Title:

The Strategy for Coastal Sustainability: a Spanish initiative for ICZM

Short title:

Spanish Strategy for Coastal Sustainability

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Abstract

The Spanish Strategy for Coastal Sustainability (SCS) was an initiative aimed at implementing coastal interventions under the principles of Integrated Coastal Zone Management (ICZM) and improving the state of the coast at the Spanish national level. The SCS, promoted by the Spanish Ministry of the Environment, started as a broad national strategy in 2005 and was finally delivered as a coastal planning instrument at the regional level in late 2007, designed to address coastal policies within the Spanish maritime-terrestrial public domain (MTPD).

The initiative was triggered by the increasing pressure on the coastal zone and its preparation was supported by different European initiatives, first of all the European Recommendation on ICZM (413/2002/EC), while taking into consideration the future requirements of the Mediterranean Protocol on ICZM of the Barcelona Convention, signed in February 2008.

Technically, the preparation of the SCS included four steps: (i) a Stakeholder Identification and Engagement process, including a stocktaking of the laws and regulations, (ii) the design of a broad Strategic Framework for the Spanish coastal zone, including a set of specific objectives and the instruments for its implementation, (iii) the signature of cooperation agreements for ICZM between the central government and the regions and (iv) a detailed Technical Diagnosis at the local scale, designed to address future coastal interventions in the maritime-terrestrial public domain and its areas of influence.

This paper aims to: (i) illustrate the triggering factors of the SCS, including the Spanish coastal issues, the administrative framework at the national level and the European and international policies addressing coastal management, and (ii) illustrate the approaches and methodologies used for the preparation of the SCS, reporting the most relevant quantitative results.

The paper concludes that the SCS gave a strong contribution in the construction of a base of knowledge for the coastal zone and to improve coastal management practices. Despite this, complex distributions of competences still undermine the implementation of strategic interventions. In this context, the future ratification of the ICZM Protocol of the Barcelona Convention represents an opportunity to use the SCS process results and improve coastal management practices and the state of the coast.

Keywords

Spain, ICZM, coastal issues, Spanish Strategy for Coastal Sustainability, EC ICZM Recommendation, Mediterranean ICZM Protocol, Stakeholders Engagement, ICZM Strategic Framework, ICZM Agreements, Technical Diagnosis.

1. Introduction

The Spanish coastal zone, especially along the Mediterranean Sea and in the Balearic and Canary Islands, is characterized by a growing pressure in terms of urban development, whose consequences include, among others, the exposure to coastal erosion and risks, the decrease of coastal waters quality, the depletion of living and non-living resources, limited public use and accessibility and an increased number of conflicts of competences between administrations.

The Strategy for Coastal Sustainability (SCS), launched in 2005 by the Directorate General for the Coasts of the Spanish Ministry of the Environment (DGC-MMA), was a national-scale initiative intended to address coastal issues based on a detailed diagnosis and on the identification of strategic interventions at the local level, under the principles of ICZM. At the same time, the initiative was thought as an approach to solve conflicts among uses, users and administrations, aiming at more sustainable forms of coastal management. In the background, the European Recommendation on ICZM 413/2002/EC and the future Mediterranean Protocol on ICZM of the Barcelona convention were the international requirements supporting the process.

In Spain, the DGC-MMA is in charge of protecting and managing the Maritime-Terrestrial Public Domain (MTPD), under the mandate of the Coastal Law of 1988. The MTPD covers the shores of the seas (beaches, dunes, cliffs, transitional waters and artificial coasts) up to the limit of the highest water levels. The provincial Coastal Districts (the province is one level below the region. For example, the Valencia Community is a region with 3 provinces; Valencia, Castellón and Alicante) execute the DGC-MMA mandate at the local level, including the identification of the exact limits of the MTPD (and its setbacks) and the execution of environmental protection, coastal restoration and coastal defense projects.

In this context, the preparation of the SCS was driven by the need of a strategic instrument to be used by the DGC-MMA and its provincial districts to address coastal interventions in the long term, instead of applying short-term solutions to coastal problems, according to the principles of ICZM as reported by the Recommendation 413/2002/EC, especially those regarding the long term perspective while addressing the

interaction between coastal properties and coastal dynamics. The translation of these broad sustainability principles of ICZM into practical actions along the coast was one of the challenges faced by the DGC-MMA. The idea was to downscale the national ICZM Strategic Framework (Ministerio de Medio Ambiente, 2006) into a regional level planning instrument, based on a Technical Diagnosis and a Stakeholders Engagement process, addressing interventions in the MTPD. The resolution of coastal conflicts between the state level and the regions (Autonomous Communities) was also a central issue to be tackled along the process: the Stakeholders Engagement at the regional level was used to involve the interested stakeholders, in order to improve integration between the central and regional administrations in charge of coastal management and as a base to formalize specific ICZM Agreements between the central government and the Autonomous Communities.

In this context, the Environmental Hydraulics Institute “IH Cantabria” of the Universidad de Cantabria was called to collaborate with the DGC-MMA in several technical activities, including (i) the Stakeholder Identification and Engagement process, supporting the identification of priority areas of intervention (ii) the design of a broad Strategic Framework, built around a set of strategic management objectives, and (iii) the design of a methodology to carry out regional scale Technical Diagnosis, finally executed by a multidisciplinary team composed of 8 Spanish consulting firms, involving around 50 people.

While the Stakeholders Engagement process (stakeholder identification and survey) was applied to the whole coast of Spain, the Technical Diagnosis was carried out in priority areas which include the Mediterranean, the Canary Islands, the Balearic Islands and the Atlantic coast of Andalusia, summing up the 68% of the total length of the coast. This Technical Diagnosis is supposed to be extended to the whole coast of Spain in the next

future. Section 2 of this paper aims to illustrate the triggering factors of the SCS, including the coastal issues, the Spanish administrative framework and new international requirements calling for improvements and integration in coastal management. Section 3 of the paper reports the approaches and methodologies used for the SCS while a quantitative summary of the results is given in section 4. Finally, a discussion about the final outcomes of the initiatives and about the future perspectives for ICZM is provided in section 5.

2. Triggering factors

2.1 Coastal issues

A brief characterization of the coast of Spain will help to understand the current situation and the triggering factors of the SCS.

Spanish coasts have a strategic importance from an environmental, economic and social point of view. Spain's 6600 km of coast (Eurosion, 2004) are distributed between 5 coastal macro-regions (the Mediterranean coast, the Atlantic coast, the North Coast, the Canary Islands and the Balearic Islands, see table 1) characterized by an exceptional diversity in terms of climate and ecosystems. Each macro-region can be considered slightly or very different from the other, due to its environmental conditions which depend on a combination of variables related to geomorphology, coastal dynamics, climate, and ecology, generating unique landscape and environmental processes. Natural conditions drive the distribution of the activities along the coast: tourism, industries, fisheries and agriculture can be seen as the main activities, with fisheries and

industrial activities mostly concentrated in the North coast and tourism and agriculture in the Mediterranean and the Islands.

Human pressure in the Spanish coastal zone is high. Ten out of 17 Spanish regions are on the coast, and their coastal municipalities, representing 7 % of the total area of Spain, host the 44% percent of the Spanish population (INE, 2005). Tourism, responsible of the 11% of the GDP of Spain, is a strategic sector in the Spanish economy, driving most of the problems of the coastal zone, related with the building sector, one of the main threats to the coastal system equilibria (see, for example figure 1, reporting a coastal development on the sand barrier enclosing the Mar Menor, in Murcia region). Most of the current problems are concentrated in the Mediterranean coast, the Balearic Islands and the Canary Islands, where tourism and the building sector represent highly dynamic economic activities that generate short-term benefits and long term damages. This tendency is now spreading over the formerly less developed northern regions, even if the building and real estate sectors are now suffering the effects of the current global economic downturn. Intensive fishing and agriculture also contribute to the degradation and overexploitation of coastal resources, and together they reflect the short-term vision and lack of integration in the management of the coastal zone (Barragán, 2005; Suárez de Vivero, 2005; Greenpeace, 2005). The lack of sustainability of this model was confirmed in a recent study on tourism development, which demonstrated how the rate of new urbanizations in Spanish coastal areas is surpassing the projections of tourism demand (Exceltur, 2005).

In any case the intensive and localized tourism model should not be discarded as a choice for the future, taking into consideration the contribution of coastal tourism to the Spanish economy (Yepes, 2005).

2.2 Legal and administrative framework

Coastal administration

The Spanish coastal zone is administered by the State, by the Regional Government of the Autonomous Communities (for the purposes of these paper, region, regional and Autonomous Communities are used as synonyms) and by the coastal municipalities, with a complex distribution of competences. The DG-MMA is in charge of the management of the Maritime Terrestrial Public Domain (MTPD), defined by the Spanish Constitution and regulated by the Coastal Law of 1988. Other authorities at the State level are responsible for the management of sectoral activities in the MTPD, such as maritime transportation and State ports, fisheries in territorial waters, oil, gas and energy exploitation. Regional main competences include regional planning, regional ports, fisheries and aquaculture in internal waters, and the quality of coastal waters. Finally, the local administration is represented by coastal municipalities, responsible for urban planning behind the shoreline and of the services for the use and accessibility of public beaches. Urban plans are subject to the regional planning regulations, and the Coastal District can address modifications of urban plans, following the Coastal Law of 1988.

Spanish coastal legislation: the Coastal Law of 1988

Many laws at the state and regional level can be related to the coastal zone and its management: they regulate sectoral activities like ports, fisheries, energy, tourism and urban and regional planning. Most of the Spanish Autonomous Communities have included in their legal apparatus planning instruments specifically designed for the protection of the coastal zone (Gobierno de Cantabria, 2004; Gobierno del Principado

de Asturias, 2005; Generalitat de Catalunya, 2006), but the only instrument specifically designed to protect and regulate the use of the MTPD is the Coastal Law of 1988. This legal instrument defines the landward limit of the MTPD as the limit of the coastal dynamics influence and its seaward limit as the limit of the external continental shelf or of the Exclusive Economic Zone (EEZ). This law also defines a 100 meters set back from the upper limit of the MTPD, which can be extended to 200 m for specific cases, where housing is forbidden. A 20 m setback applies to areas urbanized before 1988. An area of influence extends 500 m from the limit of the MTPD, where land-use must be adapted to ensure protection and access to the MTPD. A 6 m easement of passage is applied landwards of the limit of the MTPD (see figure 2).

The MTPD covers only part of the extension of the coastal zone, and the institution in charge of its management is the DGC-MMA; planning in the private domain behind the MTPD is under the regional and local governments' jurisdiction. Other national, regional and local administrations in charge of regulating or promoting coastal-related activities (e.g. tourism, fisheries, mineral resources, energy and transports) develop their activities in the MTPD, subject to permits granted by the Coastal Districts of the DGC-MMA. Despite this, many conflicts between uses and users and public administrations often arise, and the Autonomous Communities are claiming for the devolution of most of the competences (and control over financial resources), based on arguments which include the need of a higher land-sea integration in physical planning and more operational procedures in the execution of coastal works, including environmental protection and restoration, coastal defense and accessibility. On the other side, central government fears the effects of urban plans and coastal uses driven by local interests which could irreversibly affect the coastal zone. It is clear that this law defines the limits

of a space, the MTPD, but not the mechanisms for its integrated management: such a law can be therefore integrated with ICZM principles for decision making and public participation, and this could be considered as a future arrangement to improve ICZM in Spain, in the light of EU and international requirements.

2.3 International requirements

In the early 90's the European institutions, in compliance with the results of international initiatives such as the UNCED of 1992 (UN, 1992) recognized the importance of Integrated Coastal Zone Management as a tool to reach sustainable development in the coastal zone. At the European level, the Demonstration Programme on ICZM was launched in the late '90s by the European Commission (EC), with 35 pilot projects along the European coast. This initiative set the basis for the beginning of a process of incorporation of ICZM into the European legal system (EC, 1999). The current state of the process is represented by the implementation of the Recommendation 413/2002/EC adopted by the European Commission, which represents the main initiative to define a common coastal policy for the EU (EC, 2002; Rupprecht Consult, 2006). Moreover, the Protocol on the Integrated Management of Mediterranean Coastal Zones of the Barcelona Convention has been recently signed (MAP-PAP/RAC, 2008) and it will be the main instrument for ICZM implementation for the Mediterranean coast.

The SCS, promoted by the DGC-MMA, is currently the only ICZM initiative carried out at the Spanish national level, even if other initiatives have taken place in the most proactive regions, such as Andalusia's Strategy for ICZM (Junta de Andalucía, 2007). The objective of the SCS was the promotion and implementation of sustainability principles in the Spanish coastal zone through the identification of strategic intervention

at the regional and local level. This initiative gave an answer to the coastal issues previously described and, at the same time, it was thought to respond to the EU recommendation on ICZM (413/2002/EC) and other requirements affecting coastal zone management.

EU Requirements

The Recommendation 413/2002/EC aimed to establish a common framework for the implementation of ICZM in the Member States. It was based on the experiences and outputs of the Demonstration Programme operated by the commission from 1996 to 1999. It asked for (i) a national stocktaking of actors, laws and institutions concerned with the coastal zone and (ii) a national strategy for ICZM with the instruments for its implementation. The Recommendation was a major trigger to face Spain's coastal problems, and the DGC-MMA was responsible in front of the EC of the development of the stocktaking and of a coastal strategy. Spain responded in February 2006 with a document entitled "Integrated Coastal Zone Management in Spain" (Ministerio de Medio Ambiente, 2006), including the results of the stocktaking and all the instruments and actions needed for the implementation of ICZM. This document, an integral part of the SCS, enclosed the principles driving the successive Technical Diagnosis carried out in each coastal region. Other requirements at the EU level affect the coastal zone and its management, and should be considered as a part of the coastal policy apparatus of the EU. These include the Habitats Directive, the Water Framework Directive, The Marine Strategy Directive, the Directive on Flood Risks, and the INSPIRE directive on spatial data management (table 2). All of them address issues that are strictly related with ICZM, but no ICZM Directive exists, and is probably not going to exist in the future: ICZM is now considered in Brussels as one component the EU Integrated Maritime

Policy (EC, 2009). Currently, the main ICZM initiative, affecting the Mediterranean coast of Spain, is the Mediterranean Protocol on ICZM of the Barcelona Convention, signed in Madrid in February 2008 by 14 contracting parties and recently signed by the European Commission on behalf of the whole community (EC, 2009).

Protocol on ICZM in the Mediterranean

The Protocol on Integrated Coastal Zone Management in the Mediterranean of the Barcelona Convention aims to establish a common framework for the integrated management of the Mediterranean coastal zone, placing special emphasis on the implementation of sustainability principles in economic activities, ecosystem management, cultural heritage, public participation, education and international cooperation.

The Protocol encourages all Parties to define a regional framework for the development of a Mediterranean Strategy on ICZM. This Strategy should be implemented through regional action plans and national coastal strategies together with coastal plans and programmes. Each Party is consequently asked to formulate a National Strategy following the principles of ICZM: long-term holistic view, maritime-terrestrial knowledge integration, ecosystem approach, public participation, administrative coordination, public access to the coast, sectoral policies integration, spatial planning, sustainable use of coastal resources, etc. According to the Protocol, this approach will allow the countries to better manage their coastal zones, as well as to deal with the emerging coastal environmental challenges, such as climate change. The SCS outcomes should be used as a starting point for the implementation of the Protocol, after the ratification of the Spanish government (González-Riancho et al., 2008). A late

ratification could waste the efforts done in the preparation of the SCS, as parts of its results can become obsolete in a few years.

3 Approaches and methodologies

The previous sections presented the factors triggering the launch of the SCS, including (i) an overview of the coastal issues affecting the Spanish coast, (ii) the existing legal and administrative framework and (iii) the new perspectives for ICZM under the auspices of international initiatives, pushing for further action.

This chapter reports the details of the SCS process, including the approaches and methodologies used for its preparation.

The description of the SCS process reported in this paper can be divided into four main parts (figure 3): (i) the Stakeholders Identification and Engagement process, needed to launch the initiative and to involve the interested sectors in the identification of coastal issues and priorities, (ii) the design of a broad Strategic Framework, addressing coastal issues, (iii) the ICZM Agreements between the central government and the Autonomous Communities to improve integration in coastal interventions, and (iv) the Technical Diagnosis, a planning instrument designed to address coastal interventions at the level of local management units.

3.1 Stakeholders Identification and Engagement

One of the aims of the SCS was to identify and involve the most relevant public and private stakeholders at the regional level in the identification of coastal issues, management priorities and in the promotion of integrated policies between the state and the regions.

With this in mind, the Stakeholders Engagement process included (i) an inventory (stocktaking) of the stakeholders at the regional level (ii) a questionnaire on coastal issues, coastal sectors and management performance and (iii) the signature of cooperation agreements for ICZM Implementation between the DGC-MMA and its counterpart (normally the Environment Department) of the coastal region. Formally, the cooperation agreements are subsequent to the design of the ICZM Strategic Framework (see section 3.3 of this paper).

According to the requirements of the Recommendation on ICZM (413/2002/EC), the stocktaking should cover at least the following sectors: fisheries and aquaculture, transport, energy, resource management, species and habitat protection, cultural heritage, employment, regional development in both rural and urban areas, tourism and recreation, industry and mining, waste management, agriculture and education.

In the case of Spain, it was considered appropriate to include in the stocktaking the list of all the stakeholders, including public institutions at the national, regional and local level, research institutions, the business sectors, and NGOs. The stocktaking also included the list of the laws that can influence planning and management in the coastal zone, at the regional, national and European level. Data were stored in a user-friendly relational database, which was delivered to the DGC-MMA (Ministerio de Medio Ambiente, 2006).

In practice, stakeholders were identified in an iterative process using a so-called hydra model (one head generates more heads): Coastal Districts (the provincial units of the DGC-MMA) officers prepared a short list of actors in each province who, in turn, were asked to complete the list with any missing players. Finally these missing players were asked to complete the list with others not yet included. The iterative process finished when no more actors appeared on the lists, usually after three rounds.

After the completion of the stakeholders list, the identified actors were asked to fill a questionnaire in order to get their opinion on (i) the relevance of the various sectors mentioned in the Recommendation 413/2002/EC, (ii) the relevance of the main coastal problems, and (iii) the progress in ICZM. Some of the most relevant results are reported in section 4.

The identification of the actors and the questionnaire were carried out for the whole coastal zone of Spain, while a more exhaustive survey was conducted in the Cantabria region, used as a pilot site for the implementation of comprehensive methodology to be extended to other regions in the future (IH Cantabria, 2006 (1)). The results of the Cantabria pilot site are the base for a specific refereed paper on the subject, currently under preparation.

3.2 The national Strategic Framework

The ICZM principles defined by the 413/2002/EC, together with the results of the survey, represented the base to design the national Strategic Framework for ICZM. A set of national objectives to reach ICZM (table 3) was identified and used for two purposes: (i) to address the Technical Diagnosis of the coastal zone carried out in each region at the level of local management units and (ii) to respond to the requirements of the Recommendation 413/2002/EC on ICZM. The design of this Strategic Framework was followed by the identification of initiatives, measures and instruments mapping out the way forward and the work required in the coming years. These included the Technical Diagnosis discussed in this paper (formerly known as the Master Plan for Coastal Sustainability, as presented in Sanò et al., 2006), the effectiveness of which was thought to be enhanced by the Stakeholders Engagement process and by the cooperation agreements signed with the regions. The other proposed instruments include (i) the

Spanish Observatory for Coastal Sustainability, (ii) the Spanish Coastal Council (iii) the Land Acquisition Program and (iv) other initiatives related with research, education and training (Ministerio de Medio Ambiente, 2006). The present paper is centered on the activities in which the authors were collaborating with the DGC-MMA. In section 5 is reported a discussion about the current state of implementation of the other identified instruments.

3.3 Cooperation Agreements for ICZM

The third part of the Stakeholders Engagement process is represented by cooperation agreements for ICZM between the DGC-MMA and the regions. These were signed as a result of kick-off meetings organized in each of the involved regions, where the DGC-MMA invited the regional administrations to participate in the process. In these cases, the invited administrations were identified by means of the results of the stocktaking, where the main sectors of concern have been pointed out: according to scope of this first cycle of ICZM and in order to optimize the process, it was considered more important to consolidate the SCS within the key sectors than to invite all the administrations with any type of relation with the coastal zone, with the aim to extend the scope in the following ICZM cycles. The key regional sectors were the regional department in charge of the administration of ports, regional planning, environment, tourism, and fisheries. These cooperation agreements, signed by the DGC-MMA and the regional government, represented the official commitment of the political sphere to start and support the SCS process in each of the involved coastal regions. The agreements refer to the integration of the two levels of the administration, to carry out integrated coastal actions while maintaining its competences. At the same time they promote a better

technical collaboration between public administrations through data and information exchange and it emphasizes the importance of public participation in the ICZM process. High-level political meetings, where the ICZM Agreements were signed, were followed by technical meetings in each of the involved regions, to involve regional administrations in the diagnosis and the identification of priority actions, sharing their data and information and supporting the work of the consulting firms in charge of the preparation of the diagnosis in each coastal stretch. During those meetings, a common methodology (IH Cantabria, 2006 (2)), was presented to the multidisciplinary teams. This methodology is illustrated in the next section.

3.4 Technical Diagnosis

The Technical Diagnosis for the Spanish coast aimed to create a knowledge base for further action for the sustainable development of the Spanish coastal zone. The Technical Diagnosis covers, as of today, the 68% of the coast of Spain, including the Mediterranean coast, the Atlantic coast of Andalusia, the Balearic and Canary Islands. The area of study was divided into 8 coastal stretches corresponding to the coastal side of the River Basin District (RBD), also used for the implementation of the Water Framework Directive (WFD). These coastal stretches were the following: Catalonia, Ebro (delta), Jucar, Segura, Mediterranean Andalusia, Atlantic Andalusia, Balearic Islands, and the Canary Islands (see figure 4).

For each of these RBD coastal stretches the methodology included the following steps: (i) identification of management units (ii) analysis of the physical, ecological, socio-economic, and land use subsystems for each management unit, (iii) SWOT analysis for each management unit, (iv) identification of priority interventions for each management

unit (v) calculation of basic pressure, state and response indicators for each management unit.

The process for the Technical Diagnosis is represented in figure 5.

Management units were defined as spatial units with homogeneous features from a physical, ecological, socio-economic or administrative point of view. The identification of management units was based on the expert knowledge of the multidisciplinary team. 154 management units were identified, on average 18 per each coastal stretch, with an average length of around 30 km of coastline. The coastal zone was treated with a systems perspective, and analyzed covering four different subsystems: the physical subsystem, the ecological subsystem, the socio-economic subsystem and the land-use subsystem (urban plans). Each of these subsystems was described in a different factsheet, reporting (i) basic data, (ii) general description and (iii) the detected problems (diagnosis). Another factsheet was dedicated to a SWOT analysis, used to summarize and integrate the information from different subsystems.

SWOT analysis is a tool developed for strategic management which summarizes the strengths, weaknesses, opportunities and threats to a given system. SWOT analysis is also commonly used to formulate problems in natural resources management and spatial planning (see for example, Sanò et al., 2003) as it helps addressing the identification of possible alternative solutions (opportunities for development), taking into consideration the system as a whole. In the case of the SCS, SWOT analysis helped connecting the analysis of the coastal system's components (physical, ecological, socio-economic and planning subsystems), creating one comprehensive vision of the system oriented to its improvement. The opportunities identified in the SWOT were the base to identify coastal needs and interventions. Figure 6 reports, as an example, the translation of the

SWOT factsheet developed for the River Basin District Atlantic Andalusia, management unit 13.

A final factsheet reported a proposal set of coastal interventions, coherent with the whole analysis. This factsheet is thought to represent the reference for future coastal works and interventions in each management unit.

In sum, for each of the 154 management units 6 factsheets were prepared: (i) a physical subsystem factsheet (ii) an ecological subsystem factsheet (iii) a socio-economic factsheet (iv) a land-use subsystem (v) a SWOT analysis and (vi) a strategic coastal interventions factsheet. The large amount of data and information, reported on 924 A3-sized factsheets, needed to be translated into easy to handle information to be used to compare the state and needs of different regions and to communicate the results. A set of indicators was therefore identified by the project team, facilitating data storage and reporting to the end-users of the interested administrative bodies. The indicators, classified using the PSR framework (OECD, 1993), are the following: (i) length of urbanized coastline (Pressure indicator), (ii) Length of coastline which requires intervention (State indicator), and (iii) type of intervention needed for each stretch of coastline (Response indicator). The next section of the paper summarizes and discusses the most significant results of the whole study, focusing on the Stakeholders Engagement process and the PSR indicators.

4. Results

The SCS process was a broad initiative covering technical and political aspects of ICZM. Following the structure of the paper, we include here (i) quantitative results of the Stakeholders Engagement process and (ii) quantitative results of the Technical

Diagnosis, in the form of PSR indicators. In the discussion and conclusions (section 5) we report comments on the general outcomes of the SCS.

The results of the Stakeholders Engagement process include: (i) the inventory of coastal stakeholders,

(ii) the survey on the state of the coast, (iii) the survey on the progress in coastal management and (iv) the existence of the agreement between the coastal region and the DGC-MMA, a base to create synergies in coastal policies. These results are summarized in table 4, where data and information refer to the regional level. The progress in management has been calculated through the adaptation of the progress indicator developed by Pickaver et al. (2004). The methodology is reported on a refereed paper on the subject (González-Riancho et al., 2009)

It is important to remark the fact that the participation process was mainly oriented to the integration of the stakeholders at the regional or provincial level: no coastal municipalities were involved at this stage, as the scale and the resources involved only permitted the involvement of the regional level. The number of identified stakeholders is significant (around 600) but the level of response to the survey is low (33%). Tourism had been indicated as the main sector of concern and its pressure on coastal space as the main issue. This result confirms the analysis carried out by different authors (Barragán, 2005; Suárez de Vivero, 2005). An interesting result is the inverse correlation between coastal laws and the level of integration calculated using the progress indicator previously mentioned: this could be interpreted with the fact that legal complexity doesn't help integrated coastal management, probably because the existence of many, different laws and requirements regulating the same space can bring to conflicts among uses, users and administrations.

The results of the Technical Diagnosis included a broad range of data and information which is reported in the 154 identified management units. It is therefore more effective to report the aggregated information represented by the PSR indicators on table 5, where data and information are based on each RBD.

In this table, (i) the indicator of Pressure (P) is represented by the length of the urbanized coast, in percentage of the total coast; (ii) the indicator of State (S) is the state of the coast which has been evaluated by each project team (a bad state of the coast means that it needs proper interventions); (iii) the indicator of Response (R) was calculated grouping together coastal strategies aimed to control physical processes and actions related with administrative issues.

The results in the table reflect the types of coast existing in Spain. On one side the urbanized coastline is concentrated in the Mediterranean coast (average value around 50 %) while the coast of the Islands is not yet fully exploited (average value 19%) as rocky coasts and cliffs are probably limiting the accessibility and development. On average 66 % of the coast is not urbanized but 37 % of its length needs some interventions to improve its state. Most of the identified interventions (80%) are aimed to recover the concessions in the public domain and to improve public use and accessibility. These interventions are strictly related with the implementation of the Spanish coastal Law: one of the main issues faced by the DGC-MMA in the last few years was the identification of the so-called “deslinde”, i.e. the upper limit of the MTPD, as it is represents a source of conflicts. Normally, the consequent action after the delimitation of the upper limit of the MTPD is the demolition of the properties lying in this public space.

5. Discussion and conclusions

The SCS was a complex adaptive process, designed to foster sustainable development of the coastal zone of Spain. During 3 years of work, data and information were collected along the Spanish coast and important agreements for ICZM were signed between the state and the regions. While the existence of coastal conflicts and issues was clear and under everybody's eyes, the Recommendation 413/2002/EC was a major trigger for the preparation of the SCS, also taking into consideration the future Protocol for ICZM of the Barcelona Convention. The involvement of the main stakeholders, identified along the whole coast of Spain, helped in the identification of the priorities for intervention and in the design of the Strategic Framework. As we have illustrated in section 3.2, this Strategic Framework was thought to be implemented through various instruments: (i) the Technical Diagnosis (ii) the Spanish Coastal Observatory (iii) the Spanish Coastal Council (iv) the ICZM Agreements between the state and the regions (v) the Land Acquisition Programme and (vi) other initiatives related with research, education and training.

As of today, only the Spanish Coastal Council has not been put in place while most of the other have been completed or partly executed: (i) the Technical Diagnosis, reported in this paper, has been completed for $\frac{3}{4}$ of the Spanish coast, and should be completed in the future with the inclusion of the 2041 km of the north coast of Spain (ii) the Spanish Observatory for Sustainability (OSE, 2008) is monitoring two coastal indicators ((i) protection of the MTPD and (ii) artificial land cover on the coast) and (iii) the Land Acquisition Programme acquired around 1.123 ha of land (Ministerio de Medio Ambiente, 2007 (1)), to be included in the MTPD. Another fundamental result should

be included in the SCS framework: the delimitation of the upper limit of the MTPD and the demolition of illegal constructions. Even if this activity is part of the mandate of the DGC-MMA since the birth of the Coastal Law of 1988, a strong push was given to its execution, in parallel with the promotion of the SCS. As a result, 1.204 illegal buildings covering around 26 ha were demolished along the Spanish coast during the period 2004-2007 ((Ministerio de Medio Ambiente, 2007 (1)).

The SCS was finalized and its results presented to the public in late 2007 (Ministerio de Medio Ambiente, 2007 (2)). While the agreements between the state and the regions helped reaching consensus around strategic interventions, no formal adoption of the Technical Diagnosis was put in place, but it is thought to be used as a base to address coastal interventions in each Coastal District, under the directions of the DGC-MMA.

From the technical point of view, various issues should be considered important and taken into consideration for future methodological adjustments: (i) the level of response during the participation process was not as high as expected as only 33% of the identified organizations answered to the survey; (ii) the base of knowledge which has been constructed through the Technical Diagnosis is not easily accessible and no interoperability protocols were put in place following the INSPIRE directive despite the early advices (Sanò, 2007): this makes any operational spatial analysis difficult to respond to emerging questions from the coastal managers; (iii) finally, the results of the Technical Diagnosis were not available for public consultation using the internet.

Despite these issues, as of today the SCS has collected, organized and generated a wide range of data and information on the state of the Spanish coast and on the alternative solutions to improve its state. This information has the potential to ameliorate

management practices and understanding of coastal managers and it can be a base for intersectoral dialogue.

From a political point of view, the problems faced while implementing the SCS reflected the unclear responsibilities of the DGC-MMA in the implementation of a comprehensive coastal policy, being this state-level body formally in charge of the protection and regulation of the use of the MTPD only. Despite the proactive attitude of the DGC-MMA in promoting ICZM practices, it often faced the still unsolved conflicts with coastal regions, which are often claiming for management competences in the MTPD. One of the reasons why ICZM agreements were signed was because the State funds the highest part of the coastal interventions with the benefit for coastal regions.

Another important issue was the lack of a clear legal and administrative framework supporting the willingness from both the DGC-MMA and the regions to design a plan which covered the whole coastal area, as the existing regulation still separate the management of the public (MTPD) and the private domain: no integrated instrument is considered in the existing legislation. This issue finally restricted the SCS to the space of competence of the DGC-MMA, despite the efforts of further integration landwards, when the dynamics of physical processes, ecosystems and coastal communities exceed the limits marked by the divisions between the public and private domain. As of today, the opportunity to improve the coastal management legal and administrative framework is represented by the ICZM Protocol for the Mediterranean, which will fully enter into force once ratified by Spain or by six of the Parties. A Spanish new legal instrument, covering principles such as inter-sectoral and vertical integration, public awareness, engagement and participation can be therefore thought as an adequate response to the Protocol and to drive the Spanish coastal zone towards sustainability.

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