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**STEPS AND TOOLS
TOWARDS
INTEGRATED COASTAL AREA MANAGEMENT**



METHODOLOGICAL GUIDE

VOLUME II

UNESCO 2001

*" We have become masters of
technical discovery and innovation.
We must now set ourselves to becoming masters
of social /institutional discovery and innovation "*
Phua Suk Ka Phap

Ifremer

UNESCO 2001

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This guide was compiled and edited by :
Jacques Denis and Yves Hénocque, of Ifremer
with the participation of the following contributors :

Martine Antona, CIRAD- Tera, TA 60/15, Av. J. F. Breton, 34398 – Montpellier Cedex 5

Tel : 04.67.59.37.07, Fax : 04.67.59.38.27, E-mail : antona@cirad.fr

Julian Barbieri, COI-UNESCO, 1, rue Miollis, 75732 Paris Cedex 15

Tel : 01.45.68.40.45, Fax : 01.45.68.58.12, E-mail : j.barbieri@unesco.org

Paul Barusseau¹, Laboratoire de sédimentologie marine, Université de Perpignan, 52 avenue de Villeneuve, 66860 Perpignan Cedex, Tel : 04-68-66-20-57, e-mail : brs@univ-perp.fr.

Louis Brigand², IUEM, Technopole Brest Iroise, 29280 Plouzané,

Tel : 02-98-49-86-87, e-mail : louis.brigand@univ-brest.fr

Gilbert David, IRD, BP 5045, 34032 Montpelliercedex 1,

Tel : 04-67-63-69-81, fax : 04-67-63-87-78, e-mail : david@mpl-ird.fr

Olivier Dedieu : CEPEL, Faculté de Droit, 39 rue de l'Université, 34060 Montpellier Cedex

Tel : 04 67 61 54 60, fax : 04 67 61 54 82, e-mail : dedieu@sc.univ-montp1.fr

Jacques Denis³ : IFREMER, laboratoire côtier, centre de Toulon La Seyne, BP 330 83507 La Seyne sur Mer Cedex,

Tel : 04-94-30-48-20, fax : 04-94-06-55-29, e-mail : jacques.denis@ifremer.fr

Cécile Grignon-Logerot, Ministère de l'Équipement, des transports et du Logement, La Grande Arche, 92055 La Défense Cedex,

Tel : 01-40-81-94-86, fax : 01-40-81-82-92, e-mail : cecile.grignon-logerot@equipement.gouv.fr

Yves Henocque³ : IFREMER, laboratoire côtier, centre de Toulon La Seyne, BP 330 83507 La Seyne sur Mer Cedex,

Tel : 04-94-30-49-07, fax : 04-94-06-55-29, e-mail : yves.henocque@ifremer.fr

Bernard Kalaora : Conservatoire du Littoral et des Rivages Lacustres, 36, quai d'Austerlitz, 75013 – Paris.

Tel : 01-44-06-89-00, Fax : 01-45-83-60-45, e-mail : cel.paris@wanadoo.fr

Marc Lointier⁴ : IRD, Maison de la télédétection, 500 rue JF Breton, 34093 Montpellier Cedex

Tel : 04 67 54 87 03, fax : 04 67 54 87 00, e-mail : lointier@teledetection.fr

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¹French National Committee for the International Geological Correlated Programme (I.G.C.P.)

²French National Committee for the Man and Biosphere Programme (M.A.B.)

³French National Committee for the Intergovernmental Oceanographic Commission (I.O.C.)

⁴French National Committee for the International Hydrological Programme (I.H.P.)

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PREFACE

It is a necessity, not a truism, to say that coastal areas are the places where demographic, economic, and environmental pressures reach their maximum. The space is already subject to conflicts of use between different sectors such as fishing, fish-farming, industry, shipping, and recreation. In addition, all the impacts of global change will converge there : changes in sea level, climatic changes, etc. The sustainable development of these regions depends upon the way in which the use of the coastal areas is approached, not only by coastal communities, but also Governments and international organizations. Hence the need to advice the inhabitants and managers of the coastal milieu, whoever they may be.

This was the concern uppermost in our minds when we at the French National Committee for the Intergovernmental Oceanographic Commission (IOC) decided to support the publication of the Guide to Integrated Coastal Area Management (ICAM). The first volume published by the IOC described the general outline of ICAM. The second volume describes the ICAM process in greater detail, citing examples of the process in action, from the experience of the contributors to the guide.

The work that went into the publication of both volumes of the "Guide" is remarkable in many respects. To begin with, the feedback is from a variety of experiences. Moreover, it is the product of inter-disciplinary research, involving specialists from all the French agencies competent in the field. Lastly, it represents the cooperation of the national committees of UNESCO's main scientific programmes (IOC, IHP MAB, IGCP) : a cooperation that is exemplary as concerns other subjects related to sustainable development.

It is my personal hope that the methodology outlined in this Guide will reach far beyond the group that wrote it. Ideally, it will enable users to elaborate further, more specific guides, and will help set up local projects, especially in developing nations. The first volume of the Guide was so successful that the second allows great hopes. This is only a beginning, not an end.

Indeed, this is a beginning which highlights the role of UNESCO's coastal programmes with the IOC, in particular the one entitled "Integrated Coastal Area Management" (ICAM) and the coastal module of the "Global Ocean Observing System" (GOOS). One programme (IOC/ICAM) is a means of studying tools for integrated coastal management, to which the Guide is a fundamental contribution. The other is concerned with operational implementation of monitoring means, the tools for such management. This is the future perspective we must all aim to achieve to make every dimension of modern oceanography operational. From the global outlook to the local one, the theory must become a tangible reality for citizens of coastal nations, enabling them to face the challenges of global change.

We owe special thanks to all the contributors to this Guide, and especially its coordinators, Yves Henocque and Jacques Denis, for the quality of the work they have accomplished. Without their personal commitment, the support of their agencies, and that of the Secretariat of the IOC, nothing could have been done.

François GERARD, President of the French National Committee for the IOC.

Working Method

This second volume of a guide to integrated coastal zone management opens a new dimension by discussing the processes involved in a more complete and dynamic way than the first. To fulfill this requirement, an expanded work group, drawing upon the knowledge of experts in political science, economics, and sociology, devoted over two years of effort (1999 – 2001) to its completion, following a disciplined working method.

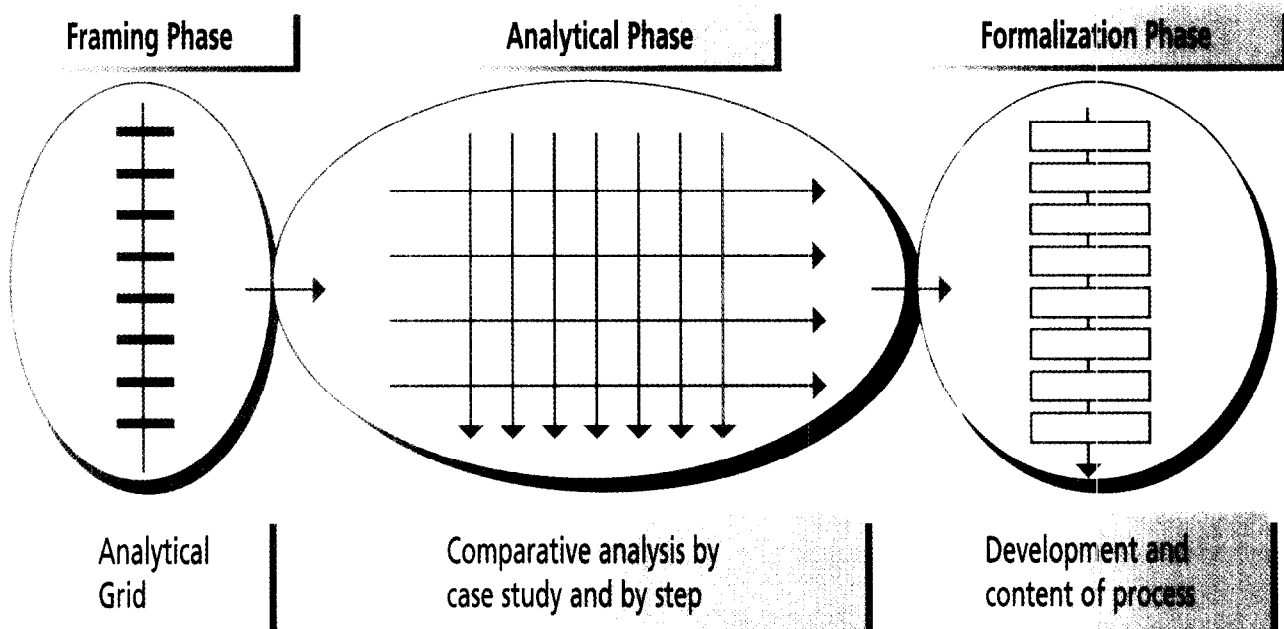
A dual principle prevailed in the application of this method. On one hand, it prescribed an approach structured as a series of steps, and on the other, it demanded that real situations be brought to light, emphasizing case studies of experience with or analysis of coastal management.

The working method is thus the outgrowth of three basic phases :

- an initial **framing phase**, intended to predefine the steps in the management process, based on the principles of the first guide as well as various representative experiences and examples of management drawn from the bibliography. This work enabled us to elaborate an analytical template for ICZM, applicable to the rest of the process;

- a second **analytical phase**, intended to facilitate the collection and organization of information likely to add to the contents of the guide. A comparative analysis was then undertaken, according to two axes, one "vertical" and the other "horizontal". Vertical analysis consisted of studying a total of twenty known or experienced cases of management, sifting them through a single analytical grid as a means of comparison. The case studies that were processed in this way contribute to a management process to varying degrees, since many of them are not yet entirely accomplished or finished. Horizontal analysis then consisted in considering all of the case studies according to phase, in such a way as to identify and select the most relevant elements in each. When this comparative analysis was completed, the potential content of the guide was clearly targeted;

- a third **formalization phase**, designed to arrive at a synthesis of the information that would make up the guide, structured according to a definitive generic grid consisting of eight steps. To give the guide the realistic aspect sought, twelve case studies were selected for their strong points and their aptitude to highlight and demonstrate the principles of the management process.



At the end of the last phase, a validation workshop was organized, in order to draw upon the experiences of ICZM professionals and managers of coastal zones.

INTRODUCTION

" Environmental management is not a question of humans' relationship to nature; instead, it is a question of human relations on the subject of nature. "

Jacques Weber

Philosophy

Although integrated management of coastal zones has been the subject of a large number of studies and publications, the electronic Forum CSI/UNESCO launched two years ago, entitled "Wise Practices for sustainable human development in coastal zones", pointed out how many obstacles to the implementation of these integrated management means still remain. It is difficult to draw conclusions from such a broad array of new experiments. Nevertheless, the experiences contributed by the over 5,000 participants in this forum demonstrate that gradually, a global trend is emerging, expressing a genuine appropriation of the concept of sustainable development, the foundation for integrated management of coastal zones.

Of the many definitions of Integrated coastal zone management (ICZM), we find the following one most accurate: "A continuous and dynamic process by which decisions are made for the sustainable use, development, and protection of coastal and marine areas and resources" (Cicin-Sain, Knecht, 1998). In other words, the goal of this process is to emphasize "proper use" of the many opportunities the coastal zone offers to any "enlightened" person. Integrated management of coastal zones therefore appears to be the most appropriate tool for the sustained development of this eco-social system, because it reconciles development with the good ecological health of the resources, and links environmental, social, and economic issues.

Once a goal has been defined, it soon becomes obvious that the field of action is always already limited to some degree by the political, institutional, economic,

and social framework structuring the environmental fate of human activities. The ICZM operator will thus find him or herself at the junction of several worlds: scientific, economic, political, ecological, and cultural, "subject to continual tension and mandating a commitment to a pluridisciplinary, mediated approach" (Kalaora, 2000). His or her task will consist of working towards the sustainable management of coastal zones by applying procedures designed to remove the barriers between representations, practices, and uses, ultimately yielding a consensual policy on the fate of the ecosystem. In this process, the operator is a player in the rationalization of the resource-population-environment-development system. He or she contributes in a pragmatic way to harmonizing public policy and making uses compatible with each other. From this point where ecological, economic, and socio-political interests converge with social aspirations, the ICZM operator must simultaneously play the roles of host and strategist, by drafting reports which present complex information clearly, by helping to resolve conflicts, by elaborating, running, and evaluating interdisciplinary communications and education programs, and by facilitating public participation.

The foregoing list, although not exhaustive, shows how complex implementation of the integrated management of coastal zones can be. It must be understood first and foremost as a collective dynamic process (figure 1) which must be coordinated using a pluridisciplinary, multi-tool approach, according to a non-linear time scale.

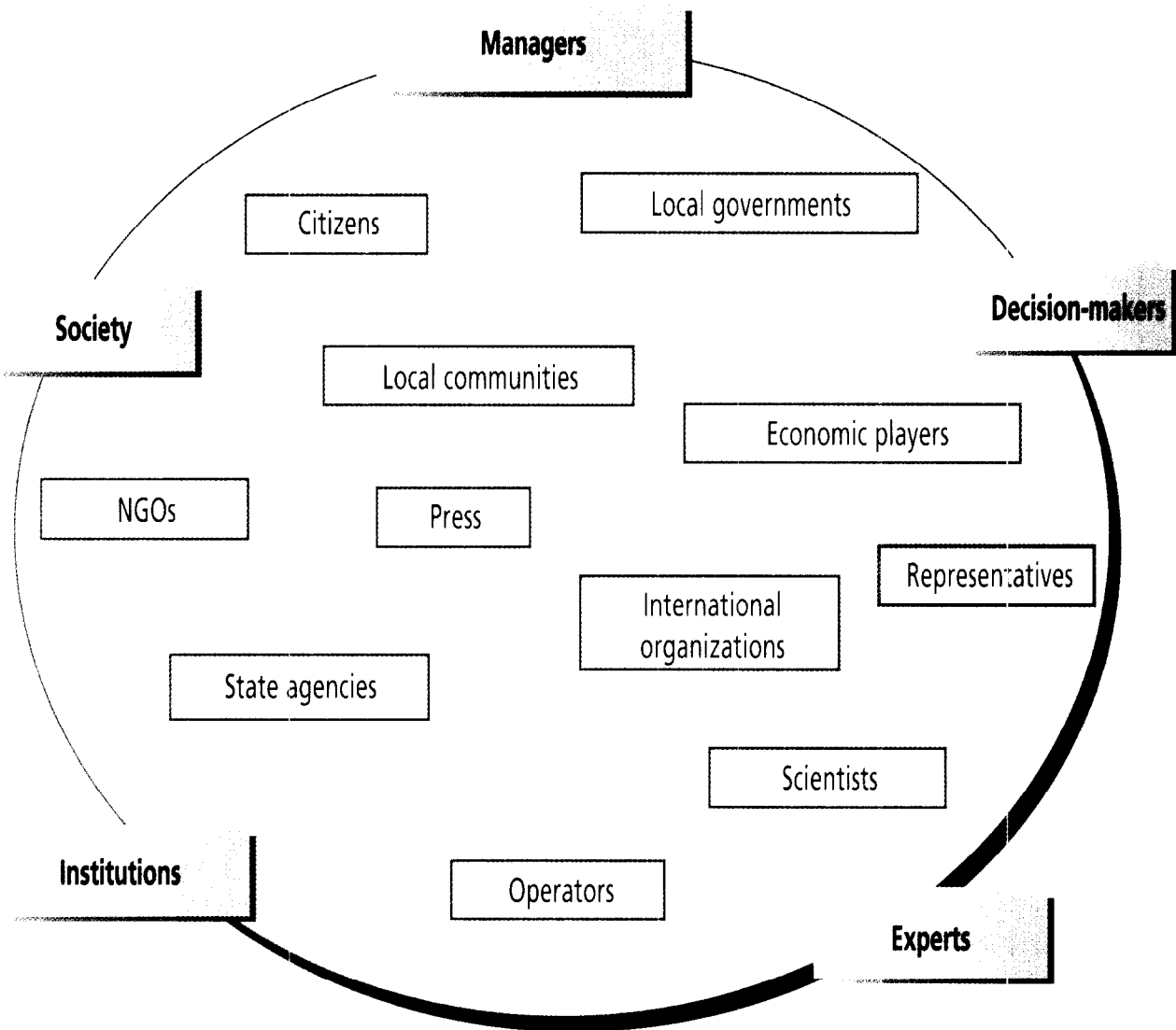


Figure 1 : The players on the field

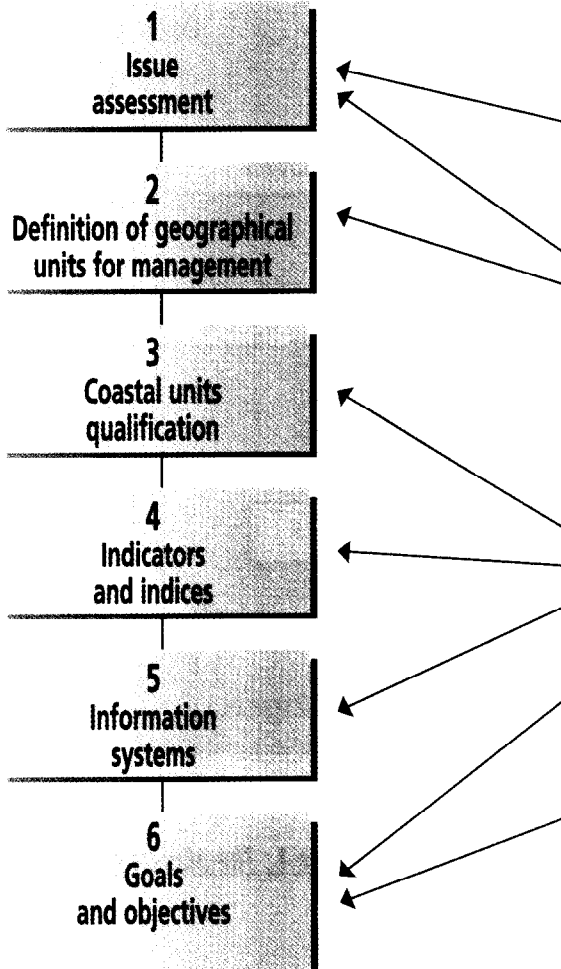
Type of approach

As a supplement to the first methodological guide on ICZM published by the IOC-UNESCO (1997), which was chiefly devoted to the elaboration of information systems, this second volume is intended to serve as a guide to the various agents involved in setting policy for ICZM (scientists, staff, managers, etc.) by setting forth the phases involved in ICZM planning.

sections of the preceding guide. The field covered herein is much greater because it expressly incorporates the socio-economical approach. This figure is a means of comparing this volume of the guide with the first one, which focused much more closely on setting up an information system, whilst Guide 2 approaches the ICZM process as a whole.

Figure 2 shows how the major phases and steps of the ICZM process unfold and indicates references to

GUIDE 1



GUIDE 2

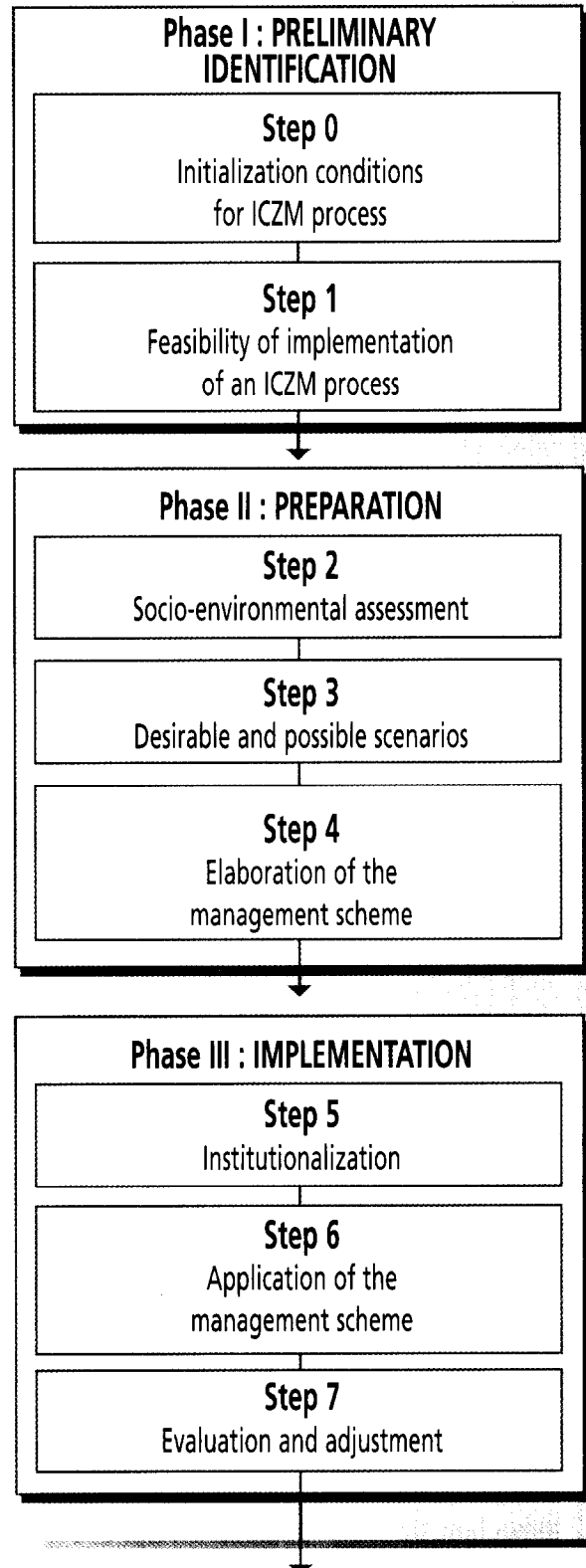


Figure 2 : How the ICZM process unfolds

Rather than making a vain attempt to be exhaustive, we aim to give the reader certain reference points by following the pattern outlined below :

- Each phase is initially given a general definition (in italics). By articulating the main questions, this paragraph sums up the general philosophy. Indeed, it is important to maintain a global vision of the issue and powers which provides a context for the action being undertaken in the same direction as the general approach.
- At each step, key points set forth in the definition are returned to in greater detail. Set off in a rectangle, a few tools and their rules are specified. These tools have been selected for their exploratory capacities : the more conventional ones, which are presented in full elsewhere, have deliberately been set aside.
- One or two examples, drawn from case studies in the authors' experience, are used to illustrate the phase by emphasizing a typical detail rather than the whole. The purpose of this approach is also to show that one never

encounters an "ideal situation." Each case presents its own particularities, which justify re-combining one or several phases or activities in a different order. Moreover, each example also clearly shows what was done as well as what should have been done.

To simplify the presentation, the suggested procedure is initially outlined in linear terms which are easier to grasp. An integrated management of coastal zones programme implies a political commitment to a territory, i.e. a space, to the people and relationships it hosts both within and with outside elements. The application of this political commitment necessarily occurs in stages, in the course of which tasks or activities are developed and products and outcomes are obtained.

Each step of the process is therefore described in this guide in terms of tasks to be carried out (figure 3). The tasks require the implementation of various tools. Each of the tasks is then described in terms of the products and outcomes it yields.

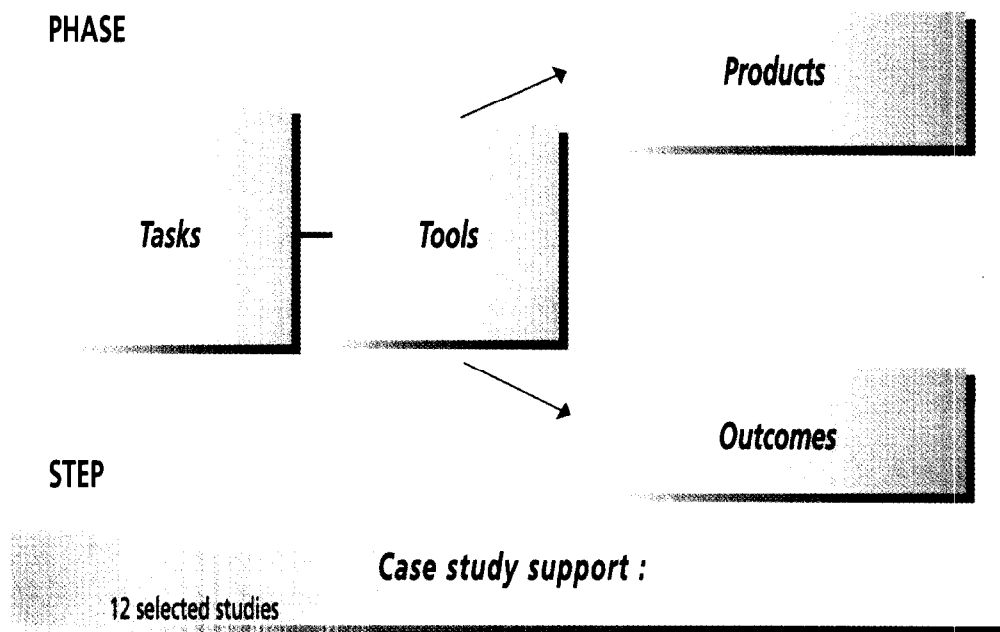


Figure 3 : Block diagram of the steps and phases

It is important to emphasize the fact that the processes engaged by the ICZM approach are as important as the results and documents yielded. These processes contribute to a new social dynamic by implicating new

players, reinforcing the expertise of agents, engaging in debate with local officials and industrialists, raising the consciousness of the participants and communicating with the public, etc.

Moreover, the reader must remember that the chronology and order of these phases can be changed without sacrificing their dynamic links. In this respect, a chart depicting "loops" may be a more pertinent illustration of the various contexts and the evolving reality which the agent is continually confronting and adapting to (figure 4). Existing context and opportunities may convince an agent to initiate the process in phase II or

even phase III. (figure 4) Sometimes, new data require the agent to backtrack to preceding steps in order to modify the content of the analyses. These re-adjustments attest to the reality of the program and justify the flexibility of the process while ensuring that the information collective is reliable, and that all the players concerned by ICZM are fully mobilized.

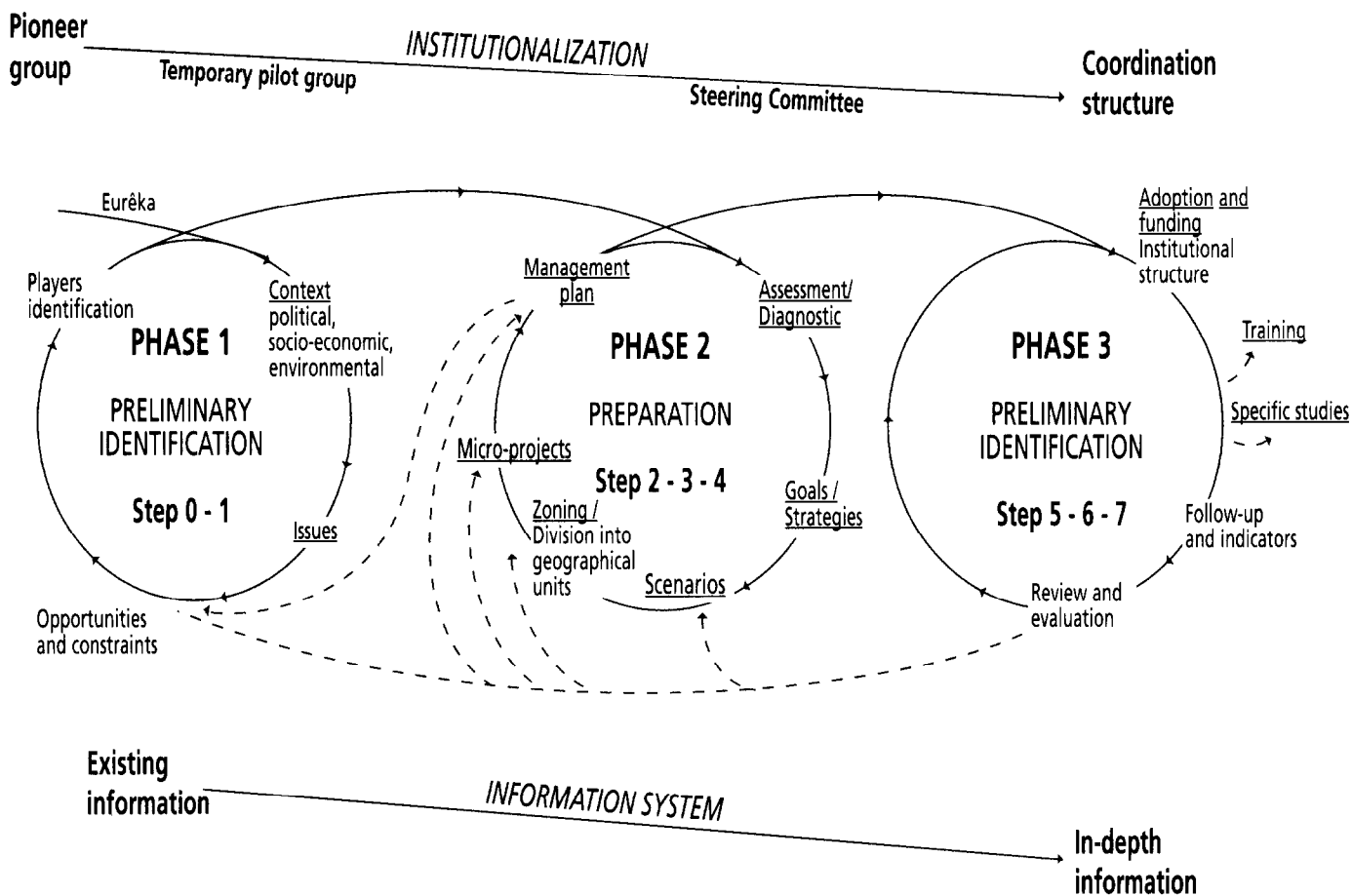


Figure 4 : Interconnections and cycles in the ICZM planning process (adapted from Salm & Clark 2000)

This guide is intended for all ICZM operators, in developed, emerging, or developing countries. It is our belief, as the examples we present illustrate, that although contexts and the sophistication of the tools available may vary to a great degree, the implementation process is always basically the same. As the CSI/UNESCO forum on "wise coastal practices" showed, this process stands only to be enriched when experiences from a broad spectrum

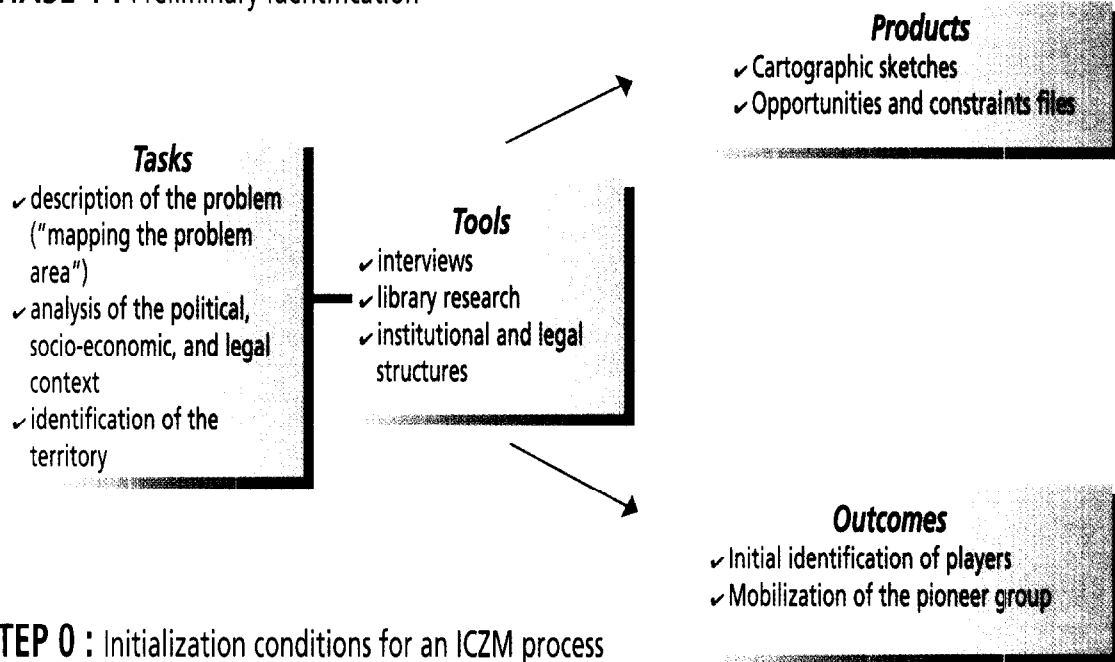
of different horizons are shared. Thus, the reader's task will be to adapt the approach suggested here, as in other specialist guides, to come up with activity lines appropriate to each local situation. As a result, we strongly recommend that this manual be used within the framework of training sessions or workshops dedicated to the integrated management of coastal zones.

How the ICZM process unfolds

Phase I : PRELIMINARY IDENTIFICATION

Step 0 : Initialization conditions for an ICZM process

PHASE 1 : Preliminary identification

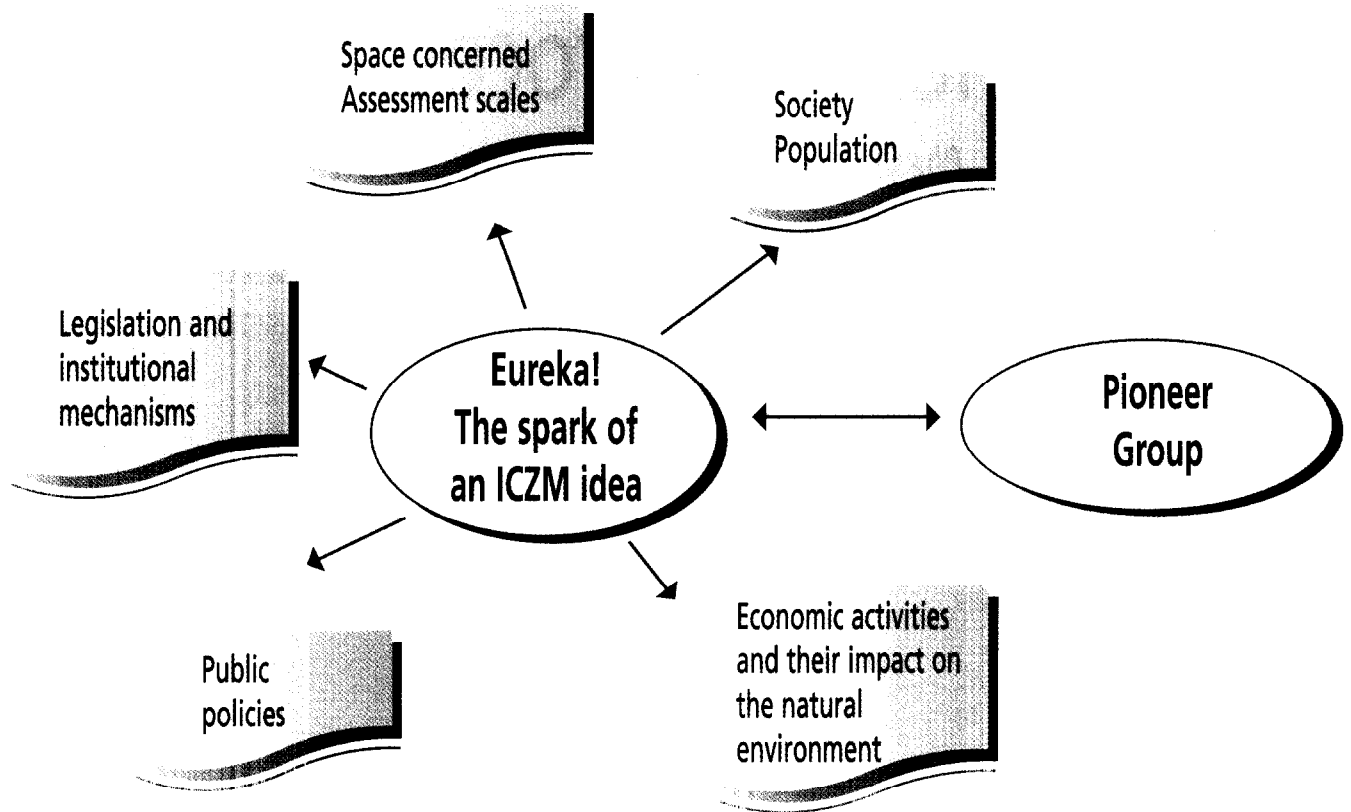


Case study support :

1. The Thau lagoon (Sea Enhancement Scheme, SMVM), France
2. Saloum Delta Biosphere Reserve, Senegal

At the outset, an idea is generated by a pioneer group, a threat is pointed out by a "whistle-blower", or a crisis is observed. The fate of this idea or initial spark will depend upon the analysis of initial conditions, the opportunities and constraints which are determined by the overall context (political, institutional, economic, social), without necessarily drawing upon the concept of integrated management. However, it is important to realize that one of the "givens" of the problem is the territorial context; that is, an area with spatial and social dimensions. The analytical scale must be adapted to encompass all the aspects of the site or region where

the project is to be started and implemented. In some cases, the national level will automatically be involved; in others, the provincial or regional scale will have a greater impact on the site and the issue concerned. In the evaluation of the overall context, the operators should be able to produce an initial identification of the various types of problems, their social framework (groups of players) and economic interest, according to the various components of the coastal zone system. Determining the answers to these questions yields reference points by pointing out the key indicators to be developed more fully in later phases.



Factors to be considered at Step 0

The "Eureka!" that sparks the pioneer group

The events leading up to the process may vary, but they usually involve a small group of individuals, regardless of their identity and legitimacy. Where a crisis or risk situation is involved, sociologists call them "whistle-blowers": that is, "non-official people or groups, with little legitimacy, or, on the contrary, individuals who are related to official agencies who step out of their official role to sound an alarm, either on an individual or on a collective basis, and according to unusual procedures" (Kalaora, 1998).

The matter at hand may thus arise from the gradual evolution of a certain situation (for example, the impact of tourist development promoted a few years earlier). In other cases, it may be the result of an emergency situation (the disaster effects of coastal erosion after a storm). In either case, it is important to analyze the overall context in order to evaluate all the forces and elements (near and far) acting upon the situation. Box one refers to the relation between space and issues.

The purpose of such an analysis is to make sure first and foremost that each player or group of players has a congruent representation of the problem (or problems). Indeed, it is more than likely that there will be discord and conflict between the various representations of what constitutes a "natural resource" and the threats that loom for such an entity. From the outset, the definition of these areas, their identification as natural resources or reserves (ex : the status of the mangrove swamp), the protection zone for coastal and marine resources, etc. are all liable to be the subject of controversy. Opinion may diverge as to their representation and definition, whether one is a user or a non-user, a resident or a non-resident, a local person or a visitor.

Any pioneer group which starts without making sure there is at least some congruence between the social representations of the various players is doomed to fail. From the beginning, it is important for the pioneer group to set aside time for discussion about concepts, terms, and ideas which are bound to have different meanings for different people.

Box 1 : Space and issues

The territory may not be a pre-existing entity : it is meaningful simply in terms of the type of issues at stake. We have been able to identify three types of situations likely to be at the origin of an ICZM process :

- In a specific territory : shared resources or use conflict in a well defined zone (geographic, administrative, or in relation to an ecosystem) which call for arbitration and regulation between users,
- From an issue to a territory : an environmental issue has been targeted and identified, but it is unrelated to a particular geographic zone. The configuration of the network of concerned players will be a means of defining the space where intervention will occur.
- From an economic sector to a territory : the development or management of an economic activity in one sector has a negative impact on well defined spaces or resources. Spatial integration is based upon an economic branch

The territorial framework : the space concerned and analytical scales

This is first and foremost a matter of defining a territorial framework which makes it possible to grasp the forces present in an analytically useful way. For example, in the case of small island states, the entire island will be taken into consideration, that is the national situation and its expression at the level of the main administrative units. In the case of a large state which may or may not be an island, the scale will depend on the degree of political decentralization. Should decentralization be very slight, it will be appropriate to take the national level into consideration. Conversely, if decentralization exists, analysis of national factors will be lesser in scope : the regional political framework is likely to be much more crucial in relation to the site targeted.

Beyond the scale chosen, it will be important in every case to identify elements from outside the system, especially any possible impact of the international market on one resource or another.

Society, population, economic activities

The task at this step is to specify the general context in which the problems identified occur. An initial, succinct approach aims to identify the causes that underlie the problems, the main players and inter-

ests at stake, and the limitations imposed by this context. Its purpose is chiefly to draw up a comparative analysis of the main economic activities in order to identify those which have the most profound impact on society and the environment. This will help define the problems at stake, as well as the sectors where anthropogenic consequences are the most crucial. It is not sufficient to list and describe economic activities.

In general, regardless of the territorial framework chosen, a number of facts pre-exist but are not necessarily relevant from an operational viewpoint. When we define a population structure, we usually do so in terms of population density (the number of inhabitants per surface unit), although population pressure (the number of inhabitants per cultivated surface unit) may turn out to be a much more significant indicator.

In this demographic and economic context, the prevailing characteristics are not limited to the job market alone. A whole spectrum of social questions related to poverty, inequality, salary scales, labor conflicts, community mobilizations, the education system, and even women's role in society. These factors will influence representations and attitudes about the environment. They underpin the degree of sensitivity to the threats existing for the biosphere and the natural resources.

The type of central government system will also have an influence : is this a free market economy or a state-run one; is the system highly centralized or not; what sort of regulations are in effect, and so on. The type of press (the role and status of the media) and the accessibility of information for different social classes are also part of the assessment of opportunities and constraints for the elaboration and application of any possible ICZM process.

It is reasonable to specify that the depth of such an assessment must always be adapted as a function of the opinion it elicits from the other participants in this initial phase. It may not be necessary to explore the entire economic, social, and political context of a project. Whether it depends upon the scope of the project, the level of development of the local thought and rhetoric on the subject, as well as the level of internal and external demand (prior experience of one of the pioneer-group members, known prerequisites of the investors and supervisors, etc.). An analysis of the economic and social situation thus is not independent of sectorial, territorial, and environmental policies developed at various echelons.

Public policies : sectorial, environmental, land-use management, etc

Sectorial activities and the conflicts that may result from them depend chiefly upon the sectorial policies implemented (or not) by specialized government agencies and ministries, in a space (the coastal zone) which is still almost always subject to the traditional legal distinction between land and sea, and fragmentation which varies according to sector. Thus, it is necessary to study the sectorial policies, the institutions involved, and the tools which are used to implement them. Of these last, we should make a distinction between regulatory and legislative tools (prohibitions/authorizations, monitoring, inspec-

tion), and non-regulatory tools (taxation, subsidization, voluntary agreement, national information system, scientific research, etc.).

Property-ownership statutes and land-use planning are often at loggerheads with the application of sectorial or environmental policies. It is thus a matter of identifying these points of contention, which are often due to horizontal coordination problems (between institutions at the same level of governmental hierarchy). Vertical coordination (between institutions descending from national to local) may also be a problem. At the end of the chain, it would be appropriate to analyze the effective role of local authorities in the implementation of public policy, their degree of control over their territory's resources, especially in coastal areas. Likewise, the ways in which local players participate in decision-making processes (traditional organizations, community groups, businesses, NGOs, etc.) are also relevant.

Legislation and institutional mechanisms

Despite its economic and ecological importance, the coastal zone, located where land and sea meet, is usually ignored by law as such. Only rarely does legislation institute a form of total integration of all the elements which should be taken into consideration. From the sea to the land, through such intermediate zones as the beaches or mangrove swamps, legal regimes overlap and replace one another, and traditional practices. Usually, there are several ministries piloting sectorial policies with regard to the sea (fishing, transportation, water-quality control, etc.) and with regard to the land (city planning, public works, agriculture, energy, etc.). It is therefore essential to inventory and analyze not only all the existing legislation, but also the institutional mechanisms which implement policy, from the national level down to the local one.

Example 1 : An institutional mechanism which is explained by competition between activities in one space : *The Sea Enhancement Scheme (SMVM) for the Thau lagoon*

The context :

The Thau lagoon is a saltwater lagoon located on the western part of the French Mediterranean coast. It is surrounded by several municipalities and is part of the Languedoc-Roussillon Region, which covers the entire western half of the French Mediterranean coast, from the Rhône River to the Spanish border.

Since the 1960s, the population in this zone has increased sharply, especially on the edges of the lagoon which have been built up at a great rate. The proportion of unemployed population is also high.

The southeastern and southern shores of the sea-lake were developed for coastal tourism, one of the goals sought by the national government in the 1970s and 80s (Interministerial program for the development of the Languedoc-Roussillon coast). This policy funded the construction of marinas and other amenities for tourists in and around the main local city, Sète. Although Sète's shipping industry is in decline, it still has a strong industrial potential, and the city has a large industrial zone. It is also the biggest fishing port on the French Mediterranean coast (large and small craft).

The lagoon's northern and northwestern borders consist of a less densely built-up residential area, characterized by economic activities like fishing (declining) and seafood farming (steadily rising), wine-growing (which has received European Union incentives to concentrate on quality rather than quantity), and tourism and leisure activities, which have a high development potential and will create increasingly important user conflicts.

In France, the central government in Paris has always had a pre-emptive power over the coastline, which is seen as a strategic zone. It has thus been entitled to full jurisdiction over the DPM (or Public Maritime Domain), which is bounded on the ocean side by the low-tide line at neap tide. The management of most of the activities carried out in this zone (fishing, seafood farming, harbor infrastructure, shipping, and pleasure boating) has traditionally been the State's business. Within this framework, two types of policy exist side by side : sectorial policies (industrial and shipping infrastructure, seafood farming, fishing, and the environment) and the land-use development policies which were enacted until the decentralization law was passed in 1982. Since then, the power of local authorities has increasingly been asserted, especially in relation to the development of the tourist and fishing industries. However, it would not be appropriate to say there is any leadership comparable to that plied by the central government.

Illustration of the ICZM approach :

Beginning in the mid-1980s, the State adopted as goals the settlement of the conflictual coexistence of various activities around Thau lagoon, the application of the 1986 Coastal Law, and the assertion of the State's leadership role in coastal-zone matters.

As a result, the scheme chosen for the management of Thau lagoon and its activities was the SMVM (Sea Enhancement Scheme), a multisectorial-type master plan instituted by the 1986 Coastal Law. The only pilot legally possible for such a plan is the State (through the Prefect and Maritime Services). Step 0 was limited to reflecting upon the enforcement of the coastal law and the arbitration of the many conflicts as to uses legitimized by the State : conflict between pleasure boating and seafood farming, urban pollution and pond water quality, etc.

Source : Dedieu, 2000

Example 2 : Elaboration of an integrated management plan for the Saloum Delta Biosphere Reserve (Senegal)

The context :

The Saloum Delta estuary and mangrove swamp (Senegal) is made up of three systems : island, maritime, and continental. Having become in large part (180.000 hectares) a Biosphere Reserve, this territory is inhabited by a population of 200,000, although its influence concerns a population six times higher. Although it is classified as a protected area, the activities practiced there (oyster-farming, agriculture, herding, arboriculture, and forestry) and the way they are managed are exerting increasing pressure on the biota, threatening its integrity. In the early 1990s, a group of scientists, aware of the impasse, decided to take action.

Illustration of the ICZM approach :

In this case, the pioneer group is a scientific team from Cheikh Anta Diop University in Dakar, with the support of the UNESCO Ecological Sciences Division and MAB, which played the following role :

- synthesis of impacts, constraints and solution hypotheses,
- formulation of integrated management and action strategies oriented towards the recovery and protection of damaged ecosystems (mangrove swamps, tannes), the improvement of the way natural resources are used, and the reinforcement of the population's institutional, technical, and financial capacities,
- definition of implementation mechanisms and follow-up.

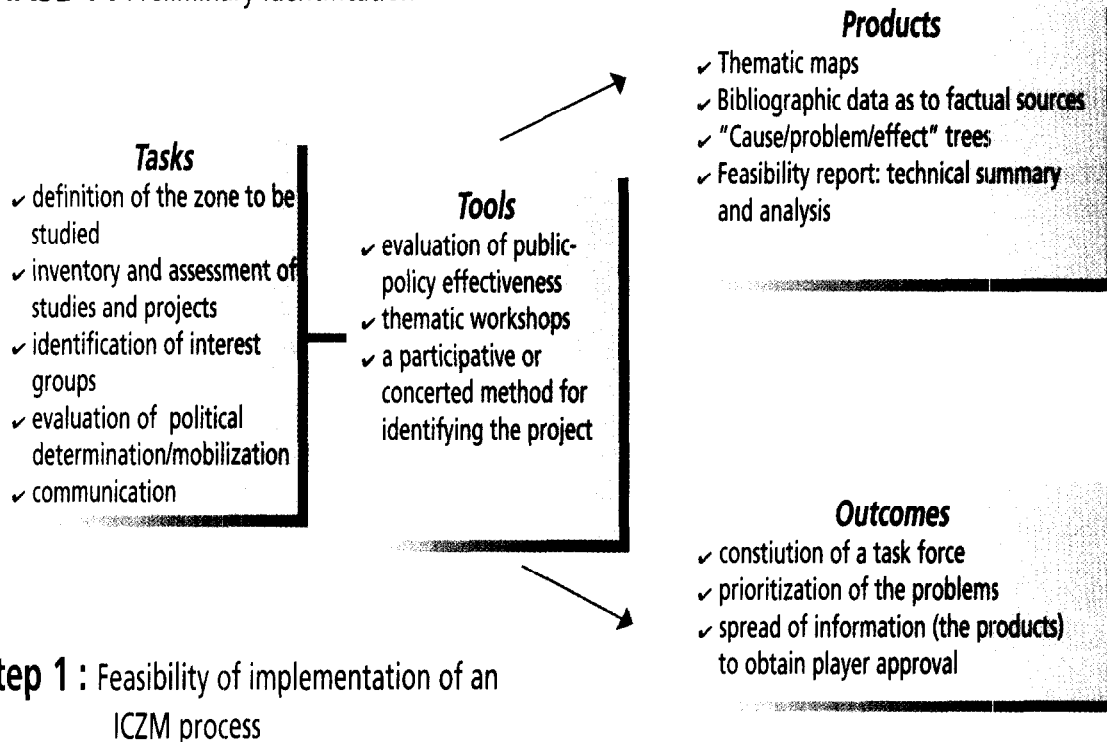
In the field of legislation and regulation, the group emphasized the existence of an abundant body of decrees, ordinances, and codes which regulate the property rights of village and community spaces and the management of fishing rights. Because they interfere with customary practices, these texts are often poorly adapted and disregarded. Local communities were hardly ever associated with drafting these regulations, especially with regard to natural resource management. Furthermore, the lack of personnel and funding is an obstacle to the institutions in charge of enforcing the provisions. Lastly, a number of activities (wood harvesting, salt extraction, and the extraction of shells from sambaquis) are entirely outside the law.

These well-aimed observations made by a pioneer group remained at the stage of a message of warning. The normative recommendations to which the work gave rise were never applied – like earlier normative recommendations (laws, etc.). Institutional support will clearly be necessary.

Source : Diop et al., 1998

Step 1 : Feasibility of implementation of an ICZM process

PHASE 1 : Preliminary identification



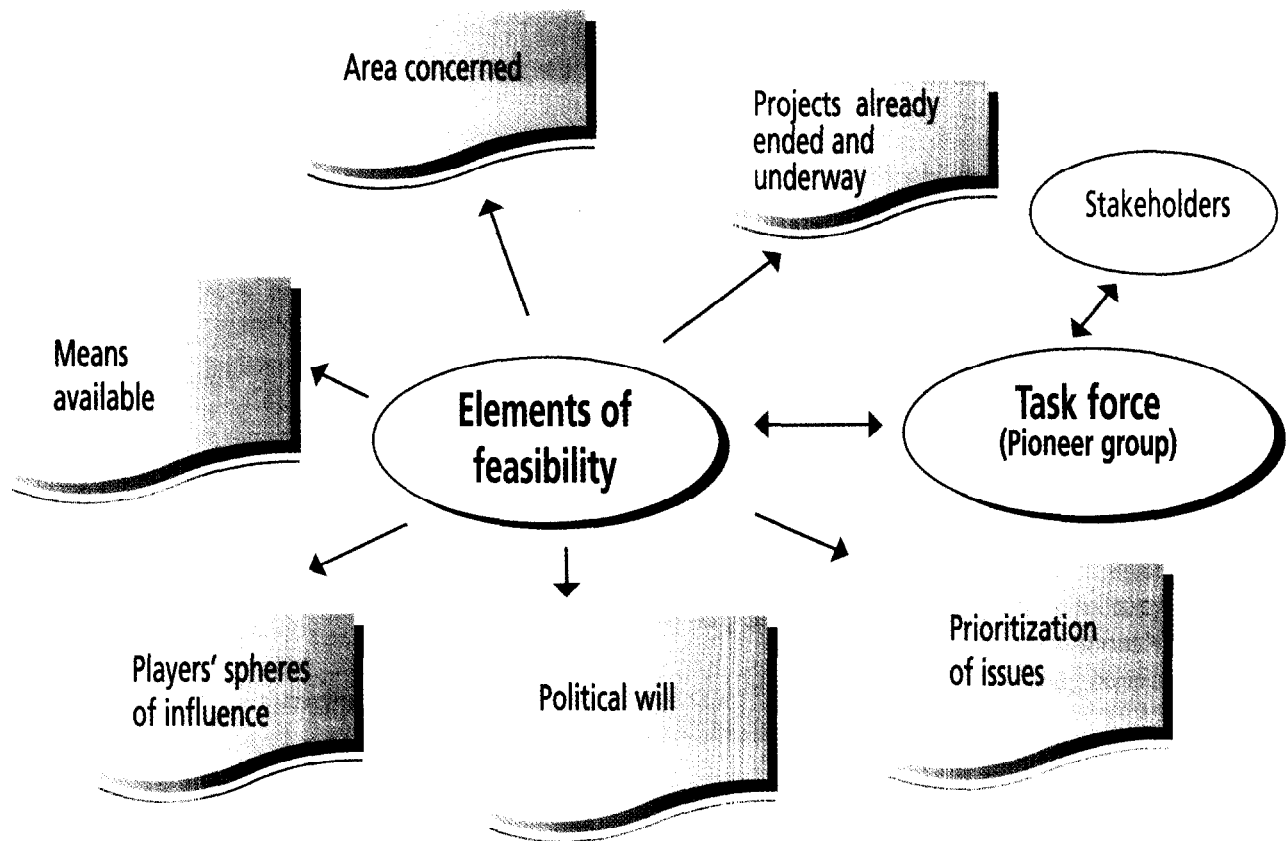
Step 1 : Feasibility of implementation of an ICZM process

Case study support :

3. Reunion Island Natural Reserve
4. The Côte d'Opale, France

Once the conditions (both positive and negative) related to the overall context have been made explicit, it is important to specify what the context covers locally. This will help define the geographical limits of the zone or site concerned by the project. The group which carries out the tasks involved in this step may be the same as the pioneer group, but not necessarily. Because it must represent a number of interests (institutional, disciplinary, geographic), it may be an embryonic form of the steering committee. This task force will have to supervise the elaboration of a fact-finding report (on environmental and socio-economic factors existing in the zone), the main issues, the players concerned, and the possible solutions, in the

form of economic, environmental, and land-use plans. This fact-finding report must be more than just a simple juxtaposition of knowledge and facts. It must strive to elucidate the causal system which will make it possible to reach the roots of the issues identified (the problem tree). The purpose of this report should be both to make an inventory of the resources available (human, institutional, and financial) and to evaluate the level of political determination to implement an ICZM process at various administrative levels. The Step 1 feasibility report should repeatedly be submitted to all the players involved for validation in the course of workshops or meetings.



Factors to be considered at Step 1

Definition of the area being studied for an ICZM proposal, and constitution of a task force

Despite its dependence on the overall context, the local context has specific political, institutional (community groups, decentralized administrations, traditional authorities), socio-economic, and environmental characteristics. The goal is to highlight all the elements or factors which contributed to the selection of the area which is the subject of the feasibility study. The local context will define the geographic boundaries of the area concerned. These boundaries will be drawn according to two horizontal axes : along the coastline, with perpendicular lines indicating the upstream boundary in the watershed and the lower one toward the sea. As a general rule, this definition will rest on three main considerations : administrative boundaries, ecosystem boundaries, and the boundaries within which the issue(s) occur. Often the definition arises from a compromise between these limits, or

remains flexible as a function of the problem concerned. It is important to note that in any case, these boundaries are indicative, and that it is vital to take a number of outside influences into account, as well as any need that may arise for policy coordination mechanisms for dealing with neighboring areas.

Geographic definition of the area goes hand in hand with the appointment of a task force which is sufficiently representative of concerned local players and institutions. At the point in the process, it is appropriate to take steps to provide for the recognition of the task force by local and national authorities. If the task force is truly representative, it will usually form the core of the steering commission which will be formed later.

Assessment of research undertaken and projects underway

This should not be a systematic catalogue of information (which will be necessary in the next step). Instead, it should lay the groundwork by gathering references

to studies, their final outcome (environmental, sectorial, social, economic), their form (descriptive or prospective studies), and the main issues and stakes they identify. In this regard, it is important not to omit to classify the kinds of studies which have been or are being carried out by public agencies, or, further, the developing countries for long-term development projects set up by lending organizations. It is important to identify the types of follow-up which have been or are being conducted (environmental assessments, impact studies, monitoring) and the economic sectors involved. It is also important to indicate whether the findings of these studies are accessible to the public, perhaps through subsequent popularization and outreach efforts (citizens' lectures, forums, community groups, socio-professional groups, NGOs, etc.).

This planning evaluation will pay particular attention to assessing the coordination of various planning measures set up by government at scales that are not always congruent. It is important to become familiar with the impact of these various types of planning on the area under consideration. Regardless of their degree of application, plans or schemes are the most prominent policy implementation instruments available. As a result, they are vital to any ICZM process, which aims to improve rather than replace traditional planning practices.

Identification of the main issues and players involved

It is essential to underpin the list of the issues identified with a reasoned hierarchization based on observation, even if this hierarchization may be changed at later phases in the diagnostic and validation of the feasibility report. This identification may also be based on preliminary surveys submitted to selected individual players or groups of players. The main body of the data collected can be supplemented by maps, even cursory ones, as a means of identifying where the various groups of actors are clustered geographically. In a subsequent phase, the management-plan preparation phase, we shall return to the use of these maps for a

joint analysis in the course of meetings with these very groups of players.

Existing sectorial, land-use, and environmental plans

As a rule, there is little coordination between developmental sectors when management plans are drafted. Land-use development and local zoning usually rule out the environment. Because different administrations supervise these processes and the scales of intervention also differ, it is important to be well apprised of the impact of the various types of planning on the area under consideration. Regardless of their degree of enforcement, plans or programs are the prime implementation tool for policies, and are thus vital to any ICZM initiative. The goal of the ICZM is to improve upon rather than replace traditional forms of planning.

Assessment of political will and spheres of influence of the players involved

A broad range of political support based on the motivations of the decision-makers is fundamental to drive any ICZM process with a chance of succeeding. As a result, it is primordial for any local ICZM initiative to seek support from national authorities, by creating the appropriate links. An evaluation of the political forces involved should also examine any potential or ongoing process of player coordination : institutions (governmental or otherwise), social groups, etc., may work together to discuss and define goals collectively. This concept, which is currently commonly called "governance", will be the heart of the ICZM process (see box 2). Depending on original contracts for the grouping of administrative territories (example : watershed contract), "governance" "refers to all of the institutions, networks, directives, regulations, standards, norms, political and social practices, public and private players who contribute to the stability of a society and a political regime, its orientation, and its capacity to guide, to supply services, and ensure its legitimacy." (Stoker, 1998).

Box 2 : Five proposals for an approach to the theory of governance (Stoker, 1998)

1. Governance solicits contributions from a range of institutions and players which are not all government organizations.
2. Where governance is working, the boundaries and duties are not as clear as in the field of social and economic action.
3. Governance expresses the interdependence between power and institutions associated in a collective action.
4. Governance solicits contributions from networks of autonomous players.
5. Governance is based on the principle that it is possible to take action without relying on the power or authority of the state. The role of the state is to use new techniques and tools to steer and support the collective action.

Inventory of available resources

Feasibility involves being realistic in the assessment of the goals and scope the project will target. Even with additional outside resources, it is advisable to adjust the size of the project as a function of the resources which are readily available, rather than long-term promises. The term "resources" covers both human and financial means. The purpose of making an inventory of resources is to see where efforts should be focused to mobilize these means.

Often, they are used poorly, if at all, especially in the case of human resources.

ICZM project feasibility report

The decision-maker will pay the most attention to the recommendations in the feasibility study, because these are supposed to give him/her the keys to the best approach. Thus, these recommendations should be summed up clearly in a report presented separately from the technical assessment..

Example 3 : Création d'une réserve naturelle sur le littoral récifal de l'île de la Réunion

The context :

Of the 208 km of coastline belonging to Reunion Island, coral formations and the beaches associated with them account for only 25 linear kilometers. These are all barrier reefs with a well developed boating channel, locally described as a lagoon. Anthropogenic pressure on the entire area is quite high, especially near the municipality of Saint Gilles, which is the island's main resort area. The number of vacationers from abroad using the beach is growing steadily (500,000 visitors in 2000). The first efforts made at protecting the Reunionese lagoon date back to 1976, when a Prefectural decree strictly regulated underwater hunting and shellfish gathering. For lack of a widespread consensus, these laws were rarely enforced.

Illustration of the ICZM process

From pioneer group to successive task forces

Local citizens' groups, most notably the NGO "Vie Océane", with the support of scientific circles, were the driving force in encouraging governmental powers to reinforce the protection of the reef environment. In 1992, a new Prefectural decree banned all fishing except pole fishing from the lagoon areas. In 1997, after a series of studies and a long institutional coordination process, a non-profit organization called "Parc Marin" was established by the region to manage the entire reef environment as a fishing reserve, and to promote its protection in relation to users other than fishermen. In 2002, the entire Reunion lagoon area should be classified as a natural reserve by the state. This legal status is irreversible, and, according to the authorities, should make it possible to apply an integrated management process to all of the island's coral reefs.

From 1994 to 1998, regional government drove environmental action, by funding a feasibility study and then creating the Parc Marin association and granting it operating resources. Departmental and central government are secondary players. Municipal councilmen are largely environmentally aware due to a series of meetings sponsored by the steering committee, and they finally joined the management process. In subsequent years (1999-2001), the State, through the DIREN office, took the reins of the process. It was encouraged to do so by the IFRECOR, the French Initiative for Coral Reef Protection, which is part of an international structure, the International Coral Reef Initiative (ICRI). Another distinctive feature is the growing protest of the lagoon's "informal fishermen", who feel excluded from the decision-making process, and refuse to serve the role of scapegoats in the issue of pressure on the lagoon.

The coordination structure of the projected reserve will probably be the current staff of the "Parc Marin" association. However, its status as a non-profit organization will probably be exchanged for one as a corporation with public and private stakeholders.

The difficulty of coordinating planning structures and schemes

The complex institutional interplay between five main agencies : the Prefect and Regional Environmental Office (hereinafter referred to as DIREN representing the central state), as well as regional, local departmental, and municipal authorities hindered the application of the ICZM process. The considerable size of Reunionese municipalities does not encourage mayors to engage in intermunicipal coordination or the application of guidelines and directives set forth by the State on the subject of zoning or conservation. Generally speaking, the relationships between these four players are characterized more by concerns for independence than by a will to coordinate institutional initiatives.

Nevertheless, seven municipalities consented to join the association "Parc Marin", thus establishing de facto geographic borders. The Reunion Parc Marin is part of the structure of the Sea Value Enhancement Scheme (SMVM) which, along with the Reunion Development Scheme (Schéma d'Aménagement de la Réunion, SAR), has drafted policy guidelines for the next 10-15 years. The SAR consists of a report complete with maps and graphs which point out the general destination of the territory of the region : the maps are drawn to a scale of 1 :100,000. The SAR and SMVM have been validated as guides for development and zoning. In other words, all other city planning documents, zoning regulations, and development projects must comply with the guidelines they established. Currently, however, the municipal-level government refuses to change its zoning regulations to comply with those of the SAR. The ICZM process underway is thus marked by its inability to solicit input from municipal authorities for the elaboration of its regional planning scheme.

The ICZM process cannot become an ongoing effort until it is validated by the players in the field, in particular the municipalities and their citizens. The State has tried to avoid the problem by legitimizing the process on the national level by creating a natural reserve, but this is no guarantee of success.

Example 4 : The Côte d'Opale (Nord-Pas-de-Calais, France) : how a corporate instrument was created as a means of defining an ICZM strategy, or the story of the Syndicat Mixte de la Côte d'Opale.

The context :

The coastal area concerned extends over 150 linear kilometers, from the eastern English Channel to the North Sea (4% of the French seaboard). This geographic sector is characterized by a high population density which is typical of north-western European countries. Mean density is 319 inhabitants per square kilometer, i.e. three times higher than the average nationwide (103 inhabitants per km²), and clearly higher than the average French coastal density (260 per km²); however, it is close density figures for Belgium (328 people per km²) and the Netherlands (377 per km²). This high population concentration leads to heavy consumption of space, especially along the coast : harbor and shipping facilities,

growth of various harbor cities (Dunkerque, Calais, Boulogne-sur-Mer), tourist facilities, the Eurotunnel terminal, international highways (the A16 linking it to the Netherlands and Belgium is called "the Estuary highway"). Moreover, the Pas-de-Calais strait which separates the North Sea from the eastern Channel is the world's busiest shipping lane (700 ships cruise it daily, i.e. 18% of the entire world shipping traffic).

In parallel, a high popular demand for natural reserves has resulted in the development of a number of conservation policies. As an example, nearly half of the coastline in our study was already being studied or had been categorized as a "natural" space, under a wide variety of statutes. Indeed, the coastal fringe of the eastern Channel is rife with regulations, measures, contracts, and national and international conventions which protect the habitat. At least 73 protection measures with various extents were counted. Most were concentrated near Cape Gris-Nez and the northern shores of the bay of Authie and the mouth of the Canche.

Illustration of the ICZM process :

This shoreline, which has been densely inhabited for centuries, a number of entities played pioneering roles in setting public natural-resource preservation policy. For example, the Nord-Pas-de-Calais Region led the way in 1978 when it empowered an agency (Espace Naturel Régional – Regional Natural Space) to manage and enhance the region's natural heritage. As for the General (departmental) Councils, they were instrumental in setting aside funds to purchase and manage natural sites. They worked closely with the Conservatoire de l'Espace Littoral et des Rivages Lacustres (CELRL – Coastal and Lakeshore Conservation Agency), providing significant logistic and financial support, in particular for the management of its lands. Indeed, nearly 30% of the coastline between the Belgian border and the Baie de Somme is the property of the CELRL, i.e. a percentage three times higher than the national average in France. This initiative and experience were factors in the European Union's 1996 decision to select the Côte d'Opale as one of thirty-five local and regional projects as models of integrated management of coastal zones in Europe.

The integrated coastal-zone land-use process was institutionalized within the framework of the public and private corporation Syndicat Mixte de la Côte d'Opale (SMCO) by 1996. The territory covered by the SMCO extends from the Belgian border to the Somme River. It includes four geographic zones, two departments, and 243 municipalities, for a total of nearly 800,000 inhabitants. The SMCO was instrumental in enabling the Côte d'Opale to federate and unify its projects. From the outset, it operated on a principle of "subsidiarity", which enables it to respect and associate the players and the various communities it serves. The SMCO succeeded in making up for the lack of coherence between the activities of various entities, and, through coordination and complementarity, defining a long-term, development strategy which reaches beyond French borders.

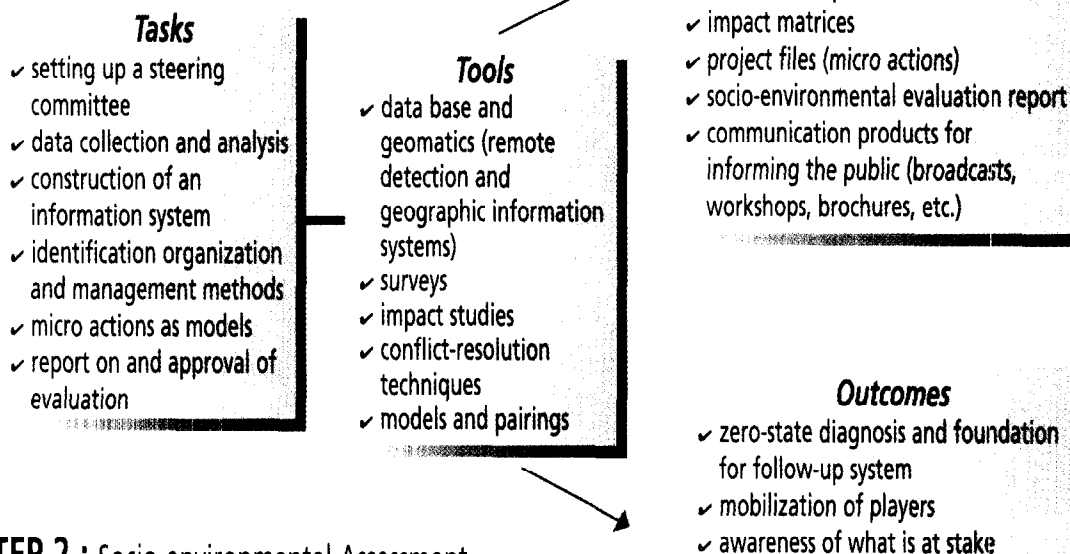
The Côte d'Opale project took shape as a charter which was drafted for the development of the coastal region. Its duty is to associate the four governmental levels involved in the elaboration of proposals concerning the coastal zone (municipality, department, region, and State), and it appears in all local management programs. The SMCO's approach is also part of an effort to obtain a modification of national legislation to provide for the management of sea and land space within the framework of a single approach. The definition of the Côte d'Opale enhancement scheme would guarantee and perpetuate the integrated coastal-zone land-use and development strategy in this territory.

Source : Excerpt from the guide "Rationaliser les connaissances pour préserver durablement le patrimoine naturel littoral", in Dauvin, coll. Patrimoines Naturels, Muséum National d'Histoire Naturelle, to be published in 2002

Phase II : PREPARATION

Step 2 : Socio-environmental assessment

PHASE 2 : Preparation



STEP 2 : Socio-environmental Assessment

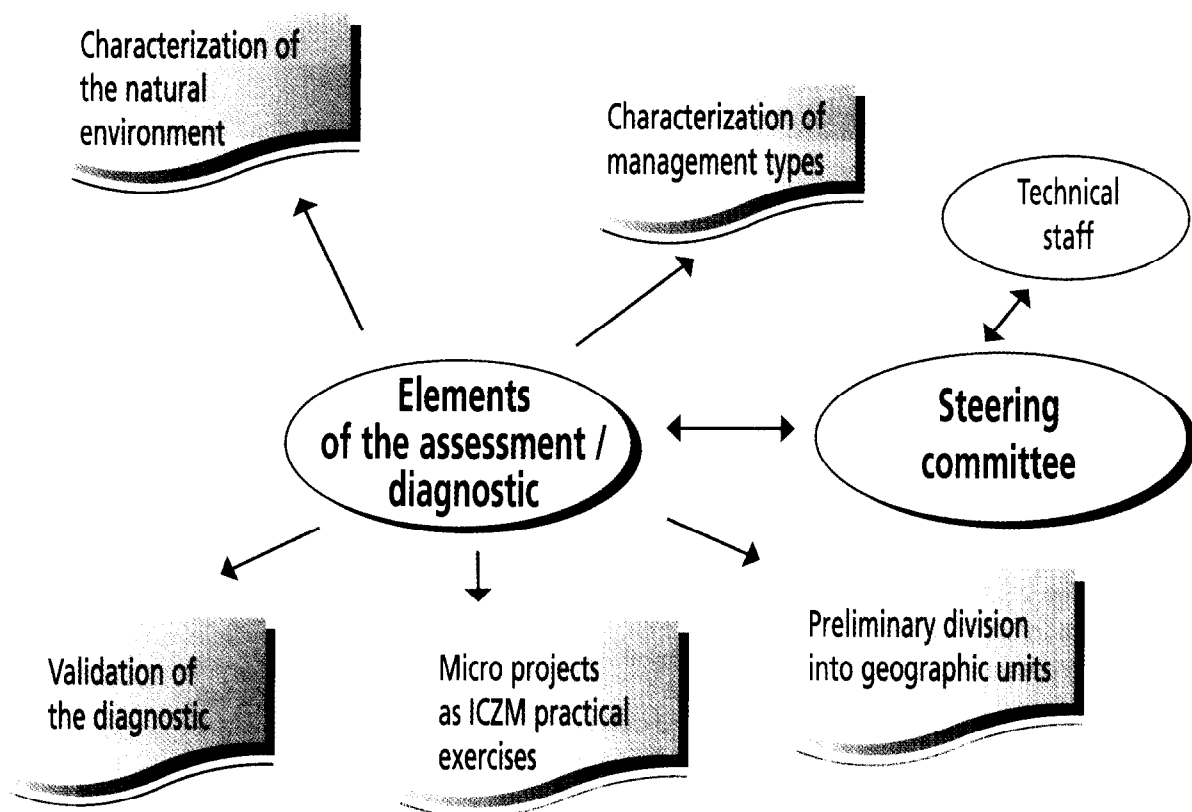
Case study support :

5. The reefs of Mauritius

6. Environmental evaluation in the Comoros

The environmental evaluation covers the "zero-state" situation and diagnostic. The goal of this step is not necessarily to produce an in-depth, detailed diagnostic, which might involve too much work. Instead, an overall assessment of the current state of the site will suffice, focusing on the three or four main issues identified in the previous step of the process. Its purpose is to go beyond simple sectorial approaches and to broach the transversal problems of territorial organization. The data collected will help build a Geographic Information System via the process and indicators described in the IOC-UNESCO manual n°36 (1997). It is superfluous to re-hash information already collected in the form of inventories and studies. On the contrary, the information contained in these reports should be presented to the users. Communication is one of the key elements of this phase, which includes the report on the environmental assessment, slated to be the subject of discussions with all the players and the

sources which provided data for the elaboration of the evaluation. Likewise, the purpose of this phase is also to make explicit basic facts, which too often remain obscure, about the players. How does each group of players relate to the environmental problems diagnosed? Is each group apt to participate in the improvement of the environmental situations observed? What are the dominant and secondary activities, and how are they organized? This is a matter of identifying how players operate : existing or potential conflicts, existing or latent conflicts, potential forces for resistance or change. In addition to the steering committee, this task requires a technical staff capable of handling the data, constructing an operational and appropriate information management system (GIS, but also grids and manual maps, etc.), doing documentary research, conducting interviews with leaders and users, and drafting the diagnostic in a clear and readable form.



Factors to be considered at Step 2

From the task force to the empowerment of a temporary steering committee

To supervise and accomplish tasks that will be crucial to the rest of the process, at this point it is essential to reinforce and empower the step-one committee, giving it the status of a temporary steering committee whose composition may change until the plan is actually being implemented. At this stage, the committee may be made up of "qualification commissions" (Gorgeu et al., 1997), which will focus on broad issues such as Poverty, Wealth, Risks, Handicaps, Transformation, Projects, etc. The idea is to promote a spatial approach which integrates data and analyses carried out earlier by professional technical staff people (technical specifications, written and cartographic reports, staff meetings, drafting of reports, etc). With this goal in mind, and in order for the committee to assume its role as the body overseeing the entire process, the steering committee must include at least one member of the technical

support staff. Indeed, the environmental technicians should be seen as partners in the process rather than suppliers of a service. The quality of this relationship will be decisive in the way the process later unfolds. The steering committee is legitimated when the socio-environmental evaluation is validated by the users and players involved.

Characterization of the natural environment and its management types

As a function of the stakes identified during the previous phase, the information to be gathered is not only environmental, in the ecological sense of the term. It may also concern all aspects of the population's heritage : that is, whatever is related to local culture, lifestyle, institutions, socio-economic activities, customs, practices, the local history, architecture, and so on.

Generally, there is far less pre-existing information available about the players themselves. Usually, it is

advisable to collect this data via an approach incorporating interviews and surveys. The purpose of the questionnaire is to survey the activities of the main groups of players concerned, their management styles, open or potential conflicts, and their vision of the problems. This data will be used to analyze the trends underway in both time and space, since the trends will go a long way towards explaining the state of the environment and vice-versa. To expand the approach, it is also important to find out what community services are available to the population (housing, sanitation, etc.). This work is directly rela-

ted to social observation tools which understand the social scene as an interplay of different groups and interests, where different rationales and priorities are in conflict. When this information is fed into the diagnosis process, it will be easier to create a context lending itself to consensus. This could be the foundation for real "social engineering" (a set of prescriptive and instrumental practices which aim to shed light on the social players' aptitude to adapt, resist, or innovate in response to environmental problems).

Box 3 : Questions to use as guidelines when drafting the territory's socio-environmental questionnaire :

1. How is the territory positioned? How do the players represent it ?
2. What is the territory's image? From the outside? And the inside?
3. How structured is the local economy? (very little, fragmented, partitioned, dense, networked, etc.)
4. What activities and jobs already exist?
5. Are local products competitive? Are markets for them accessible?
6. How can players cooperate? How can territories cooperate?
7. Are information technologies present? Do they have an impact?
8. How are the human potential and local skills exploited?
9. Have all development opportunities been explored and made profitable?
10. What local dynamics are used to consolidate activities and jobs
11. What local dynamics are available to sustain initiatives and projects?
12. Has there been any local experimentation with hybridization of resources (public, private, collective, community, individual) in order to generate new activities?
13. Are the territory's activities compatible with sustained local development ?
14. To what degree are the players mobilized in terms of the project?

Excerpted and adapted from the guide " Construire un projet de territoire, du diagnostic aux stratégies ", in Gorgeu, 1997.

At this point, we must decide what information will be relevant to the rest of the ICZM process. The information must be narrowed down to describe goals and issues accurately, yet broad enough to contain the keys to understanding the social and territorial systems present. At this point, it may be useful to commission some specialized studies, if necessary (cf. Box 4). The information may be organized in a functional information system : a broad spectrum is available, going from simple statistical tables or synthetic

diagrams to elaborate data bases, which will be geo-referenced if possible (Geographic Information Systems). Descriptive models of ecosystems may even be necessary (cf. box 5).

The second objective is to make it possible to report this information in a way that it is accessible and comprehensible to the players concerned. Example 5 is a model of a simplified report on an environmental evaluation.

Box 4 : The Environmental Impact Assessment, an example of a tool

Environmental Impact Assessment (EIA) are undertaken on a point-by-point basis to measure the impact of a specific project or program. But the approach and techniques used are related to those needed to draft an environmental evaluation in the ICZM planning cycle. It may thus be useful to draw upon the way they are organized (specific to each country) while ignoring some of the formal aspects necessitated by their regulatory nature (cf. guides cited in the Bibliography).

The Environmental Impact Assessment (EIA) has become a fundamental regulatory tool for environmental policy. Based on the Environmental Assessment approach, it has become normal practice in most countries around the world. In some countries, legislation has gone so far as to cover not only the Environmental Impact Assessment related to land development, but also "Strategic Environmental Assessment" (SEA) for evaluating policies and programs in other fields. However, the latter are as yet less prevalent.

Theoretically, the field covered by the EIA and the SEA is quite broad, but in practice it is often limited to the aspects of a project which have a direct impact on the biosphere. Ideally, if broadly interpreted, an environmental impact study would include impacts on the community, on health, risks, and even cost-effectiveness analyses. As the table below shows, it can be beneficial to combine an EIA with an SEA when a multi-scale planning system, going from the national level to the local one, is involved..

Combining Environmental Impact Studies and Strategic Impact Studies in a multi-scale land development system (From Lee & George, 2000).

Government level	Territorial land-use policy (SEA)	Category of action and type of assessment (in brackets) Sectorial and multi-sectoral actions			
		Policies (SEA)	Plans (SEA)	Programs (SEA)	Projects (EIA)
National/ Federal	National land-use scheme	National Transportation Policy	Plan for a national highway network	Highway construction program	Construction of one section of highway
Region / State	Regional land-use scheme	National Economic Development Policy	Strategic Regional Development Plan		
	Sub-regional land-use scheme			Sub-regional Investment Program	
Local	Local land-use plan				Local works project

Box 5 : Models

Although much has been written about models, there are as yet very few models available for simulating cause-effect-response chains. In an interdisciplinary context, mono- or bi-disciplinary models (physics/biology, economy/ecology) should be designed and use as analytical, exploratory, and communications tools, compatible with the use of GIS and expert systems. At the current state of research, quantified, global, interdisciplinary modelization is still a horizon rather than an operational option for management endeavors. More modest approaches, which resort to qualitative models, systemic charts, shared information-gathering and coding procedures, accountability frameworks and specialized models with limited interdisciplinarity are better adapted to the current needs of managers and planners.

Pre-zoning : division of the territory into geographical units

The diagnostic and report process is the proof of the functionality of the territorial units selected for the approach to the problems. Negotiation will make it evident whether these territorial units should be defined by their boundaries and contents as conceptualized by the players. When they are laid over a map of what is at stake in the territory, this spatial qualification approach will make it possible to list the key orientations as goals specific to each of the management units. This type of zoning (which has nothing to do with zoning for land use) contributes to the gradual construction of the management plan : each unit is considered as a territory for which a specific action plan will be defined, in the form of a development scheme, an inter-community contract, a territorial agreement, or any other form of local planning tool. This approach is described in detail in the IOC-UNESCO manual n° 36, as well as in the UNESCO guide n°38 on drafting maps of sensitivity and vulnerability.

Micro-projects or ICZM practical exercises

During the validation of the diagnostic, it is important for the committee to identify and agree upon actual activities in the field. These should be practical exercises in ICZM or small actions which remedy a well-defined problem (restoration of a levee, house-

hold waste collection, improvement of mining practices, developing a beach, etc.) which can be completed in a small amount of time and at little cost. Such micro-projects, which should be implemented quickly, serve to mobilize and train personnel. They must thus be carried out according to the same procedures as large projects (goals, procedure, schedule, follow-up committee, financing plan) with the local communities involved.

Validation of the diagnostic

Problems will be prioritized on the basis of the diagnosis report and its validation. It is thus essential to present the diagnosis and its chief conclusions clearly within the framework of various meetings or perhaps a validation workshop. Maps and cross-referenced graphs are the best medium for this type of presentation (cf. Example 5). Suggestions for modification, comments, and other reactions must be accurately transcribed with a view to modifying or re-adjusting the conclusions of the diagnosis as a consequence. The finalization and approval of the diagnosis will be crucial to sustaining support in subsequent phases, by obligation of coherence..

Example 5 : An illustration of the diagnosis of players' expectations and representations – the case of integrated management of the reefs of southeastern Mauritius Island

The context :

This project corresponds to a pilot ICZM project carried out within the framework of the Regional Environmental Program of the Indian Ocean Commission (1995-2000). The zone concerned (Mahebourg) is characterized by fairly stable population-density figures. However, a variety of activities (textile and sugar industries, fishing, sand quarrying, tourism) were causing conflicts among users, and all have an impact on the quality of the lagoon and reef.

Illustration of the ICZM process : how the diagnosis was carried out

One of the special goals of the diagnosis program was to gain knowledge of the social motivations, reasons, processes, and strategies which were resulting in such negative and unsustainable management results for the biosphere. Indeed, every effort to modify usage patterns and improve the management of the area will fail unless the logic of the prevailing system is not brought to light, from the viewpoint of both knowledge and player awareness of the prevailing system.

Six exploratory visits to the area were thus necessary, targeting the main players in the population (sand quarriers, fishermen, villagers, the sugar grower/refiner, hotel manager, and the nature conservation NGO). In the course of these visits, a sample group of thirty people were identified. They were willing to be interviewed subsequently, giving interviews lasting 2 to 3 hours. The settings where the various meetings took place were always meaningful. Likewise, the content of their discourse was quite significant : the solemnity of some of these meetings was appropriate to the emotional plea the message conveyed. Fishermen, sand quarriers, and villagers all referred to a "Creole discomfort", without naming it explicitly.

They saw the presence of observers working on an official project as an opportunity to address the institutions directly with their grievances concerning their daily lives, their family and professional problems. Their sense of injustice was expressed in various ways : by providing proof of one's professionalism, of the usefulness of one's work, by pointing out the know-how involved, the age-old quality of the trade, the "pride one feels at being an asset to regional development," etc. Isolation was put forth as the result of "a deliberate political orientation which leads to the exclusion of an entire village and does not take the community's material and social needs into account." Although these feelings may have been exaggerated slightly for the benefit of "foreign" experts, the feedback was valuable in that it put the integrative approach into perspective, in relation to a given situation.

The observers also learned from these encounters that the principal economic operators in the region were organized according to a strict hierarchy. Everyone knows the rules of the game, and the players in each sector exert exclusive control over a predefined area which excludes all those from outside. This highly effective management arrangement has serious consequences, because any disruption of the system is perceived as a loss of equilibrium. Considering the advantages of stability and comfort which result from such a well-defined and respected system, with clear regulatory laws, effective financial circuits, and territory recognized as being their own, the operator has no reason to turn to an integrated management model which would bring in players from outside the sector. Environmental mediation will consist in gradually integrating the strategies of sectors and the heterogeneous viewpoint of the players who depend on the same biota. In the absence of an organized negotiation process as a means of arriving at a consensual determination on the part of the players to reach the ICZM goals, the process will grind to a halt and the socio-environmental evaluation will be forgotten. This was the case in Mauritius, where the limitations identified in the diagnostic were never resolved.

Example 6 : A socio-environmental evaluation in the Comoro Islands

The context :

The socio-environmental evaluation carried out in the Comoros Islands within the framework of the Regional Environmental Program of the Indian Ocean Commission (1995-2000) was one of the most successful. The territory suggested for an ICZM intervention involved the entire island of La Grande Comore. The goal was to identify the natural ecosystems and areas which were fragile or subject to use conflicts, and to identify local management initiatives.

Illustration of the ICZM process : Execution and presentation of an evaluation

The diagnostic process involved the use of "problem trees" and a cohort of heavy studies. A local thematic team carried out the diagnostic, receiving training in the process to qualify them for continued participation in the ICZM, after the completion of this operation. This team set up a local office on the basis of well identified skills.

To present the findings of the diagnostic, a simplified summary was drafted in order to make the information as accessible as possible to the players (cf. the figure below). Following a validation workshop attended by some of the respondents to the study, a decision was made to emphasize support for initiatives which had already been identified (waste collection, pollution), to limit damage to the most threatened zones (reefs, beaches), and to promote the visibility of the actions undertaken as a means of raising the awareness of the entire population.

Example 5 : Presentation of the Comoros coastal zone environmental assessment (An EU/PRE-IOC project)

COASTAL AREAS	BEACHES, LITTORAL	FRINGING REEF	URBAN AREAS	AGRICULTURE AREAS ("Downstream" zone)	WOODED WATERSHEDS
CHIEF ACTIVITIES	Dredging and quarrying Tourism Urbanization Transportation	Coastal fishing Poaching Urbanization Transportation	Housing Transportation infrastructure	Agriculture for subsistence and sale Pasturing Urbanization	Lumbering (wood for fuel/ wood for building)
TYPES OF PRESSURE	Encroachment Resource mining Waste deposit	Waste deposit Resource mining	Encroachment Waste deposit Resource mining	Encroachment Waste deposit	Encroachment Resource mining
PROBLEMS IDENTIFIED	Retreat of beaches Coastal erosion Public-health problems Loss of potential tourist business	Decline in marine biodiversity Ecosystem degradation Threat to coastal fishing	Development of temporary housing Liquid and solid pollution Public-health problems High demand for wood, for building and fuel	Pressure on land in villagers' reserves Property-ownership conflicts Erosion Sedimentation of reef	Water scarcity Forest degradation Watershed erosion
MANAGEMENT TYPES	DIAGNOSTIC				
RIGHT OF WAY	<ul style="list-style-type: none"> Strong local regulation of access - depending on demand for materials - Local rights not validated by the State 	<ul style="list-style-type: none"> Presence of local rules for access to the area and regulating techniques - Local rights not validated by the State 	<ul style="list-style-type: none"> The coast and offshore zone : the only available waste-deposit areas 	<ul style="list-style-type: none"> Presence of a traditional land-attribution procedure 	<ul style="list-style-type: none"> Forest = State-owned domain open to the public
REGULATION OF ACTIVITIES	<ul style="list-style-type: none"> Activities regulated selectively by enhanced value as tourist attractions 	<ul style="list-style-type: none"> Existing but unenforced legal framework - Regulation via the players' multiple purposes 	<ul style="list-style-type: none"> Absence of waste-treatment or sanitation infrastructure - Presence of local waste-management efforts (neighborhood groups) 	<ul style="list-style-type: none"> Flexibility of the agro-sylvo-pastoral system - Dependence on international markets for export crops (Ylang-Ylang) - Players' multiple activities 	<ul style="list-style-type: none"> Local appropriation and regulation by year-round resident communities
MONITORING AND CONTROL	<ul style="list-style-type: none"> Very weak (absence of enforcement) 	<ul style="list-style-type: none"> Very weak (absence of enforcement) 	<ul style="list-style-type: none"> Unenforced city-planning rules for housing construction - Lack of control 	<ul style="list-style-type: none"> Complex land property legislation 	<ul style="list-style-type: none"> Recent adoption of a Forest Code (unenforced)

Source : PRE-CO/EU, Comoros National Coordination, 1997

Step 3 : Desirable and possible outcomes

PHASE 2 : Preparation

- Tasks**
- ✓ institutionalization of the steering committee
 - ✓ initialization of a negotiation platform
 - ✓ identification of desirable scenarios
 - ✓ arbitration of choices and agreement on possible scenarios

- Tools**
- ✓ negotiation and conflict-resolution techniques (role play, "citizens' jury")
 - ✓ observation and social engineering
 - ✓ simulation models
 - ✓ social and economic assessment techniques

- Products**
- ✓ issue / scenario grids
 - ✓ economic assessments
 - ✓ public declaration (officialization of the scenario chosen)

- Outcomes**
- ✓ shared long term vision
 - ✓ alternative scenarios
 - ✓ consensual choice of goals and strategies

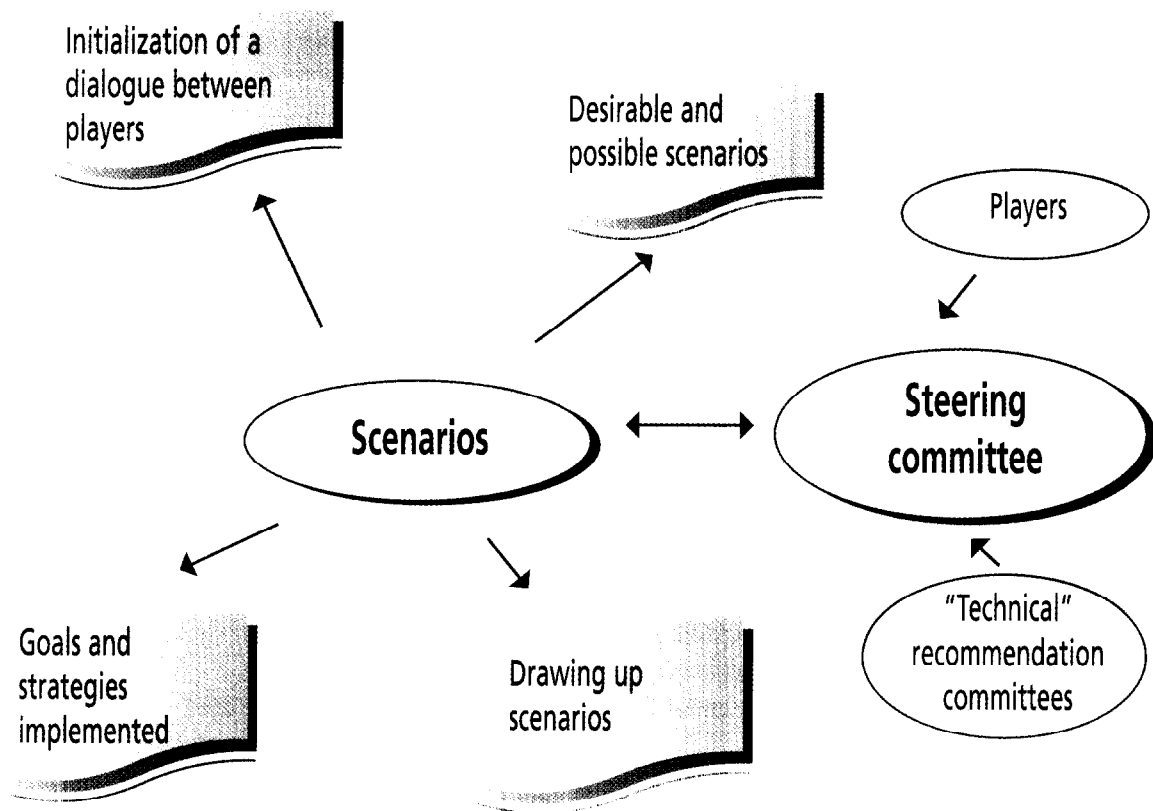
STEP 3 : Desirable and possible scenarios

Case study support :

7. Saint-Cyprien Beach, France
8. Grand Anse Bay, Seychelles

This step is interdependent upon the preceding one, and in some situations, may be conducted at the same time. A discussion about "what is going on" and what problems are present leads to a discussion of how the future should be. This involves the use of communication, negotiation, and mediation techniques, developed by social engineering and "resource mediation" (Mermet, 1992 ; Weber, 1996) act as a framework for linking different collective or individual representations of the same territory. It is important to carry out this mediation phase in a pragmatic way, adapting scenario-constructive or prospective techniques to the reality of the terrain and the people : it is advisable to ensure that a real debate takes place, involving the

intentions and choices of various groups of players ("validation") on their own land rather than elaborate sophisticated scenarios on the expert level. Clear, simple charts of strategic choices can be submitted to the communities involved by interface teams or commissions. These charts can be excellent teaching tools, leading to level-headed economic planning and the most realistic choices of vocation and strategy possible



Factors to be considered at Step 3

How to structure the steering committee

In the wake of step 2, it may now be useful to change the orientation of the steering committee. Instead of "qualification commissions", they will be "recommendation commissions" (Gorgeu, 1997) focusing on a few key issues which were identified previously (land-use management, tourist development, water management, erosion prevention, etc.). It is important to note that the way the steering committee "labels" its commissions, their establishment and their stated purpose determines future orientations. To ensure that reflection takes place about the issues institutionalized through these commissions in this way, it is the duty of the steering committee to engage the players concerned in the ICZM in a process designed to reach a consensus. This process is included in step 3..

Initialization of an approach to consensus

One of the most delicate phases in the ICZM process consists in going from an observation of the most

important issues and differences in opinion of the players involved to an agreement concerning individual and collective measures prescribed as a means of solving the problems which were identified. The goals of this consensus, mediation, or negotiation approach are to facilitate joint action on the part of institutional and sectorial players, and to go deeper into specific issues as they emerge in the course of negotiation, to identify acceptable scenarios, and to convince the players to commit resources for implementation.

Negotiation is usually presented as a multi-phase process (cf. box). Instituting an ICZM process amounts to elaborating a collective action plan. It is thus important to define the contours of the project and the collective. We feel it is useful to present a plan for carrying out a coordinated approach as formalized by J. Weber (1996).

Box 6 : Negotiation as a three-phase process

As soon as negotiation reaches a certain level of complexity and duration, it can be divided into a series of phases which are characterized by different types of reasoning.

Thus, the pre-negotiation phase consists of pointing out the obstacles to the negotiation itself. It should conclude by leading the parties to accept the principle of discussion and the rules that will govern that discussion.

The second phase aims to establish an agreement "formula" by reaching consensus about the definition of the problem to be solved, the guiding principles, the points of contention, the possible packages : in short, the global configuration of the agreement.

The third phase consists of ironing out the details : that is, fine-tuning an equilibrium following a discussion of each of the points up for negotiation. Many such encounters, especially the international ones, simultaneously follow two parallel courses : an "official" one based on the implementation of formal procedures, and an informal one which provides a forum for much more open discussion in which the role of individuals themselves is essential

(Based on Faure et al., 1998).

At the outset, the entire coordination approach assumes that an initial situation has been established, that the players are clearly informed of the conflicts which oppose them to others, and that the welfare of all of them depends on solving the issue (J. Weber, 1996). In addition to integrating players directly involved in the process, it is important to draw in those who are absent from the process at this point (cf. box).

If the discussion forums are structured around a unifying theme (the official purpose of the ICZM), backed up by the environmental assessment, a coherent result can be expected. Based on the environmental assessment (current state of the area/diagnostic), and assuming that the trends observed will continue, the players are encouraged

to discuss what they see as the most probable evolution of ecosystems in relation to their own activity and situation. This will lead to the production of a "perception chart". The players will then discuss the social, economic, and environmental acceptability of an indefinite extension of the trends observed. The fact that these trends will inconvenience everyone anchors the entire approach. It creates the initial situation from which the rest of the process can unfold.

The mediation approach requires people with listening skills who can report on the opinions expressed : They must also have the ability to point out the valid aspects of each viewpoint during negotiation.

Box 7 : Coordination commissions or workshops

Although planners often dread the organization of such large public meetings, they are wrong. On the contrary, they should be designed as opportunities (1) which give rise to mutual socialization of the perspectives for sustainable development which are the basis of the ICZM approach. Thus, the commissions should be set up with this goal in view. First and foremost, they must be driven by some sort of inner dynamic – whose potential efficiency will be increased if the discussion leaders are recognized as legitimate spokesmen for the issue in question, dynamic enough to devote themselves to this duty, and highly integrated in the pilot structure which has assumed the task of intercommission coordination. Secondly, thought about the composition of the commissions is altogether worthwhile. Their composition will be meaningless unless it respects the two facts below :

- The commission must be representative of the field concerned. This primary requirement is not always easy to fulfill. Certain players may refuse to participate in this sort of mediation although their agreement is crucial. In other cases, certain segments of society lack representative structures despite the fact that they play a preponderant role on the coastal area (recreational beach users, poachers, and gatherers of shrimp, crabs, and shellfish, for example). It should be noted that the opposite situation can also pose a problem : a number of different players may position themselves as representatives of a sector (tourism or the environment, for example). In this case, it will be necessary to screen candidates for representation (more or less strictly).

- Although the commission must fulfill the abovementioned requirement, if it is limited to that alone, it will reproduce a mono-sectorial dynamic. Discussion based on a familiar field may be much easier to structure, but it will not be meaningful and productive unless players from other sectors are integrated into the commission. Their task will consist in confronting their issues and values with those of the field in question. To achieve this purpose, it is advisable to step up this dynamic by promoting multi-commission participation on the part of the players, though the number of members of each commission should be kept low enough to make discussion possible.

(1) The steering committee is another such opportunity. Socialization may also be a product of the communication policy these commissions adopt.

Mid-term scenarios validated by the players

On the basis of a common refusal of consequences that a prolongation of current trends might have, it becomes possible for the different actors to discuss what elements would make up a desirable, long-term future. Long-term planning is a means of overcoming conflict and arriving at a shared vision much more easily. The appropriation of long-term goals "precedes and authorizes the definition of management procedures in the middle and short term" (Weber, 1996).

The shared vision may not necessarily be applied in a uniform way to the whole of the area involved, but may be interpreted differently depending on prevailing characteristics, attitudes, values, and purposes in each territory. The spatial analysis which was part of the previous step (state of the environment/diagnostic) is indispensable in this respect.

The construction of mid-term scenarios is a means of considering the various ways of reaching long-term goals. This is the step which calls upon input from scientific experts, especially economists, as a means of comparing the feasibility of the scenarios developed by the players (rather than by the "specialists" alone). By introducing the scientific evaluation of scenarios, in the form of feasibility studies (especially in institutional, legal, and economic terms), these scenarios can be fine-tuned until the players (and therefore the decision-makers) agree that they comply with their own long-term plans. Their choice will then be based upon the best cost/value compromise. Thanks to the scenarios, the desirable future (or long-term vision) becomes a possible future.

Box 8 : How can an ecosystem be priced ?

Environmental economics makes a distinction between three types of ecosystem value : use value, non-use value, and existence (or heritage) value.

Use value itself is divided into two components, direct and indirect :

- Direct use value measures the current advantages drawn from using part or all of the ecosystem. Activities which remove resources (fishing, seafood harvest, fish farming, etc.) or consume them (recreational or research activities, etc.) belong to this category. Obviously use does not involve the destruction of the asset. Private goods and services drawn from the use of the ecosystem (fishing, etc.) are usually market-related. Recreational activities (leisure activities, sport fishing) are collective use services supplied by the ecosystem. Conventional economic analysis methods are applied to determine their value : substitution value (the cost of producing fish in a hatchery as a means of quantifying the value of naturally produced fish), marginal productivity (contribution to an economic activity, such as the pasturing of cattle in a wetland meadow), and lastly, opportunity cost.

- Indirect use value is attributed to the regulatory functions (ecological functions) of an ecosystem. These functions qualify as values only if they have an influence on the present or future use of at least one player. This is the case when these functions have a direct influence on economic pursuits : when dunes protect against erosion, when foliage absorbs CO₂ and thus helps regulate the climate, when wetlands filter runoff or act as a buffer zone, the nursery function of the mangrove, etc., belong to this category. There is no direct market value for these services. The methods used to price them concern the costs avoided by the fact that these functions are operating (flood prevention, etc.) combined with the funds the community is willing to make available or maintain these functions, and the amount individuals are willing to spend to have access to them (beaches, scenery, etc.). This determines their value to the community.

- Non-use value refers to future or as yet unknown use possibilities. It evaluates the willingness of groups of individuals (or the community) to pay to preserve the possibility of engaging in these future uses of the ecosystem or its components. For this reason, it is also called "option value" and could be thought of as an insurance on future uses of the asset, regardless of current uses. Another virtual option value refers to the possibility of discovering new species or new usages once technical innovations appear (marine biotechnologies).

- The existence or heritage value measures the maximum willingness to pay in order to preserve the ecosystem and its quality, to which the individuals are attached, regardless of its current uses and even if there is no such thing as a use or one in the foreseeable future. Maintaining biodiversity, or the cultural and symbolic value of remarkable species or sites are related to this type of value. It is divided into two categories : legacy value, or the value attributed to the ability to transmit a natural heritage to posterity, and the existence value itself, which is the value drawn from the existence of the site or space, which could be associated with its preservation value. These values are calculated on the basis of a contingent evaluation method, which creates a fictitious market for the asset. In addition to technical bias problems, this method has been criticized due to its scope : who should be questioned about the existence value of a whale or of a Colorado River canyon? Can current generations presume to speak for posterity?

Due to all the uncertainties involved in calculating these values, do they have a significant role to play as an aid to decision-making? Indeed, controversy concerns their role in the decision-making process. They may illustrate various options (development, conservation, etc.) already identified, by supplying a comparative assessment of these options. In this case, they become elements in the negotiation around these options. On the other hand, when they are used upstream of the decision to identify the possible choices by reinforcing the quality/cost analysis, they must be handled with extreme caution, because they may be used to compare non-comparable values.

Goals and strategies of short- and mid-term implementation

The choice of a scenario leads to a choice of goals and short- and mid-term implementation strategies. The point is not to choose a rigid scenario; instead, the scenario should be flexible enough to be adapted spatially or temporally, depending on changes in the context.

The task of the steering committee, or any mediating committee acting under its aegis, will be to stimulate discussions and choices, keeping a record of the chief short and mid-term objectives desired by the community and the trail (strategy) for reaching them. Each objective should be matched with an implementation strategy which specifies players (contracts, institutional coordination etc.), resources (additional studies, collaboration, etc.) and a choice of tools. Options

may be evaluated according to a variety of methods, but there are obstacles to using conventional evaluation techniques, because it is so difficult to place a monetary value on the environmental costs or advantages of whatever measures are taken.

The use of maps will make it possible to visualize the future aims for the territory or territories, as well as emphasizing the major spatial intentions (vocations), the intensity of the efforts required for sites deemed strategic or major, and to report on the desired modification dynamics.

At this stage, it should be possible to validate both the approval of the environmental assessment, the vision and realistic goals of the change. This validation would probably be formalized as an official public document addressed to the local and national authorities (see example 8).

Example 7 : Intensification of development and erosion of the beach at Saint-Cyprien on the French Mediterranean coast

The context :

In 1963, when the French Riviera was saturated and huge waves of tourists were going to Spain or Italy in search of sea and sun, the French government decided to develop the tourist potential of the Languedoc-Roussillon region. The Racine Mission, a federal government effort for tourist development, supervised over seven years of planning for the development of seaside resorts like Cap d'Agde, Port Leucate, and Port-Barcarès. Since then, more infrastructure has continually been needed for the ever-increasing tourist pressure. Such is the case of the municipality of Saint-Cyprien, which, in 1969, opened the French Mediterranean Coast's second biggest marina (2600 berths). Nevertheless, intensification of development aggravated coastline erosion phenomena.

Since 1996, an association for the preservation of St. Cyprien beach has been working to alert the community (shopkeepers and other users) to the danger that the beach may disappear, and that housing may be damaged. They have lobbied municipal authorities on the subject. Based on a study for a protection plan for the St. Cyprien seaboard, the beach was divided into two geographic units according to different Pressure/State/Impact criteria.

Illustration : scenarios established in the absence of coordination

In response to a community desire to save the beach (for a variety of reasons), the scenarios imagined essentially deal with physical and regulatory considerations. This is because regulatory coherence is most likely to attract investment from national and regional government (departmental and regional councils). A short term plan has been adopted to artificially sand the beach every summer, although the quality and availability of sedimentary material requires dredging at

sea. The midterm coastal development plan also requests that all the players come to an agreement with local authorities (both municipal and decentralized federal offices). These officials must engage in a long regulatory procedure before the works can start. No social or economic evaluation of the scenarios took place, despite the fact that economic considerations are uppermost in the arguments of various players.

This case shows how the ICZM process is often viewed as a series of technical interventions rather than a choice of solutions negotiated by all the players who, in this case, are accustomed to systematic State intervention. Moreover, since the problem is not exclusive to the municipality of St. Cyprien, it would be wise for town authorities to approach other municipal councils in the area, to seek a broadened action plan applicable to the entire department.

Example 8 : Management plan for the Grand-Anse Special Reserve, Seychelles

The context :

Since 1970, the Seychelles have developed a network of natural land reserves covering 40% of the territory (about 20,000 hectares). However, none of these reserves includes the coastal zone. Marine reserves cover a surface area of 23,000 ha. The State has delegated management of these spaces to a para-public agency, the Marine Park Authority. But the extent and dispersion of the network makes their inspection and monitoring especially difficult. Moreover, the Seychelles, with a population of some 75,000 inhabitants, have invested in the development of tourist infrastructure which would make it possible to accommodate 130,070 visitors per year in 143 hotels (1997 figures). This exclusive type of tourism is based on a demand for "natural wonders" and helps to enhance the economic value of protected reserves. However, it is also a heavy consumer of water – a rare resource – and produces waste, both solid and liquid.

Grand-Anse (Isle of Mahé) corresponds to the ICZM pilot zone defined by common agreement in 1997, between the Government of the Seychelles and the Indian Ocean Commission Regional Environmental Program. It is a relatively small area (68 ha), where a diversity of milieus and uses has been preserved. The ecosystem is varied in a site which does not contain any hotel infrastructure, although it supports a variety of other economic activities. Local inhabitants, city-dwellers, and tourists are all site users.

After a player-identification phase (surveys) and a period of negotiation about the fate of this natural site, various scenarios were elaborated. The crux of the problem considered was the maintenance and management of the quality of natural milieus which contribute to the islands' attractiveness as a tourist destination. In this case, Grand-Anse is also a site with a number of uses and part of the Seychellois heritage. The scenario that would result if a natural reserve was created at Grand-Anse had to be made explicit according to the values attributed to the site by various players. The workshop resulted in consensus on a long-term vision of the site, officially sealed by a Public Charter engaging all the players.

Illustration of the ICZM process : the Grand-Anse Charter

The Public Charter was an official means of sealing the approval of all the players in the area. It is worded as follows :

"The inhabitants of Grand-Anse, attached to the natural setting in which they live and aware of the value of the natural resources located at Grand-Anse, of the economic and social interest of this environment for the present generation as well as for posterity, state the following intentions :

1. A will (I) to preserve and improve environmental quality, being vigilant about the ways in which resources (water, land, forests, crabs, etc.) are managed, in order to ensure the long-term viability of these resources (II) to keep the beach, forest, and mangrove at Grand-Anse clean (III) to avoid destroying the dunes by trampling them or removing sand for other uses.
2. To reach these goals, the people of Grand-Anse wish to create a special reserve which includes the mangrove, the forest along the Dauban River, and the beach at Grand-Anse.
3. The people of Grand-Anse recognize the legitimacy of the Grand-Anse Environmental Committee as concerns the environment regarding the future Grand-Anse Reserve. The people will be represented on this Committee by five members it shall appoint itself as well as three substitute members.
4. The Grand-Anse Environmental Committee is an entity which can arbitrate and negotiate environmental disputes. Its purpose is to provide local coordination of activities around the site of the Grand-Anse Reserve in such a way as to ensure the long-term co-viability of the natural resources and local economic and social activities. This committee, which is purely environmental and local, has no political goals. It is an assembly of the representatives of the players involved in the creation of the reserve, and is made up of ten members and three substitutes. This committee is entrusted with the task of seeking the ways and means necessary to reach the goals designated in point 1. It promises to report on its activities regularly, both to local players and residents and relevant state agencies, in compliance with the laws of the Republic of the Seychelles.
5. The people of Grand-Anse request that the economic profits from the eco-tourism activities contribute to local development (jobs, the creation of additional economic activities, improvement of the environment beyond the borders of the reserve, etc.).
6. This charter cannot be modified unless a new workshop open to the entire public of Grand-Anse is held.

Step 4 : Elaboration of the management plan

PHASE 2 : Preparation

Tasks

- ✓ preparation of the institutional framework
- ✓ additional studies
- ✓ zoning
- ✓ training
- ✓ identification of actions and projects

Tools

- ✓ guides
- ✓ surveys
- ✓ communication
- ✓ evaluations and simulations
- ✓ management plan models

Products

- ✓ territorial and thematic maps
- ✓ evaluation and follow-up systems
- ✓ action / project files
- ✓ management plan

Outcomes

- ✓ awareness of the value of ecosystems
- ✓ validation of the management plan

STEP 4 : Elaboration of the Management Plan

Case study support :

9. Menabe Master Plan, Madagascar

The management plan of an integrated approach to sustainable development may be comprised of several different dimensions, spatially and thematically. Depending on what preceded it, it may involve a master plan for the development of an entire region, or the management of a resource (water, for example). In other cases, it may be a much more specific plan of action, targeting a given issue (example : management of the mangrove swamp).

The management-scheme document to be drafted should cover the following main points :

- a definition of the zone involved and its specific territories, based on the results of the environmental assessment (biotas, resources, activities, institutions);
- the top priorities, defined by a consensual agreement, which will act as guidelines for study and discussion by interconnecting the various issue and enabling the group to approach them coherently (product of phase 3);
- the main guidelines for the drafting of the plan (national/local, governmental hierarchy, adaptation,

spatial implementation, etc.) ;

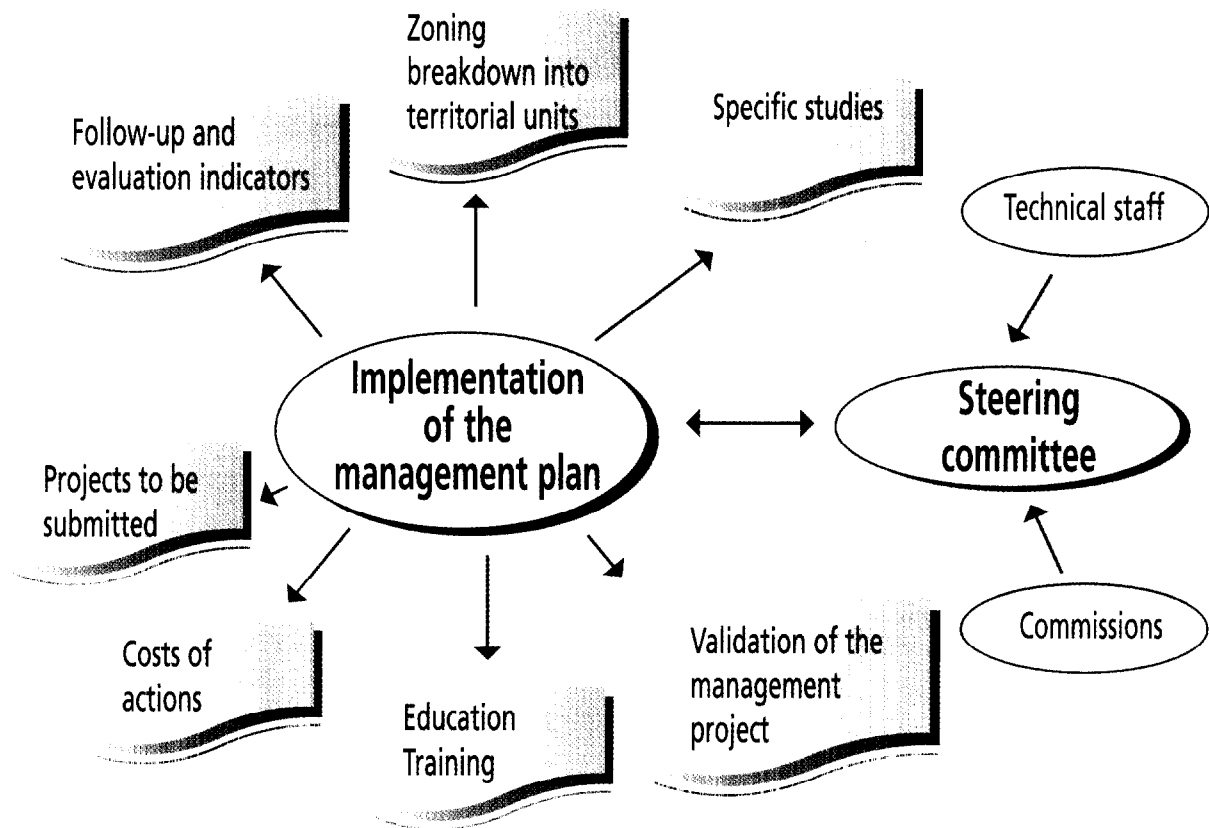
- a presentation of the overall goal or goals and its spatial breakdown depending on the milieu (river, wetland, mangrove swamp, lagoon, reef, urban area, etc.) and the territory (territorial units);

- locations where action will be taken, and the prioritized list of actions selected for the short and midterm (about five years), as well as the projects for which outside funds must be sought;

- the type of follow-up evaluation which is planned and the main steps involved in the implementation of the entire plan;

the institutional framework (project management and follow-up structure), funding sources, a timetable for achieving the goals, and outreach policy.

What matters here is the implementation strategy, which must account for the way various scales and levels of decision-making fit together. It must be realistic and progressive in its grasp of issues or commitments.



Factors to be considered at Step 4.

Role of the steering committee

During this step, the steering committee and its subcommittees (commissions) continue to supervise the plan elaboration work, which may be carried out by a technical team. Because it is the cornerstone of the rest of the process, the steering committee's specific task is to prepare the institutional structure which will be recommended for the plan's implementation and ongoing activities, by integrating them into existing or emerging regional and national (and, if applicable, international) structures. To be viable, any ICZM project, no matter how local it is, must be conceived as part of a more global approach, in the construction of which it is an element. ("double track" approach, CRC, 1999).

Focusing on the division of the area into geographical units

Work initiated during step 2 (environmental assess-

ment) and step 3 (desirable and possible scenarios) resulted in the definition of territorial units with their own goals and activity plans. The Geographic Information System (GIS) must allow the printing of corresponding maps. In this respect, it is important to note that, like the indicators, cartography is a process which lasts through the different steps. Just as the indicators do, the maps are an integral part of the information system and thus of the evaluation and follow-up process.

Carrying out specific studies on top-priority issues

As the elaboration of the management plan proceeds, additional studies may be needed (analyses, surveys, etc.) to specify the goals. In-depth studies dealing with top-priority issues may also be undertaken when this step is reached. They will then be considered as elements in the implementation strategy nurturing a given objective.

Validation of the management plan project

The management plan must be acknowledged and validated by all of the players who participated in the process, as well as by the partners it is desirable to associate with its implementation and the decision-makers who will endow the plan with a legal existence as well as a legitimate one. This approval process may take place in the form of public workshops and/or consultations which, in addition to supplying an approval of the choices and strategies, will make it possible to specify mutual commitments and the exact contribution of each partner (these documents could be annexed to the management plan). The debate could also be broadened to a public forum, in the form of

opinion surveys, press kits, radio broadcasts, etc.

Evaluation of the budget, costs, and impact of the actions considered

For the coherence of the whole, each orientation and goal identified by the plan must correspond to operational actions and measures to be taken. A convenient way of summing up this whole is the "logical framework", which is in widespread use these days for programs and projects. But the logical framework is insufficient : to remain realistic in the implementation, it is important for the actions outlined in the logical framework, whether they are thematic or territorial, be catalogued on "individual action files" which may contain the following type of information :

Box 9 : Implementation of the management plan : models for action files

- 1) Title of the mission. Supervisory implementation agency.
- 2) Brief description of the corresponding context and problem
- 3) 10-year goals targeted by the action, briefly explained
- 4) Goals of the action within one, two, or three years, global or specific, qualitative and quantitative, expressed as situational conditions to be reached
- 5) Description of the action : approach method, geographic location, content, players involved
- 6) Projected budget
- 7) Projected resources (technical, human, and material)
- 8) Projected financing plan
- 9) Works schedule
- 10) Evaluation system : indicators of results (quantitative and qualitative), evaluation means
- 11) Necessary inter-institutional coordination.

Player education/training

Ideally, training should be addressed to all the players involved, at every different level of governance. The guidelines chosen will determine which training fields it is appropriate to emphasize.

One of the key aspects contributing to the raising of awareness of ICZM issues and the discussions presented by players involves a familiarization with the concept of "total ecosystem value" and the costs engendered by impacts, even though the means of calculating these values is still approximate (what matters here is more the raising of awareness that market value is not the only thing that counts, and that other values should be considered). Outreach

and training efforts are part of the goal implementation strategy.

Identification of projects to be submitted to donors

Because some actions will be projects in themselves due to the technological or financial means they require (levee construction, highway construction, water-treatment and irrigation plants, etc.), they may be the subject of specific proposals and negotiations with investors. At that stage, each of these actions will become a project in and of itself which should be treated as such.

Evaluation and follow-up process

Although they are essential to evaluating change and adapting to it, the evaluation and follow-up processes are still in their experimental stages.

The DPSIR indicator system (Driving forces-Pressure-State-Impact-Response) is a convenient way of organizing information according to cause-and-effect relationships applied to resource management. However, its deterministic aspects make it somewhat lacking as a tool for accurately descri-

bing socio-economic dynamics.

As a means of evaluating the performance of a program or project, it is advisable to supplement the DPSIR indicators with a series of other indicators referring to the guiding principles of sustainable development, i.e. : efficiency, fairness in usage, public participation, the viability of the alternatives chosen, and risk prevention measures.

Example 9 : Elaboration of the Coastal Zone Master Plan for the Menabe region, Madagascar

The context :

The Menabe region was chosen as a pilot ICZM area within the framework of the Indian Ocean Commission Regional Environmental Program, sponsored by the European Union (IOC-REP/EU). One of the main reasons why this region was selected is that it had already set up a Regional Development Committee (RDC) on the basis of local dynamics, encouraged by the World Bank within the framework of its policy of assisting the management of decentralized structures.

After a partial environmental assessment, based chiefly on surveys conducted in 27 coastal villages, a summary/approval workshop (September, 1997) made it possible to initiate a coordination process with all the players concerned. The problems were prioritized for the first time and various scenarios were outlined.

Illustration of the ICZM process :

The Menabe RDC, with the help of the IOC-REP/EU (1998), began to implement selected micro-projects in pilot villages (fishing equipment, wells, school facilities, and first-aid supplies).

For the RDC's strategic considerations (because it must assert its role in the decentralization process underway in Madagascar) as much as due to the need for visible results for the IOC-REP/EU program, a decision was made to elaborate a first draft of a Regional Master Plan for sustainable development in Menabe's coastal zones. This elaboration was subject to a certain number of conditions and prerequisites, i.e. : the Master Plan fits into a dual structure, national and international (the Indian Ocean Commission); its elaboration is based on a double-track approach (from the regional to the local, and vice-versa); elaboration was the subject of ongoing negotiation; the field of application extends to multiple uses in terms of management of resources, production spaces, and coordination between governance levels.

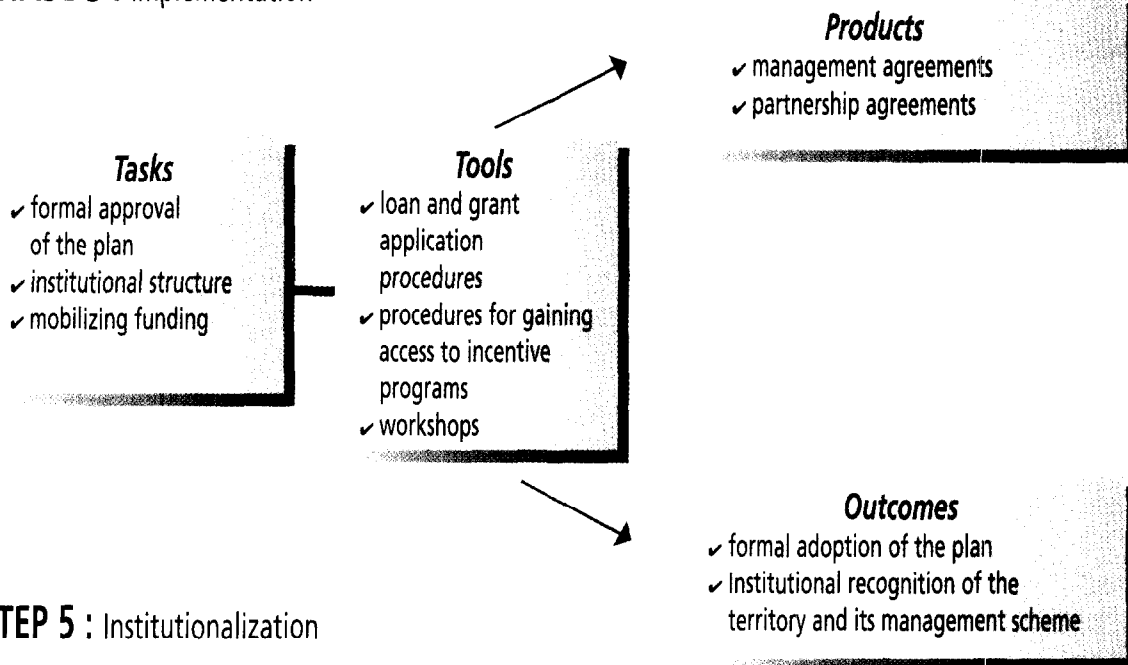
Several specific studies were carried out simultaneously on urgent subjects such as the tax system or erosion of the coast at the city of Morondava. The division of the area into geographic units was fine-tuned on the basis of existing data (more qualitative than quantitative) and the administrative boundaries of townships and municipalities. Land and sea boundaries were temporarily established as being those covered by the coastal communities, to a line 100 meters offshore. These geographic specifications would subsequently make it possible to deepen environmental impact studies by geographic unit.

Due to plans to hold a second summarization/validation workshop, it was important to present the Coastal Zone Master Plan in the most advanced and accessible way possible. It was to articulate a development vision for the very long term, as well as general and territorial orientations, as well as implementation tasks. It was supplemented by two more focused component plans : a Pilot Plan for community action and an Urban Planning Project for Morondava, the main city. After the summarization/approval workshop for these general planning frameworks, held two years after the first, the focus was on narrowing down the general structures to activities programmed in time and space, according to existing financial, institutional, and human resources. One of the top-priority issues defined and suggested for outside funding was erosion protection for the Morondova coast, which has gotten even worse since.

Phase III : Implementation

Step 5 : Institutionalization

PHASE 3 : Implementation



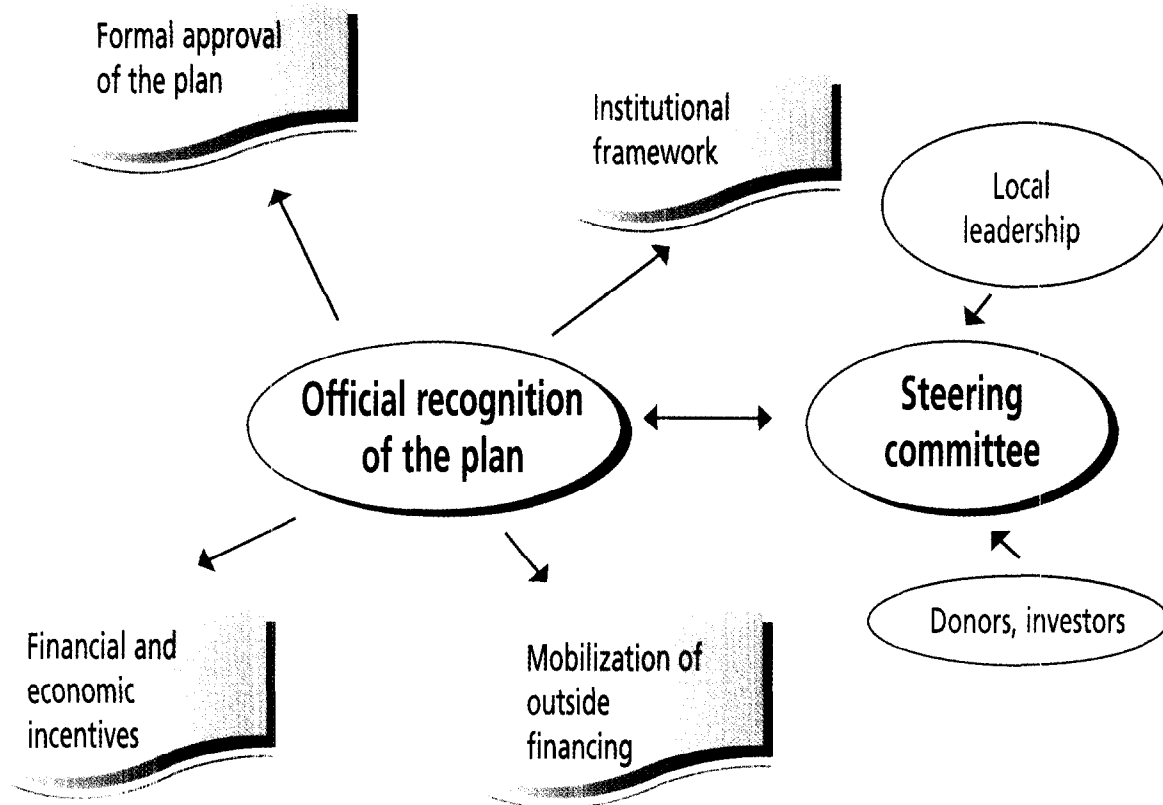
STEP 5 : Institutionalization

Case study support :

10. The Marine Reserve of the Mer d'Iroise, France

Formal adoption of the management plan is the outcome of an approval process which began in step 1. Because it was arrived at through a process of negotiation and validation, the plan (whatever its name and form : master plan or scheme, management plan, etc.) acts as a social contract involving the local officials of a territory or several territories, the residents, and their partners. Although the contract is a local one, it is integrated into the sustainable national development strategy for coastal zones and must be recognized as such during the institutionalization stage of implementation. If the territory is not too big, it might even be advisable to "ritualize" the moral commitment by having all the local players who are involved in the plan and wish to participate in its implementation sign the document. In signing, part-

ners from outside the area immediately concerned (higher-level government agencies or officials, the State, socio-professional organizations, etc.) recognize the legitimacy of the area (or territory) and its development project. This is also a matter of making certain that the funding sources foreseen during the elaboration stage are still available. Because outside financing (investors) is usually limited to a period of five years, it is important to guarantee some means of ongoing financing by internal funding sources. These may be matching funds from the State and/or revenue generated at the local level. In this context, the follow-up and adaptation in time of the management plan are also expenses which must be evaluated and integrated into the overall budget.



Factors to be considered in step 5.

Formal approval of the plan

As we noted above, the plan is the outcome of a negotiation process which reflects the image and aspirations of the inhabitants of a given territory, their society, and their shared natural heritage. It offers a project for their future, with explicit alliances and support. Whether it has regulatory value or not, the plan thus draws its strength from the act of politics or local government (institutions, networks, regulations, norms, public and private usages/players) that it represents, and the public affirmation of this act. The agreement to which the parties to the plan are signatory (local players and authorities) will express

- (I) common recognition of the territory or territories, in terms of their geographic limits and characteristics;
- (II) agreement as to the goals and strategies of development, stated in an overall way and individually,
- (II) their recognition of the institutional structure in charge of coordinating and enforcing the plan;

(IV) lastly, their commitment to take action and pool their resources

Institutional structure

This is a matter of setting up the institutional references which will be needed for the sectorial and territorial plans, to make the plan operational and coherent with corresponding national policies and their implementation instruments (legislative, regulatory, economic, etc.). The steering committee usually becomes the core staff, hosted within one or another institution. The strength of this core staff resides not only in the official recognition of its legitimacy and, in some cases, its legality, but especially in its ability to embody the collective project that the management plan represents. As such, it has the authority to remind everyone of his commitments : the more debates are expressed publicly, the more the weight of the collective opinion of the partners will matter. This is the crux of local governance when faced with the threat of power struggles and expensive legal battles.

Mobilizing funding and incentive measures

In addition to financing from lending institutions, which is limited in time, before the implementation phase begins, it is essential to define the financial and economic mechanisms which may generate resources belonging to the programme itself and thus ensuring its ongoing activities. There are a number of incentive and non-incentive tools available, such as subsidies, taxes, permits, etc., depending on production areas and uses. In community-management systems, voluntary agreements institu-

ting partnerships sharing a single resource between several users from the same community may lead to the mobilization of the "Community Investment Fund" (Borrini-Feyerabend, 2000). This type of fund is designed to be re-invested in production activities which, in turn, will generate wealth for the entire community and income for those who are directly involved in the operations. It may be useful to combine this type of management with partnerships entered into locally with the private sector (real estate, fishing, tourism, etc.).

Example 10 : The case of the Sea of Iroise Isles Natural Reserve (Northern Brittany, France)

The context :

In 1992, the isles of Bannec, Balanec, and Trielen, in the Molène Archipelago, were officially declared to be a natural reserve. This was the result of several years of scientific research and local and institutional cooperation, and sealed the archipelago's fate as an environmental haven. Ownership of the isles had been acquired in 1972 by the Finistère departmental administration, at the prodding of an association for the protection of nature (SEPNB). It was a turning point for the territory which, before the 1950s, had been privately owned. At that time, they were chiefly used by seaweed-gatherers who used them as a base for harvesting laminaria in the Sea of Iroise. The gradual abandonment of these isles, for both economic and human reasons (laminaria is no longer collected) promoted the acquisition of the territory as public property which today is devoted to nature conservation.

As federal natural reserves, these isles are managed by an agency appointed by the Prefect. It is in charge of setting up a conservation and management policy throughout the territory covered by the reserve. This agency is the association "Bretagne Vivante- SEPNB", a non-profit, public-interest organization. It is assisted by the Finistère departmental hunters' association as concerns game management, because traditionally the people of the Molène archipelago had hunted duck and rabbit there. The establishment of this reserve is part of a national policy for the establishment of protected areas. The overall plan for the reserve is the management plan.

Illustration of the ICZM process : Implementation, institutionalization, and follow-up of the management plan

Several versions of the management plan were drafted and submitted to the association heads for approval. The definitive version was adopted by the reserve's consultative committee. Formal approval of the plan was achieved when it was adopted by the National Council for the Protection of Nature (a national agency operating under the aegis of the Ministry of the Environment and the Ministry for Land Development, vested with the authority to approve the management plan).

The management plan has been implemented within the framework of time and space on the basis of an operational

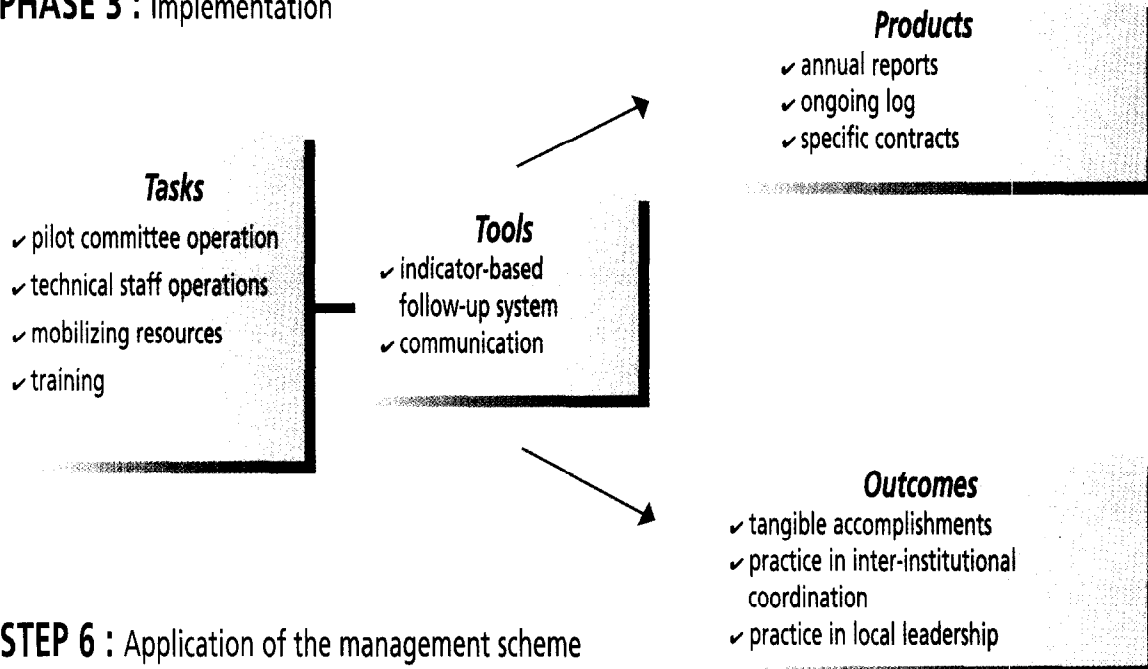
program and the schedule associated with it. Operations planned differ from one isle to the next and from one year to the next. Planned and prioritized, these actions affect all aspects of the life of the reserve (maintenance, scientific research, public outreach, monitoring, follow-up studies, etc.).

The management plan also provides for a yearly evaluation, when the activity report is drawn up, which assesses progress made on the various actions planned. This is also an opportunity to eliminate actions which may have become obsolete due to profound changes in management techniques.

In 2002, the management plan comes up for review after five years of implementation. At that time, an evaluation will be made, based on the goals set in the management plan. The evaluation will be carried out either by a member of the association or an engineering consultant, as a means of recording and analyzing the results obtained. It will give rise to a specific document which will review all of the goals that had been set for the five years which have just elapsed. The management plan will be updated as a means of re-orienting management goals as a function of the evolution of the situation and the future plans for the reserve.

Step 6 : Application of the management scheme

PHASE 3 : Implementation

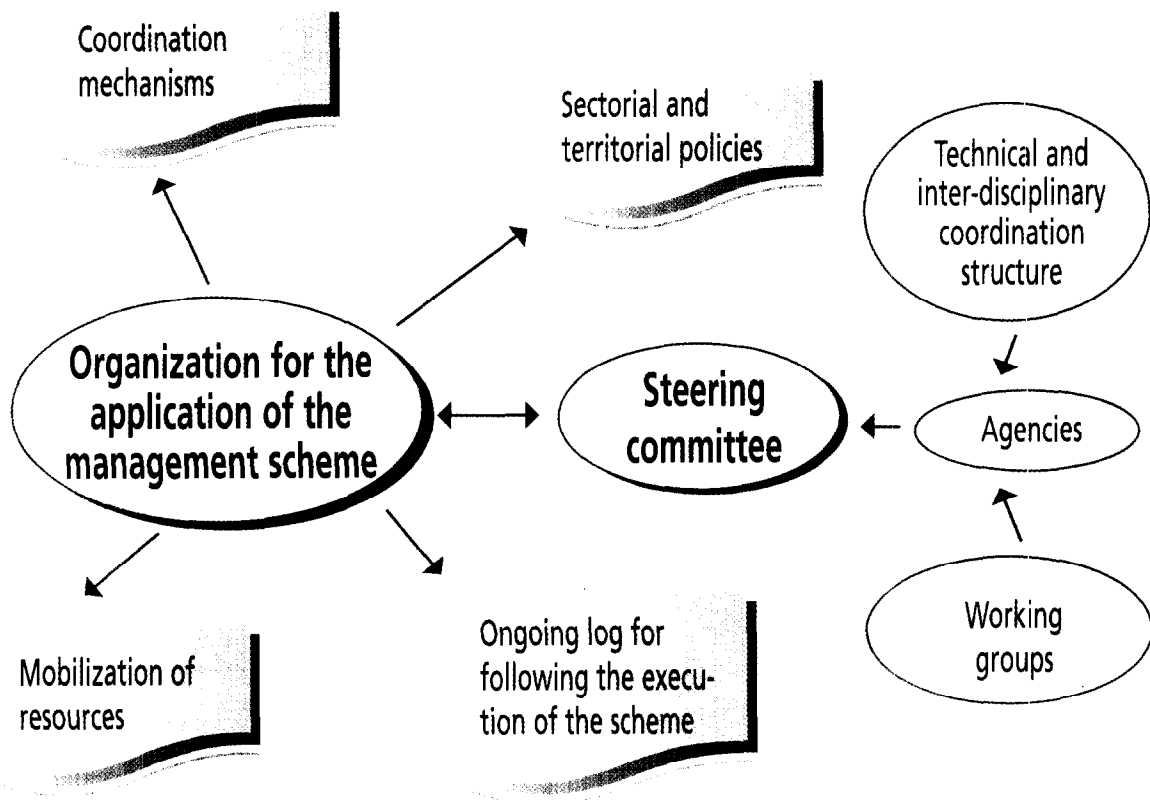


Case study support :

11. Rhône-Mediterranean-Corsica Master plan for water-resource management, France

Implementation involves more than just the accomplishment of the activities set forth in the plan; it also provides for the organization of the means for the transformation of the territories as well as the relationships between structures and people. Thus, it is as much a matter of organization as of planning of activities, which the steering committee must negotiate with its partners in order to formalize the ways each player concerned will participate. In fact, implementation will test the follow-up/evaluation system, bringing

about a number of adjustments to that system, based on the performance of each yearly section of activity. In light of the results obtained (progress made and effects produced), combined with new events or opportunities, it will probably be necessary to re-examine, and revise, if need be, the section of activities which is to follow



Factors to be considered in step 6.

Role of the steering committee

Using its recommendation commissions (cf. Step 3), the steering committee can rely on work teams which will be organized on the basis of goals and/or actions planned. The steering committee does not carry out the plan. Instead, its purpose is political : to orient and supervise. It must therefore also be able to rely upon an interdisciplinary technical coordination team, whose tasks and missions must be defined : management and technical coordination of the process, action engagement and follow-up, communication and coordination, carrying out particular studies, carrying out operations and works, etc. In the execution phase, the steering committee will have to devote particular effort to the modification or creation of training and awareness-raising sessions for the partners, institutional or relational devices, regulatory devices or good-conduct codes, financial devices, and lastly legal devices. All of the foregoing structures are vital to the actual execution of the activities planned for in the management scheme.

Coordinating actions with sectorial or territorial policies

To make sure that the plan's actions are coherent with those undertaken by other agencies in charge of sectorial or territorial policy, it is important to activate the systems set up for inter-institutional coordination. This is a means for both institutions to gather information about the evolution of the policies and their implementation tools (zoning plans, city-planning projects, housing construction, top-priority investment projects, forest conservation plans, network of protected marine areas, etc.). At this point it becomes obvious why it is so important to plan for corresponding coordination mechanisms, even when acting at the local level.

Ongoing log for following-up the execution of the plan

The follow-up/evaluation system, based essentially (but not only) on a series of DPSIR indicators (Driving forces - Pressure - State - Impact -

Response) and indicators of the performance of the ICZM system, will feed into the ongoing log for following-up the actions undertaken. These ongoing logs or "management boards" include standby devices to detect changes or opportunities as well as evaluation devices to assess the effectiveness of actions and make the decisions needed to adjust or modify the implementation. In addition to an overall follow-up of the zone, the ongoing log will make it possible to verify each geographic unit as a micro-territory with its own sensitivity and vulnerability factors. It is fundamental for this follow-up/evaluation system to be operational, because it is the best tool for maintaining an overall vision of the activities, without getting lost in routine daily operational details.

The ongoing log will also include, in a useful form, budgetary follow-up, because allocation of financial resources for investment and operating costs is an expression of the effective choices made earlier. An analytic presentation of expenses and revenue, goal by goal, will make it possible to compare

projected budgets with real spending, analyzing cost overruns (or underruns).

Mobilizing resources

To implement the various activities for each goal and use all the opportunities for support available, it is important to negotiate special agreements and contracts with various partners. These contracts may include, in addition to the financial commitment to activity programs, specific commitments to certain policies and interventions which the partners (local and State agencies) intend to carry out in the territory concerned, as well as the coordination means being considered (development plan, purchase of the areas to be protected, changes in the organization of social services). Any contribution, small or large, financial or technical, can be useful to the realization of the plan. Where private agencies are involved, these contributions may come in various forms : from a simple letter of commitment to a point-by-point contract, from a financial donation to a major grant.

Example 11 : The Rhône-Mediterranean-Corsica Water-Management Plan (SDAGE-RMC), France

The context :

In France, a law passed in 1964 concerning "the distribution and supply of water and the fight against pollution" introduced the concept of management by watershed. At that time, the French territory was divided into six major hydrographic watersheds, and six Watershed Committees were appointed to plan water policy. One of these watersheds – the Rhône-Mediterranean-Corsica basin – covers all of the French rivers and their tributaries which drain into the Mediterranean. This watershed covers all or part of 9 administrative regions and 30 departments, and extends over an area of 130,000 km², i.e. nearly 25% of the national territory. The watershed activities are characterized by a number of different water uses and the mobilization of high volume. The 1992 Water Quality Law set up decentralized planning tools for the implementation of sustainable management of water and aquatic ecosystems known as the SDAGE Water Development and Management Plans. These plans were actually drafted between 1992 and 1995, in particular for the Rhône-Mediterranean-Corsica watershed. This watershed was finally divided into ten territories, including three with a coastal fringe.

Illustration of the ICZM process : a management board as the SDAGE follow-up system

In conformity with the policy guidelines of its SDAGE Water Management Plan, the Rhône-Mediterranean-Corsica committee, coordinated by the Rhône-Mediterranean-Corsica Water Agency, decided to create a system for the follow-

up of the implementation of the goals set forth in the planning document. This is the Water Management Plan Management board. This device was drafted by the Water Agency technical staff (Water Agency, Regional Environmental Bureau) with the help of specialized research staff (surface water, groundwater, water prices, risks, coastal waters, etc.) It is a means of piloting the water policies carried out by various agencies, guided by the ten strategic points elaborated by the SDAGE Watershed Plan : (1) emphasize water quality (2) purify water in response to use requirements (3) consider the importance and vulnerability of groundwater (4) improve management prior to investment (5) respect natural environmental processes (6) conceive water management as a corollary of land development (7) reinforce local water management boards, etc.

The management board uses three types of indicators : State – Pressure – and Response, which are a means of evaluating the various actions undertaken to satisfy the goals of the SDAGE Water Management Plan. According to the ten orientations and the three types of indicators, the management board is divided into 15 modules which break down local implementation of SDAGE policy guidelines (SAGE watershed plans), the 13 top-priority goals of the SDAGE Water Management Plan (quality of the waterways, fight against pollution, eutrophication, toxic pollution, spills, physical condition of streambeds and banks, quantitative management of waterways, flooding risks, groundwater, drinking water supply, wetlands, species preservation, the coastline), and finally the networks of measurement and inspection (follow-up/monitoring). The indicators are set up on the basis of technical information supplied by a large number of producers. It is thus an annually updated collective endeavor (Comité de Bassin RMC, 2000).

Step 7 : Evaluation and adjustment

PHASE 3 : Implementation

- Tasks**
- ✓ performance evaluation
 - ✓ sustainability evaluation
 - ✓ adjustments and modifications of goals and activities
 - ✓ training

- Tools**
- ✓ standard indicators
 - ✓ an evaluation grid applicable to the impact of the ICZM process
 - ✓ multi-criteria evaluation
 - ✓ forums, seminars

- Products**
- ✓ annual reports
 - ✓ management boards

- Outcomes**
- ✓ practice in adaptive management

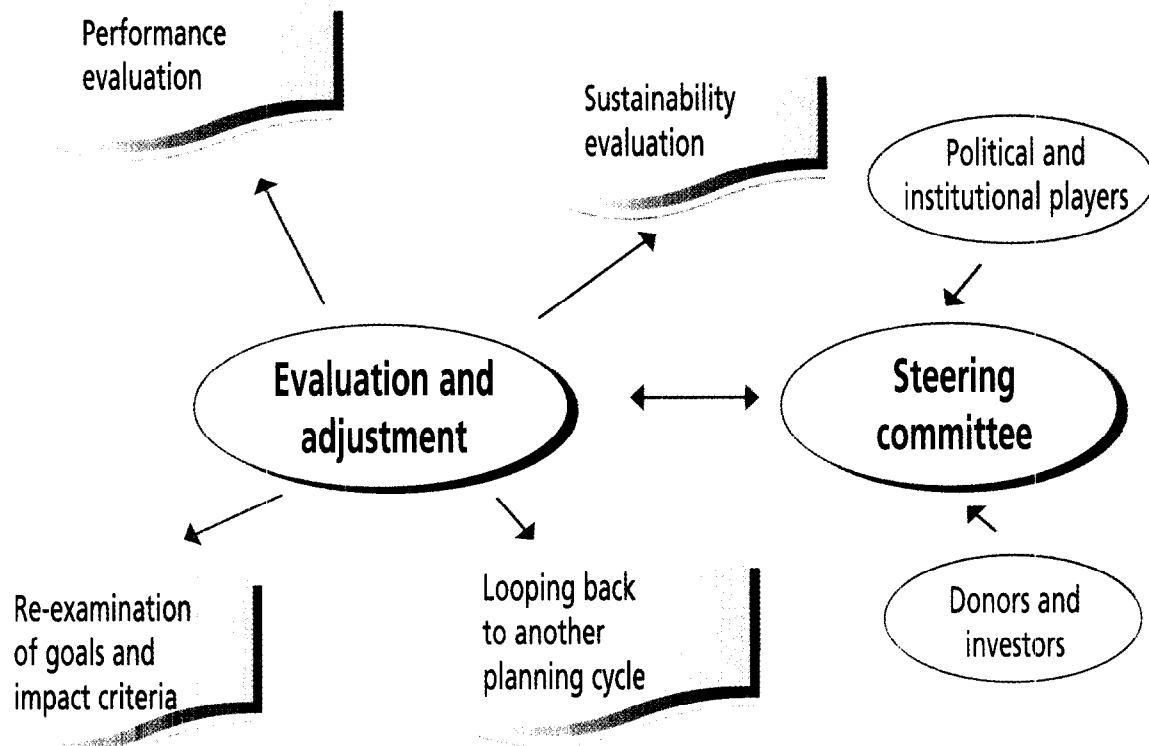
STEP 7 : Evaluation and Adjustment

Case study support :

12. Impact of the European demonstration program

Evaluation is not an inspection. It is an ongoing process which begins with giving thought to the follow-up evaluation system which is most likely to fit the goals and strategies set. There are two types of evaluation : a "self-evaluation", which follows an operational pace (annual, as a rule), and "outside evaluation" which occurs on a contractual basis (halfway through and/or at the end of the contract, and sometimes "ex-post" – some time after the contract ends). Thus, evaluation is first and foremost "a tool for refining the intelligence of the action" (Gorgeu, 1997). In light of the results of the actions undertaken, evaluation is a means of re-examining the goals and strategies implemented, their chronological development, the complementary nature of the actions undertaken, the structural organization and operating habits, partnership

endeavors, etc. In addition to the periodical adjustments to which they give rise, the plan in its draft form usually has a predefined life expectancy (five to ten years), at the end of which it must be reviewed. In changing environmental, socio-economic, and institutional contexts, the relevance of the goals must be re-examined. This does not only consist in changing them, but, again, going back to the drawing board for the elaboration of a new plan based on the preceding steps. At this stage in the iteration of the ICZM process (the looping process illustrated in the introduction to this manual), we may consider that the first cycle of implementation of the integrated management of coastal zones has been completed.



Factors to be considered in Step 7.

Performance evaluation

The evaluation of the performance of an ICZM project or programme will be all the more relevant if it is based on precise data (environmental, socio-economic) initially gathered in the identification and preparation phases. The second condition (related to the first) is the existence of a follow-up/evaluation system, and therefore a set of indicators, which is functional and in use. When the performance of a project is discussed, there are a number of "impact" criteria that make it possible to qualify the performance. They concern ecosystems and uses, institutions and policy, and society (quality of life, education, women's role, etc.). Where it is appropriate, quantitative data will be used to evaluate impact: ecosystems and uses can usually be measured. However, qualitative data is most often provided, although it is difficult to measure (cf. example 10). In any case, it is necessary to have an initial situation to use as a reference, as well as an initial strategic objective which indicates clearly (and, if possible, in a quantifiable way) the outcome(s) sought. In this respect, it should be noted that one of the duties of the steering committee is to receive "feedback" from players after the implementation of an ICZM project: grievances, demands for arbitration, or various other opinions. Likewise, the steering committee

may also rely on opinion surveys and periodic inquiries. Whether the evaluation is internal or external, it will also rely on a structured questionnaire, many examples of which are available in various publications (METAP/MAP, 1998; CRC, 1999; EC, 2000).

Evaluation of sustainability

Sustainability is an outgrowth of project performance, but goes beyond it. It concerns scales (national, international) which exceed the territorial limits of the project. It is related to ex-post evaluation which is sometimes undertaken by lending institutions: Are the mechanisms which were set up strong enough to resist the passage of time and change? A distinction should be made between financial aspects, institutional aspects, and political aspects, all of which have an impact on sustainability. Nevertheless, whereas the ex-post evaluation conducted by donors can be viewed as a top-down approach, centered on effects clustered according to activity sectors as evaluated nationally, the sustainability evaluation will pay more attention to the way in which costs and advantages (both monetary and non-monetary) have been distributed between the various categories of players: local, national, international, and global. Likewise, the operating conditions of the institutions and rules set up by the ICZM will be examined.

Box 10 : Examples of sustainability indicators

Type of indicators	Parameter measured	Type of approach	Hypotheses	Implementation	Example of application /
Indicators of Sustainability conditions	Conditions required to reach a state of reference of the system under consideration	Normative Ex-ante	Assume the state of reference is defined - physical criteria - economic criteria - social criteria Idea of an "optimal" path to follow up	Problems of scale in relation with the measurement of indicators Still quite global	IEx: the CIFOR criteria for sustainable management Indicators of Sustainable Development
Indicators of deviation from a norm	Gaps between currently set norms and effective performances: Degree of achievement of goals	Corrective Ex-post	Assumes that performances can be measured and defined. Different possible norms: environmental cost, maintenance of a "natural capital" supply	Assumes a compromise on the goals, to make them acceptable to all the players: possible revision	Examples of the procedures - for Impact Assessment (physical goals) - of the "Green Domestic National Product" values
Indicators of impact	Cross-referencing of narrowly defined actions and given ecosystems	Prospective Corrective Ex-ante Ex-post	Assumes a conceptual framework linking actions (pressure), ecosystems (state), and management (response). Assumes that environmental advantages can be evaluated in economic terms	Linear cause-effect outlook Sectorial; rarely applicable to processes	Example of the OECD <i>DPSIR</i> scheme
Indicators of thresholds, risks	Norm of preservation of ecosystems to reach at the least economic cost : Definition of "critical natural capital"	Descriptive Ex-ante	Assumes that environmental damage can be evaluated in economic terms	Useful ex ante to select policy. Is rarely used to evaluate policy.	Evaluation environmental/economical C/B "value", opportunity cost Environmental State indicators (no measurement of deviation).

Starting another cycle

As time passes, local environmental and socio-economic conditions change, as do national and international ones. We are becoming increasingly aware of how many external factors can have an impact on a territory and its fate. Thus, it is necessary, based on the progress and the deficiencies of the management plan which was implemented, to circle back to the initial steps : identification (0-1) and preparation (2-3-4). This will give rise to a new management plan or project.

A second planning cycle is thus begun. It will enable planners to consider new contexts and developments, as well as approach more complex problems, strengthened by the experience they have already acquired in the ICZM approach. The evolution of people's attitudes (behaviour) and the way they see and act upon their own environment is a complex process which evolves over the long term (20 or 30 years and more). Thus, several generations of the ICZM cycle are necessary.

Example 12 : Main positive impacts identified within the framework of the ICZM European demonstration programme

Thirty-nine sites were selected in Europe as a demonstration of the ICZM approach. Their project supervisors were then interviewed to determine what they saw as the main positive impacts of the ICZM approach, following implementation. After several years of operation, it is interesting to note that the most observable effects are generally qualitative. They are usually related to improvements in the decision-making process which resulted in more coherent planning practices. The quantifiable criteria, in terms of sectorial activity and improvement of the quality of the milieu, are only beginning to emerge at this point.

Positive ICZM impacts	Total number and % of mentions		Mean impact score (3)	Chief benefits (4)
	Nb (1)	% (2)		
Improved decision-making	33	84,6	1,84	9
Improved understanding between partners	32	82,1	1,41	17
Improved public awareness	32	82,1	1,81	8
Consensus on priorities	29	74,4	1,83	5
Sustainable tourist activity	28	71,8	2,00	1
Coherent territorial planning	26	66,7	1,85	9
Stronger community identity	24	61,5	2,04	4
Educational initiatives	22	56,4	1,91	5
Habitat restoration	20	51,3	2,05	2
Improved quality of life	18	46,1	1,89	1
More sustainable fishing activity	16	4,0	2,31	2
Pollution reduction	16	41,0	2,25	-
Landscape improvement	16	41,0	1,94	3
Lower environmental vulnerability	16	41,0	2,19	1
Reduced erosion and flooding	11	28,2	2,40	-
Reduced travel costs	5	12,8	3,00	-
Total number of positive impacts mentioned	344	55,1	2,04	67

Source : *European ICZM Survey, 2000*. Notes : (1) Total number of mentions in 39 ICZM projects; (2) % of mentions in the 39 ; (3) Average importance attributed to each factor where 1 = very positive impact, 2 = positive impact, 3 = no impact, 4 = negative impact, 5 = very negative impact. The lower the score, the more positive the impact. (4) Number of impacts rated 1 (very positive).

ACRONYMS

CELM : Cellule d'Environnement Littoral Marin – Seacoast Environment Cell

CELRL : Conservatoire de l'Espace Littoral et des Rivages Lacustres - Lake and Sea Shore Conservancy Agency

CN-COI : Comité National Français pour la Commission Océanographique Intergouvernementale – French National Committee for the Intergovernmental Oceanographic Commission

CEPRALMAR : Centre d'Etudes et de Promotion des Activités Lagunaires et Maritimes

CIAT : Center for the Study and Promotion of Maritime and Lagoon Activities

CRC : Coastal Resource Centre

CRD : Comité Régional de Développement (Regional Development Committee)

DIREN : Direction Régionale de l'Environnement (Regional Environmental Agency)

DPM : Domaine Public Maritime

DPSIR : Driving forces Pressure State Impact Response

EC : European Commission

EHESS : Ecole des Hautes Etudes en Sciences Sociales

EIA : Environmental Impact Study

EIS : Etude d'Impact Stratégique – Strategic Impact Study – SIS

GIS : Geographic Information System

GOOS : Global Ocean Observing System

ICAM : Integrated Coastal Area Management

ICRI : International Coral Reefs Initiative

ICZM : Integrated Coastal Zone Management

IFRECOR : Initiative Française pour les Récifs Coraliens (French Coral Reef Initiative)

MAB : Man And Biosphere

METAP/MAP : Mediterranean Environmental and Technical Assistance Programme / Mediterranean Action Plan

POS : Plan d'Occupation des Sols (local land-use plan)

PRE-COI/UE : Programme Régional Environnement – Commission de l'Océan Indien / Union Européenne (IOC/EU – PRE : Indian Ocean Commission/ European Union – Regional Environmental Programme)

SAR : Schéma d'Aménagement Régional (Regional Development Plan)

SDAGE-RMC : Schéma Directeur d'Aménagement et de Gestion des Eaux – Rhône Méditerranée-Corse (Watershed Development and Water Quality Master Plan – Rhône-Mediterranean-Corsica)

SEA : Strategic Environmental Assessment

SEPNB : Société pour l'Etude et la Protection de la Nature en Bretagne (Society for the Study and Protection of Nature in Brittany)

SIAT : Syndicat Intercommunal de l'Aire Toulonnaise (Greater Toulon Area Intermunicipal Corporation)

SMCO : Syndicat Mixte de la Côte d'Opale – Côte d'Opale Public and Private Partnership

SMVM : Schéma de Mise en Valeur de la Mer (Sea Enhancement Master Plan)

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GLOSSARY

- **Integrated Coastal Zone Management** :

A dynamic process involving governments and societies, sciences and decision-makers, and public and private interests, aimed at protecting and developing coastal systems and resources. The goal of this process is to optimize long-term choices which emphasize resources and their reasonable and rational use.

- **Territory** : An area, the people, and the relationships they maintain mutually and with the outside world

- **Logical framework** : A tool developed in the 1970s and used by various foreign-aid agencies ever since. It consists of an exercise coupled with an analytic method, as well as a means of formalizing the results of the exercise. It results in a logical and systematic presentation of the objectives of a project or program, which may have an influence on its success. The main results of the process are summarized as a matrix which describes in a logical way the goals, the results (outcomes) expected, the resources applied, and the costs, the hypotheses for success, and the indicators. It is important to note that this exercise must be applied throughout the process, in an ongoing way. It would be wrong to believe that the logical framework could be completed at the beginning. Its completion and correction are an ongoing, gradual process. The logical framework could also be considered as a foundation for the elaboration of other tools, in particular the detailed budget, the attribution of tasks and duties, the indicator system, the execution schedule, and a follow-up plan.

- **Externalities** : "Costs or drawbacks that the activity of one economic player imposes on another, in the absence of any financial compensation or merchant exchange. An external cost is thus an uncompensated social cost : that is, it is imposed on a third party, outside of any voluntary transaction." (Barde, 1992).

- **Géomatique** : "The study of the management and processing of data referring to spatial parameters, which draws upon the sciences and technology related to their acquisition, storage, processing, and diffusion. The term "geomatics" is used to designate a set of such disciplines as cartography, topography, photographic surveying, remote sensing, statistics, and data processing. The GIS (Geographic Information System) is a tributary of geomatics as a data base with a spatial reference." (Excerpted from the "Multilingual Land Thesaurus", published by the FAO).

- **Governance** : Refers to all of the institutions, networks, directives, regulations, standards, norms, political and social practices, public and private players who contribute to the stability of a society and a political regime, its orientation, and its capacity to guide, to supply services, and ensure its legitimacy.

- **Social engineering** : This concept refers to skills and practices which are much broader than those of the sociologist or the anthropologist : it is a case of "applied" social science. The "social engineer" is not usually expected to understand how social systems operate; instead, he or she should be able to arrive at an effective implementation of the procedures and devices for collective action in favor of the management of fragile environmental resources, as related to the values and interests specific to the social groups at hand (enhancement of grass-roots initiatives, cooperative approach, governance, etc.). Based on a social and ecological diagnostic of an environmental situation, the social engineer should be able to persuade the community to change the state of ecosystems and resources at stake, making it more sustainable. By creating cultural and cognitive frameworks encouraging these changes, the social engineer should help in finding a way to transmit the resource to posterity, near and far.

CASE STUDIES

- **Example 1** : The Sea Enhancement Scheme (SMVM) for Thau lagoon and its coastal fringe
- **Example 2** : Elaboration of an integrated management plan for the Saloum Delta Biosphere Reserve, Senegal
- **Example 3** : Creation of a natural reserve in a Reunion Island coral lagoon
- **Example 4** : The Côte d'Opale (Nord-Pas-de-Calais, France) : how a corporate instrument was created as a means of defining an ICZM strategy
- **Example 5** : the case of integrated management of the reefs of southeastern Mauritius Island
- **Example 6** : A socio-environmental evaluation in the Comoros Islands
- **Example 7** : Intensification of development and erosion of the beach at Saint-Cyprien, French Mediterranean coast
- **Example 8** : Management plan for the Grand-Anse Special Reserve, Seychelles
- **Example 9** : Elaboration of the Coastal Zone Master Plan for the Menabe region, Madagascar
- **Example 10** : The case of the Sea of Iroise Isles Natural Reserve, Northern Brittany, France
- **Example 11** : Rhône-Mediterranean-Corsica Water-Management Master Plan
- **Example 12** : Main positive impacts identified within the framework of the ICZM European demonstration programme

BOXES

- **Box 1** : Space and Issues
- **Box 2** : Five proposals for an approach to the theory of governance (Stoker, 1998)
- **Box 3** : Questions to use as guidelines when drafting the territory's socio-environmental questionnaire :
- **Box 4** : The Environmental Impact Study, an example of a tool
- **Box 5** : Models
- **Box 6** : Negotiation as a three-phase process
- **Box 7** : Coordination workshops, seminars, commissions
- **Box 8** : How can an ecosystem be priced?
- **Box 9** : Implementation of a management plan : Example of an action file
- **Box 10** : Examples of sustainability indicators

IOC MANUALS AND GUIDES

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1 rev. 2	Guide to IGOSS Data Archives and Exchange (BATHY and TESAC). 1993. 27 pp. (English, French, Spanish, Russian)
2	International Catalogue of Ocean Data Station. 1976. (Out of stock)
3 rev. 3	Guide to Operational Procedures for the Collection and Exchange of JCOMM Oceanographic Data. Third Revised Edition, 1999. 38 pp. (English, French, Spanish, Russian)
4	Guide to Oceanographic and Marine Meteorological Instruments and Observing Practices. 1975. 54 pp. (English)
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6 rev.	Wave Reporting Procedures for Tide Observers in the Tsunami Warning System. 1968. 30 pp. (English)
7	Guide to Operational Procedures for the IGOSS Pilot Project on Marine Pollution (Petroleum) Monitoring. 1976. 50 pp. (French, Spanish)
8	<i>(Superseded by IOC Manuals and Guides No. 16)</i>
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9 Annex I	<i>(Superseded by IOC Manuals and Guides No. 17)</i>
9 Annex II	Guide for Responsible National Oceanographic Data Centres. 1982. 29 pp. (English, French, Spanish, Russian)
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12	Chemical Methods for Use in Marine Environment Monitoring. 1983. 53 pp. (English)
13	Manual for Monitoring Oil and Dissolved/Dispersed Petroleum Hydrocarbons in Marine Waters and on Beaches. 1984. 35 pp. (English, French, Spanish, Russian)
14	Manual on Sea-Level Measurements and Interpretation. 1985. 83 pp. (English, French, Spanish, Russian)
15	Operational Procedures for Sampling the Sea-Surface Microlayer. 1985. 15 pp. (English)
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17	GF3 : A General Formatting System for Geo-referenced Data Vol. 1 : Introductory Guide to the GF3 Formatting System. 1993. 35 pp. (English, French, Spanish, Russian) Vol. 2 : Technical Description of the GF3 Format and Code Tables. 1987. 111 pp. (English, French, Spanish, Russian) Vol. 4 : User Guide to the GF3-Proc Software. 1989. 23 pp. (English, French, Spanish, Russian) Vol. 5 : Reference Manual for the GF3-Proc Software. 1992. 67 pp. (English, French, Spanish, Russian) Vol. 6 : Quick Reference Sheets for GF3 and GF3-Proc. 1989. 22 pp. (English, French, Spanish, Russian)
18	User Guide for the Exchange of Measured Wave Data. 1987. 81 pp. (English, French, Spanish, Russian)

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20	Guide to Drifting Data Buoys. 1988. 71 pp. (English, French, Spanish, Russian)
21	<i>(Superseded by IOC Manuals and Guides No. 25)</i>
22	GTSP Real-time Quality Control Manual. 1990. 122 pp. (English)
23	Marine Information Centre Development : An Introductory Manual. 1991. 32 pp. (English, French, Spanish, Russian)
24	Guide to Satellite Remote Sensing of the Marine Environment. 1992. 178 pp. (English)
25	Standard and Reference Materials for Marine Science. Revised Edition. 1993. 577 pp. (English)
26	Manual of Quality Control Procedures for Validation of Oceanographic Data. 1993. 436 pp. (English)
27	Chlorinated Biphenyls in Open Ocean Waters : Sampling, Extraction, Clean-up and Instrumental Determination. 1993. 36 pp. (English)
28	Nutrient Analysis in Tropical Marine Waters. 1993. 24 pp. (English)
29	Protocols for the Joint Global Ocean Flux Study (JGOFS) Core Measurements. 1994. 178 pp. (English)
30	MIM Publication Series : Vol. 1 : Report on Diagnostic Procedures and a Definition of Minimum Requirements for Providing Information Services on a National and/or Regional Level. 1994. 6 pp. (English) Vol. 2 : Information Networking : The Development of National or Regional Scientific Information Exchange. 1994. 22 pp. (English) Vol. 3 : Standard Directory Record Structure for Organizations, Individuals and their Research Interests. 1994. 33 pp. (English)
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37	Post-Tsunami Survey Field Guide. First Edition. 1998. 61 pp. (English, French, Spanish, Russian)
38	Guidelines for Vulnerability Mapping of Coastal areas in the Indian Ocean. 2000. 40 pp. (French, English)
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