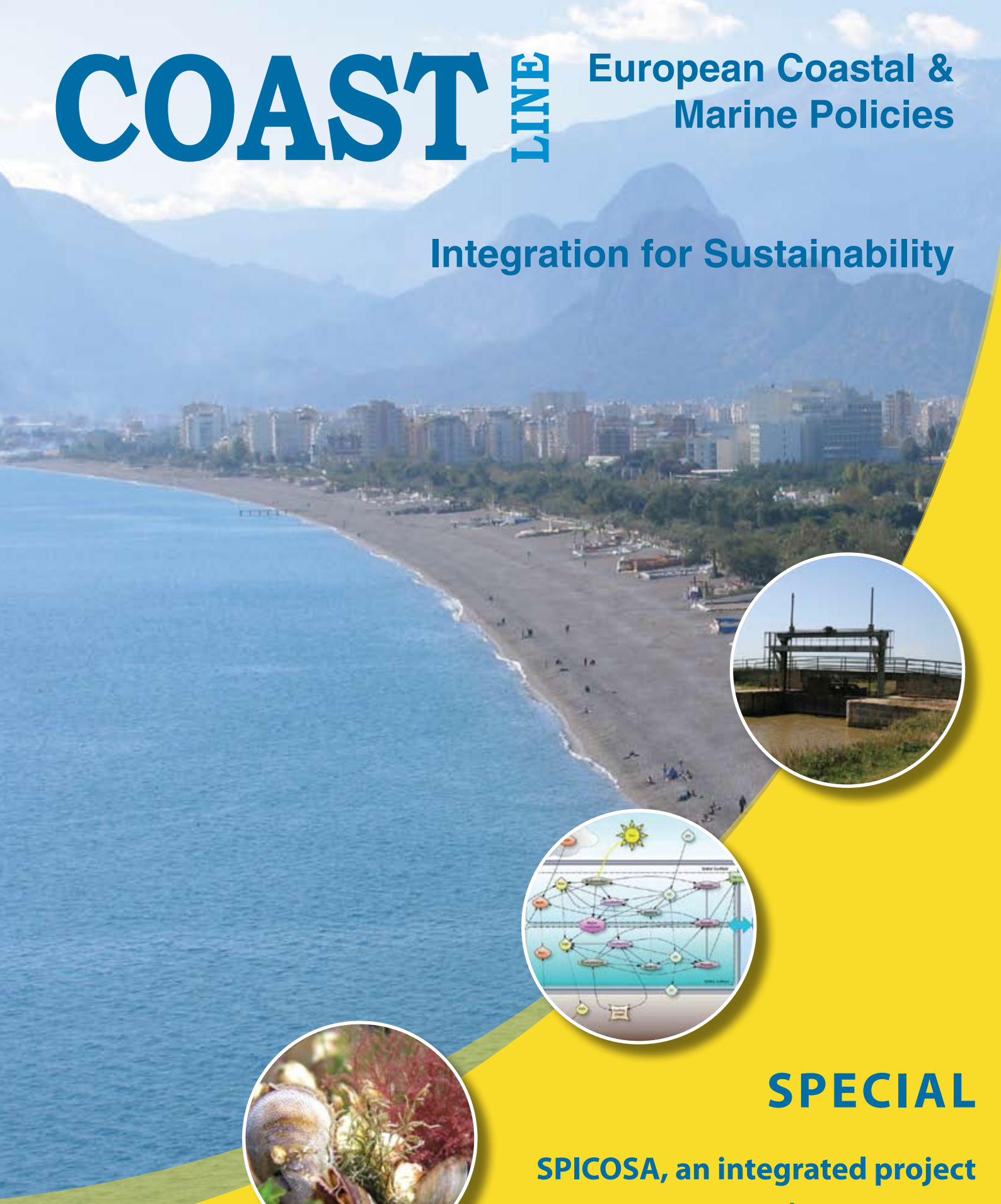


COAST LINE

European Coastal & Marine Policies

Integration for Sustainability



SPECIAL

SPICOSA, an integrated project
under the EU's 6th Framework
Programme for Research



Editorial

This special issue of CoastLine presents the Integrated Project SPICOSA, the largest research project on coastal zone management ever funded under the Research Framework Programme of the European Commission. Environmental sustainability of coastal areas is at threat despite numerous local, national and international initiatives to reverse the trends towards loss of natural assets and intensification of man-made and natural risks. The agenda set by the EU under the Water Framework Directive, the European Marine Strategy Framework Directive and other environmental legislation is very ambitious. The concept of Integrated Coastal Zone Management (ICZM) promotes an innovative governance to manage the complexity of sustainability on all the coasts in the world. The integration of scientific knowledge to serve a problem oriented approach is a key dimension of it. It calls for a new culture and renewed practices among researchers to learn how to mobilise multidisciplinary scientific expertise in support to the elaboration of public policies. Contributing to the toolbox of such an expertise is the primary objective of SPICOSA and linking natural and social science its main challenge. But integrated research will be of little help if science doesn't meet people with the concern of serving public policy development. Therefore the mediation of knowledge, in other words the integration of scientific knowledge and the knowledge of stakeholders and policy-makers, is our second key concern. For this, the potential of multimedia tools is mobilized and various ways to construct together our future are explored. This is all what the Integrated Project SPICOSA is about. This issue is intended to stimulate discussion and promote innovative research in support to ICZM. I hope you will enjoy the reading. Do not hesitate to contact SPICOSA teams to develop collaborations.



Denis Bailly,
SPICOSA Scientific Coordinator
UMR-Amure, University of Brest, France

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Colophon

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Photo front: Antalya, Turkey, photo Marko Prem

Insets: Vanne de Beaugay, photo Jean Prou; Conceptual model Thau lagoon; Blue mussels from the Gulf of Gdansk, photo Agnieszka Arciuch.

Thanks for support are expressed to the all SPICOSA partnership, and in particular to the contributions for this SPICOSA Special issue from: Denis Bailly and Tom Hopkins (SPICOSA Scientific Coordinators), Irene Lucius (SPICOSA Coordinator Communication & EUCC Med Centre), Josianne G. Støttrup (SPICOSA Node 3 SSAs Leader) Gerald Schernewski (SSA 13), Leyla Tolun (SSA 17), Ben Tomlinson (SSA 12), Antonella Petrocelli (SSA 14), Jean Prou (SSA 10) and Berit Skorstad (Work Task leader).

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Science and Policy Integration for COastal System Assessment – SPICOSA

Introduction to SPICOSA

The Integrated Project SPICOSA, funded by the EU's Sixth Framework Programme, took off in February 2007 with the aim to develop and test a self-evolving, holistic research approach for the assessment of policy options for the sustainable management of Coastal Zone (CZ) systems. It is thus of high relevance to Integrated Coastal Zone Management (ICZM) and other related European policies.

The initiative is based on the insight that policy has not been able to respond effectively enough to human pressures on the coastal environment. A more innovative, thorough approach is needed to treat the coastal zone as an integral functioning system (the CZ System) and to focus more on providing prognostic information to decision makers on how a CZ system might respond to sustainable technical options or management strategies.

The methodological product of the project is called the Systems Approach Framework (SAF). It is based on an adaptation of the Systems Approach that incorporates the ecological, social and economic dimensions of the coastal zones together with emerging concepts on system complexity. The SAF is designed to be readily updateable, to provide an accumulative knowledge base for wider and more complex applications, and to contribute to a growing understanding the options and actions necessary for the transition to sustainable development.

Six main objectives are guiding the SPICOSA initiative:

- To create an operational **Systems Approach Framework (SAF)** for assessments of policy alternatives in Coastal Zone Systems. The SAF emerges from existing knowledge and evolves with new knowledge;

- To overcome two critical challenges facing multidisciplinary science, that of **creating a working science-policy interface** and that of qualifying and quantifying complex systems, in order that the SAF is scientifically credible and operationally functional;

To implement and test the SAF over **eighteen diverse Study Site Applications** throughout the European region, such that its operational use is not limited to any specific policy issue, socio-economic condition, or coastal zone type;

- To generate an **SAF Portfolio** consisting of generic assessment-methodologies, decision-support tools, models, and new knowledge useful for ICZM, in a manner that is user-friendly and updateable;
- To improve the **Communication and Integration** among the main actors and infrastructures of coastal zone systems that promote Sustainable Development in a manner that is self-perpetuating; and
- To enhance new opportunities for **academic and professional Training in ICZM**.

54 institutions from all across Europe are united in the SPICOSA partnership, representing national research institutes, universities, Small and medium enterprises (SMEs), the Joint Research Centre (JRC) and the NGO EUCC Mediterranean Centre. The Scientific Coordination is under the responsibility of the University of Western Brittany (Brest, France) and the Institute of Coastal Marine Environment of CNR (Naples, Italy), while the Administrative Coordination lies with the French National Institute of Marine Research (IFREMER).

SPICOSA is a four-year project and will end in January 2011.

Maria Ferreira & Irene Lucius



WWW.SPICOSA.EU



The SPICOSA Dimension – Study Site Applications

SPICOSA local applications aim to bridge the gap between coastal stakeholders across various aspects of local economy, policies, uses, conflicts and impacts to enable the dialogue that may lead to sustainability. The project tests, improves and demonstrates its tools and the System Assessment Framework (SAF) throughout Europe over a diverse set of eighteen study sites. A wide variety of coasts that differ in geomorphology, environmental conditions, cultures, and human activities provide this basis. Each local application of SPICOSA provides more and better insight to the human activities that generate the greatest impacts and those types of coastal zone systems that are most vulnerable to human activity. The geographical extent of these applications is presented in this map followed by a closer look at some examples that illustrate the European-wide local challenges for science and policy.



SØNDELED



HIMMERFJÄRDEN



GULF OF RIGA



LIMFJORD



GULF OF GDANSK

ODER/ODRA ESTUARY

VENICE LAGOON



DANUBE DELTA



THERMAIKOS GULF



IZMIT BAY



TARANTO MAR PICCOLO

Science & policy Integration: local challenges and opportunities

An onlooker may perceive SPICOSA as made up of “brains” that write and formulate the manuals for the Systems Approach Framework (SAF), and “brawns”, the Study Sites (SSA) that apply the manual to their sites, provide feedback to the manual as well as feedback to the SAF. In practice, the Study Sites have both; and are faced with the enormous challenge of applying theory to very complicated systems.

All 18 SSA teams have successfully completed the Design Step of the SAF, and are now working with the Formulations Step which should be completed by October 2008 and followed by the Appraisal and Output Steps. The Design Step within each SSA was initiated by identifying Stakeholder groups with whom meetings were held to discuss Policy Issues considered important or central to each system. Already at this stage cultural differences were apparent between SSAs. In SSAs located in areas with long-term experience of democracy, stakeholder involvement was easy to achieve. Several SSAs profited from existing stakeholder groups representing a variety of activities and sectors and, due to a long tradition of public participation, had no problems in involving stakeholders in the project. Other SSAs, located in areas where democratic governance is not well evolved, met with strong scepticism, and in some cases stakeholder involvement was limited to authorities and local managers. Some SSAs resolved this problem by contacting local stakeholders individually by phone, mail or other direct means. This sub-step necessitated up to several stakeholder meetings in smaller or larger groups within each SSA resulting in an agreement on a Policy Issue on which the SSA would focus during the project, and the identification of a subset of stakeholder partners for the SSA. With the stakeholder group a list of management and global scenarios were agreed upon for the chosen issue. Once the Policy Issue and management scenarios were agreed upon, ecological, economical and social indicators were listed for the chosen issue within each system (Study Site).

It is interesting to note that all the SSAs as they progressed through the tasks, encountered different problems at different levels related to their site cultural and political setting. They resolved problems in different ways yet still completed the tasks in a satisfactory manner, enabling them to proceed with the subsequent SAF Step.

Modelling complexity – local challenges

A major task was the development of conceptual models for the chosen Policy Issue. All SSAs embarked on their conceptual models producing a variety of Odum environmental systems diagrams, or conceptual models using the freeware C-MAP. The latter, when introduced to the group as a whole at a specific SAF meeting, was generally considered very useful, and immediately adopted by many SSAs to create conceptual models and feed-back loops. CMAP was considered a useful tool for developing and discussing the conceptual model before embarking on EXTEND modelling.

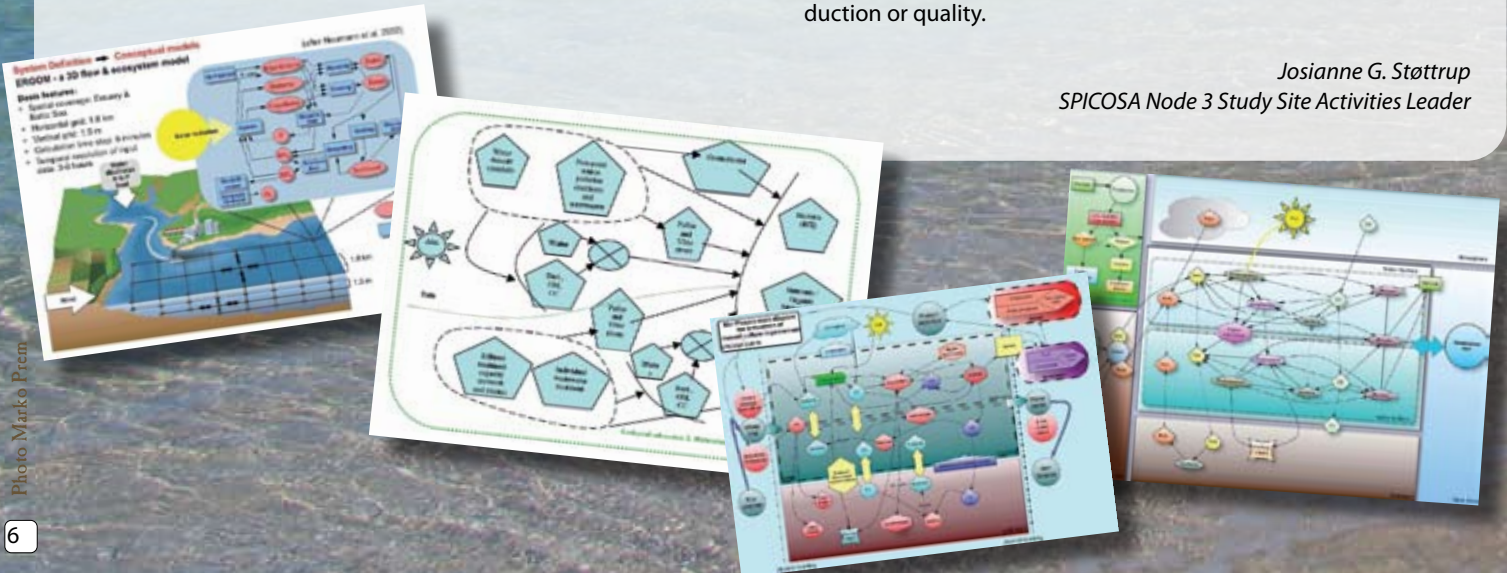
The Formulation Step was launched and with it new problems for the SSAs to tackle. The Formulation Step is very complicated. Simply described this step involves going from the conceptual model to the Extend model, which means describing mathematically the processes and quantifying the various interactions or components described in the conceptual model. Developing the ecological model, and in particular the socio-economic model, is a serious challenge for each SSA. Indeed many SSAs are struggling with the latter model. Again almost all SSAs are struggling with terminology, this time interdisciplinary terms and concepts, since ecologists and economists need to merge their models. The coupling of these models will certainly pose a challenge as scientists from different disciplines will have to meet and work together to develop the interdisciplinary model. Another factor that was perhaps underestimated at the outset is the requirement for modelling experience within the group. Considering the complexity of the models, the SAF iterative process requires a good knowledge of models to be able to “play” with the model and evaluate its efficacy. Also, one should consider how to involve managers in the process, bearing in mind that managers do not have modelling backgrounds and would be unable or reluctant to use Extend.

A closer look

Five SSAs were asked to provide a short summary on their progress with SAF. The sites represent a geographic range north to south and west to east across Europe and include the Oder Estuary Site in the Baltic Sea, Taranto Mar Piccolo in south Italy, Pertuis Charentais on the French Atlantic coast, Barcelona Coast in the Mediterranean and Izmit Bay in the Black Sea.

The Policy Issues chosen by these SSAs reflect those of most of the SPICOSA SSAs and focused on either water quality or mussel production or quality.

*Josianne G. Støttrup
SPICOSA Node 3 Study Site Activities Leader*





Inter-linking Coastal and River Management in the Oder Delta, Germany

In the Oder river at the German/Polish border intensive agriculture, industries and cities cause high loads of the nutrients nitrogen and phosphorus. The river water quality suffers from these loads, but the major consequences are visible in the coastal waters.

The large Szczecin Lagoon can be regarded as a hypertrophic, degraded ecosystem. It largely lacks a submersive vegetation, suffers from severe algal blooms (partly of toxic species) and the water transparency in summer is often below 50 cm. On sunny days without wind, anoxic situations temporary occur and cause fish kills as well as damage to benthos. Untreated sewage water of the city of Szczecin is a source of human pathogenic viruses and has potentially negative impacts on the hygienic (bathing) water quality. Due to regular dredging of the canal and denitrification processes, the lagoon still serves as a retention pond for nutrients and protects the Baltic Sea to a certain degree from pollution, but the poor water quality hampers bathing tourism and nature protection. Water quality will gain importance because most parts of the coastal zone became NATURA 2000 sites and the EU-Water Framework Directive (WFD) demands a good water quality.

The Odra region demonstrates the interrelationships between river basins and the coast and the benefits that could be derived by linking coastal zone management and river basin management. There are several agreements aimed at cooperation between Poland and Germany that relate to coastal zone and river basin management. The International Commission on the Protection of the Oder against Pollution (ICPO) is the most important mechanism. It has the task of coordinating the implementation of the WFD within the international Odra river basin and the preparation of a joint river basin - coastal water management plan.

An integrated river basin - coastal water management requires the integration between policy and science. Science is needed to predict the consequences of the ongoing dramatic political, social, economic and natural changes in this region e.g. on nutrient management. Political and social changes in Poland's transitional economy are strong and ongoing due to its EU-membership. European environmental policy has to be implemented in the entire region. At the same time the demand for bio-energy increases the price for agricultural land and the application of fertilizer and finally, these processes are superimposed by Climate Change.

Science has to provide predictive simulation models which spatially cover the river basin, the coastal zone and the sea. These model systems have to link natural sciences with economy and social sciences. They have to be able to simulate complex future scenarios and to serve as decision support tools for policy. In the Odra region, major steps in this direction have already been done.

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Photo © IKZM-Oder

Photo © IKZM-Oder

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Freshwater management, the Pertuis Charentais practice, France Atlantic coast

The Pertuis Charentais site is located on the Atlantic coast. The area is protected by two islands and characterized by shallow waters (0-15 meters), intertidal mudflats, strong currents, extended wetlands and three main river discharges. The main environment protection features are bird migration site, wetlands protection, sole nursery and benthic habitat. Integrated development schemes collapsed due to conflicts concerning environmental protection, the various space uses and freshwater sharing.

The Pertuis Charentais site team decided to focus on the policy issue relative to the uses of the freshwater of the river Charente. This river is strongly linked to the coastal zone by the large influence of tides. The coastal zone is also influenced by freshwater and shows salinity levels compatible with an important development of oyster culture. Many uses occur inland such as agriculture, raising cattle, urbanization (drinking water supply), tourism and recreation activities. Some of these uses need large volumes of freshwater (such as irrigation) which disturb the hydraulic features of the continuum. The impacts are observed on the quantity and quality of freshwater. To recover the ecosystem quality in order to satisfy different uses, a plan is being developed on the basis of negotiations between different users and administration institutions. At each geographic level, the governmental structures decide upon the basis of thresholds which are defined by minimum flows and volume authorized to be pumped. At the temporal level, a 4 year plan has been defined and is negotiated and refined every year in order to decrease the pumped volumes. The water management plan (PGE) is based on the results of modelling hydraulic features in order to determine and negotiate thresholds to be applied for the freshwater uses in the Charente river.

The SPICOSA approach adopted in the site aims to understand, describe and model the different temporal and spatial scales of this policy issue. The C-MAP model is being used to map some of the features of the system but it is inefficient to visualize the complete conceptual model and particularly the relations between environment, economic, social and governance issues.

Difficulties were identified initially by the scientific team, which revealed that each partner develop its own vision corresponding often to the extent of their discipline or structure domain. This "preliminary" work, which has been done before any meeting with the stakeholders has been followed by joint meetings between the researchers and a limited number of institutional stakeholders. This activity has proved to be the way forward for a shared vision of the system. Surveys and mapping are being further developed to fine-tune the issues at stake. Further actions encompass the use of SPICOSA tools to better engage and to further improve the communication between scientific and local stakeholders before the start of the next step of the systems approach: formulation of modelling scenarios.

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IFREMER
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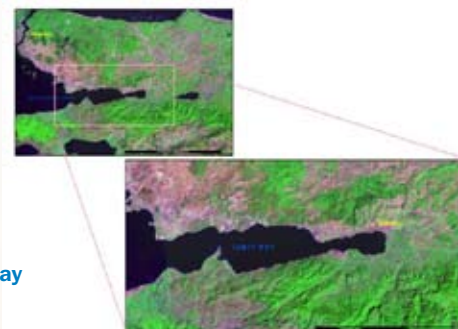
Ecosystem approach in the Izmit Bay, Turkey

Coastal environments are some of the most productive and diverse natural areas on the earth. Densely populated and industrialized coastal areas have serious environmental problems such as pollution and ecological deterioration. In our country, Izmit Bay is the most typical example of this. The way to proceed would be to develop and apply an integrated environmental management system including sustainable use and protection alternatives on an ecological basis.

Izmit Bay is a two-layered water body located at the North Eastern part of the Marmara Sea where brackish waters of the Black Sea overlays the saline Mediterranean water layer. The pycnocline is located at a mean depth of 15-20 m in both systems; having an average salinity of 22 ppt at the surface and 38 ppt at the lower layer. The surface area of Izmit Bay is 310 km², consisting three sub-basins separated with two sills and contractions. The inner-most basin (max. depth of 32 m) is the most deteriorated and anoxic bottom layers are formed depending on the season. The central basin is the largest with a max depth of 180 m, considerably affected by industrial and domestic discharges: major petrochemical industries are located in this area. The upper layer of the whole bay is considered to be eutrophic throughout the year where nitrogen is normally the limiting nutrient. The lower layer has low dissolved oxygen content directly linked with the oxidation of autotrophic and anthropogenic organic material.

Approximately 2 million people live around the Izmit Bay, mainly in 3 large cities, Izmit, Yalova and Tuzla, and several smaller industrial towns. Izmit Bay and its surroundings are one of the most heavily industrialized regions of Turkey, with large petrochemical and chemical plants and ship-yards; heavy steel industries; textile and related industries; pulp and paper processing plants and automotive industries. The Bay has been subjected to pollution by surrounding domestic and industrial discharges since 1970's. The region around the Bay has experienced very rapid population growth in the last 30 years. Pollution prevention attempts have resulted only in decreasing the industrial organic carbon levels in the 1990's. Furthermore, previous studies show that many effluents discharging to the bay are toxic and also contain harmful organic pollutants such as polychlorinated biphenyls and poly aromatic hydrocarbons. On August 17, 1999, a powerful earthquake struck the eastern part of Marmara Region and Izmit Bay, the most industrialized and populated area of the region. Recent investigations showed that the subsequent fire after the earthquake caused an increase in the total PAH concentrations of the local mussels and sediments and the dissolved oxygen content of the lower layer decreased below the detection limit.

Izmit Bay



Unfortunately, until recently the results of scientific studies could not be effectively assessed by managers/administrators and an integration of science and management has not been successful. In view of the above, developing an ecosystem-based management approach - considering the two layered and semi-enclosed water system of the Bay and its environmental factors - is very important for both the future investment/urbanization plans and for conservation of the natural characteristics of the Bay ecosystem and its sustainability. Thus, changes in industrial and domestic discharges will be determined, and their possible effects on the aquatic ecosystem will be predicted. The application of the SPICOSA's System Approach Framework methodology and its tools in Izmit Bay will allow counteraction of the present situation. It is expected that the output of this application will permit local authorities and decision makers to take the necessary and appropriate actions much earlier. Within the SPICOSA approach we also aim to keep the non-science, end-user, community well informed.

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Urban beach management in Barcelona, Spain



The metropolitan area of Barcelona, situated on the north-western Mediterranean coast has a population of greater than two million inhabitants and is a major economic centre following early industrialisation at the end of the 18th century. Barcelona is the capital of Catalonia, an autonomous community of Spain, and is home to one of Europe's principle Mediterranean ports for both cargo and cruise ships, and the second largest airport in the country.

The city is situated on the plateau between the coast and the Collserola mountain range and between the two rivers of the Llobregat, to the south-west, and the Besòs to the north east. The 30 km of linear coastline is broken by various coastal infrastructures such as ports, and protective barriers. Typical Mediterranean hydrological conditions exist such as almost negligible tides and low strength wave activity. The most persistent current direction is to the south-west with an average velocity of between 5 and 10 cm s⁻¹. The oligotrophic marine waters are naturally enriched by the deep Mediterranean waters through winter mixing and sporadically by freshwater land runoff.

The coast receives average discharges from the Besòs and Llobregat of 5 and 20 m³ s⁻¹ respectively although this is subject to extreme variation during storms – rising as high as 2000 m³ s⁻¹. Both rivers pass through urban, industrial and agricultural zones covering river basins of 1000 km² (Besòs) and 5000 km² (Llobregat). During high precipitation events, the city's storm collectors are unable to cope with the large volume of water and untreated urban water run-off is released directly into the coastal waters.

The coastline is almost completely artificial, mostly occupied by the industrial and leisure ports, the rest of which has been regenerated as municipal beaches, totalling around 5 km. Despite hard coastal infrastructures such as groynes and breakwaters, the beaches suffer erosion and require regular regeneration following storms. The beaches were constructed prior to the 1992 Summer Olympic Games on land previously occupied by industrial buildings. Pollution released by these industries for many decades has resulted in the accumulation of contaminated bottom sediment.

Most impacts on the coastal zone are a result of typical urban-related activities such as waste-water treatment plants and soil-sealing due to urbanisation. Marine related impacts stem from pollution from the ports, dredging and dumping. Additionally, agricultural and industrial pollution is released in the river basins, affecting the quality of the coastal water and local fisheries, resulting in the loss of some key commercial species. This impact has also been exacerbated by spatial conflicts between the expanding commercial port and fishing guilds. The beach is popular for both the local residents of Barcelona and the large number of tourists that visit the city. The aesthetic quality of the water is often affected during storms resulting from untreated waste water and the river plumes that form near the river Besòs. Occasionally bathing is prohibited if bacterial levels rise too high or during the presence of harmful algal blooms or jellyfish, thus reducing the recreational appeal of the coastal zone, affecting the revenues of local businesses.

Part of the problem in managing the coastal area in Barcelona is due to the variety of institutions that partake in the process, varying across scales over many stakeholders. For example, at the local level, businesses, fishing guilds, and agriculture and industries in the wider river basins; the regional government of Catalonia controls the near coastline and implements most laws; the national Spanish government holds jurisdiction over the wider marine area as well as the international port; at the international level, the European Union influences many environmental-related policies such as the Water Framework Directive, the Bathing Waters Directive as well as setting fishing quotas.

In the framework of SPICOSA, the theoretical methodology of the systems approach framework is being implemented to examine the possibility that previously unknown interactions caused by complex behaviour between the ecological, social and economic sectors will become evident. The increased understanding could lead to a more effective management of the coastal zone in Barcelona and indeed many other areas. However, this will only be possible if the link between science and policy is solid, as both are complementary and necessary for the process to succeed. This is particularly important for Barcelona where there is strong science regarding many of the policy issues but there is weaker stakeholder participation. The SPICOSA approach will help to resolve these issues and possibly demonstrate a methodological framework that other coastal zones can implement as a route to sustainability.

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Stakeholder participation to improve local economy in Mar Piccolo of Taranto, Italy



Photo Antonella Petrocelli



Photo Antonella Petrocelli



Photo Dragos Micu

The Mar Piccolo of Taranto is an inner, semi-enclosed sea with lagoon features, located north of the town of Taranto and has been the stage for various human activities for a long time. Presently, Mar Piccolo hosts the largest mussel farms in Italy, with production of about 12,000 tons/year; the most important Italian Navy base is also located here, and in addition a fishing fleet of about 300 boats is housed in the basin. Moreover, until a few years ago, many urban sewage outfalls arising from a number of small cities near Taranto, flowed into the basin.

The management of these activities and the need to ensure good and healthy environmental quality, has been the trigger for the study site application of SPICOSA methods and tools. Since the early stages of the project, stakeholder involvement and participation has been the centre of the work of the local team. So far, three local meetings have been organised with the local stakeholders, in order to firstly present the objectives and methods outlined by SPICOSA; secondly, to commonly identify and address the main issues and impacts in the Mar Piccolo of Taranto; and finally to discuss and address scenarios and future developments that could be included in the simulation model.

During the local meetings, researchers and local and regional authorities and other stakeholders have mutually reached consensus and have chosen one theme: **“to address mussel culture in a management plan for the sustainable use of the Mar Piccolo resources”**, and in the framework of this theme, three thematic areas for evaluation have been identified. These are:

- A. the environmental conditions controlling mussel growth
- B. the measures and costs needed for sustainable mussel growth
- C. the effects on human health, deriving from the exposure to hazardous levels of contaminants or micro organisms;

Respectively, it was necessary to define the three thematic areas into specific questions (scenarios) that can be quantified by the Simulation Model. These scenarios are also relevant for the interpretation and implementation of policy and decision-making processes in the Mar Piccolo. The questions (scenarios) have also been commonly defined:

- A1. To what extent would optimal environmental conditions reduce the costs of mussel culture and increase socio-economic benefits?
- A2. What kind of indicators can we use to estimate the mussel growth based on different types of food?
- A3. What would be the nutrients target ratio in order to optimize Mar Piccolo productivity?
- A4. To what degree are either contaminant substances or organisms inhibiting or endangering mussel growth?
 - B1. Are there other uses preventing better environmental conditions for mussel culture?
 - B2. What technological options or policy strategies are available to mitigate these damaging effects?
 - B3. What are the socio-economic consequences of these options or strategies?
 - C1. What are the implications to human health due to mussel uptake of hazardous substances or microorganisms?
 - C2. What are the health costs resulting from the exposure to these contaminants?

The local meetings were truly inspiring and made evident the growing interest in the SPICOSA approach, expressed by the recognition of the local problems by the stakeholders, as well as their willingness for collaboration.

A fourth meeting is already scheduled to be held in Autumn 2008, in which the local team intends to engage and widen the group of participants, involving the representatives of the field operators, hoping to reach a more complete level of collaboration. Without a doubt, mussel cultivation surely plays an important role in the Taranto economy from time immemorial and, from this collaboration, mussels from Taranto could achieve a proper classification in the same way as other national products.

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ICZM and Marine Strategy in Europe – state of affairs

This issue of CoastLine is dedicated to the EU co-funded SPICOSA project which supports the implementation of ICZM policy. What is the state-of-play in Europe as regards ICZM policy? What is at stake with the new Marine Strategy Framework Directive? The CoastLine editors asked key-players in the European Commission: Georges Kremlis (Head of Unit in DG Environment and chairman of the EU ICZM expert group) and Peter Gammeltoft, (Head of Unit Water and Marine in DG Environment).

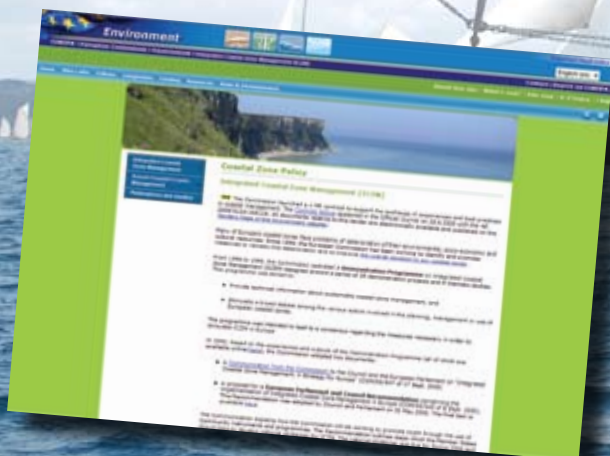


Georges Kremlis
European Commission
Head of Unit Cohesion Policy and Environmental Impact Assessments and
Chairman of the EU ICZM expert group
Directorate-General Environment

Last year's Commission evaluation of the EU ICZM Recommendation concluded that further support of ICZM in Europe is necessary. What actions are being taken to turn this conclusion into practice?

The evaluation confirmed the approach and the principles of ICZM as enshrined in the EU Recommendation. The evaluation also showed that gradually, though slowly, Member States are making progress towards more integrated planning and management of their coastal zones. With the EU ICZM Recommendation still being the valid framework to progress at EU level, we need to support a more coherent and practical implementation of ICZM in Europe. In line with this conclusion, DG Environment has launched a major call for tender of € 1 million, to set up a system of best practice exchange and analysis.

There are numerous projects and networking efforts, but these are often limited to the time-span of a project. Once the project finishes, the website shuts down and the valuable lessons learnt are no longer disseminated. Moreover, the projects are approached on an *ad-hoc* basis. We do not really bring the project results together to draw policy conclusions from them. The future contract therefore includes a significant part of comparative analysis and formulation of guidance, and obviously dissemination! In the medium term this action should also provide us with a basis to review the EU ICZM Recommendation.





The evaluation also indicated that a regional sea based approach should be promoted. What is being done in that respect?

More support to the practical implementation of ICZM raises the question of relevant scale of implementation. There is now consensus that the regional seas context is the most relevant for coastal zone management. Covering both land and sea, the Cohesion Policy is probably the privileged instrument at EU level to support ICZM in the regional seas. This will further be strengthened by the development of the territorial cohesion principle enshrined in the Lisbon Treaty and complementing the more traditional socio-economic cohesion objectives of the EU. A "Green Paper" (a policy discussion document) is due on the subject later this autumn. But already now, the transnational programmes for the period 2007-2013 actually *all* include opportunities for funding of integrated coastal and marine management. I must stress, however, that these programmes, once adopted, operate through a bottom-up approach: it is up to the regions and agencies to come up with projects and seize the funding opportunities offered. I sincerely hope that we will see numerous robust and structural projects coming forward from partners in the regional seas, building for instance on the work of INTERREG projects, such as DEDUCE in the past programming period.

More focus on regional seas also implies that we will work more closely with the existing organisations and conventions in, and around Europe's regional seas. Earlier this year, in January, a milestone was achieved in the Mediterranean with the adoption of the ICZM Protocol to the Barcelona Convention. It will provide the Mediterranean with the very necessary legal framework to promote ICZM and to curb unsustainable coastal development trends. It is now up to the Parties to the Convention to formally sign and to ratify the Protocol. Nearly all Mediterranean Member States of the EU have signed the Protocol in the meantime, and we hope that the procedures for the signature of the EU can be concluded by the end of the year and will be followed in due course by EU ratification.

This issue of CoastLine is dedicated to the EU co-funded research project SPICOSA. How will coastal research be promoted?

We currently have a very interesting portfolio of research projects, with SPICOSA, CONSCIENCE and ENCORA in particular. The recent calls for research projects again featured coastal topics. This trend will continue. Supporting coastal research and making it more operational is a necessity, if we want to give full effect to the knowledge based approach which is central to ICZM. However coastal research is still fragmented and this hampers its use by decision-makers and practitioners. In this respect, I hope that the Maritime Research Strategy, as part of the EU Integrated Maritime Policy, will allow us to make a significant step forward. Facilitating the use of research by decision makers and coastal practitioners will require a stronger interdisciplinary approach. Moreover, we need to achieve a much more systematic dialogue between researchers and users, beyond the scope of user-panels of single projects.



Peter Gammeltoft
European Commission
Head of Unit Water and Marine
Directorate-General Environment

These interviews were given in a personal capacity. The opinions expressed do not commit the European Commission and do not necessarily represent the official position of the European Commission.

The EU's maritime policy is seen as a part of the Lisbon agenda for growth and jobs. Is protection of the environment not being marginalized?

No, on the contrary. There is growing recognition that keeping the environment in good shape is a necessary condition for maintaining the variety of benefits that we expect from it. Overexploitation of resources is very short-sighted. We can witness that every day. We need a healthy balance in the ecosystem to maintain its full functionality and resilience. So there is no contradiction in the idea that we can exploit maritime economic opportunities at the same time as becoming better and more effective in protecting the marine environment. The European Council of December 2007 confirmed the Commission's proposal that the Marine Strategy Framework Directive¹ is the environmental pillar of the EU maritime policy. The directive's objective is "good environmental status for marine waters by 2020" and "keeping pressures of human activities within levels compatible with that status" through the application of an "ecosystem-based approach". Through an integrated maritime policy that addresses economic, social and environmental aspects in a coherent and co-ordinated way we are one step higher up the ladder towards sustainable development. The new directive entered into force on 15 July 2008, so we have a whole new instrument to make substantial progress in marine environmental protection.

Climate change and energy policy are becoming important drivers for changes in the marine and coastal environment. What is the EC doing to limit impacts on coasts and seas?

The Earth's water system is part of the climate system. We see some of the dramatic effects of climate change first in the water system. There are profound large-scale effects and more regional and localized effects that affect coasts. As an example of a very large-scale effect, historic CO₂ emissions seem to have burdened the oceans to such an extent with absorbed CO₂ that marine biologists now fear that the resulting acidification will start to affect the photosynthetic algae at the bottom of the food chain. We know too little of the potentially vast consequences. We thus need to continue the vitally necessary reduction of greenhouse gas emissions. At the same time, we need to prepare ourselves for the now unavoidable aspects of climate change and adapt to them. We also need to understand much better how the marine ecosystems work and evolve as a result of climate change, in order to make the ecosystem-based approach of the new directive operational. The Commission is taking action in all these areas.

We already have the Water Framework Directive (WFD) for the quality of coastal waters. How does the new Marine Strategy Framework Directive (MSFD) fit with it?

Most EU countries now have invested substantially in making the Water Framework Directive of 2000 operational. We expect them to develop their river basin management plans by the due date in 2009, in order to reach the 2015 objectives of that Directive. Coastal waters, and to some extent the adjoining territorial waters, are covered by the WFD. At the same time, the new MSFD requires that the marine waters should be treated in a coherent way, not artificially cutting off the important coastal margins. The agreed solution is a dynamic complementarity with the WFD taking precedence in coastal waters. In this way, the application of both directives should not lead to contradictory or cumbersome overlapping requirements.

¹ Directive 2008/56/EC of 17 June 2008. <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:164:0019:0040:EN:PDF>

Maritime Spatial Planning – an implementation tool for the Integrated EU Maritime Policy

Rationale – The need for an all-embracing Maritime Policy

“The seas are Europe’s lifeblood.”¹ The geographical reality of the Continent being a peninsula with thousands of kilometres of coast means that over two thirds of the Union’s borders are coastal and that the maritime spaces under the jurisdiction of its Member States are larger than their terrestrial territory. Since centuries the oceans have played a leading role to design and determine Europe’s culture, identity, and heritage.

The interrelation of all matters relating to Europe’s oceans and seas notwithstanding Community policies² so far have been developed primarily with a sectoral approach. But a fragmented way of policy making can result in the adoption of conflicting measures, which in turn have unintended consequences on the marine environment or may impose disproportionate constraints on competing maritime activities.

Therefore, a new vision for the management of Europe’s relation with the oceans and seas has been developed. On 10 October 2007 the European Commission adopted a Communication setting out the vision for an Integrated Maritime Policy for the EU³ together with a detailed Action Plan⁴ setting out a work programme for the years ahead. This vision was welcomed by the European Council of December 14, 2007 and the Commission was invited to come forward with the initiatives and proposals contained in the Action Plan.

The new Integrated EU Maritime Policy recognises that Europe’s maritime spaces and coastal areas are central for its wellbeing and prosperity. Virtually all human activities have a maritime impact – may it be direct or indirect. Technology development, innovation and increased know-how on the one hand allow for extracting ever more value from the sea. On the other hand maritime space is a limited resource and cumulated effects of all the activity at sea lead to conflicts of use and increasing competition for space and resources.

Sustainable development is at the heart of the EU agenda⁵ and thus of maritime policy. This is reflected by the holistic, cross-sectoral approach of the policy. It aims to enhance Europe’s capacity to face challenges imposed by globalisation, competitiveness, climate change, degradation of the marine environment, maritime safety and security, and energy security and sustainability. The Integrated EU Maritime Policy is based on excellence in marine research, technology and innovation, and is anchored in the Lisbon and Gothenburg agendas.

An integrated governance framework as set out in the EU Maritime Policy requires horizontal planning tools that cut across sea-related sectoral policies and support joined up policy making. Such tools will help policy makers and economic and environmental actors to join up their policies, interlink their activities and optimise the use of the marine and coastal space in an environmentally sustainable manner. Maritime spatial planning is one of these fundamental tools. It will play a major role for the implementation of the Integrated EU Maritime Policy.⁶

¹ Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – the “Blue Book” (COM (2007) 575 final)

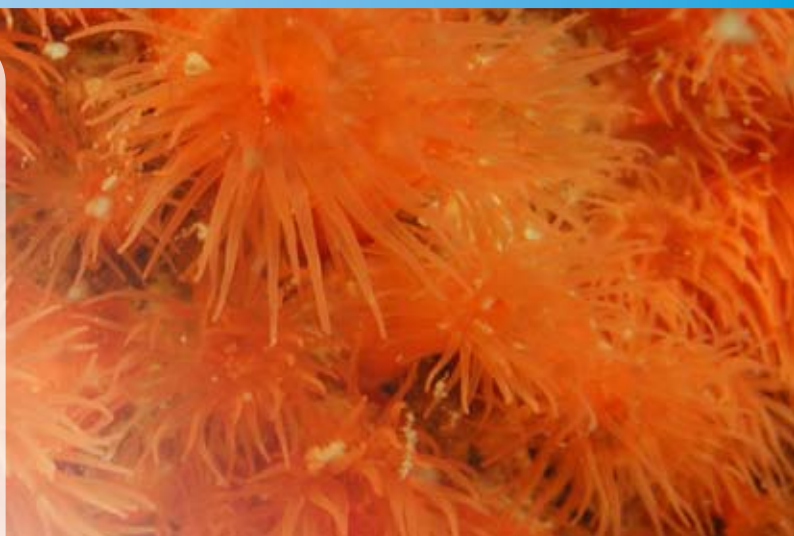
² For example policies on maritime transport, industry, coastal regions, offshore energy on the marine environment.

³ COM(2007) 575 (the “Blue Book”), 10.10.2007

⁴ SEC(2007) 1278, 10.10.2007

⁵ Communication from the Commission to the Council and the European Parliament on the review of the Sustainable Development Strategy: A platform for action – COM(2006) 658 final/2

⁶ The other integrated tools as set out in the Integrated Maritime Policy Communication COM(2007) 575 (the “Blue Book”), 10.10.2007 comprise the development of a more integrated network of surveillance systems for European waters and an EU Marine Observation and Data Network (EMODNET) to optimise and bring coherence to the current fragmented initiatives that gather data on oceans and seas.



Maritime Spatial Planning – a Process

Existing planning frameworks have a largely terrestrial focus and often do not address how coastal developments affect the sea and vice versa. Increased activities on European coasts and seas have led inevitably to growing competition between different sectors and stakeholders for limited marine space. A **coordinated approach to the allocation of marine space** is urgently needed in order to achieve a sustainable development of maritime areas and coastal regions, and to aid the restoration of Europe's seas to environmental health.

Maritime spatial planning is a coordinated, holistic approach that is reaching beyond managing and protecting the marine environment. The purpose of maritime spatial planning is to secure sustainable and integrated development which balances and, where appropriate advances economic, social and environmental objectives. It seeks to integrate all relevant maritime sectors and human activities - **no sector is given priority over the other**. It is building on the ecosystem approach and allocates space in a rational manner.

Maritime spatial planning can be implemented through various instruments of which zoning is only one possible option. It is far more than the mere existence of a plan. **Maritime spatial planning is a process** that may begin with a data collection and progress through stakeholder consultation into the participatory development of the plan. The adoption of a given plan is a stage in the process – one that continues with its implementation, enforcement, evaluation and subsequent revisions or amendments.

Despite some similarities maritime spatial planning **differs significantly from terrestrial planning**. Maritime spatial planning must operate in three dimensions by simultaneously addressing activities that take place (a) on the sea bed; (b) in the water column; and (c) on the surface. Furthermore, maritime spatial planning must take account of both fixed structures, such as oil rigs and wind farms, and transient activities such as navigation (both surface and submarine) and capture fisheries. One could even state that maritime spatial planning is a four-dimensional process that includes the time dimension. Particular uses might in general not seem to be complimentary but could become complimentary if sensitive time periods are appropriately taken into account.⁷

Maritime spatial planning is relatively new and its implementation at national level currently remains limited. However, several EU Member States have started to develop integrated management strategies for their sea areas. The activities vary significantly regarding their legally binding function and their sectoral coverage. Some Member States have developed – on the basis of their terrestrial planning law – maritime spatial plans that will become executive order law once the consultation process is finalised (e.g. Germany). Others have developed strategic or integrated management plans that are not legally binding but aim to give guidance to the maritime sectors regarding the sustainable use of marine resources (e.g. the Netherlands and Norway). Furthermore, policy framework documents – Marine Bills – have been prepared (by the UK and Scotland) or are currently under preparation (e.g. by Sweden) to implement a national integrated maritime policy and to steer future maritime development in a sustainable way. Maritime spatial planning plays in all these documents an important role to implement a coordinated approach to the allocation of marine space.

⁷ One example could be arrangements between fisheries and marine protection. Conservation objectives might be achieved in parallel with fisheries activities if particular sensitive spawning areas are closed for fishing only during a certain time period of the year. However, reliable and accessible data to measure the compatibility of maritime uses remain very limited and further research is urgently needed in this field.



Outlook – the way ahead

The European Commission is currently preparing a **roadmap on maritime spatial planning**. The aim of this document is to facilitate the development of maritime spatial planning, to encourage its implementation both at national and transnational level and to stimulate further discussions regarding the future perspectives for maritime spatial planning between Member States, and the European Commission. At the heart of the roadmap will be a chapter on key principles for maritime spatial planning that can be regarded as cornerstones for the use of maritime spatial planning in the EU. These principles will be either derived from existing planning approaches and projects or from existing international and EU instruments.

Maritime spatial planning doesn't stand just on its own. It has been based on existing EU initiatives with a strong maritime spatial planning dimension including the ICZM recommendation.⁸ Coastal zones are the "hinge" between maritime and terrestrial developments and their integrated management is closely linked to maritime spatial planning. One of the major challenges for the future will be to ensure continuity between maritime spatial planning and terrestrial planning.

The recently adopted Marine Strategy Framework Directive⁹ is the so-called environmental pillar of the Integrated Maritime Policy. The Directive supports the implementation of maritime spatial planning through its request towards Member States to achieve or maintain good environmental status in the marine environment by 2020. It particularly asks EU Member States to develop marine strategies for their marine waters and to cooperate if they are sharing a marine region or subregion (article 5). Annex VI of the Directive explicitly mentions programmes of measures amongst which are management measures that influence where and when an activity is allowed to occur and tools to ensure that management is coordinated – in other words maritime spatial planning. In order to achieve the defined objectives of both the Integrated EU Maritime Policy and the Marine Strategy Framework Directive the different Commission services will continue to closely work together.

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This article reflects the author's personal view. It does not necessarily reflect the opinion of the European Commission.

⁸ Recommendation of the European Parliament and the Council concerning Integrated Coastal Zone Management (EU ICZM Recommendation), 2002/413/EC, OJ L148, 6.6.2002

⁹ Directive 2008/56/EC of the European Parliament and of the Council establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive), 17 June 2008

ICZM in the HELCOM HABITAT Group

Integrated Coastal Zone Management has been one of the most important issues discussed by the HELCOM HABITAT Group for years. What is more, in 2003, HELCOM HABITAT took an active role in preparation and finalization of a HELCOM Recommendation 24/10 on ICZM. Integrated Coastal Zone Management was recognized by HELCOM HABITAT as an important tool for integration of different approaches to nature conservation. Especially the aspect of adequate protection of the most valuable natural habitats and species in the Baltic Sea coastal zone under the Baltic Sea Protected Areas (BSPAs) network was always interesting for the HELCOM HABITAT Group. ICZM is also important for HELCOM HABITAT because it is a fundamental tool to integrate protection of natural habitats, biotopes and species and sustainable usage of marine and coastal zone resources and values by human.

Implications of the Maritime Policy for the HELCOM HABITAT Group

In October 2007, the EU presented its vision for an Integrated Maritime Policy for the European Union. According to the Maritime Policy an integrated governance framework for maritime affairs requires horizontal planning tools that cut across sea-related sectoral policies and support joined up policy making. At the same time, maritime spatial planning was recognized to be a fundamental tool for the sustainable development of marine areas and coastal regions, and for the restoration of Europe's seas to environmental health.

In the process of the implementation of the maritime spatial planning under the Maritime Policy in a regional perspective, HELCOM HABITAT could have the leading role for the Baltic Sea. Spatial planning however is not just protection of natural resources and BSPAs. In order to implement ICZM successfully, such elements like maritime transport, fishing, aquaculture, leisure activities, off shore energy production and other forms of sea bed exploitation should be taken into account. That means that all working groups of HELCOM should be involved in this process. HELCOM could act also as a focal point for the development of GIS database for the Baltic Sea.



Biodiversity Segment within the HELCOM Baltic Sea Action Plan

As a regional Convention, HELCOM recognised its important, leading role as a coordinator in the implementation process of the Marine Strategy Framework Directive, and at the same time, the environmental goals of the Maritime Policy in the Baltic Sea region. In order to fulfill the requirements of the Marine Strategy Framework Directive, all Contracting Parties to HELCOM have jointly prepared the HELCOM Baltic Sea Action Plan, regional strategy for the restoration of the environment of the Baltic Sea. The document was adopted by the Ministers of the Environment of the Baltic Sea countries on the 15th of November 2007 in Krakow, Poland. According to the biodiversity segment of the Action Plan, all Contracting Parties to HELCOM should *jointly develop by 2010 as well as test, apply and evaluate by 2012, in co-operation with other relevant international bodies, broad-scale, cross-sectoral, marine spatial planning principles based on the Ecosystem Approach*. Within that task, they should focus on giving guidance to the planning and ensuring the protection of the marine environment and nature, including habitats and seafloor integrity as well as securing sustainable use of marine resources by reducing user conflicts and adverse impact of human activities.

HELCOM Recommendations 28E/9 on spatial planning and HELCOM SCALE project.

The Baltic Sea Action Plan also includes new HELCOM Recommendation 28E/9 which focuses on development of broad-scale marine spatial planning principles in the Baltic Sea area. It was prepared and finalized mainly by the members of HELCOM HABITAT Group. It indicates the most important actions which should be taken in the spatial planning process within the regional perspective. It recommends that there is a need for consultations concerning activities which may have negative transboundary effects on the environment and coastal populations, identification and mapping of conflicting interests, obligations and uses of the sea as well as filling in data gaps in spatial data.

In order to implement the recommendation in the Baltic Sea region, the HELCOM SCALE project was established. One of the main tasks of the project is to develop further a marine and coastal GIS database for the Baltic Sea.

Challenges ahead

Dealing with ICZM issue for years, HELCOM HABITAT has learned how difficult it is. The Group has identified a few main obstacles in the process of its implementation. Lack of GIS spatial data concerning, especially, valuable marine habitats and biotopes is one them. Another is a lack of proper integration between different policies, sectors and actions within the Baltic Sea region. Therefore, Baltic Sea States should develop joint solutions to the problems associated with access to spatial data and implement a cross-sectoral approach to ICZM. Additionally, a GIS map of interacting and/or conflicting interests should be created. Clear consultation procedures with all interested stakeholders should be established. In the Baltic Sea region there is still a lot of work to do.

Katarzyna Roszkowska

Chairman of the HELCOM Nature Protection and Biodiversity Group
(HELCOM HABITAT)



The Mediterranean Protocol on ICZM: A New Tool for Coastal Governance

Since the mid eighties, Integrated Coastal Zone Management (ICZM) has been gradually introduced as a tool for sustainable coastal development in many Mediterranean countries. But, numerous efforts have not brought fully satisfactory results, either in terms of significant improvement of the ecological status of coastal, marine and terrestrial, areas or in improvement of coastal management practices. New, and structurally more important, impetus for ICZM in the Mediterranean was needed. Thus, in 2001 the Mediterranean countries, gathered around the Barcelona Convention, decided to work on the Protocol for ICZM.

The signing of the Protocol came after a six-year process of consultation, negotiation and refinement of the text. Fourteen Contracting Parties to the Barcelona Convention signed the Protocol at the Conference held in Madrid on 21 January 2008, and the others announced to do so in very near future. The Parties are now urged to ratify the Protocol so that it could enter into force as soon as possible. The ICZM Protocol has become the seventh Protocol in the framework of the Barcelona Convention and represents a crucial milestone in the history of the Mediterranean Action Plan (MAP). It will allow the Mediterranean countries to better manage and protect their coastal zones, as well as to deal with the emerging coastal environmental challenges, such as climate change. The Protocol should ensure sustainable development of the coastal zone; sustainable use of natural resources and integrity of coastal ecosystems, landscapes and geomorphology; prevent the effects of natural hazards; and help achieve coherence between public and private initiatives. The Protocol is composed of 7 parts and 40 articles.

While it is too early to evaluate the implementation of the Protocol, it is possible to make an early assessment of its impact. Above all, the Protocol is bold. It is the first international legal instrument that provides a clear definition of the coastal zone and requires the definition of a minimum 100m of coastal setback. It is innovative, since it tackles a number of issues for the first time ever in the field of ICZM legislation, namely: islands; cultural heritage; land policy; economic, financial and fiscal instruments; natural hazards; and coastal erosion. The Protocol is forward-looking and proactive: it aims at preventing and not only reacting to coastal problems. It is comprehensive because, in addition to the issues that are "traditionally" contingent to ICZM, it covers a number of new issues that are considered as crucial for coastal environment and its protection in the 21st century. In this respect, the issue of risks affecting the coastal zone deserves a special mention. Finally, the Protocol is integrated. It sets out to ensure institutional coordination, coordination of national, regional and local authorities, involvement of non-governmental organisations and other competent organisations, as well as the integrity of sea and land areas.



The Protocol is very precise on a number of specific issues, viz. defining the coastal zone; defining Integrated Coastal Zone Management; defining the setback zone; formulating and developing the coastal strategies; formulating the Environmental Impact Assessment for public and private projects, and Strategic Environmental Assessment for plans and programmes which affect the coastal zone; developing policies for preventing natural hazards, particularly those resulting from climate change; applying the ecosystems approach to coastal planning and management; and reporting requirements.

The major added value of the Protocol is that it will help mitigate the risk of *status quo* reflected in the danger that environmental deterioration will continue if no action is being taken. Then, there is a great value in the very process of the Protocol's development. The Parties have shown a great degree of willingness to have such a document, as well as flexibility while negotiating it. Furthermore, the Protocol is a unique endeavour on a world scale. Although it is well known that ICZM is a process which is costly, technically, institutionally and administratively very complicated, time consuming, not always easily understood by all the actors and one that creates many opponents and scepticism, the countries have managed to complete the Protocol negotiation process successfully.

The Protocol applies to the Mediterranean Sea area only and will have a significant impact on those EU countries bordering it. The seaward limit of the Protocol, as defined, is set at the external limit of the territorial sea of the Parties. In this respect, the Protocol is closely related to the EU Maritime Policy, which puts special emphasis on the development of coastal regions and on ICZM as a

tool to manage them sustainably. The Protocol's provisions require countries to start acting responsibly in all maritime economic sectors, and to pay specific attention to protecting specific coastal ecosystems, coastal landscapes, islands, and cultural heritage. To do so, the Protocol offers a range of environmental assessment, land policy, economic, financial and fiscal instruments.

What are the challenges laying ahead?

The initial enthusiasm for such an innovative instrument can die down. Some countries may adopt and ratify it, as they did in many instances before, but may not provide adequate resources and not show enough political will to implement it. Since the Protocol is a complex legal document, its ratification has to be followed by relevant national legislation putting adequate implementation instruments in place. That may not happen at all, or not fast enough. There may be a growing opposition to the application of some of the "sensitive" articles, such as one on defining the coastal setback. Having all the above in mind, it is of utmost importance that all those responsible for the Protocol's implementation are being constantly reminded by all elements of the civil society that the Protocol is a not an option but a necessity.

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Director, Priority Actions Programme Regional Activity Centre (PAP/RAC)
Mediterranean Action Plan
Split, Croatia

The future for coastal and marine policies – SPICOSA Outlook

CoastLine editors talked to the SPICOSA Scientific Coordinator Thomas Sawyer Hopkins about the relevance of SPICOSA to the European coastal and marine policy context.

How does the SPICOSA approach contribute to a better understanding and implementation of coastal and marine policies?

The key challenge of SPICOSA is linking science and policy in order to contribute to a better understanding of the coastal and marine system and consequently pursue sustainable development of coastal areas. The greater understanding derives from the capacity to quantify numerous interactions associated with a single or multiple changes in a complex system. Such a capacity is essential to anticipating changes and self-organizations within complex systems. As an Integrated Project (as presented in project set-up diagram), SPICOSA is attempting to stimulate a change in what research does (applying systems analysis) and a change in how research can contribute to the social, economic, and governance sectors of society. This is an ambitious task, and its success will depend on whether the effort can demonstrate the scientific methodologies and the effectiveness in communicating information to the policy sector.

But will SPICOSA really be able to make policies more effective?

Whether the SPICOSA approach will be effective or not in the implementation of more sustainable policies is a somewhat separate question, because this effectiveness would depend on policy's willingness and capability to make better use of the information made available to them. In many situations, decision making is made by individuals or groups of individuals who have not uniformly been exposed to such projects as SPICOSA but are trying to facilitate decision-making in the context of sustainable development. However, it is certain that integrating science into policy is essential to extracting the best (in the sense of: most sustainable) decisions regarding what and how policy must change.

The next steps of the SPICOSA study sites activities will complete the methodological systems approach and provide interpretations and a portfolio of products for coastal systems assessment. What will this legacy mean for future coastal zone systems management?

In practical terms, it will mean that decision makers and managers can have interactive tools to explore decision scenarios either through their own laptop or through brief consultancies, depending on the scope of the scenario. They might want to explore a cost-benefit valuation of implementing sustainable technical options, the benefits of policy strategies addressing multiple impacts (instead of single issue directives), or how best to install an intelligent monitoring or modelling programme that will give quasi-real-time assessments of, e.g. water quality, fishery limits, ecosystem health, etc.

What are other issues that can profit from the SPICOSA approach?

The Systems Approach Framework - the SPICOSA Methodology - is a general tool and is not specific to any system (such as coastal zones), to any discipline (e.g. ecology), or to any interest (i.e. policy, industry etc.).

Sustainable Development is an overarching goal to better manage our resources, provide more equitable governance, and a more stable economy. This goal is not a fixed target, *per se*; it is a concern about the direction of change. For complex systems, it is much easier to evaluate a policy in terms of its potential to change a situation as opposed to its potential to achieve a specific goal. This is sometimes referred to as incrementalism, by which an imperfect policy implemented is better than a perfect policy that is not implemented, and many imperfect policies pointed in the same direction is much better than a single perfect policy implemented. This is why SPICOSA studies **change**, rather than status, and why it is guided by a broad, holistic approach that keeps track of all issues, rather than a detailed approach that focuses on single issues.

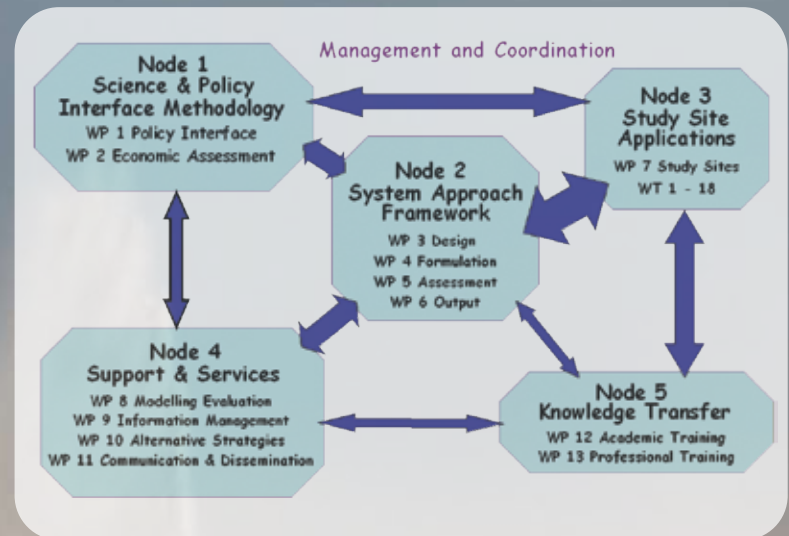
The systems theory focuses on interactions between components more than on the components themselves. It is the health of the interactions within complex systems that provide the stimulus its self-organization to more stable structures. For example, preventive medicine and healthy life-style are considered the best insurance of good health because they assist the body to maintain a best level of immunity.

And what about Climate Change?

This is certainly another example of how the SPICOSA methodology can serve other policy areas. The atmosphere is a complex system, which has had a relatively stable dynamic equilibrium over interannual scales. The destabilizing effects of unprecedented increases in CO₂ concentrations are becoming apparent and portend a reorganization of the earth's atmospheric, oceanic, and terrestrial systems that certainly will not favor the current anthropogenic system. Preventive solutions to Climate Change are those that focus on helping the atmosphere reduce its CO₂ levels. Counteractive solutions are those that temporarily reduce the increases in CO₂; and adaptive solutions are those that try to accommodate the change without addressing the root cause. While all three solutions may be needed, it is very easy to identify policies directed at these three levels. The tragedy of Climate Change will not be attributed to lack of knowledge about problems or technical solutions; it will be about the failure of formulating and implementing policies based on this knowledge. The similar analogy can be made with respect to policies addressing declining ecosystems, worsening of social conditions, and economic inequalities, all issues SPICOSA is dealing with at the smaller scale of coastal zone systems.

*Thomas Sawyer Hopkins
SPICOSA Scientific Coordinator*

SPICOSA project set-up



Node 1 produces reference material in the areas of social assessments, deliberation support tools, and methodology for economic evaluation that will serve the objectives of Systems Approach Framework (SAF) development and science-policy interfacing. Each of these activities is placed under the responsibility of a small group of partners that will then serve as a support group to teams in charge of SAF implementation in Study Site Applications (SSAs).

Node 2 is in charge of SAF development. It is implemented by forming working groups to produce methodological frameworks. The work is divided into work packages and work tasks that represent a succession of steps. A small core group is responsible to prepare and deliver. The core group interacts with a larger group of researchers representing the study site teams in charge of SAF application. The SAF develops as an operational decision support system along with these interactions.

Under **Node 3**, 18 Study Sites have been selected to develop an application of the SAF in an interactive manner with local stakeholders. For each SSA a collaborative team involving different core partners in association with affiliated partners is formed. Some involve international collaboration.

Node 4 provides support and services to the whole SPICOSA community, in particular model support, internal and external information management, and an assessment of alternative strategies and technologies for Integrated Coastal Zone Management.

Node 5 concerns knowledge transfer activities, both academic and professional training.



SPICOSA

WWW.SPICOSA.EU

Coastal WIKI: a tool box for SPICOSA and coastal stakeholders

Although morphology, biology and the policy and legal frameworks differ across coastal Europe, analysing experiences and making lessons available is a worth-while effort. This is why SPICOSA has a work package specifically aimed at evaluating global ICZM policy experiences, technical options, and strategies for monitoring dynamic indicators, classifying them based on their relevance to sustainable development for European coastal zones, and making the results of this research accessible to SPICOSA and other ICZM scientists and practitioners.

The Coastal Wiki (www.encora.eu/coastalwiki) developed under SPICOSA's sister project ENCORA, was the natural choice when it came to deciding on the dissemination tool. The Coastal Wiki is an Internet encyclopaedia based on the same principle as the Wikipedia. An important difference is that it is not possible to edit anonymously at the Coastal Wiki and that all content is related to sustainable coastal management. The Coastal Wiki targets policymakers, scientists, practitioners and other stakeholders and is therefore putting emphasis on avoiding very technical language while still being as precise and exact as possible.

The Wiki articles can be consulted and queried from different angles, depending on whether one is concerned with problems related to bathing water quality, eutrophication or biodiversity loss, or whether one is more interested in searching for available policy instruments, legislation, economic measures, planning or public participation tools. It will also be possible to use the Wiki to identify the causes or driving forces of policy challenges. The articles will be based on research, literature reviews and reports from Study Sites of SPICOSA.

With the help of the Coastal Wiki, SPICOSA will develop a database of technical and policy instruments, which is informative and understandable for the educated stakeholder community. The second and ultimate goal is to support decision-makers by providing them access to effective and flexible ICZM policy options developed in Europe.

The Coastal Wiki is expected to be a useful tool for both writers and readers. It will make it possible to learn from each others' failures and successes, but we must also be realistic in our expectations. Even if local experiences often have some transfer value, they also have a lot of limitations. It is obvious that climatic, geographical and biological differences must be taken into considerations, as well as political and cultural differences. Policy instruments often have social and historical roots and have therefore limited transfer value. Nevertheless, we can expect the policy and technical instruments database in the Coastal Wiki to be an important pool of ideas for scientists and politicians in the years to come.

Berit Skorstad, SPICOSA Work Task leader



www.encora.eu/coastalwiki