



Spatial Planning in the Coastal Zone of the East Asian Seas Region: Integrating Emerging Issues and Modern Management Approaches

Interim Edition, November 2011

Spatial Planning in the Coastal Zone of the East Asian Seas Region: Integrating Emerging Issues and Modern Management Approaches

Interim Edition, November 2011



Disclaimer: This document is intended to be a starting point for developing countries in the East Asian Seas Region who are seeking assistance in adapting their spatial planning processes to incorporate emerging issues of concern in the region and several modern management approaches. The findings, suggestions and conclusions presented in this publication are entirely those of the authors and should not be attributed in any manner to the United Nations Environment Programme (UNEP), to its Regional Office for Asia and the Pacific (ROAP) or to the Coordinating Body on the Seas of East Asia (COBSEA).

FOREWORD

Spatial planning can be defined as “coherent and integrated intervention in the allocation of limited land and sea areas for various uses taking into account the needs for socio-economic development and environmental protection.” Spatial planning is one of the major tools used for coastal management.

The project ‘Spatial Planning in the Coastal Zone – Disaster Prevention and Sustainable Development’ was developed by the COBSEA Secretariat as a post-tsunami project during 2006 and submitted to the Swedish International Development Cooperation Agency (Sida). In early 2009, the project proposal was approved for funding by Sida. The project will be implemented by UNEP/COBSEA during the years 2010-2013.

The overall goal of the project is to reduce and prevent the impacts of natural disasters, climate change and sea level rise and to promote sustainable development of the coastal areas in COBSEA member countries through the application of spatial planning for integrated coastal zone management (ICZM) and Ecosystem Based Management (EBM).

In achieving the overall goal, the specific objectives are:

1. To develop Regional Policy, Resource and Guidance document “*Spatial Planning in the Coastal Zone of the East Asian Seas Region: Integrating Emerging Issues and Modern Management Approaches*”.
2. To strengthen national capacities in sustainable coastal spatial planning through the application of the adaptation of the Document into national needs and capacities for the COBSEA countries for spatial planning and disaster risk reduction.
3. To enhance the capacity of countries to integrate the consideration of new concepts such as climate change, ecosystem based management, disaster risk reduction and integrated land-sea planning into their existing national spatial planning procedures and systems.

The project is being implemented in three phases: Phase I - Development of a Regional Resource and Guidance document; Phase II – Consultations with participating countries on their needs and priorities in capacity building and on how to adapt the Regional Guidance document to their national settings; Phase III – Capacity building, national adaptation and demonstrations.

This Regional Resource Document on “*Spatial Planning in the Coastal Zone of the East Asian Seas Region: Integrating Emerging Issues and Modern Management Approaches*” is the main outcome of Phase I of the project. This document suggests ways in which new approaches and concepts can be incorporated in existing spatial planning systems. It is organized in such a way that the user can either navigate progressively through the various sequential steps, or skip to sections that are relevant to their particular needs.

This Interim Edition of the Regional Resource Document will be used as the basis for individual country consultations on their national needs and priorities for capacity building in spatial planning, which may be in the area of mapping and scenario exercises on climate change vulnerability, risk

analysis and planning exercises, or perhaps a more basic understanding of how to integrate the principles of ecosystem-based management into existing national spatial planning regimes. This national consultation together with the identified adaptation and capacity building activities will be the main outcomes of Phases II and III of the project.

COBSEA Secretariat would like to thank Sida for its support of the project, SSPA Sweden and Dr. Larry Hildebrand (Canada) for their contribution to the development of this document.

Dr. Elik Adler
COBSEA Coordinator, UNEP

TABLE OF CONTENTS

Foreword	1
Table of Contents	3
Executive Summary	5
Part One – Introduction	6
Purpose of this Resource Document	6
Who Should Use this Guide	7
The Final Products of the Spatial Planning Process	7
How to Use this Document	9
The Relationship between Plans through Time	9
Concepts, Principles and Approaches	10
Part Two – Spatial Planning Frameworks and Approaches in the EAS Region	12
Part Three – Emerging Issues and Modern Management Approaches	15
Ecosystem-based Management in the Coastal and Marine Environment	15
Hazard and Risk Management and Spatial Planning	19
Climate Change: A Special Set of Emerging Issues and Threats	24
Comprehensive Spatial Planning for Land and Sea	31
Part Four – The New Planning Paradigm	37
Part Five – Application of Emerging Concepts in the Coastal Spatial Planning Process	37
Step One – Preparation for Coastal Spatial Planning	37
Step Two – Assessment of the Current Situation	54
Step Three – Drafting the Spatial Plan	68
Step Four – Negotiation towards an Approved Spatial Plan	80
Step Five – Implementation Programme	86
Bibliography and Sources	95
Annexes	
Annex 1 – Tools for Assessing Hazards and Risks	104
Annex 2 – Combining Sea and Land Uses in One Plan	109
Annex 3 – Working with Stakeholders	111
Annex 4 – Some Recommendations for Organizing the Documentation	113
Annex 5 – Items to Check and Include	115

Annex 6 – Carrying Out a Participatory Coastal Resource Mapping Exercise	120
Annex 7 – Analysis of Coastal Processes, Division of Coast into “cells”	122
Annex 8 – Valuation Assessments of Ecosystem Services	126
Annex 9 – Model Table of Contents for Spatial Plan and Implementation Programme	133
Annex 10 – Brief Introduction to Tools, Techniques and Aids	136
Annex 11 – Selecting Specific Strategies for Shoreline Cells	139
Annex 12 – Coastal Setbacks	140

EXECUTIVE SUMMARY

There is a long tradition of spatial planning in the coastal zone within the member nations of the EAS region. Planning systems for the land, and other systems for the sea, have served as a good foundation for protecting the valuable natural resources of the coastal areas, supporting economic and community development and cultural well-being. While shortcomings in these systems can be identified, the main point of this document is that these planning systems are being stressed and challenged, perhaps beyond their current limits, by some important emerging issues such as climate change and the expectations for incorporating what we might call modern management approaches.

Coastal zone management concepts have been applied in the East Asian Seas Region for many years. But further effort is needed for their effective implementation. The 2004 tsunami and the recent scenarios on potential impacts of climate change and sea-level rise have highlighted the importance of effective coastal zone planning and development. One of the major tools used for coastal management is spatial planning.

Spatial planning can be defined as “coherent and integrated intervention in the allocation of limited land and sea areas for various uses taking into account the needs for socio-economic development and environmental protection.” This regional resource document suggests ways in which new approaches and concepts can be incorporated in existing spatial planning systems.

This report is organized in such a way that the user can either navigate progressively through the various sequential steps, or skip to sections that are relevant to their particular needs.

Part One is the Introduction that sets out the Purpose of this Resource Document, Who Should Use it, the Final Products of the Spatial Planning Process, How to Use this Document, the Relationship Between Plans Through Time, and Concepts, Principles and Approaches.

Part Two addresses existing spatial planning frameworks and approaches in the East Asian Seas region.

Part Three introduces and discusses some important emerging issues and modern management approaches such as ecosystem-based management, hazard and risk management, climate change and comprehensive spatial planning for land and sea.

Part Four introduces the ‘new’ planning paradigm. It contrasts ‘old’ approaches against this new approach.

Part Five addresses the application of emerging concepts in the Coastal Spatial Planning Process. It takes the reader through a step-wise approach of – preparing for coastal spatial planning, assessing the current situation, drafting the spatial plan, the negotiation process, and implementation. Each section discusses the implications of applying the ecosystem-based approach, integrating land- and sea-plans and the inclusion of risk reduction and addressing climate change aspects.

PART ONE – INTRODUCTION

Within the countries of the East Asian Seas Region, there are national legal and policy instruments, planning processes and guidance documents on physical or spatial planning, with more or less flexibility in permitted approaches. The practice of planning changes and develops continuously as new demands and expectations are placed on facing current and future uncertainties. The purpose of this resource document is to provide coastal planners and those participating in these processes, with suggestions on how:

- New approaches in planning can be adopted and how these differ from ‘traditional’ methods;
- To encompass the principles of ecosystem-based management into the planning process;
- To incorporate issues of disaster-risk reduction and climate-change impacts into the planning process; and
- To integrated land- and sea-spatial planning.

The spatial plan is not a development plan, a management plan, or an environmental plan. It is a management tool that will be used alongside other management tools.

In the past, the intention of spatial plans has been to show, primarily through maps (and increasingly GIS), where various activities and land uses are permitted or encouraged and where specific resource management regimes apply.

As a generic description of the spatial planning process and the new considerations that must be incorporated, this resource document will need to be tailored to fit national, sub-national and local situations. This is best done by practitioners themselves in the specific countries and administrative levels.

Purpose of this Resource Document

The overall purpose of this Resource Document is to assist participating countries in the reduction of impacts from natural disasters, climate change and sea-level rise, and to promote sustainable development of coastal areas through the application of what can be considered ‘modern management approaches’. This document outlines a general spatial planning process that can be applied at different scales, administrative levels and degrees of complexity. It includes reference to a number of methodologies, tools and sources where additional information can be found.

The intention of spatial plans is to show, primarily through maps, and increasingly GIS, where various activities and land or sea uses are permitted or encouraged and where specific resource management regimes apply. The spatial plan is not a development plan, a management plan or an environmental plan. The spatial plan is a management tool that will be used alongside other management tools. The emphasis is on coastal areas – both land and sea.

As a generic description of the process, the approaches outlined will need to be adjusted to fit national, sub-national and local situations. This is best done by practitioners in the specific countries and

administrative levels.

Who should use this Guide?

This Guide is intended for professionals responsible for the planning and management of coastal and marine areas and their resources. It is especially targeted to situations in which time, finances, information and other resources are limited.

The challenges that the countries of the East Asian Seas Region face in relation to the impacts of climate change, sea-level rise and other natural disasters have become increasingly apparent. Coastal areas in the EAS Region are extremely vulnerable to these threats and it is necessary to respond to them and make attempts to minimize the vulnerability of coastal ecosystems and communities.

The Final Products of the Spatial Planning Process

The final products of a coastal spatial planning process typically include the following:

- A set of maps, including a zoning map depicting areas within which specified development conditions apply. The zoning map represents spatial dimensions of a long-term (~20-year) common vision and provides an element of stability for land owners and developers over time.
- Other maps, which are used as inputs into the zoning map, may include current land use, physical features, conditions and constraints; habitats and environmentally sensitive areas; and tenure/ownership.
- An accompanying text that describes the background and process through which the zoning map was determined, and a zone-by-zone description of permitted and restricted usage.

There will probably be many other maps and documents produced through the process. These include:

- Thematic working papers covering a wide range of topics;
- A report on the current situation, possibly also called a “State-of-the-Coast Environment” report;
- Reports of special studies;
- Reports of consultation meetings and workshops (required under public participation parameters of related legislation and policy).

This document guides decision-makers who prepare detailed plans for small areas and for responding to applications for permits to develop or use land in the area. This will be particularly important in the EAS countries, as most of their governance approaches are decentralized and much of the spatial planning takes place at a local scale, dependent on such guidance and assistance from senior levels of government.

A new planning paradigm (or model) is described in this Resource Document. Under this paradigm, the regulatory functions of the zoning map and text are supplemented by a more promotional, action-oriented Implementation Plan. This is developed in close cooperation with sector authorities and other stakeholders and is linked to budgeting processes and existing development plans. It focuses on the short-term, and besides giving a rationale for the decisions made, indicates which agencies or

stakeholders will take responsibility for achieving specific actions, and when.

The Table of Contents of a typical final report and Implementation Plan are given below. This is indicative and generic in nature. Every planning process is unique, so variation from this model is to be expected.

Model Table of Contents for Spatial Plan (More details are provided in Annex 9)
Executive Summary
Part One Background and Long Term Zoning Plan
1. Introduction and Background
2. Description of Process
3. Description of Area
4. National, regional and local Interests
Part Two Implementation Program
5. Introduction and reference to Part 1, especially Chapters 5, and 6 (<i>This introduction is provided so that Part Two can stand alone. However, it need not repeat everything that has already been written in Part One</i>)
6. Overview of Implementation Program
7. Long term research and development needs
8. Coordinated institutional capacity development efforts related to program implementation
9. Sectoral implementation programs and projects (<i>for each sector/sector institution give “thumbnail” descriptions of each activity or project, its location and impact area, its contribution to the goals and vision, its estimated budget, estimated time-frame, and responsible unit.</i>)

How to Use This Document

Every planning exercise is unique. It is therefore not possible to follow a single planning recipe in a fixed manner from beginning to end in every possible planning exercise. The differences between planning processes can depend on:

- The level or scale of the plan, whether national, regional, district, master or comprehensive municipal. Most EAS nations conduct spatial planning at all or most of these levels and understand the need to tailor the planning approach accordingly;
- The availability of skills of planning team members. Most participating EAS nations have identified limitations in planning capacity and have called for capacity-building support; this will be addressed in Phase II of this project.
- The finances and other resources available for the planning activity. This is a function of the financial health of the nation in question and the importance it places on investing in forward-

looking planning;

- The time available and the degree of pressure on, or by authorities. The growing pressures on EAS nations' coastal zones from rapid development and urbanization and increasing climatic impacts, plus nations' commitment to develop integrated approaches in line with international conventions and agreements, makes this approach all the more urgent;
- Other legal conditions that may be imposed, in terms of content and scope, or requirements for public participation, etc.;
- The complexity of the natural environment and socio-economic setting. The EAS Region is among the most complex, diverse, valuable and threatened regions in the world;
- The existence and currency of existing plans, including their legal status and other information and knowledge; and
- The willingness of all relevant authorities and key stakeholder groups to participate and contribute constructively to the exercise within the scope of time and resource limits.

Each step in the process is examined in terms of comparisons between the 'old' and the 'new' planning paradigms and on the incorporation of new thematic issues.

The Relationship between Plans through Time

Planning is a continuous process that repeats a number of steps in a cyclical manner through time. In this resource document, the link between the long-term vision and goals on one side and the short-term objectives that are the focus of a particular planning exercise, are emphasized. Building long-term planning foundations is essential.

Because planning is cyclical, it repeats many processes of data collection and analysis. Planners and subject-matter specialists are seldom satisfied with the available information, yet plans seldom include activities through the plan period that will fill the gaps and build the knowledge base. There are often long-term research needs in which the results will only be available for a future planning cycle. Planners are encouraged, therefore, to take a long-term view of information needs and where possible, find ways to ensure that those needs are met.

One possible way is to enter into an agreement with local universities and research institutions through which teaching is combined with applied research so that academic needs are met at the same time as future planning foundations are laid. Development of a long-term GIS information databank is another important long-term tool that will repay its costs through time. Such a geospatial databank should be kept up-to-date so as to be current at all times. This will reduce the cost of future planning exercises dramatically.

The traditional planning approach has been to start by identifying problems and then formulating goals aimed at solving these problems. In such an approach, the goals are defined in relation to problems. In the approach advocated in this resource document, the opposite is the case. A common vision of a desirable future situation provides the basis for long-term goals. Problems, in the form of challenges,

constraints and hindrances, are those factors that stand in the way, or slow down progress toward those long-term goals. Problems are defined in relationship to the goals. This allows a perspective that keeps the long-term in view while dealing with priority issues in the immediate future. The intent is that solving one problem today will not cause a different problem tomorrow.

Concepts, Principles and Approaches

This document is built on a number of concepts and principles. It is useful to be aware of them, as they are not always self-evident in traditional planning situations.

Asset/vision based development. This approach starts with assets, formulates visions and long term goals, then defines the preconditions, constraints and hindrances that must be dealt with. “Problems” are defined in relation to goals and visions, in contrast to the classical approach of first identifying “problems” and defining goals as solutions to those problems.

Coastal and marine spatial planning. CMSP is emerging as a tool of choice around the world, particularly in heavily used marine areas. CMSP offers countries an operational framework to maintain the value of their marine biodiversity while at the same time allowing sustainable use of the economic potential of their oceans. CMSP is an approach that can make key components of ecosystem-based management of coastal and marine areas a reality.

Ecosystem-based management. This is the result of the realization that human well-being is ultimately dependent on healthy ecosystems. Since planning is future-oriented, the implication is that sustainable development must respect, conserve and enhance ecosystems for the fundamental services they provide us. One of the starting points is therefore a sufficient understanding of these ecosystems to enable us to make decisions that do not undermine their integrity. This concept is discussed and described in more detail later in the report.

Hazards, risks, vulnerability. In many countries hazard and risk management are treated separately from spatial planning, having their own organizations and authorities – often several such authorities. Socio-economic vulnerability is often given very little attention by either spatial planners or risk managers. This document emphasizes the link between hazard management, vulnerability and CSP.

Nesting concept in ecosystems, administration, management and spatial planning. Spatial planning is carried out at many scales, from floor plans in individual buildings to international regions. Similarly, administrative units are generally structured in a hierarchical manner in which small, more “local” units are nested within higher levels. This is also typical of management systems. A similar nesting concept is evident in ecosystems, where there are micro ecosystems focused on a single large tree in a rainforest, to landscapes, watersheds, and climate zones. Although individual species may have limited spatial distribution, other species with which they interact may have much wider spread, and are therefore affected by conditions far removed from the studied area. This nesting concept is therefore closely related to the ideas behind the ridge-to-reef concept (elaborated below). As with that concept, this nesting phenomenon has implications for setting the scope of CSP inputs whatever scale or level of plan is being considered.

Precautionary principle, and risk minimization. This principle says that in cases of doubt or conflict, err on the side of caution. In the context of sustainability, this principle also calls for maintaining as many options as possible for as long as possible – so as not to preclude future generations’ ability to make choices.

Resilience. The capacity of a system to absorb disturbance and reorganize while undergoing change so as to still retain essentially the same function, structure, identity and feedbacks.

Ridge-to-reef. A natural consequence of ecosystem-based management in the dynamic coastal area is the recognition that what happens in one area affects other areas. The most obvious natural linkage mechanism is the hydrological cycle that, among other things, moves material from higher to lower locations. What happens in upland areas away from the coast affects eco-systems in marine areas, and many in between. For example, deforestation in humid upland areas may lead to higher runoff and sediment load, which in turn can disturb riverine and estuarine ecosystems, as well as mangroves, seagrass meadows and coral reefs. This has important implications for setting boundaries of CSP areas, which can be difficult to resolve.

Risk Management. Is the identification, assessment and prioritization of risks (the effect of uncertainty on objectives, whether positive or negative) followed by coordinated and economical application of resources to minimize, monitor and control the probability and/or impact of unfortunate events or to maximize the realization of opportunities.

Stakeholder participation. The importance of stakeholder participation has been consistently demonstrated in those situations where it has been given importance. A broad sense of plan process ownership is considered to be important in engendering commitment during implementation and enforcement. Even during the process, the involvement of many affected parties broadens the information base, the generation of ideas, the definition and prioritization of issues to address, the creation of alternative future scenarios, and the base for their evaluation. Closely related to issue of stakeholder participation are concerns for social equity, poverty reduction, citizen empowerment and gender equality. A properly designed programme for stakeholder involvement will ensure that these concerns are also addressed. While this document considers stakeholder participation to be vital, it recognizes that different kinds or levels and scales of plans require different approaches to stakeholder participation. They also recognize that participatory processes cost money and require time. Therefore there is a need to balance the time and financial costs with the benefits of different levels of participation.

Sustainability. Planning is a management tool whose main purpose is to provide some control over the future in the context of uncertainty. The intention is to create a future that is an improvement on the present. “Meeting today’s needs without compromising the needs of future generations” is the core principle of sustainability. Spatial planning is one of the key tools for achieving this by ensuring that critical resources are conserved and used wisely.

Zoning Plan. A zoning plan is a device of land- and increasingly sea-use planning used by local governments in most countries. The word is derived from the practice of designating permitted uses of land or sea based on mapped zones which separate one set of land/sea uses from one another. Zoning may be use-based (regulating the uses to which land or sea may be put), or it may regulate building height, lot coverage, and similar characteristics, or some combination of these. Similar urban planning methods have dictated the use of various areas for particular purposes in many cities.

PART TWO – SPATIAL PLANNING FRAMEWORKS AND APPROACHES IN THE EAS REGION

Spatial planning is not a new concept in the EAS Region. In fact, it has been employed for decades in member countries and has provided the foundation for making most decisions about allocation of space among many competing human uses and expectations. These approaches are often guided by long- or medium-term Development Plans, which are basically road maps for development in the country. Spatial plans are used both to promote desirable land and resource use and to regulate human activities to minimize negative environmental and social impacts. Spatial planning is done at all administrative levels within the countries of this region, but the degree of generalization and detail vary considerably.¹

While shortcomings in these systems can be identified, the main point of this document is that these planning systems are being stressed and challenged, perhaps beyond their current limits, by some important emerging issues such as climate change and sea-level rise and the expectations from international experience on what we might call modern management approaches such as EBM.

Spatial planning is widely considered to be one of the key instruments of good governance, particularly when the approach integrates environmental, economic and social factors. It can be approached from various perspectives and individual sectors will often have particular interests in promoting one or



another approach, or they may be restricted in taking wider approaches. Consider forestry plans for example, that generally focus exclusively on forested areas and forestry issues. Or watershed-based planning that is favored by hydrologists and many ecologists. Or land-use planning that typically ignores (or must ignore) marine areas.

Increasingly, there is recognition of the need to support ‘reef-to-ridge’ approaches to coastal planning, a key concept within the Ecosystem Approach, or Ecosystem-based Management (which are described and discussed in more detail in subsequent sections of this report). This means that both marine and terrestrial areas should be integrated in spatial planning and as far as possible, whole ecozones should be incorporated.

There are many national laws and regulations in place or in development throughout the EAS Region that provide the legal framework for spatial planning. In some cases, these are specific to spatial planning (e.g., the Philippines) and in others, they enable broader Integrated Coastal Management (e.g., Indonesia’s *Coastal and Small Island Management Law* and Thailand’s draft *Promotion of Marine and Coastal Resources Management Act*). In other countries (e.g., Cambodia), more specific shoreline management approaches are used that support planned sustainable development along the shoreline through appropriate zoning and development guidelines. In most cases, the objective of spatial planning is to provide specific rules – with related prohibitions and sanctions – that can be clearly understood by implementing and enforcing agencies and the courts. Spatial planning is also intended to

¹ Information for this section of the report is drawn primarily from two sets of presentations made by national authorities at COBSEA workshops on spatial planning (November, 2010) and coastal erosion (April, 2011) respectively. While the information at hand is not comprehensive or necessarily completely up-to-date, it does provide a good context for what currently exists, how well it works and identified shortcomings.

support an integrated, participatory management approach at the national, provincial and local levels. In many cases throughout the EAS Region however, it is reported that existing laws are not well implemented or enforced.

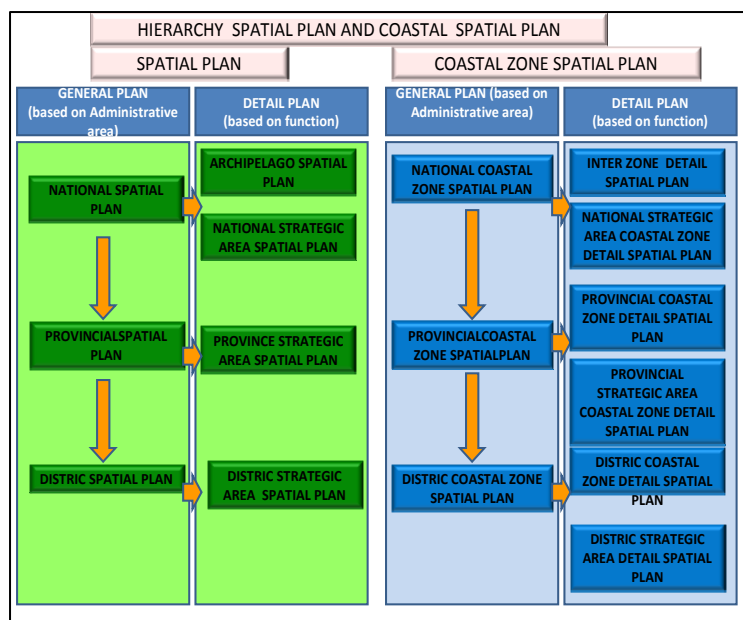
Many of these laws in EAS countries include planning provisions that require a Coastal Zone Strategic Plan, a Zoning Plan, a Management Plan and an Action Plan for the coastal zone. Some, but not all of them include hazard assessment, vulnerability scenarios, risk assessment and adaptation strategies.

There are also supporting and enabling policies within these legal frameworks. Cambodia, for example, has a National Policy for Land Use and Urban Development and a Spatial Development Strategy that provide a clear vision for spatial planning policy: *“that its entire territory shall be used, organized, developed and protected by integrative, strategic territorial planning and the harmonization of regionally significant instruments and measures.”* The Philippines has a National Framework for Physical Planning which includes protection areas, production areas, settlement areas and infrastructure. In Thailand, there are many policies, strategies, programmes and plans of action in place or in development to improve and maintain the sustainability of its coastal and marine resources. With technical support from PEMSEA and NOAA, Viet Nam is developing a master project on coastal spatial planning, including supporting legislation and policies, and building on existing coastal spatial planning procedures and systems.

An integrated spatial plan requires the involvement of all sectors and a high degree of coordination. Often, there is limited awareness between and among agencies on various policies, strategies, plans and legislation implemented through sectors, limited coordination and collaboration and duplication of efforts. To address these challenges, there are designated lead agencies for planning, regulatory and quasi-judicial activities for land development, real estate and housing (e.g., the Philippine inter-agency National Land Use Committee and Housing and Land-Use Regulatory Board which is responsible for the coordination function; Thailand’s Ministry of Natural Resources and Environment that plays the key role in coastal planning and management, and Indonesia’s National Spatial Planning Coordinating Board).

There is typically a hierarchy of Physical Plans, often related to national decentralization policies. Viet Nam for example, has a system of plans, from a national development strategy, regional/provincial socio-economic development plans, land-use plans at the national, regional, provincial, district and commune levels, as well as spatial planning for construction. The Philippines has a National Framework for Physical Planning, Regional and Provincial Physical Framework Plans, and Comprehensive Land Use Plans. There, Local Government Units are provided technical assistance in the preparation of their respective Comprehensive Land Use and Zoning Ordinances. Coastal Land-Use Planning Guide Books on Comprehensive Land-Use Plan Preparation have been prepared that provide procedural steps in the preparation of Coastal Land Use Plan Zoning Ordinances and Comprehensive Land-Use Data Management. There is also implementation of Operational Plans for specific coastal areas at the provincial level (e.g., coastal land- and sea-use zoning plan for the Province of Bataan) and local areas (e.g., Manila Bay coastal strategy) that includes components for risk assessment, oil spill contingency plans and coastal land-sea Use Zoning Plans.

The 2004 Asian tsunami exposed the vulnerability of many coastal communities to natural disasters and their effects. To an increasing extent, these spatial planning tools are considering the impacts of climate change, disaster-risk management and other emerging threats. However, the nature of disasters – existing, episodic and long-term (such as climate change), challenge these existing systems and require guidance on how to integrate these new challenges into existing planning systems.



Increasingly, we are seeing integration of Disaster-Risk Reduction (DRR) and Climate-change Adaptation (CCA) into Coastal Land-Use Guidebooks with assistance of donor agencies (e.g., UNDP and AusAid for the Philippines). Viet Nam has national policies for promotion of environmental protection and integration of climate-change adaptation, but reports a lack of experience in climate-change impact assessment. Cambodia has legal frameworks, policies and institutional arrangements to address climate change and disaster management. It has a National Adaptation Plan of Action (NAPA) to Climate Change which is developing a realistically achievable,

country-driven programme of action and priority activities that address the needs for adapting to the adverse impacts of climate change. The Cambodian NAPA consists of 39 ‘no-regret’ adaptation projects which focus on measures that have direct impacts on the livelihoods of local people, in particular, the poorest.

However, in dealing with a specific issue such as coastal erosion (the subject of another pending COBSEA publication), existing coastal spatial planning procedures and systems have no systematic approach and no national or local policies aimed at addressing the issue. Local governments and individual property owners are left on their own to decide how to address the problem. Interestingly, Local Government Units in the Philippines are encouraged to assert the public domain nature of newly accreted lands and to designate these as greenbelts.

It is important to remember that resource management and land-use plans must be devised within the capacity – in financial and human resource terms – of communities to implement and enforce them. However, a recurrent issue flagged by Thailand is that spatial plans are often ignored or so easily modified that they do not achieve their desired effect. This is partly because many management or land-use plans are not implementation-oriented in their design, meaning that they do not take into account the human and financial components required to implement them effectively. This is especially true on the enforcement side. There is still a tendency, however, to rely mainly on donors rather than mobilize internal resources, and many activities undertaken to address climate change in the coastal zone have been short-term only.

The capacity and implementation challenges associated with integrating emerging issues and modern management approaches speaks directly to the need for further guidance. This Resource Document attempts to provide this.

PART THREE - EMERGING ISSUES AND MODERN MANAGEMENT APPROACHES

Emerging Concepts and Issues

This chapter describes and discusses a number of ‘emerging issues’ and what can be considered to be ‘modern management approaches’ that have a large and increasing influence on coastal spatial planning. These include:

- Ecosystem-based planning in the coastal context;
- Integrating terrestrial and marine planning;
- Bringing Disaster Risk Reduction and Climate Change issues, vulnerability and resilience into spatial planning processes; and
- A new planning paradigm.

Ecosystem-based Management in the coastal and marine environment

Ecosystem-based management, or EBM, is an approach that goes beyond examining single issues, species, or ecosystem functions in isolation. Instead, it recognizes ecological systems for what they are: a rich mix of elements that interact with each other in important ways. This is especially important for coasts and oceans and the EAS Region in particular. To describe this, the terms ‘ecosystem-based management’ and ‘ecosystem approach’ (EA) are often used interchangeably, but they mean generally the same thing.

EBM recognizes that our welfare and the health of the environment are linked. Put another way, coastal and marine systems provide valuable natural services, or “ecosystem services”, for human communities such as vibrant commercial and recreational fisheries, renewable energy from wind or waves, coastal protection and recreation. Therefore, to protect our long-term well-being, we need to make sure that coastal and marine ecosystem functions and productivity are managed sustainably. This means managing them in a way that acknowledges the complexity of coastal and marine ecosystems, the connections among them, their links with land and freshwater, and how people interact with them. Moreover, EBM offers a valuable solution for harnessing coastal and marine ecosystems in adapting to climate change and other potential disasters.

The principles and approaches of EBM are now reasonably well known and understood. But how to put them into practice, in specific national and socio-economic settings, remains a challenge for many policy-makers and practitioners. To this end, a new publication from the UN Environment Programme



(UNEP) ***Taking Steps toward Marine and Coastal Ecosystem-based Management – An Introductory Guide*** (June 2011), has been published to help countries and communities - including planners and decision-makers on all government levels and across multiple sectors - move toward ecosystem-based management of coasts and oceans. Drawing on practical experience and lessons from around the world – including East Asia – the Guide serves as an introduction to EBM principles and applications, and provides an overview of the general phases involved. With this Guide, UNEP seeks to assist countries and communities to take steps towards making coastal and marine ecosystem-based management operational – from strategic planning to on-site implementation. Countries are encouraged to consult

this report in detail as they pursue more ecosystem-based approaches to the management of their coasts and oceans.

Although the term EBM has been defined in numerous ways, the core elements of it include:

- Recognizing connections among marine, coastal and terrestrial systems, as well as between ecosystems and human societies;
- Using an ecosystem services perspective, where ecosystems are valued not only for the basic goods they generate – such as food or raw materials – but also for the important services they provide – including clean water and protection from extreme weather;
- Addressing the cumulative impacts of various activities affecting an ecosystem;
- Managing for and balancing multiple and sometimes conflicting objectives that are related to different benefits and ecosystem services; and
- Embracing change, learning from experience and adapting policies throughout the management process.

Taken together, these core concepts set ecosystem-based management apart from traditional management. They are key overarching considerations as the practitioner begins to implement EBM. It is important to note, however, that although all of these elements are essential, they can be addressed in a step-by-step, incremental and adaptive process, given the situation, resources and existing programs in a particular area. In all cases, EBM will look different in different places, tailored to the unique mix of ecological, social and political connections in a specific geographic area.

The goal of EBM is to make coastal and marine management more effective, more efficient and less costly than the additive costs of uncoordinated sectoral management

One of the most important aspects of EBM is that it is fundamentally a place-based approach, where an ecosystem represents the place. Across an entire “place”, EBM aims to manage each of the human uses at a scale that encompasses its impacts on coastal and marine ecosystem function, rather than scales defined by jurisdictional boundaries. EBM looks both out to sea and inland, connecting terrestrial, coastal and marine systems.

Many publications on ecosystem approaches and EBM have stressed the need for regional governance, where the scale of coordinated or cooperative management extends across interconnected ecosystems and human social systems. This is well demonstrated in the EAS Region through the cooperative regional framework provided by COBSEA.

Successful steps within an EBM process include tasks that coastal and marine managers are often already doing, such as resource or stock assessments, environmental assessment, pollution monitoring, fisheries management, and many others. What sets EBM apart is its holistic, integrated approach. It seeks to link previously sector-based management, like forestry and fisheries, and to consider the full range of uses that affect an ecosystem or ecosystems. This requires deliberate work to build collaboration and coordination across diverse sectors that may be isolated from, or even in conflict with, one another.

Embedded within EBM is the concept of resilience and maintenance of ecosystem function. Resilience is the ability to return toward a previous state following a disturbance – whether that disturbance is natural, as in a hurricane event or tsunami, or whether it is human-induced, such as the physical destruction of a reef by dynamite fishing or an oil spill disaster. Investing time and energy to make ecosystems as healthy and productive as possible helps to maintain their resilience.

With respect to spatial planning and the consideration of emerging threats, EBM provides benefits by underpinning ecosystem-based adaptation (EBA). EBA concerns the management of biodiversity and natural resources in ways that help vulnerable communities cope with the impacts of climate change and other stressors. EBA strategies can include, for example, managing coastal habitats (e.g., mangroves, sand dunes and saltmarshes) to shield communities and infrastructure against storm surges. A good example of this is in Kampong Bay Basin, Cambodia where a study of climate vulnerability allowed planners to analyze different climate change projections and relevant management responses. In turn, this allowed managers to evaluate trade-offs among specific management measures. By utilizing the resilience of ecosystems for climate-change adaptation, EBA is a direct application of EBM.

While implementing an EBM process will require some changes to be made to existing management frameworks, it should take advantage of – not undermine or ignore – the existing capacity, momentum or progress. A good EBM process begins with a thorough assessment of the current management practices and policies already in place and how effective they are, sector-by-sector. It then identifies opportunities to begin building an ecosystem focus into those management frameworks and into stakeholders' mindsets and perceptions.

EBM builds on other important and existing management approaches; it does not try to reinvent them. In this sense, the geographic scope of EBM can collectively cover that of all five of the main management strategies that are being practiced in the EAS Region: (1) the coastal lands and nearshore environment of Integrated Coastal Zone Management (ICZM); (2) the marine environment of marine spatial planning (MSP); (3) the rivers and drainage basins in watersheds that drain into the sea; (4) the waters supporting exploited fish stocks; and (5) the coastal and marine environments encompassed by Marine Protected Areas (MPAs).

Some nations with advanced ICZM perceive that they are already practicing EBM. ICZM in these countries may be refined toward EBM by moving from political boundaries to ecological boundaries – linking land-use activities in the coastal zone and nearshore waters and addressing ecosystem services, livelihoods and equity issues. For this reason, it may make sense to begin with the firm foundation that ICZM policies can provide and move toward ecosystem valuation as a first step in the direction of fuller EBM.

Marine Spatial Planning (MSP) might be thought of as the visualization and mapping side of EBM. MSP is a way to develop the big picture view of what uses of marine resources and space are occurring where, and determine what should be occurring, with less impact and less user conflict. Smaller-scale, spatially-explicit management measures such as zoning of areas for multiple use, designation of MPA networks, or individual protected areas can – but do not always – flow from MSP. A benefit of MSP is that it allows planners and managers to integrate information about ecosystem features, how humans impact them (and vice versa) and how they are connected to other ecosystems (or affected by other uses). This information can then be mapped to form the basis of (a) place-based sectoral regulations pertaining to specific uses, (b) plans for future research, monitoring and evaluation to fill information gaps, and/or (c) a comprehensive ocean zoning plan.

When marine and coastal managers cannot influence what occurs upstream from their sites, they may be seriously handicapped in stopping degradation from declines in the quality, quantity and duration of freshwater flows and sediments reaching estuaries and coasts. Watershed management is among the oldest strategies for environmental management in existence – occurring as a response to hazards or conflicts over the availability of water for drinking and/or irrigation. For this reason, coastal and marine management agencies should be at the table in the planning of activities and development of policies affecting coastal watersheds.

Marine Protected Areas (MPAs) can be a useful tool in implementing EBM by regulating different uses in an area. Generally speaking, MPAs are used to protect special habitats or species, maintain livelihoods, facilitate restoration, or control access to areas important for recreational, cultural or historical reasons. Protected areas can allow managers to safeguard areas most critical for ecosystem function and the delivery of ecosystem services. Shortcomings can be avoided by integrating MPA planning in broader MSP and ocean zoning efforts. The discrete nature of protected areas allows experimentation with EBM approaches and integration – and often represent where the first steps along the EBM journey are taken. If a region has a well-established network of MPAs, adopting an EBM perspective might begin by adding management practices that link land and sea conservation, or reviewing whether the MPA's configuration matches the properties important for ecosystem integrity and resilience.

As coastal and marine management proliferates and matures, the context for taking steps toward EBM is becoming more favourable. Developing effective EBM in a particular place will require an understanding of the legislative frameworks, international agreements and evolving perspectives on dealing with uncertainty that exist in the region.

Some references and sources for further study:

- Agardy, T. 2010. **Ocean Zoning, Making Marine Management More Effective.** Earthscan Publications. London.
- Christensen, Norman L., Ann M. Bartuska, James H. Brown, Stephen Carpenter, Carla D'Antonio, Rober Francis, Jerry F. Franklin, James A. MacMahon, Reed F. Noss, David J. Parsons, Charles H. Peterson, Monica G. Turner, and Robert G. Woodmansee. 1996. **The Report of the Ecological Society of America Committee on the Scientific Basis for Ecosystem Management.** Ecological Applications 6:665–691.
- Clarke P and S. Jupiter. 2010. **Principles and Practice of Ecosystem-Based Management: A Guide for Conservation Practitioners in the Tropical Western Pacific.** Wildlife Conservation Society. Suva, Fiji. Available at: www.wcs.org/files/pdfs/EBMguide0510_low.pdf
- Coast Information Team. 2004. **Ecosystem-based Management Framework.** British Columbia, Canada. Available at: <http://www.citbc.org/ebm.html>
- Coast Information Team. 2004. **Ecosystem-based Management Planning Handbook.** British Columbia, Canada. Available at: <http://www.citbc.org/ebm.html>
- Communication Partnership for Science and the Sea. 2005. **Consensus Statement on Marine Ecosystem-Based Management.** Available at: http://compassonline.org/pdf_files/EBM_Consensus_Statement_v12.pdf

Communication Partnership for Science and the Sea. 2005. **Implementing Marine Ecosystem-Based Management: Integrating Perspectives From Science and Management**. Monterey. Available at: http://compassonline.org/pdf_files/EBM_12_05_Synthesis_5pg.pdf

Conservation Law Foundation – USA, WWF-Canada. 2006. **Marine Ecosystem Conservation for New England and Maritime Canada: a Science-Based Approach to Identifying Priority Areas for Conservation**. CLF, Boston, and WWF-Canada, Halifax.

Karen McLeod and Heather Leslie (eds). 2009. **Ecosystem-based management for the oceans**. Island Press. Washington.

UNEP. 2011. **Taking Steps Toward Marine and Coastal Ecosystem-based Management – An Introductory Guide**. UNEP Regional Seas Reports and Studies No. 189.

Walker, B., C. S. Holling, S. R. Carpenter, and A. Kinzig. 2004. **Resilience, adaptability and transformability in social–ecological systems**. *Ecology and Society* 9(2): 5. [online] URL: <http://www.ecologyandsociety.org/vol9/iss2/art5/>

Walters, C. 1997. **Challenges in adaptive management of riparian and coastal ecosystems**. *Conservation Ecology* [online]1(2):1. Available at: <http://www.consecol.org/vol1/iss2/art1/>

Some relevant websites:

<http://compassonline.org>

<http://www.marineplanning.org/> focus is primarily North America, but much can be learned and applied elsewhere.

<http://www.resalliance.org/>

<http://www.seaweb.org> and especially <http://www.seaweb.org/resources/ebm.php>

Tools of various kinds can be found at:

<http://www.ebmtools.org/>

http://wiki.resalliance.org/index.php/Main_Page Resilience assessment.

<http://www.smartgrowthtools.org> and especially:
<http://www.smartgrowthtools.org/ebmtools/index.php> A large number of tools listed here with links. Many of specific to parts of the USA.

Hazard & Risk Management and Spatial Planning

The focus of this section is on highlighting the intersections between hazard and risk management and spatial planning.

The EAS countries lie in a geographical region that is particularly prone to natural hazards, such as earthquakes, volcanic eruptions, typhoons and storms and consequential disasters like landslides, floods, storm surges and tsunamis. Most countries have developed systems to cope with these frequent disasters through contingency- or risk-reduction. Traditionally, governments in the EAS region have reacted to disaster risks after the fact rather than focusing on preventive measures to reduce

vulnerability and impacts in the first place. This reliance on post-disaster response carries substantial opportunity costs and exposes hard-won development gains to unnecessary and short-sighted risks. Recently, however, the region has begun making progress in strengthening its disaster capacities.

Yet disasters continue to erode development gains throughout East Asia and the broader Asia-Pacific region. This region accounts for 42% of global economic losses and 85% of deaths as a result of natural hazard impacts. The Asian Development Bank (ADB) prepares for and addresses these disasters by promoting an integrated approach to disaster risk management (DRM) that combines disaster risk reduction, elements of climate change adaptation and disaster risk financing.

In 2004, ADB approved its Disaster and Emergency Assistance Policy, which promotes an integrated disaster risk management model that addresses the three-fold gaps of policy, financing and capacity. The model includes disaster risk reduction and climate change adaptation. Treated together, this approach can maximize the co-benefits for investments in resilience measures that could potentially protect against multiple hazards. To implement the integrated disaster risk model, ADB developed a range of solutions applicable in multiple conditions:

- A Disaster Risk Reduction Projects Portal <http://www.drrprojects.net/drrp/drrpp/home> to strengthen regional networks on disaster risk management and share information on progress in implementing disaster risk reduction projects in the region and collectively identify gaps and areas of cooperation among development partners.
- Access to Flexible Financing is key for this region. In collaboration with various development partners, ADB is working to establish a multi-donor trust fund for integrated disaster risk management. Grants from the trust fund would provide a mechanism for funding innovative ideas as well as for responding to member country requests for small-scale ADB assistance on risk assessment, capacity development and scoping studies.

The Regional and Sustainable Development Department in ADB is initiating two new regional technical assistance projects in 2011 that will develop disaster risk financing solutions for cities in Indonesia, the Philippines and Viet Nam <http://www.adb.org/projects/project.asp?id=43553>. The projects will support work with these countries to formulate risk profiles, develop risk models for priority hazards, and explore the feasibility of various risk transfer solutions. Within three years, ADB hopes that this will provide a set of disaster risk financing models that could be applied in other parts of Asia.

The tremendous pace of urbanization in the East Asia Region, has meant that cities are increasingly being built and expanded in risk-prone areas, using building technologies that were not developed to address urban risk exposures and continuing to grow cities without adequate governance mechanisms to address the needs of informal settlers and the poor. To address these issues, urban risk reduction now figures prominently in the new ADB Urban Operations Plan that is currently being finalized. In addition, ADB is using technical assistance projects to develop guidebooks on risk-sensitive land-use planning, an urban risk-reduction toolkit for local authorities and the models for urban disaster risk financing. ADB is also exploring a potentially new initiative on risk management and environmental governance to promote and better manage the interaction of political, social and economic systems with the natural environment, within the context of disaster and climate risks.

Inappropriate human activities can make the impact of natural hazards worse. It is not currently feasible to control a typhoon, but it is possible to use management decisions of various types, to reduce the

impact of typhoons on people. Spatial planning, combined with zoning conditions, is one tool that managers can use to reduce these impacts.

Many contingency plans are drawn up for sudden events or emergencies, whether these are for typhoons or accidents in factories or on the road. Increasingly however, attention is being given to 'emerging risks' – hazards that have a slow onset. Climate change is only one of a number of such hazards. The accumulated impacts of many small human activities, none of which individually would be considered dangerous, can lead to the crossing of an environmental threshold and cause a severe disruption to ecosystem services and to human society in the area.

The impacts of hazardous events can be classified in terms of their spatial distribution, their severity and their duration. Impacts are also related to vulnerability and resilience. Vulnerability is used as a measure of exposure to a hazard. Here, it refers to the ability of individuals, households, communities, institutions or even ecosystems to recover from a hazardous event. Resilience is basically the opposite of vulnerability.

Generally, hazards are only defined as such when there is an impact on humans and human activities. With a broader understanding of the dependence of society on ecosystems, however, the hazard manager will also include important environmental features that may be negatively impacted by events, whether sudden or slow in their onset.

The types of questions the spatial planner will ask when seeking to incorporate risk reduction and hazard management in the planning process are:

1. What are the natural and anthropogenic hazards relevant to the planning area? What are their characteristic features, especially in terms of geographical area, severity and duration of impact?
2. What, if any, are the secondary or consequential hazards that may follow the first? (e.g., fires following from earthquakes in urban areas). Where are they likely to occur?
3. What features and population groups are at risk (exposed to the hazard) and where are they?
4. How robust are they in the face of the specific hazards? Robustness refers to the ability to continue fulfilling functions and services during an event. Healthy ecosystems tend to be more robust in the face of natural disasters than degraded systems. If the natural hazards are common in the area, the ecosystems will probably have evolved to survive them.
5. How vulnerable or resilient are they to specific hazards? That is, to what extent can they be expected to recover to a similar level of productivity, function or form, after an event? And what is the cause of their vulnerability or resilience? For the planner, this question may reveal factors that have spatial planning implications, where vulnerability is directly linked to location, density or intensity of land use, lack of access to and from the area, etc. These types of factors can be taken directly into the spatial plan.
6. What and where are the emergency response components, such as medical facilities, fire stations, police stations, emergency supplies, evacuation routes, reserve power supplies, refuges? Are these features in relatively safe locations, and of a robust nature?

These questions are very similar to those that the contingency planners or rescue services will ask. These groups will focus on operational issues – institutional and organizational aspects of preparedness, response and relief – while the spatial planner will focus on the locational aspects, with a view to:

- Minimizing exposure to hazards by avoiding unsafe places – prohibiting development in areas liable to floods, on steep and unstable slopes, using setbacks along open coasts subject to storm surges and tsunamis.
- Optimizing robustness by providing development and building regulations linked to zoning conditions that improve resistance capacity of buildings to the hazard – for example, requiring buildings to use earthquake-resistant methods; ensuring mangrove ecosystems are large and healthy enough to cope with typhoons.
- Ensuring adequate access to and from the area, for rescue services and for evacuation purposes.

Assessing vulnerability is unavoidable in this context. There are several aspects of vulnerability, some of which can be directly addressed by spatial planners. Spatial planners can address some of the unsafe conditions directly. Through the promotional planning process, many of the other root causes and dynamic pressures can be highlighted and addressed through the integrated development plan – one component of which will be the spatial plan.

Vulnerability Factors

Physical:

- Susceptibility of local & built environment
- Site, design/technology & materials used for housing & infrastructure
- Remoteness of settlement
- Population density levels

Social

- Level of well-being of individuals, community & society
- Social equity, class structure, gender issues
- Level of literacy & education
- Physical, mental & psychological well-being
- Basic water & sanitation, healthcare
- Traditional knowledge systems
- Collective organizational systems

Economic

- Economic status, poverty
- Levels of individual, community & national economic reserves, utilities & supplies, transport systems

Environmental

- Extent of natural resource depletion
- State of resource degradation
- Pollution

Source: Abramovitz, 2001. UN-ISDR, 2004, Chua, 2006

An important question that needs to be answered at the political and strategic levels is “what level of risk are we (as a society) prepared to accept?” This is usually linked to economic considerations, since preparedness requires financial resources. In this context, coastal ecosystems may take on special importance in terms of reducing the impact of certain types of hazards (for example, mangroves protecting against storm surges, typhoons, tsunamis), or wetlands absorbing flash floods and reducing damage to urban settlements. Such ecosystems have several advantages over hard-engineered defences in that they are productive in themselves and are generally self-sustaining and self-regenerating. Readers are referred to Annex 1 for a detailed discussion of the most commonly used tools for assessing hazards and risks.

Sources for further study

Harris and Bahadur. 2011. **Harnessing Synergies: Mainstreaming Climate Change Adaptation in Disaster Risk Reduction Programmes and Policies.**

Inter-Agency Task Force on Climate Change and Disaster Risk Reduction. **Disaster Risk Reduction Tools and Methods for Climate Change Adaptation.**

Intersections, July 2011 – **Disaster Risk Management.**
Online Version - <http://www.adb.org/documents/periodicals/intersections/2011/issue05-jul2011.asp>

Abarquez, I. and Z. Murshed, 2004. **Community-Based Disaster Risk Management: Field practitioners' handbook**, Bangkok: Asian Disaster Preparedness Center. Available at: <http://www.adpc.net/pdr-sea/publications/12Handbk.pdf>

ECLAC, 2003. **Handbook for Estimating the Socio-Economic and Environmental Effects of Disasters**, Santiago, Chile: Economic Commission for Latin America and the Caribbean. Available at: www.proventionconsortium.org/toolkit.htm

EMA, 2000. **The Good Practice Guide: Community awareness and education in emergency management**, Canberra: Emergency Management Australia. Available at: <http://www.crid.or.cr/digitalizacion/pdf/eng/doc12728/doc12728.htm>

IFRC, 2005. **Guidelines for Emergency Assessment**. Geneva: International Federation of the Red Cross and Red Crescent Societies. Available at: http://www.proventionconsortium.org/files/tools_CRA/IFRC-guidelinesassessments-LR.pdf

Wisner, B., P. Blaikie, T. Cannon and I. Davis, 2003. **At Risk: natural hazards, people's vulnerability and disasters**. Second edition. UNDP. Available at: <http://www.unisdr.org/eng/library/Literature/7235.pdf>

Web sites of interest

<http://www.adpc.net> Asian Disaster Preparedness Center, Bangkok.

<http://www.unisdr.org> International Strategy for Disaster Reduction, a United Nations initiative.

<http://www.preventionweb.net/english/hyogo/gar/2011/en/home/index.html> 2011 Global Assessment Report on Disaster Risk Reduction

Climate Change: A Special Set of Emerging Issues & Threats

The State of the Marine Environment Report for the East Asian Seas (UNEP/COBSEA, 2009) makes it very clear that strong and urgent action for climate change adaptation measures should be taken as soon as possible. This must be done to avoid exponentially increasing future costs in terms of loss of life, property and livelihoods. While the economic benefits of strong and early action on climate change will outweigh the costs, it is important that spending on climate-change adaptation does not undermine continued funding for sustainable development and put undue pressure on the budgets of many developing countries in the region.

Integrating climate change adaptation into national planning is fundamentally important to the EAS region, particularly with regards to long-term sustainable development.

It is important to accept that adaptation policies and activities for the coastal and marine environment of different EAS countries have to be framed differently, considering the special and varied needs of individual countries. However, this continuum of varied approaches may be roughly divided into four major efforts, depending on their relative emphases on vulnerability and impacts.

1. Address the drivers of vulnerability;
2. Build up response capacity;
3. Manage climate risk; and
4. Directly confront climate risk

In Climate Change Impact and Vulnerability Assessment (CCIAV) studies, climate change may be incorporated into a wider framework of general coastal hazard management. This involves an evolution of thinking from Integrated Coastal Zone Management (ICZM) to Disaster Risk Reduction (DRR).

A related issue in adaptation measures is conducting more studies at the local level – known as ‘downscaling’ - to better evaluate the impacts of climate change on communities. It is also important to consider the advantages and disadvantages of taking a ‘top-down’ or ‘bottom-up’ approach in adaptation measures and applying the strategy most appropriate to that situation.

Various international and regional organizations have already begun adaptation programmes or projects that include some of the EAS countries. For example, UNFCCC has developed a compendium on methodologies for assessing vulnerability and adaptation, and a database on existing local strategies for coping with climate variability and hazards. Additional efforts are enabling the least developed countries to identify their immediate priorities for adaptation options via the Cambodian National Adaptation Programme of Action (NAPA). The Asia-Pacific Network for Global Change Research (APN) has also undertaken a project to help build adaptive capacity throughout the EAS region, by building better theories and models of resilience and adaptive capacity and facilitating improved awareness amongst decision-makers in various sectors.

It is clear that the phenomenon of climate change increases the potential for climate-related risk. Thus, it is vital that risk management and reduction be incorporated into adaptation planning and, conversely, that climate change be incorporated into disaster and risk management activities.

It is vital that risk management and reduction be incorporated into adaptation planning and, conversely, that climate change be incorporated into disaster and risk management activities.

As in the case of hazard management, the spatial plan is not equivalent to a program for mitigation and adaptation to climate change. However, it is becoming increasingly clear that in coastal areas in particular, realistic coastal spatial planning cannot be done without acknowledging the impacts of climate change.

Climate-change risks are actually a sub-set of risk management in general. Yet they deserve special attention, partly because the hazards involved operate over the long-term and on a global scale, so that attempts to reduce the probability of their occurrence are beyond the power of any local or even sub-national authority. However many mitigating activities are put in place locally, effects are diluted in the global scale of the trend. Attention must be given to reducing the severity of the effects.

What the spatial planner requires is an awareness of the types of issues that are likely to arise within the climate change discussion and which imply spatial dimensions. Some broad steps for the process include:

- Identify which climate change phenomena are relevant for the coastal zone in question.
- Identify and try to quantify the likely impacts and consequences. The Table that follows groups these by climate-change phenomena. Select specific impact types known to have occurred in your country and investigate recent trends, looking at statistics, but also collecting anecdotal evidence from long-term residents. Many residents will have not only observed changes, but adapted their livelihoods to the changing conditions. Note that land subsidence is not a result of climate change, but many of the impacts and consequences are the same as those resulting from sea-level rise. Where land subsidence occurs, responses addressing root causes may be more effective than simply adopting climate-change adaptation responses.
- If data does not exist that can show change in key impacts, it is worthwhile creating a monitoring program specifically for watching climate-related changes.
- Examine the physical characteristics of the coast and its exposure to climate change. Look specifically at: topography, bathymetry, coastal geomorphology, hydrography, hydrology, geology, soil characteristics, soil saturation, land cover and land use. For each of these characteristics, assess the type of impact climate change may have. Then make an inventory of the areas affected and the people, property, systems and functions that may suffer consequences.
- Ask the following questions:
 - What is the area that will be affected?
 - What assets in the area will be lost, injured or damaged by climate change impacts?
 - What assets will residents and property owners in the area wish to protect?
 - How are those assets likely to change in the future?

- Analyze the adaptive capacity of individuals, households, communities and systems (economic, social as well as ecological) to the likely new situation. This is to a considerable extent a question of vulnerability, but there are other factors including:
 - Regulatory and planning capacities (providing the right type of plans and regulations and abiding by them);
 - Administrative and technical capacities, including those for implementation and enforcement and especially the ability and willingness to be learning organizations able to adapt to new situations and adopt new methods and tools;
 - Fiscal capacities, including revenue systems, insurance systems, fiscal discipline and responsibility; and
 - Infrastructure, such as flood and erosion control systems, evacuation routes and procedures, redundant water, sanitation and energy systems.
- Much of the analysis will be subjective by nature. However, the point is to identify strengths and especially weaknesses that need to be addressed. Where it is obvious that capacity of some kind needs to be strengthened, developed or purchased, such needs should be reflected in the implementation program under capacity development.
- Develop scenarios and simulate different degrees and types of change. If models have been developed (such as in the Bataan Province Coastal Land- and Sea-use Zoning Plan in the Philippines), they can be used as a base, as long as they have the correct factors in their system. More simply, different degrees of sea-level rise can be tested on maps to indicate which areas would be submerged, what assets would be lost, what infrastructure might be needed for protection, and what re-location or other adaptive alternatives would be realistic.
- Then summarize the findings in such a way that decision-makers can use them for determining strategy and action. Consider: importance or value of a system, asset or sector; magnitude of impacts; timing of impacts; persistence and reversibility of impacts; certainty of projected impacts; and threats from existing stressors.

The climate change study should feed into the coastal spatial planning process in the following ways:

- It will show, through maps, which parts of the coastal area are most exposed and vulnerable to various climate change phenomena;
- It is the basis for developing a series of strategies to face the impacts of climate change;
- Some of the possible responses to the exposure and vulnerability can lead to provision in the spatial plan. For example, space can be zoned inland for mangrove forests or wetlands as buffer zones into which they can retreat in the face of rising water levels;
- It can contribute to the conditions to specific zones, reflecting the expected type, timing or impact of climate change phenomena;
- It can directly provide inputs to the calculation of setback zones, design of building regulations, or requirements for property insurance; and
- It will contribute to the identification of needed actions for inclusion in the implementation program. These may be as basic as recommending more detailed studies, or capacity building in affected organizations.

Summary of climate change phenomena²

Climate change Phenomena	Potential Impacts	Potential Consequences
Increasing Air Temperature <i>Note: With the exception of ocean acidification, all phenomena listed here are driven by increasing air temperature.</i>	<ul style="list-style-type: none"> • Heat waves • Drought • Wildfire • Invasive species • Shift in species range • Changes in timing of ecological events • Loss of sea ice • Reduction in snowpack 	<ul style="list-style-type: none"> • Illnesses, injuries, and loss of life • Loss/degradation/alteration/ migration of coastal ecosystems and the goods and services they provide • Decline in quantity and quality of freshwater • Destruction and damage to coastal property and infrastructure • Economic losses
Rising Sea Levels	<ul style="list-style-type: none"> • Coastal inundation • Erosion • Storm surge flooding • Rising water tables • Saltwater intrusion • Nonpoint source pollution • Introduction of toxics 	<ul style="list-style-type: none"> • Illnesses, injuries, and loss of life • Destruction and damage to coastal property and infrastructure • Loss/degradation/alteration/ migration of coastal ecosystems and the goods and services they provide • Loss of beach access • Decline in quantity and quality of freshwater • Loss of cultural resources • Population displacement/ migration • Economic losses
Increasing Storm Intensity/Frequency*	<ul style="list-style-type: none"> • Flooding • High wind • High waves • Erosion • Salinity shifts • Nonpoint source pollution • Introduction of toxics 	<ul style="list-style-type: none"> • Injuries and loss of life • Destruction and damage to coastal property and infrastructure • Loss/degradation/alteration of coastal and marine ecosystems and the goods and services they provide • Decline in quality of freshwater • Economic losses
Changing Precipitation Patterns	Increasing Precipitation <ul style="list-style-type: none"> • Flooding • Erosion • Nonpoint source pollution • Introduction of toxics • Salinity shifts 	<ul style="list-style-type: none"> • Illnesses, injuries, and loss of life • Destruction and damage to coastal property and infrastructure • Loss/degradation/alteration of coastal ecosystems and the goods and services they provide • Decline in quality of freshwater • Economic losses
	Decreasing Precipitation <ul style="list-style-type: none"> • Drought • Wildfire • Nonpoint source pollution • Salinity shifts 	<ul style="list-style-type: none"> • Illnesses, injuries, and loss of life • Loss/degradation/alteration/ migration of coastal ecosystems and the goods and services they provide • Decline in quantity and quality of freshwater • Destruction and damage to coastal property and infrastructure • Economic losses
Increasing Water Temperature	<ul style="list-style-type: none"> • Coral bleaching • Hypoxia • Pathogens and disease • Harmful algal blooms • Invasive species • Shift in species range • Changes in timing of ecological events 	<ul style="list-style-type: none"> • Loss/degradation/ alteration/migration of coastal and marine ecosystems and the goods and services they provide • Decreased water quality • Economic losses
Ocean Acidification	<ul style="list-style-type: none"> • Dissolution of calcium carbonate in marine shell-forming organisms 	<ul style="list-style-type: none"> • Loss/degradation/ alteration/migration of coastal and marine ecosystems and the goods and services they provide • Economic losses

² Adapted from National Oceanic and Atmospheric Administration (NOAA). 2010. Adapting to Climate Change: A Planning Guide for State Coastal Managers. NOAA Office of Ocean and Coastal Resource Management. pgs. 8-11.

Sources for further study

Inter-Agency Task Force on Climate Change and Disaster Risk Reduction. **Disaster Risk Reduction Tools and Methods for Climate Change Adaptation.**

Abarquez, I. and Z. Murshed, 2004. **Community-Based Disaster Risk Management: Field practitioners' handbook**, Bangkok: Asian Disaster Preparedness Center. Available at: <http://www.adpc.net/pdr-sea/publications/12Handbk.pdf>

ECLAC, 2003. **Handbook for Estimating the Socio-Economic and Environmental Effects of Disasters**, Santiago, Chile: Economic Commission for Latin America and the Caribbean. Available at: www.proventionconsortium.org/toolkit.htm

EMA, 2000. **The Good Practice Guide: Community awareness and education in emergency management**, Canberra: Emergency Management Australia. Available at: <http://www.crid.or.cr/digitalizacion/pdf/eng/doc12728/doc12728.htm>

IFRC, 2005. **Guidelines for Emergency Assessment**. Geneva: International Federation of the Red Cross and Red Crescent Societies. Available at: http://www.proventionconsortium.org/files/tools_CRA/IFRC-guidelinesassessments-LR.pdf

Wisner. B., P. Blaikie, T. Cannon and I. Davis, 2003. **At Risk: natural hazards, people's vulnerability and disasters**. Second edition. UNDP. Available at: <http://www.unisdr.org/eng/library/Literature/7235.pdf>

Web sites of interest

<http://www.adpc.net> Asian Disaster Preparedness Center, Bangkok.

<http://www.unisdr.org> International Strategy for Disaster Reduction, a United Nations initiative.

An excellent example of a climate-change adaptation strategy study, with many details of impact assessments and including participatory approaches is available from Sydney, Australia at <http://www.sydneycoastalcouncils.com.au/system-approach-to-regional-climate-change-adaptation-strategies-in-metropolises/index.php>.

Another Australian study has demonstrated a straightforward method to estimate the vulnerability of the shoreline itself to climate change. This uses structural categories, such as rock types, coastal slope, geomorphology, barrier type, shoreline exposure and change per year, together with coastal processes (relative sea level rise, mean wave height, mean tidal range). This study, by P.Abuodha and C Woodroffe, is entitled "Assessing Vulnerability to sea-level rise using a coastal sensitivity index: a case study from southeast Australia." It is available at: <http://www.springerlink.com/content/6r23r6861n3r7104/>

Comprehensive Spatial Planning for Land and Sea

Coastal and Marine Spatial Planning (CMSP) as defined by UNESCO's Intergovernmental Oceanographic Commissions is: "A process of analyzing and allocating parts of the three-dimensional marine spaces to specific uses, to achieve ecological, economic and social objectives that are usually specific through the political process. The marine spatial process usually results in a comprehensive plan or vision for a marine region." Put simply, CMSP is a tool for improved decision making. It provides a framework for arbitrating between competing human activities and managing their impact on the marine environment. The objective of CMSP is to balance sectoral interests and achieve sustainable use of marine resources.

Land-use planning is primarily concerned with activities on the surface of land, while coastal and marine spatial planning must operate in three dimensions.

Land-use planning takes place against the background of private land tenure rights. In contrast, all three dimensions of the sea – the sea bed, the water column and the surface – are not subject to private tenure rights. Therefore, the regulations of the maritime space are arranged much more along with the national or regional sector agencies.

CMSP is a process that consists of data collection, stakeholder engagement and the participatory development of a plan, the subsequent stages of implementation, enforcement, evaluation and revision. In the EAS Region, implementation of CMSP is the responsibility of the Member states. However, action at the EAS Regional level can provide significant added value.

Coastal and Marine Spatial Planning (CMSP) is a process designed to promote rational and sustainable use of the sea. It provides a framework for balancing different interests and uses of the marine environment. CMSP entails the development of a spatial plan and puts great emphasis on follow-up actions, evaluations and reviews. It helps public authorities and stakeholders to coordinate their action and optimises the use of marine space to benefit economic development and the marine environment.

Coastal Settlement Development

Coastal settlement and development patterns throughout the EAS Region vary from rural village settings to the well developed waterfront attractive for public uses as part of a core city center. In between these extremes we have informal residential areas in peri-urban settings as well as more organized and planned high-cost villa areas on large private lots. Many coastal towns are harbour towns that have emerged from fishing villages.

A common feature of coastal settlement and development patterns is the competition for land as close to the sea as possible, regardless of the impact on natural land or marine resources and their vulnerability.

The spatial plan allows us to approach a complicated land and marine situation in a comprehensive way by clarifying its complexity and highlighting alternative options for concerned stakeholders. One main

advantage is the ability to handle and value the natural resources in a long-term sustainability perspective and prepare for discussions and negotiations where short-term investment is at stake.

COASTAL INDUSTRIAL DEVELOPMENT RELATED TO PORT AND SHIPPING DEVELOPMENT

The urbanization of coastal areas since the mid-20th century was often dominated by port and related industrial activities. The relation between port development and its emerging surrounding industrial activities depend on the type of goods handled by the port but also to some extent by larger inland industrial developments and the need for shipping facilities. Globalization of manufacturing and international trade – so prominent in the EAS Region – has been a key factor in encouraging this process. Along with a city's economic development, there is a tendency of the industrial port also to face rapid development of new and expanded quays with huge land storage and transport areas built up as barriers to the surrounding city. Anchorages and shipping lanes also have to be designed to manage the movement of ships at sea and outside major ports. From this perspective, the sea is primarily regarded as a waterway for transport under the control of national or local port authorities. Where domestic and industrial waste management is inadequate, the sea also becomes the ultimate repository for urban wastes.

The impact of shipping on sensitive marine habitats and the potential impact of accidents involving hazardous cargos such as oil and other chemicals, has been demonstrated in many oil spills, to the extent that most countries now have maps of coastal habitat sensitivity to oil and contingency plans to respond to such emergencies should they occur. Some countries, including Thailand have extended this sensitivity mapping to cover substances and processes other than oil.

THE NEED TO INTEGRATE LAND AND SEA PLANNING

There is clear and increasing evidence from around the world that many land-based activities and their associated point- and non-point sources of pollution, affect the quality, health and sustainability of coastal and marine systems in profound ways.

UNEP's Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA-marine) "aims at preventing the degradation of the marine environment from land-based activities by facilitating the realization of the duty of States to preserve and protect the marine environment". It is unique in that it is the only global initiative directly addressing the connectivity between terrestrial, freshwater, coastal and marine ecosystems. The GPA is designed to be a source of conceptual and practical guidance to be drawn upon by national and/or regional authorities for devising and implementing sustained action to prevent, reduce, control and/or eliminate marine degradation from land-based activities.

Ecosystems such as mangroves have developed specifically to use both the resources of fresh and saline water systems. Perhaps what has been less well understood is how much our societies rely on inshore marine systems. At a local level, international tourism, so important to EAS countries, has imposed very high pressure on ecosystems, both on land and sea. Without adequate research and management, there is a significant possibility that excessive tourism can destroy the very features that made it successful. Sensitive land and marine ecosystems have finite carrying-capacity even for so-called 'passive' recreation pressures. Refer to Annex 2 for a Case Study from the Philippines that combines sea- and land-uses in one plan.

PART FOUR – THE NEW PLANNING PARADIGM

The context for spatial planning in the EAS Region is changing at an increasing rate. Societies and cultures are being transformed by a number of forces including urbanization, electronic social networking systems and democratization. East Asia's economic growth is accelerating together with coastal industrialization and increasing exploitation of the region's coastal and marine resources. The region as a whole is highly urbanized, with populations fast transforming from rural to urban. With this migration, the number and density of coastal urban cities are projected to increase. Five of the 21 global mega-cities (cities in excess of 10 million inhabitants) are located in the region and it is estimated that more cities will achieve this status within the next five decades.

The context for spatial planning in the EAS Region is changing at an increasing rate.

These socio-economic changes are occurring within a framework of increasing awareness of the importance of ecological systems and the causes and consequences of climate change. The traditional planning approaches and methodologies are proving inadequate in terms of both the rate of change and the issues needing attention. A new planning paradigm is emerging. A comparison of many of the characteristics of the 'new' and 'old' is provided in the Table below. There are a number of key features that require particular attention.

1. Under the new paradigm, spatial planning is seen as a continuous process and a tool for managing change in its spatial dimensions. The process produces periodic products in the form of plans (maps and text), but the emphasis on process means that planning from the management perspective is adaptive while promotional. Under the old paradigm, the product (map and text) was most prominent. It was relatively rigid and primarily regulatory in nature. Often plans produced under the old paradigm were irrelevant by the time they were approved; demands and opportunities appeared faster than planning systems could respond. And whenever and wherever it could not provide managers with support in the face of challenges, it was ignored.
2. The new paradigm is also much more information intensive. Today's technology, particularly databases and geographical information systems, make it possible to keep the 'current situation' up to date. In well run systems, there is less need to have special information-gathering exercises simply to up-date old maps and information. Also, data and information can be analyzed in new ways that were virtually impossible under traditional circumstances without computerized systems. These possibilities fundamentally change the way information is collected, stored, manipulated, managed, shared and used, and thereby also changes the very processes of spatial planning. The new paradigm allows for a more directed strategy for information acquisition, focused on what is needed and can be used in the near term, rather than on collections of all possible material, including what cannot and will not be used within its 'best before' date.

The new paradigm rests on an understanding of assets and the pursuit of a vision shared widely among all stakeholders. Challenges and issues are defined in relation to their bearing on the

achievement of the vision. This allows priorities to be established in a step-wise manner over time. Under the old paradigm, the definition of problems was also the process for setting goals. Alternatively, the pursuit of a vision gives positive direction and can be directly linked to other components of development. Planning becomes a promotional tool that can be used to leverage finance (in a way similar to business plans in seeking bank loans for business development), instead of being primarily regulatory and restrictive. It opens the way, at a more detailed level, to working creatively and constructively ‘with’ developers instead of simply controlling them.

Comparison of Old and New Planning Paradigms (as applied at municipal/local authority level)

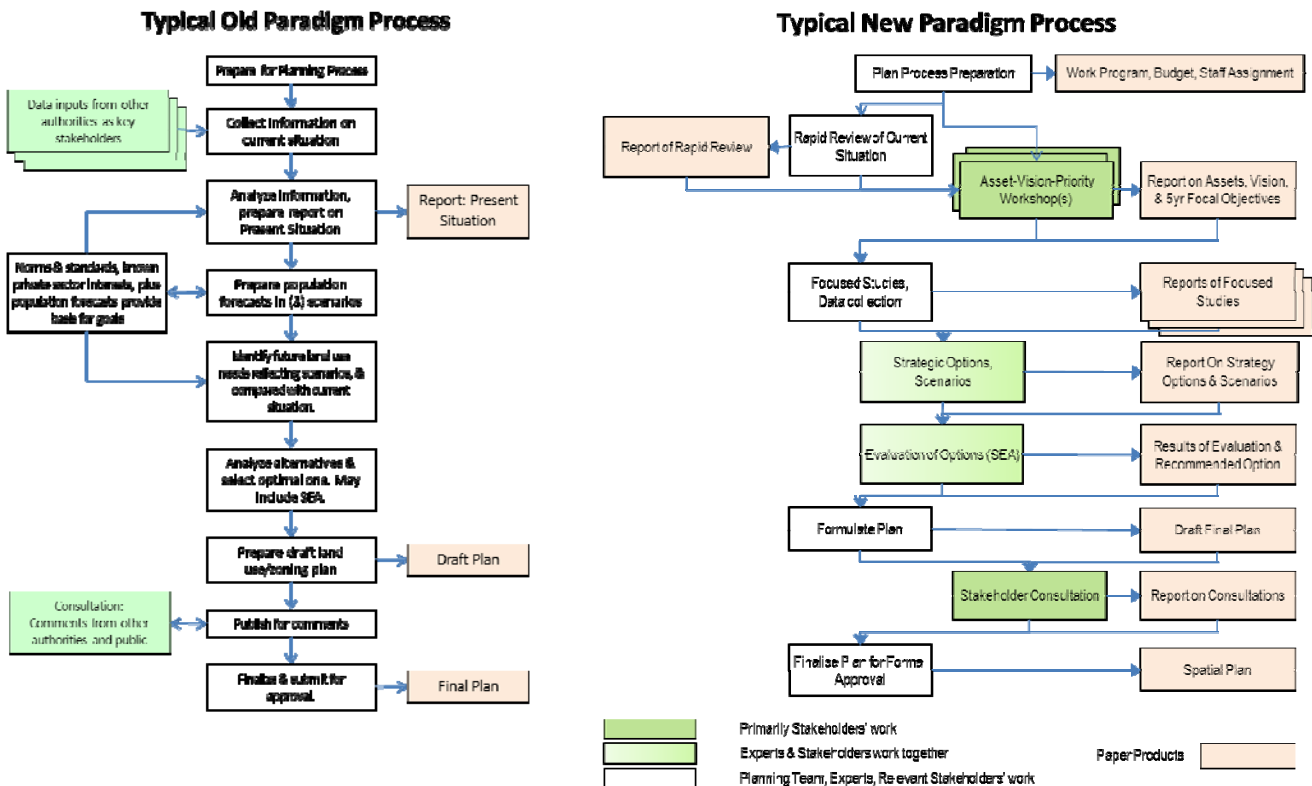
Old Spatial Planning Paradigm	New Spatial Planning Paradigm
<ul style="list-style-type: none"> Primarily regulatory: its product was typically a land-use zoning map, with an explanatory text. Zones depicted areas within which specified activities were permitted or prohibited. Detailed plans derived from master or comprehensive plans simply added new degrees of regulation. 	<ul style="list-style-type: none"> Elements of both regulation and promotion: While zoning maps continue to be used for regulatory purposes, the map provides a stable long-term depiction of the spatial dimensions of a vision. The map is accompanied by a text that describes the vision, and a program of activities that will deliberately pursue that vision. The plan will rest on strategic principles for decision making that are consistent with the pursuit of the vision, and that can guide a more promotional, adaptive, and negotiated interaction between authorities and other actors / stakeholders, especially investors.
<ul style="list-style-type: none"> Product and output oriented: the planning exercise is focused on producing a zoning plan with accompanying text. Up-dated plans are produced at predetermined intervals (e.g. five years) or when finance allows. 	<ul style="list-style-type: none"> Process and outcome oriented, with elements occurring in a cyclic manner, of varying frequencies. While long-term zoning goals are stable, the implementation program is updated annually within the usual budget cycle, and information is collected continuously for updating databases through permitting and other processes. Monitoring and evaluation focus on achieving the overall vision, which is itself reviewed periodically (e.g., every five years, or after a change of local government).
<ul style="list-style-type: none"> The plan (as product) is a tool for directing management. In rapidly evolving situations where technologies provide potential for innovative opportunities and solutions to conflicts, the plan becomes a constraint and burden to managers. 	<ul style="list-style-type: none"> Planning is seen as a management tool, and should therefore be addressing management needs in an integrated way. This includes the need to provide multiple strategies, decision-making principles, and flexibility in the face of uncertainties that are the characteristic of “the future.” Integration of spatial dimensions is needed when considering economic, social, and environmental factors, as well as with institutional capacities and financial resources.
<ul style="list-style-type: none"> Focus on spatial distribution of human activities, based on calculated future needs for specific land uses. Open space often provided on the basis of pre-determined ratios of m² per capita, and fixed buffer zones along natural water courses or around hazardous (e.g., fuel stations) or odorous activities (sewage ponds), not because of intrinsic ecological value. Flood prone and steeply sloping areas often excluded to reduce risks. 	<ul style="list-style-type: none"> Deliberately integrates ecologically important and sensitive areas with social, cultural and economic components. Views open space as “green infrastructure” and incorporates environmental services on equal footing with social and economic services. Can readily incorporate issues of social vulnerability, institutional robustness, environmental sensitivity, and issues related to climate change and risk management.

Old Spatial Planning Paradigm	New Spatial Planning Paradigm
<ul style="list-style-type: none"> • Strong problem orientation. • Large quantities of data collected and analysed primarily for problems and issues to be addressed. • Elements of opportunities and potential might be present but giving room to these was often seen itself as an issue. • Goals defined in terms of problems to be addressed. • Basic philosophy: "What's wrong? Let's fix it." 	<ul style="list-style-type: none"> • Strong asset and vision emphasis. • All types of assets mapped to identify potentials, but also needs to conserve and enhance. • Vision developed as basis for long-term goals. • Issues defined relative to their negative impact on progress towards the vision. • Combination of strategies developed to keep and enhance existing assets, overcome current constraints, pursue long-term goals, while avoiding or minimising future problems.
<ul style="list-style-type: none"> • Generally inflexible once plan is completed. • At both master/comprehensive and detailed level the plans are frequently legally binding in terms of spatial requirements, but not in terms of development: the plan will set aside space for a major road and prohibit all other uses, but cannot be used to demand that a road be built by the relevant authority. • Unexpected proposals and unforeseen developments cannot be handled easily by decision-makers held to these inflexible plans. 	<ul style="list-style-type: none"> • At master/comprehensive level would normally be strategic, while at detailed level legally binding. • Detailed plans frequently drafted with direct inputs, even negotiations, with land owners and developers. • This adds flexibility and may lead to contracts binding both the authority and the land owner to develop in accordance with the mutually agreed plan. • The strategic general plan provides principled guidance to authorities in their decision making, so that unexpected proposals can be adequately assessed and managed.
<ul style="list-style-type: none"> • Compiled by professionals and experts. • Laws usually require public display of final drafts and review of comments, but in general the tone is that "the authorities know what is best for the constituents." • The result is often that the plan is "owned" by part of the authority, and viewed as an imposition by other stakeholders and residents. 	<ul style="list-style-type: none"> • Visions, goals and priorities are set through participative and consultative processes. • Technical aspects are handled by professionals and experts, who must be able to explain their proposals to politicians and other stakeholders. • The intended result is a broad sense of ownership, willingness to comply, good relationship between authority and residents, and better enforcement.
<ul style="list-style-type: none"> • Often perceived as a product of "authority," confrontational and regulatory. • Innovation and creative thinking limited to the capacities of the few professionals involved. 	<ul style="list-style-type: none"> • Reflects a particular mind set of cooperation and collaboration among all stakeholders, encouraging innovation and creativity towards achieving win-win solutions in competitive situations.

- The new paradigm, because it is focused on a shared vision, is better able to integrate a variety of issues that were previously handled separately and individually. The new paradigm is more 'systems' oriented than the old and can therefore incorporate linkages between environmental, social and economic issues more holistically in the pursuit of sustainable development. Such issues include hazard management and disaster risk reduction, social and system vulnerability and resilience, governance, ecosystem-based management and the various implications of climate change. It also encourages a closer integration of terrestrial and marine spatial planning in coastal areas. The old system tried to predict the future from existing demographic and economic trends, and then catered for perceived social and economic needs calculated in terms of land-use requirements. The new paradigm determines the future that is wanted, then develops appropriate strategies to achieve it, while enhancing existing assets, solving current challenges and minimizing future threats and problems. It provides a long-term spatial framework and a short-term implementation program that is linked to budget cycles and medium-term expenditure plans.
- Inherent in the new paradigm is monitoring, evaluation, learning and adaptive management to deal with uncertainties. Coastal area planning under the new paradigm will:

- Emphasize process, with periodic products, that are regularly updated to match priorities, capacities and budgets;
- Focus on principles for strategic decision making, that is, promotional and adaptive rather than regulatory and fixed;
- Adopt ecosystem-based management principles, in which human society is seen to operate within and is dependent on the larger ecological system.
- Be holistic, seeking to balance social, economic and environmental needs to achieve trans-generational sustainability;
- Incorporate the spatial aspects of climate change and disaster-risk reduction, addressing issues of vulnerability and resilience, especially, but not only in, the social sphere;
- Integrate, through systems thinking, land and water planning, bearing in mind the land-derived impacts on the marine world and the marine-based forces acting on the land.

There are some clear differences in overall process between the old and the new paradigms. At the same time, it is important to understand that there are natural variations between different EAS countries and even different planning teams, depending very much on the personal attitudes and experiences of team members and especially planning team leaders. It is also evident that there is an on-going process of transition from the old to the new, so that the reality in a particular country or local authority may lie somewhere in between these two extremes. A generalized comparison in process is illustrated in the diagrams below.



The greatest difference at this stage is that in the new paradigm, much more attention is given to identifying and analyzing stakeholder groups. The purpose here is to determine how best to involve each group, anticipating their interests and their general attitudes to development. A participatory consultation and engagement program will be incorporated in the planning process, and a stakeholder communication strategy is developed.

In the new paradigm, much more attention is given to identifying and analyzing stakeholder groups.

The next step focuses on the issue of information gathering. The old paradigm generally tried to gather all possible data and information, including conducting new studies. The information gathered was then analyzed to generate a picture of the current situation. This picture could be compared then to a set of national or local norms and standards of service, or life qualities. Of special interest would be those that had a spatial measure – such as square meters of open space per person, or square meter living space per resident in a home. The norms and standards represented a level of quality of living to which all in the nation aspired. They were and are established by national authorities. The analysis of the current situation would highlight the degree to which these standards are being met. Together with trends analysis and population growth rates, these would be set to future needs for different types of services and the land required. In the old paradigm, considerable amounts of data were not used in any significant way.

By contrast, the new paradigm sets two processes in motion. One is a rapid profiling process that builds on existing, readily available data. The other is a participatory and consultative process that engages all key stakeholder groups, ideally including politicians. The aim of this step in the process is to review current assets of all types (human, cultural, social, economic, and environmental); to formulate a vision of a desirable future state for the area; to interpret this vision into long-term sectoral goals; and to prioritize short-term objectives for implementation during a 3-to-5-year period.

The prioritization process incorporates the findings of the rapid profiles and leads to a description of specific areas or topics needing focused investigation. It is in this feature that the new paradigm differs from the old in terms of data collection. This is now focused on the information that is needed for short-term use – not for activities that can only be implemented beyond the initial 5-year period. At the same time, the longer-term information needs will be identified and incorporated into activities to be carried out during the first implementation period. Thus, short-term action programs include measures to support future planning needs.

This is the point at which economic development plans, sectoral plans and environmental management plans, intersect with the spatial framework in a way that did not happen under the old paradigm.

Both the old and new paradigms will produce a long-term spatial framework for development, usually in the form of some type of zoning map with accompanying text. However, the new paradigm will also

include a programme of activities whose purpose is to achieve the vision, whose spatial dimension is provided in this zoning map.

In the new approach, economic development, environmental management and all issues related to improving the quality of life for area residents are treated together in an integrated fashion that 'also' has a spatial dimension. This allows institutional capacity needs (management, enforcement, etc.) to be incorporated. Importantly for the EAS Region, natural and human-induced hazards to environmental services and socially vulnerable groups can be incorporated at this stage.

The old paradigm usually left the plan design work in the hands of professionals, but required them to publish their draft proposals for public review. The new paradigm allows and encourages broad participation in formulating the vision, setting long-term goals and prioritized objectives, reviewing alternative strategies, as well as in commenting on the draft plans. This is intended to engender wide support (i.e., compliance) with the plan, a broad sense of ownership and thereby also a more readily enforceable plan.

The new paradigm also encourages an active and continuous monitoring of progress in implementation, through links to the annual budgeting process within local government and, where it exists, a medium-term expenditure plan.

The continued involvement of stakeholders in the monitoring and review process is an important element in transparent, accountable governance.

PART FIVE – APPLICATION OF EMERGING CONCEPTS IN THE COASTAL SPATIAL PLANNING PROCESS

STEP ONE – PREPARATION FOR COASTAL SPATIAL PLANNING

Coastal spatial planning (CSP) is inherently complex. This is true because of the dynamics of the physical and biological world components and the competing interests of human actors for the natural resources present. At the same time, many coastal areas are subject to a wide variety of hazards, both natural and human-induced. Being downstream of all human activities, the coastal zone is the recipient of many of the pollutants, waste products and impacts of inland activities.

A key aspect to bear in mind is that planning is a management activity that does not end with the production of a document. It is a cyclical and iterative process, where planning activities at different levels interact with one another. When preparing a spatial plan for one CSP cycle, remember future cycles and lay foundations for them.

Spatial planning is a management activity that does not end with the production of a document.

There are six main tasks in the preparation phase for coastal spatial planning:

1. Identification of the Coastal Spatial Planning Area and the scope of its content;
2. Identification of Stakeholder Groups and the development of an Engagement Strategy to work with them;
3. Organizing the Planning Work and identifying the skills needed;
4. Drafting a Work Schedule – the Process Map;
5. Preparation for Information Management; and
6. Notification of the Intent to Plan, and invitation to provide input.

TASK 1 - IDENTIFICATION OF CSP AREA AND SCOPE

There are a number of criteria that will play a part in determining the planning area. In several cases they need to be balanced against one another. The Table below sets out these critical aspects.

Criteria	Explanation
Definition of the coastal zone	If there is a legal definition of the coastal zone, the “coastal zone spatial plan” should be bound by this definition.
The jurisdictional authority to plan the coastal zone	In some cases, different levels of government have legal authority to plan, but their areas of jurisdiction may differ. For example in Indonesia, local authorities exercise planning responsibilities 4 nautical miles seaward of the coastline, while Provincial authorities’ jurisdiction extends from 4-12 nautical miles, and the national level beyond that. In other countries the physical planning authority does not have rights to plan beyond the low water mark. Other authorities are responsible for planning in inundated areas or areas below the high water mark.
The legal status of the plan, and the authority of the body preparing it.	In some countries such a plan may be strategic but not legally binding, while in others it may have the force of law. This would require that its compilation is done by the legally competent authority.

Criteria	Explanation
Implementation and enforcement mechanisms and bodies	Implementation of plans requires finance, and finance flows through established administrative structures. Administrative boundaries may be key determining factors in selecting the area to be planned. However, it is conceivable to have a coastal plan well within an administrative unit – that is, not necessarily covering the entire coastal length of the administrative entity.
The purpose of the plan	The specific motivation for the spatial plan may also affect the choice of area. If the purpose is to safeguard and sustainably develop a significant natural area that is expected to come under severe development pressure in the future, the plan may focus on the specific natural area. On the other hand, if the purpose is to provide a master plan for coastal economic development along 200-500 kilometers of coast, then that entire stretch of coast will define the area. At a national level, there may be a need to provide a strategic coastal plan, through which national interests in environmental conservation, transportation, energy, settlement and tourism, agriculture, aquaculture and fishing and defense are identified and allocated space according the existing resources, needs and potential.
The scale and level of detail expected	Related to the purpose of the plan, is the scale or the level of detail and quality expected. Generally, the cost (per unit area) of a detailed and high quality plan will be substantially higher than for more general and strategic levels of plans.
Planning capacity	More intensive, detailed and sophisticated planning processes require more specialized skills, and generally more staff altogether. Availability of these skills may be a factor in determining the type of plan, but may also preclude types of areas (e.g., marine areas) for which there are no competent skills within the planning authority.
Financial resources	Finances will need to be balanced against size or scale, level of sophistication and detail, and human resource capacities, and whether or not contracting of specialist skills is an option.

A particular situation may occur in which the CSP area encompasses a whole town or an urban area together with open undeveloped coast and areas with rural activities. The comprehensive CSP approach may then be crucial to be able to cater to an urban expansion in balance with protecting and managing biophysical assets. The issues of rural to urban linkages need attention as well as managing the different groups of stakeholders.

The CSP area will delineate that spatial domain for which the plan outlines land and resource uses, along with the conditions of their use. This area is not the same as the area from which input data and information is gathered. As expressed through the ridge-to-reef and nesting concepts in the Introduction, there are many activities, characteristics, and trends occurring outside the planning area that influence the situation and trends within it. This is true not only of natural and ecosystemic phenomena but even of economic, social, institutional and political factors. Areas of influence by biophysical factors, as well as socio-economic ones, can be broadly mapped to suggest where information should be gathered. This is important for understanding on-going processes within the planning area, and for developing scenarios and visions of the future. It is very important at the beginning to have a clear idea of the scope of the plan – not only in terms of the area to be covered, but the type of plan, its purpose, and its level of detail. We must ask:

- Will it be a general, strategic plan, providing broad guidance to decision-makers, or will it be a detailed zoning plan, setting out very precise conditions to development in each zone?
- Will it be legally binding once adopted by the relevant authority?
- Is it to be the central focus and driving force for an integrated coastal management program, or is it to be the spatial interpretation of an existing coastal management system?

- Is it to be a compilation of existing sectoral plans, or is it to be the dominant plan that all sectors must follow?
- Is it to be the unifying centrepiece of a long-term participative process, or is it to be one of a series of products through time?

The answers to these questions may be straightforward, for example where the plan's purpose and nature is set down in law. Other situations may be unique, calling for a solution to a particular set of circumstances that can only be handled through a specially designed CSP process.

Within this context it is also important to establish the criteria by which planning decisions will be made. In the CSP context, especially when determining zones and conditions for development, there are many options and many competing interests. It is useful to set criteria on decision-making before one reaches the point when a decision must be made. Planners must ask which criteria will carry the largest weight?

- The option that protects and enhances critical ecosystems and habitats?
- The option that provides the greatest financial return?
- The option that benefits the most people?
- The option for public or private benefit?
- The option that has the widest public support?
- The option that leads to greatest overall resilience in the face of social, economic and environmental shocks?
- The option that gives the most short-term employment?

Some Implications of Applying the Ecosystem-Based Approach

Ecosystem-based planning takes a holistic approach and places great emphasis on the linkages that bind a system's various components together. It also places human activity directly within the ecosystem. Ecological, social, economic, and administrative systems tend to be nested, smaller systems within larger ones. The implications for setting boundaries for a planning area are that one should:

- Find the appropriate "whole" ecosystem for the scale being planned – for example, avoid drawing the planning boundary in a straight line through a mangrove forest or coral reef. If it is not feasible to include the entire mangrove forest or reef, identify discrete sections within it that can be included in their entirety and use these to define the boundary.
- In a similar way, treat administrative divisions, again reflecting the scale and level at which the plan is being done. Implementation is usually carried out through administrative units and there is therefore value in respecting administrative entities.
- Acknowledge and include in various planning processes the linkages to parts of the larger systems that lie outside the planning area. This is done automatically in the administrative systems, because national legislation applies even at local levels, where national policies and strategies must be followed. Similarly the social and economic linkages are generally straightforward to account for in the planning – especially when considering driving forces such as migration, and trade. Equivalent consideration needs to be given in the environmental

components. These will include, for example, up-stream factors that affect sedimentation or other water qualities, or faunal migration patterns in both terrestrial and marine systems.

The result will be a mapped boundary that appears firm, but a working boundary that is considerably more “fuzzy” in its respect for influences outside the planned area. Where necessary, the planning team should highlight issues that need to be dealt with outside the planning area and by external agencies because of their impact on events or conditions within the planning area.

The ideal is to be able to plan at all levels in parallel. For an example of how this can be done see what British Columbia, Canada has accomplished at <http://www.citbc.org/>. In many cases this level of multi-level work cannot be done simultaneously, but will follow a pattern of information flows upwards and downwards as shown in the diagram on planning integration at different administrative levels.

Implications for integrated land- and sea-plans

Where land and sea planning is to be integrated, the seaward boundary must also be defined. As shown in the previous table, countries have done this in a variety of ways; some countries do not include marine areas in the coastal zones at all. If there are legally-defined administrative boundaries, these should be respected and used (bearing in mind what has been said above about ecosystem-based planning).

Where there is no legally-defined boundary, but no legal prohibition to including marine areas, use similar considerations as are applied on the land – a combination of ecosystem factors, administrative boundaries, and pragmatism. Consult with marine-oriented stakeholders on useful boundaries. These will include the authorities concerned with fishing (so that holistic approaches can be taken to regulating this sector), navigation, ports, enforcement and rescue (e.g., Coast Guard), off-shore mining, oil and gas exploration or extraction, and marine environmental protection.

Inclusion of risk reduction and addressing climate change aspects

Climate change will occur globally. The impact area of local coastal hazards, including relative sea-level rise should be considered when setting boundaries. A distinction should be made between hazards originating from the sea (e.g., storm surges, tsunamis, coastal erosion), those coming from inland (e.g., river floods, pollutants) and those of combined natural and anthropogenic causes (e.g., coastal ground water salinization). In very flat and low-lying areas, an impact area may extend far inland. In such cases, use other factors such as administrative units and ecosystems, to reach a practical limit. Specific threats may be addressed on their own, covering their entire impact area, even where these extend beyond the accepted coastal planning zone. However, within the designated planning area, the planner must continuously be mindful of the larger picture and any particular secondary impacts, or linkages that have importance for the planning area, consistent with the ecosystems-based recognition of linkages.

Checklist of Questions:

1. What is the primary motivation of the planning exercise?

- It is a legal requirement? The implication is that the law also stipulates the spatial scope of the plan. Use this to define the planning area.
- Is there is an urgent need to solve competing and conflicting demands for resource use? This implies that the planning area should incorporate the entire area subject to these conflicting demands.
- Is there is a need to pro-actively conserve and enhance existing natural resources? This suggests that discernible ecosystems or distinctive habitats should be the basis for drawing the limits.
- Does the local authority wish (or is required) to use a spatial plan as an instrument to manage and sustainably develop its coastal zone? Consider the development of a coastal spatial plan as a subset of the integrated development plan for the entire administrative unit. The large plan provides an important context, for the more specialized, and possibly more detailed coastal spatial plan. The inland boundary, if not the administrative border, can be selected based on a natural feature, habitat, or even a manmade feature, such as a main road.

2. Does your country have a formal definition of the coastal zone?

- If yes, are you required to use it in this exercise?
If yes, apply it.. **If no, go to question 3.**

3. Are you permitted to plan below the low water mark?

- If no, the high water mark will be your seaward boundary.
- If yes, does the law stipulate how far out to sea you may or must plan?
If yes, use this as your seaward planning boundary.

This is not a complete list. The particular situation may identify other pressures that determine what the critical options are. Coastal Spatial Planning is about finding balanced solutions to competing interests, so that even with the types of questions posed above, there will be a situation within one planning exercise where one option weighs more heavily than another while in another situation, in the same planning exercise, a different ranking would be made. The most common answer to the above questions will be “Well, it all depends....” Depends on what? It is these types of conditionalities that need to be thought through ahead of time.

TASK 2 - IDENTIFICATION OF STAKEHOLDERS & DEVELOPMENT OF COMMUNICATIONS & ENGAGEMENT STRATEGY

Stakeholders fall into several categories:

- **Core decision-makers, including financiers**, who must determine the scope and content of plans, may want influence during the CSP process, will definitely have key roles in any approval process, and are crucial in the implementation and follow-up of planning products. In this group may also be advisors, steering group members, and reviewers who will have a significant influence on the decision-makers and financiers. Spatial plans are almost always a tool for managing conflicting interests “for the public good” and fall therefore in the public sector. The core decision-makers will almost always be a representative of a government office. Financiers of

Working with Stakeholders

There are three levels of interaction with stakeholders:

1. **Inform them:** this is a one-way communication in which the planning team keeps stakeholders up to date on progress or events.

2. **Elicit reaction:** at the level a response is wanted from stakeholders, but the planning team is in full control of the subject matter and can do whatever it pleases with the response.

3. **Consult them:** at this level the stakeholders are involved at a much more fundamental level. They help determine the questions, identify the issues, assist in creating the vision and setting the priorities. This is the most meaningful level of participation, the most empowering, but also the most resource and time demanding.

both the plan and (parts of) its implementation however, may come from both public and private sectors.

- **Other key authorities that have legal jurisdiction** of some type within the CSP area. Most sectoral ministries and departments fall into this category, as do various hierarchical authorities – like the Provincial Governor or District Council. Their relative importance may vary, depending on the particulars of the area. However, they will be key players in negotiating the balance of sectoral inputs and results. They will also be very important sources of information.
- **Special interest groups** which may vary widely in size, financial resources, degree of direct economic interest in the outcome of the planning, and ability to make their voice heard. Within this category there may be very financially powerful companies and commercial interests, relatively weak artisanal fisher associations, or environmental non-government organisations with concern for conserving ecosystems, or groups of animals (e.g., bird watchers concerned about conserving floral diversity). What is common to this category is that they have specific interests in the results of the plan, and they have some form or organisation, whether strong or weak.
- **“The General Public,”** which tends to be an amorphous stakeholder group, almost always unorganised, at least before the CSP process begins. Plan proponents often justify their proposals as benefiting this diffuse group. Certainly many beneficiaries may be among them. Equally, many who will lose as a result of the plan will be among this group. The poor, the socially, ethnically, physically or otherwise disadvantaged who are unorganised and usually unable to make their concerns heard, fall into this group. This is the group that should be the focus of any attempt at “social sustainability,” reduction of poverty and vulnerability, increase in resilience in the face of social, economic and natural shocks and hazards. Yet this is the most difficult group to involve without special effort, time, and approaches.

In CSP, public sector organizations will be important and active stakeholders. It is useful to conduct an institutional analysis of this group of actors. For each agency, identify its primary responsibilities in the coastal area, its ‘clientele’ (those to whom it provides services), those other agencies or groups on whom it depends for information or other services. Assess its direct importance to the CSP exercise, particularly as:

- A source of basic information;
- A discussion partner;
- A source of technical and professional skills for data collection and research, analysis, projection and forecasting of future conditions – i.e., as a direct contributor to the plan;

Stakeholder Power, Legitimacy and Urgency

Some analytic tools build on the concept that stakeholders have varying “power” (influence and authority), “legitimacy” (rights) and “urgency” (‘vocal’ pressure, persuasive tactics). For example, many of the decision-makers with legal authority (power) over the planning process do not live in the area and will not be personally affected by the decisions made. At the same time they have legal rights (legitimacy) to make decisions. Other actors, such as international corporations wanting to gain access to beach areas, may have power (financial might) and use many forms of pressure (urgency) to get their way, but they may lack legitimacy because they have no intrinsic rights within the area. Poor fishing communities may have legitimacy (long-term rights to abode and resource use) but often lack power (they are excluded from decision-making processes) and urgency (they are unable to raise their voice and make a case for their views).

- An implementer and driver of change;
- A source of finance or other resources for either planning or implementation; and/or
- A quality controller, including monitoring and evaluation of implementation and follow-up.

This assessment will lead to decisions on how, and when during the process, individual agencies should be involved. It will also provide a basis for making initial contact with them.

Another type of analysis that may be done on the wider range of stakeholders is a “force field analysis.” Planning implies bringing control and order to a situation and to the future. It implies change, sometimes radical change. One overall goal of most planning is to achieve a situation that is “for the public good.” This almost always means that some individuals, groups, or organizations stand to lose, or BELIEVE they stand to lose, through the planning process. They may lose an existing benefit, or they may believe they will lose a potential benefit – for example, that their aspirations will not be met.

Where it is known that there are contentious issues to be addressed, the chances are fairly high that there will be many opposing views. The force field analysis is useful in identifying those organizations, individuals or social groups that will support or oppose specific types of control or change. Having a good idea of this from the beginning helps in designing appropriate ways of communicating to each group, addressing their concerns or eliciting their support. The message given may be consistent – but how it is communicated and discussed may be different, adjusted according to the type of response expected.

The CSP team must communicate with these stakeholders. To do this effectively, it is valuable to develop a communications and engagement strategy. Communication is two way. In other words, the communication strategy must incorporate mechanisms for listening to stakeholders, for gathering their views, their information, their concerns, their dreams and aspirations, and their ideas. Communication is not simply a matter of telling them what the planner has done.

The level of plan will affect the communication and engagement strategy for the planning period. So will time and financial resources. Naturally, the number of people already living in the area will be an additional factor. However, it is most cost-effective over the long term, to establish a system of communicating with stakeholders that remains in place even after the plan has been approved – it needs to be monitored, it will eventually need to be reviewed and updated. Design a communications system that is sustainable and future exercises will prove to be easier to organize.

Experience shows that the more detailed and ‘local’ a plan’s focus is, the more interest it will generate among the amorphous general public stakeholder category. More generalized, smaller scale (larger area) plans are more difficult to relate to for the individual householder who may not be able to envision specific impacts the plan may have on his or her life.

More information on analyzing and working with stakeholders can be found in Annex 3 and at the following web sites:

www.gtz.de/de/dokumente/en-SVMP-Instrumente-Akteuersanalyse.pdf

www.change-management-toolbook.com/mod/book/view.php?id=74&chapterid=68

Some Implications of Applying the Ecosystem-Based Approach

The ecosystem-based approach will stress the following, in terms of stakeholder identification and analysis:

Components of the system, especially the natural and biological ecosystems, cannot speak for themselves, and therefore it is important to identify those individuals and groups that can speak for them. These may be environmental NGOs/CSOs, ecologists, foresters, fisheries experts, marine biologists, or other environmental specialists from the academic world who know the local ecology well.

The linkages between the different components of the system – including aspects of resource management, resource use, cultural and economic valuation, competitive demand – should be part of the analysis. Wherever possible these relationships should be quantified or ranked in importance, as these issues will be important in assessing alternative strategies for future development. Knowing the feedback impacts of individual decisions made by specific institutions or users, will be essential in conducting strategic impact assessments.

Implications for integrated land- and sea-plans

For integrated land- and sea-planning, it is important to ensure that all the right stakeholders, representing marine area interests, are identified and invited to participate. They should be analyzed in the same way as their terrestrial counterparts. These stakeholders will include fisheries authorities, mining, oil and gas exploration and extraction-related authorities (and companies), the Coast Guard, port and navigation authorities at a minimum. The relationship among them and with terrestrial-oriented authorities should also be analyzed to find points of mutual intersection, interest, and integration, or alternately to identify points of competition and conflict of interest.

Implications for incorporating risk-reduction and climate change impacts

The most obvious implication is that appropriate stakeholders responsible for hazard management and emergency response be brought on board. They will have access to valuable information relating to where various types of hazards exist as well as where threatened features are located. They will know of the type and location of refuges, and have important information on issues relating to access and evacuation. They will be invaluable for their insights and knowledge of risk reduction, and specifically on how spatial planning can be used to reduce impacts of specific types of disasters. They will be able to give advice on specific development conditions that can be applied to land-use zones, so as to mitigate or reduce damage to property and loss of life in the face of specific types of hazards.

TASK 3 - ORGANIZING THE WORK AND IDENTIFYING SKILLS NEEDED

There is a range of possibilities for organizing a CSP exercise. For each type of plan, the skills needed will be the same, to achieve the same quality of output. However, the basic options outlined in the Table below show that the skills may be provided in different ways. The options also provide different opportunities for gaining access to the latest thinking in the field, the latest methodologies and approaches. Preconditions for each option may determine which one is available to you.

Options for Organizing the CSP Work			
Description	Implications & Preconditions	Advantages	Disadvantages
Do all the CSP work in-house, with inputs requested from sister authorities	<ul style="list-style-type: none"> • Requires full-time team with broad range of skills. • Requires a wide range of equipment to do field work, analysis etc. • May require Memoranda of Understanding with other authorities to gain their inputs. This may take time. 	<ul style="list-style-type: none"> • Gives full control to all parts of the process done by the authority. • No need to have special contract management or consultant supervisory skills. 	<ul style="list-style-type: none"> • Limited and conditional control over inputs from other authorities. • Not necessarily any access to necessary expertise or specialized equipment. • Places full burden of day-to-day work on the authority while not allowing full quality control.
Contract out the entire CSP exercise to a consulting company	<ul style="list-style-type: none"> • Planning authority has strong legal (for contract management) and supervisory capacities. • Adequate budget up front. • Very clear knowledge of what is wanted, and the processes to achieve it – for designing ToR. • Probably requires a competitive tendering process. • Requires ‘door-opening’ measures to ease work with other public sector authorities. • Best results if the authority is structured to use this approach regularly (and hence has built up the right types of skills and capacities). • Presupposes that there are companies/ organizations that can do the work. 	<ul style="list-style-type: none"> • Elicits innovative ideas on approaches and methods through the tendering process. This can provide a basis for continuous learning within the planning authority. • Gains access to skills that the planning authority doesn’t have. • Gains access to specialized equipment that the authority may not otherwise have. • Places burden of work outside the authority, including all logistics & many administrative details. • Still maintains authority’s control on quality of results. • An effective approach if the planning authority is structured to use it as the ‘norm’ as several planning exercises can be managed simultaneously. 	<ul style="list-style-type: none"> • Can be difficult to build flexibility into Terms of Reference (ToR) and contracts, to allow for advisable changes arising from findings during the course of the work. • Consultant company may not have same level of trust with other authorities or stakeholders, and needs ‘door-opening’ support. • Tendering process and subsequent negotiations can take time. Do not always lead to a satisfactory result. • If international finance is used for funding the exercise, financiers may impose conditions & require approval of ToR, Contracts, and selection.
Maintain a core CSP team, and contract out specific tasks that the authority does not have the capacity to provide.	<ul style="list-style-type: none"> • Requires an almost full time team with a fairly broad range of skills. Depending on what is contracted out, also requires equipment. • Requires skills in writing specialized ToR & contracts for those components the authority cannot do itself. • Requires contract management capacity and consultant supervisor skills. • Requires budget for external inputs. Must be potential for transferring unused budget allocation across financial years. 	<ul style="list-style-type: none"> • Allows hands-on control of planning process and inputs. • Allows access to specialized inputs from external sources under controlled conditions, including both personnel and equipment. • Allows some innovation in those parts of the work that are contracted out under competitive tendering. This innovation provides a possibility for learning by the core team. 	<ul style="list-style-type: none"> • Leaves burden of day-to-day management of the planning process within the organization – less flexibility in using personnel assigned to the exercise. • Depending on regulations, may still require tendering procedures for acquiring external expertise. This in turn will have time implications that must be foreseen to avoid unnecessary delays to the whole project.

Options for Organizing the CSP Work			
Description	Implications & Preconditions	Advantages	Disadvantages
	<ul style="list-style-type: none"> Assumes the necessary external skills are available and accessible. 		

An integrated coastal spatial plan supporting sustainable development needs a wide variety of skills, reflecting a variety of roles and responsibilities in the process. Usually several individuals must work together in a core team, with additional professional and technical inputs being brought in as necessary.

- Coordinative skills lie at the heart of driving and managing the process. Remember that CSP is a PROCESS. It is also a process that involves many actors. Therefore the “soft skills” of working with people, facilitating and managing a complex process are critical. It is an additional advantage if this “coordinator” also has CSP competence and can communicate well across disciplines. However, it is not essential that the coordinator is a planner; s/he could be a natural scientist, an ecologist, a geographer, or a manager.
- CSP competence must also reside within the core team. A good knowledge of geography and geographic information systems is important, as are cartographic skills. This planning competence should include a good knowledge of national planning policy, legislation and regulations, as well as accepted consultative planning processes.
- Socio-economic skills will be needed for a wide range of planning components: demographic studies may require specialist inputs, but results of demographic studies and forecasts need socio-economic interpretation; socio-economic goals need to be transformed into concrete measures pursued by appropriate social and economic instruments; and future development scenarios need to be created and evaluated from a socio-economic perspective.
- If an ecosystem approach is to be adapted seriously, ecologists, environmentalist and natural resource specialists will be essential, for analysing the current situation, for proposing viable future options (from an environmental perspective), and for evaluating scenarios proposed by the team or stakeholder groups.
- Facilitation and communication skills will be essential, particularly for working with stakeholders and the general public.
- Depending on the specific motivation for, and purpose of, the particular CSP exercise, and of the characteristics of the area to be planned, other skills will be required in varying degree in the following fields:
 - Coastal geology or geomorphology
 - Coastal engineering
 - Marine biology – possibly specialists in coral reefs, mangroves, other marine ecosystems
 - Fisheries
 - Civil engineering in fields of water supply, waste management, energy, transportation (roads, railways, ports and harbours especially), communication.

- Risk management targeting natural and anthropogenic hazards and risks
- Sociology, focusing on social and cultural issues, social structures, livelihood characteristics, local traditions, values – especially as these relate to interactions with the natural world, responses to climate change and to other development pressures.

Some Implications of Applying the Ecosystem-Based Approach

The ecosystem-based approach requires specialist skills, which spatial planning authorities may not have in-house. These skills relate especially to natural ecosystems as such, but also to systems thinking in a wider sense. Vertical and horizontal organizational and institutional relationships, as they affect issues of implementation, monitoring, enforcement and learning, are important. Depending on the options selected, as in the preceding Table, the planning authority can include such skill requirements in Terms of Reference for consultant groups, or turn to appropriate public sector bodies that have the skills, and seek to work across institutional boundaries. Experience suggests that public service institutions' personnel are heavily overworked. The planning organization's sister departments may be able to provide professional supervision in their field of specialization, but be unable to do the work themselves. This leaves the planning authority dependent on private sector or academic service providers in these skill areas. Giving the specialist authority the supervisory role acknowledges their rightful jurisdiction without imposing excessive burdens of work on them. Additionally, they stand to benefit from the new knowledge gained through specialist consultancies.

Some Implications of integrated land- and sea-planning

Similar implications apply to the integration of sea with land planning. Most planning authorities have the necessary skills to undertake or supervise terrestrial planning, but may lack the specific competence for planning marine areas. As with ecosystem-based approaches, the planning authority will then be faced with alternatives for managing the marine components. Again, respecting a sister authority's specific jurisdiction is important for avoiding institutional conflict, so involving such authorities in the drafting of ToR for consultants, and giving them a role in the professional supervision of the work may be a solution in which all parties benefit. The roles can be exercised through, for example, the establishment of an *ad hoc* supervisory committee or reference group that operates on an inter-agency basis. Many of the specific skills required are already listed above.

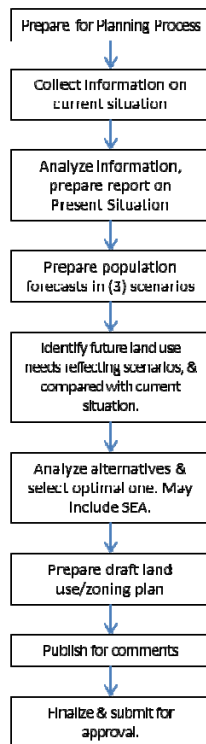
Some Implications of risk reduction and climate change

The same principle applies here as in the above two sections, this time in terms of addressing hazard management, climate-change mitigation and adaptation.

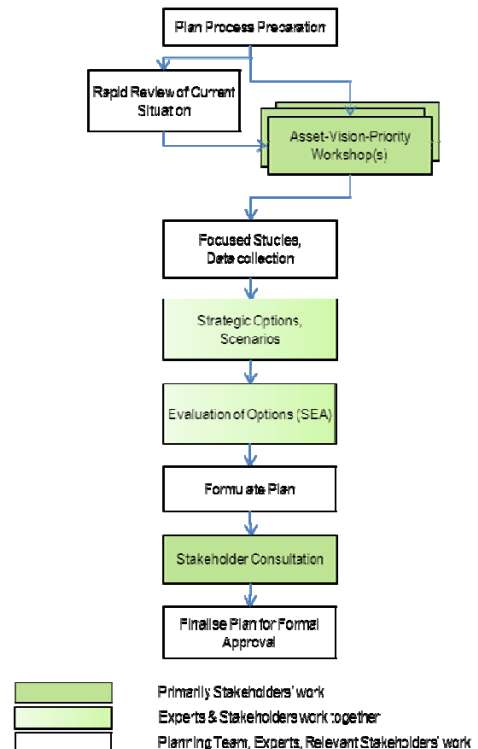
TASK 4 - DRAFT A WORK PLAN – PROCESS MAP

The two diagrams in this section provide a general comparison between the old and the new planning process models, or paradigms. The main difference lies in degree and type of stakeholder involvement, especially, but not only, in the early stages of the process. There is also a significant difference in information use. In the old planning process, as much data as possible is collected, including new data, and then it is analyzed. In the new paradigm the work begins with a rapid review of readily available information (e.g. from geo-databases), with detailed data collection focused on priorities determined through asset, vision, and prioritization with stakeholders.

Typical Old Paradigm Process



Typical New Paradigm Process



Whichever paradigm is adopted in a particular planning exercise, it is necessary to program the work.

Developing a Work Plan

- (1) List the main activities needed to develop the plan, working backwards from the final products;
- (2) Break each activity down into manageable tasks, i.e. a task that can be managed by an individual or group and is easy to visualize in terms of resources required and the time it will take to complete. However, be careful, a common mistake is to break the activities into too many small components;
- (3) Choose appropriate time periods for specifying when activities will take place (by week, month, quarter), again working backwards from the final deadline;
- (4) Clarify the sequence and relationships between tasks (Does another task have to be completed before another task can be started? Can two tasks be carried out at the same time?);
- (5) Estimate the start time and duration of each task. This may be represented as a line or bar on a chart. Be careful to:
 - • Include all essential activities and tasks;
 - • Keep in mind the workload on individuals, and identify where additional assistance may be needed; and
 - • Be realistic about how long a task will take;
- (6) Identify key events (milestones) to help monitor progress. These are often dates by which a task will be completed; and
- (7) Assign responsibilities for tasks with the various members of the planning team.

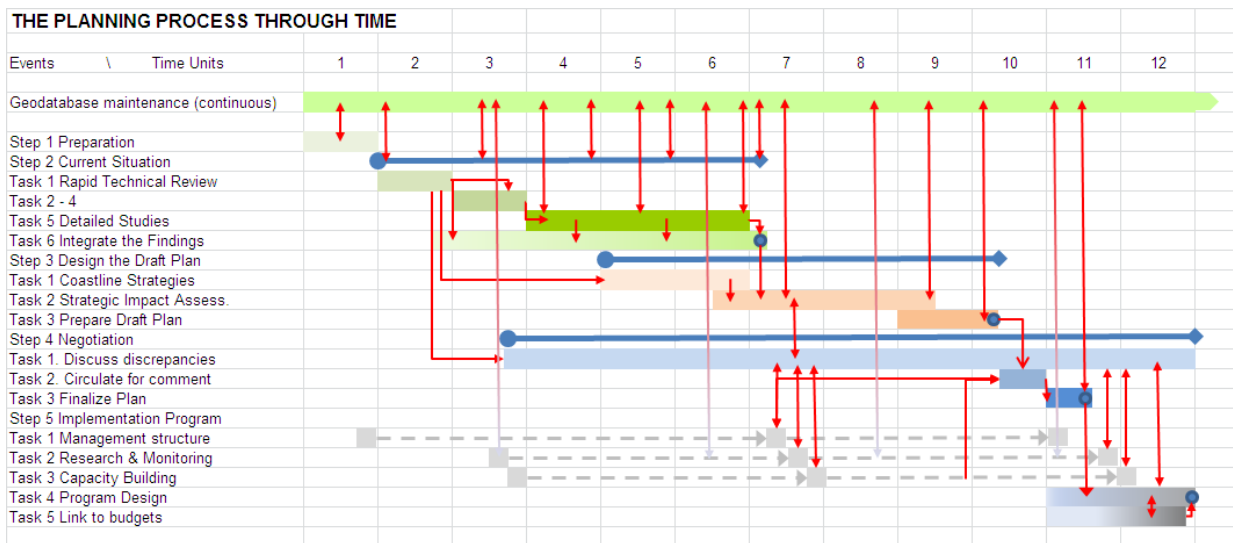
Source: Chia, 2006

Even if consultants are used in this process, the planning authority must have a clear idea of the order of steps, a good conception of the time each step will take, in order to write necessary Terms of Reference.

It is most practical to start organizing the work plan from the end point – that is, the deadline set for completion of the plan and submission for approval. Move backwards in time from that date, step-by-step, allocating reasonable amounts of time for each stage.

Compile all of this information on a Gantt diagram, and link to personnel and financial resources required over time. This exercise should be iterative, as information flows, personnel resources, and “cash flow” patterns emerge and need to be adjusted. The process is valuable for producing a reasonable budget that can show internal costs as well as external ones. Usually internal costs can be met by annual budget allocations; external costs must be funded either by special government allocations, or by external financiers, e.g., combination of international development partner contributions, and inputs from special interest groups.

The Gantt diagram can be developed by hand, by use of a simple spread sheet software programme, or specialized Project Management software. Cost does not have to be a factor if the authority does not have sophisticated software. There are good quality free spread sheet and project management software programmes. Note in the diagram here, that many steps may overlap in time. Some, such as data collection and analysis continue throughout. The new paradigm is information intensive but, by using geodatabases and geographic information systems (GIS) is able to keep information up to date and easily accessible. The GIS is able to do sophisticated spatial analysis, as well as generate and test future scenarios and land use alternatives.



Some Implications of Applying the Ecosystem-Based Approach, Undertaking Integrated Land- and Sea - Planning and Incorporating Disaster Risk Reduction and Climate Change Issues

In terms of creating a work plan, adding these elements to the picture will mean a wider scope in area and in material, as well as increasing the number and variety of stakeholders. The immediate implication is that this will mean more actors, more interactions, more issues to deal with, more data

and information to be integrated and analyzed, and therefore more time will be needed. There may well be additional financial costs as well, depending on whether or not additional consultancies are used, or marine environmental and risk management authorities give freely of their time and resources.

TASK 5 - PREPARATION FOR INFORMATION MANAGEMENT

The CSP process is focused on information and generates a lot of documentation including:

- Reference documents;
- Raw data, including survey material, statistics received from other agencies, material produced in workshops;
- Notes and records from team meetings;
- Correspondence, including e-mail;
- Presentation material;
- Maps, both as source material and outputs, hard copy and digital;
- Digital databases, with printouts as required
- Draft copies of discussion papers, theme papers, working papers, position papers, etc.;
- Photographs and illustrations, including videos;
- Final publications;
- Project management documents, including budgets and financial records, progress reports, time lines.
- (Confidential material)

These documents come from many sources, apply to many different sectors, subjects and themes, relate to different stages of the process, and may need to be distributed to different categories of participants. They may be in different formats: paper, computer files, CDs and DVDs.

It is important that the CSP team, and particularly the team leader or CSP manager, should organize this material so that it is easily retrieved and accessible by the appropriate people at the right time. Otherwise, excessive time is taken finding the material, excessive costs are incurred because of the need of making extra copies or replacing “missing” documents. Because of the increasing use of computers, it will be increasingly common to have both ‘hard’ and ‘soft’ or ‘analogue’ and ‘digital’ copies of documents. Both sets of material need to be organized.

There is no “right” way to organize the documentation. The digital database is however a case in which there are fundamental reasons why a standardized system should be followed. This is addressed specifically in the section on setting up the Geographical Information System and mapping structure. Refer to Annex 4 for some recommendations for organizing the documentation.

Implications of Introducing the New Planning Paradigm

In the new planning paradigm, spatial planning is viewed primarily as a cyclic process. This is made possible by, and is dependent on information technology, especially geo-databases and geographic information systems (GIS). Geo-databases are used to structure and store data and information. They can be accessed by a variety of software programs for statistical, spatial, and image analysis, as well as for producing maps (quickly and flexibly, according to specific needs of the moment), statistical tables and diagrams, as stand-

alone information or for inclusion in texts. It is useful to temporal as well as spatial comparison, and can therefore show spatial trends over time.

The most useful and reliable structure for these geo-databases is one in which each authority compiles data and information for which it is responsible, according to its needs and in line with accepted quality standards. However, all participating authorities in this system must agree on basic nomenclature, definition of terms, and standards for metadata (i.e., data about data), and on protocols for exchanging data and information. In this structure, authorities have controlled access to one another's geo-databases. Each authority retains primary control over its own data and determines what cannot be shared. Because of common standards, the information that is made available can be reliably combined, for example for planning purposes.

While this is the preferred system, experience shows that it takes considerable time to reach a high level of inter-changeability of data, because of both the reluctance to share "proprietary" data, and more profoundly because of the difficulty of reaching agreement across sectoral lines on the definition of terms. Reaching a good level of inter-agency cooperation is a medium to long-term process that requires continuous upgrading. The benefits can be very large.

The more common approach is that the planning authority, through purchase from, or Memoranda of Agreements with, acquires data and information from individual agencies, according to its needs, creates its own proprietary geo-database and stores this information there. Usually, this means considerable effort in ensuring compatibility and quality of data, a cost in time and staff that is borne entirely by the planning authority. Although this approach is not ideal, it is often the only realistic short-term alternative.

Whichever model pertains, the geo-database is essential to the planning process. It becomes the main link between generations of plans, and even levels of plans. In the context of plan preparation, the new planning paradigm stands for long-term information stability.

Some Implications of Applying the Ecosystem-Based Approach, Undertaking Integrated Land- and Sea- Planning, and Incorporating Disaster Risk Reduction and Climate Change Issues

The main implications for data management of introducing these dimensions to planning lie in the content of data and information. The structure of the geo-database(s) needs to be able to incorporate this data.

Since ecosystems are extremely complex it may be advisable to allow the relevant authority to manage this information, and extract only those elements that are necessary for the planning process. This will depend very much on the specifics of the area being planned. In a similar way, disaster risk reduction and emergency response, or contingency plans, contain a great deal of information that is not needed for planning purposes, and therefore it is advisable to extract only that data which are relevant for spatial planning from the relevant authorities.

For both ecosystem-based planning and risk-reduction considerations, one key element of information focuses on linkages between components of the intertwined systems. Material and energy flows, and food chains are examples in ecosystems. Aspects of vulnerability (both exposure and impact) are of critical importance to risk reduction. This means that exposure to natural hazards needs to be linked to social and economic factors that determine a household's or community's capacity to cope with, and recover from a disaster. The geo-database must therefore include those determinants of vulnerability and resilience that

pertain in a particular community (such as social structures, income levels, social inclusion, social networks, access to resources, and so on).

Some climate change data is available for most areas. However, as more studies are carried out and the science develops, the predictions of climate change in its various aspects (temperature regimes, precipitation amounts, storm frequency and intensity, winds, etc.) will change. The planner must therefore remain in close contact with the appropriate authorities for up-to-date information on current status and predictions.

TASK 6 - NOTIFICATION OF INTENT TO PLAN AND INVITATION TO PROVIDE INPUT

Some countries require that notification be given to the public that an official CSP exercise is to take place. Where it is not a legal requirement, it can be used to invite the public and special interest groups to get involved. In this way it would be the first step towards a participatory approach. Normally such a notice would appear in local newspapers in the subject area, or broadcast as an item of public information on local radio stations. If participatory methods are to be seriously pursued, this is an appropriate time to send information to all identified key stakeholders, outlining the purpose of the exercise, its proposed timing, and special participatory events and methods that will be used. This signals the true 'start' of the exercise.

Implications of Introducing the New Planning Paradigm

If the new planning paradigm is to be adopted, it is very important to make this public notice, and to invite participation. An explanation of how this participation will take place should also be provided. One important detail is that it should be described as an active consultative or engagement process in which participants can, at an early stage, have input into determining what is important, and what types of decisions are made.

However, it is also important to ensure that the general public and specific interest groups understand that their inputs are put together with many other considerations, and that it is the planning authority, working under the national legislation that is responsible for seeking to reach a balance among competing sectoral interests to find optimal solutions for society as a whole. Consultative processes should be transparent, but realistic in dealing with the public's expectations.

Some Implications of Applying the Ecosystem-Based Approach, Undertaking Integrated Land- and Sea- Planning, and Incorporating Disaster Risk Reduction and Climate Change Issues

Any notification of the intent to plan in a way that incorporates these new issues should indicate this fact, together with an explanation of what this means – in terms of environmental management, risk management and reactions to climate change.

OUTPUTS OF THIS STEP

When this step is completed you should have:

- A clear understanding, preferably in written form, of the purpose and scope of the planning exercise;
- Clear indication of criteria and relative weightings for decision-making in situations where there are competing and/or conflicting interests in resource (including location) use.
- A clear decision on how the work will be done – whether internally, by a consultant or a mixture, including Terms of Reference and model contracts
- A list of stakeholders, categorized in such a way that you know their roles, responsibilities and interests in the process and outcomes of the plan, and a clear idea of who you can turn to for specific types of inputs. This will include specific stakeholders who can speak for ecosystems, for marine sectors, and for risk management issues, including climate change.
- A consultation/engagement and communication plan indicating how you will work with the stakeholders through the different stages of the planning work and beyond;
- A documentation system for handling the information gathered and used in the process. This should include a geographical information system and geodatabase that can be the basis for long term planning, implementation, follow-up and learning;
- A clear work plan for the planning process, including a Gantt diagram detailing who or which organisation will do what and when.
- Made a public notification of the fact that a Spatial Plan shall be produced, and that stakeholders are encouraged to participate in its formulation.

YOU CAN ALSO USE THE FOLLOWING CHECKLIST OF QUESTIONS:

Do you have a clear statement of:

- the purpose of the plan?
- the geographical boundaries of the planning area?
- the expected outputs of the plan as a whole (e.g. a statement of the current situation, a vision and long term goals, priorities and strategies for the short term, a zoning map, an implementation plan and timetable)?

Will you use the classical regulatory zoning plan approach, or the new planning paradigm?

Will you apply an ecosystem-based approach, and if so, are you clear on what this implies?

Will you integrate land and sea spatial planning?

Will you incorporate the spatial aspects of risk management, and deliberately plan for strengthening of resilience among vulnerable groups?

Have you compiled a list of stakeholders? Do you know the roles and responsibilities, rights and obligations of these stakeholders? Can you anticipate where their specific interests may lie and do you have a strategy for finding a balance among conflicting interests?

Have you developed a consultation and communication strategy for interacting with stakeholders?

Are you clear on how you will manage the information required and generated by the planning process? Do you have specific strategies for how you will up-date this information and learn from it?

Do you have a clear work plan for the planning process, including a Gantt diagram? Do you know who will do what, and when during the process?

Have you made a public notice of your intention to start a plan, and of how stakeholders can participate?

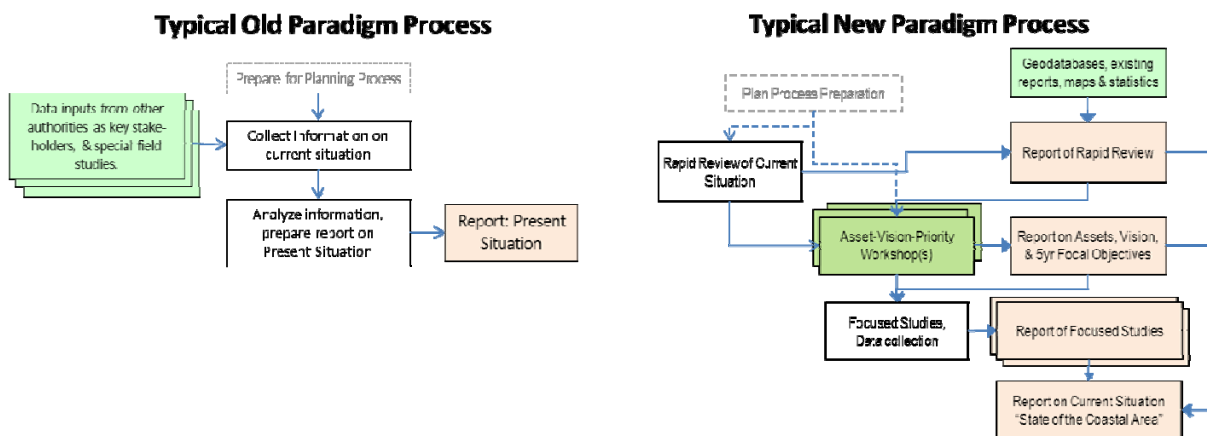
STEP 2 - ASSESSMENT OF THE CURRENT SITUATION

In this Section you will find information on:

- The difference between the old and new planning paradigms in describing the current situation
- an overview of the assessment of the current situation,
- doing a rapid review or profiling exercise, followed by focused information gathering
- reasons and methods for mapping assets of all types
- methods for vision and long-term formulation
- developing strategies
- examples of special focus studies
- a model outline for a Thematic Issues Report
- compiling a Report on the Current Situation

DIFFERENCES BETWEEN OLD AND NEW PLANNING PARADIGMS

Some of the most important differences between the traditional and the new planning models appear in the initial phases of a planning exercise. These are illustrated in the following comparative diagrams.



In both diagrams, the white boxes show activities carried out primarily by experts. The light green boxes show sources of information, while the darker green box in the new paradigm reflects activities carried out primarily by stakeholders. The old planning process is fairly well known. Many countries are in the process of moving towards the new paradigm or have already adopted major aspects of it. In the following paragraphs more details are presented on the process.

OVERVIEW OF 'CURRENT SITUATION ANALYSIS'

In traditional planning practice, the description of the present situation corresponded to a 'snap shot' of the area at the time the planning process began. The focus was primarily on identifying physical conditions and constraints, significant issues, with only a selection of potentials highlighted. Some

trends, primarily demographic, might be presented along with macro-economic changes illustrated in tables of statistics.

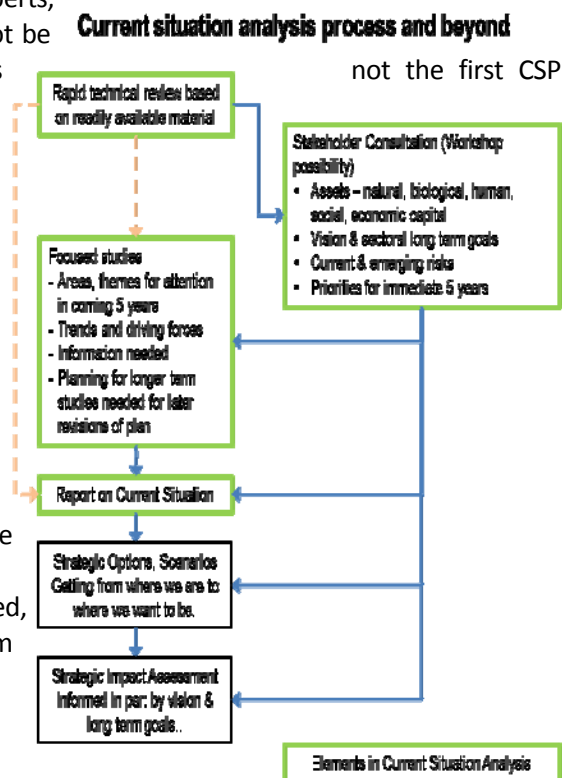
In modern, rapidly changing situations a lot more emphasis is being given to trends and the forces underlying those trends. The planning process is now understood more as a mechanism for managing those trends as they project into the future. There is also more emphasis given to assets of all kinds – natural, biological and ecological capital, economic capital, human and social capital. Good planning seeks to conserve and enhance this capital, use it to create more, while simultaneously addressing “liabilities” in the form of negative forces and trends, issues, present and future threats to those assets and their value.

This view of planning affects the way in which the current situation is researched, analyzed and understood, and then used in going forward. Special attention is given to the framework within which the plan must be developed and more importantly within which it must be implemented. This framework needs to incorporate the relatively stable components like administrative jurisdictions and organizations, legislation, but also the more dynamic social, technological, environmental, economic and political forces that have shaped, are actively shaping, and are likely to continue to affect the patterns of the future.

The content, but more especially the level of detail, will be different depending on the level and type of plan being developed. The tasks listed here can be carried out in parallel. They are presented as separate themes, but are closely inter-related.

The analysis of the current situation should be carried out as a three step process:

1. A rapid technical overview by the CSP team and experts, based entirely on existing information. There need not be any special studies or collection of new data. If this is exercise for the area, and if proper monitoring has been going on, the monitoring results will provide much of the information needed for this rapid review.
2. A consultation exercise with stakeholders, preferably in a workshop setting, during which:
 - o All types of assets are identified: natural, biological, human, social, economic capital;
 - o a common vision and long-term goals are established;
 - o current hazards and emerging risks are identified;
 - o short-term (5-years) objectives are selected, based on priorities in reaching the long-term goals.



One input to this workshop will be the rapid review. However, much of the review of assets and establishment of the common vision and long-term goals should be done WITHOUT the input of the technical experts' report. The reason is to provide additional perceptions untainted and unbiased by technical experts' views.

3. A series of in-depth studies, including new research if appropriate, in those prioritized themes or areas that are to be addressed in the first implementation period.

The preceding diagram here illustrates the importance of the consultative workshop, not only for determining the focus areas and themes, but also for the subsequent steps of developing strategies and evaluating them – based on their likelihood to achieve long-term goals.

TASK 1 - RAPID TECHNICAL REVIEW

The intention with the rapid technical review is to get a quick overview of the situation as presented in existing, readily available material – either in hard or digital format. No new surveys or field work is expected, and no deep analysis is done, but considerable judgement is needed in rapidly assessing the quality of the available material. It is basically a compilation of existing material, with extraction of data and information that will be of direct value in determining assets, issues that need immediate attention, current and emerging risks.

The review should be conducted by a team of experts with appropriate backgrounds and experience. With a good team, and cooperation of authorities in the area, it should take less than one month, and possibly as little as two weeks to compile the review document. The material can be presented in the form of a series of thematic profiles.

Annex 5 provides a checklist of the types of subject matter that should be reviewed. It does not necessarily have to be presented according to these categories, but instead could be presented as, for example:

- Physical Resources and Natural Processes Profile
- Environmental and Ecological Profile
- Settlement and Land Use Profile
- Demographic and Socio-economic Profile
- Economic Profile (including Economic Infrastructure)
- Socio-cultural infrastructure Profile
- Institutional and Governance Profile
- Disaster Preparedness Profile (including Climate Change adaptation status)

There is no “right” way to present the material. However, wherever possible it should include something on trends. The situation and purpose will be major factors in determining the Review's final report format.

The review considers “formal” material – that which is collected and stored. It is also put together by experts from existing material. It is factual, with the only judgements being placed on its validity, its

reliability, its completeness and how up to date it may be. It is in these respects different for other vital types of information – much of which is seldom captured in statistics, and which is the target of the next task. It is much more subjective and value-based, involving opinions, ideas, aspirations, and fears.

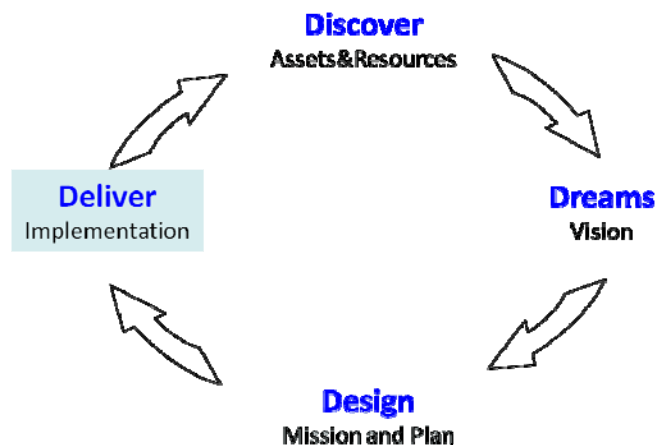
TASK 2 - IDENTIFY EXISTING ASSETS, VISION, LONG-TERM GOALS, AND PRIORITIES

While Task 1 is carried out by technical experts collating and assessing facts and figures, Task 2 seeks to gather the views, intrinsic memory, qualitative knowledge and information, expressions of future hopes and fears.

The more detailed that level of planning, the more room and potential there is for involving the broader public. The concept of sustainable development can be broadened to accommodate more directly community-defined resources and assets. These resources may be grouped roughly as follows:

- Natural: physical and biological resources available, including location – this must be seen in the contexts of accessibility;
- Human: knowledge, skills, ability to work (physically or otherwise), and health;
- Social: social relationships and networks, inter-personal or inter-group agreements, social institutions, including trust, reciprocity, cohesion, sense of “community,” common history;
- Physical: basic infrastructure available, including houses, tools, transport, etc.;
- Financial: financial resources available, including credit and credit worthiness

The local awareness of sustainability aspects together with the interest and will to participate in a CSP process, could make the plan outcome more or less successful. The visualization of such as a complex CSP process can be made very simple:



Basic 4-Step Planning Cycle

The activity of discovering and exploring these resources may also be crucial in raising interest around a CSP activity and involving community stakeholder groups. It is very useful and simple to perform an “Asset Mapping” exercise in a workshop. Participants go through the main community assets and describe their importance and value as different types of capital for development.

At the local authority level, the workshop approach works well. Here, it is possible to bring together representatives of the public sector, the private commercial sector, and civil society. The advantage of working together, rather than through individual interviews with stakeholders, is that participants tend to stimulate ideas and bring out submerged or forgotten knowledge. At the same time, it is important that such workshops are run by experienced facilitators.

The workshop should have two primary parts to it. Alternatively three separate workshops can be arranged

- **Asset discovery** – answering the question “what is good, and of value in the area? And based on the various types of capital listed above; and
- **Vision development** – answering the question, what would we like the area to be like in 20 years, given the assets available? The common vision is then interpreted in a series of long-term goals, most practically by sector (health, education, environment and conservation, energy, transport and communication, culture, and so on).

The vision and long-term goals provide the larger and longer-term framework for the Spatial Plan. The short-term objectives lay the foundation for the Implementation Program through which the Plan should be realized and enforced. The Rapid Technical Review findings should be fed into the workshop process only AFTER the participants have had an opportunity to indicate what they consider to be the assets. The Technical Review will also contribute to both the long-term goals and the identification of constraints and hindrances, and thereby also to the priority list for further investigation as part of the next step in planning. In the asset discovery part of the workshop it is important that no problems are to be mentioned – only assets.

The purpose of the assessment of the assets in a CSP area is to direct stakeholders’ thoughts towards a more objective and positive way of thinking about their own area and its development possibilities based on special or advantageous resources that characterize it. The attitude of appreciating and highlighting the positive aspects of the area will make the CSP process a more goal-oriented rather than problem-oriented exercise, supporting a promotional Spatial Plan rather than a simple regulatory plan.

TASK 3 - FORMULATE VISIONS, LONG-TERM GOALS, AND SHORT-TERM PRIORITIES FOR IMPLEMENTATION

Task 1 above is the professional mapping of the actual CSP area context and situation, and Task 2 focuses on mapping the assets and resources for development as perceived by the community and stakeholders. Task 3 - formulating Visions, Goals and Priorities - deals with combining the rapid profiles and situation analysis with the Asset Mapping to finalize a set of long-term goals that reflects the vision.

One purpose of this workshop, or part of the workshop, is to allow the experts to present the rapid survey review profiles to the public. This is both to inform them of the situation painted through statistics, but also to get additional information that may highlight what parts of the statistical information may be of dubious quality. It is also a chance to give quantitative dimensions to the perceptions of the public stakeholders and qualitative dimension to the experts. When the two sets of information are seen to be compatible, a set of long-term goals can be agreed upon.

One of the many critical aspects of this type of long-term spatial plan is its integrated approach. This means it may handle different sector values and conflicting interests in land and sea resource uses. In

some cases, the Spatial Plan may also need to connect with other types of economic development and hence will contain both spatial and non-spatial components.

The heart of strategic planning is knowing “where to go and how to get there.” The vision is a commonly agreed statement of “where we want to go” within the area to be planned. There are a number of benefits to seeking to establish a common vision among stakeholders.

It is important to bear in mind that the vision will need to be disaggregated into a number of long-term goals, often in sectoral lines, because implementation tends to be along sectors authorities or organizations. These goals must, however, be consistent with the integrated vision.

A vision...

- Breaks stakeholders out of their boundary thinking.
- Identifies direction and purpose.
- Alerts stakeholders to needed change.
- Promotes interest and commitment.
- Promotes sharper focus.
- Encourages openness to unique and creative solutions.
- Encourages and builds confidence.
- Builds loyalty through involvement (ownership).

If the vision formulation is based on the combined findings from both the professionals and the stakeholders, it will create a stronger sense of involvement in and ownership of the process at least for engaged stakeholders. As has been stressed in the previous sections, the whole planning process should be seen as an iterative and continuously ongoing learning process. With the new knowledge about local conditions, the link into a fruitful goals and strategy discussion must answer the question **“What is hampering us from achieving the vision?”**

Features of an effective vision statement will:

- Provide clarity and lack of ambiguity
- Paint a vivid and clear picture, not ambiguous
- Describe a bright future
- Be a memorable and engaging expression
- Express realistic & achievable aspirations,
- Be in alignment with the local society’s values and culture

The vision is a broad statement. It needs to be translated into long-term goals, if it is to be useful. The most straightforward way to do this is to return to the individual and small-group discussions in the visions workshop, which

probably contained a lot of thematic or sectoral aspects.

For example:

- What does the vision mean for the environment? Do we also have a clear view and knowledge of the joint assets and resources of the environment?
- What does it mean for local economic development? Do we have all necessary data and have we analyzed potentials for an economic development based on sustainable growth?
- What does it mean for health and safety?
- What does it mean for water, sanitation, and waste management?
- What does it mean for security in the face of hazards, including climate change?
- What does it mean for social cohesion, for governance, gender balance, and empowerment?

It is now that we may enter the discussion on what is hampering us from achieving this vision and come up with a problem analysis. The challenge is to overcome these problems by formulating some long-term goals. The problem analysis based on available knowledge, situation analysis, the rapid profiles and the Vision statement should provide the basis for the goals formulation in order to achieve the Vision.

There are also goals that are established at a higher level, which coastal planners must respect. Think of the national authorities and Government as stakeholders who bring with them their own goals for the area – as a part of the nation. These include:

- National policy goals, often expressed through documents like the National Development Plan, or the National Environmental Action Plan;
- Sectoral standards and norms that express targets for service provision, and indirectly indicate sectoral goals. An example is the amount of public open space per person in a settlement. As long as this standard is not met it remains a goal.
- Millennium Development Goals, which were established globally and which have now been adopted in many countries.

Long-term goals **DRIVE** the development process forward. In their formulation they should be:

- **Directional**, in the sense that they provide guidance and purpose
- **Reasonable**, for otherwise they will never be achieved and will lead to disillusionment
- **Inspiring**, providing and maintaining motivation
- **Visible and clear**, in a way that all can understand their scope and implications
- **Eventual**, in that they are long-term, rather than short-term in nature. This means that they will probably not be achieved within the first 3-5 years. However, short-term objectives for each goal will be developed that will move the area towards its long-term goals and vision.

The next part of this process is to develop strategies of how to achieve the long-term goals.

Strategy is about two things: where we want to go and how to get there. To effectively deal with planning issues - which are generally complex and are affected by a wide array of spatial, socioeconomic, and environmental factors - well designed long-term strategies are needed. Strategy bridges the gap between goals and concrete actions. Together, strategy and actions bridge the gap between ends and means.

A typical Vision statement may be:

“Current and future residents anywhere in the District are secure and healthy, enjoying sustainable development in harmony with their environmental and ecological resources.”

This Vision was partially interpreted as the following:

- The expression *“Current and future residents”* is inclusive and means all inhabitants in broad terms regardless of their origin, citizenship, generation or economic situation.
- *“..are secure and healthy”* means that the crime rate is generally low, residents are physically, socially and economically secure and resilient, their institutions robust, the region lives in peace and the people are well cared for in terms of public health. ...
- *“enjoying sustainable development”* are big words describing a situation where there is balance between economic development, use of natural resources, human resources and good livelihoods.

These can fairly readily be transformed into sector goals for health, education, housing, water and sanitation, waste management, energy, policing, risk management, conservation, recreation (including access to the beach) and so on. Several of these have implications for short-term action, but also for the spatial plan.

Converting Vision to Goals, Goals to Strategies

Example of Long-Term Goals based on a coastal area's Vision:

- 1) Improve and conserve the environment for the sustenance of the sea and its resources
- 2) Improve access and provision of basic infrastructure and health services

The challenge and problems analysis should then help us to come up with the necessary strategies to overcome the problem which may be structured and summarized in a table format:

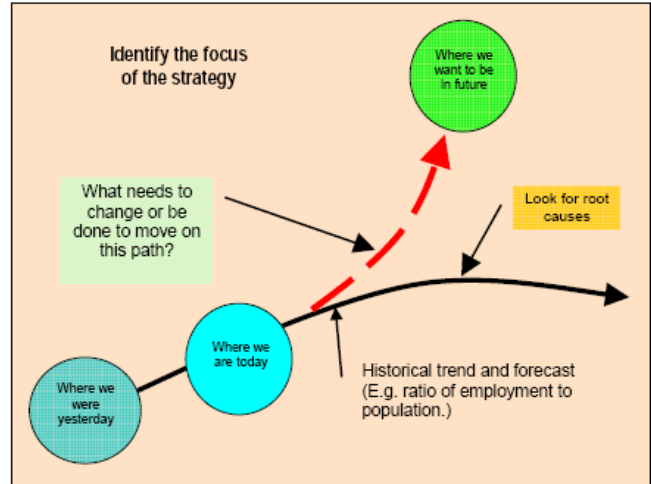
Broad Goal	Identified Challenges	Issues / Problems	Strategies
Improve and conserve the coastal environment for the sustenance of the sea and its resources and for human well-being	Degraded Coastal Environment	<ul style="list-style-type: none"> • Destruction of vegetative cover on hill slopes • Discharge of poorly treated effluents into sea • Increased surface run-off resulting into flooding and siltation • Destruction of mangroves 	<ul style="list-style-type: none"> • Design and implement coastal reforestation programmes • Institute and enforce proper environmental management practices • Conduct awareness and sensitization campaigns • Improve sanitation systems to control quality of effluent
Improve access and provision of basic infrastructure and health services	Inadequate infrastructure and services	<ul style="list-style-type: none"> • Use of unsafe sources of water and extensive use of pit latrine alternatives • Lack of solid waste collection facilities and low efficiency in operation 	<ul style="list-style-type: none"> • Encourage establishment of community-based water and sanitation schemes • Incorporate private sector participation in Solid waste management • Support recycling initiative

By this task of the planning process, we may also realize the lack of information and the need for further studies of some aspects.

Strategy is one element in a four-part structure (figure below). First are the goals to be obtained. Second are the strategies for obtaining them, and the ways in which resources will be deployed. Third are tactics, the ways in which resources that have been deployed are actually used or employed. Fourth and last are the resources themselves, the means at our disposal. Thus strategies and actions bridge the gap between ends and means.

Strategies are not time-bound like projects. Therefore it is important to formulate strategies in a way that does not make them sound like projects. Compare the following two sentences:

- Ensure a mix of local resource-based economic activities and foreign investments so that long-term economic sustainability is not jeopardized by potential flight of foreign capital out of the city.
- Establish a small business-support center to encourage the formation and growth of local resource-based companies.



The Focus of the Strategy

The first is a strategy for long-term economic sustainability sheltered to some degree from the effects of international capital movements. The second is a project, even if it is in line with the strategy. It is not a strategy. Once the centre is established the project (“establish...”) is complete.

Strategies help in formulating short-term objectives. These short-term objectives form the basis of the implementation program presented further on in this document.

Examples of Short-term Objectives

For the first period of five years, the planned development will be guided by the following specific objectives:

- Contribute to the reduction of current trends of environmental pollution within the district and its environs for the protection of the coast and its resources
- To improve the quality of life of the population by promoting actions towards a healthy environment and access to potable water and sanitation within the next 5 years
- Encourage public-private investment initiatives for improved productivity and poverty reduction

TASK 4 - IDENTIFY KEY FOCUS THEMES AND AREAS FOR FURTHER STUDY

The combination of the Rapid Technical Review, the Assets and Vision consultation and the setting of priorities, will lead to decisions on what needs to be studied in more detail:

- Critical information gaps identified in the Rapid Technical Review;
- Sectoral themes that should get priority in the Implementation Program, but for which more details are needed;
- Cross cutting themes that could address subjects like governance (e.g., issues like enforcement of environmental regulations), gender balance in resource access and utilization, poverty reduction, risk and vulnerability, climate change impacts and adaptation options.

The focal studies can be organized in a variety of ways depending of the subject matter. It is valuable to assign each one to a responsible and appropriate organization, but also to create a reference group made up of stakeholders who were present during the initial consultation and were party to the choice of the focus subjects. The role of this group is twofold:

- To provide a pressure point that ensures that the work is done and on schedule.
- To ensure that the intent of the initial choice is pursued, and that the study does not get hijacked by some outside party. In this sense, any basic changes in direction or emphasis would have to be approved by the reference group.

Generally, Sectoral focus studies have a relatively narrow focus. If the present situation analysis and the workshop consensus shows that water and sanitation are sectors that should be given priority, the in-depth studies will investigate in much more detail the dimensions of the situation, the needs, and the alternatives for meeting the needs. This will also involve identifying strategies that will be applied to ensure not only that needs are met, but that other goals, such as sustainable use of resources, are also respected. This might involve, for example, awareness building on the need to conserve water, and measures to ensure that water is not wasted. Even though the study is focused on one sector, the implications for other sectors must be taken into account.

Cross-cutting thematic studies are different by nature. They address issues that are found simultaneously in several different sectors. There can be many types of crosscutting themes. A few are listed here:

- Local economic development
- Good governance
- Environmental protection / environmental improvement
- Urban expansion into coastal areas (integrating all aspects of growth and change)
- Poverty reduction

Cross-cutting themes may express general principles or practices. Good governance and gender balance are two examples. Or the themes may express goals which several sectors should share responsibility for achieving, such as poverty reduction, local economic development and environmental enhancement.

A generic content for the studies is reflected in the Model Thematic Issue Report, shown in the box that follows. This particular format is designed to fit rapidly into an implementation program. In some cases the purpose of the study may simply be to give a more accurate description of the current situation, and therefore may not need the last three points in this Model.

TASK 5 - CARRY OUT THE DETAILED STUDIES

The list of focus themes or areas for which more detailed studies should be carried out will vary from case to case, depending on the priorities for the coming 5-year planning period. In spite of this, an attempt should be made to establish some common structure to the reports that result, in order to simplify the process of integrating the findings in the spatial plan and implementation program. Common elements of the focal study reports are illustrated in the box. Some examples of special studies are provided in Annexes 6 & 7.

Model Elements of Thematic Issues Report

- Statement of the issue
- Origins, causes and effects (issues tree, "ownership" tree, priorities tree)
- Current status (baseline), on-going trends, and implications for the future with no action, including spatial aspects
- Scale and (spatial) distribution of the effects
- Existing policies, norms and standards affecting the issue
- Long-term (10-20 years) goals and short-term (3-5 years) objectives with targets
- Proposed principles and strategies for dealing with the issue, mechanisms for implementation
- Preconditions and assumptions fundamental to success, risk of these assumptions being false or preconditions not being met
- *Resource needs: rough estimates of financial costs, human resources by type, physical and spatial/locational resources – implications for physical plan*
- *Institutional requirements: authorities involved; cooperation and coordination needed; distribution of responsibilities and identification of primary "drivers;" links with private sector and civic society.*
- *Broad steps of phases for implementation*

Elements in *italics* should be in very rough, indicative, terms. They will be compiled in more detail later, if and when the strategies are approved.. Often some indication of costs and resource needs is important for giving the approval in principle.

TASK 6 - INTEGRATE THE FINDINGS OF THE ABOVE ASSESSMENTS

The following material should now be in hand:

- A rapid technical review of the current situation including:
 - a assessment of information gaps, with priorities for filling them, either as a basis for the first implementation period, or for future planning cycles
 - the management structures and institutions (laws, regulations)
- A statement of the common vision and long-term goals for the area – this should provide the broad framework for long-term work
- A set of short-term priorities that should provide the focus for the first five years, and which lead to a number of more detailed focal studies
- An initial list of constraints, hindrances, and issues that need to be addressed within the Plan and the implementation program
- Results of the focal studies, including (but not only)
 - A new, or revised, assessment of hazards, risks and responses
 - A new, or revised, assessment of social, economic and institutional vulnerability and resilience
 - A new, or revised, assessment of the implications of climate change as they appear at this time
 - A new, or revised, valuation of natural resources and ecosystems in the area.

These documents and maps provide the working material for a summarized document presenting the current situation. From a monitoring point of view, this document provides the baseline against which change will be measured. There is no short cut to simply writing this summary. There are various ways of organizing the information, none of them is “right.”

Some ideas to consider however, in producing the Current Situation include the following:

- Consider making two versions, one for technical staff and consultants; one for the public and politicians. The latter version should be shorter, well illustrated with diagrams and photos. The technical version may be in the form of a main text, with a series of appendices, and an Executive Summary.
- Highlight the contributions made by different stakeholders, as this increases interest among readers. It is also right to give credit where credit is due.
- Highlight the Vision and long-term goals, the priority areas and the particular issues that will be dealt with in the first implementation period. Make sure that problems are described in relation to the vision, not the other way around. This gives the impression that solving critical issues is not an end in itself, but a part of the process towards a desirable future.

Explain the next steps in the process and how the material in the report will be used to draft a Spatial Plan and to develop an Implementation Program.

Some Implications of Applying the Ecosystem-Based Approach, Undertaking Integrated Land- and Sea-Planning and Incorporating Disaster Risk Reduction and Climate Change Issues in Step 2

In terms of this Step, the implications of including these new approaches are primarily:

- To ensure that special attention is given to reviewing the status of ecosystems and habitats, their health, their use, their long-term sustainability under current conditions and management regimes. This attention needs to be explicit in both the rapid review and profiling done by experts, and in the discussion of assets, goals, issues and threats in the stakeholder meetings. Special attention will need to be given to ensure that marine-oriented experts and users are involved in these exercises.
- To gather existing information, or institute special studies on the functional services provided by natural ecosystems to human society, and to set values to these functions. This process will support arguments for the conservation and enhancement of the systems on a sustainable level. If such studies cannot be done within the timeframe of the planning work program, they should be entered into the Implementation program for the first 3-5 years, so that the results are available for the next planning cycle. An environmental monitoring plan that incorporates ecosystem indicators should also be incorporated in the implementation program. The design of a suitable monitoring system should be possible within the planning time framework.
- Special attention will be needed to involve marine users, and to link their activities to uses on the land. Conflicts among marine area users and between them and terrestrial interests need

to be mapped, and defined accurately so that strategies for resolving them can be developed. These uses are also linked to ecosystem dynamics, so in some respects, the carrying capacity of ecosystems under pressure from different types and degrees of pressure need to be evaluated in order to set limits and conditions on use, partially through zoning systems. An example is to study the ecological links (with special reference to fish) between mangroves, seagrass meadows and coral reefs, as they relate to artisanal fisheries (including methods), and tourism (diving, boating, exploring mangroves). Such studies would provide inputs to management plans for the various resources, but would also underpin coastal and marine zoning plans and use conditions.

- The impact of climate change needs to be given specific attention as it influences both physical features and ecosystems. Although mitigation activities are important, local efforts will do little in themselves to influence climate change. However, they may simultaneously contribute to adaptation efforts. Studying the probable climate-change impacts will allow a careful review of response and adaptation strategies in the next step of the planning process.
- To include hazard mapping and initial risk assessment exercises. These should include natural and anthropogenic hazards, and risks to ecosystems, human health, economic and social infrastructure. These studies should include an identification and assessment of vulnerable social groups, describing where they are, and the nature and degree of their vulnerability. This should be done in a manner that allows reasonable remedial measures to be taken, and should therefore be done with the vulnerable groups themselves. In all cases a conservative approach should be taken – that is, assume that worst-case scenarios will occur and prepare for them. Again, if these studies cannot be done within the time-frame of the planning exercise, they should be included in the implementation program so that their results are available for the subsequent planning cycle. It should be possible to do a rapid review leading to a hazard, risk and vulnerability profile within the planning time-frame. This will give pointers to more detailed studies that should follow.

OUTPUTS FROM THIS STEP

At the end of this Step you should have the following results and outputs:

- A compiled Rapid Technical Review; this could be in the form of various sectoral profiles; maps should be used wherever possible to show characteristics.
- A compilation of Assets – both quantifiable and non-quantifiable, arising from the Rapid Technical Review and the stakeholder consultation process. As many as possible of these assets should be mapped.
- A clear Vision statement for the area to be planned
- Clearly spelled out long-term goals for the area, based on, and consistent with, the Vision;
- Short-term objectives for achievements in the coming 3-5 years, based on the long-term goals and Vision;
- A list of prioritized focal themes and areas for detailed investigation, reflecting issues that must be addressed in the coming 3-5 years;
- Results of the focal theme/area investigations, including strategic options for future action; there may be several special studies, but these focal themes should be included at a minimum:
 - Assessment of ecosystems in the area, their status and the value of the services they provide
 - Assessment of current hazard management situation and vulnerability, with maps showing hazardous areas, features at risk as well as vulnerability levels
 - Assessment of potential Climate change impacts, described and mapped by type, degree and location
- A final compilation of the Current Situation, being a baseline for future comparative reference, but also presenting opportunities, constraints, critical issues needing attention, and strategic options. This could be in two versions:
 - Full Technical Version
 - Summarised Popular Version

YOU CAN USE THE FOLLOWING CHECKLIST OF QUESTIONS:

Do you have a comprehensive list of the physical, ecological, social, cultural, human, and economic assets for the area, and wherever appropriate maps showing where these assets are?

Do you have a clear statement of a common Vision for the area, depicting the area's character in about 20-years time?

Do you have clear long-term sectoral (and where appropriate sub-sectoral) goals that are consistent with the Vision?

Do you have a clear understanding of the constraints and hindrances that must be overcome to achieve the goals?

Do you have a set of strategies that will conserve and enhance the existing assets, pursue the vision, deal with the constraints and hindrances and ensure that future threats are avoided or minimized?

Have you agreed on the spatial implications of the Vision, long-term goals, and strategies?

Do you have a clear set of priorities for action in the short-term that will provide the basis for an implementation program?

Have the studies of the present situation, whether through rapid assessments or special focal investigations, addressed:

- Ecosystems, their status and the services they provide to human society, as well as their inter-relations with social, economic and cultural systems;
- Marine resources, their status and utilisation, and their relationship to land-based assets and activities;
- Hazards, both natural and anthropogenic, risks, including those posed by climate change, and the vulnerabilities of those exposed to them?

Do you know what other investigations should be carried out under the implementation program as preparation for the next planning cycle?

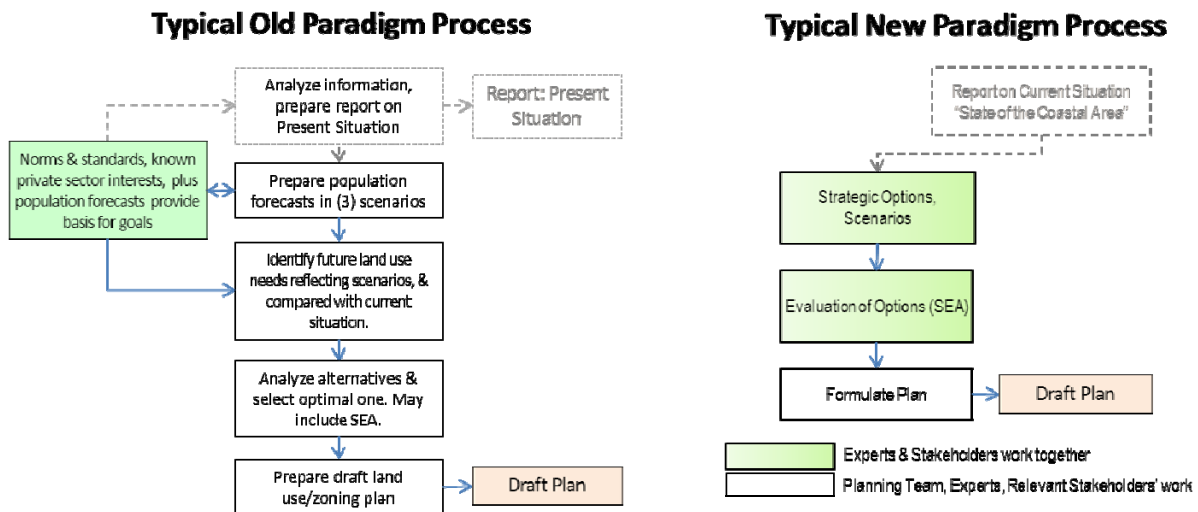
Do you have a report on the current situation that can serve as a baseline for future comparison through monitoring and evaluation programs? Do you have two versions of this report – full technical, and summarized popular versions?

STEP 3 - DRAFTING THE SPATIAL PLAN

In this section, tasks involved in compiling the Draft Spatial Plan are presented:

- Identifying realistic shoreline strategies for specific stretches of the coast
- Conducting a Strategic Environmental Assessment for these strategies and for the strategies proposed in the focused studies and/or rapid reviews and stakeholder consultation
- Drafting the Spatial Plan itself
- The use of Setbacks in conjunction with zoning is specifically explored.

The diagram below illustrates the differences between the old and new planning paradigms in the plan formulation stage. The old model uses existing trends to predict the likely future population growth, at more than one rate, then calculates needs according to land-use needs, based on given norms and standards. In the new paradigm there is some prediction based on trend analysis, but the underlying approach is to actively pursue a vision of a desirable future, rather than just to respond to “uncontrollable” forces. Current trends are used in the new paradigm to shape strategies in such a way that the future as a whole is more controlled. In the sphere of climate change, where trends are global and beyond the control of local authorities, there is still a reactive response to predicted changes. Mitigation and adaptation activities are responses to these uncontrollable long term trends.



In the new paradigm more attention is given to strategic options, rather than tactical options as in the old model. And the impact assessment is carried out first on this strategic level. The reference for comparing options is the vision, as interpreted through long-term sectoral goals.

Another significant difference between the two paradigms is that stakeholders are given a large role in the new approach. They work together with experts both to define the strategic options, and to set the criteria for evaluation. Good governance principles apply here in encouraging participation and transparency of the process. Political representation is also important here.

The intention of all the earlier work is to determine where certain activities should be allowed and under what conditions. This is presented in the form of a map or set of maps showing “zones,” and an accompanying text that describes each zone type, what activities are encouraged, permitted or prohibited there, and where permitted, and the conditions that apply to permitted activities.

Some zones will be delineated for the protection of habitats, biotopes or other areas too sensitive to intensive human activities. There may also be zones proposed to be suitable for specific land- or sea-uses such as aquaculture or tourist activities. When it comes to proposing land for development compared to restricting certain uses, it is better to be very general and flexible about future land uses. The detail with which zones are demarcated and described will be different between levels of plans. At large-scale planning (detailed plans), zones can be more specifically delineated and conditions described. Usually such detailed plans are only needed when there is an acute need because of development pressure.

At a slightly higher level - covering a wider area, and at a small scale - there will be less detail in some aspects, but just as much in others. For example, a protected area will be shown in both a detailed and more general plan, and the restrictions on permitted activities and use will be the same. However, the general plan may zone an area for future “settlement” without prescribing in detail how much land will be given to housing, transport, industry or commerce. This would be done in a detailed plan. Usually, the higher the planning level the more strategic and general it becomes.

In the processes described here, the bias is towards the medium or “comprehensive” level. At this level, long-term needs will be shown as well as zones for development in the short term. There may be zones on the spatial plan “uncommitted – for further investigation” or for “future reserves.” In this manner, options are kept open for future decision-makers, under the precautionary principle.

TASK 1 - IDENTIFY REALISTIC COASTLINE STRATEGIC OPTIONS

It is recommended that the CSP process includes, as a matter of course, an assessment of the potential impacts of climate change, as described above. That study will describe the most likely types of impacts, and their consequences. Each of these should receive attention in terms of an adaptation strategy. These will vary widely from area to area.

However, in virtually all cases, relative sea-level rise is predicted, with direct implications for the coastline or shoreline. Therefore all coastal spatial plans will be faced with this issue. The strategy selected will be site-specific. The delineation of shoreline (or coastal sediment) cells, where a stretch of shoreline shares a common morphology, may allow the selection of a strategy for each cell.

At the same time, the generic strategies available are much the same as those for combating coastal erosion today:

- **Do nothing:** in many cases this may lead to abandonment, but in others (like hard rock cliff areas), may be a justifiable strategy.
- **Limited intervention:** the emphasis here is on adapting to cope with flooding, for example through use of new building techniques (on poles) or raising limited areas of land for building

on. This strategy may also involve using biological defences like mangrove forests or wetlands to capture and hold sediment and reduce the impact of waves and surges.

- **Managed retreat, or realignment:** In this strategy the idea is to accommodate the sea-level rise, by moving investments landward, or forbidding new investments in those areas expected to be inundated. The use of setbacks is a tactic within this strategy.
- **Hold the line:** provide artificial sea defences if need be to maintain the shoreline in its present position. This is often an expensive strategy, but may be the appropriate one where there are valuable assets worthy of protection, such as in large urban centres. There may be soft engineering components like beach sand nourishment and sand dune stabilization. Hard engineering solutions include constructing sea walls, revetments, breakwaters, and groins.
- **Move seawards:** this is an aggressive response, in which new sea defences are built seaward of the present line. This may be appropriate where there are severe shortages of land and good potential for investments to make such a strategy financially and economically viable.

A workable approach to selecting specific strategies for coastal cells is outlined in Annex 7.

An ecosystem-based approach to the issue suggests an additional aspect: that is, to reduce vulnerability to climate-change impacts by either minimizing exposure, or maximizing adaptive capacity. In this approach, the causal factors of existing or threatened erosion of the shoreline are queried specifically to determine whether or not natural systems that have provided protection have been removed or weakened to the extent that they are no longer able to give the same level of resistance to erosive forces. Two fundamental responses are available where the answer to these questions appears to be positive³. Both have direct application in Spatial Plans.

- Enhance adaptability of the vulnerable natural system by reducing other, non-climatic, stresses on them, and in appropriate cases removing migration barriers to key ecosystem species, or ensuring that a minimum sustainable size of ecosystem is maintained;
- Reverse on-going trends that are weakening protective ecosystems and thereby increasing their vulnerability. Examples could be restrictive zoning that prohibits draining and occupation of wetlands, destruction of mangroves, prescribing raised walkways over dunes and re-vegetating dunes.

Regardless of the specific coastline strategy selected, there will be value in considering development control zones and/or setbacks along the coast. There may also be good reason to impose additional control measures off-shore – for example, speed limits on close-by shipping lanes, prohibition or strict regulation of sand mining and dredging. These may be particularly important where there are off-shore minerals, oil or gas exploitation possibilities.

³ Klein, R.J.T., R.S.J. Tol, 1997. *Adaptation to Climate Change: Options and Technologies – An Overview Paper*. Technical Paper FCCC/TP/1997/3 United Nations Framework Convention on Climate Change Secretariat, Bonn Germany.

TASK 2 - CONDUCT STRATEGIC ENVIRONMENTAL ASSESSMENT ON OPTIONS TO SELECT MOST APPROPRIATE

The term Strategic Environmental Assessment (SEA) is widely used to refer to the “EIA of policies, plans and programs.” Strategic environmental assessment (SEA) is undertaken much earlier in the decision-making process than project-focused environmental impact assessment (EIA) and it is therefore seen as a key tool for sustainable development. SEA for plans and programs has a longer time and implementation perspective (may cover large areas) and should be seen as preparatory to the EIA for individual projects – a kind of “SEA framework” - and be based on a comprehensive and holistic perspective of the environmental situation analysis.

Usually the SEA procedures are more or less regulated and differ between nations and regions. The SEA, by its nature broader and more strategic, may give a stronger and commonly accepted non-biased framework for subsequent EIA's to come as soon as there is a new project to be allocated land or sea space. For the SEA to be successful it should be introduced early in the planning process and used as a tool to evaluate different development options and scenarios.

Current interest in the concept of sustainable development raises the question if EIA, and more in particular SEA, can contribute to reaching more sustainable societies? Sustainable development is about enabling people to satisfy their basic needs and enjoy a better quality of life, without compromising the quality of life of future generations. It combines important social, environmental and economic goals. The issue of sustainability often has a tendency to focus on technical and economic aspects that are easy to quantify and assess while the environmental and livelihood conditions and qualities are more difficult to analyze in the sustainability context. If the environmental, social and health aspects are systematically included in SEA it could be a useful tool for a more balanced assessment of development options.

More reading on SEA can be found in the UNEP report: “Environmental Impact Assessment and Strategic Environmental Assessment: Towards an Integrated Approach” at <http://www.unep.ch/etu/publications/textONUBr.pdf>

The following is quoted from the above mentioned report:

“The aims of SEA can be summarized into two main categories⁴ :

- promote environmentally and socially sustainable development (ESSD) by:
 - anticipating and preventing adverse effects at source;
 - considering and identifying best practicable environmental options;
 - ensuring policies and plans are consistent with ESSD goals and safeguards.
- strengthen and streamline project EIA by:
 - environmental “clearance” of policy and planning issues that are addressed either ineffectively or not at all by EIA (need, justification and major alternatives);
 - early warning of cumulative effects from programmatic or other, spatially related actions;
 - pre-examination of potentially significant effects of specific proposals, thereby reducing the time and effort necessary for EIA (when it can be tiered to SEA as described later).”

Eight guiding principles for SEA process design and implementation are listed below. These core principles offer indicative guidance on the appropriate scope, orientation and content of the SEA process⁵.

⁴ Sadler and Brook (1998)

⁵ Sadler and Verheem (1996), Sadler and Brook (1998)

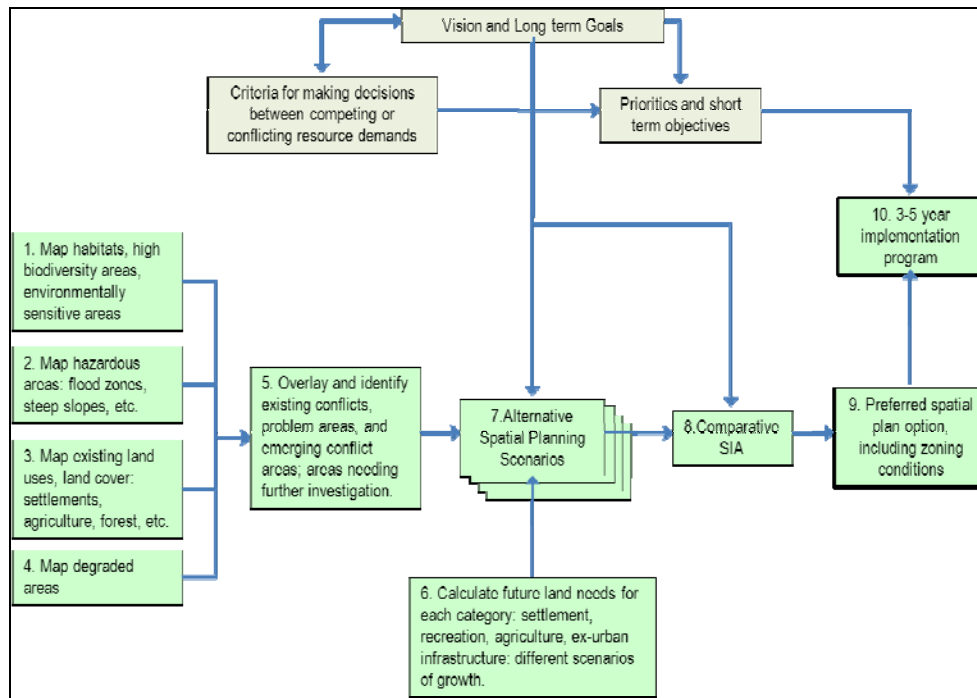
- Fit-for-purpose — the SEA process should be customised to the context and characteristics of policy and plan making;
- Objectives-led — the SEA process should be undertaken with reference to environmental goals and priorities;
- Sustainability-driven — the SEA process should identify how development options and proposals contribute to environmentally and socially sustainable development;
- Comprehensive scope — the SEA process should cover all levels and types of decision-making likely to have significant environmental effects;
- Decision-centred — the SEA process should provide sound information in a form appropriate to the level of decision-making (e.g. statement of implications, issues and/or impacts);
- Integrative — the SEA process should include consideration of social, health and other effects as necessary;
- Participative — the SEA process should provide an opportunity for public involvement, which is appropriate to the level and issues of decision-making;

Sources of material on Strategic Environmental Assessment, or Strategic Impact Assessment include:

- http://www.adb.org/Documents/Guidelines/Environmental_Assessment/Strategic_Environmental_Assessment.pdf
- <http://www.environment-agency.gov.uk/research/policy/32913.aspx> - Here there are links to many specific tools for use in SEA

TASK 3 - PREPARE DRAFT SPATIAL PLAN

The following diagram depicts a process that starts with the critical long-term need to sustain ecosystems for our own and our children’s survival. The grey-green box refers to work done in previous steps, when visions and priorities were set, and criteria for decision-making were agreed upon. The green boxes show the specific steps used once the basic information has been collected either through the rapid technical review or the focused studies and stakeholder consultation. A distinction is drawn between the Spatial Plan, which has a long AND short term perspective, and the Implementation Program that is directed primarily to the short term.



Simplified Overview of the Plan Drafting Process

The process is fairly straightforward when the information is available. Much of it will already be in the form of maps. Follow the numbered steps in the diagram.

1. Begin by marking in all existing protected areas, other important habitats, areas of high biodiversity, environmentally sensitive areas, and culturally important sites: Coral reefs; Sea grass beds; Sand dunes; Mangroves; Sago swamps; Lagoons; Estuaries; Other wetlands and marshes; Sea cliffs used by birds for nesting; Groundwater infiltration zones; Stream and river banks; Turtle nesting sites and bird nesting sites; Mudflats. Include also culturally important areas, which may be historical monuments, religious sites, archaeological sites or other important parts of the cultural heritage.
2. Identify hazardous areas such as: Steep slopes, especially those with unstable soils; Areas liable to flood, whether from inland or the sea; Severe earthquake zones; Areas liable to soil slump (not always steep areas!); Soil areas particularly prone to erosion; Severely eroded coasts, especially soft cliffs.
3. Overlay existing land uses: settlements, agriculture, salt ponds, fish landing beaches, forestry, transport corridors, (including sea lanes), harbours, mining activities, industries, services, and so on. The level of the plan will determine the level of detail shown here.
4. Map degraded areas and threatened areas, if they are not already shown. Show the categorization of shorelines and the proposed strategies for dealing with climate-change impacts.
5. Map areas with unutilised potential for resource extraction or exploitation. These could be sources of building material (marble quarries, crushed stone quarries, gravel and sand resources, clay for brick making, etc.), mineral ores, oil and gas fields, undeveloped harbour sites, areas likely to be attractive to coastal tourism, and so on.

6. Now you are in a position to identify areas of existing conflicts and problems, and probably also where future problems may arise. These should be noted on a map of their own, characterising the types of issues and challenges. This analysis will give input to both a) where specific activities can be permitted and b) under what circumstances.

Straightforward tips on zoning.

General considerations when developing a zoning plan can include the following.

- Minimize uses at the beach that are not water dependent
- Keep the zoning plan simple and understandable;
- Minimize interference with customary uses and rights through active participation by users when developing the zoning plan;
- When prohibiting existing uses in a zone, try to make provisions for these uses in other parts of the area;
- Zoning of beach uses should be consistent with the zoning in the uplands and offshore waters;

7. From previous studies you will have an estimate of the future population growth, the economic forecasts, and can calculate a variety of land needs for sectors like housing, industry, transport services and so on. The overlay maps of step 3 and 4 above will show what land is available for developing, whether this means changing existing uses, reclaiming degraded land, or moving into unused, but not environmentally sensitive areas.

8. It should be possible to create a variety of scenarios for

- Directions of development under different conditions (look at different conditions for individual zones, to assess different scenarios)
- Proposals for environmental protection and management

9. These will then become the subject for comparative Strategic Environmental Assessment studies.

10. Through discussions and negotiations with specific stakeholder groups and key actors, a preferred alternative will be chosen, and this can be transformed into a Draft Spatial Plan. Note that the Plan will have both maps and explanatory text, especially describing any conditionalities attached to individual zones.

11. This in turn will be the basis for a draft Implementation Program for activities required in the following 3-5 years for implementing and enforcing the Spatial Plan. This Program will have to be consistent with other economic development plans, but may also provide an input to them. Refer to Annex 9 for a Model Table of Contents for the drafting of the Spatial Plan.

THE PURPOSES OF SETBACK LINES

Setbacks are key zoning instruments in a coastal spatial plan. Because of their importance, but also because they may be controversial, an introduction to the subject is provided here. In several EAS countries there is already legislation on the subject, and therefore the Spatial Plan must simply “abide by the rules.” Elsewhere there is more flexibility, but a need to provide a sound justification for the decision made.

Setback lines are generally lines more or less parallel to the coastline offset by a predetermined distance, delineating a zone on the shoreward side that has a number of restrictions in terms of use or development. They may be used for four main reasons:

- **To safeguard the general public's right of access to the shoreline.** This is a rights-based use that is applied in countries that have traditions including public access to certain types of land (forests, beaches, foreshore, etc.) even where the land is privately owned. Such countries often include in their traditional rights restrictions how close a non-owner can approach the homestead of the land owner. To avoid the conflict between honoring this restriction and respecting the right of access to the coastline, a setback is imposed on construction of dwellings. Legal systems are used to permit exceptions.
- **For preservation of natural sea defenses.** This is especially so in coastal areas that are subject to storm surges, rapid erosion, and sudden collapse of coastal features (soft rock cliffs). It may be used indirectly to protect coastal features themselves where these coastal features provide protection. Sand dunes are an example, or shoreline forests, including mangroves. Such features provide protection to ecosystems and settlements inland. If they are destroyed or their functions are compromised through development and over-use, their value as a sea defense is lost.
- **To reduce economic loss of property,** especially buildings and infrastructure, due to coastal erosion, relative sea-level rise, severe weather including storm surges, or other causes of flooding.
- **To maintain uninterrupted visual amenity along the shoreline** and thereby also maintaining the aesthetic integrity of the coast.

These four purposes also provide the grounds for determining whether or not to use setback lines as a development control mechanism and as criteria for determining how deep the setback should be. But there are additional ones.

- The nature of the coastline itself, particularly its slope and material make-up, in as far as this is affected by erosion;
- The functional value of the coastal ecosystem as a natural and productive sea defense;
- The current rate of erosion or accretion if any;
- The frequency and severity of high water events (higher than spring tides), and hazards such as hurricanes and tsunamis;
- The current and expected relative sea-level rise over the next 60 years (or the period used for achieving desirable rates of return on capital investments) (relative sea level rise accounts for land subsidence where this occurs);
- The type and level of expected capital investment in buildings and infrastructure;
- The building technology to be used. (In many parts of the EAS region there are traditional technologies that use renewable and accessible raw materials to build over the water. In other parts of the world modern materials are used in similar designs – buildings raised well above storm surge levels.)

Generally, fixed setbacks have a variety of weaknesses: they cut through ecosystems and hydrological boundaries; and they often have little relevance to true hazards. Moreover, through time, and because of coastal erosion, there will be buildings within the setback zone. Setbacks have a conceptual simplicity, but this is deceptive as fixing the setback accurately on the ground can prove difficult. It needs a stable reference point (the high-water mark) but the true high water mark is not always easy to identify on site and along a dynamic coastline.

Floating setbacks allow a more variable-rate approach and are therefore a little more flexible. They are broadly determined by extrapolating historical coastline or cliff-line migration erosion rates to some selected target date. This process, to be done scientifically, presupposes a number of conditions:

- Accurate methods for determining historical erosion rates
- High quality data that is consistent through time
- Ability to accurately calculate a historical rate of change in situations characterised by non-linear, cyclical or chaotic shoreline migration processes
- An understanding of the processes caused by human-induced shoreline modifications in areas where there has already been development.
- Choice of the appropriate target date. One method suggests that the target date be linked to the return-on-investment period for buildings. This of course may vary extensively depending on the material, techniques, and types of construction.

The approach also assumes that historical erosion rates will apply well into the future. The climate change debate as it applies to coastal implications suggests strongly that this assumption is not valid. These weaknesses can be compensated for. An error factor can be added to the calculated erosion-rate, buffers can be added to the distance for specific other purposes, such as ecosystem and storm surge protection, additions can be made to account for sea-level rise, and structure lifetimes can be artificially increased. A summary of advantages and disadvantages of setback as a regulatory instrument are provided below.⁶

Advantages	Disadvantages
<p>Setbacks:</p> <ul style="list-style-type: none"> • Prevent structural loss and damage from erosion • Protect coastal habitat and water quality • Provide open space for natural shoreline environment • Provide recreation and beach access • Allow natural erosion-accretion cycles to occur • Can contribute to sustainable management of coastal systems. 	<p>Setbacks:</p> <ul style="list-style-type: none"> • May not provide adequate protection – fixed methods may not take account of topography or variations in coastal erosional processes; buffer zone may not mitigate impacts • May limit tax base • May be based on inaccurate erosion-rate based data • May not address issues of existing structures • Need additional strategies to deal with structures that continually fall within setback zone, as setbacks recede through time • Shore-parallel linear setback lines do not include the marine zone • May depend for enforcement on cultural attitudes and administrative context.

⁶ Michael S. Fenster, Coastal Setbacks, in Maurice L. Schwartz, (ed) 2005. *Encyclopedia of coastal science*. Springer, Netherlands pg. 866.

In spite of its difficulties, many countries use setbacks. In some, there is a fairly arbitrary decision of how deep the setback should be. In others there is an attempt to be “scientific.” Annex 12 includes a diagram of the process used in one Province in South Africa⁷ and gives examples from other jurisdictions around the world.

In many situations in the EAS region, there may not be any need for a general setback. In some areas, where people have for centuries lived over the sea, the concept itself would not be understood by local residents. In other areas, there is definitely a need to control built environments close to the shore, often for more than one reason. Different countries, different coasts will probably need different approaches and solutions. Below is one way to approach the issue:

- **Determine the fundamental objectives with a setback system in the given area.** Can these objectives be achieved by other, better, means? Will setbacks alone achieve the objectives, or will additional zoning conditions be needed anyway?
 - Ensure public access to the coast;
 - Protect shoreline and backshore natural systems
 - Reduce future problems with property damage by floods or erosion
 - Maintain aesthetic integrity and visual amenity of the coast.

- **Determine the fundamental criteria to use in determining setback rates:**
 - Ease of application, not complex to calculate or apply?
 - Fixed or variable rate, and if variable...
 - Variable according to erosion rates, types and scale of buildings?
 - Annual erosion rate multiplied by a generalised building life expectancy?
 - Provide additional buffers for the uncertainties of relative sea-level rise?
 - Calculate from a line other than the high water mark (e.g., a specific contour line, or from the line of first permanent vegetation)?
 - Maximize economic use of coastal property?
 - Legal requirements and ease of enforcement?
 - Public acceptance and understanding of method of determining setback rate?

- **Zone for the protection and strict management of important ecosystems,** including environmentally sensitive areas, river and estuary banks, areas of high biodiversity, special habitats or important sites (turtle nesting beaches, bird nesting areas, etc.) Wherever appropriate provide additional buffer zones to improve the adaptive capacity of the ecosystems to climate change and reduce practices that increase their vulnerability.

- **Exclude these stretches of coast from the rest of this exercise.** Identify any shorelines and marine areas where the tradition is to build over the sea, using renewable resources and traditional techniques. These areas may need special zoning attention. Using setbacks in such areas is inappropriate, unless it applies differently to different communities.

⁷ WSP Africa Coastal Engineers, 2010. **Development of a Methodology for Defining and Adopting Coastal**

Development Setback Lines. Department of Environment Affairs and Development Planning, Provincial Government of the Western Cape, South Africa

- **Exclude these areas from the rest of this exercise.** Identify those areas whose main purposes are oriented towards the sea other than tourism: harbours, ports, fishery facilities. In these areas, development conditions are needed, but setbacks are generally not appropriate.
- **Exclude these areas from the rest of this exercise.** Identify those stretches of coast where the shoreline strategy is to hold the line or expand into the sea. These will be primarily in developed urban areas. Provide an appropriate setback in these areas for the purpose of protecting the public's access to the shoreline. (Public access to the shoreline is particularly important in urban areas, where public open access is generally inadequate).

For the rest of the shoreline, proceed cell-by-cell and apply the criteria and calculation method selected. When applying criteria, do not restrict yourself to the landward side. It may be important to impose conditions on the seaward side of the shoreline also – such as restrictions on certain erosion control methods, speed limits on large vessels passing within a certain distance of the shore (to reduce wash effects), restrictions or conditions on dredging or laying of pipelines and cables.

Some Implications of Applying the Ecosystem-Based Approach, Undertaking Integrated Land- and Sea-Planning and Incorporating Disaster Risk Reduction and Climate Change Issues in Step 3

Significant portions of this step, as described here, focus on strategies that support sustainable development. In terms of this Step, the implications of including these new approaches are primarily:

- To ensure that when zoning for ecosystem protection, enough area is included to ensure the integrity of the ecosystem as a whole. Consider the likely impacts of climate change, and if necessary make allowance for additional space for the ecosystem to adapt to new conditions. For example, sea-level rise may lead to mangrove forests in certain circumstances to move landward. When considering zoning for the protection of such mangrove forests, it is advisable to provide room on the landward side for this movement.
- Climate change is very much part of the issue of coastal erosion control, yet it is not the only factor. When specifically investigating coastal erosion causes, consider marine uses that may exacerbate the process. This is particularly pertinent in archipelagos where passenger ferries and cargo ships pass on a regular basis. There may be other maritime activities like mining, oil and gas extraction, dredging and laying of pipelines, that may disturb natural dynamics, weaken natural vegetative or ecosystem protective services, and contribute to erosion. Address these issues at source as much as possible.
- Conduct studies on coastline vulnerability to (relative) sea-level rise.
- Zone specifically for reducing exposure, (particularly of socio-economically vulnerable groups) to hazards where possible, otherwise ensure zoning provides for access into, and evacuation from, such areas. Where vulnerable groups already occupy areas at great risk, use the planning exercise opportunity to identify alternative land suitable for them, to which they can be evacuated in the event of a disaster.

OUTPUTS FROM THIS STEP

At the end of this Step you should have the following results and outputs:

- Description and map(s) showing coastline cells, with appropriate strategies for management on both land and seaward sides. If and where appropriate.
- Setbacks or equivalent coastal development control zones, with a description of the rationale and conditions attached.
- Strategic Environmental Assessment of Spatial development options identified in Step 2
- Draft Spatial Plan, consisting of maps and a textual description of map units (in main map, the zones) and the conditions attached to each one.
- If appropriate the document and maps can be provided in two versions – a full technical version with full documentation in appendices, and a summarised popular version for decision-makers and the general public.

YOU CAN ALSO USE THE FOLLOWING CHECKLIST OF QUESTIONS:

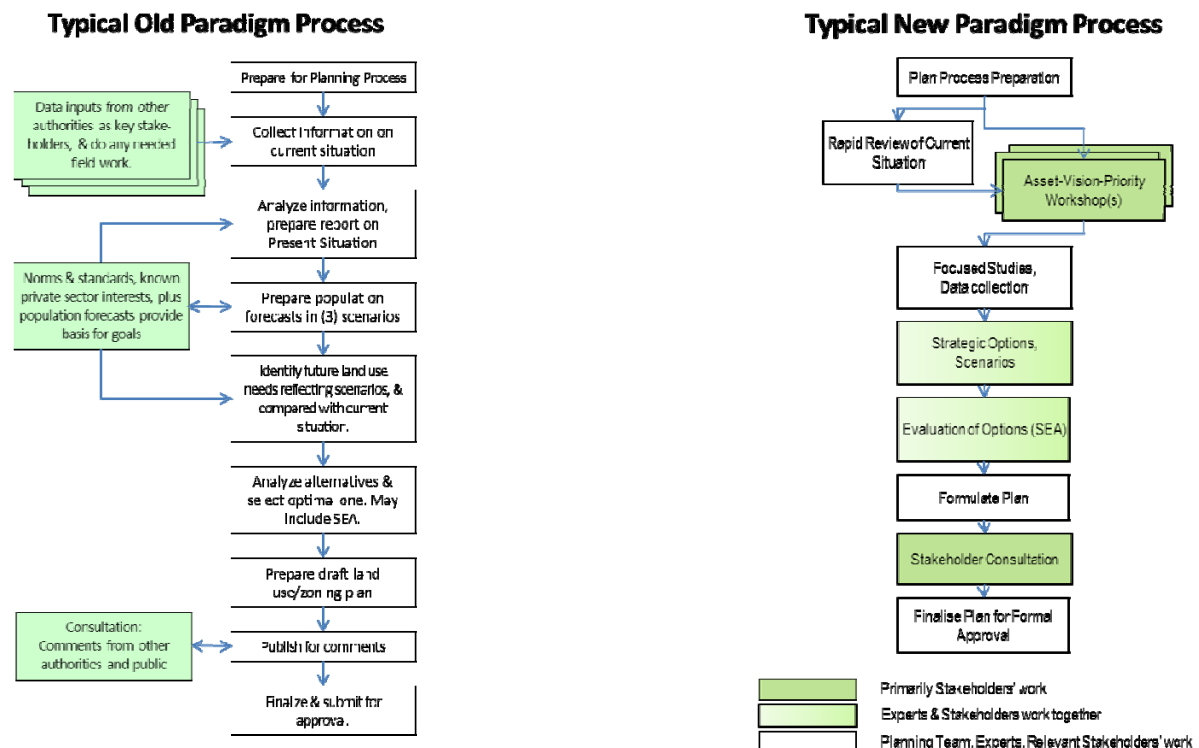
- Has a shoreline classification been completed, including the delineation of cells with similar processes?
- Have shoreline strategies been determined for all parts of the coast, related to erosion and the impacts of relative sea-level rise?
- Have criteria for appropriate lengths of coastline been established and determined?
- Have other shoreline protection strategies been considered and selected as appropriate?
- Have alternative strategic options been proposed and evaluated in terms of their environmental, social and economic sustainability? (i.e., has a strategic impact assessment been carried out?).
- Has a zoning plan for the area been drawn up, with descriptions of permitted, prohibited and conditional uses?
- Has an accompanying text been produced? Is it in two versions – a full technical, and a summarised popular version?

STEP 4 - NEGOTIATION (INTERACTIVE PROCESS OF STAKEHOLDER DISCUSSION & MODIFICATION) TOWARDS AN APPROVED SPATIAL PLAN

In this section you will find:

- That negotiation actually occurs throughout the CSP process as part of the active dialogue among stakeholders
- That if consultations / negotiations have occurred as they should through the process, there will be fewer difficulties and need to compromise on issues once the draft Spatial Plan has been prepared
- Ideas of conducting the “final” discussions prior to finalising the Spatial Plan and the Implementation Program.

The following diagrams show a comparison between the old and the new planning paradigms in terms of stakeholder participation. Although negotiation is placed here as Step 4, the interaction between the planning team and stakeholders occurs at several stages in planning. However, it is not only the timing and frequency of interaction that is different between the old and the new, but even the relative roles, responsibilities and importance given to this relationship.



In the old paradigm, stakeholders generally provided information, usually upon request. During the earlier parts of the process, the most involved stakeholders were normally public sector institutions

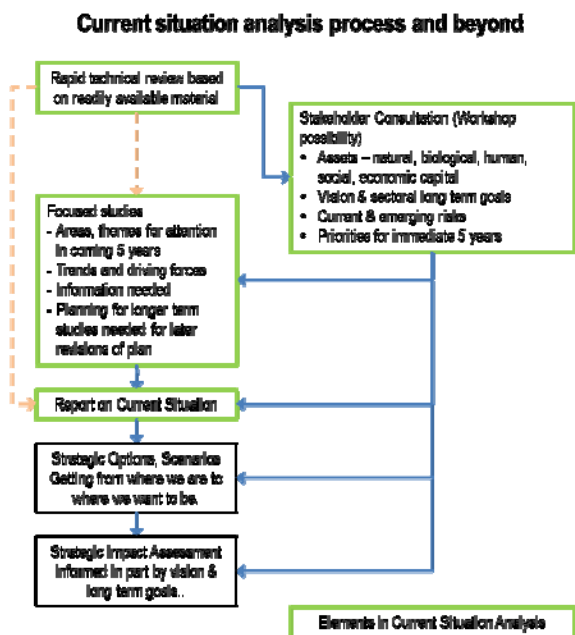
that provided sectoral information. In some circumstances there were householder surveys through which the planning team acquires data in a structured way. It is only after the draft Plan has been prepared that other stakeholders have an opportunity to react to proposals. Participation under the old paradigm was responsive and reactive. The process was driven entirely by the planning team working within a given framework.

Under the new model, stakeholders have a much broader and deeper role. They continue to provide information, but are now in a position to influence the direction of the plan, by participating actively in formulating a vision, interpreting it into long-term goals, establishing priorities, discussing strategic options and criteria for their evaluation. They are, therefore, in a much better position to review the draft final document and provide feedback.

One purpose of Step 4 is to identify actual and potential discrepancies with other levels and types of spatial plans, follow up on issues and potential conflicts with other policies and directives. This means that there will be discussions even in the form of negotiations on some critical issues. It is important to stress the concept of *negotiations* raised earlier in the process, as it is another way of overcoming conflicts of interests than just ignoring it or dismiss them as impossible issues to resolve. In debates and discussions there is less listening and more trying to convince the opponent parties of something. This often leads to unnecessary blockages in the discussions. If you manage to establish a dialogue between parties there is much more possibility for new scopes, perspectives and creative solutions to problems and conflicts. Professional facilitators are often aware of techniques and means to promote dialogues more than discussions.

You are reminded of the diagram to the right. It is included in order to illustrate that the original stakeholder consultations provide inputs to several later steps, and that their involvement should continue.

The results from the stakeholder workshops on asset mapping, vision and goals formulation and the output from the Focus studies as compiled in the “Report on the current situation” are subject to technical analysis, assessments and stakeholders’ discussions. The success of the plan implementation may be directly related to what extent there has been a thorough involvement of stakeholders from the beginning of the process. The range of stakeholders may vary a lot. For example, we have the heads of sector departments who are responsible for their own sector budgets and short-term objectives that may be different from those who have the small and informal tourism businesses along the beach.



One of the key elements in a plan is the concept of “plan ownership.” This considers both the question of who are the drivers of the whole process as well as who is responsible for implementation. The basis for the important stakeholders’ discussions on selection of the priorities should be laid early in the process and be clearly linked to the vision and long-term goals. When the report on the Current Situation Analysis is ready, it may be circulated for one round amongst the stakeholders for comments and also to confirm their

involvement in the plan preparations. The good outcome of a learning planning process is then dependent on the extent to which the involved stakeholders have been able to follow the plan process with an understanding of the selected development options.

When the plan proposals (zoning map and plan report) is ready, it is time to make another and broader circulation of the plan materials to all involved parties and stakeholder groups for discussion and comments. The impact analysis of possible alternative development scenarios should now be evident and come out clearly as the justification of selected alternatives.

Some consultation and negotiation hints:

- When discussing contentious or controversial issues, consider engaging a neutral facilitator.
- It is vital to avoid personalizing differences of opinion. Instead the facilitator, or chairperson of the meeting, should concentrate on the factual subject matter and the need to reach a solution.
- Keep the vision in mind, and use this to find common ground for compromise and creative solutions to potential conflicts.
- Review the stakeholder analysis before entering into discussions of a sensitive or controversial nature. Learn the likely attitudes of stakeholders and plan your presentation and subject for discussion in a way that will reduce animosities, and lead to win-win solutions.
- If it is possible, it is always good to advertise the consultation of the plan material in a local or regional newspaper.
- The circulated material should also be accompanied by a letter explaining the purpose of the consultation, some key questions to answer, direct contact information to the responsible planner and a last date for submitting comments in writing.
- To strengthen the exposure of the plan material, it is recommended to arrange for public hearings and consultations.
- Is important that both paper copies as well as web-based or digital material are available for all stakeholders.
- A joint stakeholders' workshop, with a professional moderator and selected and knowledgeable facilitators, can often achieve results more quickly and effectively than having many separate and individual meetings. However, some issues may be so sensitive that separate meetings, at least in the beginning, provide the only meaningful way forward.
- Sometimes it may be very efficient and interest-raising to engage a local media like a weekly paper or regional TV-studio.
- For some powerful stakeholders it may be crucial to offer to have special meetings at their respective offices.

It is now that the critical comments, arising conflicting interests and land-use demands are put at stake when some stakeholders might understand that their personal dreams of a particular form of development might not be realized. The production of the draft Spatial Plan is a milestone that provides a special opportunity for discussion and negotiation.

TASK 1 - CIRCULATE, PUBLICISE, AND ELICIT COMMENTS

This is a very straightforward task of ensuring that all key stakeholders and stakeholder groups have access to the draft Plan. It can be done in a number of ways:

- **Advertise in the local media** that the draft Plan is complete and ready for discussion and comment. Indicate where copies can be seen or obtained. This approach is a very passive one that will often give minimal response, except where the Plan is at a detailed level affecting a specific group of individual households.
- **Place copies on the internet**, and through the media indicate that the public is welcome to see the Plan there and submit comments. This approach can have some difficulties unless handled in a technically well managed way. It assumes that there will be a possibility to submit comments on the web site, which in turn requires that that facility is available. If the Plan is placed on a totally open site there is a possibility that there will be more international comment than local stakeholder comment. Some technical fixes are available to filter away viewers or commentators outside a geographic range.
- **Send copies to all key stakeholders**, either digitally or in hard copy. This may be done by post or by hand depending on the circumstances. Send a covering letter asking for written comments by a certain date.
- **Provide a venue and invite stakeholders to gather** to hear a presentation, and to participate in public discussion of the draft. The advantage of this is that participants will produce more comments together than alone, they will learn by the experience, and they will feel a greater sense of ownership if they see one another discussing the draft.
- **Do both:** send out the draft, with a covering letter inviting recipients to a gathering for the purpose of hearing a presentation of the draft Plan, and of discussing it thereafter. The letter should also indicate that written comments are also welcome. At the public meeting participants will be reminded that written comments are still welcome within a certain time period. It is important to give a reasonable limit to the time period; otherwise many may never provide their comments.

The CSP team must be prepared for organizing and evaluating the comments.

TASK 2 - PREPARE FINAL DRAFT SPATIAL PLAN BASED ON THOROUGH REVIEW OF RECEIVED COMMENTS

Once the comments have begun to come in, or the stakeholder meetings held, the CSP team can begin evaluating the comments. They should be treated seriously, but also objectively, and they should constantly be evaluated against the findings of the internal evaluations and their implications for reaching the long-term goals. With the comments in hand, the draft will be edited and revised. A final version will be prepared for formal approval.

It is important to elicit comments and collate those relating to the implementation strategies and proposals. These comments are critical to the next step of drafting the details of the implementation Plan. In some countries, the final draft Plan must be submitted with a report on the consultation processes. In such cases, the approving authorities wish to ensure that consultation has occurred and that the plan has wide support.

The approval process itself can give rise to revisions and modifications to the plan. Depending on the nature and extent of these revisions, the approval process can take a considerable time.

When the final version is prepared and approved, all stakeholders should be notified, thanked for their inputs, and invited to continue their involvement by contributing to the monitoring and continuous evaluation of the plan implementation.

Some Implications of Applying the Ecosystem-Based Approach, Undertaking Integrated Land- and Sea-Planning and Incorporating Disaster Risk Reduction and Climate Change Issues

Adding these new issues into the planning process brings new dimensions that strengthen the case for the wider participatory approaches of the new paradigm. This is true for the following reasons:

- Natural ecosystems cannot speak for themselves and require “advocates” to speak on their behalf. In many classical situations, the natural environment has received the lowest priority. Often under this approach, land that was not needed for anything else was set aside for conservation. This was largely due to general social attitudes towards “wilderness” but also to planners’ lack of training and understanding of the services provided by ecosystems to human society. As this has become more widely known, there is a change in attitude toward nature. However, the intense pressure for land and coastal waters continues to mean that vitally important ecosystems need clear and strong voices to protect them for sustainable futures. The inclusion in the planning process of public environmental authorities, environmental research interests, and non-government environmental interest groups is an important way to achieve this. This involvement is needed from the early phases when the planning agenda is set and the vision formulated, right through the development of strategies and the development of active implementation programs.
- Marine area planning is relatively new, especially to the usual physical or spatial planning authorities. It is necessary to include marine-oriented actors and stakeholders from an early phase, and throughout the process, to ensure that the integration of marine and terrestrial plans is carried out in a useful and meaningful way.
- The issues linked to hazards and risks are often perceptual and value-based, rather than factual. This means that it is not sufficient to have the inputs of professional hazard managers with high level skills in statistical probability and economics. One of the important elements in managing risks lies in the question of “what level of risk is the community willing to accept?” This varies within the same community through time, often related to perceptions of economic well-being, and the level of security the community can “afford.” This is also an aspect that technical expertise cannot, on its own, bring to the discussion. It is important that community members and social leaders are involved in the discussions of hazard prioritization, risk identification and definition, as well as in proposing what measures will be of most assurance to the community in facing future hazards. This applies equally to immediate hazards like floods, earthquakes and hurricanes as it does to the long-term implications of climate change.

OUTPUTS FROM THIS STEP

At the end of this Step you should have the following results and outputs:

- A compiled dossier on consultations held throughout the CSP process, as a record for decision-makers, financiers and stakeholders themselves of stakeholder involvement, and therefore of the degree of the Plan's credibility and acceptance.
- A compiled and analysed set of comments on the Draft Final Spatial Plan from stakeholders including:
 - Presentations and results of stakeholder workshops and public meetings
- A Revised Plan submitted for formal approval. This will include general statements on implementation programs

YOU CAN ALSO USE THE FOLLOWING CHECKLIST OF QUESTIONS:

Have all the key stakeholder groups been actively and meaningfully involved in the planning process?

- Have ecologists, marine biologists, or other relevant environmentalist and environmental interest groups been involved? Have environmental and ecological concerns received the attention they deserve?
- Have marine sectors been adequately represented in the process?
- Have risk managers, as well as vulnerable groups, participated actively in relevant parts of the process?
- Have existing or potential conflicts/contradictions between plans at different levels been identified and resolved?
- Have existing or potential inter-sectoral conflicts been identified, addressed and resolved?
- Have sectoral authorities and other relevant organisations committed themselves to enforcing and implementing the plan through specific activities and/or projects?
- Has a dossier on consultations throughout the planning process been compiled? Have lessons been learned from the consultative processes, and have these lessons been recorded?
- Has the draft Final Spatial Plan been circulated for comments, and have comments been compiled?
- Have the comments, after consideration, led to a revised plan, ready for submission for approval?

STEP 5 - IMPLEMENTATION PROGRAMME

In this section you will find insights into:

- Creating a management structure for ensuring implementation actually happens.
- Incorporating a research and monitoring, evaluation and feedback program and mechanism so that realistic adjustments can be made in the plan and program, and for organisational learning.
- Developing and including a capacity-building component, so that individual and institutional capabilities are assured as a basis for implementation.
- Linking the Implementation Program to the annual budget cycle, and using it as a mechanism for monitoring progress and adjusting the rate of implementation.

Many plans end up on the shelf, never used, because they were not designed and formulated specifically for implementation. One major difference between the old spatial planning paradigm and the new one, is that the latter focuses very much on implementation. It is promotional, beyond being regulatory, and proactive in setting out programs for achieving the area's vision. This means that in content, the new Spatial Plan will have a part specifically describing what will be done to ensure that the zoning plan will not only be enforced, but in appropriate areas will be achieved.

For example, the zoning plan may identify sensitive marine ecosystems and zone them for protection. This will involve prohibiting certain uses or placing strict conditions on allowable uses. Under the old model plan this would be sufficient. Under the new paradigm, the expectation is that the relevant authority will also present an active program that will ensure the area is demarcated, the prohibitions enforced, and the conditions for allowable use disseminated to relevant users and interest groups. If necessary, special training will be organized to ensure that the conditions are understood and accepted.

The practicalities of implementation need to be considered throughout the CSP process. A common mistake made around the world, is that a spatial plan should not include anything more than directions on where activities will be permitted to take place and under what conditions. This means that the issues of implementation capacity, whether in terms of organization and personnel, or finance coming from political support, are not considered. At best, this type of plan is only regulatory and gains the reputation of restricting the pursuit of people's aspirations. As a regulatory instrument of government, it gives the public sector the reputation of being a constraint and hindrance to development and growth.

A promotional view of planning builds on the premise that the public sector at least, will take certain specific steps to achieve the objectives set out in the plan. The involvement of stakeholders outside the public sector opens the way for non-government actors to express their own aspirations and make their own commitments. The negotiation step in the plan is in part the point at which the public, private and civilian sectors work together to reach agreement on how, when and under which premises each will pursue the common vision.

There are at least six critical preconditions for successfully implementing a program of the type meant here. These are:⁸

- Clear and consistent policy objectives;
- Good policy-relevant science (decisions based on reliable data and methodologies);
- Sufficient jurisdiction and authority (and well coordinated where these lie in different organisations);
- Good implementation structure;
- Staff competence and commitment; and
- Maintaining the implementation program's priority on the public agenda.

The tasks described here provide the basic elements of an implementation plan that, if applied, will ensure that the spatial plan is mainstreamed into organizational routines, and that the public sector actors will directly and indirectly support non-governmental stakeholders in pursuit of their own goals, albeit in accordance with certain conditions. The Implementation Programme will:

- Describe what will and may be done, where and when;
- Who will take responsibility for what;
- How it will be managed and coordinated;
- How much it is expected to cost; and
- How it will be monitored and evaluated.

The Spatial Plan will include maps which will describe where activities will and may take place, and under what conditions. Although the various components of the Implementation plan are described below as separate tasks, they are in fact done concurrently and in an iterative manner. Steps 3 and 4 will provide a clear indication of the priorities that stakeholders have made through the CSP process. The Spatial Plan Map will show where specific types of activities and land or resources uses will be permitted, and the zoning conditions for each map unit will be explained in the accompanying text.

Implementation Guidelines:

- Disaggregate and interpret the overall Spatial Plan into smaller action plans, and translate them into project and job descriptions where possible and appropriate. Use the logical framework approach and matrix to help.
- Ensure that the programmes, projects, and strategic plans taken from previous stages are realistic to carry out, through reviewing with representatives. Use SMART in formulating goals, objectives and outputs.
- Make sure that there are indicators for completion or progress for every project or activity. Also make sure that the means of verification of these indicators is stated in project documents. This is essential for efficient and effective monitoring, evaluation and follow-up.
- Set out primary roles and responsibilities for each project or activity, i.e. involve representatives from each of the major organizations, companies or firms.
- For each project or activity specify who is doing what and when and use a Gantt diagram.
- Clarify the plan's overall implementation coordination roles and responsibilities.
- Ensure that there is a regular program of reporting and review. The plan's goals and objectives should always be integrated in the performance review.
- Feedback operations must be made every specified period in order to make adjustments, modifications, or take mitigation measures when needed.

⁸ From: Olse, S., K.Lowry, J.Tobey. 1998. Coastal Management Planning and Implementation – A Manual for self-assessment. University of Rhode Island Graduate School of Oceanography, Narragansett. USA. Pg. 35

However, how the decisions on the map are achieved will require specific interventions by many actors.

Start by making a straightforward list of what activities must be carried out. This is derived from earlier steps and a thorough review of the Spatial Plan, including the Map.

Identify which organization and what post within that organization will be responsible to ensure that each activity is carried out. List other organizations and stakeholders who should be involved. It may be that the work will actually consist of inputs from several organizations – but ONE and only one should hold the responsibility to ensure that it is done. (This could be a coordinating committee with several organizations represented, but even so, the Chairperson of such a committee will carry the responsibility to ensure action is taken). With this as a starting point, work through the following tasks in parallel.

TASK 1 - DESCRIBE PLAN IMPLEMENTATION COORDINATION (MANAGEMENT STRUCTURE, MONITORING, FEEDBACK SYSTEMS)

The spatial plan as described in this document integrates inputs from many public sector agencies and authorities, private sector and civil society interests. The spatial plan, when agreed to becomes a shared instrument for guiding activities over a short period (5 years) but with common long-term vision and goals.

The implication is therefore very logical that the contributing public sector authorities will also be involved in implementation. This means that the short-term objectives described in the plan, must be disaggregated into action programs specific to the implementing bodies.

There needs to be a coordinating body, but this need not be one authority. Even where it may be a single authority (e.g., a City Council), that authority will not be expected to do everything in the plan: each authority must take responsibility for its own subject matter and within its own area of jurisdiction.

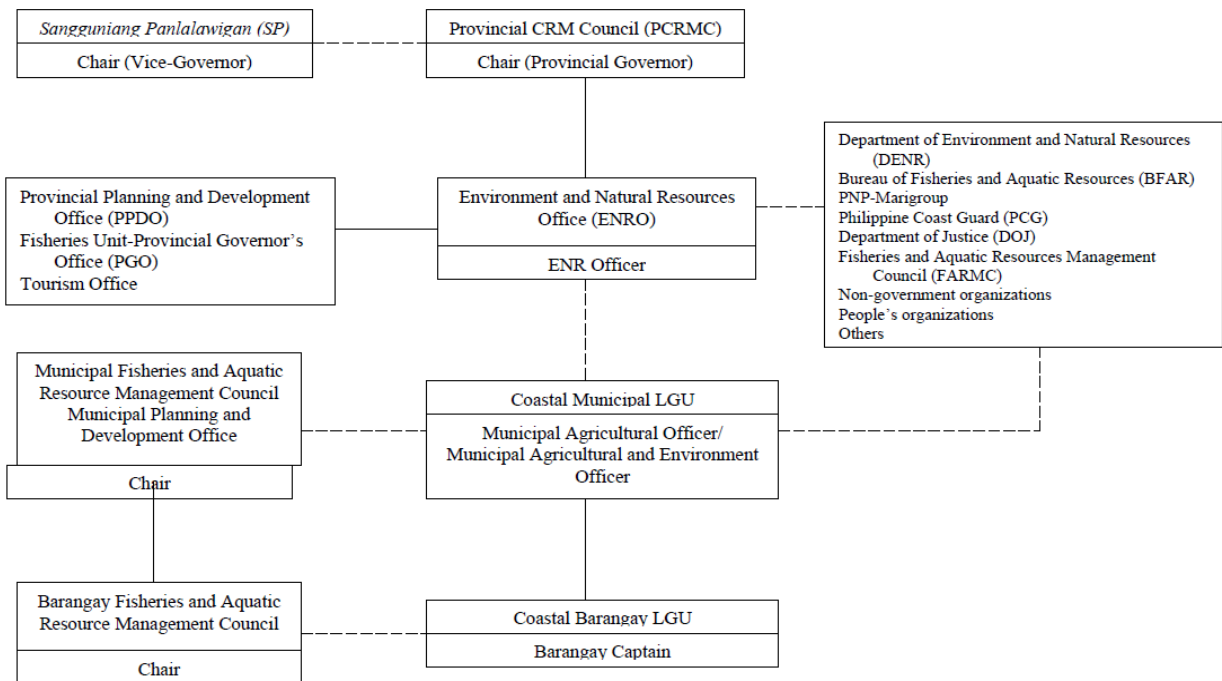
What is important is that the Spatial Plan describes the implementation process and the coordination system, whatever that may be – whether a single agency, or a coordinating body with representatives from several organizations. **DO NOT CREATE A NEW STRUCTURE IF THERE IS ALREADY ONE IN PLACE THAT CAN FULFIL THE PURPOSE INTENDED!**

The management structure for implementation needs to be set out clearly, especially with respect to how different types of decisions will be taken. Monitoring the progress of implementation against agreed timelines and budgets will need to be described. As time goes by, experience shows that “nothing succeeds as planned.” Unexpected events will occur, as will slippages in progress. This means that feedback from the monitoring will suggest changes to the program. The Plan needs to describe how this feedback will occur, and how changes in the implementation program will be agreed upon.

When describing the management structure it is important to check that:

- The proposed structure is accepted and agreed upon;
- That the key elements – especially the coordinating entity – has formal authority to fulfil its functions;
- That the requisite staff members are in place and know their roles.

INTERAGENCY COORDINATING STRUCTURE FOR CRM



Organization Chart of Coastal Resource Management in Davao del Sur Province, Philippines
 Source: Province of Davao del Sur, Provincial Coastal Resource Management Plan, 2001-2005. p 6-5

TASK 2 - IDENTIFY RESEARCH NEEDS, MONITORING AND FEEDBACK PROGRAMS

The Spatial Plan has a long-term horizon for its vision. Most of its focus is on the first five years. However, it is almost certain that the rapid review of the current situation will show many gaps in knowledge. The identification of focal study areas and themes will channel resources into those fields for which information can be gathered quickly in preparation for achieving change in the first five-year period. However, there will be many fields in which the time and financial framework will be insufficient to fill the knowledge gaps.

It is important to think beyond the first five years for the information that will eventually be needed but which cannot be gathered within the plan preparation period. The implementation program should include research elements to meet future needs. These may include long-term monitoring programs, ecosystem valuations, or specific but costly research studies relating to coastal processes, ecosystem adjustments to stress factors, climate change, or mathematical modeling of erosion, or land subsidence.

The important aspect to stress is that improvements to the knowledge base for future plans require action now, rather than sometime in the future. This is a good field in which to involve universities and other research institutions, whether domestic or international.

Monitoring, evaluation and learning need to be built into the implementation program. The Spatial Plan incorporates many specific action proposals. Each needs one or more indicators with which to measure the degree of achievement. The monitoring and evaluation program should be designed specifically with feedback mechanisms so that learning is made possible. This requires that:

- The spatial plan has clear, measurable objectives;
- Indicators are identified for these objectives;
- Means of verification are also identified;
- The monitoring agencies accept their roles and responsibilities to conduct the monitoring required, within their respective fields of jurisdiction;
- The information collected is collated by the implementation coordinating / managing agency, and used in processes of plan modification and learning; and
- Necessary financing is included to ensure that monitoring is carried out, and that the knowledge base is developed and used.

For monitoring and recording spatial change, GIS is a valuable tool. It can be coupled to satellite imagery, aerial photography, for charting natural system changes, and to development permitting systems for recording (approved) land-use changes.

TASK 3 - DESCRIBE ANY NECESSARY CAPACITY BUILDING (SPECIFICALLY TO ENABLE IMPLEMENTATION)

The plan, by nature, will present changes that should occur over the coming 5 years. The implementation program will indicate what must be done. Starting from the original list of activities and participating organizations, identify the skills and human resource and institutional needs to achieve each. Contact each participating organization and determine whether or not there is a need for strengthening capacity at the individual or institutional level. Capacity building may involve:

- Increasing the number of staff with particular skills;
- Training existing staff in new skills;
- Acquiring or adapting technology to do new things, or allow staff to be more effective;
- Adopting new methods and routines for getting work done; and
- Organising staff dispositions in new ways.

Encourage organizations to introduce capacity-building activities, and wherever these are directly connected to the implementation of the Spatial Plan, include them in the implementation program. Encourage organizations to use the Spatial Plan and its implementation program as a lever and motivation to increase financing for capacity building.

TASK 4 - PROVIDE A PROGRAM THAT INCLUDES PLAN REVIEW, EVALUATION AND UP-DATING (INCORPORATING RESEARCH FINDINGS) INCLUDING SEA MONITORING AND FOLLOW UP

Using the original list of activities, the research and capacity-building programs, compile a Gantt diagram. In the left column list the activities, research and capacity-building programs grouped by responsible organization. The columns to the right represent periods of time, from the expected starting date to at least five years into the future. Columns representing 3 or 6 months are probably adequate at this stage.

Ensure that monitoring, evaluation, feedback and reporting activities and deadlines are included in this Gantt diagram. The responsibility for this monitoring may be distributed among the stakeholders as appropriate. However, there should also be a collation of monitored data that the coordinating manager or management team can use to oversee progress. See the box below describing the typical contents of a monitoring report.

Information collection is relatively expensive, and therefore any monitoring program needs to be well thought through. A key element is the identification of Indicators that can be used to measure change. For comparative purposes, this implies that there is a baseline set of measurements of these same indicators against which the changes are set and analyzed. Wherever possible, select indicators that are already being collected as this reduces the additional costs. A good starting point for determining a set of indicators and a monitoring program is to base it on the Sustainability Evaluation Assessment done under Step 3. The box right gives a quick list of factors to consider when selecting indicators.

SMART Indicators

Indicators should be:

Specific to the characteristic that is being measured.

Measurable quantitatively, and comparable to equivalent data in time and place

Available & Accessible: use data already collected where possible

Reliable with a known degree of accuracy & dependability. Where indicators result from laboratory analysis, the specific methods used should be known, for calibration and comparative purposes

Time-bound: the frequency of measurements should be consistent with the purpose & the variability of the particular indicator known to exist over time and across space.

Indicators alone are not enough. Each one must be measured periodically – and the periodicity will vary according to the indicator and the subject matter being studied. Some will need to show seasonal variation so two or four times a year; others will need more or less frequent measurements.

Typical Contents of a Monitoring Report

1. Background of the plan (very brief).
2. Reminder of the long-term goals and short-term objectives.
3. Review of the expected activities and outputs for the reporting period.
4. Actual accomplishments of the reporting period.
5. Explanation of difference between expected and actual.
6. Changes observed through the monitoring of specific indicators, and comparison with the findings of the original sustainability evaluation assessment.
7. Lessons learned from the findings of accomplishments and observed changes.
8. Implications for the coming year, including recommendations and modifications on the plan, or on the style of implementation.
9. Expected activities and outputs for the coming reporting period (the original modified by the implications of the reality of the reporting period – in points 4, 6 & 7 above)
10. Appendix containing:
 - Tables of monitoring results
 - Tables of coming activities and outputs (similar to the table above specifying responsibilities, indicators, and references).

Extensive discussion will be needed with each implementation organization, in terms of more detailed design and timing of activities. In the implementation program, it is sufficient to provide a “thumbnail” description of the activity and the intended calendar quarters and year during which the activity will be done.

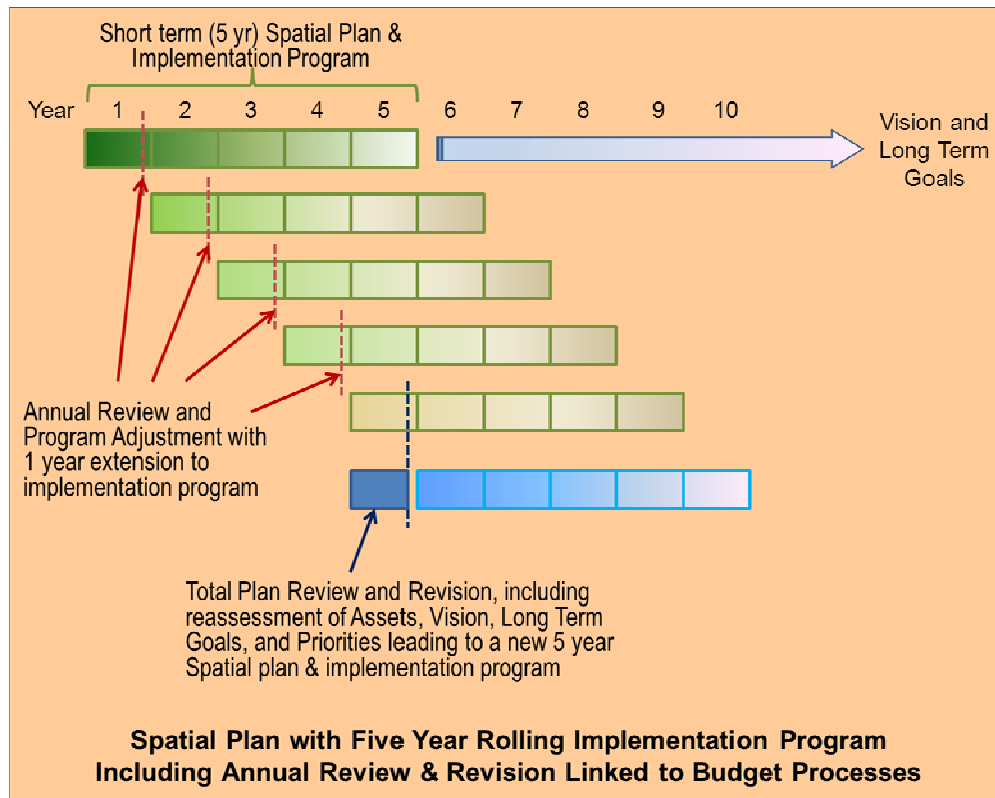
Much of the work can be implemented through projects. It is not necessary to provide all the details of every project at this stage. However, all projects should be identified and linked to an executing agency.

Dates should be decided upon when project descriptions shall be completed, and during which year each project will be implemented.

TASK 5 - LINK TO BUDGETING, TIMELINES AND STAKEHOLDER COMMITMENTS

Finance is a second major point of weakness in plan implementation, and must therefore be given special attention.

Financing the implementation of a plan can take many forms but will almost always be a combination. In some cases, a special fund may be set aside specifically for an integrated coastal zone development plan, based on the spatial plan. This may be created especially to fund significant capital inputs. In other cases, all implicated authorities and organizations may be expected to cover the activities for which they have legal responsibility. It is then a question for each and every one of them to address the financial costs within their own, regular budgeting systems.



Five Year Rolling Implementation Plan

Some aspects of the plan require very little new capital. For example, zoning regulations in themselves do not require capital investments after they are approved. However, they do need to be enforced, and therefore there need to be enforcement agents, and recurrent funds to allow them to do their work. This type of financing may be addressed in a straightforward manner through recurrent budgets. This is very different from a proposal to relocate a community being threatened by relative sea-level rise.

When the implementation program is disaggregated to appropriate authorities and organizations, each must be requested to calculate a reasonable budget for any capital investment costs, as well as recurrent operational costs. This process should be part of the negotiation step described above. There is little point in including in a plan, features or activities for which no organization is willing to find or provide finance.

The implementation program must have a timeline that is consistent with the financial flows available. For inputs from public sector agencies, this will mean that annual budgeting processes must be considered. Because a five-year implementation program is envisaged, organizations have up to four years to prepare for their various financial commitments. As many countries and organizations work with “Medium-Term Expenditure Plans” this is not a new phenomenon.

A rolling plan concept is recommended. A plan for the full five-year period is made, but divided into annual units. Each year as part of the budgeting process, the plan coordinating organization reviews progress, compiles information on deviations to the original implementation plan, and uses this information to modify the next year’s program and associated costs. At the same time, the financial planning horizon is extended one year. In the fourth year, a major review of the Spatial Plan is carried out that includes a re-evaluation of the long-term goals and the short-term priorities. This is the regular review and revision process for the plan and it is done in a manner consistent with the financial planning processes pertaining.

OUTPUTS FROM THIS STEP

At the end of this Step you should have the following results and outputs:

- Clear decisions and understanding of the Plan implementation coordination system, including management structure, roles and responsibilities, monitoring, feedback and revision processes;
- Agreed-upon research and monitoring programs that will provide additional foundations for future planning cycles;
- An agreed program of capacity building (especially institutional) specifically to enable implementation as well as to improve future CSP exercises;
- An agreed program of plan review, evaluation and up-dating of implementation, lessons learned, including SEA monitoring and follow-up;
- An implementation program that is linked to the public sector budgeting process, and including timelines, and stakeholder commitments.
 - These may include guidance on design of projects as a tool for implementation, together with a list of projects that will achieve the intended objectives for the 3-5 year horizon.

YOU CAN ALSO USE THE FOLLOWING CHECKLIST OF QUESTIONS:

- Have all relevant implementing organizations provided information on their respective programs of action?
- Has a coordinative oversight structure been designated, or designed and created to coordinate progress on the implementation program?
- Have long-term research programs been incorporated in the implementation plan?
- Has a plan monitoring program been designed, and are all roles and responsibilities relating to it clear? Does it include feedback and learning mechanisms?
- Have capacity-building needs, related to implementation of the plan, been identified (or assessments planned) so that all relevant organizations have the technical and personnel capacity to fulfill their expected responsibilities under the plan?
- Has the implementation program been linked to organizations' budget systems, so that progress can be reviewed and annual activities adjusted as required, year by year?
- Have thumbnail descriptions of projects and activities been submitted, with relevant details?
- Has an implementation program document been produced and agreed upon?

BIBLIOGRAPHY AND SOURCES

- Abuodha, P.A.O., and C. Woodroffe (2010) *Assessing vulnerability to sea-level rise using a coastal sensitivity index: a case study from southeast Australia*, J. Coast. Conserv. 14: 189-205.
- ADB (2004) *Appendix 1 Guidelines For Preparing A City Development Strategy, City Development Strategies To Reduce Poverty*, Manila, p 89.
- Anker, H.L., V.Nellemann, S.Svendrup-Jensen (1998). *Integrated Coastal Zone Management in Denmark*. Pg 4.
- Arquiza, Y.D. (1999) *Rhythm of the Sea, Coastal Environmental Profile of San Vicente*, Palawan, Philippines, Coastal Resource Management Project, Department of Environment and Natural Resources.
- Australian Government (2005) *Socio-Economic Impact Assessment Toolkit, A guide to assessing the socio-economic impacts of Marine Protected Areas in Australia*, Australian Government Department of the Environment and Heritage.
- Baker, J.M., M. Spalding and J. Moore (2008) *Sensitivity Mapping Worldwide: Harmonization and the Needs of Different User Groups*.
- Bensted-Smith, R., and H. Kirkman (2010), *Comparison of Approaches to Management of Large Marine Areas*, Flora & Fauna International (FFI), Conservation International (CI).
- Bindoff, N.L., J. Willebrand, V. Artale, A. Cazenave, J. Gregory, S. Gulev, K. Hanawa, C. Le Quéré, S. Levitus, Y. Nojiri, C.K. Shum, L.D. Talley and A. Unnikrishnan (2007) *Observations: Oceanic Climate Change and Sea Level*. In: *Climate Change 2007: The Physical Science Basis. Contributing of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds), Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.
- Broadhead, J.S. and R.N. Leslie (2007) *Proceedings of the Workshop on Coastal Area Planning and Management in Asian Tsunami-affected Countries*, 27-29 September 2006, Bangkok, Thailand, RAP Publication 2007/06, Food and Agriculture Organization of the United Nations, Regional Office for Asia and the Pacific.
- Christie, P., N.B. Armada, A.T. White, A.M. Gulayan and H.H.Y. de Dion (2006) *Coastal Environmental and Fisheries Profile of Danajon Bank, Bohol, Philippines*, Fisheries Improved for Sustainable Harvest (FISH) Project, Cebu City, Philippines, 63 p.
- Chua, Thia-Eng, (2006). *The Dynamics of Integrated Coastal Management: Practical Applications in the Sustainable Coastal Development in East Asia*, 468 p. Global Environment Facility/United Nations Development Programme/International Maritime Organization Regional Programme on Building Partnerships in Environmental Management for the Seas of East Asia (PEMSEA), Quezon City, Philippines.
- Cicin-Sain, B, and R. Knecht, (1998). *Integrated coastal and ocean management: concepts and practices*. Island Press.

- Coastal Council of NSW (2006) Coastal Design Guideline for NSW, Australia.
- COBSEA (2010) www.cobsea.org.
- Coombes, K. (2000) *Managing Coastal Development in an Urban Area, The Development of North Shore City's Coastal Controls*, New Zealand, Planning Quarterly, December 2000.
- Cooper, L.M. (2004) *Guidelines for Cumulative Effects Assessment in SEA of Plans*, EMPG Occasional Paper 04/LMC/CEA, Imperial College London.
- Dalal-Clayton, B. and B. Sadler (1998) *The Application of Strategic Environmental Assessment in Developing Countries*. Environmental Planning Issues No. 18. London: IIED.
- Dalal-Clayton, B. and B. Sadler (2004) *Strategic Environmental Assessment: A Global Overview*. London: IIED and Earthscan.
- DEAT (Department of Environmental Affairs and Tourism) and CSIR (2000) Guideline Document: Strategic Environmental Assessment in South Africa. Pretoria, South Africa.
- De Jesus, E.A., D.A.D. Diamante-Fabunan, C.L. Nanola, A.T. White, and H.J. Cabangon (2001) *Coastal Environmental Profile of Sarangani Bay Area*, Mindanao, Philippines, Coastal Resources Management Project, Department of Environment and Natural Resources.
- Department for Communities and Local Government (2009) *Multi-criteria Analysis: A Manual*, London, www.communities.gov.uk.
- Department of the Environment, Welsh Office (1992) Planning Policy Guidance: Coastal Planning, PPG 20, September 1992.
- Department of Environment and Natural Resources, Bureau of Fisheries and Aquatic Resources of the Department of Agriculture, and Department of the Interior and Local Government (2001) *Philippine Coastal Management Guidebook No. 7: Managing Impacts of Development in the Coastal Zone*, Coastal Resources Management Project of the Department of Environment and Natural Resources, Cebu City, Philippines, 108 p.
- Department of Environment and Natural Resources, Bureau of Fisheries and Aquatic Resources of the Department of Agriculture, and Department of the Interior and Local Government (2001) *Philippine Coastal Management Guidebook No. 5: Managing Coastal Habitats and Marine Protected Areas*, Coastal Resource Management Project of the Department of Environment and Natural Resources, Cebu City, Philippines.
- Department of Environment and Natural Resources, Bureau of Fisheries and Aquatic Resources of the Department of Agriculture, and Department of the Interior and Local Government (2001) *Philippine Coastal Management Guidebook No. 3: Coastal Resource Management Planning*, Coastal Resources Management Project of the Department of Environment and Natural Resources, Cebu City, Philippines, 94 p.
- Department of Environment and Natural Resources, Bureau of Fisheries and Aquatic Resources of the Department of Agriculture, and Department of the Interior and Local Government (2001) *Philippine Coastal Management Guidebook No. 1: Coastal Management: Orientation and Overview*, Coastal Resources Management Project of the Department of Environment and Natural Resources, Cebu City, Philippines, 58 p.
- Donnelly, A., B. Dalal-Clayton and R. Hughes (1998) *A Directory of Impact Assessment Guidelines* (Second Edition). London: IIED.

- Dusik, J. (ed.) (2001) *Proceedings of International Workshop on Public Participation and Health Aspects in Strategic Environmental Assessment*. Regional Environmental Centre for Central and Eastern Europe, Szentendre, Hungary.
- EAS East Asian Seas Congress (2009) *Partnerships at work: Local Implementation and Good Practices, Theme 1: Coastal and Ocean Governance, Workshop 5: The Science in Ecosystem-based Management*, 25 November 2009.
- EAS East Asian Seas Congress (2009) *Partnerships at work: Local Implementation and Good Practices, Theme 1: Coastal and Ocean Governance, Workshop 6: Land and Sea Use Zoning: Challenges and Opportunities*, 23 November 2009.
- EAS East Asian Seas Congress (2009) *Partnerships at work: Local Implementation and Good Practices, Theme 1: Coastal and Ocean Governance, Workshop 7: Making Mainstreaming Work: Driving National Action to Address Marine and Coastal Challenges*, 25 November 2009.
- EAS East Asian Seas Congress (2003) *Putrajaya Declaration of Regional Cooperation for the Sustainable Development of the Seas of East Asia, Sustainable Development Strategy for the Seas of East Asia*, Regional Implementation of the World Summit on the Sustainable Development Requirements for the Coasts and Oceans, December 2003.
- Ehler, C. and F. Douvère, (2009), *Marine Spatial Planning: a step-by-step approach toward ecosystem-based management*. Intergovernmental Oceanographic Commission and Man and the Biosphere Programme. IOC Manual and Guides No. 53, ICAM Dossier No. 6 Paris: UNESCO.
- Elliot, M (2005) *Estuarine, Coastal and Marine Science and Management: broad thoughts from home*, Presentation from the University of Hull, Institute of Estuarine & Coastal Studies (IECS), England.
- Environmental Management of the Coastal Zone Project (2006) *Cambodia Shoreline Management Strategy, Executive Summar*., Ministry of Environment and Danida.
- Environmental Management of the Coastal Zone Project (2002) *Physical Framework Plan Koh Kong Province*, Ministry of Environment and Danida.
- European Commission (2009) *The Economics of Climate Change Adaptation in EU Coastal States, Summary Report*, Socio-Economic Studies in the field of the Integrated Maritime Policy for the European Union.
- Farber, S.C., R. Costanza and M.A. Wilson (2002) *Economic and ecological concepts for valuing ecosystem services*, Ecological Economics 41: 375-392.
- Fenster, M.S. (2005) *Coastal Setbacks*, in Maurice L. Schwartz, (ed) (2005). Encyclopedia of coastal science. Springer, Netherlands pg. 866.
- Fredman, P., (1997) *En dag i skogen, 200:-*, Article in Forskning & Framsteg 2/97 (in Swedish).
- Green, S.J., R.D. Alexander, A.M. Gulayan, C.C. Migrino III, J. Jarantilla-Paler, and C.A. Courtney (2002) *Bohol Island, Its Coastal Environment Profile, Philippines*, Coastal Resource Management Project, Department of Environment and Natural Resources.

- Green, S.J., R.P. Monreal, A.T. White, T.G. Bayer (2000) *Coastal Environmental Profile of Northwestern Bohol, Philippines*, Coastal Resource Management Project, Department of Environment and Natural Resources.
- Greenhow, T. (ed). (2007) *The Strategic Urban Planning Guideline*. General Organisation for Physical Planning, Ministry of Housing, Utilities and Urban Communities. Cairo.
- Greenhow, T. (ed). (2008) *Strategic Governorate Planning Guidelines*. General Organisation for Physical Planning, Ministry of Housing, Utilities and Urban Communities. Cairo.
- He, S. and C.. Wang (2010) *Socio-Economic Impact Assessment for Exploration of Coastal Zone in Yantai Region*, Journal of Sustainable Development, March 2010, www.ccsenet.org/jsd.
- IMO/IPIECA (1994) *Sensitivity Mapping for oil Spill Response*, IMO/IPIECA Report Series, Volume One.
- IOPC Funds (2010), <http://www.iopcfund.org/>
- IPIECA/ITOPF (2007) *Oil Spill Compensation, A guide to the international conventions on liability and compensation for oil pollution damage*, a joint IPIECA/ITOPF Publication, February 2007.
- ITOPF (2010a), <http://www.itopf.com>
- ITOPF (2010b) <http://www.itopf.com/spill-compensation/cost-of-spills/>
- Kay, R. and J. Alder, (2005), *Coastal Planning and Management*, Second Edition, Spon Text, Taylor & Francis.
- King, P., D. Annandale and J. Bailey (2000) *A Conceptual Framework for Integrated Economic and Environmental Planning in Asia – A Literature Review*, Journal of Environmental Assessment Policy and Management, Vol. 2, No. 3, September 2000, pp. 279-315.
- King, S.D. and D.R. Green (2001) *Redefining the Limits of the Coastal Zone: Bridging the Gap Between Land and Sea Using Remote Sensing, GIS, and the Internet*, GeoCoast, Vol. 2, No. 1, pp 1-15, April 2001.
- Kjorven, O. and Lindhjem, H. (2002) *Strategic Environmental Assessment in World Bank Operations: Experience to Date – Future Potential*. Environmental Strategy paper No. 4, Environment Department, Washington DC. World Bank.
- Klein, R.J.T., R.S.J. Tol (1997) *Adaptation to Climate Change: Options and Technologies – An Overview Paper*. Technical Paper FCCC/TP/1997/3 United Nations Framework Convention on Climate Change Secretariat, Bonn Germany.
- KSLA (Royal Swedish Academy of Agriculture and Forestry) (2009) *Fisheries, Sustainability and Development, Fifty-two authors on coexistence and development of fisheries and aquaculture in developing and developed countries*.
- Lau, M. (2006) *Coastal Zone Management in the People's Republic of China – An Assessment of Structural Impacts on Decision-making Processes*, Working Paper FNU-28, DINAS-COAST Working Paper 4.
- Lee, N. and George, C. (eds.) (2000) *Environmental Assessment in Developing and Transitional Countries*. Chichester: John Wiley & Sons, Ltd.

- Lloyd's (2008) *Coastal Communities and Climate Change, Maintaining a Future Insurability*, 360 Risk Project, Driving the Debate on Emerging Risk.
- Lysekil Municipality (2006) Comprehensive Plan 2006, Document No. KF 2006-06-21.
- MA (United Nations Millennium Ecosystem Assessment), (2005), *Ecosystems and Human Well-being, Wetlands and Water, Synthesis*, MA and Island Press, World Resources Institute, Washington, D.C., www.millenniumassessment.org.
- MA (United Nations Millennium Ecosystem Assessment), (2003), *Ecosystems and Human Well-being, A Framework for Assessment*, MA and Island Press, World Resources Institute, Washington, D.C., www.millenniumassessment.org.
- MA (United Nations Millennium Assessment), (2005), *Global Assessment Report, Volume 3: Policy Responses*, MA and Island Press, World Resources Institute, Washington, D.C., www.millenniumassessment.org.
- McIntosh, D.J. and M.M. Epps (2008) *Mangroves in a Changing Climate*, in *Tropical Coasts*, Vol. 15, No. 2, December 2008.
- Ministry for the Environment, Manatu Mo Te Taiao (2008) *Preparing for Climate Change, A Guide to Local Government in New Zealand*, New Zealand Government, Publication No 891, <http://www.mfe.govt.nz/publications/climate/preparing-for-climate-change-guide-for-local-govt/preparing-for-climate-change-guide-low-res.pdf>.
- Mugerezi, E. (2006) *An Environmental Management Information System (EMIS) for Iringa Municipality, Tanzania Implementation Challenges*, InfoBridge Consultants Limited, Tanzania.
- National Oceanic and Atmospheric Administration (NOAA) (2010) *Adapting to Climate Change: A Planning Guide for State Coastal Managers*, NOAA Office of Ocean and Coastal Resource Management, <http://coastalmanagement.noaa.gov/climate/adaptation.html>.
- National Oceanic and Atmospheric Administration (NOAA) (2002) *Environmental Sensitivity Index Guidelines Version 3.0*, Hazardous Materials Response Division, NOAA Technical Memorandum NOS OR&R 11.
- Nelleman, C., Corcoran, E., Duarte, C. M., Valdés, L., De Young, C., Fonseca, L., Grimsditch, G. (Eds), (2009), *Blue Carbon. A Rapid Response Assessment*. United Nations Environment Programme. GRID-Arendal, www.grida.no.
- New South Wales Department of Planning (2006) *The CCA Integrated Decision Framework: A guide for sustainable land use planning*, prepared for the Comprehensive Coastal Assessment (Department of Planning) Sydney.
- Norman, B. (2009) *Planning for Coastal Climate Change, An insight into international and national approaches*, Future Coasts Program, Published by the Victorian Government Department of Planning and Community Development and Department of Sustainability and Environment, Melbourne, Australia, June 2009. www.climatechange.vic.gov.au/futurecoasts.
- O'Donnell, V., M. Cronin and V. Cummins (2003) *Sustainable Coastal Habitats: GIS Tools for Effective Decision Support*, Coastal & Marine Resources Centre, Environmental Research Institute, University College Cork.

- OECD (1997) *Strategic Environmental Assessment (SEA) in Development Cooperation: State-of-the-art-Review*. Final Report. Paris: OECD/DAC Working Party on Development Assistance and Environment.
- Office of the Prime Minister (2005) *Sustainability Appraisal of Regional Spatial Strategies and Local Development Documents, Guidance for Regional Planning Bodies and Local Planning Authorities*, November 2005, www.odpm.gov.uk.
- PEMSEA (2010) www.pemsea.org.
- Phan, Nguyen Hong (ed.), (2006), *The role of mangroves and coral reef ecosystems in natural disaster mitigation and coastal life improvements*. IUCN, MERD, Hanoi, Vietnam, 387 p.
- Provincial Government of Bataan (2007) *Coastal Land- and Sea Use Zoning Plan of the Province of Bataan*.
- Provincial Government of Davao del Sur (2001) *Provincial Coastal Resource Management Plan 2001-2005*. Province of Davao del Sur, Philippines.
- Queensland Government (2003) *Environmental Economic Valuation, An introductory guide for policy-makers and practitioners*, Prepared by the Inter-Departmental Committee (IDC) on Environmental Economic Valuation, August 2003.
- Sadler, B. (1996) *Environmental Assessment in a Changing World: Evaluation Practice to Improve Performance*. (Final Report of the International Study of the Effectiveness of Environmental Assessment). Canadian Environmental Assessment Agency and International Association for Impact Assessment, Ottawa.
- Sadler, B. (1999) A Framework for Environmental Sustainability Assessment and Assurance, in Petts, J. (ed.) *Handbook of Environmental Impact Assessment* (Vol. 1). Blackwell Scientific, Oxford. (pp. 12-32).
- Sadler, B. (2001a) A Framework Approach to Strategic Environmental Assessment: Aims, Principles and Elements of Good Practice, in Dusik, J. (ed.) *Proceedings of International Workshop on Public Participation and Health Aspects in Strategic Environmental Assessment*. Regional Environmental Centre for Central and Eastern Europe, Szentendre, Hungary (pp. 11-24).
- Sadler, B. (2001b) EIA Reconsidered, *Environmental Assessment Yearbook*. Institute of Environmental Assessment and Management, Lincoln and EIA Centre, Manchester (pp. 8-12).
- Sadler, B. (2002) From environmental assessment to sustainability appraisal? *Environmental Assessment Yearbook 2002*, Institute of Environmental Management and Assessment, Lincoln and EIA Centre, University of Manchester (pp. 145-152).
- Sadler, B. and Verheem, R. (1996) *Strategic Environmental Assessment: Status, Challenges and Future Directions*, Ministry of Housing, Spatial Planning and the Environment, Publication No. 53, The Hague.
- Sharples, C., C. Attwater and J. Carley (2008) *Three Pass Approach to Coastal Risk Assessment*, IPWEA 2008.

- Siry, H.Y. (2007) *Making Decentralized Coastal Zone Management Work for the Southeast Asian Region: Comparative Perspectives*, Division for Ocean Affairs and the Law of the Sea, Office of Legal Affairs, The United Nations, New York, 2007.
- Shintaro, G., O. Masumi, H. Seiichi, S. Nobuhiro, S. Kunihisa and S. Kazuko (2004) *Environment Sensitivity Analysis for Near Shore Region Using GIS Based ESI Map*, Faculty of Geo-Environmental Sciences, Risho University, Japan.
- Snover, A.K., L. Whitely Binder, J. Lopez, E. Willmott, J. Kay, D. Howell, and J. Simmonds (2007) *Preparing for Climate Change: A Guidebook for Local, Regional, and State Governments*. Center for Science in the Earth System (The Climate Impacts Group), Joint Institute for the Study of the Atmosphere and Ocean, University of Washington. In association with and published by ICLEI – Local Governments for Sustainability, Oakland, CA, USA.
- Sotto, F.B., J.L. Gatus, M.A. Ross. M.F.L. Portigo and F.M. Freire (2001) *Coastal Environmental Profile of Olango Island, Cebu, Philippines*, Coastal Resource Management Project, Department of Environment and Natural Resources.
- SSPA Sweden AB (2003) *Socio-Economic Survey of the South Western Coastal Areas of Mauritius, Feasibility Study and Environmental Impact Assessment for Large Scale Sand Extraction in the Lagoon at La Prairie*, Project No 20012639, Report from 2003-01-31.
- Söderqvist, T. (2004) *Presentation av miljöekonomi (Introduction to environmental economics)*, National Economics, Stockholm University, (in Swedish)
<http://www.ne.su.se/education/grundutbild/a/ht04/mikro/soederqvist.pdf>
- Söderqvist, T., (1996) *Ekonomisk värdering av miljön: Metoder och svenska erfarenheter (Economic valuation of the environment: Methods and Swedish experiences)* Beijer Occasional Paper Series, Beijer International Institute of Ecological Economics (in Swedish).
- TEEB (The Economics of Ecosystems and Biodiversity) (2010) *The TEEB for Local and Regional Policy Makers*, Report from Sept 2010. www.teebweb.org
- TEEB (The Economics of Ecosystems and Biodiversity) (2009a) *The TEEB for National and International Policy Makers, Summary: Responding to the Value of Nature*.
- TEEB (The Economics of Ecosystems and Biodiversity) (2009b) *The TEEB Climate Issues update*, Report from Sept 2009. www.teebweb.org
- TEEB (The Economics of Ecosystems and Biodiversity) (2008) *The Economics of Ecosystems and Biodiversity Intermim Report*, from 2008. www.teebweb.org
- Tegner Anker, H., V. Nelleman and S. Sverdrup-Jensen (1998) *Integrated Coastal Zone Management in Denmark, Ways and means for further integration*, Discussion paper for the Transnational Seminar on the European Spatial Development Perspective, Göteborg, Sweden, October 1998.
- The Sustainable Scale Project (2010), *Ecosystem functions and services*,
<http://www.sustainablescale.org/ConceptualFramework/UnderstandingScale/BasicConcepts/EcosystemFunctionsServices.aspx>
- Titus, J.G. (2003) *Some Social and Policy Implications of Shore Erosion*, Presentation by U.S. Environmental Protection Agency.

- Tridech, S., P. Simcharoen and P. Chongprasith (2008) *Using Coastal Environment Sensitivity Index Map as a Tool for Integrated Coastal Zone Management*, Marine Environment Division, Water Quality Bureau, Pollution Control Department, Bangkok, Thailand.
- Tropical Coasts (2005) Special Issue on: *Call to Action: Disaster Risk Reduction and Post-Tsunami Reconstruction*, Vol. 12, No. 1, July 2005.
- Tropical Coasts (2005) Special Issue on: *Port Safety, Security, Health and Environment*, Vol. 12, No. 2, December 2005.
- Tropical Coasts (2003) Special Issue on: *The Regional Approach, Harnessing Intergovernmental Partnerships for Sustainable Development of the World's Seas*, Vol. 10, No. 1, July 2003.
- Tropical Coasts (1999) Special Issue on: *Getting Our Acts Together, Resolving Conflicts in Coastal Zones*, Vol. 6, No. 2, December 1999.
- Turner, R.K., W.N. Adger and I. Lorenzoni (1998) *Land-Ocean Interactions in the Coastal Zone (LOICZ), Towards Integrated Modelling and Analysis in Coastal Zones: Principles and Practices*, LOICZ Reports and Studies No. 11, Core Project of the International Geosphere-Biosphere Programme: A Study of Global Change (IGBP) of the International Council of Scientific Unions (ICSU).
- Ulep, E.M.C. (2002) *GIS Cookbook for LGUs: Guidelines for Comprehensive Land Use Planners using GIS*, Housing and Land Use Regulatory Board (HLURB), Philippines, Paper 1197.
- UNECE (2007) *Protocol on SEA, Resource Manual to Support Application of the UNECE Protocol on Strategic Environmental Assessment*, United Nations Economic Commission for Europe & Regional Environmental Center for Central & Eastern Europe.
- UNEP/COBSEA (2010), *State of the Marine Environment Report for the East Asian Seas 2009*, Ed. Chou, L.M., COBSEA Secretariat, Bangkok, 156 p.
- UN/UNEP (2010), *United Nations Environment Programme Medium-term Strategy 2010-2013*, Environment for Development, UNEP/GCSS.X/8.
- UNEP (2009) *Opportunities in Environmental Management for Disaster Risk Reduction: Recent Progress, A Practice Area Review: In contribution to the Global Assessment Report on Disaster Risk Reduction*, United Nations Environment Programme.
- UN-HABITAT (2010) *State of the World's Cities 2010/2011*.
- Valle, I.A., M.C.B. Cristobal, A.T. White and E. Deguit (2000) *Coastal Environmental Profile of Malagal Bay Area, Davao del Sur, Philippines*, Coastal Resource Management Project, Department of Environment and Natural Resources.
- Velasquez, J. and P. Tran, (2010), *Climate Change Adaptation and Disaster Risk Reduction – Institutional and Policy Landscape in Asia*, Draft report July 2010, ISDR.
- Willows, R. and R. Connell (2003) *Climate Adaptation: Risk, Uncertainty and decision-making*, UKCIP Technical Report, May 2003, UK Climate Impact Programme, Department for Environment, Food and Rural Affairs, and Environment Agency.
- Woodroffe, C.D. and P.A. Abuodha (2009) *GIS where have we been? Where are we going?* Presentation from School of Earth and Environmental Sciences, University of Wollongong, Australia.

- World Bank (2009) *Reshaping Economic Geography*, World Bank Report 2009.
- World Bank (1999) *Case Studies on Regional and Sectoral EA: An Analysis of Lessons Learned*. Washington DC: World Bank.
- World Bank (1991) *Environmental Assessment Sourcebook Vol. 1: Policies, Procedures and Cross-Sectoral Issues. Technical Paper Number 139*. Washington DC: World Bank.
- WSP Africa Coastal Engineers (2010) *Development of a Methodology for Defining and Adopting Coastal Development Setback Lines*. Department of Environment Affairs and Development Planning, Provincial Government of the Western Cape, South Africa.
- Yambao, A.C., A.T. White, W.E. Ablong and M.R. Alcala (2001) *Coastal Environmental Profile of Negros Oriental, Philippines*. Coastal Resources Management Project, Cebu City, Philippines.

ANNEX 1

TOOLS FOR ASSESSING HAZARDS AND RISKS

The most commonly used tool for assessing hazards and risks is the APELL process (Awareness and Preparedness for Emergencies at Local Level). This document will not provide the full details of the process, but indicates the basic steps and how they relate to the Spatial Plan. Readers interested in more details are encouraged to turn to the UNDP-ISDR and the Asian Centre for Disaster Prevention in Bangkok. The basic procedure is as follows:

1. The team doing the work, or ordering it, should decide on the objectives for the analysis, and in particular the level of detail to achieve it. A map of the area to be covered will be needed at sufficient scale to match the level of detail sought. A table should also be developed as follows:
2. List the objects to be covered in the analysis in the first column. "Risk objects" are those features that are or contain a particular hazard. The objects should be located on the map. These can be broadly grouped into: natural, anthropogenic and anthropogenically enhanced natural sources of risk. Natural "risk objects" include areas liable to flooding (from rivers or the sea, or poorly drained urban areas), areas subject to coastal erosion, steep unstable slopes, and so on. Some hazards, such as hurricanes are not location specific, but within an area, some parts may be more exposed and vulnerable to hurricanes than others. Anthropogenic risk objects include industrial areas where dangerous processes occur, dangerous materials are used, stored, transported or disposed of. This means that roads designated for dangerous goods transport, railways, and ports will usually be included in the list. Other risk objects may be waste disposal sites, sewerage works, high voltage power lines and so on. Anthropogenically enhanced natural risk objects are those in which human activities have made natural hazards more risky. For example, steep slopes cleared of vegetation for residential use, will increase the likelihood of a disaster occurring, and will also increase the impact of such a disaster. Settlement of flood prone areas increases the risk level, because for the same level of probability of flooding occurring, the risk increases because of the greater impact such a flood would occur. It is precisely these types of situations that the Spatial Plan can help avoid, by imposing restriction on development in naturally hazardous areas.
3. In the second column provide a more specific indication of the process through which the hazard manifests itself. For example, the hazard inherent in steep unstable slopes is the process of land or mudslides. In industrial cases, there may be specific hazards involved in storing certain goods. Some processes, such as in the food sector, include biological hazards, exposing humans to disease vectors. Depending on the level at which the study is done, it may be sufficient to identify and entire industrial area as a risk object, where dangerous processes may include everything from transportation, storage, use, and disposal of hazardous materials, but could also be a general source of air, water, soil, and noise pollution – all of which involve risks for humans in the vicinity. At a more detailed level, individual industrial buildings must be catalogued. The procedure is the same.
4. The third column asks for quantification or scale of the hazard. The accuracy of this information will reflect the purpose of the exercise and its level of detail. The information is used to determine the scale and likely nature of an accident that could occur relating to this risk object.

For purposes of the Spatial Plan as such, more generalized depiction as minor, significant, great, very great, may suffice. Where chemicals are involved one would also try to note the level of toxicity in this column. This will be a matter of discussion among the team member doing the study.

5. The risk type is listed in the fourth column. Here one could expect to find descriptive words like landslide, building collapse, flooding, release of dangerous gas, fire, explosion, ecosystem collapse,
6. The fifth column lists the objects, areas, people and activities that are threatened by each risk object. To some extent in the context of the Spatial Plan having a sustainability and ecosystem-oriented approach, this column can be used as a starting point – for example in identifying sensitive habitats that are generally at risk from a multitude of different development activities – from air and water pollution, encroachment, over-utilization and so on. Certain cultural monuments, for example those constructed in limestone or other calcareous rocks, may be at risk from heavily polluted air. Such threatened objects can be noted first, and then the risk object(s) collectively can be identified. Normally, if no people, property or environmental features are significantly threatened by a risk object, that particular risk object can be ignored in subsequent parts of the analysis.
7. The consequences of an event occurring are described in the next column. For the Spatial Plan the consequences can be described according to how wide-spread they are, how long lasting they are, and how devastating they may be, but in this column it also interesting to note the type of consequence. The extent or coverage of the consequences will be important in the Spatial Plan for identifying buffer zones; the type and probable severity may influence other conditions for certain activities. For example, earthquake zones may be classified according to their severity, but it is not always possible to avoid habitation in such zones. Therefore, other regulations and conditions are imposed to reduce the impact of an earthquake on life, property and the environment.
8. The seriousness column relates to the impact on Life (L), Environment (E) and Property (P). The Speed (S) with which an event may develop will also be important in determining how many people, how much property and environment may be affected within a given time, thereby affecting the success of the response. These columns are used to determine the seriousness of an accident or event occurring. Seriousness is judged within 5 classes as illustrated in the risk matrix below.
9. The next two columns are for noting the probability of an emergency event occurring and the Priority this hazard should receive in being addressed. Probability is generally divided into 5 classes with 5 being “very probable” (frequency of more than once a year) to 1 “improbable” (less than once every 1000 years). See the matrix below. Readers who are interested are encouraged to study the literature for more details on this aspect of the procedure.



RISK MATRIX – PROBABILITIES AND CONSEQUENCES

As noted above, the value of this procedure for the Spatial Plan is to:

- Identify the type and location of risk objects;
- Identify the type and location of features at risk – including environmental, habitat, cultural, community, or infrastructural features;
- Use the spatial plan to impose locational restrictions on risk objects in relation to features at risk, using a variety of measures such as buffer zones, setback lines;
- Use the spatial plan in its zoning components to regulate conditions for development where certain hazards are unavoidable, so as to reduce the impact of any accident or event occurring.
- Identify in particular, vulnerable groups of people, who are exposed to one or a multiplicity of hazards, and who are relatively unable or unlikely to successfully recover from a disaster.
- Identify and prioritize for the implementation program any particular activities that are warranted to support a move towards a safer society. For example, such activities might include a relocation program for social groups who, because of their current location, are particularly vulnerable to disasters.

A newly released report – *Harnessing Synergies: Mainstreaming Climate Change Adaptation in Disaster Risk Reduction Programmes and Policies* (Harris & Bahadur, 2011) – provides a good overview of the principles and steps involved. As an initial contribution, this report draws on the insight and experience of over 100 disaster risk managers from a range of contexts across Africa and Asia. The report provides practical tips, action points, advice and guidance on the process of mainstreaming. The focus of the report is on mainstreaming CCA into DRR programmes and policies.

Practitioners and policy makers working across the globe are recognizing the importance of bringing together disaster risk reduction (DRR) and climate change adaptation (CCA). There is increased recognition of the value of mainstreaming CCA into DRR activities, to reduce vulnerability and increase resilience. This report is the foundation for a process that seeks to answer questions that are fundamental to mainstreaming CCA into DRR: who leads such initiatives and what motivates these actors?; what ‘real world’ challenges are faced and how are they overcome?; what tactics and methods can be employed to undertake mainstreaming and what kinds of expertise and knowledge is needed?

Over the past ten years, the agenda to bring DRR and CCA closer together has continued to gain momentum. However, convergence has continued to progress at a faster rate conceptually and on paper than in practice.

Despite sharing common goals of reducing poverty and vulnerability and increasing resilience, CCA and DRR often lack the necessary political backing and financial commitment. In the current economic climate, the trend for donors and governments wanting ‘hard’ results and physical development investments may continue to hamper much needed support for the ‘softer’ activities associated with mainstreaming.

A conceptual tool known as the Zebra has been developed. The Zebra is a process that can be used by practitioners and policy makers as it recognizes that no two contexts are the same. The main purpose of the tool is to provide a structured framework for programme managers to think through the mainstreaming process. The Zebra provides a means to think through real-life situations in order to identify handy tips, action points, insights and guidance about how to mainstream CCA into DRR policies and programmes.

There is no single pathway to mainstream CCA into DRR programmes and policies and there are no ‘silver bullets’ for developing climate-smart DRR approaches. It is possible, however, to learn from experience, debate ideas and identify which suggestions are most likely to be effective in a given scenario. It is important for disaster-risk managers to understand the nature of change that they are aiming for and envision the end state of the mainstreaming process in order to carefully define the direction in which they are moving.

Mainstreaming demands changes in our operating structures, the institutional ‘homes’ and the way funding channels and policies govern the work carried out in the name of CCA and DRR.

Even gradual changes in the climate can increase the vulnerability of the poor and make the work of disaster risk managers more difficult. Thus, there is the call for greater mainstreaming of CCA into DRR and their mainstreaming into development more broadly. Exploiting the overlap between CCA and DRR is one way to ensure disaster risk managers can continue to have a positive impact on reducing vulnerability.

Climate change adaptation is high on the international political agenda and has the potential to receive significant support from new funders. The connections between CCA and DRR are being emphasized in national and international frameworks and agreements.

Disaster Risk Management (DRM) needs to significantly shift its approach to risk calculation and intervention design to incorporate climate modelling and its associated uncertainty. There are a number of points of overlap between CCA and DRR that have the potential to be exploited to enable improved and more effective interventions.

Broadly speaking, it is understood that CCA aims to help communities undertake long-term adjustment to changing average climate conditions, whereas DRR entails engaging with a wide variety of potential extreme events. Consequently, CCA and DRR are not the same and should not be conflated. DRR deals with all hazards, including geophysical hazards. CCA deals exclusively with climate-related hazards associated with changes in the average mean climate conditions. That said, both CCA and DRR

aim to reduce the impact of hydro-meteorological hazards, but on different timeframes. CCA aims to help communities undertake long-term adjustments to changing average climate conditions; DRR focuses on dealing with short-term occurrences.

The majority of CCA and DRR processes at national level continue to function in parallel. The Zebra is a conceptual tool that provides disaster risk managers with a way to think through real-life situations by presenting real or invented scenarios on mainstreaming CCA into DRR, and DRR into broader development programmes. The Zebra challenges practitioners and policy makers to reflect on their own learning, experience and action to draw out practical advice for mainstreaming.

The Zebra is based on the premise that promoting and harnessing links between CCA and DRR requires constructive, actionable guidance. It provides a means to identify handy tips, action points, insights and guidance about how to integrate CCA into DRR policies and programmes. Three conceptual pillars form the basis of the tool. The Zebra is a tool which allows programme managers who have been sharply focussed on day-to-day management of individual projects, to pause, reflect and creatively devise strategies to ensure their work can continue to be relevant despite the exigencies of a changing climate.

ANNEX 2

COMBINING SEA AND LAND USES IN ONE PLAN

Case study: Philippine Bataan Province Coastal Land- and Sea-use Zoning Plan (CLSUZP)

The CLSUZP as it is made for the Philippine Province of Bataan is considered as a tool to improve the use of coastal resources. The province of Bataan is a peninsula composed of 11 municipalities and one city with a land coverage of 1,373 km². The Manila Bay area is one of the Philippines' major avenues that cater for a lot of economic activities for continuous growth and development ranging from shipping, industrial, commercial, fishing, aquaculture to tourism activities. The complete zoning scheme for Manila Bay is therefore necessary to resolve the multiple use conflicts and address various issues and problems that continue to build up. Bataan is the pilot area for the coastal use zoning of Manila bay.

“The Comprehensive Land Use Plans (CLUPs) of each municipality and the Provincial Physical Framework Plan are linked and harmonized with this coastal use zoning plan to provide a more comprehensive Integrated Land – and Sea-Use Plan for the province.”



The main planning components used in the Bataan plan are the selected twelve zones and their use characteristics:

NEW COASTAL LAND AND SEA USE ZONES

1	Agricultural Zone (<i>farms and fishpond</i>)
2	Aquaculture (<i>fish pens/cages, shellfish farms</i>)
3	Built-up Area Zone (<i>Commercial, Residential, Institutional</i>)
4	Coral Reef Restoration and Protection Zone
5	Industrial Zone
6	Mangrove & Mudflat Restoration and Protection Zone

7	Municipal Fishing Zone
8	Sanctuaries
9	Seagrass Restoration & Protection Zone
10	Shipping & Navigational Use Zone
11	Tourism Zone (<i>recreation, cultural & eco-tourism</i>)
12	Traditional Fishing Zone

	New
	Existing
	NA

Note: *Fish Sanctuary, Marine Turtle Sanctuary (Strict Protection)*
Mangrove, coral, seagrass (Restoration, Protection and Habitat Management Zone)

The following extracts from the plan illustrate the dominant permitted, the prohibited and the regulated uses that can pertain to each of the 12 zones. The legislation on which these decisions are made is enumerated and the relevant authority specified.

Table 7. Guidelines for the Coastal Land- and Sea-Use Zones (continued from page 52)

ZONES	ALLOWED USES			PROHIBITED/ RESTRICTED USES	SUPPORTING NATIONAL POLICIES	RESPONSIBLE AGENCY/ INSTITUTION
	DOMINANT	COMPATIBLE	REGULATED			
Coral Reef Restoration and Protection Zone	<ul style="list-style-type: none"> Breeding, spawning, feeding area for marine fishes, turtles, etc. Coral reef sanctuary or protected area Fish sanctuary 	<ul style="list-style-type: none"> Marine reserve Tourism Research and study 	<ul style="list-style-type: none"> Tourism and recreation (diving & snorkelling) Research and study 	<ul style="list-style-type: none"> Collection/ harvesting of any type of corals All fishing activities Use as shipping and navigational lane 	R.A. 9147; R.A. 7586; R.A. 8550; P.D. 1219	LGUs* DENR DA-BFAR PNP PCG DOT DOST-PCMARD POs, NGOs Private sector
Industrial Zone	<ul style="list-style-type: none"> Industrial development 	<ul style="list-style-type: none"> Commercial 	<ul style="list-style-type: none"> Establishment/ expansion of refinery oil and chemical depot, quarrying activities, & mangrove planting 	<ul style="list-style-type: none"> Tourism development Fishing activities Untreated liquid, solid, toxic, and hazardous waste disposal Residential 	P.D. 1152 Sec.24; R.A. 9003; R.A. 9275; R.A. 6969; P.D. 1151; P.D. 1586; R.A. 7942	LGUs* DTI PEZA DENR PPA
Mangrove and Mudflat Protection Zone	<ul style="list-style-type: none"> Mangrove planting. Rehabilitation and protection Food and sanctuary for birds and marine life Mangrove nursery and collection of propagules for replanting Protection of shoreline 	<ul style="list-style-type: none"> Ecotourism sites Bird sanctuary Research and educational purposes; avifauna monitoring Conversion of abandoned fishponds back into mangroves. 	<ul style="list-style-type: none"> Mudcrab culture Collection of dried branches for fuelwood Establishment of ecotourism structures (e.g., boardwalks, etc.) Collection of associated mangrove species, (e.g., nipa) 	<ul style="list-style-type: none"> Cutting of mangroves Conversion of mangrove areas into other uses Building structures within mangrove areas Encroachment of built-up areas (settlement) 	R.A. 8550; P.D. 705; R.A. 9147; R.A. 7161; R.A. 9003; DENR DAO 15-90; P.D. 1067, Art. 51; CA 141; CA349	LGUs* DENR DA-BFAR DOT PNP POs, NGOs
Mudflats	<ul style="list-style-type: none"> Mudflat protection Habitat for shrimp, crabs, etc. 	<ul style="list-style-type: none"> Bird sanctuary Research and educational purposes 	<ul style="list-style-type: none"> Mangrove planting Dredging for fishing vessel navigational lane 	<ul style="list-style-type: none"> Conversion/ reclamation of mudflat areas (e.g., settlement, commercial, & industrial purposes) 		

The guideline, regulation status and prevalence of the zones are then listed and the geographic distribution of the zones for each municipality is then presented in maps and tables.

ANNEX 3

WORKING WITH STAKEHOLDERS

Basic progression in stakeholder identification and analysis:

1. Locate your CSP exercise as local, intermediate, or national level. This should affect your choice of stakeholders and stakeholder group representation.

2. Identify within your own organization, who the primary decision-makers are with respect to your CSP exercise. Include those that affect financing decisions. Your list will include your own immediate supervisor. It is vital that you keep these internal stakeholders up-dated on your progress and the processes that you are using. It is also vital that you work for their support.

3. Identify those other public sector authorities that are DIRECTLY involved in the management and administration of resources in the CSP area. These will probably include representatives of fisheries, agriculture, forestry, tourism, transportation, environment/conservation and local government administration at a minimum, but may include many more. Look even at departmental levels, e.g., responsibilities for commercial fisheries, artisanal fisheries, and aquaculture may lie in different units under the same authority. These authorities (or their local representatives) can be described as having a legitimate voice in the planning process, and should be brought actively into the process. There may be other bodies that have a more indirect role – that is, they are not “on the spot” and do not have daily operational functions, but may be important from a policy point of view.

4. Create a network diagram describing the linkages between these authorities. Note especially how information flows among them, and be aware of where you are likely going to turn for different types of information, influence, and support. Note which authorities have the reputation of having more or less “power” in pursuing their sectoral goals, possibly because of their own size and effectiveness, possibly because their sector has a high priority in government circles. Identify where there may be common interests and where there may be conflicts. These aspects will affect your work, and will need special approaches. In coastal areas, sectoral conflicts can arise between forestry and aquaculture, between artisanal and commercial fishing, between tourism and conservation, between conservation and urban development, and so on.

5. Identify commercial sector stakeholders. Depending on whether your plan is at national or local level, you may need to work with Chambers of Commerce and other sectoral associations at the national level, while possibly with individual large-scale enterprises at the local level. Be clear of their specific interests – both in terms of investment for profit and of public image and corporate social responsibility. Add these stakeholders to the network diagram, noting which private actors relate to which public sector authorities.

6. Identify civil society stakeholders, distinguishing between international or national non-government organizations, and local-based community- or faith-based organizations and interest groups. When working at the local level, ensure that there are civil society organizations that can assist in participating directly but also in encouraging the general public to participate. Note again any types of potential support or opposition to your work, but also among stakeholders (there may be antagonism between some civil society organizations and industries or between Community

Stakeholder Organizations (CSOs) and specific public sector authorities). Consider the possibility that your planning process can improve relationships and achieve win-win solutions to issues over which there are now clear differences of opinion. Add these stakeholders to the network diagram, indicating links (supporting or conflicting) between CSOs, private sector commercial interests and public authorities.

7. Determine how you will work with each category of stakeholder. It is not possible to use the same approach and the same mechanism for all. It is at this stage where you will need to develop your communications strategy and your engagement program. Link these aspects to the various stages of the planning process – especially in terms of eliciting basic technical information, formulating visions and long-term goals, doing special studies, formulating strategies, reviewing the plan and its zoning implications, as well as preparing the short-term implementation program. Your budget will affect your consultation program. On the other hand, a good stakeholder analysis that highlights the need for reconciliatory decision-making through engagement methods can also be a way to argue for a bigger communication and consultation budget.

The degree of stakeholder analysis that is needed will depend to some extent on whether or not there are contentious issues to address in the CSP area. Where there are many conflicting or competing interests over the same resource or location, there will be greater need to understand those interests and what groups support or oppose them (applying force field analysis for example). Special types of interaction, for example forums and workshops, may be needed to search for win-win solutions at key stages in the CSP process.

ANNEX 4

Some recommendations for organizing the documentation:

As an overriding principle – if the planning authority has a documentation or comprehensive information management system that incorporates all types of media, follow the rules of that system. If there is no such centralized system apply the following ideas:

- All planning projects should have a code – this might consist of a number and a name. The number could be the code number of the town being planned, for example. A coding system provides an easy way for relating information within a project, and between projects, even if these are at different hierarchical levels (i.e., village, municipality, district, province, economic region).
- Devote a part of a bookcase shelf to the project as a project team library. Keep reference material (bound reports, books, etc.) and binders holding loose papers.
- Organise loose papers – meeting notes and minutes, copies of correspondence, etc. – in binders, each clearly marked with the contents. Inside the binders organise material using dividers, and keep an up-to-date table of contents sheet inside the front cover.
- Digital material needs to be organised as well. If you don't already have one, create an organised system of digital folders for material and a structured database for raw data. Where possible and appropriate use this system as a model for hard copy documentation systems. In some situations planners will have their own computer and not be connected to a network. It is important in such situations to keep material under one digital folder, sub-divided into further folders. Folder names and structure on individuals' computers should be consistent with those on a common server – so that synchronisation is supported.
- Material on CDs and DVDs should be stored in a manner that will not damage the medium, and that is secure. If possible make a copy of each CD or DVD, store the original in a secure place and use only the copies.
- There will be a need to make copies of many documents, and for sharing documents. Do not lend originals of documents for extended periods of time. For shorter documents, make copies for lending out. Some documents are difficult to acquire. Do not lend these out – rather make a copy for lending.
- There may be a need to separate secret or confidential information from that which is available to the full team. The rules of the organisation should be followed in such a case. Normally any original household survey material should be kept secure in accordance with current regulations.

A geographical information system, whether it is called an environmental information management system, a spatial database, or geospatial databank, is an immensely valuable and powerful tool in planning. If the country has a geospatial data system, use it, being careful to apply its rules. This will save a great deal of time and effort later. If there is no such system, seek advice on how to establish one. One specific CSP exercise is not an adequate basis for establishing a long-term geo-database structure and system, but to the

extent possible, its own database structure should be designed to be easily adapted and transferred to a future common system.

Many countries have developed their own geo-databases for use in planning and environmental management. An example is the Philippines' GIS Guidebook available at: <http://www.cookbook.hlurb.gov.ph/book/export/html/34>.

The UN-Habitat has produced Guidelines on developing an Environmental Management Information System. Although it is biased to urban applications, its principles can be applied even in CSP. It is available at http://www.unhabitat.org/downloads/docs/2907_70876_EMIS_.pdf

ANNEX 5

Subject/Theme/ Sector	Items to check and include depending on relevance for plan purpose
Administrative Jurisdictions & Organizations	<ul style="list-style-type: none"> • List all public sector authorities active in the area together with a description (or on a map) of their area and scope of jurisdiction; • Identify significant private sector and non-government/civil society organizations with special interests relevant to coastal resource management and sustainable development. Indicate their particular interests. • Note overlaps, uncertainties, and gaps, especially for specific types of coastal resources (e.g., who is responsible for overseeing issues related to salt production by evaporation ponds?)
Policies, Legislation and regulation	<ul style="list-style-type: none"> • All policies and legislation that are relevant for CSP, resource management, and coastal development. Include international conventions of relevance to which the country is signatory and other legal instruments, state, provincial or district-level legal instruments, and local level instruments, development contracts, by-laws, resource management instruments. Some of these have limited spatial bounds, some have limited life times. These aspects should be noted. <p>Check especially for legislation on:</p> <ul style="list-style-type: none"> • Coastal and marine area protection • Environmental management (designation and management of protected areas) • Resource sectors: fisheries, water, forestry, mining (including exploration), oil and gas extraction, and so on • Pollution control – air, water, marine, soil/land, including waste management • Disaster management and emergency services • Social security • Impact assessment – whether EIA, SIA at project or strategic level <p>Check for existing policies, strategies or even guidelines on:</p> <ul style="list-style-type: none"> • Development of benthic structures • Development of marinas • Deployment of pipelines and cables • Planning, construction and maintenance for enhancement and protection of shorelines • Management of beaches • Extraction of beach sand • Dredging of estuaries, harbours and ports • Management of coral reefs • Management of seagrass and seaweed • Management of mangroves and other coastal wetland areas and lagoons • Management of estuaries • Management of sand dunes • Restrictions on coastal development • Water-front Tourism development • Marine and coastal reserves, parks and other protected areas • Management of coastal fisheries • Biodiversity and control of alien species

Subject/Theme/ Sector	Items to check and include depending on relevance for plan purpose
	<ul style="list-style-type: none"> • Hazard management, whether natural or anthropogenic, and risk assessment • Disaster preparedness, disaster response, rehabilitation and recovery, emergency services, contingency planning • Mitigation of, and adaptation to climate change • Strategic impact assessment, and socio-economic and environment impact assessment <p>Note gaps, known conflicts or confusions.</p> <ul style="list-style-type: none"> • Extract useful elements that can guide specific parts of the plan. National standards, for example, can be considered as the State’s ‘vision’ in terms of quality within the particular subject of the standard. National water quality standards express the minimum quality of water that should be provided to urban households. Where these standards are not met, they continue to represent a vision of what should be. There may be similar standards for other environmental factors, such as air and soil quality. There may be other norms and standards applying to land use, density of settlement, definition of hazardous conditions and so on. <p>Note known or cited deficiencies in enforcement. This will be important in gauging the particular needs for plan implementation and follow-up.</p>
Current maps and plans	<p>Identify currently used base maps, topographic maps at different scales, produced by national mapping authority. How recent are they? How recent are the remote sensing products on which they are produced? (this information should be available on the topographic sheets produced by the authority.) Note whether or not these products will be suitable for use as base maps for the spatial plan.</p> <p>Identify existing plans that cover all or part of the area concerned. Include:</p> <ul style="list-style-type: none"> • Integrated physical development plans, urban plans, zoning plans; • Environmental management plans, conservation area plans; • Resource management plans, like coral reef or mangrove management plans; • Habitat maps and maps of resource utilisation; • Sectoral plans illustrated with maps (e.g., plans for road, rail and harbour development) • Habitat maps compiled for sensitivity maps and response plans; • Contingency plans, especially with respect to where hazards exist, and where specific risks exist (e.g. areas liable to flooding). <p>The purpose for this overview is to note sources of valuable spatial data that can be quickly gathered and used.</p> <p>Look specifically for spatial plans – physical development plans, like urban plans, regional development plans, District plans, provincial plans – plans that state WHERE different types of development may or will occur. For these plans note especially the following:</p> <ul style="list-style-type: none"> • Is the plan legally binding, or advisory? If legally binding, is its statutory legality limited by time, and if so is it still legally binding, and for how much longer? • How old is the plan, and therefore how up to date are its measures? To what

Subject/Theme/ Sector	Items to check and include depending on relevance for plan purpose
	<p>extent are its contents still relevant?</p> <ul style="list-style-type: none"> • Is the plan the major instrument of implementation and enforcement, or are additional, more detailed plans, for smaller areas, the primary instrument for enforcement? Do these plans exist? • To what extent do these plans cover the intended CSP area? How much of the CSP area is already covered by plans and at what level of detail are these plans? • Is zoning used as an instrument to promote or regulate development? Does it go beyond identifying permitted land use, to include issues of development style, technology, site coverage, accessibility, hazard and risk management issues, services to be provided, etc.? Are coastal setbacks already in use, and if so what is their nature and purpose? • How well accepted are the plans? One measure of acceptance is the degree to which they are followed. However, this may also be a question of enforcement capacity, or public participation in the formulation process. • Has there been any systematic monitoring of plan implementation and enforcement? Is there sufficient capacity to maintain a monitoring and enforcement function? <p>The answers to these rapid questions will give insight into how much updating will be required and what specific types of instrument are likely to be enforceable or not. The last 3 questions will raise the issue of what additional capacity-building measures will be needed to ensure that the spatial plan is followed as intended.</p>
Hazard and risk management Climate change issues	<p>Look for any disaster management plans in existence. The basic rapid review question here is: are there any hazard maps? Are there any contingency plans? Are there any Disaster Risk Reduction plans in place? If not, note these facts.</p> <p>If any of these do exist, check them specifically for the spatial information they provide on:</p> <ul style="list-style-type: none"> • Natural and anthropogenic hazards (where and what are the sources of danger)? • What features, objects and population groups are exposed to these hazards? (include habitats and ecosystems – for example, natural fish nurseries, coral reefs, sand dunes, wetlands, and so on.) • What levels of risk are involved? • How will expected climatic changes influence the existing hazards and risk scenarios, or introduce new ones? • Are some areas or population groups more vulnerable than others, and if so, where are these areas and groups, and what is the nature of their vulnerability? Is any action already being taken to reduce vulnerability and increase resilience? • How up to date are the maps and plans? • What is currently being done in the way of climate change mitigation and adaptation? What, if any, explicit policies and strategies for climate-change mitigation and adaptation already exist for the area? <p>The information being sought here regards the mapping of hazards and risks, of valuable features (natural as well as cultural, social or economic) at risk, and identification of any (natural/biological) features of importance in the reduction of</p>

Subject/Theme/ Sector	Items to check and include depending on relevance for plan purpose
	<p>risk and vulnerability (for example mangrove forests). This information will be used in identifying particular types of zones with restricted development options.</p>
<p>Demographic, socio-economic, economic and cultural aspects</p>	<p>There are usually large quantities of demographic and socio-economic statistics. The intention in the rapid review is not to do a comprehensive analysis of these statistics, but to extract information of importance to shaping the more detailed and focused work that will follow in Task 3. Look specifically for information on:</p> <ul style="list-style-type: none"> • Population size and structural change – trends over the past 10-20 years; • Changes in the spatial distribution of population, for example, areas of settlement expansion of densification, encroachment into environmentally sensitive areas, and areas of relatively high risk. • Socio-economic structure of the population, and trends. Of special interest is migration patterns, especially among the lower income groups. This should be linked to the spatial distribution factors mentioned above. • Economic data, industrial and commercial sector structures, trends. • Information on energy sources, and use, preferably by sector and area • Studies on the valuation of natural resources and ecosystems • For quality of life and provision of services, look for data on proportion of households with water, sanitation, waste collection and energy services. Again note the spatial distribution of disadvantaged groups. There may or may not be recent data at the appropriate scale on achievement levels of the Millennium Development Goals. If not, do not try to collect it at this point. • In any available disaster preparation material, look for recent data on vulnerable groups, especially by location, but also in terms of numbers and degree of vulnerability. • Note any information on sites of archaeological, cultural or natural historical value, especially where this information is mapped and described.
<p>Physical/Natural Features and Characteristics</p>	<p>For an ecosystem-based spatial plan it is important to collate existing material of physical features, habitats and ecosystems, climate, weather and dynamic forces that affect the coast itself. Look for information that has been collected on:</p> <ul style="list-style-type: none"> • Geology and tectonic forces, geomorphology, physical features such as sand-dunes, sand banks, and descriptions of the physical nature of the coastal zone. • Locations of physical resources of economic importance, such as minerals, oil and gas reserves, and building materials (rock quarries, gravel and sand resources, etc.) • Habitats and ecozones, distribution of specific biological resources, and their utilisation. • Marine topography (bathymetry), offshore currents (check for seasonality), tides, erosion and accretion features. • Climate and weather, including trends in rainfall patterns (temporal/frequency, intensity, etc.), temperature, winds, storms and storm surges and similar characteristics. Without necessarily describing it all, indicate what data and information exists, where it can be found, and whether or not there are obvious gaps in knowledge. • Parallel with the work done on hazards, check for natural hazards and natural mediators of those hazards, such as biological defences.

Subject/Theme/ Sector	Items to check and include depending on relevance for plan purpose
	<ul style="list-style-type: none"> • Existing process models, especially those built on the Pressure-State-Impact-Response concept, but also material showing material and energy flows, existing EIA studies for large projects, which may include valuable natural process information. • Coastline or coastal profiles, with maps describing different categories of coastline. Coastal classification, and/or division into coastline “sediment cells” (sections of coastline with similar sediment transport and morphological characteristics – preferably the processes in one cell do not significantly affect those in a neighbouring cell). • Sites of economic importance such as natural harbours, high quality agricultural soil/land, fresh water reservoirs (surface and ground water), dam sites. <p>The coastal zone is highly dynamic and it is important in the long term to have a good enough grasp of the forces and processes involved to be able to make informed decisions of if, when, how and where interventions should or should not be made in these processes, and to be able to identify activities inland or on the coast and in the sea that will interfere negatively with these processes.</p> <p>The rapid review should provide an indication of what significant gaps in knowledge exist currently that may impede sound decision-making.</p>

ANNEX 6

Carry Out a Participatory Coastal Resource Mapping Exercise

A map of coastal resources is a highly useful tool for CSP. It can be done with community participants under guidance. The advantage of using coastal community members is that they have a great deal of local knowledge. Fishers especially can provide information on the marine estuarine and lagoon resources.

Use maps of a scale 1:20000 or larger or even aerial photography that allows easy identification of physical features.



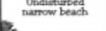


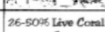

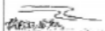
Step 1: Work with the community to identify the main habitat types found in the area. The list may look like the one in the Box. Each type should be assigned a colour.

- Sample Coastal Habitat Types**
- Beach
 - Mudflats
 - Seagrass meadows
 - Mangroves
 - Estuary
 - Coral Reef
 - Rocky shoreline
 - Inshore flats, marshes
 - Lagoons

Step 2: Construct a Table with a column for each habitat type identified, and on the left hand side one entitled "Condition." Under the left hand column list rows "Excellent" "Good" "Fair" and "Poor/low." Then describe criteria for assessing each habitat according to each standard. An example is provided on the next page from an exercise done in the Philippines.

Step 3. Using these criteria, and working with the community, identify specific resources in each habitat – by type, by name. Also identify any particular issues pertaining to the condition or management of the resources. In a table indicate the general condition of each identified area on the map.

Step 4. Develop a transect line from the landward side to the marine areas, and illustrate the common features, resource types and uses along that transcript. See the example right, also from the Negros Oriental exercise. The Map, an example of which is shown below, indicates the location of the habitats by colour; the type of resources, by symbol, the usage by a different symbol, as well as issues, again by symbol, for each location.

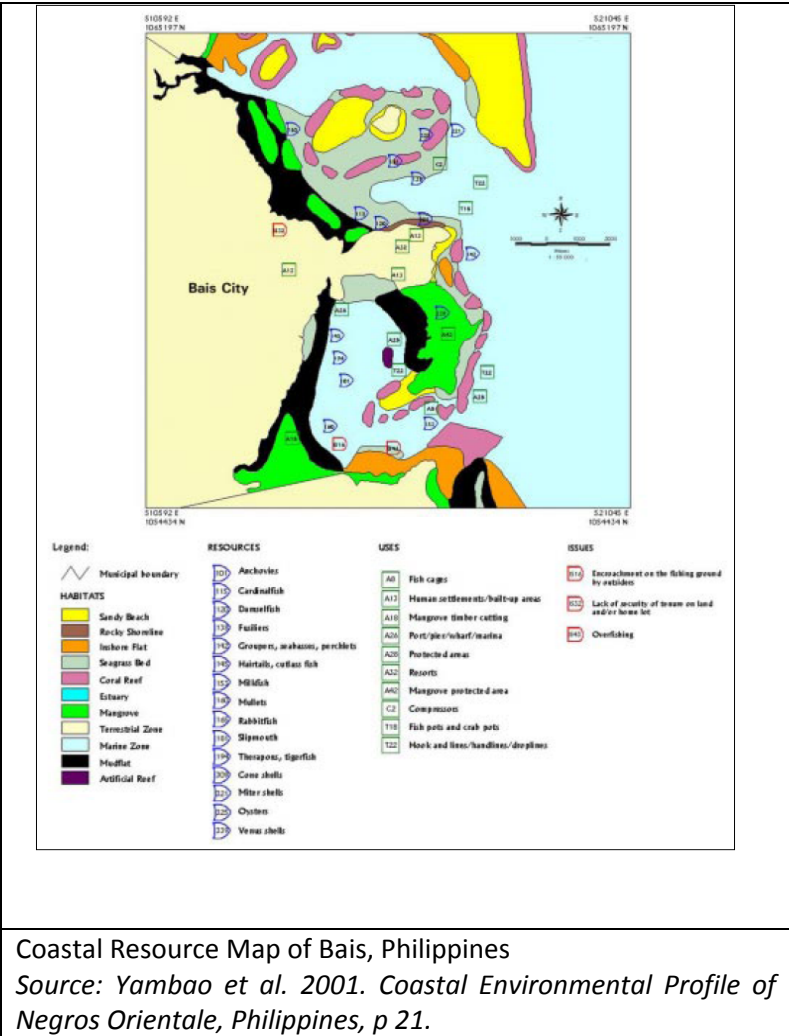
CONDITION	BEACH	SEAGRASS	CORAL REEF	MANGROVE
Excellent	Undisturbed wide beach 	76-100% Live seagrass, no sediment	76-100% Live Coral Cover 	76-100% No cutting or disturbance
Good	Undisturbed narrow beach 	51-75% Suspended sediments only	51-75% Live Coral Cover 	51-75% Cutting for firewood, poles
Fair	Some pollution, erosion, fallen trees 	26-50% Seasonal sedimentation on bottom	26-50% Live Coral Cover 	26-50% Fishponds
Poor/Low	Heavy pollution, seawalls, major erosion, modification 	0-25% Permanent sedimentation on bottom	0-25% Live Coral Cover 	0-25% Land or trees removed, reclamation

Assessment Criteria for Habitats
 Source: Yambao, A.C. et al. 2001. *Coastal environmental profile of Negros Oriental, Philippines*. Pg 11.

Step 5. Complement the tables and maps with a written description of the area and the community, including data on population size, the physical area of the community, activities common in the community. Include some basic facts, summarizing the habitats (total area of each as mapped, length of coastline, etc.).

This type of exercise does not need to be complex. It is important to have an ecologist or environmentalist to assist in the process, as well as a facilitator, as workshops in the community for information and basic training will be needed. However, it is an approach that does not need a great deal of expensive equipment, yet provides significant amounts of useful information and increases the local community's sense of ownership in the CSP process. It can also be used as an initial step towards community based management of local environmental resources.

A fuller description of the Negros Oriental coastal environmental profile exercise is available in pdf format from http://www.oneocean.org/download/20010825/negros_profile/intro.pdf.



Coastal Resource Map of Bais, Philippines

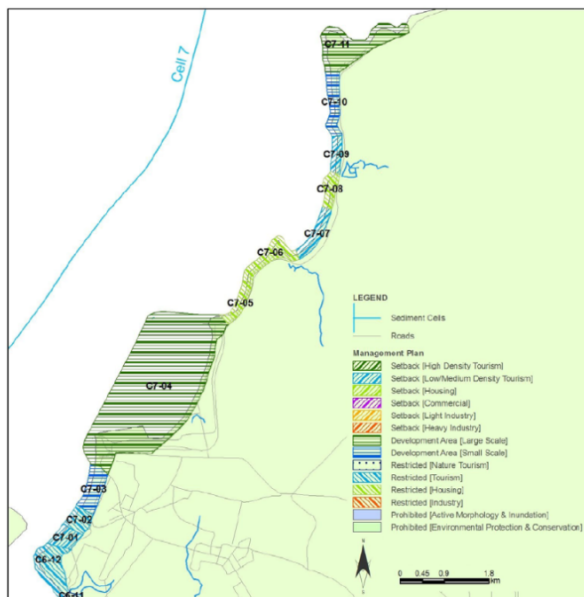
Source: Yambao et al. 2001. *Coastal Environmental Profile of Negros Orientale, Philippines*, p 21.

ANNEX 7

Analysis of Coastal Processes, Division of Coast into “Cells”

Integrated land and marine spatial planning requires a basic understanding of the processes underlying the inter-play between these two realms, as well as between the physical, biological, and socio-economic sectors. Depending on the complexity and size of the CSP area this basic understanding may take a few months or several years to achieve. The approach described here can be done at different levels of detail, and occur as one of the focal studies, or it could be done as a special activity within the implementation program as a foundation for future cycles of spatial plans. It seeks to develop an understanding of the forces driving change in the system, so that appropriate interventions can be designed that support and enhance positive and sustainable changes, while avoiding, or mitigating, destructive and deleterious processes.

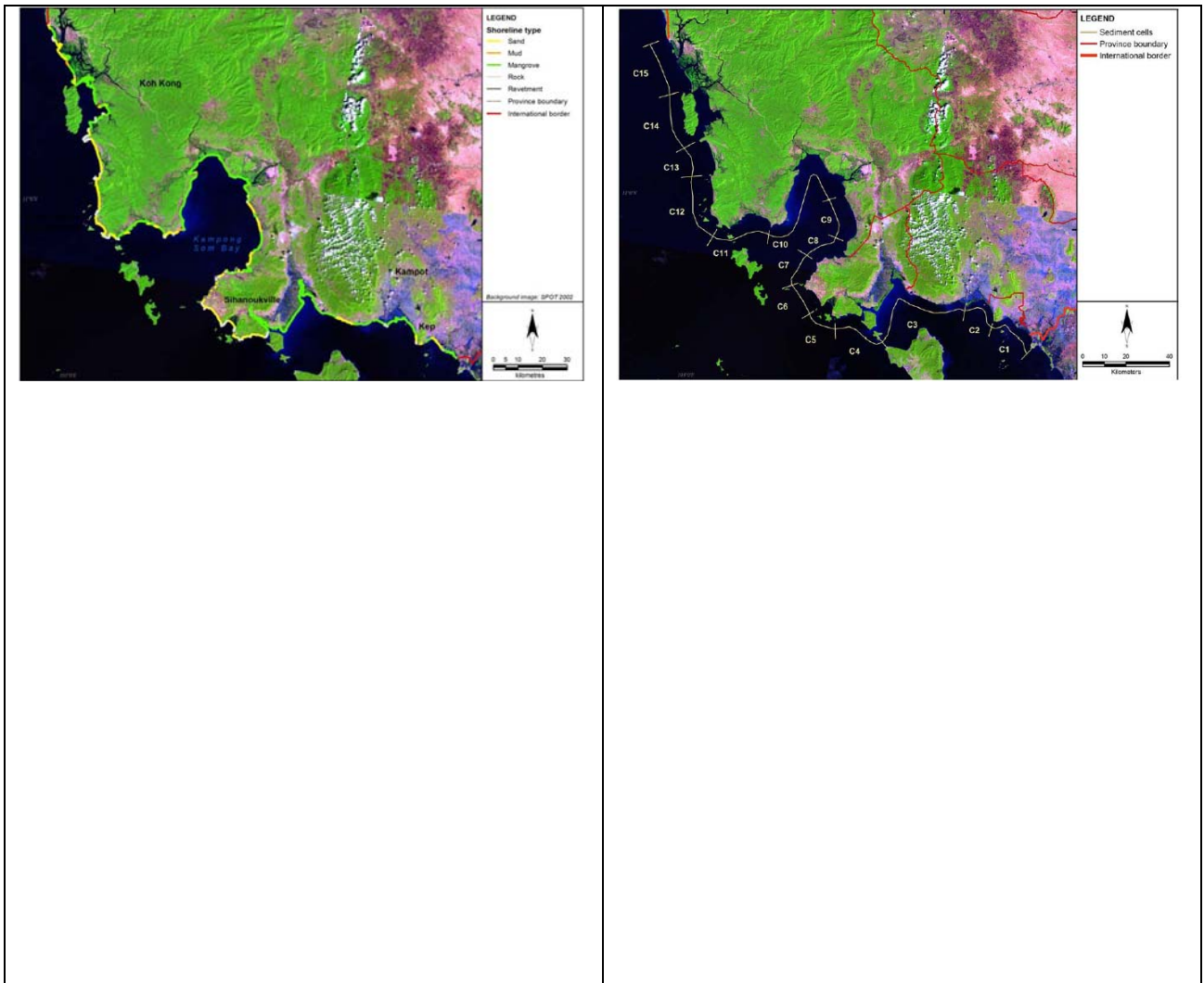
One of the simplest approaches to this is to divide the coastline into sediment and morphological cells – that is stretches of coast which have similar sediment transport and morphological characteristics.



Typical shoreline categories

- Sandy beach
 - Pebble beach
 - Hard rock cliff
 - Hard rock
 - Mudbank
 - Salt marsh
 - Estuary
 - Mangrove
 - Sago Palm forest
 - Revetment or other artificial sea defence
- These can be further subdivided and described according to need, for example:
- Sandy beach, backed by dunes, with offshore coral reefs.

Design your classification according to your coastal types and the purpose in hand.



Coastal Classification and Division of Littoral Cells in Cambodia

One can start by categorizing the coastline itself as is frequently done for oil spill sensitivity analysis. This is also similar to habitat mapping, for some coastlines would be classified, for example, as mangrove.

The second step is then to identify the degree of erosion or accretion along the coast. A coastal engineer can advise on the appropriate delineation of coastal cells. These in turn can become the basis for specific and detailed management interventions.

The combination of sediment/morphological cells with habitat types not only supports decisions on types of erosion control measures that may be appropriate, but can also contribute to linking ecosystem management with sea defense, conservation and biodiversity protection.

An example of coastal classification is given in the preceding illustration.⁹ The weakness of this approach on its own is that it is very limited in its spatial scope to the immediate landwards side of the coastline itself. It does not touch on marine habitats, or those further inland.

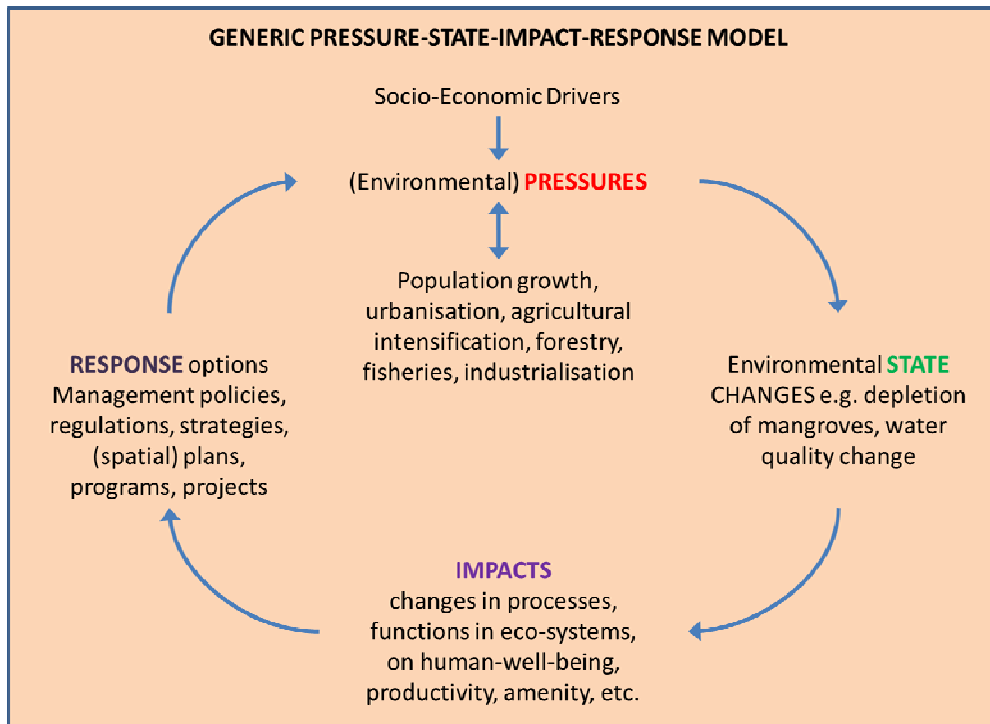
For example it would not normally include an entire mangrove forest. It therefore does not address the coastal stressors that lay more than a couple hundred meters from the coastline.

A more sophisticated but very useful approach is to establish a model of the coast in question. This implies not only providing spatial information, but also identifying the main components and processes. This can be valuable even at a conceptual level, to test alternative scenarios at a general level, before examining them in more detail.

The model is based on the idea that a dynamic “system” exists, and that at a particular time it is in a certain “state.” When various “pressures” are imposed on it, changes will occur in the “state” of the system. This change in the state will have impacts that may well lead to a “response.” Responses or reactions can lead to further pressures, or act to mitigate or remove the original pressure in order to restore the previous state. Because of these key steps in the process this model is often referred to as the P-S-I-R model.

In this context the Spatial Plan is an instrument in the “response” component. By studying the pressures that are being exerted on the system, noting the changes in the state of the system and the impacts those changes have, authorities can chart a response, ONE element of which may be the Spatial Plan or components within it. It will in turn impose certain “pressures” on the current state of the area through promotional or restrictive interventions. The Strategic Impact Assessment, and even environmental impact assessments of individual projects, in practice are applying this model, when they seek to identify the broad impacts or programs or projects.

⁹ The three illustrations are from Environmental Management of the Coastal Zone Project. 2006. **Cambodia Shoreline Management Strategy**. Ministry of Environment and Danida. pgs. 76, 81, 97



The model for a particular coastal area will build up a series of relevant material and energy flow diagrams, that first reflect the relationship between different elements in the system, and second show the effects caused by a particular pressure – which itself may be the result of an earlier response to an even earlier impact.

For example, socio-economic pressures of various kinds (drive for economic improvement, need for more land for settlement, need for more fuel) may lead to the destruction of a mangrove forest area, in part for settlement, in part for building and fuel wood, in part to make room for shrimp farms. The state of the ecosystem changes, specifically in the balance between mangrove forest size and the functions it can provide relative to sediment entrapment, defence from storm surges and strong winds, nursery for fish and other marine creatures, etc. The impacts will be partially positive financially for the shrimp farmers, but detrimental in other ways in terms of survival of coral reefs and sea grass meadows, fisheries production (with implications for fishers and fish processors and consumers, coast erosion, subsequent nutrient enrichment and addition of antibiotics from shrimp farms, with additional repercussions). These impacts then may lead to specific responses, at the individual, community or even national level.

A more thorough development of the model will quantify the pressures, the change in state, the impacts, and once quantified, values can be set. The quantification process will involve setting some standard values (for example, fuel wood extraction per hectare mangrove forest) for calculation purposes. These can later be used to test different response scenarios, to allow comparative analysis of the potential impacts of new policies, regulations, plans, programs or projects.

ANNEX 8

Valuation Assessments of Ecosystem Services

Ecosystem functions and services

The natural ecosystems are crucial for our survival, and provide us with services and functions that can be damaged from misuse of resources and environmental pollution.

Humankind benefits from a number of resources and processes that are supplied by natural ecosystems. Collectively, these benefits are known as *ecosystem services* and include products like clean drinking water and processes such as the decomposition of wastes. While scientists and environmentalists have discussed ecosystem services for decades, these services were popularized and their definitions formalized by the United Nations 2004 Millennium Ecosystem Assessment, a four-year study involving more than 1,300 scientists worldwide. These experts grouped ecosystem services into four broad categories. The following lists represent samples of each¹⁰:

Provisioning services

- Food (including seafood and game), crops, wild foods, and spices
- Fresh water
- Pharmaceuticals, biochemicals, and industrial products
- Genetic resources
- Energy (hydropower, biomass fuels)
- Fibre

Regulating services

- Carbon sequestration and climate regulation
- Waste decomposition and detoxification
- Water regulation
- Purification of water and air
- Crop pollination
- Pest and disease control

Cultural services

- Cultural, intellectual and spiritual inspiration
- Recreational experiences (including ecotourism)
- Aesthetic
- Inspirational
- Educational
- Scientific discovery
- Sense of place

¹⁰ Millennium Assessment (2005)

- Cultural heritage

Supporting services

- Nutrient dispersal and cycling
- Seed dispersal
- Soil formation
- Primary production
- Water cycling
- Provisioning of habitat

Table 1 Categories of ecosystem services¹¹

Categories of ecosystem services		Description
Provisioning services	<i>Food and fiber</i>	This includes the vast range of food products derived from plants, animals, and microbes, as well as materials such as wood, jute, hemp, silk, and many other products derived from ecosystems.
	<i>Fuel</i>	Wood, dung, and other biological materials serve as sources of energy.
	<i>Genetic resources</i>	This includes the genes and genetic information used for animal and plant breeding and biotechnology.
	<i>Biochemicals, natural medicines, and pharmaceuticals</i>	Many medicines, biocides, food additives such as alginates, and biological material are derived from ecosystems.
	<i>Ornamental resources</i>	Animal products such as skins and shells, and flowers are used as ornaments, although the value of these resources is often culturally determined. This is an example of linkages between the categories of ecosystem services.
	<i>Fresh water</i>	Fresh water is another example of linkages between categories – in this case, between provisioning and regulating services.
Regulating services	<i>Air quality maintenance</i>	Ecosystems both contribute chemicals to and extract chemicals from the atmosphere, influencing many aspects of air quality.
	<i>Climate regulation</i>	Ecosystems influence climate both locally and globally. For example, at a local scale, changes in land cover can affect both temperature and precipitation. At the global scale, ecosystems play an important role in climate by either sequestering or emitting greenhouse gases.

¹¹ Millennium Assessment (2003)

	<i>Water regulation</i>	The timing and magnitude of runoff, flooding, and aquifer recharge can be strongly influenced by changes in land cover, including, in particular, alterations that change the water storage potential of the system, such as the conversion of wetlands or the replacement of forests with croplands with urban areas.
	<i>Erosion control</i>	Vegetative cover plays an important role in soil retention and the prevention of landslides.
	<i>Water purification and waste treatment</i>	Ecosystems can be a source of impurities in fresh water but can also help to filter out and decompose organic wastes introduced into inland waters and coastal and marine ecosystems.
	<i>Regulation of human diseases</i>	Changes in ecosystems can directly change the abundance of human pathogens, such as cholera, and can alter the abundance of disease vectors, such as mosquitoes.
	<i>Biological control</i>	Ecosystem changes affect the prevalence of crop and livestock pests and diseases.
	<i>Pollination</i>	Ecosystem changes affect the distribution, abundance, and effectiveness of pollinators.
	<i>Storm protection</i>	The presence of coastal ecosystems such as mangroves and coral reefs can dramatically reduce the damage caused by hurricanes or large waves.
Cultural services	<i>Cultural diversity</i>	The diversity of ecosystems is one factor influencing the diversity of cultures.
	<i>Spiritual and religious values</i>	Many religions attach spiritual and religious values to ecosystems or their components.
	<i>Knowledge systems (traditional or formal)</i>	Ecosystems influence the types of knowledge systems developed by different cultures.
	<i>Educational values</i>	Ecosystems and their components and processes provide the basis for both formal and informal education in many societies.
	<i>Inspiration</i>	Ecosystems provide a rich source of inspiration for art, folklore, national symbols, architecture and advertising.
	<i>Aesthetic values</i>	Many people find beauty or aesthetic value in various aspects of ecosystems, as reflected in the support for parks, “scenic drives”, and the selection of housing locations.
	<i>Social relations</i>	Ecosystems influence the types of social relations that are established in particular cultures. Fishing societies, for example, differ in many respects in their social relations from nomadic herding or agricultural societies.
	<i>Sense of place</i>	Many people value the “sense of place” that is

		associated with recognized features of their environment, including aspects of the ecosystem.
	Cultural heritage values	Many societies place high value on the maintenance of either historically important landscapes (“cultural landscapes”) or culturally significant species.
	Recreation and ecotourism	People often choose where to spend their leisure time based in part on the characteristics of the natural or cultivated landscapes in a particular area.
Supporting services	Nutrient dispersal and cycling Soil formation Seed dispersal Primary production Water cycling Provisioning of habitat	The supporting services are those that are necessary for the production of all other ecosystem services. They differ from provisioning, regulating, and cultural services in that their impacts on people are either indirect or occur over a very long time, whereas changes in the other categories have relatively direct and short-term impacts on people.

Society is coming to realize that ecosystem services are not only threatened and limited, but that the pressure to evaluate trade-offs between immediate and long-term human needs is urgent. To help inform decision-makers, economic value is increasingly associated with many ecosystem services and often based on the cost of replacement with anthropogenically driven alternatives.¹²

Assessing the ecosystem services helps us in outlining the costs and benefits, and thus finding the optimal local strategies for enhancing economic sustainability and human well-being.

Economic analysis indicates that maintaining a healthy ecosystem is often less costly than dealing with other protective measures. In the North-eastern part of Viet Nam, more than 70% of the population is threatened by natural hazards. To protect the coastline, local communities have planted and protected mangrove forests as a more cost-effective strategy than building and maintaining artificial barriers (sea dykes). The investment of the mangrove forests (appr. USD 1.1 million) has saved an investment of an estimated annual USD 7.3 million in dyke maintenance alone.¹³

Estimating and assessing the ecosystem services can be done in a stepwise approach, as suggested by TEEB. The six steps for including ecosystem service into local and regional policy and decision-making are:

Step 1: Specify and agree on the problem with stakeholders. This involves an initial stakeholder analysis, and insures that all important aspects are being considered and misunderstandings are avoided during decision-making.

Step 2: Identify which services are most relevant. Questions to ask are: Which ecosystem services are central to my local/regional society? Who depends on them most? Which services are at risk? How do policies affect them?

¹² The Sustainable Scale Project (2010)

¹³ TEEB The Economics of Ecosystems and Biodiversity, www.teebweb.org (2010)

Step 3: Define information needs and select appropriate methods. Before commissioning an assessment, determine what kind of information on which ecosystem services you need; e.g. if you need a qualitative description, a biophysical quantification, or a monetary valuation.

Step 4: Have ecosystem services assessed. Use frameworks that conceptualize the ecosystem services, asking questions such as “To what extent will the decision impact the ecosystem service?” or “To what extent is the decision viable without the availability of the ecosystem services?”. This step will most likely be carried out by analysts, consulting with stakeholders, by NGOs or by local policy staff.

Step 5: Identify and assess policy options. This is the key evaluation procedure of the policy option. The insights from the assessment can feed into the policy through a participatory process, as a cost-benefit analysis, or as input for a multi-criteria analysis.

Step 6: Assess distributional impacts. The final step assesses which stakeholders are likely winners or losers from a policy proposal. Changes in availability or distribution of ecosystem services affect people in different ways according to their dependence. These sometimes hidden effects need to be anticipated.

These six steps described above are a systematic way of including ecosystem services, and hereby natural capital, into local policy.

The table below briefly describes frameworks for valuing and evaluating ecosystems and biodiversity.¹⁴

Focus	Framework	Purpose and objectives
Socio-ecological	Millennium Ecosystem Assessment (MA)	Classifies ecosystem benefits into categories (e.g. supporting and regulating services) which can in some cases be monetized.
Economic	Total Economic Value (TEV)	Conventional economic approach to valuing ecosystems in monetary terms. Considers intrinsic values, i.e. conservation for its own sake, irrespective of benefits to people.
Ecological	Key Biodiversity Areas (KBA)	Designates priorities for conservation, but based purely on ecological criteria. Can be used in conjunction with economic analyses but is “stand-alone”. Links to the MA – focuses on biophysical processes.
Developmental	Sustainable Livelihoods Approach (SLA)	A socio-cultural approach that considers capacity-building and exposure to risks. Relates to benefits and economic values but in a different way than TEV.

¹⁴ TEEB The Economics of Ecosystems and Biodiversity, www.teebweb.org (2010)

Environmental costs estimation methods

The environmental costs include estimations and evaluations of losses of ecosystem functions and services. There are no general regulations determining compensation or the estimation of environmental costs, but there are some actual cases where estimations have been made, based on the local situation and the prevailing circumstances.

Estimating economic losses on ecosystems or on the environment can be done in various ways. Some methods include measuring the natural resource on an existing market or a parallel market, for example the economic value of clean drinking water can be measured by the market price of drinking water. Valuation of forests can be based on the economic market value of timber. This method also shows that using the market as the basis for valuation gives very different values in different parts of the world.

The six major methods for valuing ecosystem services in monetary terms are:¹⁵

- **Avoided cost** – Services allow society to avoid costs that would have been incurred in the absence of those services (e.g. waste treatment by wetland habitats avoids health costs)
- **Replacement cost** – What is the cost for replacing a lost resource? Services could be replaced with man-made systems (e.g. restoration of the watershed cost less than the construction of a water purification plant)
- **Factor income** – Services provide for the enhancement of incomes (e.g. improved water quality increases the commercial take of a fishery and improves the income of fishers)
- **Travel cost** – Service demand may require travel, whose costs can reflect the implied value of the service (e.g. value of ecotourism experience is at least what a visitor is willing to pay to get there)
- **Hedonic pricing** – What are properties worth on the market before or after a certain incident or event? Service demand may be reflected in the prices people will pay for associated goods (e.g. coastal housing prices exceed that of inland homes)
- **Contingent valuation** – (CV, or willingness-to-pay) Service demand may be elicited by posing hypothetical scenarios that involve some valuation of alternatives (e.g. visitors willing to pay for increased access to national parks). CV can be used when valuing changes over time, or choices between different alternatives.

Other methods used are:

- **Loss of income** – what amount has a certain individual lost because of destruction of an environmental resource?
- **The cost for reconstruction or reestablishment** can also be used as a valuation.

A natural resource generally has two values; use value and non-use value. Taking a forest for example, it has a high use value as a resource for recreation, for picking berries etc. It also has a user value for future use, tomorrow's recreation. The non-use value of the forest is the value of the mere existence of the forest, and for the use of future generations.

¹⁵ Farber et al(2002), Söderqvist (2004), Fredman (1997) and Söderqvist (1996)

Most of the economic valuations of environmental resources or ecosystems are performed in order to inform decision makers, and to influence decisions.

Economic valuations of environmental resources and ecosystems are not easily performed, or accurate. The valuations depend on the specific circumstances, the specific location and/or the specific individuals interviewed. There are some methods for valuation that are used in many countries, but there is no consensus or international agreements on choice of methods. The difficulty is that there are no right answers to what the environment is worth.

More information on Environmental Assessments Methods

Methods for performing environmental assessments abound, some more widely used than others. Some relevant reports and websites that can be consulted are listed below:

- A searchable database website listing and comparing numerous different methods for several types of ecological assessments can be found on: <http://assessmentmethods.nbii.gov>.
- The Millennium Ecosystem Assessment Reports identify, describe and analyse methods for assessing the environment, and the ecosystem services. www.millenniumassessment.org
- The report *Land-Ocean Interactions in the Coastal Zone (LOICZ), Towards Integrated Modelling and Analysis in Coastal Zones: Principles and Practices* by Turner et al. (1998), also discuss relevant methods and the response for different measures.

Several reports also discuss the ecosystem services, their benefits, and possible assessment and evaluation methods:

- The Sustainable Scale Project Report *Ecosystem functions and services*, can be found on: <http://www.sustainablescale.org/ConceptualFramework/UnderstandingScale/BasicConcepts/EcosystemFunctionsServices.aspx>
- The Economics of Ecosystems and Biodiversity (TEEB) have published several reports that identify and discuss methods for assessing ecosystem services: *The TEEB for Local and Regional Policy Makers*, and *The TEEB for National and International Policy Makers, Summary: Responding to the Value of Nature*. The reports can be found on: www.teebweb.org
- <http://www.derm.qld.gov.au/register/p00870aa.pdf> (Queensland Government.2003. Environmental Economic Valuation. An introductory guide for policy-makers and practitioners.)
- <http://www.environment.gov.au/epbc/assessments/strategic.html>
- <http://webarchive.nationalarchives.gov.uk/+http://www.communities.gov.uk/documents/planningandbuilding/pdf/142520.pdf> (Office of the Deputy Prime Minister. 2005. London Sustainability Appraisal of Regional Spatial Strategies and Local Development Documents. London)

ANNEX 9

Model Table of Contents for Spatial Plan and Implementation Program

In some countries, legislation and/or existing Guidelines may specify what should appear in a spatial (or Land Use, or Physical) plan, and how such a document should be organised. Follow the national standard wherever there is one. The following is an example, meant primarily to provide ideas, where there are no existing requirements or strict guidelines. In general this example adheres to the approach of the new planning paradigm in which participatory methods are used and reported upon, and in which an implementation program for pursuing the goals is included, here as Part Two.

Executive Summary

Part One Background and Long Term Zoning Plan

10. Introduction and Background

11. Description of Process

- 11.1. Overview of the process
- 11.2. Participatory and consultative elements
- 11.3. Special studies
- 11.4. ...

12. Description of Area

- 12.1. The area within the region
- 12.2. Physical Characteristics
- 12.3. Shoreline classification
- 12.4. Habitats and Ecosystems
- 12.5. Current resource use

13. National, regional and local Interests

14. Vision and Long-Term Goals

- 14.1. Current Assets, Potentials
- 14.2. Common Vision
- 14.3. Long-Term Sectoral Goals (*These should be fairly brief statements.*)
 - 14.3.1. Environmental Management, Green and Blue Structure
 - 14.3.2. Fisheries
 - 14.3.3. Forestry
 - 14.3.4. ...
 - 14.3.5. Shoreline management
 - 14.3.6. Social well-being, resilience
 - 14.3.7. Economic Development
 - 14.3.8. Settlement Development
 - 14.3.9. Transportation

- 14.4. Constraints, Hindrances and Priorities (*Usually problems cross sectoral and spatial boundaries, and should be treated in an integrated and coordinated manner. It is useful to show the interconnections between issues in diagram form – either as cause and effect diagrams or “horrendograms.” This also provides a good background for presenting and discussing priorities.*)

15. Strategies for Achieving the Long-Term Goals

- 15.1. Strategies for protecting & enhancing assets

- 15.2. Strategies to overcome constraints and hindrances
- 15.3. Strategies to avoid future threats
- 15.4. Climate change mitigation and adaptation strategies
- 15.5. Specific shoreline management strategies
- 15.6. Specific strategies for reducing risks, and vulnerability and for increasing resilience
- 16. Land use and development management zones (*Refer to map(s); describe what is permitted and/or prohibited in each zone. Zones are given main and subordinated classifications. Create zone classes and sub-classes according to national standards, or in the event these don't exist, create them according to need.*)
 - 16.1. E Environmental protection
 - 16.1.1. E1 Protected areas
 - 16.1.2. E2 Limited use conservation areas
 - 16.1.3. E3 ...
 - 16.2. A Agriculture
 - 16.2.1. A1 Crop Husbandry
 - 16.2.2. A2 Mixed Crop and Animal Husbandry
 - 16.2.3. A3 Animal Husbandry
 - 16.2.4. A4 Horticulture, Orchards, Permanent Tree Crops other than Forestry
 - 16.3. Fo Forestry
 - 16.4. Fi Fisheries
 - 16.4.1. Fi1 Marine Protected Area (no fishing)
 - 16.4.2. Fi2 Fishing Conservation Areas (seasonal restrictions on fishing...)
 - 16.4.3. Fi3 Terrestrial Aquaculture
 - 16.4.4. Fi4 Marine Aquaculture
 - 16.4.5. ...
 - 16.5. T Transportation and Communications
 - 16.5.1. T1 Land Transportation corridors and ancillary (non-urban areas)
 - 16.5.2. T2 Marine shipping lanes (can be subdivided to allow for special regulations like speed restrictions close to sensitive shorelines, or marine ecosystems)
 - 16.5.3. T3 Ports and harbours
 - 16.5.4. T4 Tele-Communication infrastructure
 - 16.5.5. ...
 - 16.6. P Energy infrastructure
 - 16.6.1. P1 ...
 - 16.7. U Urban land uses
 - 16.7.1. U1 ...
 - 16.8.
 - 16.9. R Reserved for future unspecified uses.

Part Two Implementation Program

- 17. Introduction and reference to Part 1, especially Chapters 5, and 6 (*This introduction is provided so that Part Two can stand alone. However, it need not repeat everything that has already been written in Part One*)
- 18. Overview of Implementation Program
 - 18.1. The program in Tabular form with Time-frame (*provide a table showing all sectoral goals, strategies and proposed activities/projects, identifying responsible actor and other*

participating agencies. Follow this with a Gantt diagram showing each activity/project's timing through the 3-5 year period.)

- 18.2. Management structure for integrating and coordinating implementation program
- 18.3. Mechanisms to link progress reviews and updating to annual budget process,
- 18.4. Monitoring and feedback goals, methods, responsibilities
- 18.5. ...
- 19. Long term research and development needs
 - 19.1. Role of universities and research institutions
 - 19.2. Coordination of institutional geodatabases, including standards for data exchange
- 20. Coordinated institutional capacity development efforts related to program implementation
- 21. Sectoral implementation programs and projects *(for each sector/sector institution give "thumbnail" descriptions of each activity or project, its location and impact area, its contribution to the goals and vision, its estimated budget, estimated time-frame, and responsible unit.)*
 - 21.1. Environmental Protection Agency *(or equivalent)*
 - 21.2. Agriculture
 - 21.3. Forestry
 - 21.4. Fisheries
 - 21.5. ...
 - 21.6. Public works *(or the agency responsible for sea defence, and shoreline protection)*
 - 21.7. ...

ANNEX 10

Brief Introduction to Tools, Techniques, and Aids

Spatial planning is itself a tool for:

- Addressing and resolving conflicts in land use;
- Bringing order in the face of uncertainty, by creating a spatial dimension for a model future;
- Providing a view of the future and thereby give a sense of stability to residents and investors
- Giving direction to actors and stakeholders regarding their inputs to achieving long-term goals.

In the process of planning many individual tools, techniques and aids are used. In broad terms they consist of the following categories:

- Models: these are simplified descriptions, either qualitative or quantitative, of reality. They can be fairly generalized and simple, or extremely complex and detailed. Some examples:
 - Community sketch map of habitats
 - [Sites.google.com/site/communitymappingandplanning/](https://sites.google.com/site/communitymappingandplanning/)
 - Generalised description of the “water cycle” and other nutrients, or elements in nature
 - [En.wikipedia.org/wiki/Water_cycle,_etc.](https://en.wikipedia.org/wiki/Water_cycle,_etc.)
 - [Studenten.samenvattingen.com/documenten/show/046760/](https://studenten.samenvattingen.com/documenten/show/046760/) - a presentation of different system models
 - Ecosystem models, either qualitative (descriptive) or quantitative (based on mathematically determined relationships between components)
 - www.mssanz.org.au/modsim05/papers/villa.pdf A semantic model of Computation for Natural System Modelling.
 - [Gisweb.ciat.cgiar.org/dapablogs/dapa-ecosystems/?cat=5](http://gisweb.ciat.cgiar.org/dapablogs/dapa-ecosystems/?cat=5)
 - Socio-economic models
 - Computerised mathematical model of climate
 - Alternative scenarios of potential future developments
 - Cause and effect flow chart
 - www.mindtools.com/pages/article/newTMC_80.htm
 - www.mindtools.com/pages/article/newTMC_03.htm
 - Information, material and energy flow diagrams, food chains
 - Institutional network diagram
 - Livelihood analysis model
 - Geographic Information System applications
 - Strategic impact assessment, based on inter-relationships between system components
 - Images, and image analysis – “manual/visual” or automated, pattern recognition
- Methods, approaches and techniques for encouraging and managing stakeholder participation. Most of the following can be done by individuals or small groups – including the planning core team. Involving stakeholders improves the probability of covering more information and ideas, but also builds a wider sense of ownership. In the long term this should mean more effective adherence and enforcement of the plan.
 - Stakeholder analysis
 - www.eestum.edu/voorbeelden/Stakheholders_analysis_guidelines.pdf
 - erc.msh.org/quality/ittools/itstkan.cfm

- www.pmhut.com/what-is-stakeholder-analysis
- www.euforic.org/gb/stake1.html#assess
- www.mindtools.com/pages/article/newPPM_07.htm
- Assets.panda.org/downloads/1_1_stakeholder_analysis_11_01_05.pdf
- www.12manage.com/methods_stakeholder_mapping.html
- Stakeholder analysis using Venn diagram of Power, Legitimacy and Urgency
 - www.12manage.com/methods_stakeholder_mapping.html
 - www.saltlane.co.uk/Resources/stakeholder%20analysis.HTML
- Stakeholder analysis using the 4 Rs
 - www.odi.org.uk/resources/details.asp?id=791&title=4rw-valuable-tool-management-benefit-sharing-decisions-bimbia-bonadikombo-forest-cameroon
- Stakeholder analysis using Force Field Analysis
 - www.mindtools.com/pages/article/newTED_06.htm
 - www.12manage.com/methods_lewin_force_field-analysis.html
 - www.accel-team.com/techniques/force_field_analysis.html
- Meetings, seminars, workshops, with various types of facilitation to encourage creative and constructive discussion, to reach consensus on issues, visions, goals, priorities and activities
 - Treegroup.info/topics/facilitation_primer.pdf
 - https://engineering.purdue.edu/~iwla/iwla/resources/Academy/Group_Facilitation_Strategies.pdf
- Questionnaires and other data collection, collation and analysis tools – open and closed questionnaires, interviews.
 - asq.org/learn-about-quality/data-collection-analysis-tools/overview/survey.html
- Asset mapping
 - extension.missouri.edu/about/fy00-03/assetmapping.htm
 - backspace.com/notes/2004/06/what-is-asset-mapping.php
 - www.rwmc.usguelph.ca/cms/documents/11/Asset_Mapping1.pdf
- The Have-Want Grid
 - In_environment.sipuweb.se/Docs/ProjectDesignPresentations/24_5_2_Project_Design.ppt
- Situation analysis
 - cmsdata.iucn.org/downloads/approach_andMethod.pdf
 - pqdl.care.org/gendertoolkit/Pages/context%20default.aspx
- Root Cause Analysis / Problem Tree Analysis /Pareto analysis /Ishikawa diagrams /scatter diagrams
 - www.toolkitsportdevelopment.org/html/resources/91/910EE48E-350A-47FB-953B-374221B375CE/03%20Problem%20tree%20analysis.pdf
 - www.mindtools.com/pages/article/newTMC_03.htm
 - asq.org/learn-about-quality/cause-analysis-tools/overview/pareto.html
 - asq.org/learn-about-quality/cause-analysis-tools/overview/scatter.html
 - asq.org/learn-about-quality/cause-analysis-tools/overview/fishbone.html
- Institutional Analysis (Network analysis, Governance)
 - ageconsearch.umn.edu/bitstream/24542/1/0s05he03.pdf
 - siteresources.worldbank.org/INTTOPPSISOU/Resources/Volume201Tool-Sourcebook.pdf
 - www.governorat.eu/files/pb_world-bank-tools-for-policy-analysis.pdf

- Scenario building, Brainstorming
 - www.mindtools.com/brainstorm.htm
 - www.slideshare.net/adgo/scenario-building-workshop-how-to-build-and-use-scenarios
- Team building
 - www.accel-team.com/index.html
 - www.atpl.net.au/sample/pdf/atpsample_11969.pdf
 - Managementhelt.org/grp_skill/teams/teams.html
- Conflict analysis and resolution
 - www.cios.org/encyclopedia/conflict/Eskills4_assessmenttools.htm
- Vulnerability Analysis
 - www.proventionconsortium.org/themes/default/pdfs/VCA-ws04.pdf
 - www.proventionconsortium.org/?pageid=39
 - siteresources.worldbank.org/INTTOPPSISOU/Resources/Volume201Tool-Sourcebook.pdf
- Nominal small group techniques (for avoiding dominance of a few individuals, and provide opportunity for silent participants to submit ideas)
 - www.cdc.gov/HealthyYouth/evaluation/pdf/brief7.pdf
 - www.joe.org/joe/1984march/iw2.php
 - En.wikipedia.org/wiki/Nominal_group_technique
- “One will get you ten” – idea generation and dissemination
 - [In www.atpl.net.au/sample/pdf/atpsample_11969.pdf](http://www.atpl.net.au/sample/pdf/atpsample_11969.pdf)
- Information management: the organization of data and information is fundamental to planning and especially to the new planning paradigm. Having geodatabases
 - Catalogued documentation / libraries
 - Relational databases
 - Geodatabases – the specific feature of these RDBs is that they can store and manipulate locational (geographic) data and information
 - Environmental Information Systems (EMS)
 - Geographic Information Systems (GIS)
 - Management Information Systems (MIS)
- Memory aids, acronyms often referring to specific tools and methods
 - PEST, STEP, STEEPIL, acronym reminder of sectors to consider in trend analysis, scenario building, impact assessment: Socio-cultural, Technological, Environmental-Ecological, Economic, Political, Institutional, Legal
 - SWOT : Strengths, Weakness, Opportunities and Threats
 - DRUGS, categories of key stakeholders in approval processes: Decision-makers, Recommenders, Users, Gatekeepers, other Stakeholders
 - 5Ms – for budgeting and time scheduling: manpower (personnel, in-house or contracted), machines (capital goods – non consumables), materials (consumables and other operational costs), methods (if purchased or developed in-house – software programmes, other indirect process development costs, etc.), money (the sum-total of the costs of the previous 4 components)

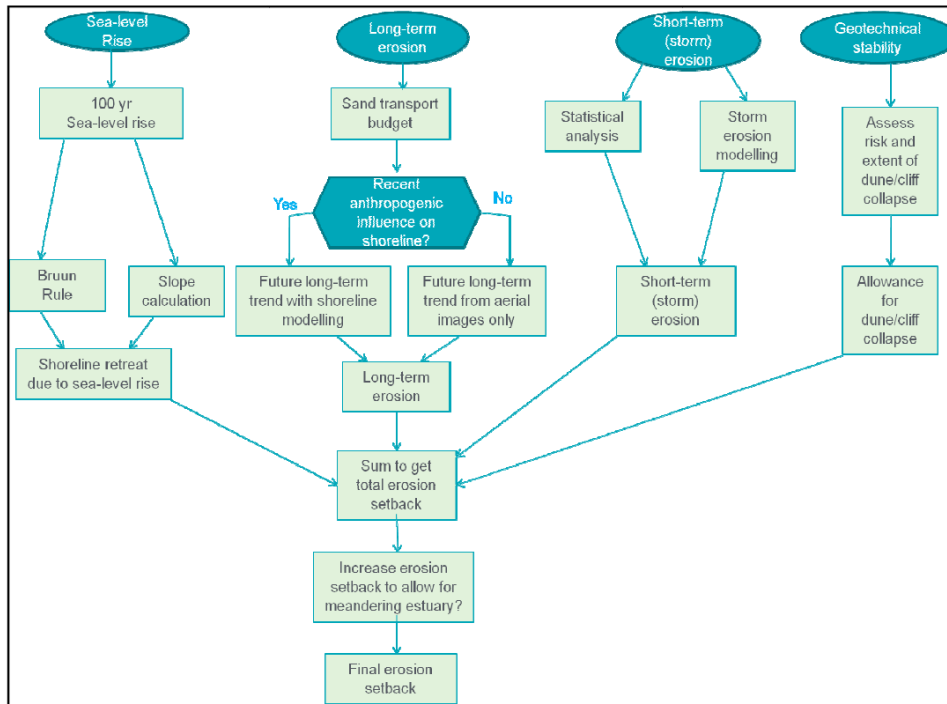
We encourage readers to search the internet for material on any or all of the above topics.

Annex 11 Selecting Specific Strategies for Shoreline Cells

A workable approach to selecting specific strategies for shoreline cells is as follows:

- What are the specific coastline characteristics, relative to current and future erosion – is it a sandy, muddy, rocky or vegetated coastline? Are there sand dunes? Is there an off-shore current with evident sediment transport? Is the shoreline already subject to erosion control measures such as groins, sea walls or beach nourishment?
- If erosion is a current problem, look initially at possible causes or exacerbating agents. Examples could be sand-mining, wash from large or fast vessels in nearby shipping lanes, poorly designed or inappropriate erosion control measures up-current from the site, loss of protective natural defenses. If such causes are evident, take steps to correct them as part of any strategy.
- Define the specific characteristics on the landward side of the shoreline for that specific cell – what is the land cover or land use, what is the “development trend” (is it a remote rural area with little future, or is it likely to be a very attractive area for investment)?
- If possible, specify the important climatic change impacts likely for this stretch of coast – is sea-level rise the only issue, or will there be others that may affect natural ecosystems as well as productive land uses?
- What are the adaptation options, specific to the shoreline, as discussed above?
- What are the constraints to the realistic options?
- Quantify and cost the options, and compare with the value change under the Do Nothing scenario.
- Compare the cost of measures with the benefits derived, using an appropriate discounting method to incorporate future values and costs of maintenance. Note any intangible values that may over-ride straightforward economic calculations (e.g. religious sites, important cultural values, etc.)
- Evaluate the trade-offs in the options being compared.
- Recommend the better adaptation measure.

Annex 12 Coastal Setbacks



Setback line process used in South Africa

Examples of Coastal Setbacks and Equivalent		
Denmark	Nature Protection Act (1994)	300 meter in-land beach protection zone along entire Danish coast (deviations in urban areas). New Activities are prohibited in the beach protection zone unless particular circumstances indicate a need to grant an exemption. ¹⁶
Sweden	Planning and Building Act	100 meter inland on which no development can take place without special permit. The main purpose is to ensure public access to the water front. In some cases the setback is 300 meters.
Barbados		Where a beach is present there is a 30 meter setback from the high water mark for building construction; Where a cliff top exists there is a 10 meter setback from the most landward point of cliff undercut for building construction. Exceptions: - increased setbacks as a result of policy to preserve and conserve unique landscape features along the coastline - Decreased setbacks may occur in areas where there are existing buildings
State of Delaware		100 ft (30,5 m) landward from the seaward-most 7 ft (2,1 m) elevation above the geodetic vertical datum.
Poland	Maritime	200 m landward of the dune ridge, or 100 m inland of the upper

¹⁶ Anker, H.L., V.Nellemann, S.Svendrup-Jensen, 1998. Integrated Coastal Zone Management in Denmark. Pg 4.

	Administration	edge of a cliff.
Minnesota, USA		50 times the annual erosion rate plus 25 feet in areas where erosion data is available and a standard 125-foot setback elsewhere.
North Carolina, USA	Administrative Code for Ocean Hazardous Areas	Measured from the first stable natural vegetation. Based on annual erosion rates. Single homes & small structures (<5000 ft ² and less than 5 units) are set back 30 times the average annual erosion rate, or a minimum of 60 ft. For larger structures the setback is 6 times annual erosion rate, or at least 120 ft. Swimming pools may be built within the setback area.
Hawaii State Minimum standards		Lots less than 100 ft deep require 25 ft setback for buildings; lots 100-160 require 40 ft setback. On lots more than 160 feet deep, setbacks are 150 ft or one quarter of the lot depth, whichever is smaller.
Maui County, Hawaii	Maui Planning Commission	Basically: 50 times the average annual erosion rate plus 20 ft., or use the Statewide standard, whichever is greater. Existing structures within the setback zone may be rebuilt if they are damaged by non-coastal hazards. Lots must have a 30 ft buildable depth after the setback is set. If this is not possible a variance MAY be granted to allow some part of the building to cross the setback line. Rocky shores, or shores already artificially hardened by engineering works need only adhere to the lower State wide minimum standards.
India	CRZ Notification	Regulations apply to areas within 500 m from the high tide line plus the area between the high and low tide line. The line runs parallel to the coast. Special rules apply inland along rivers. Four zones: I(i) – ecologically sensitive and important (national parks, sanctuaries, reserve forests, wildlife habitats, mangroves, coral reefs, areas close to breeding and spawning grounds, areas of outstanding beauty, historical, cultural areas, areas rich in biodiversity, areas likely to be inundated due to rise in sea level, and other areas as decided.) I(ii) – areas lying between the low tide line and the high tide line. II – areas already developed up to or close to the shoreline (in 1991) – usually urban areas III – areas that are relatively undisturbed and which do not lie in either category I or II: coastal zone in rural areas, and undeveloped areas in Urban municipalities. IV – coastal stretches in Andaman & Nicobar, Lakshadweep & small islands except where classed as I, II or III. The regulations stipulate what activities may be carried out in each zone. Monitoring, implementing & enforcement are by State Coastal Zone Management Authorities.

The table above is provided to show that there are many variations on the theme of setbacks. Some, but by no means all, are contingent on knowing the average annual erosion rate. In many situations this will not be practical to calculate. This difficulty can be met by making an informed estimate and then adding a correction factor. Both these, and those that use a fixed rate, take no account of ecosystems or special habitats.