



COmmunity-based Management of
EnviromenTAl challenges in Latin America



D4.4: “Community based sustainable management and governance models in in marine and coastal areas”

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Executive summary

The aim of the Deliverable 4.4 is to provide tools to build a community-based governance model for coastal and marine systems. Based on the Argentina case study of COMET-LA project¹, we analyze the relation between the governance system and the sustainable management of artisanal fishery and tourism. Several conflicts arise due to industry concentration, government legislation and intervention, and port activities, which contrast with artisanal activities and production. The exploitation patterns, the anthropic impacts and the climate change increase the tension on system, leading to one of the major environmental challenges: the construction of a governance system for sustainability.

The main purpose of the Argentinean group during the COMET-LA three years research period was *to propose community-based sustainable management and governance models in marine and coastal systems* by analyzing its application in the Argentina case study, and up-scaling the results to higher geographical levels. A first step was the characterization of the social-ecological system adopting the Ostrom's framework. Participative methodological approaches have been used to capture the key characteristics of these social-ecological systems in the area of study and the impact of climate change. The results of the analysis of the information gathered from previous studies of the Argentine team, but mostly from the input provided by stakeholders and decision makers clearly show that Argentine case differs from the Colombia and Mexico cases from the governance system. Second step of the analysis was the structural prospective study (PSA). Note that the methodology allowed building meeting-spaces to discuss the common use and management of resources. From PSA workshops the consensus about the needed of a common management plan in coastal and marine system was strengthened in order to ensure the sustainability of the system. Last step of the analysis was scenarios analysis. This was a defiant methodology, in particular at the Argentine case, because our society has a cultural focus on present problems and challenges; the conjuncture prevails over the future. Nevertheless, the outcome of the activity was constructive and promising, in particular because the SHs noticed the importance of their participation in all the actions aimed to construct their "future". They recognized the relevance of their own participation in the creation process of rules and laws, also understanding that they could be involved in several activities for controlling resource management.

More, due to the big extension of the area under study, different coastal environments are involved and then the interaction between the different localities is made more difficult. This situation implies a huge diversity of environmental and socioeconomic problems in the area. In many cases, the boundaries between them are confused and even overlapped, generating future conflicts. In this sense, spatial heterogeneity makes more difficult the communitarian action.

¹Bahía Blanca Estuary and Monte Hermoso – Pehuén Co area

According to the findings of COMET Project, an adequate governance model for these systems should ensure arrangements between SES users and upper legislation systems, with rules able to be modified by stakeholders' initiatives. At the same time, stakeholders must monitor and enforce the laws, restricting free riding behaviors and avoiding a lost in social benefits.

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List of abbreviations

CGPBB	Consortium of Management of Bahía Blanca Port
LNG	Liquefied Natural Gas
NGO	No Governmental Organization
PSA	Prospective Structural Analysis
SH	Stake Holder
SES	Social-Ecological System

1 Introduction

Governability is based on the capability of political system to generate trust and legitimate its own actions. This implies the need to focus on strategic social actors, decision-making processes and conflict resolutions (Coppedege 1996, Mayntz 2001). Nowadays, governability involves a more cooperative way to rule in which the collective resolution of problems prevails: the governance system.

The aim of the Deliverable 4.4 is to provide tools to build a community-based governance model for coastal and marine systems. Based on the Argentina case study of COMET-LA project², we analyze the relation between the governance system and the sustainable management of artisanal fishery and tourism. Several conflicts arise due to industry concentration, government legislation and intervention, and port activities, which contrast with artisanal activities and production. The exploitation patterns, the anthropic impacts and the climate change increase the tension on system, leading to one of the major environmental challenges: the construction of a governance system for sustainability.

For this purpose, the work is divided into six sections. The first one describes the study area and the problems related to the community-based resource management in a context of climate change. The second section is devoted to describe the methodology. The main input to conduct the research is the perspective of stakeholders obtained through workshops. The method consists of three steps: (1) the recognition of the area (description and stakeholder mapping); (2) the characterization of Social-Ecological System (SES) following the Ostrom's framework (Ostrom, 2009) and the analysis of the principal variables affecting the SES using a Prospective Structural Analysis (PSA) (Godet, 2004; Ambrosio-Albala and Delgado, 2008); (3) the future scenarios building and the study of possible responses and adaptation policies (Hunt et al., 2012).

The third section describes the governance problem from a theoretical point of view. Then, the main characteristics of the present study case are presented. At last, guidelines for a governance system for natural resources management in coastal and maritime areas are treated. In general terms, a governance system should consider: the agenda of central government about environmental issues; the power relationship between social actors; a set of rules made under a bottom-up approach; the creation of institutional and social networks; the reinforcement of the collective action and the community awareness and the social control of corruption.

²Bahía Blanca Estuary and Monte Hermoso – Pehuén Co area

2 The problem of marine and coastal resources management in the context of SES in the Argentine

2.1 Study area

Bahía Blanca Estuary (Figure 1) is located in the southwest of Buenos Aires province, Argentina (from 38° 42' S, 62° 28' W to 39° 00' S, 61° 15' W). This region is characterized by a wide range of geomorphologic, physical, biologic and socio-economic conditions that make it unique in the Argentinean coast, but also rather particular in the international context. Artisanal fishery and tourism, both directly related to the coastal area, are two of the main economic activities on the region. The administrative division defines three different municipalities in the area: Bahía Blanca, Coronel de Marina Leonardo Rosales and Monte Hermoso. The first one includes the towns of General Daniel Cerri, Bahía Blanca and Ingeniero White; the second includes Villa del Mar and Pehuén Co and the latter houses the homonymous town (Figure 1).

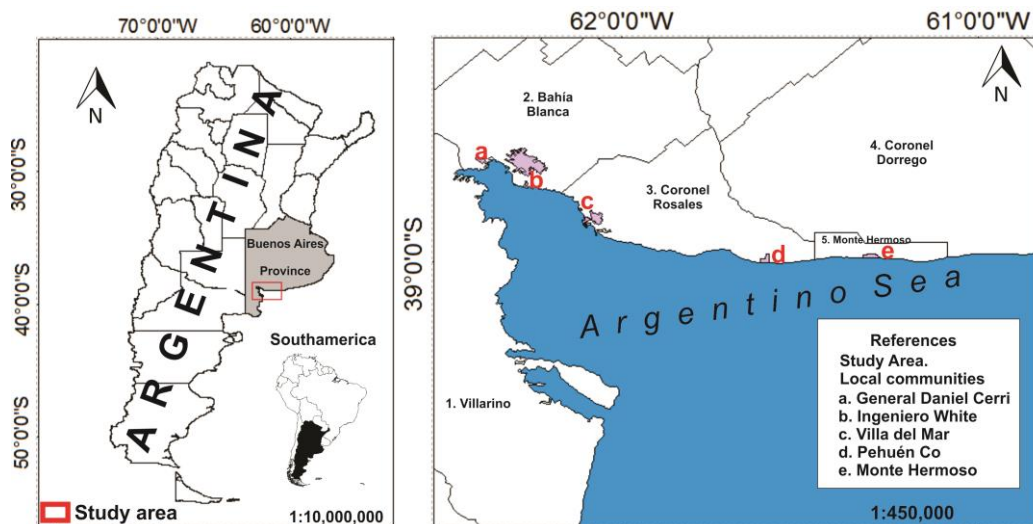


Figure 1. Location of the study area including the political division as well as the localities where the study was performed.

Source: Own elaboration.

The Bahía Blanca Estuary is the second largest estuary of the country with a total area of 2300 km². A municipal natural reserve only 3 km² in area contains an ecological system that is worldwide unique (Perillo and Iribarne, 2003). The estuary presents different morphological units connecting the inland with the ocean, among which extensive tidal flats, salt marshes and islands can be identified (Perillo, 1995; Meloet *al.*, 2003). These conditions generates in Bahía Blanca, General D. Cerri and Villa del Mar, a high level of vulnerability in case of raising the sea level, facing a high risk of flooding (Diezet *al.*, 2007). From an economic point of view, harbor activities, industry and fruit and horticultural activities (in a small extent) can be stressed in the area.

Pehuén Co and Monte Hermoso are touristic towns located in the outer area of the estuary. The area between both towns is a coastal area of sandy beaches surrounded by vegetated and no-vegetated dunes. Several major aspects make this area very unique indeed. About 10 km west of Pehuén Co there are Pleistocene cliff where in 1933-35 Charles Darwin found the first Megatherium fauna which, from his own opinion, put on him the seed of his Theory of Evolution. Whereas, from 3 km to the east of Pehuén Co until 1 km west of Monte Hermoso, along the beach there are outcrops of a 12000-4500 yr BP of a shallow Pampean lake with very well conserved footprints of the same fauna including some of first human footprints for the region in the upper strata. All this area is presently in the final selection to become a World Heritage Site from UNESCO. Since these outcrops are on the upper beach, they are subject to erosion processes. Their economy is based on the "sun and beach" tourism and the artisanal fishery (London *et al.*, 2012).

Coastal morphology is directly related to the speed, direction and intensity of winds (Bustos *et al.*, 2011) and wave and littoral current activity (Delgado *et al.*, 2012). Sediment losses due to urbanization processes change coastal morphology increasing the vulnerability in the area (Bustos *et al.*, 2011; Huamantínco Cisneros, 2012). This condition must be further stressed as Pehuén Co and Monte Hermoso could be considered as two extreme urbanization concepts. While the former is considered as park town (no pavement, highly forested, most of the foredune is preserved), the latter is a highly developed city with little or no urban planning. All the foredunes along the coast have been eliminated and high-rising buildings are located along the coast just 20-30 m from the beach. Because of the poor planning, a sector of the town along the beach has been intensively eroded and houses abandoned or protected as the sea can flood them during a storm. Also a major problem in both towns is the use of the beach by cars, motorcycles and cuatri. Preliminary studies (Bustos *et al.*, in preparation) have demonstrated that strong vehicle activity during summer and long weekends may erode up to 63 m³/m wide of the beach between two high tides.

Fish richness of the region is related to climatic conditions. Fish availability depends not only on environmental factors but also to social phenomena as resource overexploitation and coastal pollution (Delgado, 2013).

The most important socioeconomic issue in the region is related to the impact of dredging, commercial fishery and pollution over the artisanal fisheries. The artisanal fisheries of the study area involve over 1500 families from the localities of Ingeniero White, Punta Alta, Pehuén Co and Monte Hermoso. Even though the fishermen complain that catch reduction is related to pollution, there are long-term monitoring data showing that contamination is unlikely the problem. Overfishing, both inside and outside the estuary, as well as changes in water and air temperature, and prolonged drought situations that are affecting the freshwater input into the estuary can be considered as the major causes. Although these problems have all been predicted, decision makers only started to take action when the fishermen communities reacted by closing the deep harbors for commercial shipping which resulted in economic losses of over US \$ 100 million. A fraction of this value could have been enough to resolve the situation well ahead of its occurrence (Pizarro *et al.*, 2007; Piccolo *et al.*, 2009). Nevertheless, Port authorities have been influential in trying to eliminate the artisanal fishery

inside the estuary by buying fishing permits, providing subsidies for fishermen retirement and even helping some of them to buy larger boats that can fish outside the estuary, which in itself provides another source of conflict among the fishermen.

Furthermore, the Port Authorities tried to dredge the inner portion of the estuary in 2013 to establish a new port related with national gas provision. Such project, called LNG Puerto Cuatros (LNGPC hereafter), mainly motivated for unmet needs of natural gas at national level, was demanding an investment of around US\$ 200 million. The first stage of the plan involved the construction of a pier with two berths, designed to receive the current fleet of Liquefied Natural Gas (LNG) ships on the south side and be home of a fixed re-gasification vessel on the north side. Zilio *et al.* (2012) demonstrated from a cost-benefit analysis of the nursery services of the estuary which may be permanently affected by the dredging is between \$ 5 million and \$ 6.5 million dollars depending on how the displaced labor force can reallocate. However, if some non-official indices are employed, the cost may reach up to \$7.5 million.

Further conflicts appeared during the last stage of the COMET-LA project (July 2014) when an unconsulted Provincial decision allowed two large, trawling boats to operate from the Puerto Rosales Harbour (located near Villa del Mar). This situation affected mostly to the outer artisanal fisheries. Although finally the two boats returned to their home town without operating, the situation permanently damaged the interaction among the two fishermen organizations, much of the very good relationships they had were built by the activities of the project during the preceding three years³.

3 Methodology

As was mentioned on introduction, the governance study for coastal and marine areas has been developed in the frame of a particular case: Bahía Blanca-Monte Hermoso Estuary and Pehuen Co. Methodology has been performed during three years based on participatory research techniques. The possibility of replicate this methodology in other cases requires a deeper description, which is presented below.

Year 1: Participative approaches have been used to capture the key characteristics of the socio-ecological systems in the area of study and the impact of climate change. The basic structure carried out follows the criteria and concepts proposed by the COMET-LA project with some adaptations required by the idiosyncrasies and cultural aspects proper of the whole region but also taking into consideration the local perspectives under the climate change scenarios. The core objectives were to identify the main stakeholders of the communities (community members, community leaders, local non-governmental organizations and governmental organizations) and their main perceptions about socio-economic and ecological problems. During the first semester of 2012 we mapped the most representative stakeholders

³ For further information about the characterization of the area and the main ecological challenges, see Deliverables 1.4, 2.4 and 3.4 at www.comet-la.eu

and decision makers of the community and gather their perceptions on ecological problems and socioeconomic consequences. Therefore, we performed separate workshops in each one of the towns: one with stakeholders, the other one with decision makers. The main reason to use this methodology is that we considered that, as a first step, it was relevant to distinguish between different decision levels. Moreover, stakeholders and decision makers do not often think in a similar way and in some cases decisions about the allocation and use of the resources are taken in a broader territory than the local one. Due to our preliminary knowledge of the communities, we also were expecting that having all participants together in the first workshop may have induced some discussions that may have affected future interactions and losing of some of the participants. Fortunately this was not the case and further workshops were made in an integrated way.

Since one of our main weaknesses was the lack of a community history on participative actions and meetings, we began the group discussion with some “trigger questions” using the brainstorming technique. The brainstorming technique is a method of eliciting ideas without judgment or filtering, often used in the early stages of futures workshops and in many other contexts, which involves encouraging wild and unconstrained suggestions and listing ideas as they emerge (Slaughter, 1997). As stated by Geilfus (2002) one of the advantages of brainstorming is that it allows to collect ideas and perceptions in a broad group of people, and it is very appropriate to be used when firstly inquiring about living characteristics of a community or when trying to catch people’s perceptions and reactions on some proposals and events. Usually brainstorming consists of four steps. First, introducing a question, problem, or topic both orally and in writing on chart paper; second, inviting participants to respond; third, writing the responses on chart paper; and finally, prioritizing, analyzing, or using the list to generate discussion or problem solving.

In order to have responses on the same direction, we used the same triggering questions in the first workshops performed with stakeholders and decision makers in each one of the communities. These queries were addressed to differentiate if the perceived changes in their socioeconomic conditions were ecological or human made changes and highlighting the main consequences of such changes. We were very careful to avoid questions and discussions regarding political (partisan) and religious issues.

During the second meeting, the main responses to the questions (which have been previously systematized) were presented to the attendees and deeply discussed. Also information from official data sources from governmental institutions (INDEC, etc.), academic papers and doctoral research on the field of study were employed. Then, the main perceptions of the stakeholders on socio-ecological systems and their governance (resulting from the participative workshops) are presented. This information has been used to perform a preliminary SWOT analysis for the case study.

Year 2: In order to complete the SES characterization and to define the key variables from the point of view of the stakeholders, participatory research with focus groups (Maya Velez *et al.*, 2004) was performed. Afterward, connections and influence/dependence relationships between the identified variables were defined using the Prospective Structural Analysis and the MICMAC software. Fieldwork was limited by several factors in the Argentinean case. First

of all, SES historical conformation bounded the confidence of stakeholders and their willingness to participate in community-based activities. Moreover, the involved communities did not have any previous experience in driving participatory work before COMET-LA. Secondly, stakeholders' lifestyle in urban areas determines that time and mechanisms for developing group activities are restricted.

The analysis of both, the SES and the possibility of reaching an auto-organization for sustainable development, were performed using the methodological framework proposed by Ostrom (2009). An operative definition of SES was adopted: "A social-ecological system consists of a bio-geophysical unit and its associated social actors and institutions. Social-ecological systems are complex and adaptive, and delimited by spatial or functional boundaries surrounding particular ecosystems and their problem context" (Glaser *et al.*, 2008 en Jhanet *al.*, 2009). Therefore, in order to define the SES, describing the structure and topological pattern of the relationships between the elements of the system was needed (Basurto and Ostrom, 2008).

In order to identify problems and drivers related to environmental changes, the Prospective Structural Analysis (PSA) was used. Stakeholders were selected according to SES characterization. The characterization allowed focusing on the problems related to fishery and coastal management as well as having an accurate definition of the "community" boundaries according to the Ostrom framework. During the stakeholders' mapping, two selection criteria were used: pertinence and representativeness. Pertinence was evaluated through the relationships between users and resources, their ability to impact on SES and their knowledge on the system. Representativeness was defined according to how well or how accurately each individual reflects its own group interests.

Stakeholders were selected in order to representatives from different localities and associated with different activities of use and management of resources. Internal and external stakeholders (as decision makers) were evaluated using the same criteria. Some of the most important groups identified were: fishermen, neighborhood groups, rangers, teachers, firefighters (as internal to the SES); and municipalities, government agencies and Petrochemical Industrial Pole representatives (as external SH).

Several participatory activities in focus groups were carried out, grouping stakeholders according to the town and the activity related to the resource system. Focus group methodology allows a large participation of stakeholders, avoiding monologues and discussions able to undermine the fieldwork objectives. Stakeholders worked on the variables identified by them and found some new variables. The variable definitions were made by the SH. The relevance of the variables was established according to the repetition in all groups (number of times the variable was mentioned during the different workshops). Indirectly, the questions made by the moderators along the activity sought that all the 8 categories from Ostrom (Social, economic and political settings; Resource system; Governance system, Resource units; Users; Interactions; Outcomes; Related ecosystems) were covered during the discussion. Mobile displays and double-entry tables were used to conceptualize relationships among variables and their degree of influence. SH identified the degree of influence as "a lot", "little", "anything", "irrelevant" and "may be".

From the outcomes obtained in this activity, the researchers adapted the results to the MICMAC's framework translating concepts to numbers (3, 2, 1, 0 and P) and getting a first approximation of the Matrix of Direct Influence (MDI) (Arcade *et al.*, 2004). In subsequent meetings, this information was triangulated with SH thus defining the 21 key variables defined according to them. From these variables, the AT wanted to determine (i) what role each plays in the system; (ii) how are the maps of influence in relation to the MID?; (iii) what are absent variables, etc.

Year 3: The research team followed the common scenario-planning methodology (JHI, 2013) adapted where necessary to suit the needs of the case study. The methodology set out what data have to be collected at every stage; resulting in: a list of drivers and internal variables chosen by the researchers; a morphological analysis of driver impacts on these variables; field notes on the community's views on the morphological analysis; three narratives of the future derived using global archetypes validated by the community members; field notes on the community's views of the narratives; a list of possible response options, including existing response options; a matrix of how response options might occur according to each scenario conditions; a matrix of how the response options might react to shocks; a final list of robust response options and strategies; a list of implications of the robust response options/strategies; and a plan for taking these response options/strategies forward.

The scenario analysis was realized in four steps:

- Step 1: Exploration of how different key trends can affect the system in the future. The most relevant variables defined by the MICMAC analysis were used in this step. Drivers of change defined are linked to some Latin American scenarios created for the Millennium Project in 2010. Morphological analysis was done following criteria in Ritchey *et al.* (1998).
- Step 2: Construction of possible future scenarios using archetypes. Narrative writings. Validation of narratives by stakeholders. Scenario archetypes were built following Hunt *et al.* (2012) methodology.
- Step 3: Identification of possible responses
- Step 4: Implications of the responses on the local system management/governance. The last workshop (July 9, 2014) coincided with the visit of the entire COMET-LA team and it took place at the IADO, Bahía Blanca.

Step 4 inquired about the implications and appropriateness of the responses obtained locally and identified possible strategies and future plans through specific actions. The strongest five recognized responses were analyzed one by one with respect to what, who and how they could each be carried out.

4 Community based sustainable management and governance models: actors, relationships, institutions, power and flows of resources

The notion of governance has changed along last years. During the '50 and '70 decades, enormous administrative reforms and bureaucracy have been key factors in defining governance.

It is important to highlight that democracy does not ensure the governance of a society even when it is considered a system that could raise the levels of human development (PratsiCatalà, 2001). In 1975, the Trilateral Commission, comprised of the United States of America, the European Commission and Japan, called the attention on a governance crisis that modern democratic societies was facing due to: a) a society more and more fragmented; b) a growing society with governments with resources more and more limited (the Welfare State fall); and c) increasing social demands for setting up collective actions. As a result, a need for both institutional and attitudinal changes on citizens it is observed (a need to reinvent the society) (Crozier *et al.*, 1975).

During the '80s, the perspective of public policy was redirected from administration to the public management, preserving the previous logic of *rationality* and *political neutrality*. Those ideas become summarized in the Washington Consensus and the programs of reform of the state generated from it.

In general terms, during the last quarter of the 20th it is possible to observe an inadequacy of both the forms of government and the ways of relating these forms to the citizens (the "governing") and a need to implement a new form (the "governance") in order to ensure the democratic governability. Two implicit issues on this new form of governing are the decision decentralization and the rapprochement of the normative orders to regional and local governments. Bringing decision making process closer to local populations allows improvements on equity, efficiency and effectiveness conditions on natural resource management (Ribot, 2002).

The word "governance" starts to be used by development organisms during the '80s and the beginning of the '90s (Jiménez, 2008). It must be noted that the term emerges in a frame of political liberalization and retirement of the state of some social basic functions. In fact, governance criteria is often confused with a sum of criteria aimed to improve effectiveness and efficiency of the public sector, even when it should refer to the conformation of structures for decision making. It is also criticized the excessive use of the term "*governance*" (PratsiCatalà, 2001; Merino, 2014). In order to solve that, a functional and applicable definition should be found.

Today, a socio-ecological system is considered *governable* if it is structured in such a way that the strategic actors interrelate for collective decision-making and conflicts are solved under established rules (PratsiCatalà, 2001). And, particularly, governance implies the development of explicit and implicit norms defining who are the relevant political actors and which are the channels and resources that they use in their search for active and political positioning

(O'Donnell, 1994). More precisely, "governance" is the art or manner of governing aimed to achieve a long life social, institutional and economic development, promoting a healthy balance between the state, the civil society and the economy market (in Rothstein and Teorell, 2008).

Governance refers to a new way of governing related to the collective troubleshooting, leaving aside hierarchical forms (Scharpf, 1993; Prats, 2001; Mayntz, 2005). Particularly, environmental governance includes regulations, practices, policies and institutions that set up the way in which people interact with the environment; the management is not a governmental monopoly anymore and it is now (also) responsibility of other actors (Sarukhan, 2009). It is the process through which society defines objectives and priorities related to the natural resources management and establishes cooperation mechanisms at local, national and regional level (GrupoTécnico de Trabajo en GobernanzaAmbiental en Napo, 2013).

Government ceases to be the direct center of society in the cases in which nets are developed. This is not about the total loss of control of the state but about its change of form. When decision making is left to institutions of social self-regulation, the state keeps the right of legal ratification as well as the right to intervene through legislative or executive actions if self-regulations become ineffective. In modern governance, hierarchical control and civic self-determination are not opposite. Instead of this, it works in combination with each other and such combination can be even more efficient than any of the "pure" forms in isolation (Mayntz y Sharpf, 1995).

We understand that, in defining a governance system, three key elements must to be considered:

- A. The socio-ecological conditions specific to each region
- B. The stakeholder's inclusion on the debate
- C. Structural and institucional previous conditions

Each of these elements presents some interesting point to debate about.

4.1 The socio-ecological conditions specific to each region

4.1.1 Components

An accurate characterization of the space is required, and Institutional Analyses is useful to do this. It is that part of the social sciences that studies how Institutions determine the performance of a socio-economic system. In a formal sense North (North 1990) defines institutions as "*humanly devised constraints that structure political, economic and social interactions*" to reduce the inherent uncertainty in human interactions. Constraints are devised as formal rules (constitutions, laws, property rights) and informal restraints (sanctions, taboos, customs, traditions, code of conduct), which usually contribute to the perpetuation of the *status quo* of the society. Changes in this result became from changes in the institutional design.

Elinor Ostrom extends the institutional analysis to the collective action for the study of the socio-ecological systems (SES), (Ostrom 1990). Any group that attempts to manage a common resource for optimal sustainable production must solve a set of problems in order to create institutions for collective action; there is some evidence that following a set of design principles in creating these institutions can overcome these problems. She developed a specific methodology to analyze SES and **the possibility** of a self-organization (community management of resources) for sustainable development (Ostrom 2009).

Following this methodology, each system will be characterized by the attributes of a Resource System (RS), Resource units (RU), users (U), governance system (GS), interactions (I) and outcomes (O). General description will be done by social, economic, and political settings (S) and related ecosystems (ECO), first tier variables (figure 2). *“These eight broad variables can be unpacked into a second-tier set of variables that have been found in empirical studies to impact diverse interactions and outcomes. The second-tier variables are considered the initial core conceptual variables necessary to identify the type of SES operating at a particular location, as well as the reasons for sustainable or unsustainable outcomes”* (Blanco 2011).

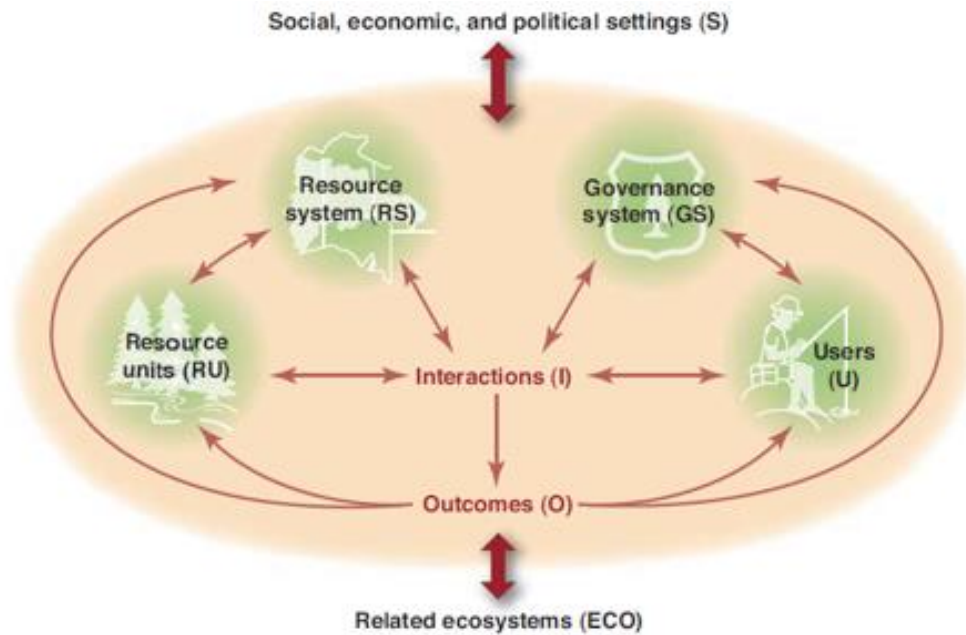


Figure 2. The Ostrom Framework.

Source: Ostrom 2009

In our case of study, one of the major problems is the “community” delimitation related to the use of the coastal and marine resources. If we define “community” as a social unit that shares common values, where there exists sense of connectedness and the community “takes on a life of its own, as people become free enough to share and secure enough to get along” (Putnam 2000), then we do not study a well defined community. But if we point out Cohen’s definition (“Community is a boundary-expressing symbol. As a symbol, it is held in common

by its members; but its meaning varies with its members' unique orientation to it", Cohen, 1985, p.15), we find signs of an unifying force (Skogen and Krangle 2003) in the group of artisan fishermen and other users related to the fishery and coastal management. As a positive outcome, in the last periods some environmental organizations have demonstrated an increase in social capital performance. These organizations and fishermen have found in COMET-LA workshops a place of communication and discussion. While it is too early to reach conclusions, the organizational structure related to the resources management at a local level are showing marked evolution towards some collective actions.

4.1.2 Redefining territory and its functionality

Considering socio-ecological conditions lead to redefining the system functionality. This, in turn, guide to designing a (new) integrated management of the territory that unifies not only the social, but also the environmental and the economic agendas.

The changes in the lifestyle of modern societies, the rapid urbanization and the demographic changes have lead to the appropriation of the concepts of development and welfare that requires taking into account environmental and biodiversity issues. However, at the same time, the territory is not being recognized by its own citizens. It is necessary, in this context, to reassess SES components and to refunctionalize the territories according to these social, environmental and productive components. An ecosystem it is considered functional only if it provides services that local community requires in a sustainable way. The above mentioned Ostrom's framework provides the tools to analyze such functionality.

In this sense, a territory fragmentation and consequently a breakdown of institutions and policies involved in resources management are observed. The territory redefinition should lead to the reintegration of intervention forms. Achieving an effective communication and building mechanisms of territorial integration are probably the biggest challenges. Nevertheless, future governance models cannot deny the diversity of systems, even when it looks ecologically similar.

An accurate ecological and economic zoning requires a permanent and confident provision of information on environmental and social issues. Such input could be provided by the community itself, working in coordination with specialized scientific institutions through the implementation of simple and continuous monitoring and control systems.

4.2 The stakeholder's inclusion on the debate

4.2.1 Generation and diffusion of information

The inclusion of all the stakeholders involved on the debate could lead to some difficulties that must be previously solved. Firstly, necessary tools for a conscious and complete participation on the debate must be given to the community. The information must be available and public. Availability is not only about data accessibility but also about interpretation and facilities for reading. In this point, training and adequacy of information are crucial.

The participation on the discussion will be partial if information is not qualified. Qualified information allows the equality of opportunities in the understanding of a phenomenon when a policy measure is defined. Contrary, participation will be partial and could even generate sinister mechanisms of biased decision making.

The key principle is the emphasis in the participation based on a dialogue of knowledge. It becomes extremely important harmonizing the knowledge triangle (stakeholders, scientific community and government) under some neutrality principle, ensuring quality of terms between the parts.

Developing mechanisms of communication and diffusion of the information to the civil society is another key element that makes to good governance. The role played by local media is crucial. In this point, the presence of radio and television programs has been fundamental during the COMET-LA process and can be an important tool for integration (participation of *Hola Pehuén* and *Bitácora*, among others, should be remarked).

4.2.2 Representation and meeting spaces and participation mechanisms

Secondly, representation and meeting spaces between different actors must be found. This can only be achieved with a deep knowledge of the history of each community, distinguishing some stages on the evolution of civic participation.

It is important to recognize which the existent spaces are and which ones are able to be built in order to achieve a higher level of integration and equality in decision making processes. This does not lessen the need for a definition of roles and competences for both the internal and the external stakeholders groups, which can be better defined if are determined in a frame of formal rules.

A higher degree of equality and integration can emerge from horizontal, instead of vertical, dialogue processes, through permanent communication channels. A concrete identification of the tools for implement these dialogue processes is required. The organization of thematic working roundtables could be an option (about, for example, sustainable fishery, coastal management, protected areas or sustainable tourism), having periodical meeting points and joint projects.

The COSUDE (2007) defines five basic principles that should be implemented in order to embrace a correct governance model: the accountability (the obligation that decision makers have to respond to control mechanisms), transparency (related to getting and using information), non-discrimination (no excluding any group to the usage and the decisions regarding resources), participation (no excluding anyone to taking part of decision process) and efficiency (make the best possible use of natural, human and financial resources). While the first principle (below addressed) is closely related to institutional framework, the other four principles summarize the need for generating mechanisms and participation spaces for information diffusion.

It is important to highlight that this corresponds to some of the main answers emerged in Argentinean study area during the future scenarios assessment (see Deliverable 3.4). Community expressed a strong demand for:

- Encouraging the third sector, on the one hand, promoting the setting up of new organizations and networks and, on the other side, training their members and promoting leaders formation. Extending education, information and environmental consciousness processes not only to local community but also to visitors and external stakeholders.
- Generating spaces for community participation aimed to expand the level of stakeholders' interference in the formation of regulatory frameworks like bans regulations, road construction and coastal laws, among others. In the latter case, to determine an agenda of institutional agreements should be required.

4.2.3 Recognizing the incentives for conservation

It should be remembered that stakeholders are the Main users of the system and their actions will respond to a wide range of incentives that must be clearly identified and strategically encouraged or discouraged. The remaining answers to scenarios analysis give some idea on which the incentives guiding the community are. Stakeholders asked for:

- Increases in legislation regarding the sustainability of marine and coastal resources, as the approval of a law of artisanal fishery or a ban law
- Increases in the controls of productive activities in order to limit the resources overexploitation
- Decreases in corruption levels among external and also internal stakeholders, as well as increases in community awareness

Community itself has shown interested in resources conservation in order to base their economy (and the economy of future generations) in the sustainable use of the coastal and marine resources.

4.3 Structural and institutional previous conditions

4.3.1 Legal framework

Even when the kindness of community-based resources management are recognized, it should be noted that its implementation have to be done according to the current legal framework. This is the set of formal rules established for allowing or forbidding the actions of individuals on a SES, facilitate interaction among users and ensure ownership and tenure rights.

In the Argentinean case, it must be noted that marine and coastal resources are public property according to the National Constitution, the highest formal law, while the control of the resources use (sand mining, fishing, etc) mainly correspond to the different levels of the state (local, provincial and national). The land adjacent to the coast in which population concentrates is private ownership. The exploitation of the main activities related to the resources (fishing and tourism) is executed privately, even when some signs of joint exploitation through the fishermen chambers were observed during last years. In this complex frame of stakeholders and roles, the current legal system has become very intricate.

Property rights on land, public or private, are defined in the frame of the National Constitution, the Buenos Aires Province Constitution and additional legislation, as the national "Land Law", created under the dominance of the new National Registry of Rural Lands.

Environment and natural resources protection is defined according to the National Constitution, national laws (General Law of Environment Protection, Fishing Law, Maritime Spaces Law, Water Law; Buenos Aires Province Constitution, provincial laws (Fishing Law, Environment Law, Natural Reserves Law, Provincial Water Law; and also local laws. Moreover, it must be noted that the implementation and control of each of the norms correspond to different organisms (Ministry or decentralized offices) and frequently overlap one with each other (as in the case of the fishing laws).

4.3.2 *Institutional conditions*

According to Mayntz (2001), modern governance can emerge only in countries with some structural and institutional previous conditions: (a) a high dispersion, but not in a fragmented or inefficient way, of power in society; (b) strong but not omnipotent political authorities, which has democratic legitimacy and a high level of representativeness; (c) A strong and well organized civic society, functionally divided in subsystems (production, education, health, etc). Each stakeholder must be efficient in its own sphere and the cooperation and coordination between the spheres must be achieved in a non-confrontational manner.

Our community has shown highly heterogeneous in terms of power, conflicts, relations with the resources and answers. However, once the face-to-face interaction occurred, heterogeneity seems not so enormous anymore. Some problems and points in common can be found.

After workshops and the Policy Conference COMET-LA discussions, the research team considered that three new conditions can be added to the conditions above mentioned: (d) bringing guidelines about how to move from local willingness to government areas in the case of modern democracies; (e) developing and establishing evaluating and monitoring process for internal conflicts resolution, since many times local corruption hampers the governance process; and, (f) funding arrangements for ensuring participation.

In relation to (d), it can be remarked that a new kind of politics could be needed if governments are not able to understand the bottom-up process construction. Planning coming from communities would be a new institutional form.

The question is if current public policies and government systems are ready to incorporate community-based management strategies. In other words, is civic participation based on collective action allowed in the frame of the current legal framework? As stated before, the tools for implementing this kind of management must be designed and probably some legislative changes will be needed in order to achieve it. This is the reason why the construction of an agenda of modifications and new institutional agreements is required in order to set up the governance.

5 [Lessons learned](#)

5.1 **Methodological**

The main purpose of the Argentinean group during the COMET-LA three years research period was *to propose community-based sustainable management and governance models in marine and coastal systems* by analyzing its application in the Argentina case study, and up-scaling the results to higher geographical levels. A first step was the characterization of the social-ecological system adopting the Ostrom's framework. This leads us to the identification of the role played by the different variables in the current and potential functioning of the ecosystem according to the perceptions of the local communities; the identification of community-based sustainable management and governance models in marine and coastal systems; and the inclusion of community and local stakeholder's knowledge and views in the process to develop the learning arena and to match scientific and local knowledge about the problems and their solutions. All these objectives will be addressed through the field work performed jointly between researches and the community stakeholders in a participative dynamic process, in the "learning arena" proposed by the project.

Participative methodological approaches have been used to capture the key characteristics of these social-ecological systems in the area of study and the impact of climate change. The team has found that the methodology was appropriated to recognize the social conformation and the conflicts of interest on governance system.

The results of the analysis of the information gathered from previous studies of the Argentine team, but mostly from the input provided by stakeholders and decision makers clearly show that Argentine case differs from the Colombia and Mexico cases from the governance system. Where in the other countries community based governance is a major issue and defines the conditions for the environmental management and the definition of strategies towards future climatic changes, in Argentina stakeholders and decision makers appear somewhat separated and, many times differ, in their appreciation of the realities, problems and potential solutions.

Second step of the analysis was the structural prospective study (PSA). Several workshops were held in order to identify the most important variables of the system, their relations and

intensity. Social actors recognized and discussed the key variables of the SES characterization according to their perceptions. Control variables were defined as elements whose changes could enable an evolution of the system to a new state: *Artisanal fishery history*, *Conservation Measures*, *Community awareness*, *Changes in coastal and estuary environment* and *Tourism*. Also, variables as *Resource sustainability*, *Fishermen association* and *Artisanal fishery* were named as challenges. The indirect interactions with lever variables could show interesting outcomes.

Note that the methodology allowed building meeting-spaces to discuss the common use and management of resources. From PSA workshops the consensus about the needed of a common management plan in coastal and marine system was strengthened in order to ensure the sustainability of the system.

Last step of the analysis was scenarios analysis. This was a defiant methodology, in particular at the Argentine case, because our society has a cultural focus on present problems and challenges; the conjuncture prevails over the future.

Nevertheless, the outcome of the activity was constructive and promising, in particular because the SHs noticed the importance of their participation in all the actions aimed to construct their "future". They recognized the relevance of their own participation in the creation process of rules and laws, also understanding that they could be involved in several activities for controlling resource management.

More specifically, SHs considered that the more relevant issues for Community-based Management are: training and promotion of organizations, environmental education, information dissemination and the development of an appropriate, controlled and genuine legislation coming from their own common interests instead of the powerful interest groups. It was pointed out the importance of the participation of all actors, and its interactions with external organisms, in the management and control process of natural resources and the organization of institutional networks to strengthen the governance.

5.2 Related to marine and coastal systems

Coastal environment is an important resource for the area since it supports the two main economic activities: fishing and tourism. Regarding fishing, the stakeholders have a deep knowledge of the environment, which allows them work in a sustainable way in the most part of cases. At the same time, climate conditions and its effects (plankton availability, storms occurrence, among others) affect the activity causing in some cases the depletion of the fish stock. In the case of tourism, coastal erosion reduces the availability of sand beaches and destroys roads and building near to the coastline. These problems are mainly observed in Monte Hermoso and Pehuén Co.

Environmental problems are different in Daniel Cerri, Ingeniero White and Villa del Mar. In these cases, problems are related to the Petrochemical Pole activity, which generates water pollution and requires a continuous dredging of the access channels. Industrial activity have

displaced fishery and have also had a strong impact, causing the disappearance of some species and encouraging the appearance of new ones.

Due to the big extension of the area under study, different coastal environments are involved and then the interaction between the different localities is made more difficult. This situation implies a huge diversity of environmental and socioeconomic problems in the area. In many cases, the boundaries between them are confused and even overlapped, generating future conflicts (for instance, the last conflict between fishermen exposed in Annex 1 of Deliverable 3.4). In this sense, spatial heterogeneity makes more difficult the communitarian action.

5.3 Policy implications

As Zurbriggen (2011) established, politic process in Latin America could affect governance in a different way that in Europe or other cases around the world. The role of State has changed since the decentralization and privatization process during the 90th. These movements in the institutional context lead to the emergence of new actors in the form of public, private and social organizations and make relations between central government and community more complex. Then, institutional relations had to be reinvented, even by resettling the decision power location. In our case, some examples were the creation of new ministries or secretaries at provincial level, or the concession of Ingeniero White Port to the Consortium of Management of Bahía Blanca Port (CGPBB)⁴. In such complexity frame, the dissemination of information about competences, responsibilities and interest are needed to conduct a efficient governance system.

In Argentina, a gradual increase of NGOs and private sector in the provision of local public service and responses to social demands occurred, while the participation of State was reduced. It was a spontaneous and spasmodic process of creation of new institutions that contribute to fill the gap left by the national State. The strengthening of such institutions and the articulation between them and with the different government levels are still a strong objective in terms of policy implication.

On the other hand, an increasing democratization of the politic regimen was observed in Latin America along the last decades. But this process is weak and new enough to SH to recognize common action as a genuine form of civic participation. For some SH in Argentina, the vote seems to be the only way to have any influence on political decision process. Collective action should be reaffirmed as a manner to plan, state and conduct norms in the control and management of the resources.

Moreover, although activities relate to control and management could have been, in part, decentralized at local levels, power decision and financial resources have not been decentralized at all. Local communities have strong difficulties to tackle the control and management goals without the logical financial resources.

⁴ See Deliverable 1.4 at www.comet-la.eu

One recommendation in order to obtain the financial resource could be the payment for ecosystem services (PES). Of course, the (real) value should arise from the community itself. The PES schemes are attractive as mechanisms to improve conservation and achieve sustainable development outcomes since it aim to reach mutually beneficial agreements between different SH linked to the use and management of resources. Latin America has been a pioneer in the implementation of PES and numerous schemes are now in place (Martin-Ortega *et al.*, 2013). However, Martin-Ortega *et al.* (2013) show that there is a certain mismatch between how PES schemes are presented in theory and how they are actually practiced or reported in the literature, for which we should be careful in the implementations of such tool.

6 Conclusions and further research

The relevance of the study of governance systems on ocean and coastal zones is straightforward. This importance might be even higher in a country as Argentina, which has one of the most extensive coastlines in Latin America. For this reason, the objective of Comet-LA in Argentina was to *identify sustainable community-based governance models for the management of natural resources in the case of the marine and coastal areas.*

Marine and coastal resources have a crucial role for social and economic development. This fact have been stressed in the Agenda 21, one of the documents emerged from the Earth Summit in Rio de Janeiro 1992. The chapter 17 of the document is devoted to the sustainable management of coasts and oceans, focusing in the relationship between sustainable development and marine environments based in the following four points:

- Marine and coastal environments constitute an integral system essential for the global maintenance of life;
- Coasts and oceans offer social and economic opportunities for sustainable development;
- The Law of the Sea (1982) of the United Nations states rights and obligations of States and provides the international basis upon which to pursue the protection and sustainable development of the marine and coastal environment and its resources; and
- According to the recent environmental destruction and depletion, new approaches for coastal management are required at national, subregional, regional and global level, approaches that are integrated in content and are precautionary and anticipatory in ambit (Arauz 2009).

From the point of view of community-based natural resources management, coastal areas exhibit some additional difficulties derived from proper characteristics of the territory: conflict on legislation about resource tenure, confuse definition of geographical limits, conflicts related to land use, climate vulnerability, among others.

According to the findings of COMET Project, an adequate governance model for these systems should ensure arrangements between SES users and upper legislation systems, with rules able to be modified by stakeholders' initiatives. At the same time, stakeholders must

monitor and enforce the laws, restricting free riding behaviors and avoiding a loss in social benefits (Fraga et al, 2008).

The Argentinean team believes that the analysis of the implementation of the relationships and indirect influences, and the nonstructural prospective analysis (scenario analysis) must be deepened and strengthened to achieve a complete knowledge of the system and to make a conclusion regarding the community management of the resources. This will allow determining if the SES could have the possibility to promote laws and regulations allowing community-based resource management, where the opinions of all the people involved with the resources and services provided by the system will be taken into consideration. It is important to analyze and understand if social actors have the capacity and the real possibility to take the formal governance of resources and make rational use of them, ensuring the interests of them all.

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