton and Arcachon. In auction rooms of Arcachon, 2 579 tons of fish were landed during 2004, for a value of €14,5 millions. In Saint-Jean-de-Luz, 6 851 tons were landed for a value of €14,3 millions.

The Bassin d'Arcachon is also a very important area for oyster farming with 500 concessionaries.

Marine litter problem

Marine litter is major issue for the Aquitaine coastline. Since 1992, an average of 16 000 m³ of wood and waste have been collected per year along Landes coastline (106 km) with a maximum of 25 155 m³ in 1994 (source: General Council of Landes). A study of Bordeaux University (Carrere, 2001) showed that there was an average amount of 3 kg of waste per meter along the shore, with important geographical and seasonal fluctuations.

There is no evaluation of the amount of floating wastes in the bay of Biscay but a study carried out by IFREMER (Institut français de recherche pour l'exploitation de la mer) between 1992 and 1998 gave an average amount of waste of at least 1,42 waste per hectare (large geographical and seasonal fluctuations).

The Aquitaine shoreline is subject to this nuisance because of its geographical location at the bottom of the Bay of Biscay, the influence of waterways and the importance of tourism for regional economy.

Wastes have various origins:

- From inland, then wastes come on shore by waterways,
- Illegal dumps located along waterways and coastline,
- Dumps on the shoreline by recreational and professional activities,
- Dumping from ships (yachting, fishing, merchant navy).

Wastes are mainly in plastic but others have a natural origin and aground regularly: seaweeds, wood, carcasses. Their presence on beaches is normal but it can be considered as pollution by users or by local authorities.

Marine litter can have an impact on health (water quality, hazardous waste...) or can cause damage on animals (birds, turtles, fish...). It also has an important visual effect: accumulation of waste decreases the "value" (attraction) of the beach.

This topic may seem minimal regarding issues such as the development of coastal zones, erosion or floods. However, it is important to consider it as a major issue for local communities because of the

effects on ecosystems, the costs of clean up, the effects on tourism economy and the fact that it is difficult for them to reduce significantly the arrival of waste on the shore at their scale.

Conscious of technical and financial issues supported by local communities and faced with environmental stakes caused by marine litter, the Regional Council of Aquitaine decided to lead a programme dealing with:

1. Exchanging information and experience by
 - Supplying an overall visibility of answers brought by local communities,
 - Promoting exchanges between actors to have coherent actions.
2. Raising awareness of sea users
 - Professional fishermen,
 - Yachtsmen.

Architecture of this programme is described in figure 14.

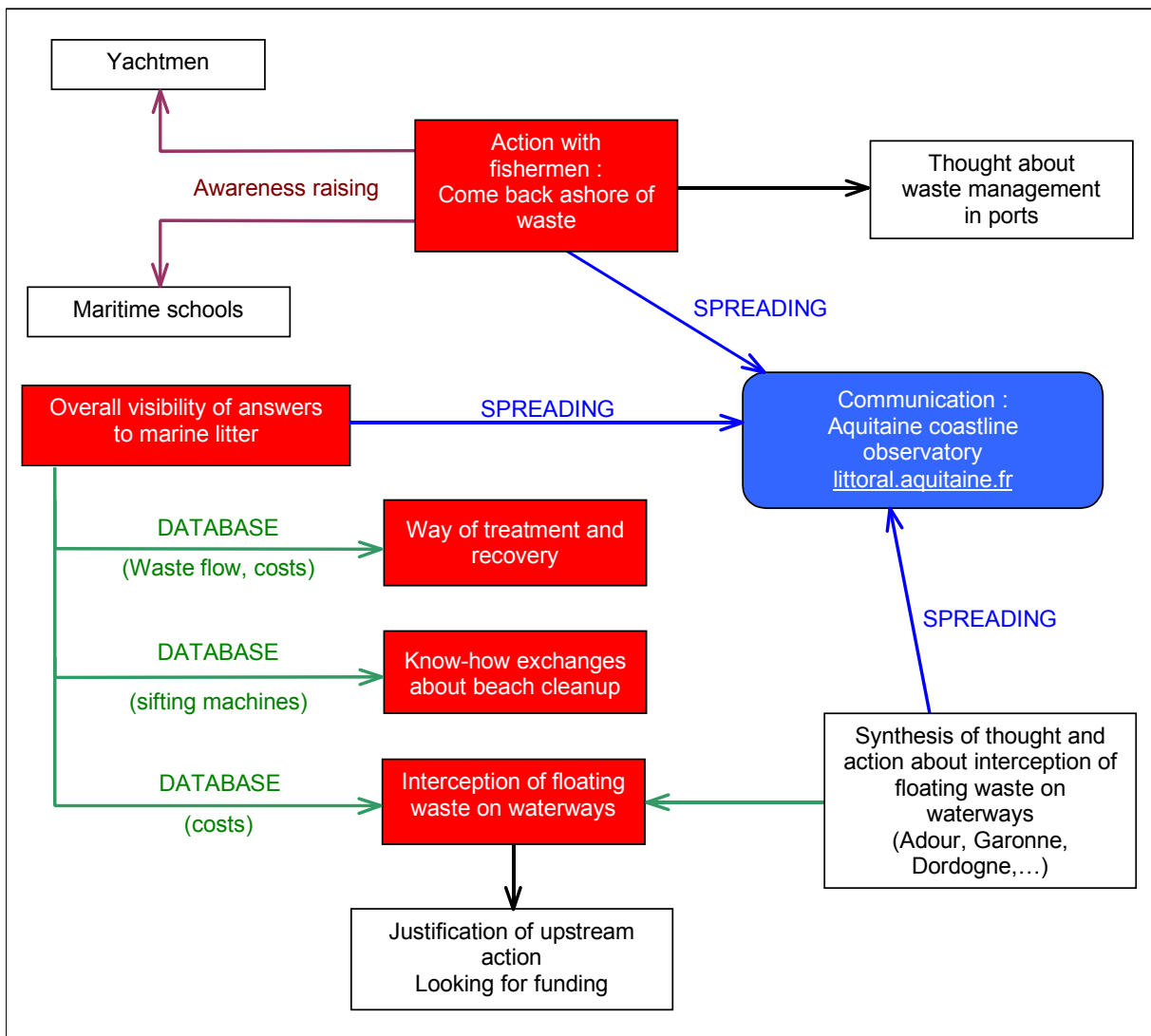


Figure 14 – Architecture of regional action program.

b) Methodology

Data collection methodology

Asking all coastal local communities to know what their responses to marine litter on their shore are.

Data

- | | |
|---|---|
| <ul style="list-style-type: none">▪ Operator: contracting authority, project manager▪ Area of collection:<ul style="list-style-type: none">- sand hill- shore- at sea▪ Length of coastline cleaned during seasons▪ Frequency of collection | <ul style="list-style-type: none">▪ Technical means▪ Human means▪ Results and follow-up▪ Financial means▪ Funding▪ Amounts of waste collected▪ Waste disposal |
|---|---|

Results

General organization of coastal cleanup varies from department to department. Figures 20, 21 and 22 sum up these organizations.

Figure 15 – Organization of coastal clean up in Gironde

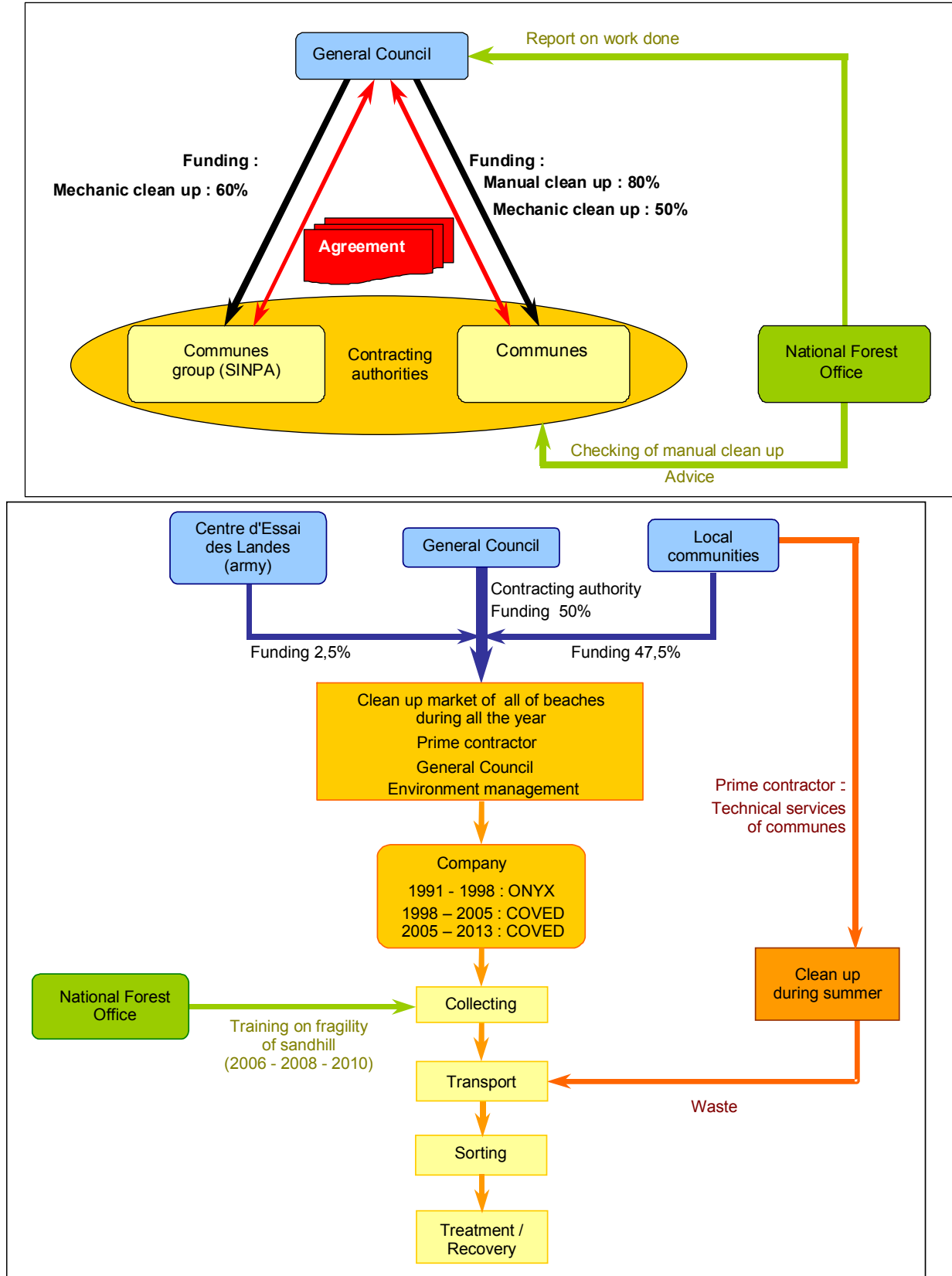


Figure 16 – Organization of coastal clean up in *Landes*

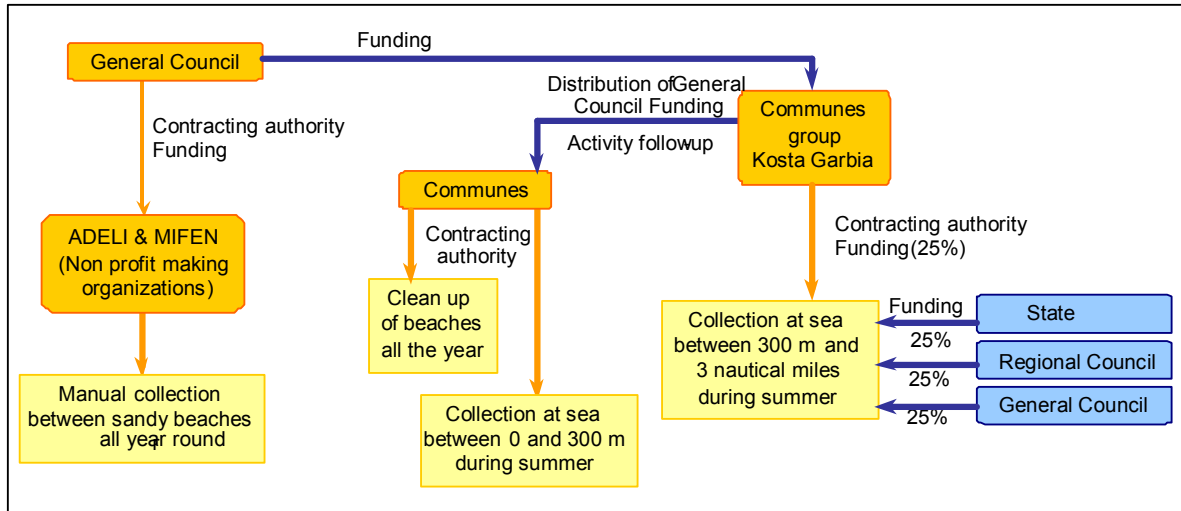


Figure 19 – Organization of coastal clean up in *Pyrénées-Atlantiques*

Clean up is mainly done during spring and summer because of tourist frequentation. But operations still exist all year round.

In **Gironde**, communes organize themselves their beach cleanup, distinctly from the action undertaken during spring. In this case ten communes get together and call a company to collect waste with mechanical means during 4 to 5 weeks in May. Four communes collect waste all year round but with low frequencies during winter and autumn, mainly in accordance with waste stranded. During summer, cleanup is performed daily on some beaches; on others it depends of the condition of the beach.

In **Landes**, collection by General Council is planned all year round and frequencies are foreseen according different areas. Various configurations allow communes to choose a cleanup method adapted to their needs (figure 9 and table 1).

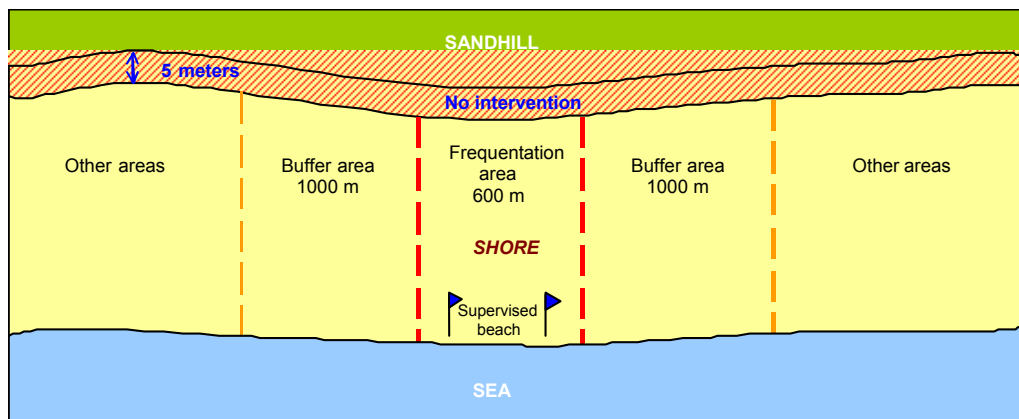


Figure 20 – Areas considered for beach cleanup by General Council in Landes

BASIS CONFIGURATION		January 1 – may 31	June 1 – September 30	October 1 – December 31	
Frequentation area (600 meters)		Raking mesh 50 mm Once a week	/	Raking mesh 50 mm Once a week	
Other areas	Buffer area	Raking mesh 80 mm Once a week	Raking mesh 80 mm Once a week Raking mesh 50 mm Once a week	Raking mesh 80 mm Once a week	
	Remaining area		Raking mesh 80 mm Once a week		
CONFIGURATION 1		January 1 – may 31	June 1 – September 30	October 1 – December 31	
Frequentation area (600 meters)		Raking mesh 50 mm Once a week	Sifting mesh 20 mm Once three days	Raking mesh 50 mm Once a week	
CONFIGURATION 2		January 1 – may 31	Easter holidays (3 weeks)	June 1 – September 30	October 1 – December 31
Frequentation area (600 meters)		Raking mesh 50 mm Once a week	Raking mesh 50 mm Once three days	<i>According to basis configuration or configuration 1</i>	Raking mesh 50 mm Once a week
CONFIGURATION 3		January 1 march 31	April 1 – may 31	June 1 – September 30	October 1 – December 31
Frequentation area (600 meters)		Raking mesh 50 mm Once a week	Raking mesh 50 mm Once three days	<i>According to basis configuration or configuration 1</i>	Raking mesh 50 mm Once a week

Winter season
 Summer season

Table 3 – Organization of cleanup of Landes coastline performed by General Council.

In **Pyrénées-Atlantiques** beaches are cleaned everyday by municipalities all year round but frequency increases during summer. The General Council is the prime contractor for collecting waste from the most frequented beaches; this work is done by non-profit organizations that collect waste manually.

Mechanical means to clean beaches are widely used. The nature of the coastline allows for the use of sifting machines: large sandy beaches without shingles where access is easy for vehicles (photo 3).



Photo 8 - Use of sifting machine during summer in Landes.

Since the Prestige oil spill, there are only two municipalities in Gironde without any sifting machine. In Landes all of them own at least one. In Pyrénées-Atlantiques, because of the rocky

shore, sifting machines can only be used on sandy bays. Areas with shingle or rocks are manually cleaned.

About 300 people employed by communes, associations, companies, take part in beach cleanup during summer. However it is difficult to estimate the total working time spent on this activity.

Collection **at sea** takes place only in Pyrénées-Atlantiques. Five municipalities out of seven gather floating waste between 0 and 300 meters with nets and small crafts. All these municipalities get together in a group, which is a prime contractor for collecting waste at sea between 300 meters and 3 nautical miles. A small plane detects floating wastes and gives their position to the fishing boat in charge of their collection. Wood and wastes are sorted, and then recycled. During 90 days, in 2004, 6 tons of wood and 8 tons of plastic were collected.

The disposal of these wastes is another important aspect of the issue. In Gironde, each municipality takes care of its waste; landfill is the main method of disposal (figure 10). Valorisation of wood could be better (composting or energy recovery) but it needs sorting facilities, which do not exist yet.

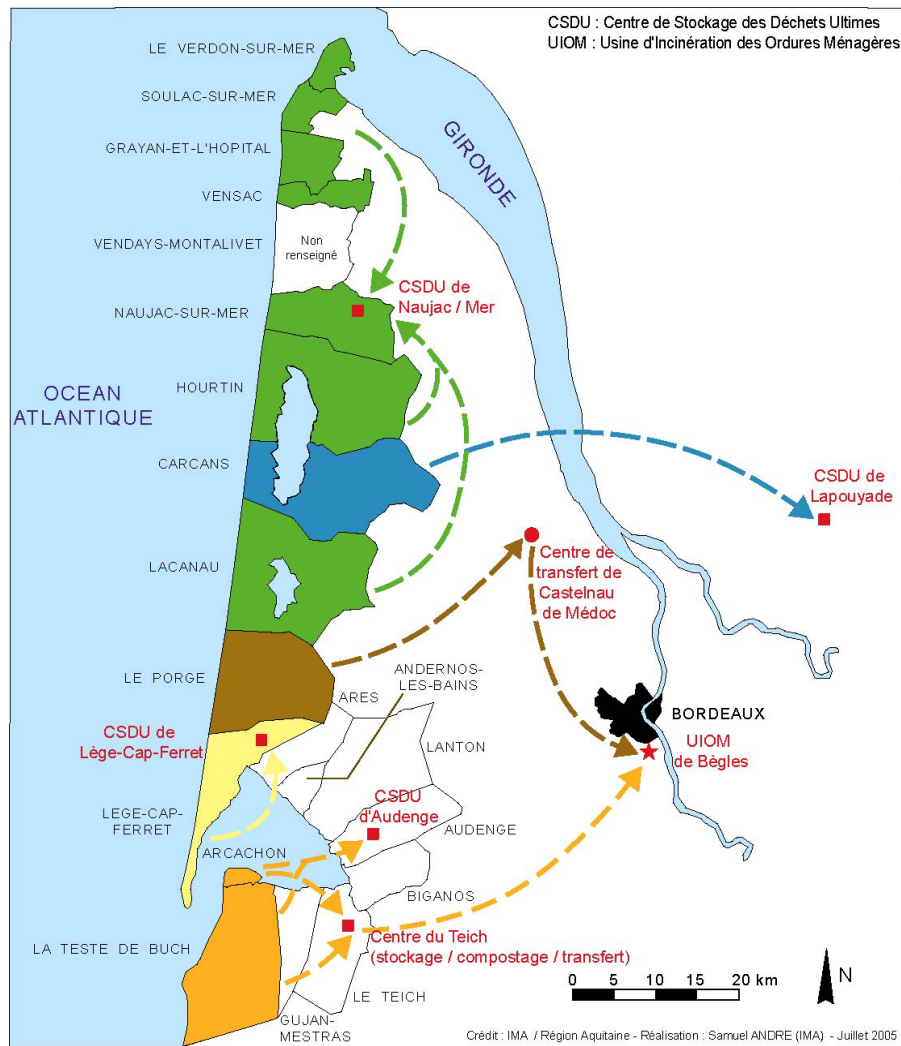


Figure 21 – Marine litter disposal in Gironde

In Landes and Pyrénées-Atlantiques two sorting facilities dedicated to waste collection on beaches allow separation of waste, wood and sand (photo 4 and 5).



Photo 9: Sorting of wood collected on Landes coastline. Photo 10: Sorting of sand collected on Landes coastline.

The monitoring of waste collection is highly variable according to departments and operators. In Gironde, information is not complete. During the spring clean-up (five weeks of work) operated by the group of municipalities called SINPA (Syndicat intercommunal de nettoyage des plages atlantiques), 70.4 tons in 2004 and 73.4 tons in 2005 have been dumped in landfills but we do not have any information about the proportion of sand versus wood. The organization set up by General Council in Landes has allowed more precise data since 1992 (figure 11).

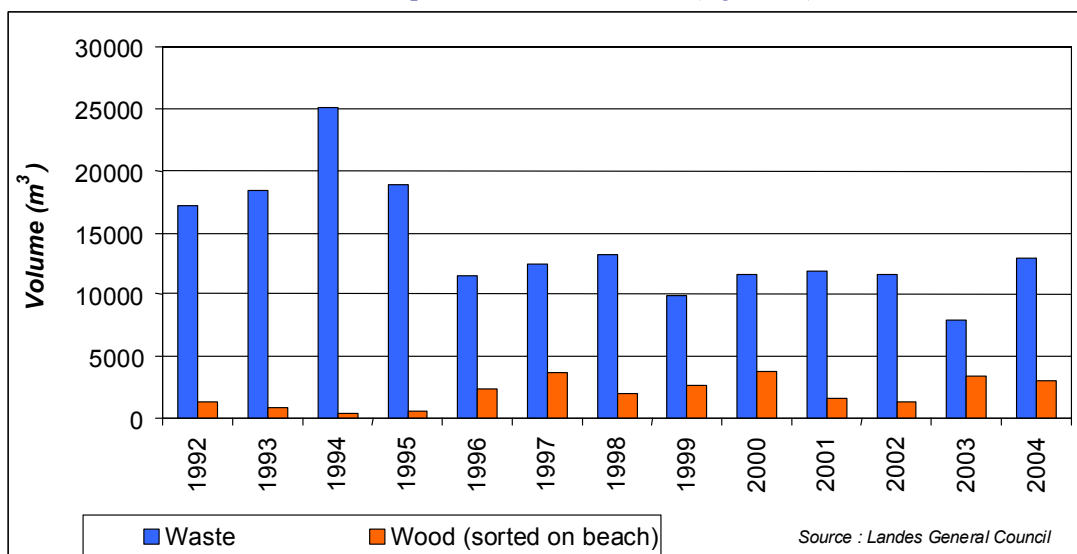


Figure 22 – Waste collected on Landes coastline (106 km)

In Pyrénées-Atlantiques, the group of municipalities Kosta Garbia is even more precise with regard to the details of data on the categories of waste per municipality (table 2).

	BEACH							Bins	At sea (0-300m)
	Tons	% Plastic	% Wood	% Seaweed	% Sand	% Metal	% Others		
Anglet	3500	0,5	15	0	67	0,5	17	90 tons	3,1 m ³
Biarritz	2233	25	72	3	0	0	0	125 tons	5 m ³
SIAZIM	445	25	73	2	0	0	0	25 tons	/
Bidart	2161	7	14	1	78	0	0	150 m ³	/
Guéthary	700	38	30	32	0	0	0	2 m ³	/
Saint-Jean-de-Luz	1329	8,5	27	5,5	46,5	0	12,5	100 tons	40 m ³
Ciboure	66	6	7	86	0	1	0	65 m ³	2 m ³
Hendaye	3042	0,4	16,4	4,9	59,2	1,3	17,8	17 m ³	/

Table 4: Proportion of materials collected in Pyrénées-Atlantiques (35 km)

(source: group of municipalities Kosta Garbia)

Raising awareness among sea users

Methodology

The objective of raising awareness among the sea users is intended to limit waste dumping into the sea by changing habits and practices among the groups that mostly “use” the sea, namely fishermen and yachtsmen.

Since 1996, a young Basque fishermen association called "Itsas Gazeria" has raised awareness about marine litter and has encouraged fishermen to manage waste correctly. In 2001, the Regional Council of Aquitaine invited tenders to innovate about location and collection of marine litter at sea. In 2002 and 2003 the company "Bertin Technology" experimented collection of marine litter with the implication of fishermen (45 tons of marine litter collected during a 9-month period). In 2004, the Regional Council of Aquitaine entrusted the program to the Institut des Milieux Aquatiques in order to develop the pilot-project and extend it to the whole littoral of the region.

Fishermen take part voluntarily in the scheme. They collect the waste they catch in their nets during fishing and bring them ashore without financial incentive.

Four fishing ports have skips or containers for wastes, which are:

- produced on board (preventive measure),
- collected at sea when fishing (remedial measure).

A special program officer has to be in the ports every day:

- To give plastic bags to crewmembers,
- To raise awareness with professionals,
- To set up contacts with contractors who pick up the skips,

To keep ongoing contacts with professional organizations and port authorities.

c) Results

Crewmembers of 164 fishing boats were contacted in 2004, which represents 1800 fishermen in Aquitaine (90% of total population).

	Number of distribution of plastic bags	Number of boats
Saint-Jean-de-Luz / Ciboure	138	48
Arcachon	208	56
Capbreton	79	21
Hendaye	60	18
Other harbours	34	21
<i>Total</i>	<i>519</i>	<i>164</i>
<i>Number of plastic bags directly delivered to crewmembers</i>	<i>13 000</i>	

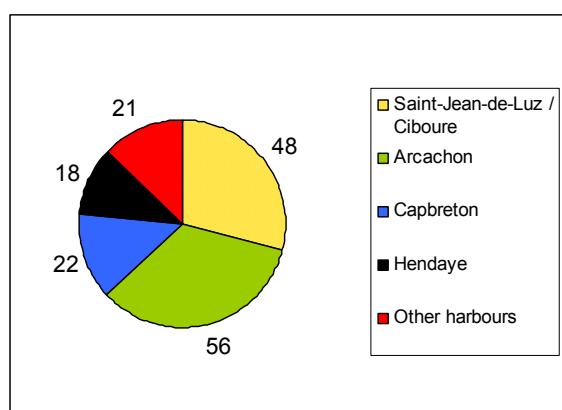


Figure 23 – Distribution per harbour of contacts with crewmembers in 2004

89 tons (1004 m³) were collected and disposed of in 2004 and 86 tons from January to September 2005 (figures 13 and 14).

Categories of waste:

- Domestic waste\>: plastic and metal packaging, bottles, paper...
- Ordinary industrial waste: remnants of nets, hawsers, cans, crates, polystyrene
- Special industrial waste: oil cans, engine filters, paint cans, batteries

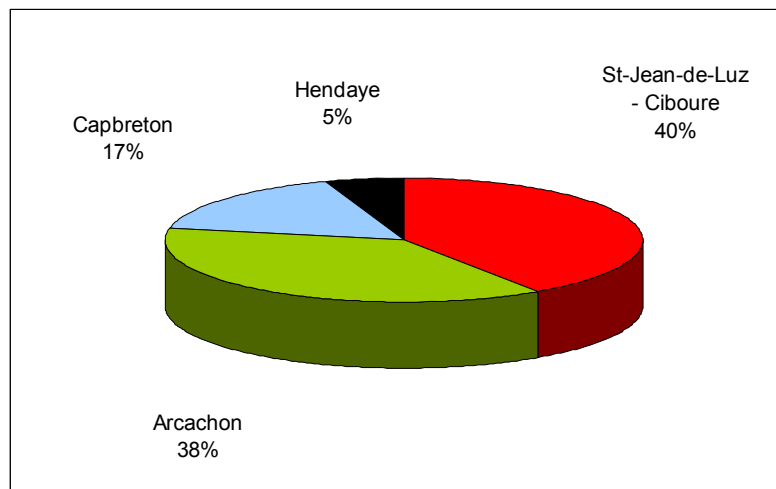


Figure 24 – Distribution per harbour of collected waste tonnages from January 2004 to September 2005

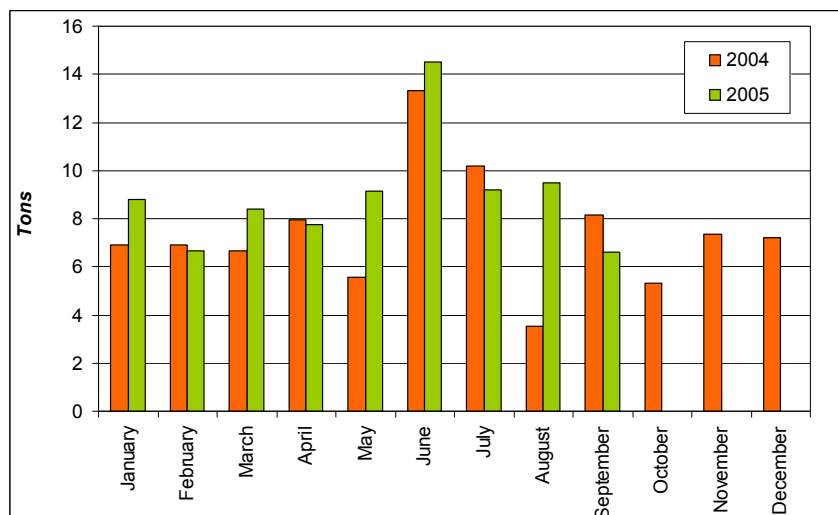


Figure 25 – Monthly situation for collected waste

Final waste are incinerated or put in landfill. 80 m³ of old fishing equipment, which might be reused, have been exported to underprivileged fishermen in Africa.

Actions towards yachtsmen and in budding fishermen

To raise awareness among yachtsmen, priority is given to direct contacts with the program officer. Nevertheless harbour authorities, ship chandlers, shipyards and yacht clubs are involved to relay information by giving plastic bags and brochures to yachtsmen.

Actions of raising awareness are also directed towards budding seamen so that they learn how to manage waste correctly on board.



d) Proposals

Follow-up

The issue of marine litter is often underestimated inasmuch as it is seldom part of a policy per se and lacks a consistent and comprehensive monitoring. Therefore, there are no follow-up actions or programs of actions, which would tackle the problem directly. In order to be efficient and to set up a program which could in the long term improve the situation, there is a concrete need for:

- Integration of data connected with mechanical cleanup / manual cleanup areas in ICZM tools. For instance, these data will be included in the GIS software of the Aquitaine coastline observatory (<http://littoral.aquitaine.fr>) in order to be analysed, compared or evaluated.
- Cost analysis of different methods of cleanup. In this case it is essential to include cost of waste disposal to get coherent data and be able compare them.

Actions

- Obviously, all operational actions which aim at reducing illegal dumping, river maintenance, collecting and recovery of waste will reduce arrivals at sea and therefore contributing to improve situation on coastline (prevention).
- Raising awareness among sea users about marine litter issue and its consequences on coastline.
- Develop actions to have rational cleanup, notably with use of sifting machine: training of sifting machines drivers about fragility of sand hill and of rational use of machines.

- Put in place scientific monitoring to know the consequences of various methods of cleanup on flora and fauna of beaches.
- Information and communication for tourists and local councils on the fact that a beach is not a "sandpit" but an ecosystem in which seaweed and wood have their place.

These actions are or will be developed in Aquitaine by various participants of beach cleanup and waste management.

d) Problems and solutions

Problems	Answers	Conclusion
Actions are different between three departments of Aquitaine (even though the nature of the coastline is relatively homogeneous)	Increase of know-how exchanges in order to have coherent actions	Common actions are under way on thematic topics (for instance: exchanges of experience on the use of sifting machines)
Total costs of beach cleanup for local communities is unknown	Survey to assess it	Results are not reliable at a large scale because of a lack of monitoring.
Risk of decrease of waste collected by fishermen with stop of financial incentive in 2003	Great presence in ports of program officer (formerly fisherman) with distribution of information brochures on results in order to maintain implication	Increase of amounts: 89 tons in 2004, 86 tons from January to September 2005

6.2.8. Results

The local communities are the main actors on the territory; their involvement is very important for the success of any intervention strategy; involving them from the beginning in the discussion is fundamental to embrace all local specificities.

To promote the integration in the ICZM of the areas under administration of the port military, the lagoon and the estuary systems, through instruments of territorial administration, of integration mechanisms and the co-responsibility and of the environmental certification of the ports.

To reinforce the mechanisms of the resolution of subjects transborderline, through the formulation and implementation of the Emergency Plans among the states members, of the continuous attendance of the evolution of the administration of the international hydrographic basins and all the options of the Marine Strategy of the European Union (EU).

To ensure the assessment and the continuous monitoring, through the use of innovative methodologies uniforms, including valid indicators that feed a national and international base of data that allow a better knowledge of the system, the programming of new actions and the reevaluation of already made actions.

To reinforce fiscal actions, through the assumption of the national importance of the coastal area, promoting regular preventive actions and replacement of the legality.

Intervention in risk areas associated to the phenomenon of natural and/or human origin, through the implementation of operational programs that allow in a short term to mitigate the critical situations with in the definition of priorities.

To promote a better use of the resource beach – through appropriate communication strategies to the problems and local specificities, it will be possible to change people’s mentality.

To inform the population about the issue of the marine solid residues and his impact on the coast.

To monitor the impact caused by the several processes of the cleaning of the beaches and to endorse the better methods for the real needs.

6.2.9. Conclusions

The planning and management of the nature areas with high potential is important to ensure the biodiversity, sustainable development and the natural heritage of the Atlantic coast.

The soil plays a primary role as a basis for development, being the means for the spatial expression of the economic, social, cultural, and ecological policies of the society, hence the need for its rational use.

The protection of biodiversity competes with the growing and conflicting pressures involving the use of the soil, so the policies to be defined at the European level will have a growing role in the resolution of this problem, maximising the value of the areas already protected and integrating the questions of biodiversity into sectorial policies and other environmental policies.

The conservation and reintroduction of the nature areas must therefore be the main objective of the land use policies, with a view to ensuring:

- The protection and management of the nature or semi-nature areas in urban areas, intensively used rural regions, as well as in uninhabited areas;
- The definition of minimum areas reserved for nature and a network of biotopes;
- A reorganization of the interrelationships needed between the various nature areas;
- The conservation of the natural land surfaces, protecting the soil as a non-renewable natural resource.

The conservation of nature, being the management of the human use of nature, it should enable to make the maximum profit, while being compatible with the maintenance of the regenerative capacity of all the resources, pursuing the objectives of:

- Maintaining the ecological processes and natural systems;
- Preserving the biodiversity;
- Using species and ecosystems in a lasting and sustainable manner.

The protected areas, as instruments of the policies for the conservation of nature, a component of land use zoning, will embrace the following objectives:

1. Protect the landscape, the flora and fauna, maintaining the dynamics and structure of the ecosystems;
2. Encourage integrated development and growth, based on the traditional activities and other activities compatible with the preservation of the values and natural resources of the protected area;
3. Encourage uses that are compatible with the conservation of resources;
4. Integrate the protected areas into ever-growing areas for applied research.

At the end of 2003, the sites designated as special protection areas or proposed as sites of community interest represented 15% of the territory of the European Union, a fact that accentuates the need for the protection/sustainable use of these areas.

	2002	2003
EU (25 countries)	:	:
EU (15 countries)	12.3	12.5
Euro-zone	12.6	13.0
Euro-zone (12 countries)	12.6	13.0
Belgium	9.9	9.9
Czech Republic	:	:
Denmark	7.4	7.4
Germany	7.0	7.0
Estonia	:	:
Greece	16.4	16.4
Spain	21.8	22.6
France	6.3	6.8
Ireland	9.5	10.7
Italy	14.7	14.7
Cyprus	:	:
Latvia	:	:
Lithuania	:	:
Luxembourg	14.8	14.8
Hungary	:	:
Malta	:	:
Netherlands	8.2	9.5
Austria	10.6	10.6
Poland	:	:
Portugal	16.4	17.4
Slovenia	:	:
Slovakia	:	:
Finland	12.7	12.7
Sweden	13.9	13.9
United Kingdom	6.7	6.5
Bulgaria	:	:
Croatia	:	:
Romania	:	:
Turkey	:	:
Iceland	:	:
Norway	:	:
United States	:	:
Japan	:	:

*Table 5 – Protected Areas for biodiversity: Habitats Directive
 Area proposed under the Habitats Directive as a percentage of total area*

Font: EUROSTAT, 2006.

Note: The indicator is based on national territories proposed by countries under the Habitats Directive as a percentage of total area. The EU policy on nature conservation is part of the EU biodiversity strategy. Mainly, it is based on the implementation of the two directives: Council Directive 92/43/EEC of May 21, 1992 (Habitat Directive) on the conservation of natural habitats and of wild fauna and flora and Council Directive 79/409/EEC of April 2, 1979 (Birds Directive) on the conservation of wild birds.

The protected areas need to be integrated in broader systems of protection; therefore it is essential that the interlinking of the sites be promoted, with a view to ensuring the possibility of survival for the species that move from one place to another, the implementation of this objective being the responsibility of the Nature 2000 Network.

The protection, maintenance and increased potential of the protected areas should be effected through planning and management that are articulated institutionally between the various bodies and different levels of Administration that have jurisdiction in the area.

Among other aspects, it is of the highest priority to carry out the resolution of issues arising from urban development – urban expansion, large tourist projects, opening of new access routes; or those resulting from illegal activities – such as illegal construction, dumping of inert materials and pollution, which can jeopardize the conservation of these areas – environmental and conservation conflicts.

Within the European space we rounded up a vast number of nature areas that are important for balanced land use and which are characterized by the constant economic-financial pressures fostered by a management that is heavily dependent on a Central Administration. It is therefore fundamental that we develop institutional mechanisms that will guarantee the financial sustainability of the local and regional management of the protected areas.

The fact that the costs related to the presence of the protected areas are generally borne by the local population, while the benefits extend to the whole country causes a problem of equity; costs and benefits are other questions pointing to the need to optimize the means for guaranteeing the financial sustainability of these areas.

In order to guarantee nature management, it is imperative that we accelerate the transposition of the Community directives and other Community legislation with regard to the conservation of nature and the integrated management of coastal zones.

A way of monitoring and assessing the evolution of the protected areas, and in particular, the protected areas integrated in the coastal zones, should be to use a uniform set of indicators defined at the European level. , this would describe the state of conservation of the habitats and the protected species as well as the degree of preservation of the area.

The floating waste project illustrates the vulnerability of the coastline in general. The coastal zone, whether protected or not is subject to various pressures and pollution coming from the hinterland and the sea. Given the specificity of the sea with currents which can bring pollutants over hundreds of km (as shown with the Prestige oil spill), it is all the more necessary to co-ordinate the prevention and protection form pollution along the Atlantic Area, especially in the Bay of Biscay.

Indicators showing the state of conversion of the habitats and the protected species

Resident population

Area of construction

Natura Network

Marine Protected Areas

Protected Areas Integrated in International Networks

Surveillance of the Protected Areas

Species of fauna that are threatened and protected

Species of fauna and flora that are threatened and protected

Protected areas covered by Land Use Plans

Quality of the water in bathing areas

Evolution of the coast line

Specific events involving discharges of untreated effluents

National Ecological Reserve

Use of protected areas as locations for raising public awareness and environmental education

Maintenance of agricultural and forestry systems having special interest in nature conservation

Area of burned off land in protected and/or sensitive areas

Table 6 – Indicators to the Conservation of the Natural Heritage

Source: Adapted from Instituto do Ambiente, Proposta para um Sistema de Indicadores de Desenvolvimento Sustentável, Portugal, 2005.



6.3. Cultural Heritage

Cultural heritage is the identity of the people, their origins, their evolution, their history and their life throughout history and is therefore a fundamental element in the running of any development



Photo 11: Caerleon Amphitheatre

project for any sector.

This is obviously applicable to the Integrated Management of Coastal Areas project that could not be considered fully integrated without taking into account cultural heritage, which includes the purely coastal area and the adjacent interior zones of that coastal area.



Photo 12: Transept

Cultural heritage means all the forms expressing a way of being, of doing, of living, of relating... between the inhabitants of an area, starting from the most traditional sections (such as architectural, ethnographic, historic heritages, etc...) to the least known as heritage, but absolutely integrated into daily life, such as the microtoponymy of the area, which form part of an intergenerational memory and are the expression of the link between the people and their geographical environment throughout history.

The objective of this project is to preserve heritage wealth in the coastal areas, promote it and let people know about it, especially, if it can be of benefit to the area, by studying the territory in its widest concept, allowing the inhabitants to know about it, preserving it, protecting it and promoting it in an attractive way, making it a focal point of attraction for visitors and at the same time reinforcing local identity through a deeper awareness of the territory for its own inhabitants.

6.3.1. Cultural heritage issues

This project strand will contribute to the overall objectives of promoting the integrated management of coastal areas and estuaries and protection of wetlands by helping to address two issues:

- **Sustainable development**

Illustrating the fact that the heritage resource, although rich, is finite, there have been important ties between the countries of the Atlantic Coast for thousands of years – the management of the Administration is vital to ensure that these monuments, sites, individual finds and cultural legacy are preserved for the benefit of future generations.

- **A Sense of Belonging**



Photo 13: Severn footprints

The examination of the cultural legacy will not only facilitate a greater understanding of links between countries but will also play an important outreach role in enabling local people to examine the region in which they live. A sense of belonging is desirable to foster the appreciation of the environment in people and enrich the lives of the inhabitants and visitors of the region.

Practically, the Cultural Heritage strand contributes to the preservation of transnational networks which reinforce the local stakeholders Forums increasing therefore the value of the local cultural heritage.

With this philosophy, the two partners in this thematic line have focused on the projects that are briefly outlined below:

6.3.2. Cultural Heritage in the European Union

Cultural heritage has always been the injured party when it comes to planning territory. Until recently, as far as existing cultural heritage is concerned, it was so undervalued, in most cases, that when it came to planning, urbanising or building the necessary infrastructures and equipment for the

development of an area, not only was it not taken into account but there were hardly any factors to preserve it. Many of these cultural elements appeared when constructing a new building and it was no problem to pull them down to be able to carry out the work.



Photo 14: Tidal mill

Currently, this trend has changed and there is much more control of heritage materials than before, even with regard to elements of heritage that are localised when excavating, rehabilitating or topographically studying an area.

In the cultural heritage, the archaeology role has yielded many traces of pan-European links, from Prehistory to modern times. Influences from Iberia and France are found in the Celtic Finds of the Severn Estuary, and Roman boats brought trade goods from all over Europe up to the Severn for distribution at ports on both English and Welsh sides of the Estuary.

Photo 15 : Severn Skip



This project provides a rare opportunity to tie together various strands of archaeological information to build an ideal platform to disseminate our understanding of links between countries in the past. The enduring appeal of archaeology to enable a sense of place should ensure that the results of the project are popular at both local and national/international levels. Factors relating to sustainability will also have cross-national benefits;

to promote the highest sustainable quality of life and environment, without compromising the ability of future generations to meet their needs, and indicating past links between communities of the Atlantic.

The opposite trend was observed with regard to the immaterial cultural heritage that cohabited with the population throughout history and which, since the mid 20th century, due to the lifestyle changes of the population, has been losing presence and has been relegated to very localized sectors.

Photo 16: Windmill



Older generations and some associative entities became “refuges”; they were nearly living treasures of popular culture, traditions and know-how of society.

Currently, in this 21st century, we are retrieving and re-evaluating those “treasures” such as, tradition, language and culture in general, which are the inheritance that belongs to future generations.

In any of these cases, preservation of heritage is taken into account, although legislation is different in each member state of the EU; today one concept is a priority: to know, study and promote existing heritage, in every way, given that it plays a fundamental role in the sustainability of a territory and the sense of identity of its inhabitants and could be an engine for development.

Issues

Photo 17 : Country house ruin



The main issue of material Cultural Heritage is that one part is in private hands and its preservation and maintenance is costly.

The culture and awareness problem regarding the preservation of heritage is disappearing today thanks to the population’s awareness of the fact that heritage is our history and our wealth and consequently its disappearance

would be the loss of our identity and our memory. Hence, the great problem that we once fought against, the lack of interest and awareness of great sectors of the population regarding the material, sentimental and economical value of heritage, is disappearing. At the same time, a parallel legislation that supports preservation more and more has been developed, favouring the retrieval and conservation of the mentioned heritage.



Photo 18 : Country house restored

6.3.3. Objectives

Towards an integrated and common management

- To implement an integrated management of the coastal areas and the neighbouring interior areas.
- To contribute to the cultural diversity of a space.
- To implement an information system that is able to integrate data on cultural resources.

Exchange of good practices

- One of the main objectives of this project is the integration, in similar spaces or places with shared characteristics and problems within the Atlantic area, of a common management or an exchange of good practices, allowing these places to learn or adopt successful experiences carried out in other spaces as a model or, on the other hand, reject others that were a failure, and therefore not convenient to be carried out. This should take place so that what has been done in the different spaces belonging to the Atlantic zone, or what is still to be done, becomes a model that the rest can recognise and take advantage of for their own development.

The objectives mentioned previously are being carried out within the two territories involved in the Cultural Heritage thematic action, through individual projects that each of the members presented in their respective spaces. The experiences these concrete projects revealed have been shared with the other partners of “Coostatlantic” in the general meetings held during the project. At the same time, the partners organising each meeting showed us and explained their project in their territory.

- The Welsh partners involved together with Galicia in the “Cultural Heritage” thematic line, visited Galicia in November 2004 to get to know the territory involved in the project and observe in situ the Galician experience, the problems, needs and expectations. It was an exchange of ways to act when considering cultural heritage, which has enriched the management model that could be established in this thematic line and in the framework of an integrated management of a coastal zone. In 2006 Galicia will return the visit and go to Wales with the same expectations as far as learning and possible application of ideas is concerned.

- The visit of Severn to Galicia, as well as helping to get to know the territory where the project is being developed, made it possible for the Welsh technicians to establish relations with

businessmen of the mentioned area and find out about the experiences those people had to be able to make for their business to be successful.

Improvement on the local management.

- To promote the participation of local communities as well as of people and entities who have the capacity to influence the improvement of the integral management of the coast.
- To facilitate formulas and means for the visitor that incorporate criteria for sustainability and hierarchy in the elements on offer for tourism, favouring alternatives for his/her leisure use that are adequate to the socio-economic and environmental conditions.
- To strengthen the links among Atlantic countries, from prehistoric times to the modern age, and the importance of transoceanic movements.
- The goal of this project was to set lines of interaction on the basis of research and knowledge of the environment, developed from endogenous resources, in search of a sustainable development of the area and aiming to establish the best way to develop the territory, preserving, at the same time, the quality of nature, the environment, heritage and culture.
- To increase in value the cultural and natural heritage of the Galician areas of Ortelgal, A Mariña Occidental, A Mariña Central and A Mariña Oriental, taking into consideration the “maritime culture” and the “agricultural culture”, through a diagnostic study of the territory and its elements.
- To catalogue the mentioned heritage and promote it, by using new technologies in the whole process and involving the population in a sustainable development of the areas that integrates economic, environmental and cultural aspects.
- To preserve and evaluate the cultural and natural heritage.

Preserving and giving value to the cultural and natural heritage of the territory involved in this project is the main objective. That is why a study on the situation and state of preservation of local Galician heritage was carried out, together with data collection, a review and update of the existing stocktaking of heritage and, finally, a proposal of prompt intervention for the recuperation of the more important elements was suggested.

In the case of the territory of the Severn Estuary, an archaeological stocktaking of existing elements was made so that it would be taken into account when planning all the development actions, especially for new infrastructures or facilities that are to be developed along the Severn Estuary .

- To increase in value the local resources within the limits of the project.

It is key to consider the importance of local heritage and, together with awareness of this resource, the way to make the local population and the different authorities involved in the spatial planning value it. In other words, they wanted all inhabitants to be aware and value their heritage through all studies carried out and their later promotion within all the social contexts of the territory. It has also been recommended to consider each evaluation of heritage when carrying out the infrastructures or facilities that could affect the mentioned heritage elements, protecting them and preserving them when planning.

- To promote sustainable tourism in the areas of action with the criteria of territorial quality.

In a parallel way, an awareness and valuation of the mentioned heritage resources must help promote the territory, given that the existing elements, be it in the Severn estuary (Wales) or in the *comarcas* (regional departments) of As Mariñas Lucenses and Ortegal (Galicia), are of great archaeological, architectural and cultural value, which must also be added to the great natural value found in the two territories. This heritage set (cultural and natural) must be put together and offered as a tourist attraction, promoting the environment and being a focal point for visitors, accompanied by a parallel offer of hotel and catering facilities that allow the traveller to see the different leisure possibilities available in these areas. Of course, for all this to happen, a basic factor must be maintained, and that is the preservation of these resources, albeit natural or relating to heritage. Without this, it will be impossible to maintain territorial quality and, consequently, the attraction point of the territory being offered to possible visitors would be lost.

- To reinforce local identity through the promotion of information for the local population about their heritage. Studies of both territories must be available to the resident population, so that a deeper knowledge of these spaces really reaches its inhabitants and has a positive repercussion on local identity, strengthening and incrementing it, resulting in greater identification between population and environment.
- To diffuse heritage resources in the territory with regard to a sustainable development.

Together with one of the previous objectives, which aims for sustainable development, this objective reiterates the need to make the most of heritage resources, taking into account heritage wealth in both territories.

6.3.4. Improving sustainable development decisions in the coastal zone, focusing on the cultural conservation dimension. *Severn Estuary Partnership*

a) Description of the working area



The Severn Estuary is the largest example of a coastal plain estuary in the United Kingdom and one of the largest estuaries in Europe with an area of 24,700 ha. It is a phenomenally rich and varied archaeological landscape.

Figure 26. Severn Estuary location

Historic Environment

A landscape in which one can walk alongside the footsteps of those from the past – with footprints of Mesolithic humans visible in the mud of the Gwent levels, and the imprint of the boots of Roman soldiers visible in tiles of the Roman Barracks at Caerleon.. Trackways of the Bronze Age, villages of the Iron Age and fish traps of the Medieval period can also be found in the Estuary and its Levels whilst more modern elements, relating to the defense of Britain in the 20th Century also have historic significance. Generally speaking, older archaeological deposits are buried deeper, with more recent deposits above them. In the Severn Estuary however, one can find prehistoric remains on the surface of the mud of the inter-tidal zone.

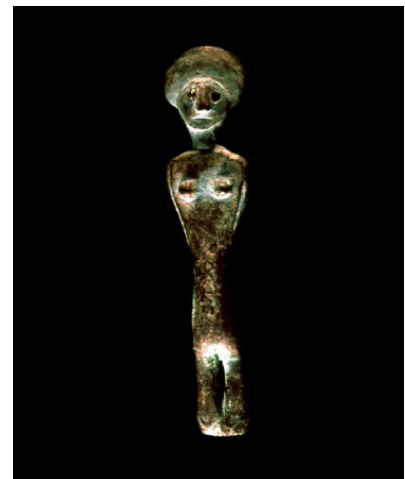


Figure 27. Aust Goddess

The River Severn meanders over a course that has altered over time – this must be an important consideration in any Planning Decisions; areas that are now land may once have been inter-tidal and with huge potential for archaeological deposits – much of the land has been reclaimed from the River. One must also remember that areas now within the waters may hold incredible archaeological elements, after all the *Mary Rose* was found in the Solent. The Severn of course has a rich maritime heritage, to which the finds of the Newport (Medieval), Barland's Farm (Roman)

and Caldicott (Bronze Age) boats bear testament; such potential will be a serious consideration in planning decisions.

Social Environment

As with other elements of the Coastatlantic project, whilst the Severn Estuary itself is a single physical system from a social and economic perspective it separates its two shores both socially and economically. Although the Second Severn Crossing enhances communication between southern England and South Wales, day-to-day contact specifically between the two sides of the estuary region is limited. Less tangible but no less significant is the lack of a feeling of community identity across the estuary.

Figure 28. Severn Estuary map



Studies of the region, until recent years, have often concentrated on one side of the water or the other, without considering the landscape as a whole. The Coastatlantic project aimed to take the example of the later Prehistoric and Roman periods

and establish a cogent whole for the story. In so doing, this would provide vital evidence for the production of information to guide decision makers within the planning sphere and emphasize the region's connections with the European mainland; connections that have existed for millennia.

b) Methodology

Phases

d. Use of established flora

Discussions on the project were held with the Severn Estuary and Levels Research Committee which comprises the major stakeholders and interest groups for the region; academic departments, Statutory bodies, local authorities and local residents and members of the committee.

e. Pilot project

A pilot project to examine links between the coastatlantic regions in later prehistory and the Roman periods was established. This was to encompass site visits within the Estuary and a desktop assessment of published and 'grey literature' reports from archaeological excavations.

f. Site awareness.

A field visit with the Planning and Environment Section of South Gloucestershire Council was accomplished to act as an example to planning departments of the nature of the resource and the problems in preserving and recording it.

A number of methods were used to gather data and information throughout the project-

Meetings / forums – A discussion on the methodologies to be used was conducted during the main Stakeholder forum for the archaeology of the Severn Estuary and Levels – the Severn Estuary and Levels Research Committee. Following the discussion, an email discussion with several of the members involved was held.

Sites and Monuments Records- All of the regions sites and monuments record in the study area were visited or interrogated online.

Informal discussions – with individuals at academic establishments and museums to ascertain the significance of specific monuments were conducted.

Site Visits – visits to significant sites of archaeological importance were undertaken – a low-tide inspection of the inter-tidal zone of the Severn examining remnants of fish-traps, the submerged mesolithic forest, prehistoric flints, and Roman pottery sherds.

Discussions with partners – a study visit of Gallician sites was carried out, examining their approach to museums displays and site interpretation. This also highlighted the links between nations with Atlantic coastlines.

c) Results

The production of an accessible planning guide to be used on both sides of the Severn. By highlighting the quality and importance of the archaeological resource to developers and development control officers, this leaflet aims at protecting archaeological deposits within a spatial planning context. In doing so, the layers of pan-European significance will benefit from additional awareness and protection.

Sub action	Issues/problems	Solutions
<p>1) Use and develop existing Stakeholder Forums and networks, to assess and address the need for action to improve the awareness of response to the role of the archaeological heritage in spatial planning:</p>	<p>A major stakeholder group exists so attending one of their meetings was important – this facilitated access to individual members of the group that could assist with the project and, in particular, a guide to planning.</p>	<p>Funding sought from Cadw to assist with the production of the guide.</p>
<p>2) In liaison with transnational and local partners, direct and manage the collation of existing information relating to Atlantic Trade networks in the Prehistory and Roman Period, to underpin the production of guidance below.</p>	<p>Discussion with Heritage partners to evaluate their interpretations of heritage resource from this period. A problem with the information from the Severn is that the information is located in widespread locations.</p>	<p>Discuss the potential with the SELRC; Use all their published excavation and study volumes. Follow this by consulting all unpublished and published archaeological entries within all the Sites and Monuments Record (SMRs) to provide all-encompassing information.</p>
<p>3) In liaison with transnational and local partners, research the Pattern of Trans-Maritime Trading as revealed by results of collations and material uncovered by GPS work and Map-based studies.</p>	<p>Initial field visit with Doctoral student from Reading University highlighted the treacherous nature of the Severn Estuary and any survey would need to be undertaken with great care.</p>	<p>Create a suitable risk-assessment for site visits, in liaison with SELRC and the coastguard.</p>
<p>4) Prepare a strategy to promote the role of archaeology in the sustainable development of the region.</p>	<p>Legislation differs somewhat in England and Wales. Including all legislation will make this inaccessible and therefore likely to be ignored by planners/developers</p>	<p>To provide a visually stimulating leaflet, covering the main basic points and a guide on what to do in specific circumstances.</p>
<p>5) Produce and disseminate user friendly information and guidance in an appropriate range of the of coastal zone having some kind of historical dimension, including its bearing on spatial planning sustainable development decisions.</p>	<p>Contribute to local walks and information for websites.</p>	<p>Information already given to existing local walks – the Severn Way guide. Study of the Iron Age and Roman periods to add to succeeding publications and display boards.</p>
<p>6) Contribute to ICZM dissemination, exchange of learning and recommendations & vision including producing 2 articles (1 local 1 transnational) on findings of cultural heritage actions, as well as publish guidance for quarterly ICZM project web site update.</p>	<p>Few Cultural heritage partners to be able to discuss the overall Atlantic network.</p>	<p>Discussions with lead partner, Galicia to examine links were possible, and the finds recorded from other partner countries on individual SMRs need to be included in reports on the Iron Age and Roman period.</p>

d) Summary and proposals

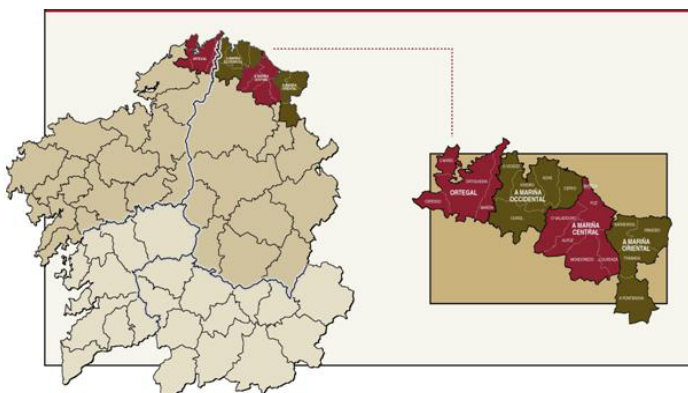
The main objective of this project was to improve the management of the cultural heritage resource around the Severn Estuary. The in-depth examination of both the published and unpublished records, and of site visits to museums in England and Wales, emphasized the richness of this asset. Comparisons with museums and sites in Galicia also highlighted the similarity of populations use of their coastal environments and of trading links in terms of sea-going vessels and of goods transported between countries of the Roman Empire.

The project successfully produced planning guidance to assist decision makers to ensure that archaeological deposits can be preserved, either in situ or by comprehensive record, for the benefit of future generations in England, Wales and by wider communities. By highlighting the importance of the area from prehistoric times, the project aimed to help give a ‘sense of belonging’ to local communities. If, through dissemination of information in leaflets and websites, this proves to be the case, then the project would have been deemed successful. Liaison between representatives of partner nations have highlighted the importance of the cultural heritage sector in this identity, together with the fact that it should be bound to local food networks and nature conservation proposals to provide a cogent cultural whole.

6.3.5. Cultural and natural itineraries along the coast. *Xunta de Galicia*

a) Description of the working area

Figure 29: *Comarcas involved in the Project.*



The *comarcas** (regional departments) of A Mariña Oriental, A Mariña Central, A Mariña Occidental and Ortelgal, are situated in the north of Galicia, occupying all the Cantabrian coast of Galicia. Their boundaries are to the north, the Cantabrian sea, to the east, the region of Asturias, to the south, the *comarcas* (regional departments) of A Fonsagrada, Meira, Terra Cha, Eume and Ferrol, and to the west, the *comarca* (regional department) of Ferrol and the Atlantic Ocean.

It has an extension of 1.787,2 km² and on 1 January 2005 it had a total of 90.997 inhabitants.

The natural environment of the four Galician *comarcas* (regional departments) included in this project is characterized by its diversity at all levels, be it from an abiotic or a biotic and/or landscape point of view, which translates into an ample network of protected spaces. Hence, the presence of ZEPA (Zones of Special Protection for Birds), of wetlands which form part of the Ramsar convention, of natural monuments and zones integrated into the Natura 2000 network, among others. In this way, it is possible to enjoy different coastal environments that alternate interesting rock formations with good sandbanks, fluvial and interior, that include rests of well-preserved autochthonous forestland, peat bogs, shrubs....all in conjunction with the fauna in which all the groups of animals are amply represented.

The studied area is characterized by great natural beauty together with great heritage wealth that has a lot of potential as far as tourism is concerned, only threatened by the urban boom that in some cases does not respect the integration of the environment.

Farming production, which was of great importance in the past, is concentrated in the interior and provides work to 14% of the population.

Photo 19: cattle



Industry deriving from endogenous resources, such as forestry, kaolin and canning are also part of the economic engine of the zone, however, they do not manage to stop the depopulation process, which is taking place in most of the Galician territory.

Fishing and the aluminium industry, together with one of the biggest plants in this sector of Spain, which belongs to the multinational company Alcoa, complete the economic distribution of these *comarcas* (regional departments), not forgetting the services sector, which provides work to most of the employed population (48%) and is focused on trade and hotel and catering businesses. Within this sector we find that a great part of services belong to the field of tourism, which has been in continuous expansion for a few years, but is conditioned by tourism in the summer, the highest season in this zone. Now the battle lies in “de-seasonalising” and promoting zones in the interior that are suffering from depopulation but have a lot of tourism potential and are not considered by visitors due to a lack of knowledge.

All these themes have been analysed in the studies that have been carried out during this project. One of the main objectives in all the actions undertaken was to trigger some development based on all the different endogenous resources with positive repercussions on the well being of the population.

The adequate management of the territory, following integration and sustainability criteria, will contribute not only to the preservation and re-evaluation of the cultural heritage, but also to fixing the population by stopping the ageing and depopulation process taking place in these areas and creating new opportunities.

***Comarca**: The comarca is a territorial area between the province and the municipalities formed by a group of adjacent municipalities which possess an internal cohesion and linked by historical, functional, cultural and socio-economic aspects. The comarca is the strategic geographical unit for the implementation of the Comarcal Development Plan.

b) Methodology

The methodological proposal is based on the implementation of studies and analyses of the mentioned territory carried out by qualified technicians, contrasting the results with the socio-economic agents of the *comarcas* that in this way become involved in the analysis of their resources, in the definition of a strategy of action, in the design and structuring of an offer of tourism and in its promotion. In this way, the endogenous resources with economic criteria-diversification of the local economy and the environmental resources are promoted by fomenting a network of territories.

Phases:

1.-Field and office work:

- a. - Documentation and study of the *comarcas* included in the project. Field work, interviews with socio-economic agents and implementation of studies and analyses.
- b- Pooling of the conclusions obtained in the studies carried out and the design of the itinerary proposal.
- c.- Debate on the proposal with the socio-economic agents and narration of the definite itinerary design.
- d.- Design of a strategy of action for the organisation of a structured offer of tourism.

2.- To promote the cultural-natural itinerary designed through the means proposed in the actions.

3.- To analyse the results obtained and work in conjunction with the other members to find the best practices to follow.

For *Estudios Comarcales* (Studies of the regional departments) and research into linguistic cultural heritage we have developed a specific methodology that is exposed below:

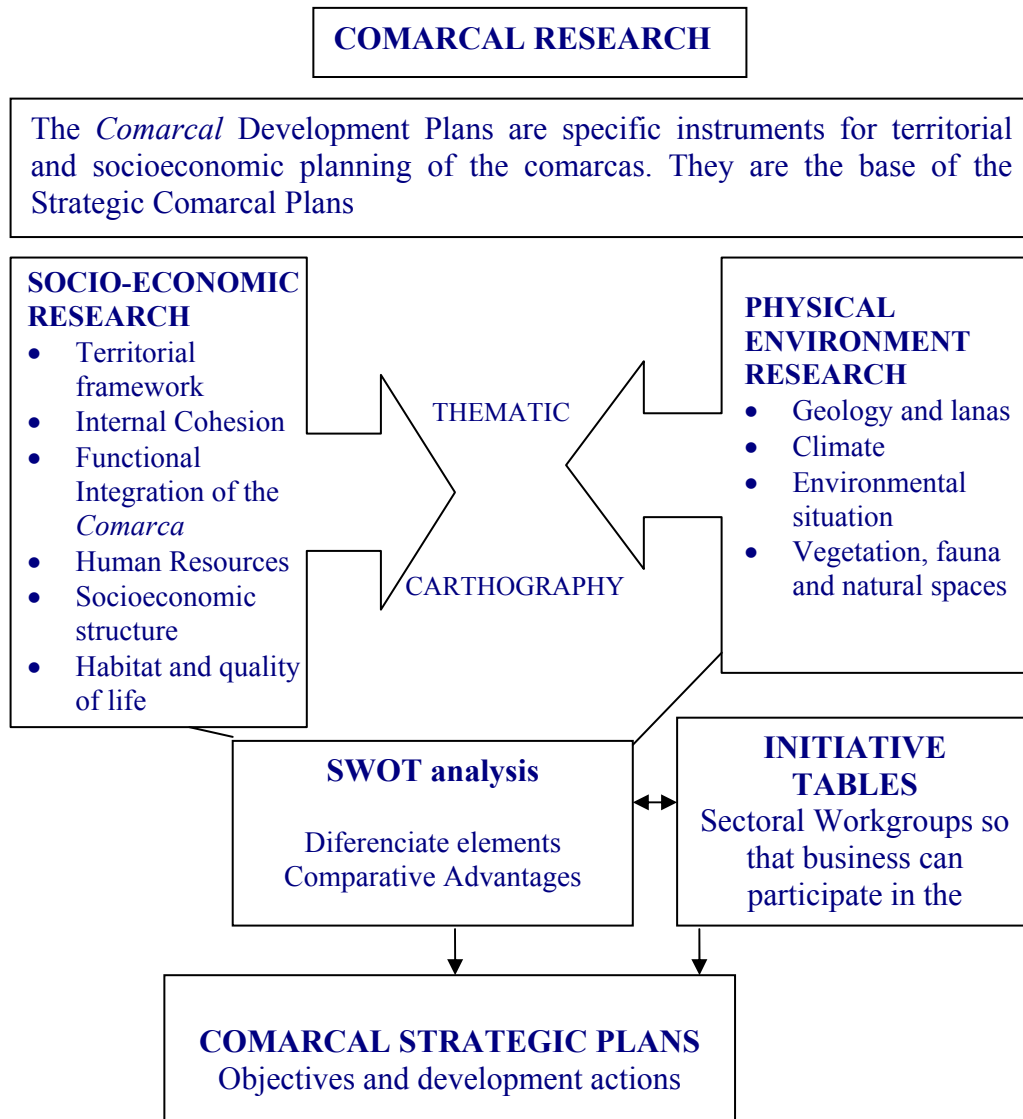


Figure 30: methodology for Studies for regional departments

Data collection methodology

Actions referring to studies:

- Bibliographic research.
- Compilation and treatment of official statistics databases: Parish, municipal, *comarca* (regional departments), provincial, regional, national and international databases.

- Visits to the territory.
- Interview with the most representative social, economical and institutional agents.
- Fieldwork.
- Obtention of updated direct information from public entities.

Study actions, review and creation of a new heritage inventory:

- Bibliographic research
- Compilation and processing of official inventory
- Visits to the territory
- Fieldwork to obtain updated direct information

Microtoponymy actions:

- Fieldwork with surveys being carried out on residents of the territory being studied.
- Analysis of the information obtained during fieldwork.
- Analysis of the existing cartographic information.
- Input of information into database.
- Meetings with experts regarding the results obtained.
- Decision to introduce the toponym in the definitive database.

Data

The data compiled is required for the different actions to take place. Work is carried out with data pertaining to the physical environment, nature, the population, the socio-economy, archaeological inventories...

- Demographic data (population, births, deaths, Natural Growth , structure of the population...)
- Information on the physical environment (soils, vegetation, fauna, climate, environment...)
- Socio-economic information (economic structure, employed population, unemployed population, economic sectors...)
- Information on quality of life (education, health, housing, work market...)
- Cartography (historic, topographic, aerial, satellite...)

Data analysis

The data collected were analysed by technicians for each of the actions that were implemented: editing of studies, record sheets of heritage and microtoponymic inventory, which also underwent computing. The data collected was also analyzed individually with statistical series calculating different valuations by applying formulas. Data collected by means of oral sources were treated by specialists in the field, specifically with regard to the microtoponymy action.

c) Results and proposals

The results obtained from data analysis were as was expected. Support on behalf of the “informers” and experts who evaluated the information made it possible to obtain great results, and in turn, for these to be endorsed, confirmed and, under consensus by the experts of each area, related to the different actions.

It is our aim that the methodology developed expressly in the studies of the territory and the microtoponymy of Galicia be spread, analyzed and used by other regions, adapting it to their own needs and characteristics.

SPECIFIC ISSUES

Sub actions	Issues/Problems	Solutions
<p>1) To elaborate a territorial diagnostic study and a SWOT.</p>	<p>There were no elaboration problems. These studies provide lines of action to be followed to reach the sustainable development of the area. The problem is the difficulty that political, economical and social protagonists have when it comes to agreeing on how to carry out these lines of action.</p>	<p>The solution lies in that the population as a whole must be aware that the development of the territory will not occur unless all efforts from the sectors participating in local life are united and form part of a shared effort.</p>
<p>2) To investigate and have a descriptive development on the resources of the areas of A Mariña Occidental and A Mariña Central.</p>	<p>There were no elaboration problems. These studies are aimed both at the local environment and the area that lies outside the limits of the territory being studied, taking into account that the places where the results of these studies will be exhibited will be the “Centros Comarcales” (regional department centres) whose main aim is to be an open window for all visitors showing the characteristics, potential and resources, in general, of each of the <i>comarcas</i> (regional departments) where they are located.</p>	<p>Better promote these <i>Centros Comarcales</i> (regional department centres) so that they truly reach all sectors of the population of the area involved, enabling all visitors, whatever their origin, through the net, anywhere in the world, to participate.</p>
<p>3) To elaborate a study on the situation and state of conservation of local heritage (cultural, natural, historical), considering the most significant manifestations, be it within an architectural level (historical groups, monuments, catalogued goods, listed goods), an ethnographic level (mills, granaries,</p>	<p>Local heritage had been left for a long time without an exhaustive study of its situation, which made many heritage elements, deteriorated due to abandonment, fall in ruins. The problem is that cultural heritage is very extensive and this takes up a lot of time and money to carry out. With this program we have carried out a study of the current</p>	<p>The main goal of this action is to impede the loss of more elements of cultural value due to a lack of thorough heritage study. The solution would be to have more economical and technical means to be able to carry out these studies with continuity.</p>

crosses, washing places, oak woods...) or an archaeological level (Celtic settlements, dolmens, burial mounds...).	situation of heritage.	
<p>4) To take down data, revise and update the cultural stocktaking of the area proposed by especially concentrating on those elements that with their own identity represent a significant qualitative example within the coastal arc for which the program has been designed.</p>	<p>With this action we have started to update the heritage stocktaking of the territory involved by having technicians in the territory who analyze the characteristics of the cultural elements, their value and their state.</p> <p>The problem lies in the need to have more economical, technical means and to program the update of inventories according to temporal periods.</p>	<p>With this action we aim to catalogue existing cultural elements so that their preservation is ensured.</p> <p>It is necessary to provide more means and ensure the continuity of the updates.</p>
<p>5) To propose a prompt intervention for the retrieval of significant cultural elements that means retrieval at all levels (economic, social, tourist, leisure...) and a regeneration of the area to articulate a global action along the coastline and its neighbouring areas.</p>	<p>After updating the stocktaking of local heritage, there will be a proposal for the retrieval of some cultural elements that are especially significant as a pilot action.</p> <p>The problem is the elevated cost of the actions for retrieval, especially when the mentioned elements are privately owned.</p>	<p>We need more collaboration between the government bodies and the private owners, given that if it is economically difficult for the government to maintain its heritage, it is even more complicated for a private owner.</p>
<p>6) To survey and analyze the microtoponymy of the territory of action.</p>	<p>This is a very difficult action to carry out, given that most of the information is being lost with the death of the older generation of the population, the people who know the toponymy of the different places in their environment (informers). Therefore, to retrieve memory and the names of all places in the territory involved is an urgent task that cannot be delayed.</p> <p>The problem lies in the mistrust shown, especially</p>	<p>We found the solution introducing the technicians in the territory and establishing contacts with the people of the hamlets and villages that know the names of the different places, so that both the informer (person from the place that has the knowledge) and the field technician, that have been previously introduced get to know each other before exchanging information.</p>

	<p>by the rural population, towards the field technicians, due to the fear that the questions about names of properties may be related to higher fiscal rates.</p> <p>Another difficulty comes from the physical conditions of each territory, which makes it necessary to have a very specific type of informer (for example, mountain areas, shepherds; coastal zones, fishermen, etc.)</p>	
<p>7) To design and develop a GIS as a tool for the implementation of the project</p>	<p>This action is planned as a promotional tool of the territory involved in the project, which can be accessed at a worldwide level, through INTERNET.</p> <p>The relative problem comes up when considering the limits of the information, given that the zone has a vast number of elements that deserve to be highlighted, promoted and known about.</p>	<p>The solution came, logically, by selecting the mentioned elements taking their value and general interest into account and then introducing the selected elements in the SIG, creating three itineraries according to the time (short, medium and long) and offering detailed information about each one of them.</p>
<p>8) To promote a territorial network formed by enclaves for tourism with sustainable development criteria through new technologies.</p>	<p>With this action we developed the itineraries created after the studies carried out in the previous actions. The relative problem was the selection of the elements to introduce in the mentioned itineraries.</p>	<p>The solution was the same as before, that is to say, to select according to degree of heritage, ecological, cultural, natural, economical or social value and from there, create routes that can be followed from east to west or vice versa.</p>
<p>9) To design a product for tourism through business co-operation.</p>	<p>The aim of this action was to make all the business people and social sectors interested in their territory feel involved in this project to promote a sustainable development of the area. The problem was to maintain interest for the project, to generate</p>	<p>The solution was to constantly inform of the progress and results of the project, sensitising the socio-economic agents of the territory.</p>

	medium-long term benefits.	
<p>10) To promote, within a network, the maritime culture of the Atlantic area through the “Centros Comarcales de Galicia”.</p>	<p>The aim is to spread a Common European Atlantic Culture from the <i>Centros Comarcales</i> (regional department centres) of Galicia to all sectors of the population in the territory involved and Galicia in general, especially, young people from the territory, so that they become aware of the roots they have in common with Atlantic countries. The biggest problem is the motivation of young people, awakening their interest for an Atlantic culture in common.</p>	<p>The solution to a lack of interest was to hold meetings with the Directors and teachers of the different educational centres, working together to be able to offer young people the mentioned information in a more attractive manner. Teachers were informed so that they became “transmitting conveyor belts” and developed activities related with these themes.</p>
<p>11) To elaborate triptychs, web pages, amongst other things, to promote and spread knowledge of natural and cultural resources (leisure, gastronomy, art, ethnography, etc...).</p>	<p>This is considered the promotional complement to all actions previously mentioned and is the most direct promotion, as far as the visitor is concerned, when going to the territory or visiting a promotional fair in which this zone is being presented.</p>	<p>Although this project is supported by new technology for the promotion of this territory, we will not dismiss printed promotion, so easily obtainable for potential visitors given its directness.</p>

6.3.6. Results

a) Common and specific tools

- * Bibliographic and cartographic documentation, databases and interviews with public and private personages related with each action.
- * Fieldwork for the studies of the territory, the heritage, the local microtoponymy and the creation of the natural-cultural itinerary.
- * Introduction of data into software to be processed and prepared for broadcasting of the actions.
- * Creation of publications, leaflets and everything related with promoting the project.

c) Success and failure

Success

The best result, within the project framework, is the creation of the natural-cultural itinerary proposed, and its influence on the integrated management of cultural heritage, managing to achieve cooperation between the government bodies and the private sector.

Another good result is that the territory has studies and specific tools that allow for greater awareness, in a more profound and varied way. They reinforce local identity as far as the regional population is concerned. With respect to visitors, physical or virtual, they have the attractive heritage wealth in this area at their disposal.

Failure

The biggest failure or, in other words, lack of results came up when involving the population in a constant, active way in the development process this project aimed to achieve. It would have been more satisfying for project achievements, if the business people of this territory had been aware, “in situ”, of experiences in other regions regarding cultural heritage through sustainable development as well as experiences in other places of similar characteristics, so that they could be applied in this territory.

The fact that the population do not believe in the concept “union is strength” to carry something out, as it already has a historic tradition (“individualism” is one of the most deeply rooted characteristics of this community), makes people with greater business dynamism or original ideas plan their future

individually based on their economic resources without involving a collective idea or Sustainable Development Plan.

A second failure or difficulty was the mistrust shown by the people that could provide information when carrying out the research of some studies. People from Galicia have a very closed temperament, especially people from the rural area, and they need to trust when it comes to disclosing their historical, traditional, working or territorial knowledge.

To be specific, for the study of the microtoponymy of the territory, the information acquired from the inhabitants of the hamlets and villages is essential and basic given that, in most cases, they are the only ones who know the names in the territory and why those places have those names. Communication with the inhabitants of those areas and getting information about the names of the different spaces was the most difficult part for field technicians who work on this section of the project action plan. The so-called “Informers” are not receptive at all with a stranger who asks them for information about the places around them. They always suspect that the information will have a negative consequence for them.

6.3.7. Conclusions

The project, in general terms, has served the purpose of giving this territory a push as far as self-esteem and valuation are concerned, taking into account the great existing potential that has come to light, thanks to the different studies, and the way in which that potential can be turned into a higher level of well-being for the resident population. A deeper awareness of the value of culture, heritage, landscape, etc... in the territory, has facilitated a re-evaluation, which has strengthened local identity. All this is necessary so that practical measures are implemented in a second phase of the project allowing a more adequate management of the resources, and so that these be taken into account when planning development measures for the mentioned territory. Hence in the Severn estuary, the stocktaking of archaeological resources made it possible for those resources to be considered when planning infrastructures and facilities. This planning process, which is so important for any area, does not mean the destruction of heritage hidden by the years and, in this case, by fluvial sediments.

In the case of Galicia, the most practical actions of the project have served to promote Atlantic culture and strengthen the awareness of relationships and existing affinities between Atlantic countries throughout history. Besides, under sustainability criteria, it was possible to promote the territory and this directly resulted in greater power of attraction, and consequently, in an increase in visitors and greater income. New technology has contributed considerably to obtaining the objectives set.

6.3.8. Recommendations

- To undertake actions in three fundamental fields: the material and immaterial heritage itself; population and their organizations; and, politic-administrative and legislative power.
- Creation, dynamization and strengthening of stable structures and mechanisms those guarantee interadministrative coordination, population participation and financial and technical resources availability.
- To promote the collaboration and coordination, in the technical and financial field, between administrations and departments for a coherent and efficient use of the planning and promotion instruments of the cultural heritage.
- To guarantee interest heritage elements conservation with support financial mechanism with private-public cooperation based.
- Carrying out studies with specific methodology:
 - Implication of the public and private sector.
 - Search for bibliographic information and statistical data, as well as complementing and contrasting it with fieldwork.
 - Interviews with socio-economic agents that inform on qualitative aspects of the territory, needs, weaknesses and potential they see.
 - These studies are the basis for planning specific development projects and strategic plans of action.
- To know coastal erosion mechanism to protect the cultural heritage, speciality archaeological heritage and heritage situated in the inter-tidal areas.

- To create ways to facilitate the transfer of information and experience and additionally exchange the owner's heritage. To elaborate as well adequate teaching and technical materials for the territorial planning and development.
- To value the cultural heritage as resource for sustainable development and wealth building. To elaborate specific plans within the framework of cultural heritage and coordinate with the territorial general planning.
- Involve the population in the cultural heritage actions to the integrated coastal zone management by touching different areas: business world, educational sectors, public and private institutions, researchers and the general public.
- Attract young people with imaginative products of a cultural and educational nature.
- Broadcasting of the European Atlantic Culture and reinforcement of a shared identity with a specific methodology through actions directed at a specialized public that serves as a transmitter of the mentioned information.
- Definition and application of a methodology for products design that promote the cultural resources, combining new technology of research and promotion with traditional technology.
- Improve the common legislative framework of the specific Atlantic Area and European Community.

- To create ways to facilitate the moving information and experiences exchange furthermore the awareness of the owner heritage. To elaborate as well adequate teaching and technical materials for the territorial planning and development.
- To value the cultural heritage as resource for sustainable development and wealth building. To elaborate specific plans within the framework of cultural heritage and coordinate with the territorial general planning.
- Involve the population in the cultural heritage actions to the integrated coastal zone management by touching different areas: business world, educational sectors, public and private institutions, researchers and the general public.
- Attract young people with imaginative products of a cultural and educational nature.
- Broadcasting of the European Atlantic Culture and reinforcement of a shared identity with a specific methodology through actions directed at a specialized public that serves as a transmitter of the mentioned information.
- Definition and application of a methodology for products design that promote the cultural resources, combining new technology of research and promotion with traditional technology.
- Improve the common legislative framework of the specific Atlantic Area and European Community.



6.4. Urban-Rural Interdependences

The “Urban and Rural Interdependences” action plan has as partners Alentejo as leader, Asturias and the Severn Estuary. Their general objective is to contribute to a sustainable development in the Atlantic Area, that is:

- Better knowledge and assessment of the issues affecting the coastal area;
- Planning and management of tools available at different levels and for different partners;
- Find new and renewed potential activities and use of traditional products and methods as used by those maintaining the ecological values;
- Find what kind of support measures will ensure its replacement;

And the following specific objectives:

- Coastal areas planning tools assessment;
- Achieving the conservation and improvement of valued landscapes and habitats through the fulfilment of their economic potential;
- Special execution plan related to the use of coastal areas.

6.4.1. Urban rural interdependences issues

Sustainable development

Economic, social, cultural and environmental issues represent the four pillars of sustainable development. Many projects emphasize the economic aspects first and foremost as these are often easier to measure and as their relevance to the concept of “development” may be more immediately obvious. The environmental pillar of sustainable development is more often seen as a separate desirable action rather than an integrated part and test of sustainability. This project seeks to identify and promote this linkage so that the contribution of environmental actions to promote sustainability, such as the coastal areas management including *Natura 2000* sites, can be seen more clearly.

Indeed, Europe’s coastal zones are an important focus for economic activity. Supporting some of the most valuable and endangered natural/cultural resources of the European Community is another

important focus. Finding ways to foster the economic potential of rural areas in a way that does not jeopardize the environment is a serious challenge faced in many parts of Europe. Local population centres can have a role to play in supporting the economic base of their rural hinterlands, however current mainstream food retailing does not generally take this into account.

6.4.2. Urban rural interdependences in the European Union

Half of the EU population with coastal zones lives in a 50 Km strip along the 89000 Km length of the European Coast which reinforces the global dimension of the Integrated Coastal Zone Management concept - review, planning, decision making, management and monitoring of execution. The planning process is thought as the strategic development of policies and not only just a soil occupation plan or sector plan; it means the integrated character of the objectives and the tools to get it. It also means the integration of all-political areas, sectors and levels of the administration, sea and terrestrial components as well as interdisciplinary integration in space and time.

6.4.3. Objectives

The main objective is to find the way to promote territorial dynamics and occupation with new, or renewed traditional activities and uses to achieve not only rural space sustainability, but also urban and rural interdependences between the coastal zones and their hinterland.

Alentejo

Several European reports include the reference to the identification of the landscape units of the 50 Km coastal zone and Évora University developed an important work about Portuguese landscape units that may be fundamental for the identification of common questions and of the territorial competitive strategy for each of them.

The Landscape Management Tools – PROTALI (Alentejo Coastal Line Regional Land Plan) and master plans of the municipalities – identify standard potential uses and activities for that territory but the plans produced until now have not been strategic enough or compatible with the private sector dynamic.

The great regional specific diversification allows the existence of multiple uses and the identification of possible ways to follow, regarding the population access to health, education and

culture, in a context of a well-functioning network of infrastructures. The predictable requests to the regional space for cultural and leisure activities should bear in mind the necessary attraction to investments in order to get the third sector developed.

The maintenance/revitalization of rural areas needs the presence of population with better living conditions which can be achieved by the previously referred social and economical measures, along with clarified construction rules in rural landscape (including the recovery of the architectonic value of buildings). This would avoid the confused proliferation of buildings in the territory that create a general disorder, rise of infrastructures' costs, a change in the typology of the region settlements, or the use of non-resident population, among others.

The increasing phenomenon of scattered house building as second residence has generated some problems. On the one hand, it does not ensure the maintenance of rural functions and, on the other hand, it sometimes leads to an architectonic disintegration, making the extension of infrastructures or public services more expensive. Moreover, it does not guarantee the local population to improve their income, through an increasing number of jobs, or through the acquisition of goods.

To build up a new model and dynamic of soil occupation, not just directly attached to rural space functions, leads to an urgent need to debate the problem mostly reinforced by the experience of application of Territorial Planning instruments. That experience has frequently revealed that these are not sufficient to guarantee traditional and multifunctional rural space (agricultural, sylvan and nature preservation) safeguard. As a matter of fact, uses and functions of rural space must be thought over, since functions are sometimes not too visible and therefore forgotten.

Assuming that some major items must be taken into account, like food production, raw materials, retention, infiltration and water flow, landscape valorisation, climatic regulation, farmers' homes and agricultural supports, some industries and population's leisure activities - the equilibrium and compatibility of all these uses can only be possible with an adequate Territory Planning.

Asturias

The Asturian rural settlements exhibit a most scattered array. These areas have been so far managed in accordance with regional regulations under the general concept "Núcleo Rural". Of the total of town and villages and groupings of houses, 230 are located along the coast.

The POLA includes a theoretical reflection as to the potential modification of the technical and juridical treatment they have insofar received and also reviews the current treatment of some rural settlements including proposals for modification of their designs when necessary. Effectively, the Asturias coastal line is at present part of more than 10 special schemes for the protection of certain

sites that POLA is reviewing and proposing modifications where necessary. That's the case of the "Suelo de Protección de Costas" (Areas Under Coastal Protection) modifications that will allow some coherence in the conceptualization of actions devised for each of the districts.

The housing and planning rules and policies established by POLA apply, for instance, to the periphery interventions as solutions for any problems related to the town center – turn away traffic, urban soil availability to avoid speculation, etc. In the same way POLA points out the beach parking solutions to avoid direct pressure in a specific area far from which it is much better to find protection and use compatibility.

The checklist of case studies related to coastal rural settlements has already been identified.

Anyhow, POLA doesn't have direct influence on the road network but tries to find limits to that kind of infrastructure for an adequate planning of the north / south communications of the national network with the coastal and interior roads, therefore improving accessibility (the motorway purposes is limited to 14 ring road variant with a medium distance of 1100m which look for the turning away of the coastal line and the articulation with parking and pedestrian ways).

The road plan is already in discussion namely, the spatial organization model that may set out the role of the old national road as traffic distributor in the eastern sector and the new drawing in the western one where building doesn't allow its enlargement anymore.

Severn Estuary partnership

The way Europe's coastal areas might contribute to sustainable development will be the theme of this project to enhance the local economic base. The relationship between produce and environment is a practical example of realizing the economic potential of valued habitats and landscapes.

So, this project is designed to learn from the experience of partners in other Member States in promoting local produce; its role is additionally to serve as a mechanism to boost rural economies and ensure the economic viability of valued landscapes and habitats and consequently:

- take forward the findings of Landscape Character Assessments and surveys of local food suppliers regarding values placed on key landscape features and habitats;
- adapt and extend existing local food stakeholder forums to take a more regional focus on the estuary hinterland, and to bring together consumers and retailers, particularly from population centers and producers from their rural hinterland;
- Identify the products in the Severn that are harvested from or depend on valued landscapes and habitats and vice versa;
- Investigate mechanisms for increasing awareness of local produce, and boosting demand for it – especially in the mainstream food outlets;

And make recommendations for:

- Local actions to promote awareness and market local produce that would help to sustain valued habitats and landscapes, thereby contributing to the sustainable development of the rural economy.
- Pilot projects to demonstrate the range of economic/environmental benefits that could arise from promoting local produce.

6.4.4. Asturias Coastal Zone Protection Plan. Principality of Asturias

a) Description of the working area



Figure 30. Geomorphologic map of Asturias

The coastal planes of Asturias region (*rasas*) are the northern landscape unit between Lugo and Cantabria in a buffer that may occur until 5 Km in hinterland territory. They result from abrasion surfaces resulting from marine regressions to 20, 12 and 2 million years ago.

That feature is only partially visible near *Cabo de Peñas* where the altitude levels are of 110, 180 and 265m.

This territory presents under transports network (connection to Galicia and Cantabria) articulation with the central area of the region. This is also evident in the reorientation of rural production to the market and tourist sector, associated to human demand.

Part of agricultural exploitations is related to milk production with all the effects in land planning – abandon of extensive practices and other land cultures to pasturages and grazing activities. Nevertheless the modernization supported in a familiar structure was not enough to stop the migration process even to the mountain zones.

Other activities able to generate territorial effects are fishing in the 334 Km of the coastal line; industries like mining or paper production which were responsible for the rapid growth of species of eucalyptus and pine. With great importance the tourist sector was the second of importance and other accommodation infrastructures appear.



Photo 20. Peñarronda park-beach

The territory is not homogeneous – in the coastal line the tourist and fishing activities are the most important; agricultural use dominates the coastal plane and grazing along the transition area for the mountain marginal areas.

The Asturian Mountain sea is very important, with 50% of the surface below 600m altitude; the agricultural area only equates to 33% of land occupation.

That multicultural system, where cattle was a subsidiary activity, remained as is until the early 19th century; it was only changed by the land owner regime and cattle exploitation. This was reinforced by the development of communications and, at the same time, the progressive urban growth of the central area with the resulting demand of milk products integrated in an organized economy.

That specialization, that ended about 1960/70, involved the replacement of agriculture by pasturages and the native animal species by foreign races, through easy processes provided by the factories equating nowadays to 80% of the exploitations.

Vertical integration trends of rural activity were, therefore, in a clear way, responsible for rural space changes mainly in coastal plane through the existence of 9 milk centres which ensure delivery and transformation.

This is how pasturages became the dominant landscape (sometimes with associated specific buildings) besides the familiar character, the age of the farmers and the low number of animals/exploitation far from modern pattern conditions. At the same time, other traditional uses like vineyards and orchards got marginalized, the latter only sustained by “sidra” factories.

At the Asturian coastal zone also took place other activities related to environmental potentialities – fishing and tourism: fishing means more than 2800 active jobs (besides the loss of importance and the improvement in Avilés port) and tourism means about 1135 accommodation locations directly associated to the coastal line.

The secondary residence sector is growing along the coastline representing in some municipalities more than 20% of the buildings and often-new patterns of architecture dissonant from the traditional ones.

The Landscape and the POLA (Plan de Ordenacion del Litoral de Asturias)

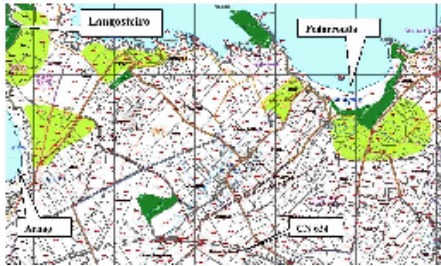


Figure 31. Peñarronda park-beach planning

Since the 60's the secondary residences (for seasonal use) and the spread housing in the rural landscape contrast with the depopulation of a growing number of settlements far from the communications network and in marginalized cultural lands ; this exist for market economic purposes.

Such facts has as first consequence the change of the rural landscape with the abandonment of the fields, the growth of spontaneous vegetation, the disappearance of the access network, the rising fire risks and the loss of the alternative potential use of these areas. Definitely inhabited settlements are associated with no useful and unqualified landscapes.

The Asturian landscape dynamics is between abandonment and urbanization.

The POLA (Plan de Ordenacion del Litoral de Asturias) as an instrument of responsibility for the Principality of Asturias establishes policies and rules that may be incompatible with some detailed urban or protection plans of the municipalities which may be corrected to accomplish the limited expansion of the coastal settlements and their rural character.

Indeed, each of these rural settlements has a specific urban drawing with a narrow connection to the access network and housing situation whose distribution could be compared to a spider web: multi centered in several quarters or nucleus connected by the access network which is adapted in complex relation to the topography and soil characteristics. The introduction of new buildings that do not respect that pattern, and often the architectural feature, means that the set will be damaged; In this regards, POLA has a checklist of rural settlements that should serve as case studies for building purposes.

Role of the urban/rural interdependences thematic action: contributes to enhancing the effects of the coastal landscape and the hinterland referred to in the ICZM practices through detailed actions, mainly the acces to the coast and the parking system.

b) Methodology

The POLA Asturias strategy currently under elaboration, will allow to plan an integrated model of the occupation of its coastal zone safeguarding the natural resources conservation and ensuring the complete and detailed knowledge of the 500 m coastal zone of Asturias.

Phases

Since its establishment in 1981, the Autonomous Government of Asturias has developed an active policy to preserve and enhance the environment. A number of actions have been implemented to harmonize the protection and enjoyment of our natural and cultural resources:

- The Network of Protected Areas, which covers a wide extension (30% of the total surface), many of them located on the coastal fringe.
- Planning instruments, including Regional Spatial Planning Guidance (1991), Planning Guidance for the Coastal Fringe (1993) and the Coastal Areas Protection Plan (POLA) (2005)
- Water management plans, wastewater treatment and sewage.

At the beginning of the 1990's, the Principality of Asturias pioneered regional integrated planning in Spain through the design of a plan-led system from regional to local level. Local plans should be consistent with it, and take into account the regional and sub-regional recommendations. The Planning Guidance for the Coastal Fringe includes a number of measures to preserve the seaboard (an area of about 500 m in width) from development. The objectives of the POLA are to specify the extent of this protected area at local scale and achieve a balance between recreation and protection of the natural and cultural values. This active-protection policy intends to reduce the pressure impacting the sensitive areas diverting it to carefully-designed leisure areas.

Data collection methodology

The data base consist in the official cartography of the Principality of Asturias at 1:5000 scale, in digital format “dgn” elaborated from a flight realized in 1993.

Subsequently, orto-photographs at 1:5000 scale dated in 2004 were added.

For development studies purposes, aerial photographs from previous years were used. This study was completed with oblique aerial photographs, visits and surveys in the field.

It has also been necessary to manage the cartography of the municipal urban planning and statistical data related to Population development (1950-2004) and Employment distribution.

Data analysis

The coast is at present involved in more than 10 special schemes for the protection of certain sites. The POLA reviews all of them and proposes modifications when necessary.

It also reviews the delimitation of the Suelo de Protección de Costas (Areas Under Coastal Protection) and proposes some modifications that will allow coherence in the design of actions devised for each of the districts.

6.4.5. Alentejo Coastal Zone: Recent and Present Territorial Planning Policies – the PROTALI (Regional Land Management Plan of Alentejo Coastal Zone) experience

a) Description of the working area

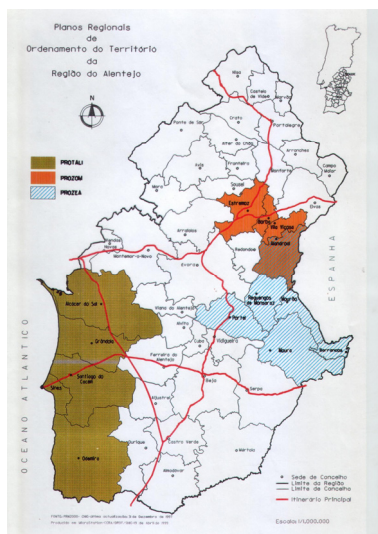


Figure 37. PROTALI plan

Global vision of that territory taking in account:

- Exceptional natural patrimony, high environmental quality, important standard of nature conservation;

On the other hand:

- Increasing urban and tourist pressure.

Its **main objectives** were:

- Harmonize the socio-economic development with environmental and cultural values;
- Promote integrated and sustainable development of the total area of the 5 municipalities in order to achieve a balanced interaction between the coastal area and the interior rural area;
- Establish the priority strategies of intervention;
- Define the sectors and fundamental investment in order to achieve the technical dialogue with the economic agents.

With this scenario the **technical work** of the Regional Plan was developed:

- With a diversified and complete team;
- With the participation of all levels of administration – central, regional and local;
- With sector agreements and broad public discussion;
- With detailed strategy for the implementation of land use.



Photo 24. Montado habitat in Alentejo



Photo 25. Montado habitat in Alentejo

In Alentejo, the strong influence of agricultural policies disregarding the regional context has, among others, determined serious changes in the traditional economic basis – agricultural sector – with **consequences not only to soil occupation levels, but also to population structure and settlement forms.**

The fundamental activity of the regional economic basis – agriculture – has therefore been conditioned by a set of internal and external factors, to the sector itself and to the country, that has limited its development and, in some cases, its own survival.

Nowadays, this perspective has been replaced by a **more integrated approach, conferring the rural areas other functions than those related to the agricultural sector only.** Rural areas play more than just a function of agricultural; they frequently use traditional sustainable environmental practices.

Those areas comprise **territories** in which the **most determinant productive activities of the economy** are directly or indirectly **dependent on the soil as a resource**, including not only **agricultural activity**, as a structural element of those spaces, but also all activities existing before that.

In the last decades Alentejo has revealed an incapacity to fix its population – presently around 530.950 inhabitants (census 2001 – preliminary data), which equates to a 1/19 of the whole Portuguese population, although concentrated in an area of 26.9 thousand Km², representing almost a third of the national area. The population density shows therefore a low figure, around 19.7 inhabitants/Km².

The **depopulation process** has been **more severe in rural areas**, enhancing the **contrast of urban/rural areas**. The population scarcity has reached additionally a proportion that puts in danger the sustainability of any development strategy.



Photo 26. Traditional type of settlement
(Marvão - Alentejo)

Alentejo has a “concentrated” type of settlements, spread out in the territory based on the defense or productive conditions which, through times, have defined the economical basis of the region, essentially supported by agriculture.

The relation between the agricultural sector and territory has been weakening due to several factors, among which a loss of population, rural workers’ ageing, loss of production and profits, and fields desertification.

The worrying problem of depopulation settles the urgent need to analyze the re-equilibrium of rural space functions.

Urban dynamics has strengthen up, but the urban network in Alentejo is still not developed; there is no real urban system, due to the scarcity of relationships between centres, especially at the equipment's complementary level as well at services and goods levels; this, proves a very weak link among the 3 medium-sized towns – Beja, Évora, Portalegre – each of them having different rhythms of growth and investments.

As to the municipalities of the capital's towns, there is a stronger investment which exceeds the one made for the smaller settlements, creating a displacement of people from the fields to the main cities. This concentration phenomenon is sometimes followed by a process of depriving cities of character, especially in the new areas of expansion, where some architectonic models and scales appear without paying attention to the characteristics of the region and to traditional architectonic languages.

It is therefore of major importance to structure the urban system in a coherent way, bearing in mind different vocational functions and articulating equipment and accessibility infrastructures; this would rationalise investments in the urbanization process, fulfilling the adequate levels of functionality and interdependences of urban and rural areas.

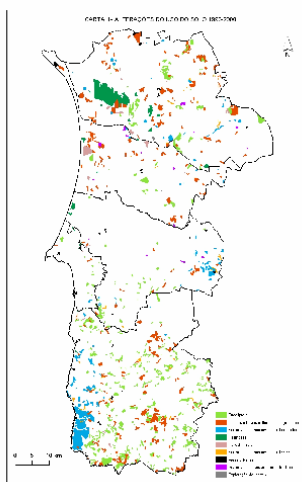
This applies also to the 5 coastal zone municipalities sub-regional units, besides its specific characteristics, namely high environmental and landscape quality, ecosystems fragility, low population density and strong urban and tourist pressure. This defines the scope for the need of a Regional Land Management Plan which sets out a strategic vision articulating national, regional and local level interests through territorial referenced proposals and rules.

b) Methodology

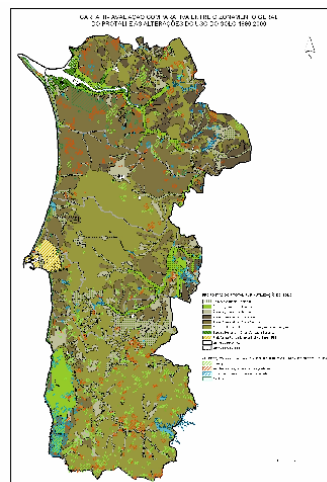
Phases

a. Assessment of the landscape dynamic after 10 years (CORINE Land Cover surveyors 1990 and 2000):

- Land uses and functions evolution (mainly the traditional ones and their role in the conservation / valuation of coastal zone landscape accomplishing the potential utilization ruled by PROTALI);



Land Use Changes 1990/2000



Comparative evaluation with PROTALI



Selected Areas from Landscape Units

- Identify the characteristics of that land transformation - were the uses those identified as standard potential uses and activities for the territory according to the plans? What are the (new) trends of development and should the plan preview them? And also if possible: Who is defining that dynamics? (In the previous conclusions it seems that urban and tourist usage and interests are the main factors of transformation) and, on the other hand, we could wonder what will be the necessary reinforcement of rural landscape infrastructures? What has been the evolution of the equipment network and of the urban or tourist purposes?

b. Brief Assessment of European Funds (type and amount) spent in that coastal zone in the last 10 years and the proposals of PROTALI.



Area 1



Area 2



Area 3

c. Selection of 3 transversal areas of the Alentejo Coastal Zone, based on the landscape units defined by the University of Évora, representative of the diversified biophysical support to develop in an appropriate scale detailed work about its dynamics:

Area 1 – Troia (tourist zone in a sensitive system of sand dunes and beach) – Vale do Sado (intensive agriculture in an important river valley), umbrella pine system of the hinterland;

Area 2 – Sines (industrial and harbor complex) – Serra de Grândola (mountain system) – hinterland plain;

Area 3 – Cliff beach (inside an urban settlement with detailed tourist plan) – irrigated area of Mira river – Colinas de Odemira (mountain system).

d. Best practice definition, according to the ICZM principles and rules, found in the five municipalities territory, crossing the urban / rural and hinterland / coastal zone interdependencies (and not only the use and activities of a narrow string of the coastal zone).

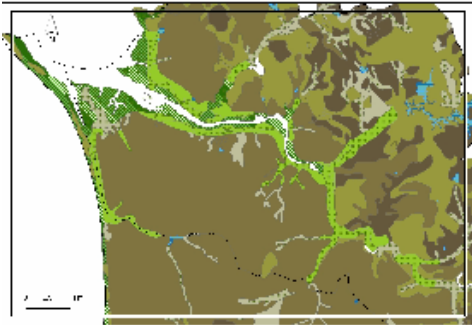
The objective is to **identify and study good and bad examples of practices** like tourist or residence settlements, coastal access, conservation and valuation of dune systems, traditional uses and activities that contribute both to local economy and landscape management maintaining its intrinsic value...etc.

e. Global commentary on the current state of land planning tools to evaluate if the huge characterization and rule strands are enough to get a good dynamics of the territory or, otherwise, if there must be a more strategic joint private investment to facilitate their operations.

f. The setting up of a seminar, open to other experts, to deal with this subject involving all the partners of this project.

c) Proposals

The main proposals:



Example: Land Use Plan
(Extract of the respective map)

Land Use

- Environmental network with the aim of protecting and raising the value of natural areas and systems and ensuring the environmental dynamics and balance;
- Fit the agricultural uses taking advantage of irrigated areas and best soils;
- Increasing and raising the value of “montados” and their multiple use characteristics;
- Correct the installation of other vegetal species including the recovery of the natural vegetal cover.

Structural Land Management

- Implementation of small industrial areas associated to the secondary urban centres;
- Tourist strategy:
Promote a broad set of tourist types;
Promote investments that produce more number of jobs;
The Plan has established as tourist potential for this area with an accommodation availability of 100 000 users, 51 000 of them during its validity period (10 years).
The usage intended for the tourist is distributed along the coast line through land management nucleus, according to the environmental characteristics, and allowed in the rural interior areas.

About the **implementation and management of the Plan, 10 years after** the PROTALI approval:

- There were limited positive transformations in the territory;

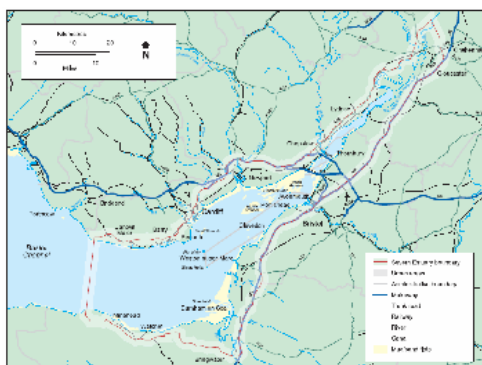
- It has not become the fundamental tool for priority actions and investment of several sectors of the Administration, including the European Funds;
- There were only 100 single rooms that have been implemented mostly in tourist apartments;
- The present offer is limited , in number of beds, to 3700 in the current complex of Tróia (which shows some signs of degradation) and 10 camping sites for 7500 users;
- It had on the other hand, a strong influence in the rural space management, dissuading the land speculation and the urban spreading, as there is a strong increase of second residences and unqualified urban image inside the settlements;
- It promoted the local master plan and other specific plans of coastal areas.

Our proposal for Urban and Rural Interdependencies Action of COASTATLANTIC Project was to compare, assess and improve the coastal areas planning tools of several partners taking in account:

- The experience of application of territorial planning tools has frequently revealed that they are not sufficient to guarantee traditional and multifunctional rural space safeguard;
- In which way the plans contributed to raise the value of social and economic conditions of the inhabitants and how they reinforced the urban network of secondary centres;
- That the new challenge is to promote a territorial dynamic and occupation with a new perspective of traditional activities and uses, in order to achieve not only a rural space sustainability, but also providing population settlements with the best quality of life.

6.4.6. Achieving the conservation and enhancement of valued landscapes and habitats through the implementation of their economic potential – the Severn Estuary Partnership experience

a) Description of the working area



The Severn Estuary is one of the largest estuaries in Britain, having the second highest tidal range in the world; it is also the largest example of a coastal plain estuary in the United Kingdom and one of the largest estuaries in Europe with an area of 24,700 ha. It is internationally recognized for nature conservation, having the status of Special Protection Area (SPA) under EC Conservation of Wild Birds Directive and is a Ramsar site (a wetland of international importance).

The Estuary, including the subtotal zone, is a possible Special Area of Conservation (PSAC) under the European Habitats Directive. The area is of national and local conservation status with a variety of national and local conservation designations. The estuary itself has large associated tracts of low lying rural and urban land, locally known as 'the levels'. This area is backed by higher ground and hillsides that overlook the flood plain.

Drained riverine farmland and grazed salt marsh is a low lying, windswept and generally treeless flat landscape of productive improved cattle pastures Pillhouse Aylburton Newgrounds, Awre, Westbury on Severn, Upper and Lower Dumball. There is a distinctive pattern of hedgerows dividing the landscape up into large geometric fields. The inundation grasslands and drainage ditches (locally known as rhines) are sometimes lined with pollarded willows and numerous 'Pills' (stream outlets) and wharves (salt marshes) can be found at the outer edge of the drained farmland.

There is a diversity of species-rich habitats of scrub, salt marsh and sand dunes dominated by long shingle beaches, which are home to large bird and invertebrate populations. These flat coastal levels are often punctuated by large modern farmsteads, sometimes accompanied by remnant orchards.

The levels immediately surrounding the estuary on both the English and Welsh banks have similar characteristics. The Levels are a largely flat open agricultural landscape. A defining physical element of this area is the complex pattern of drainage ditches and tidal rhines that divide the fields linking and flowing into the estuary. The flat landscape of mixed medium sized regular shaped pasture and arable fields are divided by thick trimmed hedges, ditches and rhines. Small-scattered deciduous woodlands and copses with some examples of remnant pollarded willow and coppiced trees are present. Scattered amongst the mixed pasture and arable fields, and usually adjacent to farms, are a number of small orchards in a mixed state of repair.

The Severn Shoreline and Estuary landscape character area is a flat open landscape of exposed tidal wetlands and mudflats, the large expanse of the estuary representing its most dominant feature. Flat, open landscape of exposed tidal wetlands, mudflats and rough grassland exist.

The un-wooded vale of the Stroat and Sedbury area is a Soft rolling landscape formed from the youngest rocks and thick deposits of drift geology. Extensive areas of wet meadow and floodplain. Well maintained and often-ancient hedgerows forming an extensive network throughout the vale. Numerous mature field and hedgerow oaks and small copses and shelterbelts.

The landscape typical of the vale is cloaked in a patchwork of productive pastures and arable fields defined by well-maintained hedges. Saline inundation is evident in pastures adjacent to the lower reaches of the Wye such as at the Pennsylvania Fields SSSI. These areas are notable for nationally scarce plants.

Historically large areas of the vale would have also been cloaked in orchards. Recently these have been grubbed out and replaced with grazing land or crops. Despite significant losses small orchards survive and neat rows of fruit trees can often be seen in close proximity to farms. Many fields appear to have been left fallow. In these meadows buttercups and other wild flowers have been allowed to grow unchecked, resulting in an attractive contrast compared to the better-maintained arable fields and improved pastures.

Hedgerow trees and field trees, typically oak, are an important landscape feature. These are often mature and contribute to the sense of a well-treed landscape. Small copses and shelterbelts are evident in the landscape, and gain further prominence when located on one of the many small hillocks that rise from the vale.

The Severn Ridge to the east is a steeply undulating diverse area rising up from the surrounding lower landform. Dominated and united by its sloping landform, which varies from gently rolling to undulating to the north, to steep scarp slopes to the south. There is a diverse mix of land cover dominated by woodland and hedgerows, which divides the intricate mix of pasture and arable land.

The Estuary supports a wide array of habitats and species of international importance for nature conservation. The Severn Estuary was classified as a Special Protection Area (SPA) in 1995. The Severn Estuary is also a Ramsar site and a possible Special Area of Conservation (pSAC). Where a SPA, such as the Severn Estuary, or Special Area of Conservation (SAC) incorporate sub tidal and/or inter-tidal areas, they are referred to as European marine sites (EMS).



Photo 27. Typical habitat of Severn Estuary

The Estuary is a Site of Special Scientific Interest (SSSI) under UK law, as are many of the levels areas around the Estuary. It has numerous national and local designations such as national and local nature reserves around its shores.

Many estuaries in the UK are of great importance to migratory and wintering wildfowl and waders. The Severn Estuary forms part of the complex chain of estuary sites along western coast of the UK that provide habitats for migratory waterfowl.

The relatively mild winter weather conditions found here compared to continental Europe at similar latitudes can be of additional importance to the survival of wintering waterfowl during periods of severe weather. It is especially important when there is severe weather affecting other sites further north and on the east coast of Britain. The Severn Estuary ranks amongst the top ten British estuaries for the size of visiting waterfowl populations that it supports over winter (Musgrove *et. al.*, 2001). Outside of this period, it is of particular importance as a staging area in autumn and spring for migratory waterfowl species as it lies on the East Atlantic Flyway route.

Humans were first attracted to the estuary and the surrounding areas for its wildlife, natural resources and access. With easier personal transport came recreational use of the estuary - evidenced by such Victorian seaside resorts as Weston-super-Mare and Penarth. This interest in recreation has now expanded to millions of people who enjoy and appreciate the estuary and wildlife for its own sake.

The natural environment of the estuary and surrounding land, including the coal and iron ore of the adjacent South Wales valleys and the Forest of Dean, was the basis of the economy for centuries. With improved communications and globalization of the economy the links have become less obvious but the economy and local environment are still intimately related. Archaeological excavations have reinforced evidence already available of the importance of the Severn lowlands for settlement and farming at least from the Iron Age.

The social structure of the growing population reveals the large number of households in the highest social class categories, as well as high proportions of heads of households who are retired. Taken together, these characteristics reveal a growing population around the estuary, and particularly so in those social groups having both the time and resources to enjoy outdoor activities, as well as showing the highest levels of concern for environmental issues; they also express interest in the membership of environmental interest groups.

The tourist industry illustrates the importance of the estuary as more than just something to gaze at, live by and work by, but as a formal part of the present-day working economy. The ports and harbors around the estuary continue to play vital economic and social roles.

Whilst the Severn Estuary itself is a single physical system from a social and economic perspective it separates its two shores both socially and economically. Although the Second Severn Crossing enhances communication between southern England and South Wales, day-to-day contact specifically between the two sides of the estuary region is limited. Less tangible but no less significant is the lack of a feeling of community identity across the estuary.



*Photo 28. Recreational activities
in Severn Estuary*

Access around the estuary is patchy, with areas where there is little public access. Many other areas are only frequented by local communities in a recreational way. There are a number of Victorian seaside towns around the estuary and what tourism tends to be associated with these, notable exceptions being the Quantocks coastal strip in Somerset and the Vale of Glamorgan Heritage Coast.

In many parts of Europe, the planning and management of activities in the coastal zone is very sectorial. This includes nature conservation initiatives that may be established independently of other activities taking place in an area. The opposite situation also applies where development is seen as having little relationship to nature conservation if it takes place outside protected areas. In reality, the long-term success of both nature conservation and development are closely linked.

Much guidance on the protection of the nature conservation resource is very technical and not readily accessible to or useable by those who are engaged in making decisions regarding development in the hinterlands of our Natura 2000 sites.

The Severn Estuary has yielded many traces of pan-European links, from Prehistory to modern times. Influences from Iberia and France are found in the Celtic Finds of the region, and Roman boats brought trade goods from all over Europe up the Severn for distribution at ports on both English and Welsh sides of the Estuary.

This project provides a rare opportunity to tie together various strands of archaeological information to provide an ideal platform to disseminate our understanding of relationships between countries in the past both at local and national/international level. Factors related to sustainability will also have cross-national benefits to promote the highest sustainable quality of life and environment, without compromising the ability of future generations to meet their needs, and indicating past links between communities of the Atlantic.

Coastal zones are important to people as places to live, work, and relax, and access to and along the

coast is therefore a highly valued commodity. Access can also improve the value of the environment as an economic asset as well as supporting its conservation and enhancement, if it developed to promote a more sustainable way of living.

Access around the Severn and in other locations along the Atlantic Arc has evolved over many years, often through a mix of historic rights, individual schemes and regional projects, with access being gained as well as lost. Through this piecemeal approach, the chance to enhance the use and quality of the coastal environment, to promote access as part of a more sustainable way of living or to reinforce a regional identity may be lost.

There are, within the Severn, variations in the degree to which coastal access has been established, with a long distance route having been formalized along the English bank, but with variable access on the Welsh side.

The project will contribute to the specific measure objective of promoting the integrated management of coastal areas and estuaries and protection of wetlands.

b) Methodology

The project is being undertaken to raise the economic status of valued habitats and landscapes across the whole estuary area as well as promote research and leverage the best practices in Europe. The Strategic Guidance and Action Plan seek to make recommendations for future enhancement of the economic status of valued habitats and Landscapes.

The Landscape character assessments will be used to gain an overview of the important landscape features and habitats within the estuary area.

The stakeholder forum is a key instrument in delivering the project. However an adaptive approach will be required in order to respond to the differing needs and requirements of all those with an interest in the supply chain.

The Stakeholder Forum has been established to allow all those with an interest to have an input in to the formulation of the Strategic Guidance and action plan.

Phases

a. Setting up access forum - An estuary-wide access forum was set up to act as a guide for the project, and allow key stakeholder involvement. Invitations were sent out to each of the Local

Access forums around the estuary, and also to major landowner bodies and agencies. Each forum had two seats available - one for an officer and one for a member of the local access forum. Meetings were scheduled three times a year for the entire duration of the project.

b. Running access forum - The estuary-wide access forum agreed Terms of Reference. Each meeting a speaker gave a speech on a topic of interest. The forum then offered advice into developing a toolkit, and on the progress of the pilot projects. Problems were encountered due to the difficulty of promoting access near and on a European Protected Marine site, but through careful liaison with the Nature Conservation Agencies a toolkit was developed and recommendations made.

c. Pilot projects - Four pilot projects were undertaken: Newport, Monmouthshire, Forest of Dean, South Gloucestershire.

Data collection methodology

A number of methods were used to gather data and information throughout the project:

Meetings / forums – e.g. Access 1 to 1 meetings January - May 2004. Also sat on the European Marine Site Advisory group.

Workshops- e.g. recreation and nature conservation workshop- April 28th 2005

Questionnaires – Interpretation questionnaire

Email data requests - for the access and nature conservation GIS

Informal discussions – with community groups, interest groups and individuals.

Each pilot project had different objectives and outputs. Together they show the variety and extend of the different types of coastal access around the Severn Estuary:

a. Pilot projects

- Newport - produced two interpretation panels and two leaflets. Together they are designed to help protect the valuable coast by informing visitors of responsible routes and behaviours.
- Monmouthshire- infrastructure installed along footpath on coast. Kissing gates, suitable for disabled users were installed and a circular trail created. Counters were installed to monitor use.
- Forest of Dean - Link footpath installed between coast and town, suitable for disabled and cycles. Developed as part of a larger regeneration project.

- South Gloucestershire- Installation of infrastructure to improve quality of access on Severn Way. Also interpretation panels to inform visitors of wildlife importance. A survey of visitors was carried out to determine frequency of use and type of activity.

b. Access survey - The access survey was carried out through face-to-face interviews with highways authorities around the estuary to deal with the problems, opportunities and priorities of access to the coast. These were then incorporated into a written report and a GIS system produced by the GIS strand.

c. Interpretation survey - The interpretation survey was carried out by sending out questionnaires to visitor attractions / event organisers around the estuary.

d. Recreation and access GIS - This database was a main output of the GIS strand. Information was gathered from highways authorities and input alongside nature conservation information and further information gathered on site visits to the coast.

6.4.7. RESULTS

Europe's coastal zones are an important focus for economic activity as well as for supporting some of the most valuable and endangered natural/cultural resources of the European Community.

The fact to know the history and the issues of the Atlantic coastal areas will give the opportunity to preview and correct the land planning concepts and management – including the respective tools - that are ruling the urban and rural interdependences in the coastal areas.

The main long term objective is to support regional and local authorities with rules that allow the sustainable perspective of land management and the economic success of land use, uses and activities ensuring the precautionary principle of conservation and management of the resources.

Besides, there is always a risk of conflict of interest and priorities, which will need to be overcome in order to benefit the wider area as a whole; indeed, to implement any land use plan it is necessary to have a strong sector co-ordination associated with economic instruments promoting the priorities and proposals of the planning tools.

The ability to be flexible and allow for the modification of the strategic recommendation and Action plan is equally essential if all the needs and requirements of the stakeholders are to be accommodated.

With the kind of approaches / case studies that are presented we expect to contribute to the Integrated Coastal Zone Management set of rules and examples of the best practice that will be able to “build” the future COASTATLANTIC ICZM Handbook.

It is also a good exercise for the local authorities to learn to see the entirety of the coastal zone territory bearing the responsibility for the drafting of a plan of proposals and interventions as a unit.

6.4.8. CONCLUSIONS

It is fundamental to plan and manage coastal areas also in the hinterland as a way to articulate the protection and production functions of the rural and the urban areas, transport or supply /drain networks.

Their interdependences have an impact on the natural cycles as well as the complementary functions, for tourist and recreational activities, based on the typologies and seasons of the year.

This thematic action identified some general set of rules for the coastal area and their hinterland that may constitute basic orientations:

- Need for environmental compensation of artificial character and negative effects of urban and industrial concentrations, or even agricultural or forestry intensive exploitations.
- Promotion of correct land use achieving better patterns of soil and water conservation and growth of exotic species, avoiding fire threats.
- Defend and promote natural forest contributing to diversification and reach a balanced water cycle.
- Promote the traditional sustainable and balanced systems (pastoral under cover namely “montado” forest) taking advantage of the multi function character and high adaptation level of these systems.
- Unquestionable tourist and recreational activities vocation of the coastal areas that must be planned, making those uses compatible with the high environmental standards; monitoring will allow their continuity and quality.

- Organization of accesses and parking networks as well as beach equipment localization (dune system protection avoiding buildings and housing and people or vehicles random crossing).
- Housing and planning rules and policies applied to the periphery intervention can be solutions for the town centre problems – traffic turned away or urban soil availability to avoid speculation. In the same way beach parking solution avoids direct pressing in a specific area finding protection and compatibility of use.
- A checklist of coastal rural settlements that should have a detailed study can be useful.
- Promote the continuity and efficiency of irrigated areas, defending the coastal streams and establishing diversified landscape structures in order to get an ecological network in hinterland continuity; attend also to the necessary care for use in artificial factors production (herbicides, fertilizers...) application.
- The promotion of local produce and products can make an important contribution to regional economies as well as support local businesses, promoting sustainable consumption and making consumers more aware of the source of such products.
- A wide range of stakeholders can be successfully engaged to contribute to the process of identifying activities as well as to convey their understanding on how their activities and projects are susceptible to have impact on nature conservation.
- A significant diversity of Atlantic regions and diversity of produce were selected so that the case studies gain a broad understanding of approaches relevant to this coastal area, and ensure broad applicability of the results of this project.
- The question of land planning tools model should be incorporated in the agenda.

Alentejo

The major result of Alentejo's participation resulted from the 2 thematic reports with the comparative and evaluation task of landscape dynamic 1990/2000 carrying through the 3 selected areas and coastal line detailed scale surveyor of the ICZM good practices whose main conclusions are now presented.

From both the analysis and diagnosis of landscape dynamics in the whole of the 5 municipalities territory and the case study of its respective adjustment in the 3 selected representative areas it has been demonstrated that, despite PROTALI proposals and the available financial instruments, the land use did not evolve into the potential one identified in the plan and neither did the equipment and infrastructures priorities already set out.

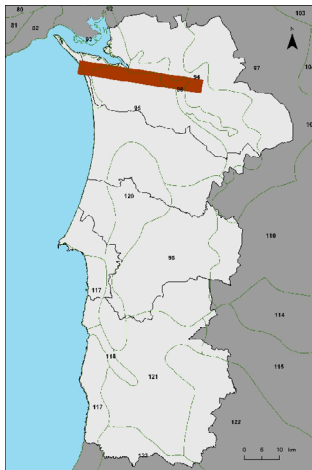
This conclusion may put in the agenda the question of land planning tools model – regional scale completed with the municipal master plans and detailed land use plans – did not get the objective of land use adjustments and landscape balance. Namely they should be more compulsive to all administration sectors and have a more objective and operational approach to turn proposals into reality; one should also identify the public or private agents to implement it, as well as be associated to specific financial tools.

Therefore, despite the existence of some localized ICZM good examples or practices in the coastal trip it is necessary to plan and manage its thinking also in the hinterland as a way to articulate protection and production functions of the rural areas and urban, transport or supply /drain networks.

Their interdependences have a certain impact on the water and soil cycle for instance as well as complementary functions based on the typologies and seasons of the year for tourism and recreational activities.

Area 1 – Tróia – Vale do Sado

This Area crosses the coastal line in direction of the hinterland and includes the following landscape units:

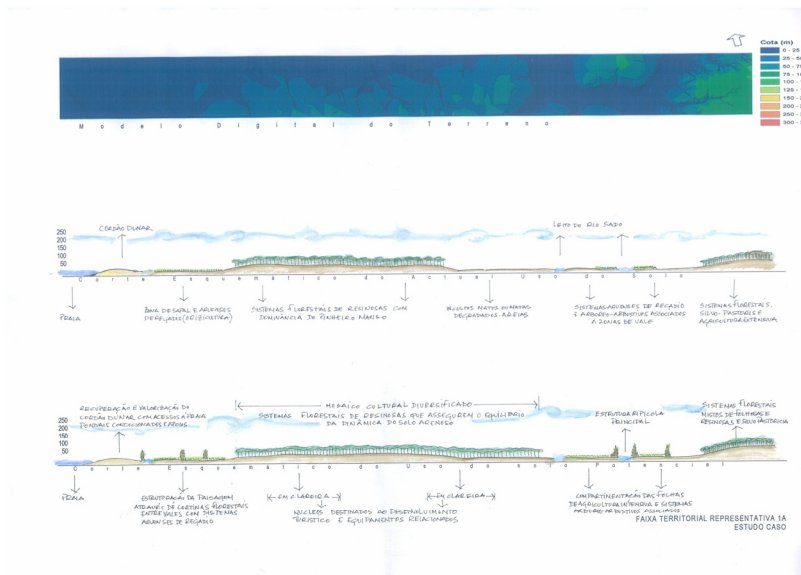


93 – “Estuário do Sado” – Tróia Peninsula is a sensitive sandy system mainly stabilized with natural vegetation and significant pressures of tourist and recreational uses.

94 – “Charneca do Sado” – sandy plane with cork and pine cover crossed by Sado river and several streams where, according to the dimension, agricultural use take place. The dominant forestry and grazing activities influence the population distribution in scattered small settlements.

95 – “Pinhais do Alentejo Litoral” – plane area with sandy soils that associated to oceanic climatic conditions favours the pines habitat.

96 – “Vale do Baixo Sado” – wide valley with an extended alluvial plane where intensive agriculture benefits from the soil and climatic conditions. Despite the presence of some pine and cork woods - “montado” - in the surrounding slopes this intensive use should be “crossed” by landscape structures like natural small woods and hedgerows.



Existing land use scheme:
Generally the land use is almost adjusted to the territory conditions.

Purposed occupation pattern:

- re conversion of uncultivated zones to forestry systems;
- landscape structures installations in the intensive agricultural areas;
- cultural “mosaic” establishment with clearings in forest zones and localized tourist units complementing the coastal tourist enterprises.

Future orientations:

- dune system protection avoiding buildings or housing and the random crossing by people or vehicles – that means the organization of access and parking as well as beach equipment localization.



Photo 29-30. Sand dune system in Alentejo Coastal area

- plan and management monitoring of forestry actions specially the umbrella pines or natural vegetation, avoiding fire threats and growth of exotic species.



Photo 31-32-33. Landscape type from coastal area to hinterland (cliffs, irrigated area and pasturages)

- Planning of tourist and recreational usage in the coastal area taking advantage of its exceptional conditions and allowing continuity and quality to take place.
- Ensure environmental quality of water and soil parameters and indicators in the intensive exploitation areas with strong interdependencies with the estuary conditions.
- Create in the hinterland landscape structures and diversify the uses and activities achieving a “mosaic” that assures the essential ecological functions.

ICZM good practices in Area 1 Coastal Strip

Implosion of Tróia tourist towers

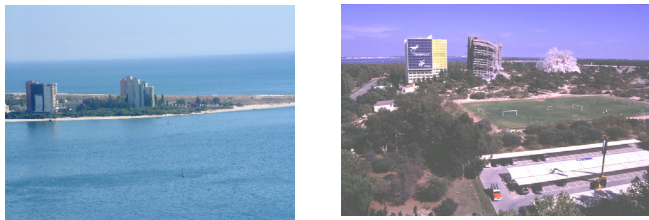


Photo 34. Implosion of tourist towers (Tróia Peninsula)

The flat character of the Tróia Peninsula was crossed by 3 big towers 2 of which had never been finished and imploded in September 2005 with the aim of correcting an inadequate intervention in view of reassessing the +area.

Forestation with pioneer species



Photo 35. Forestation with pioneer species and dune system protection

Knowing the sensitivity and dynamics of that dune system the Forestry Services took forward pioneer plantations as the first step to spontaneous vegetation protecting at the same time the uses in the hinterland. Next step was the selective and progressive cut of the pioneers since the sand system was stabilized and the current fluxes from the estuary to the ocean were guaranteed.

Golf courses



Photo 36. Tróia golf course

The golf activity is more and more prominent in Alentejo. The Tróia peninsula in particular, gathers exceptional climate, morphologic and scenic conditions for that sport and the existing courses are very well adapted to the surrounding and environmental features.

They do not have associated an excessive real estate charges and take advantage of soil, relief and vegetation allowing the cycles of water, nutrients or sediments to take place and contrasting clearings with the surrounding pine area.

Carrasqueira harbour and traditional houses

The Carrasqueira palafitte fishery harbour remains as a very ancient and sustainable



Photo 37. Traditional house and access through the salt marsh

Relationships between man and estuary. It is located in Sado Estuary protected area over the estuary salt marsh and represents a strong and unique patrimonial identity.



Photo 38. Carrasqueira palafitte harbour

That craftsmanship building complex can also be seen in the traditional houses, now and then, associated to poverty and patterns of uncomfortable living conditions. It was built with pine timber stakes and rope linking the straw roof that often did not protect efficiently from the rain.

They both represent nowadays examples of typologies, materials and building techniques very well adapted to the climate, resources and fishery activities.

Nowadays, these patrimonial elements are an important empiric know-how that deserves to be an inspiration source and be of good use to the modern techniques and technology respecting the environmental concerns.

Comporta beach interventions



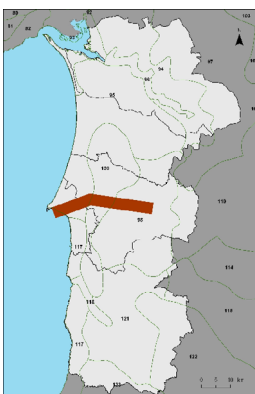
Photo 39-40-41. Access network in Comporta beach

In the course of using the regional planning tool and the Land Use Plan for Alentejo Coastal Strip beach plans were elaborated organizing their use with the assistance of various systems. Namely the access over the dune system was monitored through the implementation of a unique solution offered to people, emergency and logistic vehicles, the concentration behind the dune system of parking areas and also the adequate location of support equipment on the beach.

Among others, Comporta beach received in 2005 the Blue Flag award from EU due to environmental parameters and service components but also because of its ability to have dispatched information on the structure of environmental education.

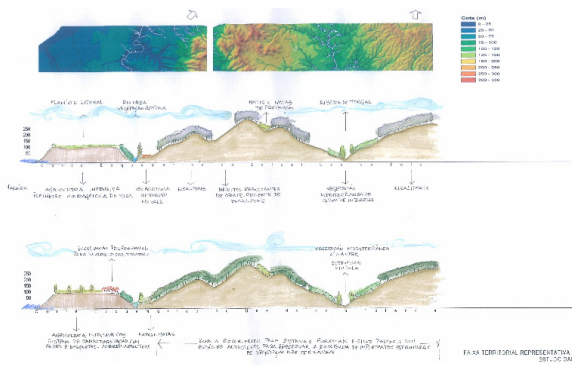
Area 2 – Sines – Serra de Grândola

The second area includes in “Terras do Sado” large landscape units with strong presence of one of the Alentejo mountains – Serra de Grândola – making the transition from coastal area to the hinterland. This area crosses in the coast/hinterland direction the following landscape units:



95 – “Pinhais do Alentejo Litoral” – extended sandy plane with strong oceanic influence where pines have very good conditions specially the umbrella pine.

120 – “Serras de Grândola e Cercal” – this relief contrasting with the surrounding plane character has significant expression both in morphology and soil uses. Making a barrier to oceanic winds it has the perfect conditions to a dense and diversified cork trees cover with traditional pastures clearings – “montado” system. The excellent climate and scenic conditions promote the current requalification of existing buildings taking advantage of that landscape identity maintaining the suitable human presence in a sustainable land use.



Existing land use scheme:
The land use must be adjusted in almost all situations; it is the selected area where the land use is more misadjusted according to the potential ones.
Purposed occupation pattern:
- Control and avoid the expansion of exotic species forest.
- Tourist and recreational activities planning and monitoring.

Future orientations:

- Environmental compensation of artificial character and negative effects of a significant urban and industrial concentration;



Photo 42-43-44. Forestry planning in Serra do Grândola

- Promote the correct land use namely the forestry planning and management achieving better patterns of soil and water conservation preventing the abusive growth of housing for second residence purposes;
- Promote the cork trees forest “montado” and deciduous species in valleys contributing to diversification and fire combats;
- Diversified use in the valleys taking advantage of humidity and soil fertility conditions and contributing to the balanced water cycle;
- Take advantage of the oceanic winds to get sustainable and friendly environmental technologies with windmills installations.

ICZM good practices in Area 2 Coastal Strip

Sines Urban area and harbour complex



Photo 45-46. Sines and aerial view of the harbour

Sines is an ancient town associated to fishery activities with a strong relationship with the sea. With the installation of the oceanic harbour and its important industrial complex the town and the surrounding hinterland welcomed a new population and gained an economic dynamics.

Located in a singular geologic unit – a prominent cape interrupting the 60 Km sand strip – it is a compromise between tradition, development and, in the future, environmental compensation measures.

EOLIC PARKS



The use of renewable energy with windmills installations taking advantage of the oceanic winds is a sustainable and friendly environmental technology.

Photo 47-48. Wind mills in Alentejo coastal plane

Area 3 – Zambujeira do Mar – Regadio do Mira –

The third area includes the Alentejo coastal area landscape and its hinterland hills:

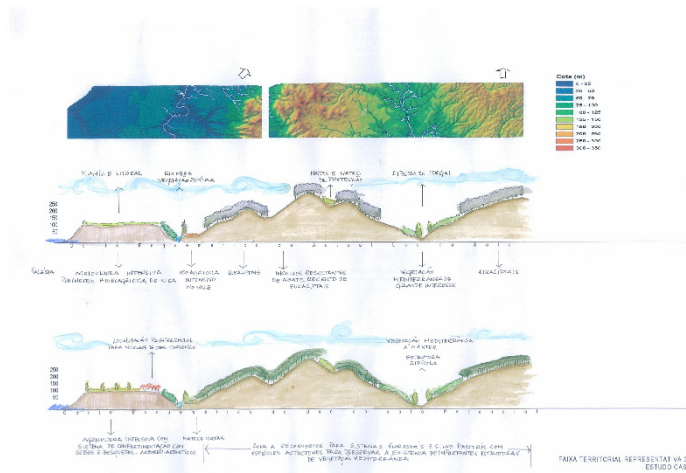


117 – “Litoral Alentejano e Vicentino” – coastal flat plane with cliffs over the ocean cut out by small beaches. The maritime climate of Atlantic exposure has low temperature variations with soft winters and moderate summers. Little ancient fishery settlements concentrate on the coastal strip with chaotic growth trying to supply the seasonal summer search.

118 – “Vale do Mira” – the marked Atlantic influence due also to surrounding relief gives to that sloped valley a very interesting vegetal cover, despite some significant exotic species areas or, in the same way, the overgrowth (often low urban quality one) of Vila Nova de Milfontes near the estuary.

120 – “Serras de Grândola e Cercal – this relief contrasting with the surrounding plane character has significant expression both in morphology and soil uses. Making a barrier to oceanic winds, it has the perfect conditions to a dense and diversified oak forests, mainly cork trees in “montado”, covered with traditional pastures clearings.

121 – “Colinas de Odemira” – the repeatedly hilled relief with almost exotic species has a low diversity level but this unit crosses one of the most important streams of the Mira river system as far Mediterranean spontaneous vegetation is concerned. The agricultural activities are now abandoned giving place to uncultivated fields on the less sloped areas.



Existing land use scheme:
The land use must be adjusted in almost all situations; it is the selected area where the land use is more misadjusted according to the potential ones.

Purposed occupation pattern:
- Control and avoid the expansion of exotic species forest.
- Tourist and recreational activities planning and monitoring.

Future orientations:

- Unquestionable Tourist and recreational activities vocation that must be planned and monitored making it compatible with the high environmental standards;
- Promote the continuity and efficiency of irrigated areas defending the coastal streams and establishing the landscape ecological structures in order to get an ecological network;
- Avoid the expansion of exotic species forest;
- Promote the pastoral under cover systems, namely the “montado” taking advantage of the multi function character and adaptation level of this system;
- Prevention and fire combat system.

ICZM good practices in Area 3 Coastal Strip

RURAL TOURISM



Photo 49-50. Herdade do Touril de Baixo before and after the re qualification of the existent buildings

About 4 Km far from Zambujeira do Mar in the heart of the protected area, the exploitation of “Herdade do Touril de Baixo” has 365 hectares of agriculture and cattle activities with a small tourist enterprise (9 rooms) that resulted from the re qualification of existing buildings. With good accesses, this quiet landscape with a privileged sea, belongs to the “living together with the landowner” tourist model allowing the revitalization of the buildings and the exploitations maintaining the local characteristics.

RIO MIRA IRRIGATED AREA



Photo 51-52. Fields of Rio Mira irrigated area

This is an intensive production area crossed by landscape structures defining fields organization or located in the most sensitive areas. According to the landscape dynamics 1990/2000 report agricultural uses and activities had a significant increase taking advantage of the excellent climatic conditions as well as the available irrigation network and associated structures. This landscape unit is, therefore, adjusted to the potential uses identified by the land planning tools. For the future, the concern must be with the application of artificial factors production (herbicides, fertilizers...) to avoid negative effects on soil and water cycle; the compartmentalized structures should have deciduous species too.

MIRA RIVER VALLEY



Photo 53-54-55. Water mill in Mira River with the re qualification of the existent buildings



Photo 56. Aerial view of Vila Nova de Milfontes

The marked Atlantic influence due also to surrounding hills relief gives to that sloped valley a very interesting and rare vegetal look constituting a Special Bird Protection Area. Its diversified character must be preserved despite the opportunities to recreational and scientific potential initiatives that must go with the sensitivity the area.

Asturias

POLA interventions proposals:

Central Zone – Verdicio Beach



Figure 32. Verdicio park-beach planning



Photo 57. Verdicio park-beach

The new Verdicio coastal park is the “heart” of the strong seasonal character representative of the Central Zone and its planning obeys the following scheme:

- Creation of a vegetable protection band around housing creating an obstacle to view and noise;
- Just beside it a parking lot with 100 places was created; it was able to receive additional 100 places in the high season; it is also surrounded by an evergreen vegetation strip; other permanent parking lots were created in the southeast area - high seasonal park with 10 to 15 hectares;
- The pedestrian coastal path counts 2 or 3 enclaves.



Figure 33. Rodiles park-beach planning



Photo 58. Rodiles park-beach

Western Zone – Arnao-Peñarronda beach

The set of 3 beaches is arranged with a multi local plan where parking is located in the less environmental sensitive areas and in a strategic way for several beaches. This action is supported by a new road that works both as obstacle and collector of the coastal traffic in its adaptation to relief characteristics, far from the coastal line between 300 and 900 m, and linked to the national road 634 at the end.

Close to the main axis, 4 parking areas accommodate 560 places with scenic integration functions and distribution of walking paths network avoiding sensitive areas. Mainly built on the existing routes that join beaches, parking areas and settlements; a bicycle trail also links the most interesting spots.

The seasonal coastal park represents about 6 to 7 hectares on Arnao beach, the same between A Cruz and Espiela, 3 to 4 hectares joining the recreational area and again 3 to 4 hectares between Corno Cape and Peñarronda beach. All of them work only from June 15 to September 15 and are the structure of the circulation network that links the south to parking and rural settlements. During the rest of the year a permanent parking resulting from the expropriation process of small areas ensures that function near the coastal line.



Photo 59. Coastal route between Cape Busto and Vidio Cape

That coastal line is characterized by a vigorous relief pointing out 3 morphologic units: the coastal plane (*rasa costera*) that ends in deep cliffs; the river valleys with chestnut and oak woods and some pasturage lands in the hinterland, changing to pine and eucalyptus in the coastal line; the upper lands that rise 1500m altitude. The climate is Atlantic temperate with a high degree of precipitation.

The local economy is mainly from the primary sector with relevance for milk and meat production. Fishing is also an important resource as well as the timber industry; the feeding agro industry is the most important sub sector like the tourist activity that has known a great increase in the last years. There are no great enterprises in the region and the capital villages of municipalities are the only ones below 1000 inhabitants with concentration of urban functions and services. Along the territory there is a spread and unequal location of the population in almost 900 nuclei showing the great difference between the high populated coastal plane and the almost desert hinterland mountain.

The POLA intervention is the proposal of access network leveraging the existing routes where motor traffic is only allowed to the surrounding farms and to the lighthouse that remains at 450m distance and at an average of 5 minutes while walking. Hidden in the trees there is a parking lot with 60 places (20 plus 40 seasonal) with some accesses to where the beach converges.

Peñas Cape coastal route between Nieva and Candás – Central Zone

It begins from San Juan de Nieva lighthouse and goes East about 16 Km to Peñas lighthouse located in one of the most significant cliffs of the Principality of Asturias, and the most septentrional of northern Spanish coast line, with important ecological values. It is classified as “Protected Landscape” with 2 important landscape examples of very well differentiated ecosystems: the Playa del Xagó sand dunes and the Peñas Cape cliffs. The essential point is to achieve the land planning of that area looking for environmental preservation and human intervention, namely the educational and recreational potential.

Coastal route between Ribadesella and Guadamía – Eastern Zone

It is a very rich and interesting landscape route with a diversified scenic quality that allows the possibility of having different levels of difficulty. If we start from the village, there are multiple choices to do it and the new parts were drawn very carefully in order to have no visual impacts either from the track or out of it.

The idea is to connect that pedestrian route with a cycled one that will link several coastal settlements that distance about 1 Km from the coastline and from the accesses to the beaches.

The POLA does not have direct influence on the road network but tries to find limits to that kind of infrastructure in order to put in place an adequate planning of the north/south communications of the national network with the coastal and hinterland roads, improving consequently accessibility.



The road plan is already in discussion, namely the spatial organization model that may set out the role of the old national road as traffic distributor in the eastern sector and the new drawing in the western area in which building enlargement does not allow anymore.

Figure 34 Road map

The purpose of the motorway is limited to a 14 ring road variant with a medium distance of 1100 m looking for the turning away of the coastal line and the articulation with parking and pedestrian paths.

The housing and planning rules and policies established by POLA apply for instance to the peripheral interventions as solutions for the town centre problems – turn away traffic, urban soil availability to avoid speculation, etc. In the same way POLA points out the beach parking solutions to avoid direct emphasis in a specific area far from which it is much better to find protection and use compatibility.

The checklist of coastal rural settlements case studies that should have a detailed study has already identify:

1. Settlements with an strong urban character – Llóngara-Arboces, Ortiguera, Oviñana, Antromero, west coast nucleus of Gijón, Barru and Celorio – deep urban characterization and category classification of a certain dimension nucleus with a significant presence of the

- tertiary sector: the creation of execution units, road and pedestrian networks plan, equipment areas that give away to municipal soil;
2. Settlements to submit to specific studies (most of the cases) – marked rural character of some dimension (Barcia, Cadavedo) or very small but with peculiar characteristics (Linares);
 3. Particular situations in which a careful delimitation of the nucleus in scale 1:2000 below land property (Sabugo, Camia, Castañeras);
 4. And finally situations that will take the best possible option among the possibilities listed above during the studies.

The urban rules for rural settlements growth must consider the delicate interaction and pattern of buildings and paths adapted to the topography and land potentialities that result in small nuclei organized in “spider web” form.

Based on the data analysis that we have, some proposals/technical rules can already be enunciated:

- Often the settlements take a linear form forming small groups in the highest and less sloped hills (Bayas, Viodo, Luces) – in those cases, it may be necessary to establish the urban limit avoiding the occupation of the middle slope.
- In other situations, settlements exhibit a scattered pattern through the hills releasing the plane areas (San Martin de Laspra) that must be conserved.
- When the settlement is on a flat area having woods as scenery, this framed situation must be maintained as it happens in Western landscape units.
- When the settlement limit is a coastal path with panoramic views, this character must be maintained and help assess, as it has already been the case, using drawing tools, the effects of new building (Valdeparais, Podes).
- The linear building along the roads is not a suitable way of growth.

Accesses Network Proposals

Rural and pedestrian trails Network

The coastal trails network is conceived to a specific area, as well as in articulation, between one or more settlement, beaches and other landscape interest points, trying to hide their new landscape elemental character, which could mean that they are the most visible scenic impact. The objective is also to ensure their correct environmental and landscape integration; this is why the main conceptual criterion is the existing walking path network. The new interventions were designed with a minimum visual impact and a 2,5m wide ensuring emergence/maintenance and rural vehicles access.

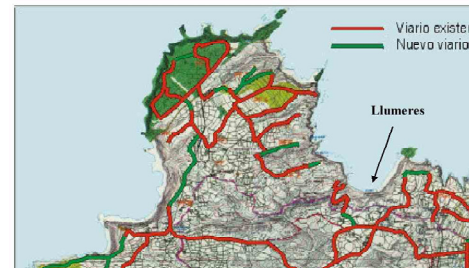


Figure 35. Pedestrian trail network

This network, besides the connecting advantages that it brings, makes the most difficult access zones easier, avoids the motorized access to sensitive environmental areas and maintains the traditional paths essential to combat fire.



Figure 36. Road networks alterations in Cape Busto

Road network alterations

The national and regional road network is part of an entire communication system of the region that in articulation with the interior links, determines a set that must be coordinated to ensure the coastal/ interior connections. The limits for buildings are impacted by the drawing and future development of that network.

Severn

The main objective of this project was to improve the management of sustainable decisions related to development around the Severn Estuary, focusing on access and interpretation.

The project identified a need to participate in trans-national and local forums to establish common approaches to coastal and estuarine access and best practices in managing these to minimize impact. The project successfully engaged a wide range of stakeholders who contributed to the process of identifying activities, producing an access toolkit for managers and decision makers around the estuary.

A major benefit of involving a wide range of organizations has meant that their awareness of the nature conservation on the Severn Estuary has significantly improved, as has their understanding of how their activities and projects may impact the nature conservation resource. The access project worked closely with the COASTATLANTIC nature conservation strand and the COASTATLANTIC GIS strand on this objective.

Best practice case studies

A diversity of Atlantic regions and diversity of produce was selected for the case studies in order to be able to gain a broad understanding of approaches that are relevant to this coastal area, and ensure broad applicability of the results of this project.

Case Study 1 - Montado Habitat, Alentejo, Portugal.

Introduction - The Alentejo is a large region covering almost a third of the landmass of Portugal, being bounded in the north by the River Tagus (Tejo) in the south by the hills of the Algarve to the east is the border of Spain and the west is the Atlantic Ocean.

Historically, having poor road infrastructure and being sparsely populated and predominantly rural the landscape is of exceptional quality. Its scenic beauty and cultural complexity and diverse wildlife makes it an important area regionally, as well as internationally.

Alentejo through its anthropological elements remains a region of strong cultural identity.

The Montado is a unique agri-silvi-pastoral system developed from the management of the oak forests and scrub that used to covering the area. The forests were cleared of the scrub vegetation and undergrowth to allow livestock to graze and crops to be planted and timber and fuel to be extracted. The Montado can be found on all types of soil although with the clearance of the trees from the better soils in order to facilitate crop production, the most important production that can be found on the poorer soils of Montado.

The Montados are an extremely valuable natural habitat for its landscape diversity and biodiversity. This woodland pasture harbours some of Europe's rarest wild animals such as wolf, pardal lynx, genets, mongoose and wild cat and rare birds such as the Spanish Imperial eagle and Black Vulture. As well as being botanically very rich, there is also a wealth of Fungi, ferns, mosses and lichens.

Economy

Today few crops have grown within the Montado areas due to the poor nature of the soils. Although some soil are being improved by liming or adding phosphates and sowing nitrogen fixing crops, in general, very little is done. Which means that the Montado is florally rich of species.

Most of the livestock used are local breeds well adapted to the extreme conditions of Mediterranean hot and dry summers. These include Alentejano, Mertolengo Preto and Brava cattle, the White Merino, Merino das Beiras black merino and Campanica sheep the Serpentino Serrano and Beiras goats and the Black Alentejo pigs. Due to the poor quality soils and low yields, the Montado has, extensive stocking levels, which also adds to the floral diversity being upheld.

Portugal and Alentejo especially is the world market leader in production of cork, which is produced from the cork oak (Quercus suber). The cork is harvested by cutting it free from the tree every nine or ten years. Nearly 33% of the world's cork oak plantation is in the Alentejo region which produces approximately 40% of the world production and nearly 80% of the total national production of Portugal.

The cork industry has been present since the Roman period and really grew dramatically in Portugal from the latter half of the eighteenth century. This was a result of the expansion of the glassware industry and especially the increase in the usage of glass bottles for wines.

Cork is also used in a variety of other industries including, footwear, fishing, sport goods, decorations, civil engineering and the chemical industry. On a regional level cork has an important cultural role as it is widely used in the creation of craft artefacts.

The traditional local food is pork and lamb, as well as some game such as wild boar hare and partridge.

Issues.

Due to the poor crop yields and the extensive nature of the livestock farming and the reduction in the use of corks for the wine industry, revenues are very low. This has, in many areas, lead to the abandonment of farms and the management of the Montados and resulted in scrubbing over the area. This results in severe fire risks, which are increasingly destroying large areas of this important habitat. The scrub regeneration also takes over the trees and the end result is a loss of habitat. There is also increasing amounts of Eucalyptus plantations being grown which adds to this loss.

More recently overstocking has been taking place due to incentives of the subsidy led farming whereby farmers are increasingly encouraged to increase stock levels to gain extra payments. This has resulted in the loss of the delicate balance between the natural and man managed systems.

Good practice.

In order to raise revenue levels from farming in the Montado whilst maintaining the natural and cultural heritage of the area, a number of measures are being implemented. Owner associations are in favour of good practices and realize that agricultural grants do not contribute to the sustainable management of these delicately balanced habitats.

As producers cannot compete on price due to economies of intensive farming, they have decided to win on quality. The quality of meat produced from the extensive system is much higher than intensively reared livestock. As a result meat quality brands have been established to market the quality products. Two of the many examples are the Carne de Porco Alentejano and the Vitela Traditional Do Montado.

There are also actions underway to increase revenue from tourists by marketing the natural and cultural heritage, such as for example bird watching.



Photo 60. Labels of montado products from Alentejo

Case Study 2: Os Irmandinos Cooperative, Galicia, Spain

Introduction - The cooperative was founded in 1976 out of the desire to find good quality suppliers in the preparation of Cattle feed. The local Agricultural Development Agency gave advice and information and the project grew little by little between 1978 and 1990. The partnership was made up of more than 80 partners both in Galicia and Asturias and grew to 961 by 2003.

Good Practice

The original objective of this enterprise and the coop was to make cattle feed. The coop makes 20 million euro of profit each year of which cattle feed makes up to 65% of this amount.

The coop also produces a wide range of other agricultural tools and products. 5000 tons of fertiliser per year, 110 million litres of milk per year and 3500 beef cattle per year.

The coop has now its own food laboratory where extensive research and development work can take place; such issues as the keeping and storage of hay and other vegetables for cattle food can be examined within that framework.

There is also a shop on site which was initially devoted solely to agricultural food but has now diversified into other areas e.g. gardening, electrical goods, paints, fertilisers, pesticides, and pet food. There are also tools, human food products which are still being developed, furniture, white goods.

The local population is increasingly using the shop and therefore product lines are further increasing with time. Market research has shown the coop and its shop to have an excellent image in the local community. This is unusual in the fact that non partners use the shop on a large scale.

Profits are distributed to partners and as a result are kept in the local economy benefiting the economy of the region as a whole. No profits are siphoned off by a larger company and disappear to other parts of Spain or in some other large companies.

The Coop is the main provider of seeds in Galicia with 350 tons of hay seeds being sold. The coop markets its own production of hay and grows 150 tons of maize.

Bean production is important. there are links to bean production in Asturias with the provision of seeds etc. The cooperative is now developing training courses and special training programs.

The range of services is constantly expanding and diversifying as well as retail; there is an important advisory capacity within the coop. Scientists give expert advice on all aspects of agriculture including, feeding, production, and breeding. This helps to avoid problems and these preventative measures eliminate 80% of any issues that might occur.

Post classification and the marketing of beans are extremely important in the area. Most partners have large areas devoted to bean production. Beans are grown when small farmers could not afford cattle production.

The market for vegetables is really wide and distributed to Asturias and the rest of Spain. Currently there is a shortage of people devoted to selling produce but the decision-makers are realizing the need to link technician producers to the market. This needs will be achieved by increasing awareness of products and by enhancing marketing. An element needs to be included in the training programme to appraise what products the market wants. Also a wider view of European classification is required and training should occur to maximize profits. European needs should be taken care of.

Advice is given on crop production and the best type of machinery to use.

Issues

There is some conflict from advertising campaigns from other companies which are trying to sell partners' inferior products. So coop uses their own advertisement to inform and advice their members.

The coop owns its own agricultural machines and these machines are completely insured (unlike other independently owned machinery) which is a great benefit. However some members are not prepared to pay more for legal protection. Farmers are naturally worried by red tape and do not like signing papers e.g. insurance papers.

Computer controlled pesticide and fertiliser application save money and is "better for the environment"

Analysis is performed on the efficiency and profits of farms and crops and cattle to maximize efficiency. This shows the impact of the latest techniques and allows comparison with different methods of production. storage and cattle feed. So investment in production methods and machinery improves the quality of food and the quantity produced.

Reduction of production costs is extremely important as profit margins are constantly reducing with time. So any help in maximizing efficiency of production is essential.

There are associations of cooperatives to gain buying power.

Case Study 3: Galician Food Festivals

Gallicia's position in the North West of Spain on the Atlantic coast ensures the wild countryside and mountains set it aside from the rest of Spain. Galician's are passionate about their food and are proud not only to share their cultural traditions but also to celebrate the rich diversity.

The main appeal of Galician gastronomy is this variety and to such an extent that it is hard to know which is the most typical dish of the region. If there is one key thing that characterizes all the local dishes it is the passionate way of slowly cooking quality local food with varied abundance. The same ingredients can be slowly cooked in many ways. The often simple methods of preparation produce the most complex of flavours.

Many festivals are a mixture of religious and gastronomic celebrations involving processions along traditional routes lined with stores selling traditional local produce. In recent times the importance of eating has become ever more important and festivals solely devoted to food have developed all over the region. The gastronomic celebrations aimed at celebrating and raising the awareness of the importance of the typical products include, wine, octopus, ham, Galician stew, shellfish, lamprey, eel, Galician pies peppers trout, beans etc. These festivals are spread throughout the year across the entire region forming an important part of the local economy and culture.

Case Study 4: Centres of excellence - The Organic Centre Rossinver, Ireland.

The Organic Centre was established in 1995 as a non profit manufacturing company limited in guarantee with the objective of providing training, information and demonstrations of organic gardening, growing and farming.

“The aim is that the Centre will prove of real value for anyone involved in organic production or marketing. Availability of technical information, answers to queries, provision of courses and demonstration of different techniques and methods should be of very practical assistance particularly to small-scale producers in the West. Quite; apart from this, the Centre will also be an important source for public education, promoting a much wider understanding of the environmental and health implications of organic food.”

The staff and board of directors always thought that an Organic Centre would only survive and prosper if it had some practical relevance for farmers, growers and gardeners and so the centre started with 3 courses in 1996. The next year saw the first FAS sponsored course in “Commercial Organic Horticulture” which is now in its 9th year.

The centre offered 30 weekend courses in 1998. In 2001 they moved into the new building and offered 65. The Centre is located on a site of 19 acres in Rossinver in the unspoilt countryside of North Leitrim. Each year, since 1995, there has been significant developments at the Centre and currently they provide:



Photo 61. Organic Centre Rossinver (Ireland)

- Demonstration gardens and growing tunnels illustrating organic methods of food production. A wide range of training courses intended for all levels from the interested amateur gardener to the professional grower.
- Information and advice for commercial growers and farmers.
- A Wetland sewage disposal system. Display gardens for visitors - including a children’s garden, a taste garden, a heritage garden, an unusual vegetables and salads garden, and a display of composting techniques.
- A willow sculpture area
- An orchard and soft fruit area.
- Display of composting techniques.
- A café which is open at weekends during the summer.
- A shop stocking herbs, transplants, organic compost etc.

The new visitor and training centre at the Organic Centre has a large conference room capable of subdivision into two smaller rooms. This looks out into the demonstration gardens and is ideally suited to cater for groups of different sizes.

There are now 8 polytunnels, a big kitchen garden, field production, a modern ecological building and we work with many lecturers to offer more than 100 courses not only in Leitrim, but also in Dublin, dispensed by Clare and Kerry. Their aim is to make the courses informative and worthwhile for participants who can draw upon 10 years of experience and depth of knowledge.

The resident Small Farms Development Worker can advise and assist farmers in all matters ranging from conversion to organic methods. The Organic Centre now employs a staff of 12 and hosts an award winning FAS training scheme aimed at those interested in a career in organic horticulture. The latest phase of the ongoing development program has seen the opening of a new purpose built training centre in 2004. This houses an organic café, a shop, teaching rooms, an information centre and offices. The new centre is constructed on ecological principles and also serves as a practical example of environmentally sound building design.

Full time 8 month training course – An introduction to organic horticulture - This full time FAS funded course is designed for 15 participants. It runs from the beginning of March until the end of October. The course is based on hands on practical experience together with lectures, field trips and a project. The demand for organic food is growing rapidly and jobs in gardening and horticulture are becoming more available

Group Courses - Introductory training courses on organic growing and organic farming are available to groups. These courses can be tailored to meet the needs of groups, both in terms of duration and content, and include practical demonstration and information sheets.

Courses may include: Organic Principles and practices, pest, disease and weed control, garden composting, organic standards, propagation from seed, protected cropping, herb production, organic animal husbandry.

Full Time Training: The Organic Centre in association with FAS hosts a full time nine month training scheme in Commercial Organic Horticulture. The course aims at providing trainees with the necessary knowledge and skills that will enable them to gain employment or become self-employed, in commercial organic horticulture.

Organic principles and practices, pest, disease and weed control, conservation, harvesting and storage, sales and marketing, garden composting, organic Standards, propagation from seed, protected cropping, herb production, organic animal husbandry.

The Organic Centre Demonstration Gardens

- The Centre is located on a site of 19 acres with over two acres devoted to display gardens showing:
- Kitchen garden showing a wide range of vegetables, herbs, fruit and flowers that can be grown organically for the home.
- Commercial vegetable production illustrating field scale organic vegetable production.
- Polytunnels showing protected cropping on a domestic commercial scale.
- Glasshouse for propagation.
- Composting display area.
- Children's play area constructed from willows.
- Hedge management demonstration showing hedge laying and rejuvenation.
- Orchard and soft fruit areas.
- Edible flower garden.
- Fruiting hedge.
- Dye garden.
- Heritage Vegetable Garden to keep some old favourites alive.
- Sunflower Maze.
- Seed savers garden.
- Wetland Sewage System.
- Special needs garden with raised beds.
- Box scheme with 80 weekly boxes.
- Medicinal herb garden.
- Unusual vegetable garden.
- Basket willow demonstration.

Educational Tours: The Organic Centre offers the unique opportunity for groups of all ages and experiences to learn more about organic gardening, growing and farming. Optional workshops available are: Composting. Propagation.; Protected Cropping; Organic food Production.

Case Study 5: Salt marsh Lamb Somerset

Salt marshes are formed by the colonization of grasses on the muddy shores of an estuary. Grasses like *Spartina*, Sea Purslane and *Puccinellia Maritima* thrive in saline conditions. Herbs like Sea Lavender and Samphire also grow amongst the grasses. The Somerset marshes are a very diverse part of the levels countryside and attract a large variety of birds. Grazing by sheep is an essential part of this ecosystem.

The lambs are mainly Suffolk crosses and are reared on the salt marshes of the north Somerset coast by the Fisher family. The benefits of grazing sheep on salt marshes, has been known in England since the 13th Century. However in England there are only a small number of farms producing this delicacy.

Between May and September, English Nature allows the sheep out onto the 'salterns,' the marshes directly adjacent to the sea, where they love to graze on sea lavender, samphire and sparta grass. The peninsula is a finger pointing north-east to Burnham, between the Bristol Channel and the Parrett estuary. Its tip is a nature reserve managed by English Nature, which supports waders including curlew, dunlin, oystercatchers and lapwings, as well as other species such as tawny and barn owls, which hunt in the pastures.

Salt marsh lamb is a very special meat. It has a delicate flavour, colour and texture. The sheep are grazed on wild grasses, many of which can only be found in estuary salt marshes. This unique agricultural practice gives the meat its special character.

The salty ground and grass underfoot means that worming is not necessary and foot rot is much less prevalent than with some inland herds. This also means less chemicals are required making the meat healthier too. The Fishers' specialty, salt marsh lamb, was awarded the Taste of the West Gold Award in 2005 via the company which markets it, The Thoroughly Wild Meat Company, and displays the Levels' Best marque devised by Somerset Food Links.

Case Study 6: South Gloucestershire Council sources local and organic produce for school meals.

In 2001, South Gloucestershire Council made a commitment to source as much locally produced food as possible in order to provide fresh, healthy food for all its pupils.

The Council's local purchasing policy and the partnerships it has developed with local farmers and suppliers has the potential to bring huge benefits to the local economy as well as directly addressing the unfriendly environmental issues that catering brings: the use of energy resources, waste management, recycling and packaging.

Within public procurement, there are very few contracts that require a supply of goods at a single site; the majority require multi-site drops. Individual local producers are unable to fulfil these requirements, through restrictions both of labour and transport resources. In addition, the large mix of produce required could not be provided by a single, local, producer with the result that complex arrangements for purchasing would be needed by the producer, once more initiating capital investment, time and purchasing expertise.

One solution to this would be the setting up of marketing groups, but the local producers had not yet formed co-operatives that could sustain the rigours of tendering and supply, largely remaining as discrete units offering only a small proportion of the overall products required by the Authority. Using a large number of independent suppliers, delivering limited products to small pockets of local schools would have become expensive, environmentally unfriendly and would not, therefore, promote sustainability.

During 2001, a number of contracts were let for the purchase of food and grocery provisions for the catering services within South Gloucestershire. These were let through the normal European procurement process (open, negotiated, route) in partnership with the Consortium for Purchasing and Distribution. The tendering procedure maintained a non-restrictive purchasing process in line with European legislation.

Wide local coverage was given to the advertisements, with the result that local suppliers came forward to tender and were subsequently successful in that process.

The nature of the business (mainly schools), and the requirement to provide the best available products, requires specifications asking to meet standards for the freshness of at the point of delivery with a limited window of delivery and a requirement for contingency support in the form of a same-day replacement policy.

Consequently the catering manager has been able to network with local farmers, producers and successful local suppliers to facilitate the Council's requirement to obtain products as fresh as possible at the point of delivery. The range of locally-sourced products includes fresh and/or

organic vegetables, eggs, fresh meat, ice-cream etc., all of which have appropriate traceable audit trails as required in respect of Food Safety.

The contract for the supply of fresh meat was put in place for a period of three years (from May 1, 2001 to April 30, 2004) and was won by a local butcher. Fresh meat purchased through the local food contractor originates from locally-reared beasts and is purchased via an abattoir in Cinderford. Similarly, home-made pies etc. purchased within the framework of the contract also contain meat from local beasts. The specification for fresh meat requires “home-kill” and many of the small farming partners now direct their stock to a local abattoir, from where meat is purchased by the nominated supplier.

The contract for the supply of fresh fruit & vegetables was won by a local contractor in September 2001 for a period of three years until August 31, 2004. Through partnering with the contractor, they were successful in sourcing local fruit and vegetables, using the same criteria of compliance with identical specification requirements, value for money, audit trailing and freshness of food at the point of delivery.

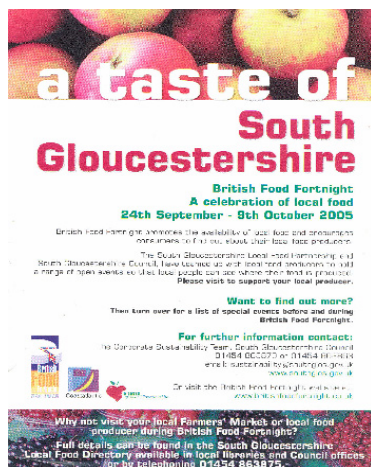


Photo 62. Poster explaining the use of organic produce

Additionally, the Council aims at helping to reinstate local orchards by using local apples which are rejected by supermarkets as imperfect but which are ideally suited for the fruit cones sold in the tuck shops.

The Catering Division is also sourcing local organic products from "The Better Food Company" in Bristol, including organic bread. This retailer has been established to receive small (or large) amounts of produce from a large number of suppliers, in readiness for distribution. Among other local products, they now source local farm eggs and home-made ice-cream at no additional cost to those provided by previous large suppliers.

Pilot Projects

Local food fortnight - One of the objectives of the local food group is to promote the sustainable consumption of local produce. The group is keen to market local produce as a way of maintaining a healthy local farming economy, reduce food miles and promote healthy eating. It was decided to market a series of open days to promote local food producers.

For the first time links were made to the European and particularly the Atlantic context.....go on about raising awareness of and links through project

There was a farmers' market established at Downend attracting 300/400 people with some stalls selling out after 2 hours. A local produce market in Filton an area where good quality fresh food is scarce which also attracted hundreds of people to a variety of stalls.

Greys organics which produce and sell organic beef and eggs at Shepperdine, Riddles cider, a farm producing cider from its own orchard at Kington near Thornbury. Both these producers are key examples of the importance of marketing the produce in order to safeguard the distinctive coastal and estuarine environment; they are additionally two examples of the success of the local food group's initiative.

Greys organics although organic since 1982 has only been an individual farm since may 2004. This means the farm has no historic entitlement to subsidies and therefore needs to survive on production alone. Since becoming organic, the Farming and Wildlife Advisory Group survey of the farm has shown an increase in the number of birds on the farm, an indication of the enhancement of the habitats as a whole. If the farm is not economically viable then any environmental benefits will be reversed if the farm ceases to be operational as an organic concern. This is why initiatives such as this are essential as part of the marketing of local produce.

Riddles Cider is a typical example of a small scale cider producer selling cider from the farm gate. Orchards as well as being a valuable part of the landscape are extremely important for biodiversity. Many have become redundant and therefore surplus to requirement and grubbed up with the tragic loss of the associated wildlife. By stimulating interest and demand for the produce at events like this, revenue is created for the farmer and a valuable economic income from the orchard ensures its survival.

Local Food Producers Web Site - In order to stimulate demand for produce and therefore put an economic value on land it is important to maximise the marketing potential of local food. As well as holding open days and demonstrations on farms and in orchards, it is important to advertise the availability of local produce as widely as possible.

As part of the marketing campaign, a web site has been designed to inform the public on the location of the producers, the local produce available and the retail outlets where all local food can be purchased from.

The site will also include a map showing the Atlantic context and links to our transnational partners along the Atlantic Arc, zoom in on a map of the estuary and links to other local food groups close to

adjacent food group areas around the estuary, then detail a local area. This model is developed to have wider applicability and can be linked to the Severn Estuary Partnership web site.

Proposals

Introduction - Additionally, the Council aims at helping to reinstate local orchards by using local apples which are rejected by supermarkets as imperfect but which are ideally suited for the fruit cones sold in the tuck shops.

The Catering Division is also sourcing local organic products from "The Better Food Company" in Bristol, including organic bread. This retailer has been established to receive small (or large) amounts of produce from a large number of suppliers, in readiness for distribution. Among other local products, they now source local farm eggs and home-made ice-cream at no additional cost than those provided by previous large suppliers.

Distinctive coastal landscapes studies have shown how important it is to conserve and enhance these areas, both for quality of life and promotion to visitors. Diversity of learning from transnational working has highlighted the following ideas and initiatives that can be implemented locally across Europe once the project has finished. There are various mechanisms by which these can be delivered but it will be important that funds are allocated either at a national level or as part of a wider European funding program.

Local Food Forum

The most important step is to establish a local food forum to coordinate the issues around local food. All local stakeholders can then feed into the process to develop strategies and initiatives that relate to their local area. There are six key priorities identified by this study that the groups can focus on

- Food festivals
- Food quality marques/branding
- Centres of excellence
- Cooperatives
- Farmers markets
- Local procurement policies.

Food festivals

Local distinctiveness is the key to safeguarding cultural traditions, local food production and local economies. The connection between production, cultural traditions and landscape has been interlinked for centuries. With the introduction of modern farming techniques and shifting patterns of retailing there is an ever increasing danger that uniformity of mass production will wipe away centuries of traditions.

It is important therefore to encourage the promotion of local food production and use innovative ways to market local produce. Elements of celebration, education and awareness raising as well as base information about availability and location should be included.

Promote and market festivals celebrating the unique and diverse range of local produce.

Food quality branding

Promote the quality, health and environmental benefits of local food production.

Encourage and fund the investigation and research into establishing local branding of produce.

Investigate the potential for developing environmental criteria for the brand. This would encourage and reward high standards of habitat management by farmers and producers. The important landscapes and habitats would be conserved and maintained and the benefits could be used as a marketing tool.

Centres of excellence

Undertake a feasibility study to investigate the potential demand for a centre of excellence/ education for local food production and marketing.

The role of the food centre would be to support new and existing rural businesses by providing training in all aspects of environmentally friendly production techniques and business management issues. Provide a centre for marketing, education and raising awareness.

To fund the planning organisation and implementation of centres where demand is identified to justify provision or where rural areas are identified as being in economic decline and in need of rejuvenation.

Cooperatives

Research the barriers to local food production and distribution and identify support; the establishment of local cooperatives to achieve economies of scale to improve competitiveness in

local markets is important. Find appropriate links with the local food centres to provide advice and information services to local producers.

Farmers markets

Plan, organize advertise and run local farmers markets to sell local produce by local producers. The public can gain confidence in the origin of the food, ask questions and get closer to the sources of local foods. The producers get valuable feed-back from customers.

Local procurement policies.

Investigate the potential for increasing the amount of local food purchased by public bodies such as schools.

Investigate the potential to work in partnership with local cooperatives to provide local food. It is also essential to further develop the publicity in schools, promote understanding among schools and the extend the links between consumption and the attractive rural landscapes around the towns and villages in which they live.



Severn Estuary Partnership

6.5 Stakeholder Involvement

Objectives

Each partner delivered projects in their localities focusing on one or more thematic action area. The Severn Estuary Partnership provided a lead role for the stakeholder involvement cross-cutting action. This lead role involved providing guidance to partners on approaches to stakeholder involvement during the course of their individual projects.

The main objective of this report is therefore to:

1. Draw out common lessons learnt from individual partners' activities in stakeholder involvement activities.
2. Summarize the Severn Estuary Partnership work to demonstrate networking experiences in a more comprehensive manner.
3. Provide conclusions for the COASTATLANTIC project on the role of the stakeholder involvement in delivering ICZM.

6.5.1. Objectives

a) Stakeholder Involvement

The vital role of the stakeholder involvement is emphasized in the EU Recommendation on ICZM (2002), and is being translated into national policies through country strategies (e.g. UK ICZM Strategy, due in draft Spring 2006). The COASTATLANTIC project has developed and applied socially inclusive stakeholder involvement in decision-making process across a diverse range of contexts along the Atlantic Arc. To strengthen implementation of ICZM the goal of this project were to:

- Develop mechanisms that would facilitate the stakeholder and community involvement.
- Share experience transnationally through local project delivery.
- Pilot projects applying ICZM principles.

A wide variety of mechanisms were used to facilitate the stakeholder involvement:

- Consultation
- Groups
- Workshops
- Public Meetings
- Information circulation.

Each of the ten partners used one or more of the above stakeholder involvement mechanisms through their pilot projects broad and specific actions.

b) Broad & Specific Actions

The application of the stakeholder involvement has been tested and reviewed through partner projects to address the following **broad actions**:

- Spatial planning at the strategic and local levels;
- Decision-making with regard to sustainable development;
- Achieving the implementation of concrete and innovative actions at the local level;
- Making recommendations for the improvement of governance, a vision for the Atlantic Arc and the development of national ICZM strategies (other partner reports focus on these aspects).

Actions to further develop socially inclusive involvement in all levels of ICZM, including spatial planning, development decisions and the implementation of ICZM policy in concrete actions on the ground have been developed.

The partners aimed to improve dialogue among the different administrative levels of Government and involve non-governmental organizations and citizens in the decision-making process.

In addition, **specific actions** were set for the Severn Estuary Partnership:

- Build links to exchange information and experience across the Atlantic Arc in ICZM.
- Stakeholder liaison session and presentations at ICZM conferences.

- Strategic implementation of the Severn Estuary Strategy through common approaches to engaging stakeholders (i.e. Fora).
- Manage the stakeholder dimension of pilot projects for GIS, Access, Natural Heritage, Urban-Rural Interdependencies and Cultural Heritage.
- Identify and pursue longer term opportunities for the Severn Estuary Partnership.
- Transfer experience of stakeholder involvement mechanisms.

6.5.2. Methodology

a) COASTATLANTIC Partnership – Working Together

During the earliest stages of the COASTATLANTIC project, partners shared views and developed common approaches through the ‘Cardiff sessions’ in January 2004 workshop on the importance of the stakeholder involvement. This event gave all partners the opportunity to discuss mechanisms for the stakeholder engagement and share common approaches.

Early on in the project, all partners were asked about their intentions to involve stakeholders in their pilot projects and actions. The ‘stakeholder proforma’ provided the baseline from which the Severn Estuary Partnership evaluated partners’ activities.

An ICZM monitoring matrix was used to evaluate each partner’s position including ICZM principles most closely related to the concept of the stakeholder involvement: ‘use participatory planning’ and ‘get everyone involved’.

Two progress reports on the stakeholder involvement work were provided by the Severn Estuary Partnership mid-project. This specific reporting focused on establishing a stakeholder forum around the Severn Estuary (see Section 5.3). Further reporting on progress was provided in October 2005, at the Blaye conference.

As a final step to sharing experiences about the stakeholder engagement, a questionnaire was issued to all partners in December 2005 to gather feedback on the activities that partners had intended to undertake. This report details results and analysis from this feedback from all of the partners (except GIAHSA who were only involved in GIS development work).

Discussion on the results to further improve trans-national exchange of experience has been undertaken in May 2006 COASTATLANTIC meeting in the Highlands.

b) Partner Actions in Stakeholder Involvement

Each partner focused on different themes to engage stakeholders in ICZM. Two steps were taken by the Severn Estuary Partnership to co-ordinate data from all partners to illustrate their activities.

Methods used for engaging stakeholders included:

- Forums (e.g. access, GIS)
- Working Groups (e.g. natural heritage)
- Consultation with specific groups (e.g. farmers)
- Meetings with specific groups (e.g. Town Councils, commercial agents, teachers)
- Community Liaison Groups
- Workshops with experts
- Seminars (e.g. on landscape valuation)
- Topic group meetings
- Presentations to experts and public
- Open public meetings
- Steering Group
- WebPages

A very wide range of techniques have therefore been used by COASTATLANTIC partners to engage stakeholders across sectors and across levels of decision-making.

c) Severn Estuary Stakeholder Group Network

As the cross-cutting action leader, the Severn Estuary Partnership was very active in fostering stakeholder involvement activities. This included establishing stakeholder forums in two of the thematic strands and one cross-cutting action area. In addition, stakeholders were key to the delivery of other project work in these areas.

The activities of these initiatives have been fully reported, however in summary, the following stakeholder involvement mechanisms were used:

- Access - Forum
- Geographic Information Systems - Forum
- Natural Heritage - Working Group
- Cultural Heritage – specific consultation with key decision-makers
- Urban-Rural Interdependencies - stakeholder engagement activities supporting local markets and WebPages.

In addition, the Severn Estuary Partnership staff has worked together to strengthen the whole partnership initiative, through the provision of general networking tools:

- Severn Estuary Gateway and Partnership website pages (www.severnestuary.net)
- *Severn Tidings* Newsletter (two issues/year)
- Severn Estuary Common Platform – two days per year bringing together decision-making groups and committees to progress policy issues.

The objective of the Severn Estuary Partnership is to maintain and strengthen the stakeholder network that has been established through the above forum, together with working groups and mechanisms to assist communication and exchange of information.

6.5.3. Outputs

a) COASTATLANTIC Partnership

The COASTATLANTIC partnership set out with the following aim (amongst others):

Local communities are more aware of the possibilities available to co-operate with the other areas in the Atlantic Arc and to promote the possibility of forming partnerships. This has to strengthen the local authority's competences.

Pilot projects have achieved this by encouraging the stakeholder involvement concept.

b) Partner Actions – Delivering Local Stakeholder Engagement

As indicated above, the partners used a wide range of methods to engage stakeholders in their pilot projects and decision-making activities. A summary of the type of meetings held, linked to the theme of investigation, is provided in the table.

The *total number of meetings/workshops/seminars and conferences* were:

- Severn – 20 +
- Asturias – 15
- Alentejo – 1
- Lisbon – 5
- Aquitaine – 4
- Galicia – 10
- Highlands – 18+
- Ireland – 2
- Cornwall – 10

The results indicate a good level of engagement with stakeholders, particularly work undertaken by the Severn across 4 themes and in general networking, Asturias in relation to access, Galicia in promoting cultural heritage and Highlands in developing a Coastal Plan on the theme of governance.

Total *representation in stakeholder engagement activities* for all COASTATLANTIC partner activities* shows the following levels of representation:

- National Government – 7%
- Regional Government – 21.5%
- Local Government – 31.5%
- Non-Governmental Organizations – 14.5%
- Business/Commerce – 10.5%
- General Public – 15%

Most partners are representatives of their host bodies at the regional/local government level, therefore these results are not surprising. However, the total results do indicate a bottom-up

approach more strongly than top-down, with less representation from national government compared to NGOs, business/commerce and the general public. A further observation is that over half (59%) of representatives were from government, with the remainder fairly equally representing their interests from NGOs, Business/Commerce and the General Public. These results show that collaboratively, the COASTATLANTIC partners have achieved a good range of stakeholder involvement in their pilot projects.

The comments made on the final questionnaire about cross-sectorial representation, revealed that:

- Generally, representation was ‘fit for purpose’, successfully engaging the stakeholders involved in the project.
- ‘Officials’ and ‘experts’ were more reliable in attendance than local community representatives, particularly from specific business sectors.
- New opportunities were provided for public engagement
- There is no ‘formal’ framework for stakeholder engagement in decision-making/the ICZM process; therefore representation from different levels is subject to local political and social contexts.

Evidence of success with several of the projects is shown by the *future meetings to involve stakeholders* that have resulted from the COASTATLANTIC funded project work:

- Severn – ongoing meetings of access and other forums;
- Asturias – stronger relationships with Town Councils formed;
- Alentejo – new planning tools proposed;
- Aquitaine – method of involving & working with communities on litter clearance maybe rolled out to other sites along the Atlantic coast e.g. N Spain;
- Galicia – future meetings and work with schools;
- Highlands – future meetings for periodic review of the coastal plan;
- Ireland – ongoing Forum for Clew Bay;
- Cornwall – collaboration across Local Authority boundaries for regeneration.

Many tangible outputs have already arisen from the stakeholder involvement work and will continue to come out of future meetings.

Finally, all partners were asked to score their views on how well their stakeholder involvement work had advocated the ICZM principles of ‘use participatory planning’ and ‘get everyone involved’. In total, with a score between 1 (poor) and 5 (excellent) the results for 7 partners* were:

- 2.7 for ‘use participatory planning’
- 3.2 for ‘get everyone involved’.

The results suggest good efforts are being made to comply with ICZM principles, with some mixed results and progress to be made before satisfactory stakeholder involvement is achieved. The table in Section 6 draws out further recommendations relating to ICZM principles.

c) Severn Estuary – Developing and Sustaining the Network

The example of stakeholder engagement activities led by the Severn Estuary Partnership (SEP) illustrates the benefits of ICZM and the pioneering role of an estuary partnership in delivering ICZM principles.

Those involved in facilitating the topic specific forum for the Severn Estuary have realized benefits of working more closely together. Tangible results from the SEP work include:

- Stronger opportunities for collaboration across England and Wales to deliver the Severn Estuary Strategy, through the ongoing work of the Severn Estuary Partnership – **Joint Estuary Groups day** and **Joint Advisory Committee meetings**.
- Closer **co-operation between Local Authorities**, particularly in the fields of access, interpretation, natural heritage, cultural heritage and promoting local produce.
- Improved access to information through the provision of the **Severn Estuary WebPages**, **gateway website** for all estuary-wide groups and the **Severn Tidings newsletter**.

- New opportunities through the preparation of a **Severn Wonders Festival** to strengthen information and awareness of key issues between decision-makers and community representatives (from June 2006).
- A **Severn Estuary Forum** is being established. This will be a cross-sectorial standing conference involving representatives at all levels of decision-making. It is intended that this will be the first of many annual conferences to strengthen stakeholder involvement in decision-making around the Severn Estuary.

The COASTATLANTIC project has enabled the establishment of all of the above initiatives. It is hoped that they will be sustained by the services of the Severn Estuary Partnership through funding contributions from the public and private sector.

6.5.4 Conclusions

As the theme leader for the stakeholder involvement cross-cutting action, the Severn Estuary Partnership can draw the following conclusions on behalf of the COASTATLANTIC partnership for the future delivery of ICZM along the Atlantic Arc.

The results indicate a bottom-up approach more strongly than top-down, with less representation from national government compared to NGOs, business/commerce and the general public. A further observation is that over half (59%) of representatives were from government, with the remainder fairly representing their interest from NGOs, Business/Commerce and the general public.

- Generally, cross-sectorial representation was ‘fit for purpose’, successfully engaging the stakeholder concerned with the project
- ‘Officials’ and ‘experts’ were more reliable in attendance than local community representatives, particularly from specific business sectors.
- New opportunities were provided for public engagement.
- There is no ‘formal’ framework for stakeholder engagement in decision-making/ the ICZM process, therefore representation from different levels is subject to local political and social contexts.

Further analysis and a summary of the conclusions are presented in the conclusion section

6.5.5. Recommendations

Analysis of the stakeholder involvement activities undertaken has enabled development of the recommendations presented in the following matrix.

Common problems/issues and concerns were identified from the evidence supplied by eight partners and experience of the Severn Estuary Partnership.

These included:

- Using 'fit for purpose' methods of stakeholder involvement
- Government's commitment to supporting ICZM processes to retain momentum (beyond strategy/action plan production)
- Involvement of private sector is challenging
- Involvement of the public e.g. teachers, children
- Ensuring balance of sectorial representation & willingness to be involved
- Ensuring a holistic view across boundaries and borders - full collaboration
- ICZM is about effective co-ordination; therefore leadership is the key to success.
- Effective partnership working is labour intensive. It helps if objectives are clarified early to minimise problems later.

Strategic guidelines can be drawn from the common problems and specific solutions.

Examples of best practices from individual partners are shown in the matrix:

- 1. It is necessary to carefully consider techniques for engaging stakeholders to ensure representation throughout the process of decision-making. A local officer together with one-to-one meetings are often needed in addition to workshops/seminars and regular forums.**
- 2. Local government support and involvement in ICZM is valuable and necessary and should be achieved through legal framework**

- 3. Increase local income from local produce. Provide & maintain consultation/participation mechanisms to encourage open representation of business in decision-making**
- 4. Innovative public participation mechanisms**
- 5. Evidence reveals that ICZM processes encourage joined-up thinking and lead to new initiatives**
- 6. Regional level support for ICZM is important.**
- 7. Local ICZM projects/partnerships deliver effective services & projects, but the implementation of the objectives is volatile due to inconsistency of funding and lack of legal backing for ICZM delivery mechanisms.**

The above strategic guidelines for participation and ICZM provide valuable input to the final reporting for the whole COASTATLANTIC project team in pursuing recommendations for the future of coastal planning and management across the Atlantic Arc.

The COASTATLANTIC partners collaborated in recognition that there was a need for more transnational exchanges across the Atlantic Arc. Particular emphasis has been placed on spatial planning and the delivery of ICZM through local projects.

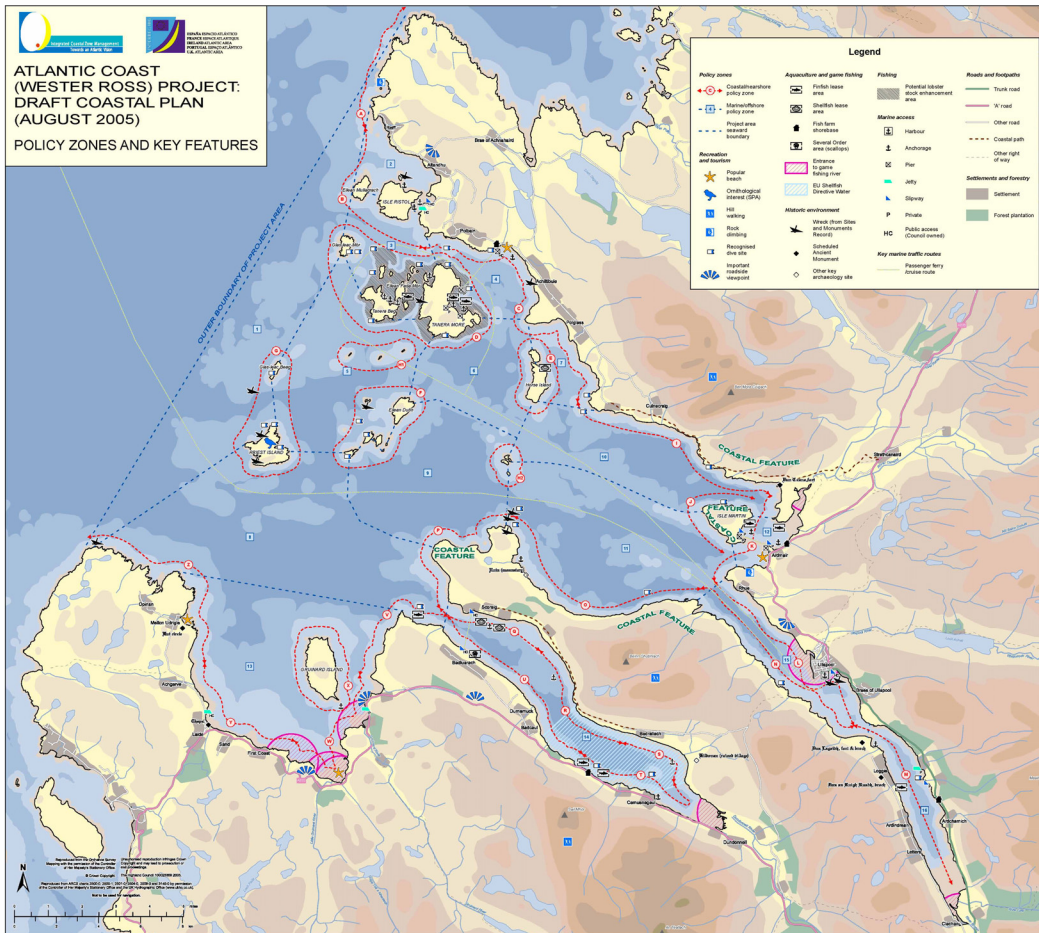
The coast requires special attention when delivering the European Spatial Development Perspective (ESDP). Partners involved in COASTATLANTIC have initiated projects that constitute good examples of why ICZM principles are needed to assist delivery of the ESDP in coastal zones. The partnership generated by this project could facilitate further partnership working across the Atlantic Arc coastal regions.

COAST ATLANTIC Stakeholder Involvement Recommendations Matrix

	Partner:	Asturias	Atlantejo	Aquitaine	Cornwall	Galicia	Huelva	Highlands	Ireland	Lisbon	Severn	Common Problems & Specific Solutions	Best Practice Examples
	Main COASTATAN TIC theme of partner:	Access	Urban-Rural Interdependenci es	Access	Access	Cultural Heritage	GIS	Governance	Access	Natural Heritage			
Problems/ issues	Common Concern	Solutions											
TOOLS	Using 'fit for purpose' methods of stakeholder involvement	One-to-one meetings with Town Councils to increase level of engagement	Difficulties in involving stakeholders in land-use planning	Regional Council established technical committee to deal with clean beach across administrative boundaries for the Bay of Biscay	One-to-one meetings with local authorities focused on site issues	Employment of education officers to involve teachers helpful		Someone on the ground (e.g. coastal officer) in the community helps to build momentum			Establishment of Forum to increase contact between decision-makers and estuary users	It is necessary to carefully consider techniques for engaging stakeholders to ensure representation throughout the process of decision-making. A local officer and one-to-one meetings are often needed in addition to workshops/seminars and regular forums.	Highlands - local officer employed. Aquitaine - regional council established to tackle beach litter. Severn - topic specific forums established for access, GIS and natural heritage. Asturias - targeting town councils involvement.

RESOURCES	Government commitment to supporting ICZM processes to retain momentum (beyond strategy/action plan production)	National and regional government involvement in ICZM is stronger than local government involvement - a weakness	Uniform development and planning process encourages participation of business and political determination	Contact with fishermen stimulated by special programme officer	Improved co-operation across local authority areas - sharing perspectives on coastal access improvements.			Western-Ross plan extended beyond low water mark and extent of current responsibilities - outcome of Marine Bill may determine future funding	No legal framework for ICZM in Ireland	Estuary Partnerships in UK have faltered due to lack of resources. Severn Estuary Partnership (SEP) Officer spends c.25% time fund raising	Local government support and involvement in ICZM is valuable and necessary and should be achieved through legal framework	Severn - 10 years of partnership working with voluntary funding support from local authorities, but legal support for ICZM would improve further commitment.
REPRESENTATION/PARTICIPATION	Involvement of private sector is challenging		Uniform development and planning process encourages participation of business and political determination	Contact with fishermen stimulated by special programme officer	Improved co-operation across local authority areas - sharing perspectives on coastal access improvements.			Western-Ross plan extended beyond low water mark and extent of current responsibilities - outcome of Marine Bill may determine future funding	No legal framework for ICZM in Ireland	Estuary Partnerships in UK have faltered due to lack of resources. Severn Estuary Partnership (SEP) Officer spends c.25% time fund raising	Local government support and involvement in ICZM is valuable and necessary and should be achieved through legal framework	Severn - 10 years of partnership working with voluntary funding support from local authorities, but legal support for ICZM would improve further commitment.

<p>CHALLENGING PERSPECTIVES</p>	<p>Ensure a holistic view across boundaries and borders - full collaboration</p>	<p>ICZM is about effective coordination, therefore leadership is the key to success.</p>	<p>Regional leadership exists, this project helped increase local engagement</p>	<p>Successful approach for Bay of Biscay - possible transfer to north coast of Spain</p>	<p>Workshops for local authority officers to share experience of local regeneration options</p>	<p>All levels of decision-making were involved</p>	<p>Wester-Ross plan was first initiative to take a broader holistic view for planning across land-sea interface</p>	<p>Forum proposed for Clew Bay</p>	<p>Regional expert meetings to raise the profile of natural heritage of Atlantic coast</p>	<p>Focus on strategic issues of estuary-wide perspective - SEP is unique in that role</p>	<p>Evidence that ICZM processes encourage joined-up thinking and lead to new initiatives</p>	<p>Cornwall – New approaches to regeneration of Cornish coastal towns</p>
<p>OBSERVATIONS FOR CONCLUSIONS</p>	<p>Effective partnership working is labour intensive. It helps if objectives are clarified early to minimise problems later.</p>	<p>Regional leadership exists, this project helped increase local engagement</p>	<p>Regional Council to address marine litter is unique in France but successful</p>	<p>County Council provided leadership</p>	<p>Regional leadership worked</p>	<p>Someone on the ground in the community helps to build momentum</p>	<p>No legal framework for ICZM in Ireland</p>	<p>Regional leadership evident</p>	<p>Lack of regional leadership</p>	<p>Regional support for ICZM is important.</p>	<p>Local ICZM projects/partnerships deliver effective services & projects, but implementation of objectives is volatile due to inconsistency of funding and lack of legal backing for ICZM delivery mechanisms</p>	<p>Aquitaine - Potential of Bay of Biscay regional approach to co-operation. Lisbon & Galicia - regional leadership.</p>
						<p>Uncertainty about future of project officer to deliver Wester-Ross ICZM plan</p>	<p>Uncertainty of commitment to ICZM and establishing Clew Bay Forum</p>		<p>Still some uncertainty about the role of SEP - ToR need further development and awareness.</p>			<p>Highlands, Ireland & Severn: this is a particular issue in UK</p>



Improvement in Governance

Highlands County Council

6.6 Improvement in Governance

This chapter describes relevant actions and findings by the Coastatlantic partners which point the way to better governance of the coastal zone.

The chapter has three main parts. Firstly, it considers in general terms what improved governance means in a coastal management context. Secondly, it provides an overview of the Coastatlantic sub-projects relevant to this theme and draws out the key findings in this regard. Thirdly, it describes in detail the projects in Asturias and Highland which are particularly relevant to this theme, the issues they tackled and the lessons that were learned.

6.6.1. Improved governance meaning in a coastal management context

The policy drive towards ICZM since the early 1990's reflects a growing perception that the traditional form of split governance in the coastal zone - ie completely separate systems for the land and sea components - is sometimes inadequate for modern needs. This is felt most keenly in areas where there is relatively intensive use of inshore waters and where coastal communities have a relatively high level of economic dependence and therefore a vested interest in their management. Highly indented coasts, such as those found in Galicia, western Ireland, and the Highlands and Islands of Scotland, particularly fall into this category. They have more sheltered waters so dispose of a range of options for use, and the relationship between land and sea is a more intimate one than on abrupt, exposed coasts.

The coast represents a fundamental physical and psychological division so traditionally it has been an obvious boundary for administrative purposes - the terrestrial planning and land ownership system on one side; the sea and its users on the other. The rationale for treating these two worlds separately is based on the fact that:

1. the two realms are physically different
 - the landward side is highly visible, accessible, and populated; whereas most of the sea and seabed is normally invisible, it has limited accessibility particularly in its deeper subsea areas, and people only visit the sea on a temporary basis;

- the land is a relatively fixed asset which can easily be demarcated by building fences and walls; the sea is a mobile medium with biotic resources which are often highly mobile and less easily contained;
2. the ownership patterns are different
 - the land has many owners and private property rights restrict access to much of it; the sea and seabed often has only one owner - the state - which generally permits freedom of access for navigational purposes but licenses activities such as fishing, aggregate dredging, or oil and gas drilling on a centralized basis;
 3. the management needs of the terrestrial side are more complex
 - there is a complexity of interests on the terrestrial side which deserves a sophisticated management approach - a spatial planning system operating at a range of scales which is democratic, integrated, participative, and closely linked to the system for licensing physical development and activities. The marine side, by contrast, has fewer users and the scope for physical development is much more limited;
 - also, information on the resources in the sea has traditionally been harder to come by, and its community of interest has been smaller.

However, several trends have been working to undermine this dichotomy:

1. the visibility and accessibility of the sea is increasing - it is not the 'great unknown' it once was
 - advances in technology such as ROV's (Remote Operating Vehicles) are opening subsea areas to view which were previously either unviewable or accessible only to divers.
 - increasing numbers of pleasure boats and opportunities for people to access marine areas quickly and safely.

2. the pattern of tenure is gradually becoming more like that on land - more people are leasing sea space for a specific use and more have a physical economic stake in the sea (e.g. through sitting of installations there). There may still only be one owner of the seabed (the state) but the number of tenants with a financial stake in particular areas of sea is growing rapidly. Fixed installations in inshore waters (e.g. fish farms, oil rigs) are not just growing in number. They are becoming increasingly sophisticated in terms of their design, storage, accommodation facilities, and communication links.
3. the increasingly complex pattern of use of marine areas is requiring more sophisticated management measures like those on land:
 - increasing competition for sea space means that systems are required for rationally allocating this space to pre-empt or resolve conflicts of interest. Invariably this involves an element of partnership working;
 - the drive for sustainability is forcing people to pay closer heed to and work with natural processes (e.g. coastal erosion and deposition, fish and bird migration, the need to conserve valuable coastal and marine wildlife habitats);
 - there is growing recognition of the limitations of single-sector management - for example, more widespread acknowledgement that fisheries management and marine nature conservation need to work together, not try to operate in isolation from each other;
 - technology is developing to meet this challenge - the capacity for monitoring the use of marine resources, for demarcating management areas in the sea and for policing them, is increasing, e.g. remote sensing and automated data capture from buoys, tracking of boat movements via transponders, sonar survey techniques and use of ROV's to identify and monitor the condition of seabed habitats. GIS tools are becoming more ubiquitous and their power to manipulate multiple spatial datasets and carry out sieve mapping is increasing.

At the same time, pressure on the coast and nearshore zone is increasing:

1. the coast is often seen as an attractive place to live and as the proportion of retired people in the population increases and as modern communications and transport systems make it possible for more people to work remotely, pressures for house building on the more attractive sections of coast are increasing. The building of second (holiday) homes on or near the coast is one aspect of this. Another is the increasing tendency to use holiday homes for longer periods or to convert them into main residences. This does not just increase demands for the development of local infrastructure. It can sometimes have a 'backwash' effect on inland areas which are vacated and this is one of the issues being addressed by the Coastatlantic partner for Alentejo under the 'urban-rural dependencies' theme;
2. coastal and water-based recreation is increasing in importance and this can put localized pressure on areas of inshore waters and the coast itself for new or expanded facilities (e.g. marinas, visitor centers, roads, car parks, footpaths and cycleways);
3. methods for exploiting natural resources are becoming more intensive and efficient, e.g. fishing technologies and high-speed ferries, and without careful control this can lead to greater impacts on vulnerable species and ecosystems;
4. the marine area represents a 'new frontier' with new types of development opportunities not available on land. For example, aquaculture is increasing in importance and diversity. It may extend to more areas as improved standards of sewage treatment improve coastal water quality and as more robust installations allow more exposed offshore locations to be developed. This is a realistic alternative to over-reliance on capture fisheries. Similarly, offshore wind farms and installations for harnessing wave or tidal energy may be preferable to the development of more wind farms on the land where amenity is an important issue.

ICZM and marine spatial planning are still relatively new approaches which are more

necessary in some areas than in others and which seem easier to establish under some governmental systems than others. Taken together, the above factors put a premium on:

- an integrated, multi-sector approach - joint working at appropriate levels.
- cost-effective community involvement.
- long-range planning - anticipating technological developments and future needs; working to pre-empt conflicts of interest.
- area prioritisation - putting resources for coastal zone management where they are most needed.
- promoting sustainable economic development.
- developing new planning tools for the new frontier (tools for managing the dynamic coast, the inter-tidal zone, and the marine area).

The EU Demonstration Programme of Integrated Management in Coastal Zones, carried out in 1997-99, advocated seven key principles for ICZM:

- take a wide-ranging perspective
- build on understanding of specific conditions in the area of interest
- work with natural processes
- ensure that decisions taken today do not foreclose future options
- use participatory planning to develop consensus
- ensure the support and involvement of all relevant administrative bodies
- use a combination of instruments

The Interreg 2C Norcoast project in 1998-2000 took this a step further by focusing on planning methods and mechanisms to deliver integrated management. It based its findings on a thorough review of the different planning systems and experiences in each of the countries around the North Sea. Another Interreg 2C project which ran in parallel, SEAGIS, worked to develop a common technical basis for the use of GIS in coastal zone management and planning systems. Again this was primarily concerned with the North Sea area but its findings were relevant also to other areas of Europe. Norcoast produced a series of general recommendations on process, planning techniques, and regulatory framework. It

also produced a detailed set of issue-specific recommendations, many of which are relevant to the Atlantic Region, e.g. in relation to sustainable tourism, coastal development, and protection of biodiversity and landscape.

Improvement in governance can be seen as a progression through various levels. An old Confucian saying is "Give a man a fish and he will eat for a day; teach a man to fish and he can feed himself for a lifetime". However, in the light of experience of unsustainable fishing practices, a worker in the Philippines adapted this to read "teach a man to fish and he will eat until the resource is depleted. Teach a community to manage its fishery resources and it will prosper for generations to come".

This exemplifies the important progression not just from dependence to self-reliance but also the progression from rational but unsustainable practice towards sustainable activity which benefits the community as a whole in the long term.

6.6.2. Overview of the Coastatlantic sub-projects and key lessons learned

The Coastatlantic project has provided an opportunity for partners from a diverse range of areas to develop different aspects of coastal management and to share their experience. The local projects have covered 5 main aspects:

Improvement of planning and development control systems in the terrestrial coastal area

- **Asturias** has worked to establish better control over development in the vicinity of its beaches and seaside towns which are subject to high seasonal visitor pressures. It has also improved footpath routes along the coast;
- **Alentejo** has worked to develop a more robust framework of planning policies and tools for implementation to safeguard the character of the landscape in its coastal areas, including the rural hinterland;

Planning for the inshore marine area

- **Highland** has looked at the design and implementation of integrated coastal plans at local level and as a pilot study has developed a new plan for part of the coast and inshore waters of Wester Ross; this could provide a model for other areas in Highland and possibly beyond;

Work to raise public awareness and enhance the management of particular types of coastal resource

- **Galicia** has sought to develop better awareness of its cultural and natural heritage on the coast, resources for its interpretation, and itineraries for tourists which can help to stimulate economic development;
- **Severn** has been developing sustainable access networks, including a long distance route, around the Severn Estuary and working to improve planning practice in relation to the management of natural heritage interests. It has developed guidance material for both planners and private sector interests to help safeguard wildlife, landscape, and archaeology assets in the area;
- **Lisboa** has made a stocktaking of its coastal natural heritage sites and developed management strategies for these at a range of spatial levels;

Management of shorelines which are subject to significant physical pressure – either through natural processes of erosion and deposition or from patterns of human use

- **NASC** has tackled issues in relation to shoreline management in physically fragile coastal areas in the west of Ireland which are of high amenity value. It has also explored the potential for partnership working to safeguard the natural heritage value of Clew Bay in County Mayo;
- **Cornwall** has worked to establish a model strategy for the sustainable management of its beaches and sand dunes on the Atlantic coast. This has

developed a more detailed understanding of coastal processes, natural systems, patterns of human use and their interactions;

- **Aquitaine** has sought to co-ordinate the ways of dealing with marine-borne litter and to establish a coastal observatory to monitor the processes of erosion, deposition and sea level change on its coast. It has also recently established a public interest partnership to progress ICZM. This partnership includes the three departments of Aquitaine, and the municipalities on the coast;

Development of information tools and resources for coastal management

- **Huelva/GIAHSA** has assessed and developed GIS tools which can be applied to coastal management;
- **Gironde** has developed methods of information dissemination for the Coastatlantic project - to inform the EU institutions about issues on the Atlantic Coast, to share experience with other areas, and to help establish links with other ICZM initiatives

These projects have had diverse objectives and have operated on different scales. The lengths of coastline involved range from 40 kms in Alentejo to 400 kms in Asturias. The populations range from 2500 in the Highland project area to 2.7 million in the Lisboa metropolitan area. Most of the projects have focused on the terrestrial side of the coastal zone. Highland's project has been the only one focused on the management of the inshore marine area. However, the Severn and Lisboa projects have also had some marine aspects.

Each of the above projects has elements which are relevant to the theme of improved governance. Two of them - the projects in Asturias and Highland - are examined in more detail in sections 4 and 5 below. The others are presented in more detail in other chapters.

The main aspects of governance which the partners have sought to improve are:

- the quality and consistency of decisions on development proposals;

- communication within government and between government and the wider ICZM community;
- co-ordination between agencies and between the different levels of government;
- awareness of the value of cultural legacy;
- more effective planning tools and rules;
- the involvement of local communities and developers in sustainable development/management of nature sites

Improved governance is not always easy to measure, especially in the short-term. Quantitative socioeconomic indicators (like per capita income or levels of educational attainment) may be difficult to obtain, slow to respond to changes in practice, or may not tell the whole story. The main indicators of improved governance which the partners have identified in a coastal management context are a mix of qualitative and quantitative:

- development of planning guidance;
- implementation of plans and their influence within and beyond the area;
- increases in visitor numbers (to places and purpose-designed websites) + job creation;
- flow of information between partners and positive feedback from customers;
- action plans produced, surveys carried out;
- level of public awareness and compliance

Experience of the Coastatlantic partners in relation to governance issues

Stakeholder and public involvement is seen as an essential component of ICZM but it is not always easy to achieve. In Galicia's project on developing a stocktaking of cultural heritage, the project team worked alongside agencies and government and involved local entrepreneurs. It also hoped to reach the younger population via schools but schools proved either unable or unwilling to rise to this challenge. The project team therefore concluded that too much emphasis should not be put on the secondary school sector as a means of reaching the wider public - it may be better to work through local experts for this purpose. However there is a need for real involvement of the public *and* private sectors in the

management of cultural heritage.

Similarly, the project in Lisboa encountered a lack of participation in the municipal and regional areas. Agencies in the coastal areas and a national institute were relevant to this work but the project team felt there was not enough communication between these bodies. They also noted a certain mindset in some areas which made it difficult to sell the conservation message. This chimed also with the experience of Highland in developing its coastal plan for part of the Wester Ross area. Here the group which seemed most reluctant to get involved was the local fishermen - probably because they felt the preparation of the new plan threatened the status quo even if that status quo involved elements of unsustainable practice which tend to undermine the area's productivity in the long run.

The Cornwall project found that carrying out an audit of the number of bodies involved was useful because there are often many. They felt that beach management was a microcosm of the ICZM process and encountered a good reaction to the integrated approach. Their experience was that the multi-sectorial approach could actually be very efficient. It dealt with areas of conflict between agencies and helped with shoreline management. They noted that sharing of resources and facilities comes out of ICZM for a relatively small investment in resource terms.

The Severn Estuary Partnership did several projects which produced guidance notes and generated an access forum but found it difficult working across a number of administrative boundaries. Some agencies felt they were being asked too much but the guidance notes were produced and modified in relation to the agencies' needs. The partnership found that ICZM must tread carefully in relation to other agencies' remits. A co-ordinated approach does have benefits however. The access forum which has been set up has been very useful and should continue to be in the long term. Resources are required for stakeholder involvement but this is ad hoc in the UK because ICZM is not yet underpinned by statute. A stronger statutory basis is required for ICZM to be more effective.

Aquitaine has put in place a technical committee to deal with the issue of marine litter. This has stimulated debate about the role of local communities in managing this problem. The

initial target was to co-ordinate actions but local communities wanted action in a different way. They wanted information about the role of the other actors in the issue. It is important to have an overview of this issue at the regional scale.

Information management is a fundamental tool in ICZM and the need for some sort of information strategy was borne out by the experience of some of the partners on the ground with their local projects (eg Cornwall) and with the Coastatlantic Project as a whole. The problem, as Gironde found, can be getting partners to co-ordinate their thinking about information acquisition, management, and dissemination, and to do this within a reasonable timescale. Huelva/GIAHSA managed to involve a range of relevant interests in a common work programme for its GIS project and this helped with information exchange.

NASC's experience was that a co-ordinated approach to coastal management could help with **objective setting and work programming**. Up until 2002 coastal protection works in NASC's area of western Ireland were not done in a co-ordinated way. Sometimes applications take up to four years to process under current legislation and money can get lost in the process. The NASC project for Coastatlantic made it possible to produce a report which could feed into the coastal protection programme. This gave confidence to agencies who were involved in allocating lease agreements. It was also able to convince managers that erosion is not just caused by natural forces - it is often people-generated. Public awareness raising can sometimes be a better investment.

Co-ordination between relevant agencies and the different levels of government is crucial for ICZM to be effective. The authors of the POLA in Asturias consulted all three levels of government while working on the plan. It achieved signing of an agreement which implemented all the actions. The state provided finance whilst the regional level organised plans and actions. This has put an end to most of the conflict between these two tiers. It has not however achieved the same degree of success with local-level government which is still not aware of how important CZM is. The municipalities in Asturias sometimes see ICZM as meaning restriction rather than revitalisation. There is much still to be done in raising awareness.

The Principality did not get much information back from some of the consultation because

of local parochialism. A limited number of NGO's - have used the internet and public debate. But there has not been much reflection on the type of land management which Asturias wants for its coastal areas.

In the Severn Estuary - a large area straddling the Welsh and English border - there has been a lack of strong commitment to ICZM at the regional level. This is mainly due to the lack of positive incentives for the regions to work together other than in voluntary fashion. However Coastatlantic has allowed the Severn Estuary Partnership to strengthen its services, e.g by starting a new forum.

Cornwall's project showed that **the spatial aspect of governance and planning** is important because there is often a need to look at the whole ecosystem, which may not fit in with all administrative boundaries. For shoreline management purposes there is a need to look at coastal sediment cells. For integrated land-sea coastal plans there is a need, as the Highland project showed, to identify management units which both coastal communities and marine users can relate to (e.g. landscape character tracts along the coast, the main hydrographic subdivisions offshore). Planners need to look at the catchment (environmental and socioeconomic) as well as the specific site. There is often a need for a holistic, ecosystem-based approach, including beyond the tideline. But ecosystem information which is suitable for spatial and policy planning purposes can be difficult or expensive to obtain, particularly in the marine area.

6.6.3. Key principles and lessons drawn from projects.

1. **There is value in cascading skills and awareness down to the next level of government** - the Principality of Asturias found that giving local authorities an element of training under the POLA initiative when municipal plans were being revised was worthwhile. The practice of this principle by the Norwegian government, both at national and regional level, where specialist staff have assisted or even been seconded to district councils to help with coastal plan preparation, may help to account for the extensive coverage of coastal plans in that country. Without such pro-active help, local communities or municipal authorities may be resistant to

change.

2. **Use the media pro-actively to raise public awareness of coastal management issues** - the public tends to be more conducive to change if it understands the need for it. The public also sometimes does not fully appreciate the resources on its own doorstep and single-sector management tends to compartmentalize knowledge and makes it harder for people to gain an overview. Media coverage helped the POLA to have more influence on interests involved with beaches in Asturias. A passive approach to the media risks it only taking an interest when things go wrong.
3. **Integrate and co-ordinate plan-making at the next level down** - Asturias has reaped the benefits of this approach in relation to shoreline management and coast protection work by local authorities in the principality. Some of the county councils in Norway (e.g. Hordaland and Rogaland) have been active this way in helping co-ordinate the preparation of local coastal plans. In the UK, by contrast, central government has been more passive in relation to coastal planning and ICZM (with the possible exception of shoreline management), leaving local authorities to go their own way. This hands-off approach may (indirectly) encourage a degree of local innovation, but it also tends to result in patchy coverage and under-resourcing.
4. **Focus the responsibility for coastal management, but spread the cost** - Asturias did this by establishing bilateral agreements between regional and local administrations.
5. **Develop networks for data capture and information exchange** - the real authority of a coastal management plan rests on good information and ideas. No single agency is self-sufficient in this respect. If integration of objectives and action is the aim, and key information is missing on just one sector, a coastal plan cannot be regarded as fully integrated or fully a success. Also some coastlines (e.g. semi-enclosed ones) lend themselves to data capture more than others. Exposed and relatively undifferentiated coasts do not lend themselves well to being carved up

into manageable cells for the purpose of data capture. In such areas, collaborative working with the jurisdictions further up and down the coast is important for the preparation of credible coastal management strategies. The work of coastal observatories will be an important resource.

6. **Terrestrial plans and marine spatial plans require different approaches** - fusion will take time but some fusion is necessary to deal with the interactions which take place across the coastal divide (e.g. pressure for development of port facilities to service an emerging marine resource area). Government should both encourage and enable innovation and experimentation in this field.

7. **Leadership is key but it does not always come from the higher levels of government.** It may not even come from government. There are varying levels of commitment to the ICZM ideal and the necessity for it may sometimes be felt more strongly at local level where the socioeconomic and environmental impacts of conflicts of interest are most immediate. Integrated management means coordinated management - at whatever level is appropriate - and this requires a coordinator at each level. It will not happen by itself. Good government will facilitate ICZM at the appropriate levels.

6.6.4. Asturias Coastal Zone Protection Plan – the POLA in Asturias.

Methodology

Phases

The Government of the Principality of Asturias has been following since 1983 a politic based on the steady elaboration of a protected coastal area (Suelo de Protección de Costas), through the application of legal directives. They have been revised; these directives are integrated in the urban development planning of the 21 coastal counties. This area is finished and is the bigger stripe of protected coastal land in Spain, and goes to the non urban soil located between 500 and nearly 2 kms measured from the littoral stripe.

These actions are included in the POLA, a special plan of the physical environment adapted to the soil laws in Spain and the Principality of Asturias and which integrates a very high number of measures.

The elaboration of the POLA was started in 1998 by the Government of the Principality. In 2000, there was already a draft that was discussed with each of the 21 Local Authorities and other agents. After this, a progress report was elaborated which was finished in November, 2002. At the same time, during 2003 there was a second round of consultations with the same agents, with a Public Information of 2 months adapted to the existing legality in Spain. From this basis, the Special Plan has been transformed by integrating a selection of possible observations and by carrying out all minor modifications. The final approval of this document was achieved by mid 2005. Due to its peculiar approach, several foreseen sub actions have been started and were running at the same time of its processing.

Data collection methodology

The data base consist on the official cartography of the Principality of Asturias at 1:5000 scale, in digital format dgn elaborated from a flight realized in 1993.

Subsequently to this cartography, it was added orto-photographs at 1:5000 scale dated in 2004.

For development studies of particular scopes, aerial photographs from previous years were used. This study was completed with oblique aerial photographs, visits and surveys on the ground.

It was also necessary to manage cartography of the municipal urbanism planning and statistical data as:

Sophisticated information management such as GIS, was not used. A proposed method was selected based on a “territory project” idea, from a landscape point of view: the project of a coastal landscape. The planning was elaborated in digital format (Microstation) and in PDF format for its divulgation.

Proposals

There are general considerations regarding the competences required for land planning in the coastal strip

Table 5: Administration skills

		Planning instruments
Central Administration	Coast Law	Regulation for determined coastal stretch
	Construction in Natural Spaces and wild flora and fauna Law	Land use and National Park management Plans
Local Administration	Revised text Land use Law	Advance, initial approval provisional approval of the general urban planning
		Definitive planning approval of population cores with more than 50000 inhabitants
Regional Administration	Coordination and Land Planning Law	Land Planning sub regional guidelines
		Land Planning sectorial guidelines
		Territorial action programs
	Natural Spaces Conservation Law	National Park, Integral and Partial Nature reserves management Plans use
	Revised Text Land use Law	Definitive approval of the general urban planning
		Definitive planning approval of population cores with less than 50000 inhabitants

The POLA has been conceived as a document of unlimited validity that considers a kind of actions for the future and fully defines those ones to be executed within the first initial 8 years. These actions have been negotiated between the Principality of Asturias and the affected Local Authorities as well as with the competent organ of the Central Administration, The Coastal Demarcation. The future modifications will be introduced within the document and/or the municipal planning or they will be developed through new special plans of the monitoring and management of the documents and the Comisión de Urbanismo of Asturias will be in charge of the approval of new documents and documents of legal content.

Participatory planning

The first draft was written 4 years ago and the final document was finished by mid 2005. This delay has been due to the careful method used in the consultations with the agents involved in the work. In particular, there has been a pedagogical work regarding the 21 local authorities involved in the political and technical level. A very useful instruction of the editorial team of planning took place when the most of the municipal planning were being revised. At the same time, the media has triggered a controversy and an extended task of popularization, which made the POLA to have a big influence when focusing the actions on the beach and on the position of the population related to it.

Support and involvement of the relevant administrative bodies

The POLA, drafted by the Principality of Asturias is expressed in concrete terms through the integration of its proposals in regulative documents that have been drafted, processed and approved by the Local Authorities (Adaptation of municipal planning, inclusion of planning recommendations, and execution of special plans), therefore they are very effective. At the same time, and regarding the Spanish legislation, the urban development planning is of local and regional responsibility, therefore, all actions carried out by the Central Administration have to adapt to them. The POLA integrates all the special plans that have been designed to monitor actions of certain kind of private operators.

The POLA subdivided the interventions it proposes into two more general subsets: interventions that are to be implemented by the Regional Authority and those that must be led by the town council corporations involved and under the coordination of the Regional Authority.

4.4. Specific issues

The relationship framework between administrations that the POLA has been developing is as follows:

The coastal protection development is conceived as collaborations between administrations in which the Autonomic Administration acts as driving agent and principal and coordination body, at least from the urbanism point of view but always complementing its tasks by bilateral agreement with the Local Authorities and in some cases with the State Administration.

Thus, the document imposes occasionally certain rights but always compensate them by alternatives benefits that allow favoring the development of each municipality. In return for those new benefits it is required from the Principality a mayor effort in urban linked to invest and advice by part of the Autonomic Administration. This is coordinated with the Central Administration: In this manner, the elaboration, approval and fulfillment of the POLA have a certain character of agreement between Autonomic and Local Administrations for their own benefit.

Coordination task

There are studies and work that are tackled by the Principality and involve those planning instruments that try to resolve issues at regional level by unique plans or projects with a high level of investment.

The second kinds that are tackled by the municipalities are based on bilateral agreements achieved between Local and Regional Administration and it comprises the concretion, proceedings and execution processes of the following actions:

- Creation of the Park-beach zones.
- Creation of pedestrian networks and car parking networks linked to the littoral protection.
- Complementary planning modification proceedings.
- The preparation of a bilateral agreement system between the Regional and Local Administration, including the Central Administration when it is necessary.

Action at municipal level

Regarding complex actions but fully linked to a specific municipality such as the outline of a local pathway network or those that require urban proceedings initiated and developed from the town council such as a detailed urban treatment of the rural cores of any council.

Problems and solutions

Despite the different public information periods, and the meeting with the town and city councils, we have not succeeded in involving them in the concept regarding the coastal protection philosophy .

Stakeholders perceive these plans as a restriction to the possibilities of economic development (urban) more than an opportunity of an increase of value of the territory.

This can be noticed by the number of appeal presented against the definitive approval of the POLA. The number of appeals lodged by the town councils was 20 of 21 coastal town councils during the initial approval of the document. However this number has decreased till 9 town councils who have lodged an appeal against the final approved document.

Besides, as the public information period was enlarged the number of allegations of particulars was increasing

Solutions:

- Increasing the level of implication of community participation in the formulation and implementation of plans and programs
- Improving the “didactic” or “pedagogic” task during the public information stage.
- Improving the divulgation of the plans by a more effective in littoral protection making awareness advertising campaign
- The bilateral agreements between Regional and Local Administration share the resource management responsibilities in the projects implementation.

6.6.5. Design and implementation of integrated coastal zone plans at local level- the Atlantic Coast (Wester Ross) project in Highland.

The Highland Council's main project under the Coastatlantic project has involved the development of a new type of integrated coastal plan for application at local level. This plan has been designed to provide guidance on the use and development of the coast and inshore waters. The plan has not been prepared as a hypothetical exercise but as real plan for a real area. In this case it involves 265 kms of coastline and a marine area of more than 300 square kilometers, parts of which are up to 5 kms from the nearest land. It has therefore been an exercise in "learning by doing" which has involved collaborative working with the other key agencies in the field and consultation with stakeholders and local communities at various stages.

Background

Highland has long experience of dealing with the issues associated with aquaculture development - particularly salmon farming. The first major wave of development of this industry was in the 1980's when most of the current fish farms were established. Because marine fish farming was outside the scope of the UK's terrestrial planning system and there was no agreed national development strategy for it, local planning issues and conflicts of interest often arose. However the allocation of leases for fish farms was (and still remains) in the hands of the Crown Estate, a body which is not directly accountable to the public. The local authority felt that that best way to minimize such conflicts of interest was to prepare advisory plans for the parts of the coast which were coming under most pressure for development. It began preparing these Fish Farming Framework Plans in the mid-1980's and by the late 1980's had completed 8 - mostly for the major sea lochs on the west coast.

The pace of aquaculture development slowed somewhat in the 1990's, though the industry's production steadily increased as farms expanded and became more automated. This continued expansion, whilst welcome as a source of employment in remote rural areas, caused unease in some quarters where it was felt that other assets (e.g. coastal scenery, migratory stocks of wild salmon and sea trout, sheltered inshore fishing grounds, and recreational anchorages) were being compromised. This built up the pressure for marine

fish farming to come within the scope of statutory planning control and in 1997 the UK Government announced that it intended to transfer the Crown Estate's planning role to the local authorities. Nearly 10 years have since elapsed and the draft legislation for this has been slow to arrive - partly because of intense lobbying by the industry which is anxious to minimize controls on its operation, and partly because of the legal and technical difficulties associated with bringing the industry within the scope of the planning system "after the event". An important precedent will be set for the UK because local authority planning powers will be extended into the marine area for the first time. The draft legislation is now expected around the end of 2006.

The rationale for this change however has not diminished over time. Indeed, interest in extending the UK's planning system into the marine area on a more comprehensive basis is now as high as it has ever been. This is being driven partly by the sustainability agenda, partly by increasing recognition of the limitations of single-sector management and the potential value of ICZM, and partly by the onset of another wave of marine-based development competing for space - this time for renewable energy generation.

Aware of this trend, and motivated by the increasing public and professional demand for a more comprehensive, integrated approach to the management of inshore marine resources, the Highland Regional Council conducted a pilot ICZM study in the area around Skye during the mid-1990's. This took stock of the range of issues associated with use of the coast and inshore waters and started to develop ideas on how ICZM could be developed in practice. It was clear then that a partnership approach would be key to this. However, a suitable mechanism for pulling such a partnership together on the West Coast, where the population is very scattered, was lacking.

In the meantime a partnership had formed on the east coast, around the Moray Firth, but it was driven mainly by nature conservation interests and commitments under the UK Biodiversity Action Plan. Stakeholders around the Moray Firth saw the partnership as a means of improving communication between different user groups and pre-empting conflicts with nature conservation interests but not as a regulatory body. Although the east coast is more heavily populated than the west, without the harbor areas most of its inshore

waters tend to be more exposed so the pressure for location of new installations there is not so great. The Government also maintains an active policy presumption against expansion of finfish farming on the east coast - essentially to safeguard the wild salmonid stocks of important fishing rivers which drain into the sea here.

Between 1998 and 2000 the Highland Council took part in the Interreg 2C Norcoast project. This involved planners from regional and local government in the 7 countries around the North Sea working together to prepare best practice guidance on coastal planning and management. An important spin-off from this project for Highland was the experience of working with Norwegian coastal planners who were dealing with similar coastal planning issues to those in Highland but who had experience of working within a statutory planning system which already included inshore waters and which had already completed some exemplary coastal plans.

The Highland Council started preparing its second generation of aquaculture framework plans in the late 1990's (it has since completed 5 of these) and around the same time became closely involved in the preparation of management strategies for marine Natura sites. However it has also been keen to explore the potential for a broader-based type of coastal plan appropriate to Scottish conditions. The Council formally signaled its intention to do this, in partnership with the other relevant authorities, in the year 2000. The Interreg 3B Coastatlantic project, which came forward in 2003, brought the funding opportunity to do this.

Choice of project area

The "Two Brooms" area in Wester Ross is typical of much of the West Highland coast in that it has a combination of sheltered fjordic sea lochs, rugged hill terrain and scattered crofting communities (scattered small-scale farm holdings with extensive communal grazing). It also has some sweeping bays and an attractive group of offshore islands - the Summer Isles. The landscape quality is generally high (most of it is designated as National Scenic Area) and the area has good opportunities for outdoor recreation though the built facilities for this are fairly limited. Tourism is therefore important to the local economy but highly seasonal. The areas of sheltered water, depths inshore, seabed types, and water

quality are conducive to both fishing and aquaculture. The area has an important local service centre - Ullapool - which is both a fishing and a ferry port. The area is fairly remote by UK standards but has a good road link to Inverness, which has the region's main airport and railway station. Ullapool is the main terminal for the ferries which ply between the northern part of the Outer Hebrides and the mainland.

The Two Brooms area was selected for this coastal planning project because:

- it represented a geographic gap in the Council's coverage of aquaculture framework plans and in the absence of such coverage aquaculture development had become contentious locally;
- the range of marine and coastal interests in the area, the area's scale (not too big and not too small) and the fact that it is semi-enclosed made it a good place to test a broader-based approach to coastal planning;
- dealing with this area as one unit for planning purposes made more sense than to try and deal with Loch Broom, Little Loch Broom and the Summer Isles area individually;
- there is a track record of innovation in the area and Ullapool has good facilities for management of a project of this kind;

Key issues in the project area are:

- the scale and location of aquaculture - the industry needs scope to consolidate, diversify, and where necessary relocate but it also needs to take account of other interests;
- safeguard and rebuilding of depleted wild salmonid stocks;
- rural development and sustainable employment;

- management of coastal landscapes with high scenic quality;
- the pattern and balance of commercial fishing effort and management of sea fish stocks to sustain productivity;
- conservation of wildlife, particularly marine Biodiversity Action Plan species;
- development of the area's recreation and tourism potential and coastal access provision

Wider relevance of the project

A key objective has been to develop a model for coastal planning practice at local level which could be applied in other areas of Highland and perhaps beyond. It is therefore relevant to a range of other Scottish and UK policy initiatives which are dealing with the coastal zone, e.g. the Scottish Sustainable Marine Environment Initiative, inshore fisheries advisory groups, and discussions on how a marine spatial planning system for the UK should be developed.

Methodology and Outputs

Objectives

The main objectives of the Atlantic Coast (Wester Ross) project were to:

- appraise the marine and coastal resources in the project area and identify key management issues;
- identify development opportunities appropriate to the area;
- design and prepare an integrated coastal zone plan to guide future development and use;

- implement the plan on a trial basis for at least one year;
- review progress, the lessons learned and ways forward;
- compare with similar work being done elsewhere in the UK and abroad and to learn from best practice;
- feed the results back to the wider Coastatlantic partnership

Most of these objectives were successfully achieved. However, progress on the comparative study was not as good as hoped because core elements of the project which had to take higher priority proved more demanding of staff time than expected. At the time of writing, it is hoped to complete this comparative element by liaising with coastal planners in Norway before the end of the Coastatlantic project period and by producing a supplementary report.

Phases

The main phases of work involved were:

1. preparation and launch of the project - via establishment of an inter-agency steering group, a full-time project officer, a community/stakeholder liaison group, and an initial series of open public meetings to explain the project objectives and gather information and views about the area;
2. information gathering - survey work, GIS development, and preparation of a series of topic papers to identify key issues and potential development opportunities;
3. policy development - discussion of scenarios and preparation of thematic map-based strategies, generic policies for each sector, and area-specific appraisals to produce a composite plan;
4. public consultation and refinement of the plan - this included a review seminar

which was open to the public and preparation of a detailed report on comments received on the draft plan;

5. trial implementation, monitoring and review

The whole process demanded a considerable amount of attention to communication with the various interest groups - to keep them informed, engaged, and on-side as far as possible. Relationship building proved to be important at all levels - both as a means of gathering information and as a means of agreeing policy objectives. However it was not always successful in that some interests were naturally more inclined to engage with the project than others, and some were more inclined to compromise than others. Also the partners on the steering group had differing expectations and degrees of commitment to the project, and different degrees of responsibility in terms of outcomes. This however is part of the reality of joint working and should not detract from the fact that the coastal plan which was produced was generally regarded as a positive step forward which enhances people's understanding of the area, helps to safeguard key interests, and identifies development opportunities.

The discussion of scenarios and preparation of thematic map-based strategies was not quite as productive as hoped. Some interest groups (e.g. aquaculture) contributed openly and enthusiastically to this while others (e.g. commercial fishing interests) were more reticent. There was also a basic lack of information in some areas, most notably in relation to the extent and relative sensitivity of the different seabed habitats in the area and the pattern and intensity of local fishing effort and the productivity of different fishing areas. This tended to undermine the plan's objective of charting a sustainable development path via an ecosystem-based approach. Survey information on the extent of local seabed habitats did however arrive in the later stages of the project but by then the opportunity for public consultation on policies developed with these in mind had passed.

Local fishermen are sensitive to the possibility of more restrictions on their activities being advocated, and a dialogue based on sound scientific information and local knowledge is essential to help them see the practical benefits of an ecosystem-based approach. They

would also need to be assured that if local voluntary restrictions are introduced in the interests of better stock management, they will not be breached by fishing boats coming from outside the area. Providing such scientific information and guarantees on an area-by-area basis is a significant political, technical, and logistical challenge for the government department charged with management of inshore fisheries - one which at present it does not seem adequately resourced to meet.

The delay in obtaining information on seabed habitats and the lack of detailed information on fishing activities also hampered the development of a sieve mapping approach. However, to be fair, the cost of obtaining this information had not been factored into the project. For sieve mapping to be useful in developing a balanced picture of opportunities and constraints it needs to have a balanced spread of information for all the topics under consideration. Otherwise, it tends to over-emphasize some interests and underplay others. This forced more reliance on developing generic policies for the whole project area and on working up the area policies around natural management units such as the coastal landscape zones and semi-enclosed marine areas.

The trial implementation period was originally conceived as being a one-year period which would come in after the plan was finalized and before the end of the Coastatlantic project. However, the preparation of the draft coastal plan and finalization of the document took longer than expected. Once the draft plan went public in September 2005 it became a reference source and it started to have an influence on the way people perceived the area. Members of the steering group therefore felt that it was legitimate to consider the trial implementation period as starting at that point.

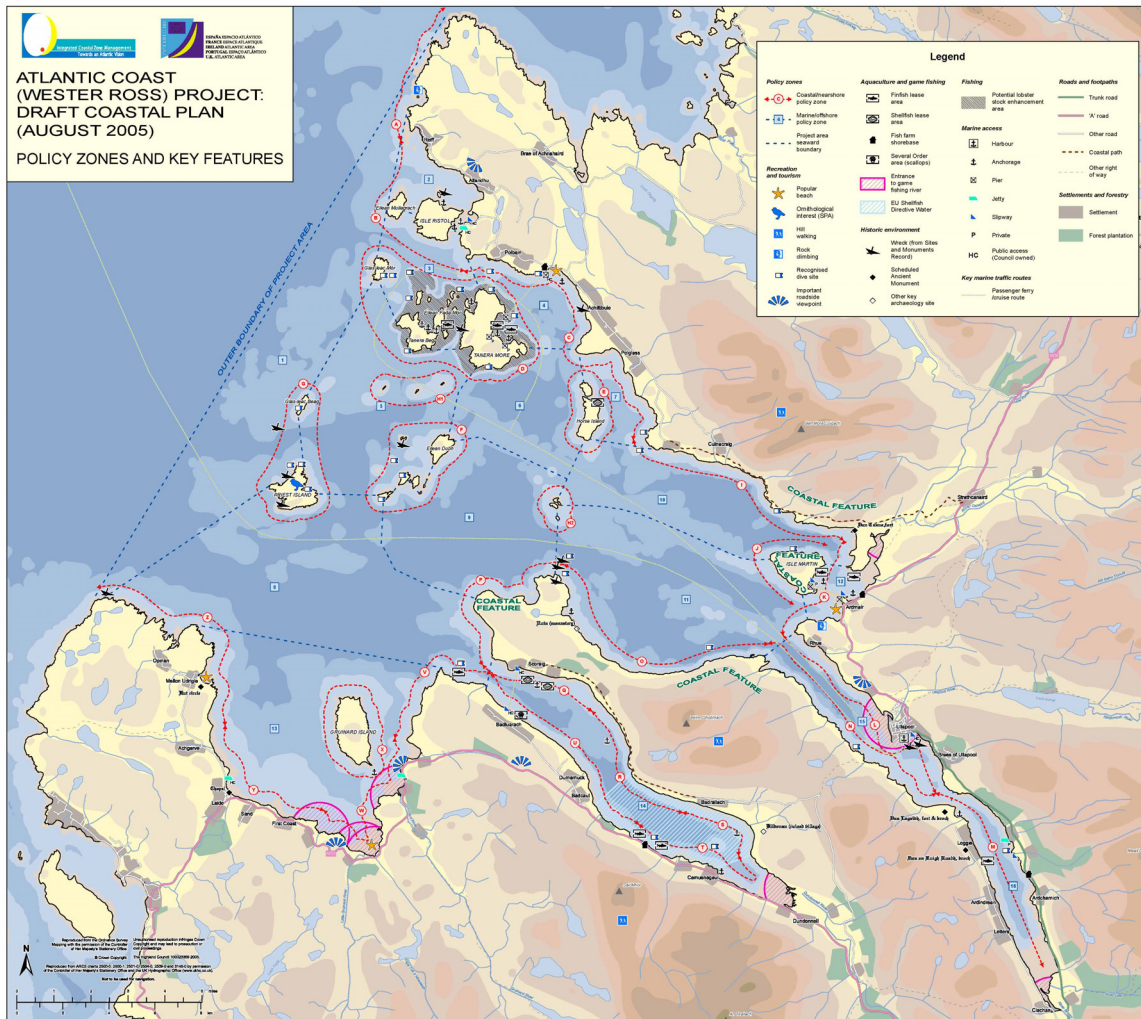
In practice, the trial implementation period and monitoring and review process for the Two Brooms coastal plan will extend well beyond the lifespan of the Coastatlantic project which brought it into being. In addition to the evaluation contained in this report, a local commitment has been made to reconvene the community liaison group in 2007 to review progress and the Highland Council will co-ordinate a more formal review of the coastal plan's effectiveness after 3-5 years.

Features of the coastal plan

In essence, the coastal plan for the Two Brooms area seeks to:

- guide the location/relocation of aquaculture and encourage species diversification (e.g. locate new finfish farms away from the inner lochs and salmon/ sea trout rivers, and identify sites with potential for shellfish farming);
- encourage improvement in the information on local fish stocks and promote approaches which can add value to local landings;
- encourage fishermen to identify locations with potential for stock enhancement schemes (e.g. the main Summer Isles group for lobsters);
- support the improvement of access to the sea and development of marine-based recreation;
- safeguard scenic quality (e.g. the two National Scenic Areas and views from settlements over open water), important wildlife habitats, key archaeological sites, and recreation assets;
- encourage information sharing to promote joined-up management

The plan does this by providing a combination of generic policy guidance for each of the main sectorial interests and area-based policy guidance to assist in decisions involving location and design. The area-based guidance employs two sets of policy zones - 26 linear zones labeled 'A' to 'Z' for the coastal/near shore area, and 16 polygonal zones labeled 1-16 for the offshore/marine area [*see diagram overleaf*]. The coastal/near shore zones are based on landscape character tracts and visual enclosure and their policies mainly relate to aquaculture development, landscape management, and safeguard of harbor areas. The offshore/marine zones are based on the main hydrographic subdivisions and their policies mainly relate to fishing, marine nature conservation, and navigation. The two types of zone overlap in the near shore area but the advice they offer is intended to be complementary.



PUBLIC REACTION TO THE DRAFT PLAN, AND REFINEMENT OF THE PLAN

The overall response to the draft plan was broadly positive and few took issue with the area-specific policy advice. The main criticisms came from the nature conservation agency, one of the local fish farming companies, and a local crofting interest. These criticisms were offset to an extent by messages of support from local landowners, another fish farm operator, the community group which had engaged most closely in the project, and the representative of the local fishermen's association. The main concern of the nature conservation agency, echoed to an extent by the Crown Estate, was not with the content of the policy guidance per se but with the process of policy development which it felt needed to be set out more clearly if the plan was to provide a model for other areas.

The fish farming company which was critical of the draft plan felt it should be more encouraging towards finfish farm development and queried the viability of expanding shellfish farming in the area given that previous shellfish farming operations in the area had not lasted very long. It also queried the cost implications of finfish farm relocation which, without a linked funding mechanism, made relocation recommendations somewhat academic. The crofter's criticism was more area-specific and reflected a sensitivity to the perception that some crofting areas and elements of the crofting landscape might be in decline. This emphasized the need for care in dealing with crofting sensitivities and the interface with the terrestrial plan for the area.

These results pointed to the need for relatively minor changes to the detail of the policy and descriptive content of the plan. However more attention was required to the presentation format so that the process of policy development could be more clear-cut. This was achieved by restructuring the section on area-specific policy guidance under somewhat different headings and by the preparation of technical appendices which set out in a systematic matrix form the relevant characteristics and policy factors for each of the coastal/near shore policy zones. Topic maps have also been prepared for the revised plan which helps illustrate more clearly the patterns of use, potential and constraint in the project area.

The results of consultation also showed that a plan like this does not exist in isolation and relies on the actions of a range of agencies to implement it in practice. Funding for fish farm relocation is beyond the scope of the plan but the Government, which leads a working group on fish farm relocation, may be able to provide practical assistance with this aspect. Just weeks before the draft plan was completed one of the few good potential relocation sites for a finfish farm was effectively taken out of the reckoning by an application from a shellfish farm developer which could not be refused. If the way forward for fish farm relocation is to be a plan-led approach, the Government may therefore also need to consider some means of ring-fencing potential relocation sites.

One of the local communities was particularly concerned that the draft plan had not been taken into account when an appeal against refusal of development consent for a contentious

fish farm application was being examined. Despite considerable local opposition to the application, and contrary to the recommendation of the local planning authority, the government official in charge of the examination of the appeal had recommended the applicant. The Crown Estate, as licensing body was minded to accept this recommendation subject to detailed discussion of planning conditions. The local community questioned the value of a plan which was not heeded by two key statutory agencies. However, this was at least partly a case of unfortunate timing and criticism of the plan itself seemed somewhat unfair given that the relevant parts of the draft plan had been produced before the appeal decision was published.

In the event, the policy for only one of the 26 coastal/near shore zones had to be substantively changed in the light of public consultation. Changes in a few others involved only minor amendments or corrections. In addition, information that became available at a later stage on the location of sensitive seabed habitats made it possible to include a cautionary mention of these in the relevant area policy zones.

ANCILLARY PRODUCTS

Whilst preparation of the new coastal plan was the main output of this project, it also generated some useful ancillary products. The set of topic papers produced in the early part of the project stand as briefing material and reference sources on all the main activities and resource potential in the coastal and marine area. These can be updated relatively simply in the years ahead. Initial work on identifying development opportunities was later worked up into a set of papers which examined each of the main opportunities in more detail - e.g. local fish processing, the potential for a marine visitor centre and voluntary marine reserve, and improvements to coastal access.

GIS development, whilst not a major strand of the project was one of the aspects which attracted most interest and praise from members of the public in the project area. Good new maps which combine both topographic and hydrographic detail help people to see the area in a more holistic way. The compilation of thematic information layers [*see diagram below*] puts down a basis for sieve mapping and scenario testing which can be developed in the

future. The presentation of topic maps in the form of a mini-atlas for the area (four to a sheet) has helped people to appreciate the diverse range of resources which the coastal and inshore area represents.

There are also the intangibles: the experience gained by the people and organizations involved in steering the project and preparing the plan, the contacts made through networking, the knowledge gained about the project area.

FOLLOW-THROUGH AND FOLLOW-UP PROJECTS

Coastatlantic has been a time-limited project and this has imposed fairly tight constraints on the plan preparation exercise for the Two Brooms area. The objective of the local project has not however been to prepare a coastal plan for a part of the Highland west coast then walk away. It has been about establishing a planning framework for this area which can be revisited and refined in the years ahead as better information and techniques become available. It has been about helping a community to see where its full potential may lie. And it has been about developing and testing a planning tool - a prototype - which others can learn from and develop further. Follow-up projects will hopefully flow from this exercise and at the time of writing, one - a detailed biotope mapping project - was already under consideration.

5.3 Key challenges faced; achievements and shortcomings

The biggest challenge in ICZM is not conceptual or technical. It is political and organizational because for the foreseeable future ICZM will be about partnership working. Effective ICZM will flow from effective partnerships and this will put a premium on leadership, good communications, and collective effort. These in turn should lead to a sense of shared stewardship of coastal and marine resources.

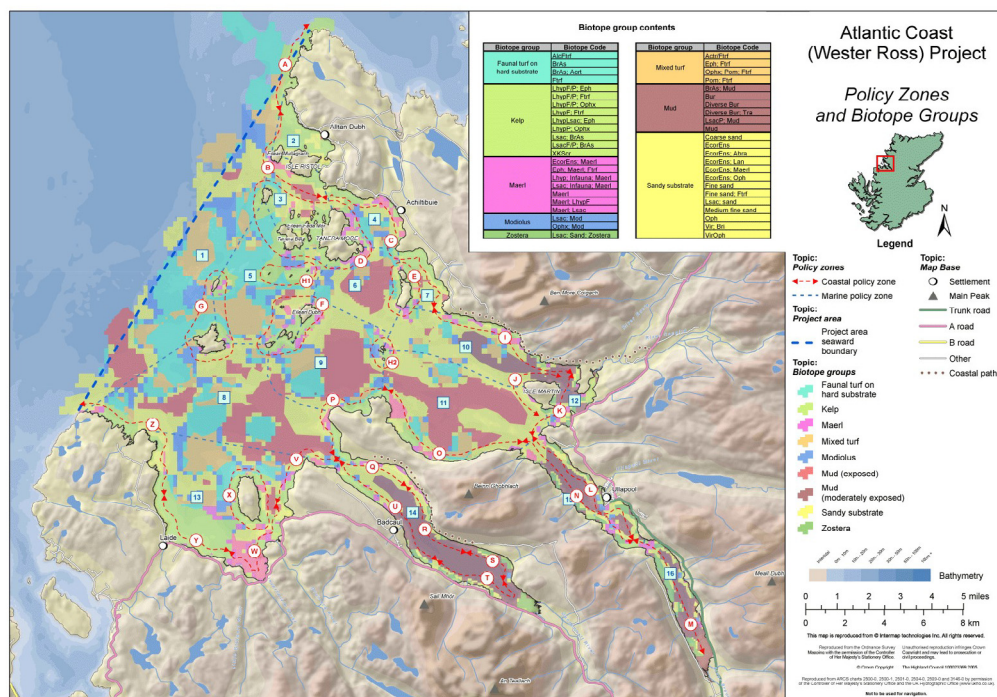
The main achievement of the Atlantic Coast (Wester Ross) project has been to prepare within a relatively short period of not much more than two years, an integrated coastal plan. The plan provides detailed policy guidance for a sizable part of the Highland west coast where none existed before, and has put this through the test of public consultation. Furthermore, there is a willingness on the part of the agencies involved and elements of the

local community to maintain the impetus and learning value of this exercise in the years ahead.

The main shortcomings of the project are that it has not been able to develop a more rigorous ecological base for the plan or to attract a significant level of engagement from the local fishing industry. These problems are not however unique to this area or this project. It has also not yet engendered a wide sense of community ownership of the plan. However more time and follow-up work may be needed for this to develop.

The process of plan preparation has proved more resource-intensive than expected, and the dynamics and tensions of partnership working have sometimes proved challenging. But ultimately partnership working has produced a plan which is probably more robust and balanced than any which a single body could have produced on its own. Wider stakeholder involvement has helped to broaden the base of the document and the test of public consultation has brought its own discipline and helped to fine-tune both the presentation and the content.

In addition to the lessons mentioned in section 3 above, perhaps one more lesson stands out from the experience of the Atlantic Coast (Wester Ross) Project - consider information needs well ahead and figure this into the costs and timescales.



One of the products of GIS work for the coastal plan for the Two Brooms area



Geographic Information Systems

GIASHA

6.7. Geographical Information Systems

The GIS cross-cutting action has been carried out under the leadership of GIAHSA (Huelva), and has been divided into two sub-actions:

- a) **Geographic information system (Huelva)**: the purpose of this action was for all participants to have access to a set of specific common tools which would endow local government organisms with geographical information management capabilities.
- b) **Integrated Geographic information system data in a multi-authority, cross regional context (Severn)**: to assess the possibilities of integrating the geographical data handled by the different organisms and corporations in the estuary, and the possible benefits to be derived from this integration, within the Severn Estuary's complex natural and administrative environment.

6.7.1. Concepts related to GIS

The GIS cross-cutting actions described form part of the overall series of actions. A series of basic concepts therefore exists which justifies the implementation of these actions.

With regard to the **coastal access**, measures have been implemented covering the following aspects:

- The identification of sustainable communication links between the coastal and the inland areas,
- The evaluation of the sustainability and efficiency of existing coastal access networks and the analysis of the impact of the disorderly use of coasts,
- The logical construction of systems used in a sustainable manner on the coastline,
- Spatial planning of coastal routes and networks,

- Setting up action/management plans and programs for locations that are representative of the Atlantic coast (e.g. estuaries, swamp areas, dune systems, cliffs),
- Implementing concrete and innovative actions to test and promote the application of ICZM policy on the ground,
- The use of interpretation associated with coastal access to promote awareness and understanding of the local, regional and Atlantic context, and particularly promoting the environment, and social and economic well being.

The **cultural heritage** measures are aimed at increasing the value of elements of interest and trying to fit them into sustainable development models. These are:

- The identification of the relationship between natural and cultural heritage,
- The development of educational and interpretative material,
- Understanding and promoting the local and Atlantic archaeological context and the role of archaeology of the coastal zone in spatial planning and development decisions,
- The production of coastal cultural itineraries.

The **natural and environmental heritage** action also aims at giving added value to the existing resources. Some ideas to be developed are:

- The stocktaking of the natural and environmental coastal resources and impacts of activities on them,
- An analysis of the contribution of natural protected areas to the social-economic development in the surrounding area,
- The spatial planning and sustainable development of the coastal zone, identifying guidelines for land use, for fluvial flows, estuaries and swamps as well as beach and cliff areas,
- The protection and promotion of habitats and species associated with the coast and the restoration of degraded spaces,

- Promoting the role of the natural heritage of the coastal zone in spatial planning and development decisions.

Inter-dependency between rural and urban environments.

The change in the social and economic structure of the Atlantic area territories requires an analysis of different issues, all of which are related to the activities that were traditionally carried out in the rural environment. Likewise, the repercussion on the coast is examined as well as the potential for new products and in particular those that maintain ecological values. The actions to be developed within the project's framework are linked to the needs for:

- The systematic identification and description of traditional activities, in such a manner that it can be integrated in a GIS,
- The updating of the framework of traditional activities adapted to the new market conditions and to the social and economic value of the environment,
- The identification and description of the ecosystems and essential species for traditional activities,
- The identification of the value of the resources of the coastal zone in urban areas,
- The need to explore and realise the sustainable economic exploitation of rural activities associated with products that are required by the urban environment,
- Guidance on the use and management of the coastal zone and its management for tourism with sustainability criteria,
- The development of marine and land-based cultivation initiatives, from both a technical-scientific and a marketing point of view.

Geographic Information Systems

In order to tackle the sustainable development and management of such a wide, diverse and complex area, in spite of the common elements that encourage co-operation between partners, it is essential to have the tools available that enable us to link alphanumeric information and topological references. The great technical progress of Geographic information systems and the capacity and the readiness of the different regions to work together in this respect, means that it would be advisable to consider how different GIS

(Geographic Information Systems) are needed and to study how different GIS already in use might be integrated to underpin spatial planning and sustainable development decisions, as well as emergency planning for the Atlantic coast, initially conceived for the areas that take part in this project. This means that enquiries have to be made into existing GIS developments, basic common references have to be established, a logical system has to be determined on which the GIS can be developed, procedures have to be defined to obtain information, and guidelines have to be established to access data and to co-ordinate implementation of aspects that can be integrated in the GIS.

6.7.2.Objectives

Towards an Integrated and common management.

Land use data and the processes and organisms for which this kind of information is crucial should all be involved with a tool that enables information and experiences to be shared. GIS is that tool. The system therefore becomes a central, common element which facilitates the management process and makes it more viable.

Exchange of good practices.

The actions implemented have led to the exchange of good practices in the following areas:

- Information and experience exchange forums.
- Implementation of Geographic information systems.
- Data access mechanisms:
- Data maintenance.
- The most suitable communications channels for sharing information.

Improvement on the local management

Each of the sub-actions undertaken has also contributed to local management improvements:

- There has been a considerable exchange of information and experiences.
- For each sub-action, a common system has been established which will serve as the basis for the easier exchange of information and experiences in the future.

6.7.3. Integrating Geographic Information Systems data in a multi-authority, cross regional context. Severn Estuary partnership

a) Background

Natural environment

The Severn Estuary is the largest example of a coastal plain estuary in the United Kingdom and one of the largest estuaries in Europe with an area of 24,700 ha.

The Estuary supports a wide array of habitats and species of international importance for nature conservation. The Severn Estuary was classified as a Special Protection Area (SPA) in 1995. The Severn Estuary is also a Ramsar site and a possible Special Area of Conservation (pSAC). Where a SPA, such as the Severn Estuary, or Special Area of Conservation (SAC) incorporate subtidal and/or intertidal areas, they are referred to as European marine sites (EMS).

The Estuary is a Site of Special Scientific Interest (SSSI) under UK law, as are many of the levels areas around the Estuary. It has numerous national and local designations such as national and local nature reserves around its shores.

The Severn Estuary is important for its immense tidal range, which affects both the physical environment and the diversity and productivity of the biological communities. The mean tidal range is the second largest in the world, reaching 12.3 m at Avonmouth. There are five major rivers which feed into the estuary causing changes in salinity which may be from brackish to fully saline, depending on the season and rainfall. Fine sediments from erosion of the intertidal zone and suspended sediments in river water entering the estuary create high turbidity, which has its highest average level between Avonmouth and the outer part of Bridgwater Bay (British Geological Survey, 1996).

The extreme hydrodynamic and sedimentary conditions determine the type of habitats and species present and result in characteristic animal and plant communities. The Severn Estuary comprises many different habitats including saltmarsh, intertidal and subtidal mud and sand, mixed mud and sand, rock outcrops, boulder and shingle shores as well as Sabellaria biogenic reefs. There are sandy beaches on the southern shores, backed by sand dunes.

The intertidal zone of mudflats, sandbanks, rocky platforms and saltmarsh is one of the largest and most important in Britain. The extensive mudflats and sandflats cover an area of 20,958 ha, the fourth largest area in the UK. Whilst the diversity of species is often low, in places the mudflats and sandflats support dense populations of marine invertebrate species, which provide a food source for the large populations of waterfowl and the many species of fish.

The fish fauna of the Severn Estuary is very diverse (Potts & Swaby, 1994). More than 110 species of fish have been identified, which include seven different species of migratory fish, more than any other British estuary. The estuary is one of the most important British estuaries for several rare species, including river lamprey *Lampetra fluviatilis*, sea lamprey *Petromyzon marinus*, twaite shad *Alosa fallax* and allis shad *Alosa alosa*.

Social environment

Humans were first attracted to the estuary and the surrounding areas for its wildlife, natural resources and access. With easier personal transport came recreational use of the estuary - evidenced by such Victorian seaside resorts as Weston-super-Mare and Penarth. This interest in recreation has now expanded to millions of people who enjoy and appreciate the estuary and wildlife for its own sake.

The natural environment of the estuary and surrounding land, including the coal and iron ore of the adjacent South Wales valleys and the Forest of Dean, was the basis of the economy for centuries. With improved communications and globalisation of the economy the links have become less obvious but the economy and local environment are still intimately related.

The social structure of the growing population reveals the large number of households in the highest social class categories, as well as high proportions of heads of households who are retired. Taken together, these characteristics reveal a growing population around the estuary, and particularly so in those social groups with both the time and resources to take part in outdoor leisure pursuits, as well as showing the highest levels of concern for environmental issues and of membership of environmental interest groups.

The tourist industry illustrates the importance of the estuary as more than just something to gaze at, live by and work by, but as a formal part of the present-day working economy. The ports and harbours around the estuary continue to play vital economic and social roles.

Whilst the Severn Estuary itself is a single physical system from a social and economic perspective it separates its two shores both socially and economically. Although the Second Severn Crossing enhances communication between southern England and South Wales, day-to-day contact specifically between the two sides of the estuary region is limited. Less tangible but no less significant is the lack of a feeling of community identity across the estuary.

The Severn Estuary is a jurisdictionally complex area with 12 local authorities, 3 Environment Agency regions, 3 water companies, several ports, 2 countryside agencies and 2 regional governments, all with their own data requirements and GIS systems.

b) Methodology

Phases

The methodology employed to implement both thematic actions follows the same line of approach in each case. It can be summarized as follows:

- a) Development of a GIS Forum for each of the GIS projects.
- b) Analysis of all of the data.
- c) Development of a meta- database containing the data groups.
- d) Development of a GIS pilot project for each of the GIS projects.
- e) Implementation of the recommendations corresponding to the results obtained in the pilot project.

Data collection

Appropriate data was identified from the results of the data audit and contact with key individuals within organizations.

The data groups obtained from the different organisms were used to carry out a data analysis to establish the data models applicable to each of the sub-actions.

Data collection

The data necessary to establish the Severn Estuary meta-database was collected. A study into organizational operability revealed the existence of three very important data groups which provided spatial data of relevance to the Severn Estuary.

- a) Joint study into marine dredging restrictions (Welsh Assembly Government)
- b) Severn Estuary coastal management plan (Coastal management group)
- c) Data ownership study (Environmental Office)

The meta-database includes a total of almost 400 entries pertaining to spatial information about the Severn Estuary.

A large number of national and international standards were consulted to produce a meta-database, using Microsoft Access as software, covering key issues related to existing standards. The database designed is enlargeable and can be consulted by users.

The meta-database, however, attempts to avoid false expectations regarding the development of this technology. Its usefulness will depend on the quality of its entries, commitment to its maintenance and the ease with which metadata can be generated in order to add more entries, together with its users' ability to effect consultations and update the meta-database.

Data was also collected for the GIS pilot project.

Data for this initiative included:

- a) Base mapping: a large part of the data group is available as base mapping layers. The most appropriate is probably the OS/UKHO raster data base available from METOC plc, but the cost of this data was beyond the budget of this project. Using the draft version of the Memorandum of Understanding, the official mapping service (OS) provided a 1:25000 raster base map under license from English Nature. English Nature supplied the aerial photograph for geographical reference, which covered a broad area in easy-to-handle files.
- b) Administrative layers: it was possible to compile these administrative layers from different sources, but their accuracy and number of lines are unknown. Care must therefore be taken when using these layers. Wherever the data shows specific

boundaries, suggestions will be made directly to the corresponding authority. Some of the layers have boundaries which do not match the same boundaries as shown in other sources. Checking and correcting such discrepancies does not lie within the scope of the project.

c) Conservation status. The nature conservation layers acquired for this project include:

- a. Ramsar
- b. Special Protection Area
- c. Proposed Special Protection Area
- d. Sites of Special Scientific Interest.
- e. National Nature Reserve
- f. Local Nature Reserve
- g. National Park

d) Bird data: EN and CCW supplied the bird data.

- a. CCW bird data: bird count data added.
- b. English Nature bird data

e) Habitat data: data for the phase 1 inter-tidal habitat on the English side of the Estuary was not available without authorization and was therefore not included.

f) Sea fishing: Data was supplied by the Bristol Channel Federation of Sea Anglers (BCFSA) and the Welsh Federation of Sea Anglers (WFSA). The data took the form of text descriptions of fishing zones and locations, and in some cases the places were marked on the maps. Some of the descriptions were long and the text was therefore shortened as much as possible to allow the spreadsheet fields to be added. Popularity has been graded on a scale of 1 to 4, with 4 being the most popular and 1 the least popular. This applies only to the English part of the Estuary. The fishing zones in the Welsh area have all been graded as 3. Locations have been marked as points even though some descriptions refer to larger areas. If fishing points are used in the analyses, the area around a specific point will be included in that particular analysis. See annex for data description.

g) Leisure activity data: Data was gathered from a number of workshop participants. They were asked to mark on a map where, to what extent and when activities took place. This information was recorded and the replies were grouped into clearly defined areas along the coast. The results were presented as a spreadsheet.

6.7.4. Geographic Information System. GIAHSA

a) Background

Natural environment.

GIAHSA represents a voluntary association of both coastal and inland councils which have delegated their respective competencies concerning integrated water and solid urban waste cycles in order to manage them jointly. This offers sufficient economy of scale to permit a modern, efficient management of such services.

The association was set up in 1989 by the town councils of Aljaraque, Ayamonte, Cartaya, Isla Cristina, Lepe, Moguer and Punta Umbría. Since then, the councils of San Juan del Puerto, San Silvestre, Villablanca, Beas and Trigueros have also joined the project.

Aljaraque dropped out at the beginning of 2001, although GIAHSA still supplies it with treated water for distribution and sale as it did previously.

The coastal village of Mazagón, on the municipal boundary between Moguer and Palos de la Frontera, also forms part of the association.

GIAHSA, through governmental collaboration agreements with the Coast, the Andévalo area and the Mining Basin, also manages the following villages: El Almendro, Alosno, Berrocal, Cabezas Rubias, Calañas, El Campillo, Campofrío, El Cerro del Andévalo, Granada de Rio Tinto, Minas de Rio Tinto, Paymogo, El Perrunal, Pozo del Camino, San Bartolomé, San Silvestre de Guzmán, Santa Bárbara de la Casa, Tharsis, Villanueva de las Cruces, Villanueva de los Castillejos, Zalamea la Real and Zarza.

Social environment.

GIAHSA manages three infrastructure groups, of which the first two will account for 90% of the assets:

- a) Supply: Drinking Water Treatment Facilities (Treatment Plants, Transportation Networks and Storage Tanks)
- b) Sanitation: Wastewater Treatment Facilities (Treatment plants, General Sewer Collectors, Pumping Stations and Undersea Conduits)
- c) Urban Solid Waste: Domestic refuse (organic and inert) and debris treatment facilities. These are currently in the design or pre-construction phase.

GIAHSA is empowered to exercise the competencies delegated by the association of town councils.

- a) INTEGRAL WATER CYCLE: Supply of drinking water, Sanitation and Treatment of wastewater.
- b) INTEGRAL SOLID URBAN WASTE CYCLE: Onsite Collection and Classification of domestic refuse (organic and inert), discarded furniture and household goods, plant cuttings and debris.

By exploiting the economy of scale produced by drawing together the management activities of a large number of councils, GIAHSA can therefore employ tools, management instruments etc, which would be beyond the individual reach of each of the villages covered by the project. This offers great social benefits, directly related to the management of:

- a) Basic infrastructures:
 - a. Providing the association with modern facilities which permit sustainable economic development for the constituent towns.
 - b. Partially financing investments as a multiplying driving force which channels investments and highlights the investment efforts of the associated villages as a differentiating factor as compared to other, less organized, local entities.
 - c. Providing a backbone for organized, coherent action implemented through coordinated joint action.
- b) Investment Maintenance and Improvement:
 - a. Supervising the correct maintenance for installations and providing them with the elements necessary to ensure their correct functioning.

- b. Constantly improving installations in line with future needs and expectations, as a dynamic factor to avoid obsolescence or insufficiency and to ensure the technological development of the installations.
 - c. Channelling the funds required by maintenance and improvement programmes.
- c) Efficient running of the services:
- a. Guaranteeing the correct, efficient operation of the services undertaken.
 - b. Achieving a high level in the public services supplied, managed and financed, with reasonably priced, competitive tariffs thanks to the economy of scale resulting from the integration of the different villages.
 - c. Providing benchmarks in the form of indicators and parameters for the progress made in the management of services especially advances in quality and environmental commitment.
 - d. Solidarity with other areas within the province, contributing to the economic and social development of the Province of Huelva.

b) Methodology

A land-use data management solution should include a set of data and technologies which will build up a multi-purpose land-use database. This database will be designed specifically for those local and regional governments taking part in the trans-national ICZM, using GIS tools as a basis.

The database was designed considering the following main themes:

- a) General data
 - a. Street map
 - b. Toponym maps
 - c. Main industries
- b) Town planning data
 - a. Town layout

- b. Land-use regulations
- c. Building licences
- c) Public Services networks and road maps
 - a. Road maps
 - b. Coastal routes
 - c. Electricity networks
 - d. Sewerage networks and treatment plants
 - e. Supply networks
- d) Natural resources

Data base design is the first task to be carried out in order to develop the ICZM GIS tool in line with commonly used application programming methodology. The specific data must be covered for each thematic area, and common references established to produce a coherent database.

Data acquisition procedures must be defined, with special attention being paid to the gathering of meta-data (information about the data acquisition sources).

The entities to be considered in both Area and Municipal terms are identical, the difference lying in the level of detail which will be revealed when they are represented in the corresponding scale (for example, 1:20,000 for Area and 1:5.000 for Municipal).

The Municipal scale, for example, will show all the roads of any importance at this level. Some of these roads may not need to be included on the Area map due to their lack of importance within the land-use structure.

Another example is that of the large “patches” which may sometimes appear on Area maps, regarding agricultural land-use. At this scale it may not be necessary to differentiate between the different crops grown on a particular piece of agricultural land, but at municipal scale this information may be of vital importance due to its possible relationship with urban development. The main elements which make up the data model are therefore:

For **interurban land**:

- a) Physical Base of the Land: Topographical and toponymical map, contour lines, hydrography, municipal boundaries, urban areas (patch), added information about the number of inhabitants, residential, industrial, tourism and mixed uses, railway, cattle tracks, ports, coastlines.
- b) Municipal Land Structure: Structural road network: access roads, main avenues, streets and ring roads, railway, urban, agricultural, woodland and livestock raising areas, principal Infrastructures.
- c) Land Use
 - a. Residential use, corresponding to land used for human accommodation.
 - b. Industrial use, corresponding to land used for the extraction, processing, production, transformation or storage of products.
 - c. Public service use, corresponding to land used for all activities providing service and support or which complement residential and productive uses.
 - d. Free use.
 - e. Natural use.
- d) RENPA (*Red de Espacios Naturales Protegidos de Andalucía*, Andalusian Network of Natural Protected Areas): National Parks (Doñana National Park), Natural Parks (Doñana, Sierra de Aracena and Picos de Aroche), Suburban parks (El Saltillo and Lomero Llano, La Noriega), Natural Sites (Enebrales de Punta Umbría, Estero de Domingo Rubio, Lagunas de Palos and Las Madres, Marismas de Isla Cristina, Marismas del Odiel, Marismas del Río Piedras and Flecha del Rompido, Peñas de Aroche, Sierra Pelada and Rivera del Aserrador), Protected Sites (N/A Huelva), Natural monuments (Acebuches del Rocío, Acantilado del Asperillo, Encina de la Dehesa de San Francisco, Centenary Pine at the Parador de Mazagón), Nature Reserves (Ísla de En Medio, Laguna de El Portal, Marismas del Burro), semi-state-run Nature reserves (N/A Huelva).
- e) Open spaces: Metropolitan bicycle lanes, open spaces (metropolitan and urban parks), fire breaks and planked pathways. Beach access.
- f) Sanitation, water supply, electricity, gas and communications networks.

For urban land:

- a) Construction. Heights and maximum heights
- b) Public Space: Existing main circulatory space, urban and metropolitan parks.
- c) Public facilities and services: metropolitan facilities, city facilities, proximity services and city-suburb facilities.
- d) Transport: Existing rail, bus, parking system.

This sub-action covers the cadastral level of detail, and the following main elements have thus been identified:

- a) Lot mapping. Lots, estates, blocks and pavements, street axes, police number, cadastral reference.
- b) Alpha-numeric cadastral code for urban land: land use, purpose, surface areas, height and maximum height, typology, cadastral value, maximum occupation (%), buildability.

Sub action	Issues/problems	Solutions
<p>Severn sub action: Establish a GIS Forum to bring together users and owners of GIS data, as well as technicians, to work to resolve current lack of co-ordination.</p>	<p>There are many statutory and voluntary organizations around the estuary with different GIS systems. A major issue will be to develop a network and ethos of information exchange where needed. In addition, most of these organizations are large and it will be difficult to involve more than one or two departments in any particular organization. That said, there is a genuine desire by most organizations to become involved.</p> <p>A potential problem is that the organizations around the estuary rely on the officer co-ordinating the project for co-ordinating their involvement and maintaining momentum. This momentum may be lost when this project is completed.</p> <p>It is proving difficult to keep all organizations involved in the GIS Forum unless there is a specific issue which the GIS is addressing which relates to their remit.</p>	<p>The project aims at developing a GIS Forum of users around the estuary and collecting information collation and exchange relationships. This will hopefully lead to improved information co-ordination after the completion of this project.</p> <p>The project involves all main GIS users around the estuary. It aims to be demand led and therefore will reflect the changing needs of the many users around the estuary. The project aims to facilitate information exchange and data gathering relationships where appropriate which will be adaptive to changing needs between different users.</p> <p>The forum intends to set up mechanisms and develop relationships so that as issues arise in the future that would benefit from a GIS, relationships, a MoU and a metadatabase are in place to help this.</p>
<p>Severn sub action: In consultation with stakeholders and transnational partners, determine information requirements and level of detail required for a GIS covering the coastal zone and in shore waters, which would support the implementation of the Strategy for the Severn Estuary.</p>	<p>Many organizations are restricted in the type of data they can collect or use due to internal mechanisms.</p>	<p>There were 3 major existing datasets held by different organizations around the estuary. These were researched in detail and incorporated into a metadatabase designed specifically for the Severn Estuary. The metadatabase identified the main aspects of each data and who to contact to obtain the data. This metadatabase will provide a baseline for data that is needed for any project around the estuary.</p>
<p>Severn sub action: Prepare a listing and analysis of existing GIS systems relevant to the Severn Estuary, and Action Plan for Stage 2.</p>	<p>Many organizations around the estuary do not collect spatial data specifically related to the estuary. A few organizations with a national or regional remit do.</p>	<p>All organizations were asked to provide information on their spatial data using a standard questionnaire.</p> <p>There were 3 major existing datasets held by different organizations around the estuary. These were researched in detail and incorporated into a metadatabase designed specifically for the Severn Estuary. The metadatabase identified the main aspects of each data and who to</p>

<p>Both Sub actions: Suggest and agree on a common GIS base map, approach proprietors of data and access to data.</p>		<p>contact to obtain the data. This metadata base will provide a baseline for data that is needed for any project around the estuary.</p> <p>A number of datasets are available as base mapping layers. Probably the most appropriate is the merged OS/UKHO raster dataset available from METOC plc; however the cost of this data was beyond the resources of this project. Utilising the draft MOU, base mapping was provided by OS in the form of 1:25000 raster mapping under license to English Nature. Geo-referenced aerial photography was also provided by English Nature. This was mosaiced and re-sampled to provide large area coverage at manageable file sizes.</p> <p>The data layers employed in the case of the Association were of another type: cadastral mapping and council urban planning combined with data regarding natural spaces obtained from the authorities at regional level.</p>
<p>Both Sub actions: Propose, agree and facilitate the implementation of a system for coordinating between local members, data and information access by members and facilitate the future updating of this information.</p>	<p>For large areas of land involving collaboration between different institutions and organisms with a wide range of competencies, and which may in some aspects successfully exploit a shared GIS. The project managed to coordinate a meta-database of spatial information and agree on a common base map. But producing a GIS for the whole estuary would have served no purpose if there were no organization with the resources necessary to house, maintain and update the GIS.</p> <p>Agreements had to be reached over the content of the pilot systems and the definition of different data model, data processing and functional components.</p>	<p>The data was stored in a meta-database, and employed in a pilot project.</p>
<p>Both Sub actions: Identify and agree on the areas to be covered in the GIS test projects (possible identification of current activities or those potentially suitable for action), and the completion and distribution of the pilot project to users and international partners.</p>		<p>The two pilot projects proved that a project could be completed using data from a group of users and providing a work plan with which to tackle other issues.</p> <p>Each pilot project creates a GIS for its respective location, one of them a European sea project for the Severn Estuary and the other for</p>

<p>Both Sub actions: Prepare an Action Plan to make recommendations for the application of the integrated GIS across other spatial planning related issues and areas locally, and to input the recommendations on transnational co-ordination and working.</p> <p>Both Sub actions: Contribute to the dissemination of the ICZM by exchanging know-how and suggestions.</p>		<p>the towns in the GIAHSA, adding the necessary data to each layer.</p> <p>Pilot Project</p>

6.7.5. Outputs

a) Common and specific tools.

The technologies used in each sub-action were different, resulting in a global project of great variety:

a) Severn Estuary, technological environment:

a. Data - in ESRI Shapefile and Mapinfo Tab formats

a. General data layers – base mapping, administration, conservation designations.

b. Habitat and bird data layers

c. Access and recreation data layers.

b. ESRI Map Explorer – data viewer/GIS

c. Access Database

b) GIAHSA (Huelva):

a. Smallworld GIS

b. AS/400 Database

c. Web Server SIAS (Smallworld Tecnology)

d. GIS Clients for Desktop

b) Achievements and failures.

The project's principal achievements can be summarized as follows:

- The establishment of communication between the different interlocutors, and the creation of collaboration forums based on their common interests.
- The implementation of respective pilot projects and the subsequent design of the corresponding metadata.
- The establishment of data exchanges between organisms.

The failings should always be interpreted as constructive experiences which have contributed to the development of both this project and future initiatives. This project would have benefited from greater participation from the other transnational partners because it would have provided a dataset even larger than that which was achieved.

6.7.6. Conclusions

The project aimed at offering an overview of recreational activities and their effect on Nature conservation in order to support ASERA in its studies into relationships between issues concerning Nature conservation and recreational activities. This was achieved through a Memorandum of Agreement in which ASERA members placed their data at the full disposal of the project.

A wide range of data layers were gathered, such as base maps/photographs, administrative, conservation status, habitats/birds and leisure activities. A series of workshops supplied the information used to provide details of the recreational activities.

Numerous issues were addressed during the course of the project, including the availability of GIS data, permission for its use and problems regarding its dissemination.

The project presented the GIS data layers in common formats which could be viewed using any standard GIS software, or with its own integrated data viewer.

The project satisfactorily illustrated the use of a data exchange agreement and data exchange within a user group to prove that leisure and Nature conservation are compatible, and also provided a suitable framework with which to address many other issues.

GIAHSA's project had as its objective the practical implementation, on behalf of the towns belonging to the association, the transnational partners and the company itself, of a computerized alphanumeric and graphic data management tool designed to aid decision-making in their respective areas of activity. The project has shown that it is possible to:

- Select a suitable technological platform, with the help of specialists.
- Define a broad dataset of interest to all parties.

- Obtain data from different organizations. In this respect, the failures proved irrelevant in the final result.
- Define a series of minimum functions to the satisfaction of the participants.

6.7.7. Recommendations

The pilot project is generating a GIS for each sub action. The Project aims at demonstrating best practices (generating metadata, using data layers provided for free by Forum members, using a base map provided by Forum members etc).

However, it confirmed that there are already examples of data sharing agreements used at international, national, regional and local level, and that the GIS Forum could be a mechanism for disseminating best practices and developing any agreements to suit local circumstances.

As a result of the work carried out both in the Severn Estuary and in GIAHSA, a series of general recommendations can therefore be made based on the experience acquired in the GIS projects developed and implemented for this action:

- Collaboration forums need to be set up to attempt to generate the communication mechanisms necessary between individuals and organisms, and to facilitate the exchange of spatial data in such a way that both access to the data and its quality are improved.
- Themes of common interest, beneficial to the majority of the participants, should be identified. In this way the work carried out and the implementation of the data project will be of real interest to them, increasing their motivation.
- Encourage the philosophy of gathering primary data directly from those organisms which, as a result of their activity, need to keep it updated. In contrast, the use of recompiled data or data originating in or re-processed by organisms with objective that do not fully correspond to the nature of the data (secondary data for the organism), should not be encouraged.
- It is important for the definition of metadata to be based on existing standards, if they exist, since metadata definition is one the fundamental features of a GIS system.

- Today, a lot of specialized software can be used as the basis for Geographic information systems. This particular project used two (Smallworld y ESRI).
- Technically, all such software offers many possibilities. When deciding which one to use, therefore, a study should be carried out taking into all relevant
- factors (the software's technical specifications, existing data, existing information system infrastructures, economic aspects...). This analysis should ideally be carried out by specialists, preferably unconnected with the organizations involved, to ensure a more balanced study and more objective proposals.
- Although the sub-actions were based on pilot GIS projects, it is important to remember that the phases in any IT project (analysis, design, implementation, testing and putting into service) should be monitored meticulously. It must not be forgotten that the foundations are being laid for a means of handling data, and the fact that it is a pilot project should not, as often occurs, be taken as an excuse for employing procedures which are not part of normal methodology.
- Data sharing and consultation channels should be offered using Web access for simple operations and VPN to access more complex functions for which a Web access may be insufficient.
- Finally, the steps necessary to update the information to keep pace with everyday activities should be made available in business and work environments in order to prevent the data from becoming obsolete.

7. Conclusions

Specificity of Atlantic coast – moderate tourist activities and urbanization, climatology, tiding, culture socioeconomic situation require specific actions for planning, control and monitoring.

Europe's Atlantic coastal zones are an important focus for economic activity. Moreover, they do support some of the most valuable and endangered natural/cultural resources of the European Community.

The planning and management of the coastal areas with high potential are vital to ensure the biodiversity, sustainable development and the natural and cultural heritage of the Atlantic coast.

But spatial planning, playing a primary role as a basis for development, being the means for the spatial expression of the economic, social, cultural, and ecological policies of the society, hence the need for its rational use, it is not enough to ensure the legitimacy of an ICZM towards a sustainable development in the Atlantic arc.

Because of this, some complementary aspects emerge to play a key role as an essential part of the ICZM process in which the following issues are usually taken into account:

- Spatial order requirements.
- Landscape and characteristic values.
- Economic development.
- Nature protection requirements.
- Cultural heritage requirements including architectonic values.
- Public health and security requirements.
- Economic values of the space.
- Ownership rights.
- National security and defence needs.
- Public interest needs.
- Access rights / interests to the coast.
- Legitimacy of ICZM policies.

The management of these issues competes with the growing and conflicting pressures involving the use of inshore and offshore areas. So policies to be defined at the European level will have a

growing role in the resolution of this deficiency, in order to maximize the value of the coastal areas and integrate the questions related to the use of land into sectorial and other environmental policies.

7.1. Protection of the Atlantic Space

The conservation and reintroduction of the nature areas must therefore be the main objective of policies related to the use of the land, with a view to ensuring:

- The protection and management of natured or semi-natured areas in urban areas, intensively used rural regions, as well as in uninhabited areas;
- The definition of minimum areas reserved for nature and a network of biotopes;
- A reorganisation of the interrelationships needed between the various nature areas;
- The conservation of the natural land surfaces, protecting the soil as a non-renewable natural resource.

The conservation of nature, being the management of the human use of nature, should enable sustainable development, while being compatible with the maintenance of the regenerative capacity of all resources, aiming at:

- Maintaining the ecological processes and natural systems;
- Preserving the biodiversity;
- Utilizing species and ecosystems in a lasting and sustainable manner.

The protected areas, as instruments of the policies for the conservation of nature, a component of land use zoning, will embrace the following objectives:

1. Protect the landscape, the flora and fauna, maintaining the dynamics and structure of the ecosystems;
1. Encourage integrated development and growth, based on the traditional activities and other activities compatible with the preservation of the values and natural resources of the protected area;
1. Encourage uses that are compatible with the conservation of resources;
1. Integrate the protected areas into ever-growing areas for applied research.

At the end of 2003, the sites designated as special protection areas or proposed as sites of community interest took in 15% of the territory of the European Union, revealing the need for the protection/sustainable use of these areas.

The protected areas need to be integrated in broader systems of protection; therefore it is essential that the interlinking of the sites be promoted, with a view to ensuring the possibility of survival of the species that move from one place to another; the implementation of this objective remains the responsibility of the Nature 2000 Network.

The protection, maintenance and increased potential of the protected areas should be effective through planning and management that are articulated institutionally between the various bodies and the different levels of Administration that have jurisdiction in the area.

7.2. Integrated development of the Atlantic Coastline

Among other aspects, it is of the highest priority to carry out the resolution of issues arising from urban development – urban expansion, large tourist projects, opening of new access routes; or those resulting from illegal activities – such as illegal construction, dumping of inert materials and pollution, which can jeopardise the management of these areas – environmental and conservation conflicts, taking account too, deficiencies related to employment and economic performance in most of the Atlantic coast.

Within the Atlantic space we rounded up a vast number of nature areas that are important for the balance of land use and which are characterised by the constant economic-financial pressures fostered by a management that is heavily dependent on a Central Administration. It is therefore fundamental that we develop institutional mechanisms that will guarantee the financial sustainability of the local and regional management of the protected areas.

The fact that the costs related to the presence of the protected areas are generally borne by the local population, while the benefits extend to the whole country, makes the problem of equity, costs and benefits a question pointing to the need to optimize the means susceptible to guarantee the financial sustainability of these areas.

In order to guarantee nature management, it is imperative that we accelerate the transposition of the Community directives and other Community legislation with regard to the conservation of nature and the integrated management of coastal zones.

As a way of monitoring and assessing the evolution of the coastal areas, a uniform set of indicators defined at the European level should be used. They would describe the state of conservation of the habitats and the protected species as well as the degree of preservation of the area.

The project has served to give this territory a push as far as self-esteem and valuation are concerned, taking into account the great existing potential that has come to light, thanks to the different studies, and the way in which that potential can be turned into a higher level of well-being for the resident population. A deeper awareness of the value of culture, heritage and landscape, has facilitated a re-evaluation, which has strengthened local identity.

7.3. Atlantic resources inventory

The most practical actions of the project have served to promote Atlantic culture and strengthen the awareness of relationships and existing affinities between Atlantic countries throughout history. Besides, under sustainability criteria, it has been possible to promote the territory and this directly resulted in greater power of attraction, and consequently, in an increase in visitors and in income. Hence, the stocktaking of archaeological resources made it possible for those resources to be considered when planning for infrastructures and facilities.

The project has served to address the need to establish plans related to the use of the land while applying sustainable development criteria in a global perspective but with management models adapted to the territory. These models have to take into consideration the local specificities specially of those areas already designated as environmental/natural protection as well as special interest heritage elements.

7.4. Overseeing spatial planning for the Atlantic Coastal Zone

Another issue is that traditional spatial planning used to be effective on the terrestrial side of the coastal zone, with the land use regulations and nature conservation being based on comprehensive approach. Problems arising with the integration of land-sea border often coincide with the administrative borders of planning authorities.

Anyway, spatial planning must be complemented with other planning tools, in order to ensure that the goals proposed for ICZM are achieved.

The coastal zone is an open system, based on different, usually much wider borders than the administrative ones.

The ability of local spatial plans to deal with coastal issues whose impact often goes beyond the administrative borders can be substantially questioned. What is needed is a regional (or even national) planning overview to ensure effective consideration of issues of such nature that require the extension of the traditional planning territorial limits. Spatial planning needs to act more carefully while planning on administrative border areas and make the best use of networking between spatial plans of neighbouring regions.

Moreover, the great independence relationship of coastal areas with their hinterland must be a concern of spatial planning assuming the assimilation and balance of natural cycles (soil and water, fauna and flora, population fluxes).

7.5. Participation

Through a variety of projects involving stakeholder engagement and sharing experience, the COASTATLANTIC partners have highlighted the effectiveness of mechanisms to inform decision-making.

a) Key Achievements for Stakeholder Involvement

Representation

- Regional & local government engagement has been strongest.
- General public and business/commerce engagement in decision-making is less strong, but could be representative and ‘fit for purpose’.
- A ‘bottom-up’ approach is more dominant than a top-down approach.

Evidence of ICZM Principles in Action

- Good efforts are being made to comply with ICZM principles, with some mixed results but progress is being made towards achieving satisfactory stakeholder involvement.

Future opportunities from the COASTATLANTIC project work

- A large number of meetings, workshops and conference presentations have been delivered under the COASTATLANTIC banner, many of which are likely to be the platform for ongoing initiatives to encourage stakeholder involvement in ICZM.

7.6. Progressing ICZM across the Atlantic Arc

Increasing attention is being given to ICZM and the marine environment through the EC Recommendation on ICZM (2002), the Commission’s Green Paper “Towards a future Maritime Policy for the Union: A European vision for the oceans and seas” and the evolving EU Marine Strategy with the possibility of a Marine Framework Directive.

All regions of the Atlantic Arc need to take on board the principles of ICZM in their decision-making processes. The demonstration work delivered through this COASTATLANTIC project offers experience that may be leveraged by the partners and other organisations.

CONCLUSIONS	
Protection of the Atlantic space	<ul style="list-style-type: none"> • The coastal areas should become an instrument of the policies as a component of land use zoning • The protection, maintenance and increased potential of the coastal areas should be implemented through planning and management that are articulated institutionally between the various bodies and the different levels of Administration.
Integrated development of the Atlantic coastline	<ul style="list-style-type: none"> • Coastal areas are important for balanced land use characterised by the constant economic and financial pressures fostered by a management heavily dependent on a Central Administration. It is fundamental to develop institutional mechanisms that will guarantee the financial sustainability of the local and regional management of the coastal areas.
Atlantic resources inventory	<ul style="list-style-type: none"> • It is possible to promote the territory: this directly results in greater power of attraction, and increase in the number of visitors and greater income. • The stocktaking of archaeological resources made it possible for those resources to be considered during the planning of infrastructures and facilities.
<u>Overwhelming</u> spatial planning in the Atlantic coastal zone	<ul style="list-style-type: none"> • Spatial planning need to ensure effective consideration on the terrestrial side of the coastal zone and on the administrative borders, providing the use of tools designed to ensure goals proposed by ICZM takes place. • The great dependence relationship of coastal areas with their hinterland is a concern of spatial planning assuming the assimilation and balance of natural cycles (soil and water, fauna and flora, population fluxes).
Participation	<ul style="list-style-type: none"> • Regional and local government engagement has been strongest. • General public and business/commerce engagement in decision-making is less strong, but could be representative and 'fit for purpose' • A 'bottom-up' approach is more dominant than a 'top-down' approach • Good efforts are being made to comply with ICZM principles, with some mixed results but progress is being made towards achieving satisfactory stakeholder involvement.
Progressing ICZM across the Atlantic Arc	<ul style="list-style-type: none"> • Increasing attention is being given to ICZM and the marine environment through the EC Recommendation on ICZM (2002), the evolving EU Marine Strategy and the COASTATLANTIC Recommendations with the possibility of a Marine Framework Directive.

8. Strategic Guidelines for Management

8.1. Conservation towards sustainable use

- Pass from a conservationist attitude to an environmentalist attitude in the coastal nature areas having high potential – from conservation to responsible and sustainable use.
- Maintenance of traditional production activities important for conservation, as abandonment leads to the degradation of the area and to illegal activities.

8.2. Better integration on current legislation

- The role of the Local Agenda 21 – establish partnerships so that the coastal area is perceived as having a potential for development.
- Create a network for the management of the Natura 2000 Network that would leverage the exchange of information, set up a database at the European level, and put into effect the means for an economic-financial management.
- Natura 2000 Network should receive more assistance from community funds when other means cannot be implemented, with an objective of becoming self-supporting; this should be based on more detailed studies on the delimitation areas.

8.3. Ensuring the sustainability of public policies for coastal areas.

- In order to provide a sustainable development of Atlantic coasts – in both sides, environmental and financial, we propose to open the protected areas to low impact human activities, such as recreational and leisure activities, environmental education, and

agriculture, which will ensure their maintenance and their potential, respecting also their load capacity and the characteristic vulnerabilities of the area.

- The sustainability of a protected area will be achieved through actions to be defined at the local level areas that are protected and productive.
- Use areas through new activities and/or maintaining traditional activities as a mean of protecting the nature areas, optimizing their sustainability and profitability, making it possible for them to be self-supporting.

8.4. Manage the information for the stakeholders

- Direct the information, as well as the educational activities, to the users of the area, encouraging their participation, making information available to them, and selecting specific targets or groups – Guided Information involving local activities and enhancing the value of the local economy.
- Environmental awareness related to the protected areas should be directed to the public; information on the species that need to be protected should be communicated.

8.5. Establishment of institutionalized participation mechanism

- Encourage the role of local governments in conservation, awareness-raising and utilisation – promoting a closer relationship with the population. This should be achieved through legal framework.

8.6. Common instruments on coastal management

- Design the instruments for land / sea management that are applicable to Atlantic coastal areas.

In short:

- a. Apply the concept of sustainable development, as established in the Lisbon Strategy, Agenda 21 (UN) and the National Strategy for Sustainable Development (ENDS) 2005-2015 in striving for an efficient and preventive management of the environment and the natural heritage.
- b. Increase the constructive public participation at the local and regional levels.
- c. Avoid the dispersion of jurisdictions.
- d. Empower planning instruments that are more efficient and uniform within Europe.

It is necessary to preserve the values of nature, culture and landscape of the Atlantic coast through integrated management, especially the nature areas located in the coastal zones, because the littoral functions as a support for various activities in the medium and long term. Its sustainability must therefore be promoted, making a contribution that will allow future generations to equally enjoy this Atlantic space.

STRATEGIC GUIDELINES FOR MANAGEMENT

<p>Conservation towards sustainable use</p>	<ul style="list-style-type: none"> • Pass from a conservationist attitude to an environmental attitude in the Atlantic coastal areas having high potential – from conservation to responsible sustainable use. • Maintain traditional production activities important for conservation, as abandonment leads to the degradation of the area and to illegal activities.
<p>Better integration on legislation</p>	<ul style="list-style-type: none"> • Create a network for the management of the Natura 2000 Network that would leverage the exchange of information, set up a database at the European level, and put into force the means for an economic-economic-financial management. • Natura 2000 Network should receive more community funds with a view to becoming self-supporting; this should be based on more detailed studies of its delimitation areas.
<p>Ensuring the sustainability of public policies in public spaces</p>	<ul style="list-style-type: none"> • Open the Atlantic coastal areas to human activities such as recreational and leisure, environmental and agriculture that will ensure their maintenance and their potential, respecting also their load capacity and the characteristic vulnerabilities of the area. • Use coastal areas through new activities and/or maintaining traditional activities as a mean of protecting the coastal areas, optimizing their sustainability and profitability.
<p>Managing the information for the stakeholders</p>	<ul style="list-style-type: none"> • Direct the information, as well as the educational activities, to the users of the area, encouraging their participation, making information available to them, and selecting specific targets or groups • Environmental awareness related to the protected areas should be directed to the public; information on the species that need to be protected should be communicated.
<p>Establishing an institutionalized participation mechanism</p>	<ul style="list-style-type: none"> • Encourage the role of local government in conservation, awareness-raising and utilisation – promoting a closer relationship with the population. This should be achieved through legal framework
<p>Common instruments on coastal management</p>	<ul style="list-style-type: none"> • Design the instruments for land/sea management applicable to Atlantic coastal areas • Increase the constructive public participation at the local and regional levels. • Avoid the dispersion of jurisdictions. • Empower planning instruments that are more efficient and uniform within Europe

9. Recommendations

Three main categories of policy recommendations have been put forward for each of these projects included within the thematic and cross-cutting actions. These can be divided into three main axis of intervention:

➤ **Planning and Management of coastal areas:**

Planning coastal areas could play a bigger role than it is now in facilitating the activities of the various bodies to achieve ICZM objectives.

➤ **Participation and Governance:**

Promote the regional level to take the responsibility of the strategic coordination of the whole planning and management process while the national level should provide the overall framework for ICZM process (including participation of national authorities).

➤ **Assessment and Monitoring**

Encourage the establishment for monitoring and assessing the state of conservation; the monitoring of the evolving trends of the coastal areas data sharing and consultation channels should be made available.

These recommendations are summarized in the following table.

9.1. Axis of Intervention 1 – Planning and Management of Coastal Areas

- Define a regional system of coastal areas integrated in the European network and supported by monitoring indicators at the European level.
- Encourage spatial planning authorities to consider and include the inshore marine area as well as the hinterland units and the sectoral interest in their spatial plans to provide a comprehensive overview of resource use and management issues.
- Potentiation on endogenous resources.
- Share the responsibility of identifying the appropriated coastal plan boundaries by politicians, planners, managers and researchers, at the appropriate level.
- Reinforcement of the common management of coastal areas in transborder areas, taking advantage of crosscutting mechanisms of collaboration.
- Organize access and parking networks as well as beach equipment involved in the design and localization (dune system protection avoiding buildings and housing and people or vehicles random crossing).
- Defend and promote natural forest contributing to diversification and to a balanced water cycle.
- Promote the environmental compensation of artificial character and negative effects of urban and industrial concentrations, or even agricultural or forestry intensive exploitations.
- Promote the continuity and efficiency of irrigated areas, defending the coastal streams and establishing diversified landscape structures in order to get an ecological network in hinterland continuity; attend also to the necessary care for the use of artificial factors production (herbicides, fertilizers) application.

9.2. Axis of Intervention 2 – Participation and Governance

- Participatory system for the management of coastal areas. Collaboration forums need to be set up to attempt to generate the communication mechanisms. A local officer and one-on-one meetings are often needed in addition to workshops/seminars and regular forums
- Involve population and stakeholders in the development project in an integrating way taking into account the whole coastal community: business, educational sectors, public and private institutions, researchers and the public in general
- Use of media in a pro-active manner to raise public awareness on the coastal management issues
- Focus the responsibility for coastal management but spread the cost (e.g. bilateral agreements between regional and local administrations)
- Promote the local communities to form partnerships because they are more aware of the possibilities available to co-operate with others sectors in the Atlantic Arc. This should strengthen the local authorities' competences.
- Promote the regional level to take responsibility of the strategic coordination of the entire planning and management process while the national level provides the overall framework for ICZM process (including participation of national authorities).
- Increase and guarantee a greater participation of the population in general and the actors and agents in particular. Active public participation should have first priority in planning and in the review of coastal management actions.
- Promote social involvement in drawing up and discussing the plans, programs and management of the coastal areas. Stakeholders who have been involved in the formulation of policies and rules on resource use in the coastal areas are more likely to support them.
- There is value in transferring skills and awareness down to the next level of government.
- Integrate and co-ordinate plan-making at the next level down (e.g. preparation of local plans in Norway)
- Develop networks for data capture and information exchange.
- The authority of a coastal management plan relies on adequate information. No agency is wholly self-sufficient. If key information is missing on just one sector you can not consider your plan as being fully integrated. Also some coastlines lend themselves to data capture more than others. The work of coastal observatories will be an important resource.
- Terrestrial and marine spatial plans require different approaches – fusion will take time. But some fusion is necessary. Governments should encourage innovation and experimentation in this field.

9.3. Axis of Intervention 3 – Assessment and Monitoring

- Create a system for monitoring and assessing the state of conservation and the evolving trends of the coastal areas, which in the long term provides for on-going measures for the conservation of the biodiversity, preservation of the natural heritage, ecological viability, and the mitigation of threats. We propose, among others:
- Creation of a shared data base in ICZM for the Atlantic coast, harmonizing it with other data bases existing for other coasts, to allow comparisons, share information, etc.
- Creation of a GIS for the Atlantic coast, integrating the data base in it, to provide a tool for managers and decisions makers.
- Encourage the use of data sharing and consultation channels should be ; this would be feasible by using Web access for simple transactions and VPN to access more complex functions for which a Web access may be insufficient.
- Create specific cross-cutting management bodies that integrate the different Administrations and the private sector.
- Ensure the support of technicians in the planning and management process, providing adequate training and skills for ICZM.
- Encourage the philosophy of gathering primary data directly from those organisms which, as a result of their activity, need to keep it updated.
- Encourage the use of existing standards for the definition of metadata.
- Establish partnerships with the scientific community/research centres to provide support for the monitoring and assessment of the coastal areas and the development of support mechanisms for the preservation of these areas:
- Identify themes of common interest, beneficial to the majority of the participants. In this way the work carried out and the leverage of the data project will be of real interest to the users, increasing as a result, their motivation.
- Establishment a cross-border **coastal research and Interpretative centre**. The facility would have combined functions in commerce, public education and marine research in support of coastal management.
- Set up of collaboration forums to generate the communications mechanisms necessary between individuals and organisms, and facilitate the exchange of spatial data in such a way that both access to the data and its quality are improved, using media and NIT.
- Expertises can be requested by local councils or Observatory's partners. Technical institutions and scientific experts can deliver a technical and neutral opinion about the elaboration of a coastal management project or a local coastal problem.
- Consolidation of the COASTATLANTIC developed unique group of international expertise on the management of the Atlantic coast.

10. Epilogue

The objective of this chapter is to summarize not only the outcomes and achievements, but also the failures and challenges encountered after two years of common efforts and partnership.

Dynamism and peripherality can be highlighted as the two main factors that distinguish the Atlantic Arc coast from any other in the European context. Our coastal landscape is subject to continuous changes due to the action of macro-tidal ranges, strong currents and fierce tempests. On the other hand, most of the Atlantic regions are located far from the most attractive and vibrant European economic centres, which results in weak urban networks and declining rural areas. A common vision for IZCM in Europe is essential, but the singularity of the Atlantic Arc requires specific management procedures, different from those applied to other European sea basins.

The Atlantic seaboard comes with a great variety of regions with different concerns, aims, statutory powers... But the Ocean is not aware of boundaries or governmental bodies. From the Highlands to Alentejo, we have checked that the Ocean speaks only one language, which is that of the sound of the waves caressing the sandy beaches or smashing against the rocky cliffs. Accordingly, the first task for any Atlantic Arc partnership is to build a common language based upon shared interests. This process required many efforts and time for Coastatlantic and our experience shows that it should be enhanced and strengthened in the future.

The sectorial-transversal methodology adopted by Coastatlantic has proved to be useful and effective, allowing each partner to participate actively by leading any of the thematic or cross-cutting actions. The main conclusions can be summarized as follows:

- The Atlantic coast is a highly valuable resource, not only from the economic, but also from the environmental and cultural point of view. As in any other coastal areas in the world, the density of population and economic activities is progressively increasing, and this trend is expected to continue in the future. Land use planning becomes an efficient tool to reach an appropriate balance between the promotion of economic activities and the conservation of the coastal heritage. Easy, public access to the coast allows people to understand, appreciate and enjoy this heritage. Encouraging local communities to be fond of their coast is the best way to keep them committed with its protection. Experience shows that conservation can be made compatible with access and enjoyment.
- Because of their complexity and dynamism, the Atlantic coasts are highly sensitive to human action. Planning that does not take into account natural coastal process is doomed to failure. A great amount of areas are protected, but their efficiency gets considerably improved when

integrated in broader systems of protection, such as protected areas networks at any level (regional/national/transnational). Coastatlantic has proved that the preservation of the natural heritage and enhancement of biodiversity can be regarded by local communities not as constraints but as opportunities for local development.

- Often discarded or forgotten in the planning processes excessively focused on environmental issues, cultural heritage turns out to be one of the most important factors for identity-building for the Atlantic Arc. Since centuries, our coasts have provided a privileged settlement for a number of civilisations that have left an exceptional cultural legacy and shaped a unique landscape. Local communities' self-esteem grows significantly when they are given the chance to become aware of the value of the vestiges of their past. Careful inventory and wise management provide firm basis for conservation, re-use and conversion into a significant source of income for local people.
- ICZM is at times extremely focused on coastal fringe issues. Analysis carried out by Coastatlantic show the relevance of the hinterland and its interdependence with coastal phenomena. Rural depopulation may be not as intense as in mountain regions, but significant imbalances between urban and rural areas have been detected as well. Accurate understanding of natural and human processes that shape the countryside landscape (agriculture, forestry, sheep farming) becomes essential to assess its transformations and develop adequate planning measures.
- Stakeholder involvement arises as an essential condition for the success of any ICZM initiative. In addition to officials and experts, to whom should we address to, but local people, fishermen, farmers, retailers, entrepreneurs...? Coastatlantic has experienced that, when properly encouraged, stakeholder engagement is possible and fruitful. Good efforts and progress are being made in this direction, but there is a lot of work ahead.
- Traditionally, the coast has been regarded as an administrative boundary between the terrestrial planning system on one side and the sea and its users on the other. Increasing accessibility, changes in the patterns of tenure and intensified pressure have been detected removing those boundaries. Coastatlantic has revealed new planning tools for coast and marine areas, as well as the importance of an integrated, multi-sector approach to tackle the growing complexity of coastal issues.
- Technology has supplied us with powerful and sometimes overwhelming instruments. The Coastatlantic web site has been a helpful resource to exchange information between partners

and disseminate it to the public. Geographical Information Systems have proven to be efficient for integrated analysis and monitoring, but they should be fed with a shared data base in ICZM for the Atlantic coast, harmonizing it with other existing data bases used for other European sea basins.

Leaning over the window has allowed us to catch a glimpse of the challenges ahead. Maritime transport and safety, industry, offshore energy, fisheries, the marine environment, should be issues to be considered in future partnerships. The Atlantic Ocean appears now to us as an exciting and moving new frontier.

