

An analysis of beach management framework in Spain. Study case: the Catalan coast

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Received: 12 May 2010 / Revised: 18 October 2010 / Accepted: 20 October 2010
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Abstract In the present paper, the current beach management framework in the North-Western Mediterranean coast (Catalonia, Spain) was revised. Beach management was analyzed using the concepts of Integrated Coastal Zone Management (ICZM). The history of beach management in the second half of the 20 century and the new developments in the academic field and in the practical beach management sector during the last decade were studied. The revision of legal texts and strategies in the Catalan coast allowed synthesizing all scattered information affecting beach management. A SWOT analysis was performed. The main strengths of the beach management framework in Catalonia are the public ownership of beaches, which allows the government to carry out a comprehensive management and the recent data and analysis provided by the adopted National and Autonomous ICZM strategies. The weaknesses found were related to the functioning of traditional existing institutions. New opportunities are related to the possibility of establishing new institutions that conduct a more inclusive and proactive management. The main threat is that although the possibility for a fundamental change in beach management organization exists, resources available are not fully exploited.

Keywords Beach management · Spain · Integration · Institutions · Strategies

Introduction: beach management and integrated coastal zone management

Coastal areas are valuable spaces of extreme variability, diversity and multifunctionality that encompass a wide

range of landscapes, uses and activities. The complexity of the interactions that occur in the littoral zone is caused by various factors. Dynamic changes are intrinsic to such areas due to their special biophysical components, but anthropogenic pressure is increasingly squeezing coastal areas. At the end of the last century, 60% of the world's population lived on a 100 km wide strip along coasts (Von Bodungen and Turner 2001), and this percentage is expected to increase during the next few decades. Specific human activities having negative impacts on coastal zones include: excessive construction work, exploitation of natural resources, discharges and sand mining. Erosion is also affecting the sediment dynamics in many areas of Europe (EuroSION 2004). In the western Mediterranean, a very large part of the anthropogenic pressure on coastal areas is caused by tourism, which is the most important driver of coastal-related changes in this area (Departament d'Indústria, Comerç i Turisme 2002).

For coping with complexity of coastal areas, Integrated Coastal Zone Management research includes concepts such as coordinated analysis and planning and proactive management of human and natural resources. Goals must be established according to the functions assigned to coastal areas (De Groot et al. 2002) and planning must be adapted, in time, to defined goals. Management transparency and the active participation of all stakeholders (Barragán 2003) are necessary in order to cope with the uncertainty involved in managing complex systems. The process of coastal management has been transformed from a purely technical discipline to a scientific discipline of a social nature. As such, the importance of social capital for achieving effective environmental management has been recognized (Pretty 2003).

Beaches are functional links between the land and the sea. They are the main factor attracting humans to coastal areas, and play a very important role in increasing tourist potential in the Western Mediterranean. The attraction of coastal areas may be increased by physical qualities such as

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local geology and geomorphology, biological qualities such as flora and fauna, and socio-economic qualities such as recreational facilities, access, safety and landscaping. Planning for the integrated management of these factors is very important for the many coastal areas of the world that are subjected to highly complex interactions and impacts.

The present research has been undertaken while keeping in mind the importance of beaches in Spanish coastal areas and the need to manage them in an integrated and inclusive way. The work is focused on the analysis of the present legal and administrative framework of beach management. The Catalan coastal area, located in the north-western Mediterranean was selected as our study area (Fig. 1). Strategies, legal texts and tools used by managers, as well as local biophysical and socio-economic processes were analyzed. The history of beach management in Spain, from the 1950s until the current day, is reviewed in part 2. In part 3, we present an analysis of the new trends in beach management that have emerged in the last decade at the academic level and have started to influence European, Spanish and Catalan coastal management. Part 4

describes the SWOT analysis performed on the Catalan beach management framework, and Part 6 summarizes our conclusions.

General background of beach management in SPAIN

Human use of beaches in Spain increased sharply during the second half of the 20th century. The initial development of beach management processes in Spain began in the 1960s, as beaches were previously considered natural resources of little economic interest. The application of planning measures to beaches was a novelty of the Shores Act of 1969 (Yepes 2002), which established the Plan for the General Zoning of the Beach (PGOP) for the permanent planning of beach services and facilities. Following this law, the first guidelines, “Playas, modelos tipos y sugerencias para su ordenación”, which gave concrete standards for managing urban beaches, were published (MOP 1970). The Shores Act of 1969 was a decisive step towards a clearer definition of the responsibilities of the various beach

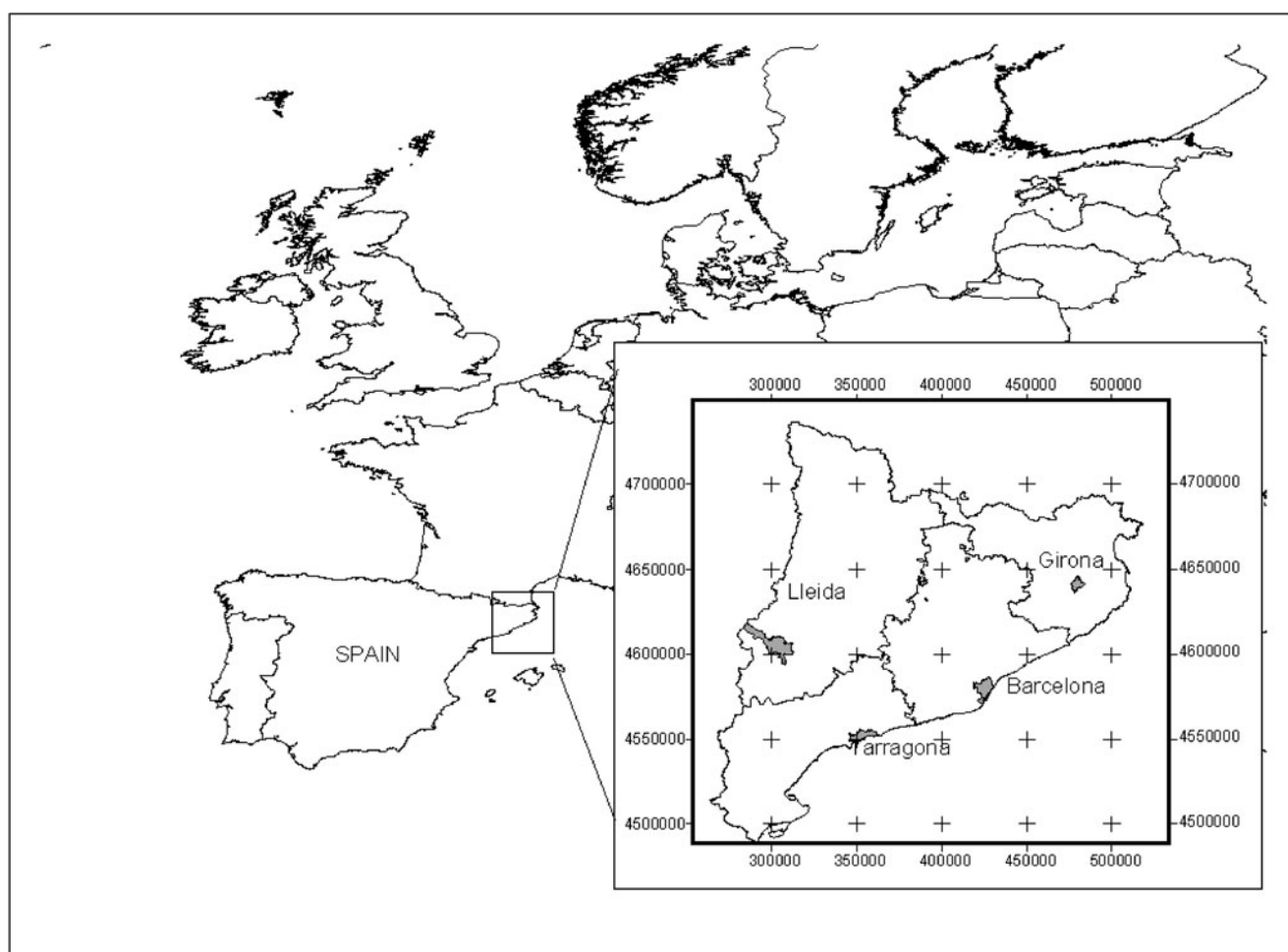


Fig. 1 Map of the Catalan coast

administrators, and towards the establishment of rights of access and use on all lands bordering the shore.

In the mid 1970s, the Ministry of Public Works and Urban Planning carried out a project that provided guidelines for the development of the coastal areas in the coastal provinces of the country. The result was the “Plan Indicativo de Usos del Dominio Público” (Indicative Plan of the Uses of the Public Domain) (PIDU), which analysed parking characteristics, licenses and authorizations, uses, sediment dynamics, and, qualitatively, beach use and urbanization density. This study, which in the Catalan coast was carried out in 1976 (Ministerio de Obras Públicas y Urbanismo 1976), was a catalyst to allow future steps forward for the beach management processes that were undertaken subsequently. Two years later, the Spanish Constitution of 1978 included beaches in the public domain (Art. 132.2) and established that they should be regulated according to more specific laws. This regulation came into place in 1988 with the new Shores Act of 1988 (Ley 22/88 de Costas 1988) and its Regulation 1471/89, which developed it further. This law significantly changed beach management practices, abolishing the PGOP. The new law assigned responsibility of land use planning, urbanism, and other issues to the Autonomous Government, also establishing the competencies and responsibilities of the different governmental bodies and agencies. With this change, the focus of beach management also changed. The possibility of permanent and more or less long-term regulated management of beaches was replaced by seasonal management (measures of management are the same year after year). Since then, the only framework used for annual planning has been that of the beach use plans, drawn up annually by local councils and approved by the Autonomous Government.

The approval of the new Shores Act also revoked some legal texts that ruled different aspects of beach management. These legal texts had some deficiencies that were overcome by the new law. An important improvement of the 1988 Shores Act was the coverage of responsibilities and the management and conservation of the natural heritage by developing Article 45 of the Spanish Constitution. The Shores Act also covered the criteria expressed in the Recommendation of the Council of Europe 29/1973 and other documents and studies of littoral areas.

The Shores Act 22/88

The Shores Act (22/88) is still today the most important legal text influencing the beach environment in Spain. It introduced fundamental innovations in the management of coastal areas. It provided legal protection for the public ownership of natural areas and acknowledged natural processes that go further inland than the intertidal area.

The concept of the public domain is clearly reinforced by the law, which takes into account natural processes and coastal habitats. It also establishes restrictions on the protection area and guarantees the conservation of the public area.

The Shores Act establishes that Autonomous Governments may create further legislation to protect the public domain more restrictively. The areas on which each regional government can develop legislation are defined in the law that regulates autonomic activity. For example, based on its Statute of Autonomy, the Catalan Government has the authority to develop legislation on land use planning, littoral issues, urbanism and sewage discharges.

One of the main aims of the Shores Act was to regulate the DPMT (Marine and Terrestrial Public Domain). It contains rules for the occupation of the DPMT when activities cannot be located elsewhere. It defines the DPMT, establishes its limits, regulates uses, defines responsibilities and establishes penalties (Montoya Font 1995). It establishes the DPMT zone for the purpose of environmental protection, not simply considering the strategic or recreational value of beaches. Finally, it also covers the protection of landscapes.

Legal responsibilities defined by the Shores Act 22/88

According to the Shores Act 22/88, the beach management responsibilities of the national, autonomous and municipal governments include the following:

Responsibilities of the national government

- The national government is responsible for establishing the limits of the DPMT and the administrative work required in each case to maintain or achieve established public areas. It is responsible for managing the DPMT and granting licenses and authorizations for the occupation of it.
- It is also responsible for conserving the DPMT and the access areas.
- It is responsible for navigation, pollution control, and human safety and rescue services. Navigation and pollution control are carried out in conjunction with other competent authorities according to the coordination principles established in the corresponding plans and programs.

Responsibilities of the autonomous government

- It is responsible for carrying out action related to littoral land use planning and urbanism, discharges into the sea and other aspects attributed according to its statute.
- It is responsible for giving permission for occupation of the protection area.
- It is responsible for dealing with infringements in the protection area.

- It is responsible for distributing beach use; subsequently, the national Ministry must give permission for occupation of the DPMT.
- It regulates urbanism documents of the local councils in the protection area, which must report all activities carried out in these areas.
- It is responsible for works, promenades, parapet walks, etc. In the case of some of the promenades that have already been constructed, the cost has been shared (50%) by the national and autonomous governments.

Responsibilities of the local government

- It reports when the limits of the DPMT should be established, and also when there are requests for changing the usual management conditions of areas of the DPMT. It also reports on authorizations, licenses, occupation and exploitation of the DPMT.
- It exploits seasonal services that can be established on beaches by direct or indirect management as established in the legislation on local responsibilities.
- It maintains beaches and public bathing areas in a suitable state of cleanliness, hygiene and health. It is responsible for complying with the legal requirements established by the national government on safety and rescue services.

New trends in beach management

Progressively, coastal crowding has made the processes occurring on beaches around the world more complex. Natural, socio-economic and managerial processes combine on beaches and generate specific dynamics. Beach multifunctionality has been already accepted among many coastal scientists. The approach that merely accounted for sediment management and recreation has been replaced as a result of the recognition of multidimensionality of beaches and a knowledge of their main coast-based processes (Simm et al. 1995; Micallef 1996; Williams and Davies 1999; these authors also extol the need to establish effective legislation, adequate management practices and complete economic balance of beaches). Micallef and Williams (2002) consider that the quality of beaches should guarantee a higher financial return, higher conservation value and higher multiplicative effect on the socio-economic structure of beach municipality. The beach management on the French Riviera has been considered a useful example of a positive contribution to the economic activity of the region (Anthony 1997).

Following the EU Recommendation on ICZM (413/2002/EC), new actions have been carried out by the national and regional administration in Spain, in order to develop a strategy to implement ICZM principles. The development of

this strategy may have influence on beach management processes in the future. The “Plan Director para el Desarrollo Sostenible de la Costa” (Master Plan for the Sustainable Development of the Coast) (PDSC), a tool for implementing the National ICZM strategy, has been developed. Within this plan, several indicators have been created to account for beach processes: sediment dynamics, dune systems, natural characteristics, state of the landscape, beach usage, access and parking, uses, services, activities and measures of protection (Plan Director para el Desarrollo Sostenible de la Costa 2005).

The legal and administrative framework of beach management in the Catalan coast

Strategies and plans

In the regional context, the Catalan government has also carried out two important initiatives related to the ICZM mandate in the last 10 years. First, it introduced its own strategy, the “Pla Estratègic per la Gestió Integrada de les Zones Costaneres a Catalunya”(Strategic Plan for Integrated Coastal Zone Management in Catalonia) (PEGIZC) (Departament de Medi Ambient i Habitatge 2004), launched prior to the national initiative, which deals with water quality, land use planning, sustainability, pollution, sediment dynamics and biodiversity and seeks to enhance cooperation and responsibility between experts and actors. Second, the current trend of increased construction on the Catalan coast forced the development of the “Pla Director Urbanístic del Sistema Costaner” (Master Plan of Land Use Planning of the Coastal System) (PDUSC), which is specifically aimed at protecting areas that have not yet been urbanized (Departament de Política Territorial y Obres Públiques 2005). This plan is very important for protecting the hinterland of non-urban beaches that have not yet been transformed.

Legal requirements and responsibilities

At the regional administrative level in Catalonia, management responsibilities affecting beaches are scattered. The Department of Territorial Policy and Public Works is responsible for regulating beach use and approving municipal urban plans. It is also responsible for maintaining protected areas. The Department of the Environment is responsible for applying environmental impact assessments to new public and private projects, drawing up sewage treatment plans, and monitoring the quality of bathing water, sewage discharge and water treatment plants and the aesthetic quality of water and sand. The Department of Agriculture, Ranching and Fisheries is responsible for planning and managing natural protected areas and natural

resources. The Department of Economics and Finances is responsible for Tourism. In Catalonia, a supramunicipal administrative structure, the Councils of the Comarques, can also intervene in the development of strategic plans.

In Spain, land use planning and urbanism responsibilities have been transferred to the autonomous governments. In Catalonia, they are developed by the “Llei de Política Territorial de 1983” (Territorial Policy Act), the “Llei 1/1995 Pla Territorial de Catalunya” (Catalan Territorial Plan Act), the “Llei 2/2002 d’Urbanisme” (Planning Act) and the “Decret 166/2002”. Other legal texts that affect land use planning are related to the protection and management of natural areas “Llei 12/1985 d’Espais Naturals” (Natural Areas Act), “Llei 6/1998 Forestal de Catalunya” (Catalan Forest Act), “Llei 3/88 de Protecció dels animals” (Animal Protection Act) and the “Decret 328/1992 del Pla d’Espais d’Interès Natural” (Decree of the Plan of Areas of Natural Interest). On the littoral fringe, certain protective planning measures have been developed in some natural areas. In the north of Catalonia, in the Costa Brava region, before the development of urban areas, other legal texts regulated urbanism and landscape activities. The 1960s and 1970s was a period of major urban development. Now though, due to current requirements, the possibility of further land use planning in those areas is limited.

At the local level, the local administration, represented by the Provincial Council, Councils of the Comarques and local councils, is responsible for several aspects. The Provincial Councils are responsible for monitoring environmental parameters, and they share the intervention in beach management with the other supramunicipal structures by organizing and managing common services. Local councils are responsible for land use planning, economic activity authorizations, cleanliness, the provision of services/facilities on beaches and the daily management of beaches.

There is a highly complicated body of regulation directly concerning beach management issues in Spain. In Table 1, the most important ones affecting beach management in the Catalan region have been summarized.

These legal texts regulate aspects such as water quality, sanitation, beach use plans, and safety and rescue services:

- Water quality is regulated in international and national legal texts. The new Directive 2000/60/CEE establishes ecological parameters for assuring the quality of water masses. Directive 91/271/EEC establishes the requirements of sewage treatment. Directive 76/160/EEC and the “Real Decreto 734/88” regulate bathing water quality parameters, reviewed by the Directive 2006/7/EC.
- The regulation of beach services and facilities is covered by several legal texts. Requirements include conditions of stands and the occupation of beach space.

The “Ley 7/1985 Reguladora de las Bases de Régimen Local” (Regulatory Act of the Bases of Local Regime) establishes that local councils are in charge of cleanliness and the provision of necessary services in the public areas of their municipalities. The “Ley 14/1986 General de la Sanidad” (Public Health Act) requires local councils to maintain public places in a good state of hygiene.

- Another group of legal requirements accounts for safety and rescue services. Most legal texts focus on establishing sectors for bathers with restriction and prohibition of nautical activities, also considering the characteristics for buoying. In Catalonia, there is no specific law that establishes minimum measures of safety and protection for beaches.
- There are also other laws affecting beach management. In Catalonia, the “Decret 109/1995” regulates recreational fishing, The “Llei 13/2002” defines requirements for tourist municipalities and the “Llei 30/1992” establishes principles for collaboration and cooperation between authorities. The “Llei 20/1991”, developed by its “Decret 135/1995”, regulates accessibility and the elimination of architectural barriers and the approval of the Accessibility Code. The “Llei 4/1997 de Protecció Civil a Catalunya” (Civil Protection Act of Catalunya) establishes mechanisms to diminish the effects of emergencies in municipalities. The “Llei 4/2003” establishes conditions for public safety of municipalities and the “Llei 25/1998” establishes the responsibilities of the Catalan Water Agency (a body dependent on the autonomous government), which include quality control of beaches and water in general.

Swot analysis of beach management framework in the Catalan coast

Strengths

The main strengths of the current beach management framework in the Catalan coast are the public ownership of beaches and the strict regulation of land use around them (although legal requirements have not always been respected). Due to the fact that public areas comprise the totality of beach spaces, planning and management may potentially be implemented by the government in a coordinated and comprehensive way. Public ownership also guarantees accessibility of beaches. The Shores Act 22/88 strictly regulates land use around beaches up to 500 m. In 2005, the Catalan government approved the “Pla Director Urbanistic del Sistema Costaner”, in order to regulate development in the coastal zone. During the last half of the past century, the Catalan coast has undergone a large

Table 1 Legal texts regulating aspects of beach management (Yepes 2002; Diputació de Barcelona 2003a, b, 2005). Legislation: EU=European, NA=National, AUT=Autonomic

Legal text	Topic
Water quality	
EU Directive 76/160/EEC	Establishes parameter values and methods for controlling bathing water quality.
NA “Real Decreto 734/88. Normas de calidad de las aguas de baño”	Establishes parameters, values and sampling methods for controlling bathing water quality.
EU Directive 2000/60/EEC	Establishes criteria for assuring ecological quality of water masses.
EU Directive 2006/7/EC	Reviews parameters and methods established in Directive 76/160/EEC.
EU Directive 91/271/EEC	Defines criteria for urban and industrial sewage discharges.
Services and facilities	
NA “Orden del Ministerio del Interior 31 de marzo 1976 sobre establecimientos públicos en las playas y zonas”	Requirements to be accomplished by food and beverage stands located on beaches and in public areas.
NA “Orden de la Dirección General de Puertos y Costas de 21 de julio de 1986. Normas para el establecimiento delimitación y explotación de los servicios de temporada”	Establishes conditions for occupation of beaches by recreational facilities.
NA “Ley 7/1985 Reguladora de las Bases de Régimen Local”	Establishes services that local councils must provide in public areas.
NA “Ley 14/1986 General de la Sanidad”	Establishes the obligation of the local councils to maintain health control of the environment.
AUT “Llei 8/87 de 15 d’abril municipal i de règim local a Catalunya”	Establishes mechanisms of citizen participation, relationships between authorities and local organization.
Security	
NA “Orden 31 de julio de 1972. Normas para la seguridad humana en lugares de baño”	Regulations for human safety in bathing areas. It prohibits the presence of motorboats and water skiing in these areas.
NA “Orden 2 de Julio 1964”	Defines areas for bathers on beaches, as well as the use of sport and leisure boats.
NA “Real Decreto 259/2002”	Updates safety measures on the use of jet skis.
NA “Resolución Director General de Puertos y Costas 4/11/1991”	Establishes the technical characteristics of buoying (modified by the Resolution of State Ports of 12 May 1998).
NA “Real Decreto 1685/83”	Adopts the buoying system of the International Association of Lighthouse Authorities (IALA) for the Spanish Coasts.
NA “Normas Técnicas sobre obras e instalaciones de ayuda a la navegación de 1986 de la Dirección de Puertos y Costas”	Defines conditions of buoying.
NA “Real Decreto 1043/2003”	Conditions of navigation of nautical self-propelled artefacts.
Other issues	
AUT “Decret 109/1995”	Regulates recreational fishing in Catalonia.
AUT “Llei 13/2002 de Turisme de Catalunya”	Regulates conditions that must be met by tourist municipalities. They have the obligation to protect public health and hygiene in the whole municipality.
AUT “Llei 30/1992”	Establishes the bases for collaboration and cooperation between authorities and regulates specific questions for executing actions.
AUT “Decret 135/1995”	Regulates accessibility and suppression of architectural barriers and the approval of the Accessibility Code.
AUT “Llei 4/1997 Protecció Civil a Catalunya”	Defines measures for mitigating the effect of emergencies occurring in municipalities.
AUT “Llei 4/2003”	Establishes requirements for local authorities in order to assure safety in all areas of municipalities.
AUT “Llei 25/1998 de responsabilitats de l’Agència Catalana de l’Aigua”	Establishes that it is responsible for controlling water quality.
NA “Ley 27/1992 de Puertos del Estado y de la Marina Mercante” (changed by “Ley 62/1997 de Puertos del Estado y de la Marina Mercante”)	Regulates questions such as jet skis and safety and maritime rescue service.
NA “Real Decreto 1835/1983”	Establishes maritime signalling for Spanish coasts.

Table 1 (continued)

Legal text	Topic
AUT “Llei 3/98 d’Intervenció Integral de l’Administració Ambiental”	Regulates activities with an environmental impact carried out by companies.
AUT “Decret 114/1998 activitats sotmeses a Declaració d’Impacte Ambiental”	Regulates activities that are subject to Environmental Impact Assessment before they are carried out.
AUT “Llei 16/1991 de les policies locals”	Regulates the execution of the Civil Protection Plans.

transformation of its landscape as the amount of impervious surface has increased significantly. This plan was established in response for protecting the natural areas still present in this coastal system.

Another important strength, although its potential has not been fully developed yet, is the adoption of the Catalanian strategy for ICZM “Pla Estratègic per la Gestió Integrada de les Zones Costaneres a Catalunya (PEGIZC)”. This strategy has defined the main problems occurring on the coast by developing an inclusive analysis in which many important agents involved in beaches were included. In this way, the weak points detected in the analysis (e.g. erosion, marine pollution, landscape degradation, urban systems sustainability) can be included in programs, and measures to overcome them applied. The case of the National strategy is similar. Different processes not studied before have been analyzed. The information obtained is available for planning and management.

In the case of the Metropolitan area of Barcelona, a Coastal Sustainability Plan was developed in 2005. The plan considers in detail many aspects of beach management and gives interesting recommendations about accessibility, emergencies, natural communities, and urban development. The Maresme Strategic Plan 2015 was developed for the Comarque of el Maresme and it is an integrated beach management plan. It is the result of a participatory and negotiated process between stakeholders. The Llobregat Delta Infrastructure Plan (LDIP), another strategic local initiative launched in 1994, has also allowed the establishment of beach management actions oriented towards a resilience model (Banchini et al. 2009), in an area that has been promoting the conservation of natural resources of beaches and environmental education during the last 20 years.

Weaknesses

Despite the acknowledgement among scholars of the need for multidisciplinary approaches, some academic areas have not been sufficiently incorporated on beach studies yet. No complete economic studies of Spanish beaches have been carried out and revenues from beaches have not been calculated in many areas. The multiplicative effect is

largely unknown in many Mediterranean coastal areas. New advances at the academic level have not been generally considered by local managers (they have not yet incorporated integral approaches to beaches). Besides, they are not used to considering for they work complete economic studies of beaches and beach management.

Beach management is still carried out in Spain by various private and public organisms, frequently without an organized regular flow of information and a clear common policy to achieve medium-term goals. The segregation of competencies between different governmental bodies will cause difficulties when effective integrated management is to be implemented. At the national level, the Ministry of the Environment is in charge of the Marine and Terrestrial Public Domain (DPMT) and therefore responsible for lighting, buoys, civil works and beach nourishment operations. It is also responsible for granting the authorizations and licenses for the occupation of coastal areas. The Ministry of Public Works is in charge of the work related to infrastructures. The Ministry of Agriculture, Fisheries and Food is in charge of the management and protection of the natural resources of the public domain and is therefore responsible for controlling fishing activities. Their activity is frequently not well coordinated, although some administrative and legal mechanisms exist. As has been reported in other countries (see the case of Australia, for example, James (2000)), better guidance is needed to achieve effective beach management in Spain. The most evident shortcomings found are related to planning, consideration of beach characteristics, beach use control and monitoring and the administrative process (Table 2).

Beach management lacks proactive management tools that allow coordination between the different authorities that are responsible for it. There is no periodic communication between coastal managers. Responsibilities are highly dispersed and more explicit information is needed. Although the Shores Act 22/88, “Llei 30/1992” and “Llei 8/87” (in Catalonia) consider principles of cooperation between authorities, they are not applied in beach management. The role of local managers is not clearly established in all beach management aspects, though its necessity has already been demonstrated (Breton et al. 2000; Larson 2002). The role of the stakeholders has not been properly

Table 2 Shortcomings detected within the legal and administrative beach management framework

Planning	Beach characterization	Beach usage control and monitoring	Other issues
No proactive coordinated management tools.	No beach classification beyond those situated in natural protected areas.	Beach management focuses on assuring beach usage without restriction.	The administrative process is time-consuming and does not allow immediate action when problems appear.
No establishment of responsibilities and periodic communication.	No consideration of the beach community on natural beaches or semi-natural beaches.	No tool has been applied for establishing maximum carrying capacity and reducing beach usage when necessary.	
No emergency plan specific to beaches.	No consideration of the different interests of different beach users.		
No incorporation of the principle of steady improvement.			
No creation of medium-term management programs.			

defined either. The framework is not inclusive and the vision of many important beach management agents has not been adequately incorporated.

In municipalities where beaches may be subjected to special events, Emergency Plans have been carried out. In Catalonia, the Autonomous Administration has developed Regional Plans to fight water pollution (Pla Especial d'Emergències per Contaminació Accidental de les Aigües Marines de Catalunya (Special Plan of Emergencies for Accidental Pollution of Marine Waters in Catalonia)—CAMCAT) and flooding (Pla de Protecció Civil per al Risc d'Inundacions a Catalunya (Civil protection Plan for Flooding Risk in Catalonia)—INUNCAT), but more specific plans including other beach emergencies should be developed.

The principle of steady improvement is not assumed as a basic element of beach management due to the fact that management is considered to be static from season to season. Also, the current framework does not account for the creation of medium-term management programs. According to Yepes (2005), in order to improve management to beaches, a tool similar to the PGOP (present in the Shores Act of 1969 and excluded from the subsequent Shores Act 22/88) is needed.

Concerning the intrinsic natural environment, natural beach communities on natural and semi-natural beaches have not been widely studied and considered. Only beaches with evident natural values (those situated in protected areas or with fragile communities such as dune systems or seagrasses) are specifically considered within the framework of management, and only in such cases are protection measures applied.

Very few surveys have been carried out on beaches to assess the profile of users and patterns of use. They have reflected important differences (Chapman 2006; Roca and Villares 2008). The current administrative and legislative framework does not consider user opinion as an input for management, although some studies made on the Spanish coasts show interesting results and may be useful (Morgan et al. 1996; Villares Junyent 1999; Buceta 2002). Due to the lack of information on the natural and social processes that occur on them, beaches have not been characterized and classified according to their most important features (the autonomous and the national ICZM strategies have partially improved the situation).

One of the most important advances of the Shores Act 22/88 was the guarantee that people had public access to beaches without restriction. However, further mass tourism has caused beaches in some localities to become overcrowded. Few frequentation studies of Mediterranean beaches have been carried out (Alemany 1984) and no limits have been defined for overcrowding.

In addition to the aforementioned, other issues are not considered within the present framework for beach management. In the current situation of general erosive dynamics in many coastal areas (EuroSION 2004), a sediment management policy is needed that allows planned proactive management in conflictive areas. In the case of storm damage, for instance, a very time-consuming administrative process has been established that does not allow immediate action when problems occur.

The shortcomings explained above make it very difficult to establish permanent planning measures for beach management. Permanent planning also requires the assign-

nation of functions to beaches according to particular characteristics. The functions currently attributed to beaches are the protection of promenades and human facilities from wave energy, the recreational experience of users, and the natural function as a landscape and container of natural heritage. However, if functions are to be properly assigned to beaches, more information on some important beach processes is needed (i.e. the waste and litter production process, the consequences of mechanical cleaning.). Additionally, more specific criteria must be defined and applied to other aspects: buoying, safety and rescue services, facilities, access for the disabled. Also, activities carried out by companies operating in beach areas, as established in The “Llei 3/98 d’Intervenció Integral de l’Administració Ambiental” (Integral Intervention of the Environment Administration Act), need to be assessed and controlled in order to assure the minimum environmental impacts.

Opportunities

New opportunities will be available with the adoption of ICZM strategies and new beach studies and tools. The adoption of those strategies and, in some municipalities, Local 21 Agendas and beach quality tools such as Environmental Management Systems for Beaches (EMSB’s) or the Beach Quality Index (Ariza et al. 2008, 2010) offer the possibility of substantially improving the beach management process. The information obtained in the different assessment studies can be used for defining the best practices in each municipality. The adoption of Function analysis schemes (De Groot et al. 2002; Micallef and Williams 2003) may help define the suitable approach in each location. All of these tools may be used for launching the institutional change needed. Additionally, participation and transparency in the beach management process are a must. Unfortunately, they have not been present so far in the framework. Local groups, NGO, universities, and economic agents have not been adequately included in the collective process of beach management. The adoption of ICZM practices may help to establish the right setting and allow an open dialog among stakeholders from the beginning of the process. The adoption of the “Pla Director Urbanístic del Sistema Costaner” also offers interesting possibilities as well as the local strategic plans aforementioned (Banchini et al. 2009). Landscape management is also needed in many areas of the Catalan coast. The regional approach may be very effective for preserving spatial coherence and sustainability of the Catalonian coastal landscape. Existing regulations for control of development in the coastal zone have not been very effective in preserving natural resources in many areas. In this regard, the possibility of buying coastal areas by management institutions (in order to protect the landscape) could also be considered.

Threats

The main threat facing beach management in the Catalonian coast is the ineffectiveness of adopted strategies and tools for solving the problems that have been detected. The diagnosis has been a very important step for improving beach management (although increased monitoring efforts are needed for some beach processes such as use, natural communities, and economic issues). The next steps should be directed towards an institutional change. The effort required to change the organization of beach management in the Catalonian coast is important from technical, financial, social, and political standpoints. The risk of a lack of financial resources should also be handled by creating adequate organization and assuring the needed flow of economic resources. Additional threats include the lack of proper participative process and involvement of all important stakeholders. If that happens, some technical aspects of beach management may be improved, but the global approach will not be taken and the beach management process will fail. There is a very important risk that management continues to be done sectorially although tools for more holistically approaches are now available.

Conclusion

Beach Management framework in Spain and Catalonia has evolved over the last half of the XX century. It has been influenced and directed by the Shores Act of 1969, the “Plan Indicativo de Usos del Dominio Público” (PIDU) and the Shores Act 22/88. This last law has had a very strong influence on beach management in the last decades. It established legal coverage for the ownership of natural areas, but it also stopped the possibility of permanent beach planning. Many interests and activities converge on beaches. Legal responsibilities are scattered throughout different management bodies and often not well structured and related. The adaptation of the EU Recommendation on ICZM (413/2002/EC) has been encouraging for beach management. Much more data on beaches has been collected and now is available for planning and management, although beach characterization still has some shortcomings. Many natural processes are still not well understood, nor are user profiles and use or economic processes. The lack of adequate institutions for managing the coast is probably the most important problem. In this sense, the adoption of ICZM principles constitutes a good opportunity for the change needed. As a result, a more inclusive, participatory and proactive organization of beach management can be created. The main threat against proper beach management is that the newly adopted strategies have not been effectively put into practice. If this threat is overcome, the important short-

comings found in this study in the beach management framework may be resolved using the available resources.

Acknowledgements This work was supported by the MeVaPlaya project REN 2003-09029-CO3/MAR and a predoctoral I3P fellowship from the Spanish Research Council (Consejo Superior de Investigaciones Científicas).

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