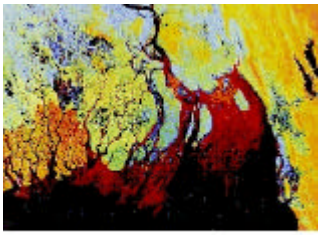
Government of Bangladesh
Ministry of Water Resources
Water Resources Planning Organization (WARPO)

Previous Initiatives and Base Conceptual Documents

Working Paper
WP001

Dhaka
May 2002

Program Development Office
Integrated Coastal Zone Management



PDO-ICZM

Previous Initiatives and Base Conceptual Documents

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2. Policy Note of GoB: Integrated Coastal Zone Management: Concept and Issues, 22 September 1999

3. Aide Memoire IDA/NEDA Preparation Mission, Proposed Second Coastal Embankment Rehabilitation Project and Integrated Coastal Zone Management, October 1999

Concept consolidated further

Concept Note & Development Process on Integrated Coastal Zone Management; Joint Donor Identification Mission (IDA/NEDA/WFP), March 1999

This is a product of a Joint Donor Identification Mission of the International Development Association (IDA), the Netherlands Development Assistance (NEDA) and the World Food Programme (WFP). The Mission team consisted of: Messrs John Soussan (Team Leader); Anjan Datta & Luitzen Bijlsma (consultants); Jan Weijenberg & Imtiazuddin Ahmed (IDA); Peter de Vries & Zahir Uddin Ahmad (NEDA); and Rezaul Karim (WFP). This document identified the 'why' and 'what', of ICZM; and elaborated on the 'steps and elements' in preparing an ICZM program.

Policy Note of GoB: Integrated Coastal Zone Management: Concept and Issue, 22 September 1999.

The following team of senior officials undertook a tour of Thailand during February 18-27, 1999 to study in-depth the ICZM practices:

- Principal Secretary to the Prime Minister (Team Leader),
- Secretary, Ministry of Water Resources,
- Secretary, Ministry of Planning,
- Secretary, Ministry of Fisheries & Livestock,
- Secretary, Ministry of Land,
- Chairman, Bangladesh Water Development Board and
- Chief Conservator of Forests.

The Policy Note is prepared on the basis of participant's general and study tour experience. Later on, this note was approved in a Cabinet meeting to be considered as Policy Note of the Government of Bangladesh on ICZM.

As per the Policy Note, ICZM will offer a mechanism to balance the competing demands of different users for the same resources and to manage the resources to optimise the benefits of their use. ICZM is a special type of governing in order to conserve coastal resources through controlling of development.

In addition, the Policy Note emphasized the following.

- ICZM is needed to combine natural hazard prevention and resources conservation. The zone contains the biologically most valuable habitats and a dense human population. Sustainability is an essential ingredient for ICZM.
- Conservation and economic development are not conflicting. In economical terms, the multiple-use concept requires that the "opportunity costs" are minimal, e.g., when water is used for irrigation only, the potential reduction of income reduction from fishing has to be considered as a loss.
- A major purpose of ICZM is the care-taking of common property resources such as coastal waters. This is an important government task.
- Non-quantifiable values have to be considered in decision-making.
- ICZM requires the highest possible level of public participation.
- The value of ICZM is that it should serve to co-ordinate all the varied interests in coastal resources. Therefore it needs to involve all levels from national to village governments.

For implementing the preparatory phase, a small but highly professional PDO will be set up.

BACKGROUND ON PREVIOUS INITIATIVES

Gradual conceptualization of Integrated Coastal Zone Management (ICZM) in Bangladesh

ICZM is not a new concept or even not a new attempt in Bangladesh. It has a history. Three important activities on a national level merit mention in this context.

1. The Bangladesh National Conservation Strategy (1986/1987)

The National Conservation Strategy (NCS) is a project of the Ministry of Environment and Forest (MoEF), initiated to address the natural conservation issues at a national level, obliged by the World Conservation Strategy (WCS). Technical support for the project is provided by the International Union for Conservation of Nature (IUCN). NCS has already developed a conservation strategy to be incorporated in sectoral development. NCS is now in the 1st phase of implementation and doing Tanguar Haor (RAMSAR site) management and working towards development of a Marine Park in St. Martin Islands.

On the coastal zone, the NCS observed: "The economic development of the coastal zone, therefore, needs to be carefully controlled and monitored, in view of the numerous linkages, that contribute to keeping the whole intact, and it is the whole that matters when considering long-term benefits".

2. The United Nation/Economic and Social Commission for Asia and the Pacific (UN/ESCAP)-Government of Bangladesh (GOB) Coastal Environment Management Plan for Bangladesh (1987-88).

Several Bangladesh experts with ESCAP support produced this report with recommendations for environmental management of the coastal zone. This report embarks from the premise that sustainable development demands environmental maintenance and even improvement. In this report, attempt has been made to integrate socio-economic considerations into considerations of environmental issues.

3. The activities of the Parliamentary Committee and the CARDMA Initiatives (1988).

An organisation of parliamentarians called CARDMA (Coastal Area Resource Development and Management Association) organised a workshop in October 1988 and was able to bring together on the one hand the people's representatives i.e. the Members of the Parliament (MP), representing the constituencies in the coastal region and on the other, the experts, scientists and policymakers. The workshop participants emphasised 'the need for a comprehensive coastal development plan based on the principles of sustainable development'. An action programme was to give priority to three aspects: Sunderbans; conservation of the environment; and sustainable development. A total of 67 different recommendations were made on 17 different topics, such as: shrimp cultivation; forests; land reclamation; wildlife preservation; database; eco-tourism; communications; habitat; crop development; livestock development; salt production; seabed resources; marine pollution; energy; disaster preparedness; mass awareness; and institutional mechanism. No follow-up action programme was made.

Above initiatives could not stimulate immediate follow-up activities. However, through these initiatives a number of documents were generated, which captured knowledge at that stage of development, providing a sound background for further consolidation of information, and which created a growing awareness for a more institutionally focused ICZM.

Aide Memoire IDA/NEDA Preparation Mission, Proposed Second Coastal Embankment Rehabilitation Project and Integrated Coastal Zone Management Plan, October 1999

A Joint Mission of the International Development Association (IDA) and the Netherlands Development Assistance (NEDA) consisting of: Jan Weijenberg, Benson Ateng, Imtiazuddin Ahmed, Md. Abdul Ghani, Peter Jipp, Walter A. Garvey, T.C. Sarker & Mahtab Alam (all IDA); Peter de Vries & Zahir Uddin Ahmad (NEDA); Sarwat Chowdhury and Gertjan de Graaf (consultants), assembled during September 21 and October 7, 1999. The Mission specified institutional arrangements for ICZM in detail. It emphasised that development of the ICZM Plan would involve extensive consultations with local stakeholders including local government, civil society, NGOs, and the private sector in the coastal zone as well as concerned central government agencies. Land use planning and responsible coastal fisheries, forestry and marine resources management would be necessary, as would the resolution of existing resource use conflicts. An integrated coastal resource information system will be needed to support these planning and consultation activities. Preparation of this program is expected to take approximately 3 years, and implementation up to 15 years.

In the following section, all three conceptual documents are compiled for further use and reference.

Concept Note & Development Process on Integrated Coastal Zone Management; Joint Donor Identification Mission (IDA/NEDA/WFP), March 1999

INTEGRATED COASTAL ZONE MANAGEMENT in BANGLADESH

A CONCEPT NOTE

DEVELOPMENT PROCESS

Recommendations of a Joint Donor Identification Mission

March 1999

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Table 1: Indication of the Knowledge Base of Completed & Ongoing Development Projects in the Coastal Zone
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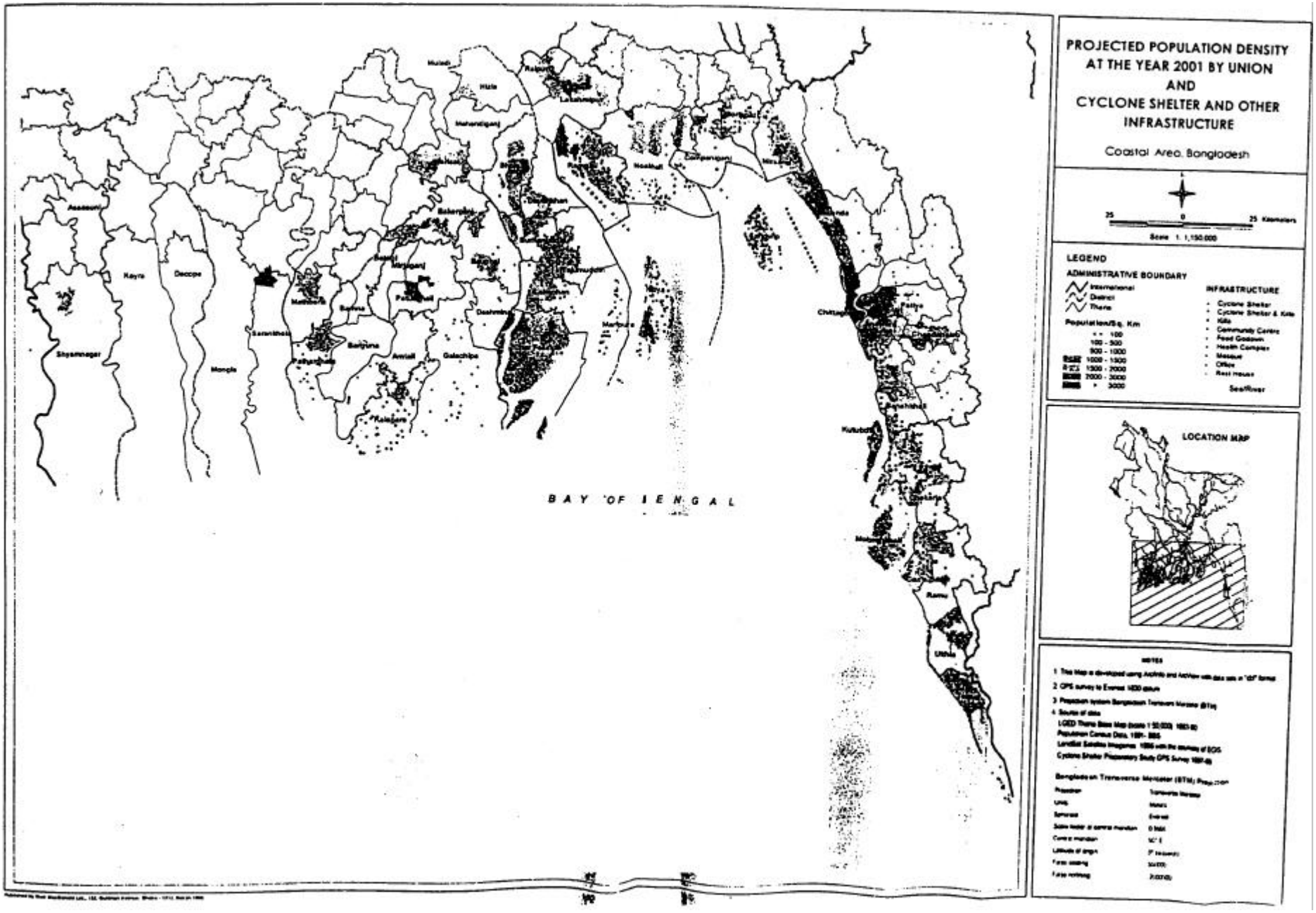
List of Abbreviations

ADAB	Association of Development Agencies in Bangladesh
ADB	Asian Development Bank,
BARC	Bangladesh Agricultural Research Council
BBS	Bangladesh Bureau of Statistics
BCAS	Bangladesh Centre for Advanced Studies
BIDS	Bangladesh Institute of Development Studies
BIWTA	Bangladesh Inland Water Transport Authority
BRAC	Bangladesh Rural Advancement Committee
BWDB	Bangladesh Water Development Board
CDSP	Char Development and Settlement Project
CER.P	Coastal Embankment Rehabilitation Project
DANIDA	Danish Development Assistance
DFID	Department For International Development
EGIS	Environment and GIS Support Project
EU	European Union
FAO	Food and Agricultural Organisation
GEF	Global Environmental Facility
ICZM	Integrated Coastal Zone Management
IDA	International Development Assistance
IPOE	Independent Panel of Expert
IUCN	International Union for Conservation of Nature
LGED	Local Government Engineering Department
MES	Meghna Estuary Study
MOA	Ministry of Agriculture
MODMR	Ministry of Disaster Management and Relief
MOFE	Ministry of Forest and Environment
MOFL	Ministry of Fishery and Livestock
MOL	Ministry of Land
MOLGRD&C	Ministry of Local Government Rural Development and Co-operatives
MOWR	Ministry of Water Resources
MT	Management Team
NEDA	Netherlands Development Assistance
NEMAP	National Environmental Management Action Plan
NGO	Non Governmental Organisation
NWMP	National Water Management Plan
SWMC	Surface Water Modelling Centre
TC	Technical Committee
ToR	Terms of Reference
UNDP	United Nations Development Prograrnme
WARPO	Water Resources Planning Organisation



PROJECTED POPULATION DENSITY AT THE YEAR 2001 BY UNION AND CYCLONE SHELTER AND OTHER INFRASTRUCTURE

Coastal Area, Bangladesh

25 0 25 Kilometers

Scale 1: 1,150,000

LEGEND

ADMINISTRATIVE BOUNDARY

- International
- District
- Thana

Population/Sq. Km

- < 100
- 100 - 500
- 500 - 1000
- 1000 - 1500
- 1500 - 2000
- 2000 - 3000
- > 3000

INFRASTRUCTURE

- Cyclone Shelter
- Cyclone Shelter & Killa
- Killa
- Community Centre
- Flood Goddown
- Health Complex
- Mosque
- Office
- Rest House

Seafloor

LOCATION MAP

NOTES

1. This Map is developed using ArcInfo and ArcView with data sets in "GIS" format
2. GPS survey to Everest 1830 datum
3. Projection system Bangladesh Transverse Mercator (BTM)
4. Sources of data

LGED Thana Base Map (scale 1:50,000) 1993-95

Population Census Data, 1991, BBS

Landsat Satellite Imageries 1995 with the courtesy of EGIS

Cyclone Shelter Preparatory Study GPS Survey 1997-98

Bangladesh Transverse Mercator (BTM) Projection

Projection	Transverse Mercator
Units	Meters
Spheroid	Everest
Scale factor at central meridian	0.9996
Central meridian	90° E
Latitude of origin	0° (Equator)
False easting	500,000
False northing	0 (zero)

SECTION A: DEFINING THE CONCEPTS

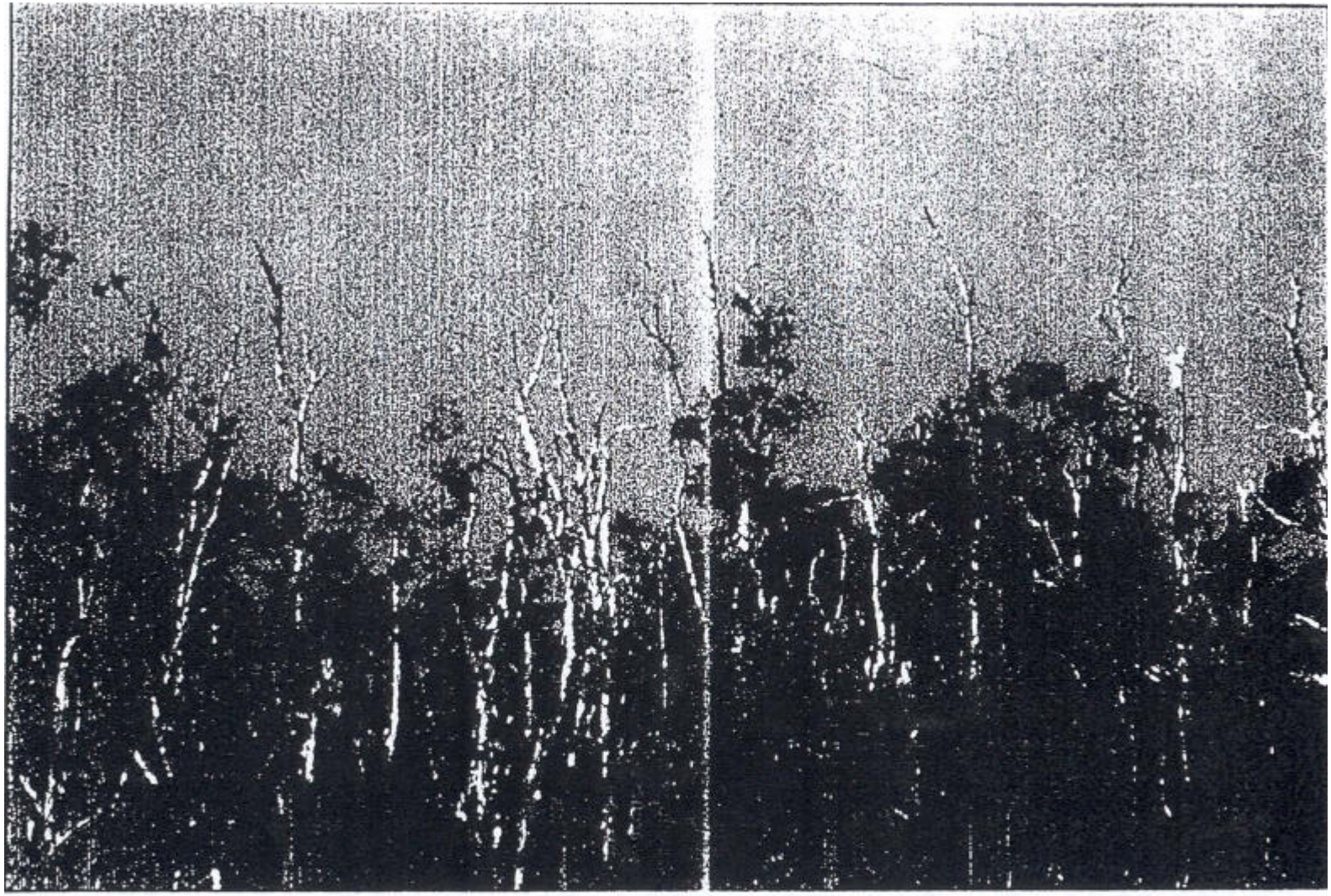
1. Introduction

1. This concept note is the first stage in the development of a process of Integrated Coastal Zone Management. It is the product of a Joint Donor Mission, with the World Bank, the Netherlands and the World Food Programme contributing directly to the mission. The mission team, which consisted of Messrs. John Soussan (Team Leader), Anjan Datta & Luitzen Bijlsma (consultants), Jan Weijenberg, & Imtizuddin Ahmed (IDA), Peter de Vries & Zahir Uddin Ahmad (NEDA) and Rezaul Karim (WFP) consulted with a wide range of stakeholders within Dhaka, but the limited time available meant that there was no time to visit the field or involve many other stakeholders at all levels from national to local (including the communities of coastal areas). This means that the ideas and approach presented here are a starting point only, not a definitive statement on the issues for Bangladesh. The mission took place at a time of active development of the debate within Bangladesh on the future of tile coastal zone (not least within government, with a group of senior government officials recently completing a study tour to South-East Asia to gain insights into the experience of other countries on coastal zone management). It is hoped that this paper can contribute to this process.

2. What is essential is that these issues are actively debated and a national consensus on the way forward develops. The discussions that did take place emphasised the critical importance of these issues for the development of the coastal zone and the nation as a whole. What there is already a consensus on is that the situation in Bangladesh's coastal areas is unique; a contention that the mission wholeheartedly agrees with. There are many experiences in Integrated Coastal Zone Management (ICZM) a-round the world: experiences that offer some lessons but few direct comparisons. There are few, if any, examples of a coast that is so dynamic, so critical to a nation's future yet so uncertain in its prospects. The approach set out in this paper attempts to capture this special character and outline a process that could form the basis of the sustainable development of an area that is unique in its challenges and international in its significance.

2. The Approach

3. The first question to answer is why the coastal zone matters. This is important in defining the goal of and approach to ICZM. There are many perspectives, but the starting point for the analysis presented here is that **ICZM should be people-centred**. The key challenge is to create the context within which the people and communities of the coastal zone (Figure 1) can sustain and improve their livelihoods with a sense of security and prospects that are equal to those of other pails of the country. This should, of course, take place in a way that preserves the integrity of the environment and recognises that what happens in the coastal zone is often of national or even international significance (for example, there are globally significant ecosystems that are presently under threat: see Figure 2). There is nothing contradictory in this, for the durable development of coastal livelihoods will be built 'upon the sustainable management of the zone's resources and the fuller integration of the coast into the national and international community.



Increase of salinity is major cause of Top-dying of Sundari trees in Sundarbans.

4. The area does have special characteristics, special vulnerabilities and potentials that are discussed below. It is also not virgin territory. There are a wide range of existing policies, projects and other activities that have and will continue to mould the zone's development. This raises the question of **what integration means.** What it does ***not*** mean is a prescriptive plan, administered by some sort of super agency, which aims to control all aspects of the coastal zone's development within one rigid form of control. Rather, ICZM is above all about the **integration,** the harmonisation, of existing policies, programmes and projects. It is about moving from traditional sectoral approaches that address the whole part of the picture to a unified approach that addresses the whole picture. An integrated approach should seek to build on what is there, to inform these existing activities so that their wider implications are understood and the approach they take is adapted to reflect the zone's special challenges.

5. Within this overall approach, integration is also about the **integration of development and disaster management** policies and activities. The coastal zone is characterised by both many factors that limit development potentials and a range of threats from natural disasters. These tend to be viewed separately; a perspective that falls to recognise the synergy between the two. Disasters obviously impact upon development, but conversely a strong development-based program will both lessen the impact of disasters and make the post-disaster recovery process far easier. This is largely because the people and environment of the coastal zone will be more resilient to the impact of hazards, but the permanent institutional presence that long-term development programs brings to coastal areas also means that disaster preparation and awareness-raising can be a continuous process rather than something that happens immediately before the disaster strikes.

6. This in turn leads to the need to identify the framework for harmonisation: the process of **policy and institutional development** that will create the conditions within which ICZM is possible. This should link to national processes and priorities, which in contemporary Bangladesh means the processes of decentralisation, democratisation and institutional integration. A horrible piece of jargon but crucial concept is ***subsidiarity:*** the process through which decisions are devolved to the lowest appropriate level. This does not always mean the local level: some issues are national in character, yet others are purely local, others lie somewhere in between and many issues can only really be tackled by integrating these different levels. The key to ICZM is to make sure that the right people are taking the right decisions. Such changes cannot happen overnight, so the approach set out here is evolutionary in character: 1CZM is a process whose details will change over time but which is founded on clear goals and a strong consensus.

7. There are many means through which this harmonisation can take place, from a loose co-ordination between agencies that are jurisdictionally independent to an overall plan, what could be called a master plan, that gives a clear and structured framework that sets the direction for all stakeholders. The precise form of ICZM that is appropriate for Bangladesh should not be hastily defined, but should rather reflect a process of considered analysis. What is clear is that, whatever form it takes, it must be dynamic, developing over time as new issues emerge and the nature of the challenges in the coast themselves change. ICZM must be a dynamic process for a dynamic place, for one of the defining features of the coastal zone is the speed and variability of change.

3. Why Integrated Coastal Zone Management?

8. In developing an ICZM Program, the first issue is to define whether it is necessary at all. In other words, are there specific features of the coastal zone that set 11 aside from the rest of the country and necessitate a special initiative? In a country such as Bangladesh, this should not be taken as fact, as all parts of the country face profound development challenges. This issue has been actively debated and discussed by the mission, with a clear conclusion that the coastal zone does indeed possess special characteristics. It is the site of a specific range of vulnerabilities, combined with unrealised development potentials that do indeed make it unique. These vulnerabilities and potentials reflect the interface of land and sea and require distinctive approaches from the rest of the country. This is the

basis of ICZM: not that the coast is just different, but rather that it needs fundamentally different approaches to meeting its distinctive challenges.

9. There is a very special set of **vulnerabilities** that limit the development of livelihoods in coastal communities, present unique challenges to external agencies and create particular threats to the integrity of ecosystem processes in coastal areas:

- Widespread **poverty,** limited livelihoods opportunities (especially outside agriculture) and poorly developed **economic linkages,** including poor access to markets, that are even more severe that in other parts of rural Bangladesh.

- Poor levels of **service provision** and very poorly-developed **institutional structure** (with both government and non-government institutions poorly represented in many coastal countries) that make the **isolation** of many coastal areas worse.

- Highly **unequal social structures,** with a small powerful elite dominating the mass of people, allied to high levels of **conflict** and poor **law and order.**

- The threat of **cyclones** and storm surges is a constant feature of life, with devastating events such as the 1970 and 1991 cyclones and smaller storms every year (Figure 3).

- The long-term effects of **climate change**, with predicted rises in sea levels, possible increases in the frequency of major storms and changes to rainfall patterns over the whole Ganges-Brahmaputra catchment.

- Active processes of **land erosion and accretion** (Figure 4) in the Meghna Estuary, combined with geological and tectonic processes that are causing land to sink.

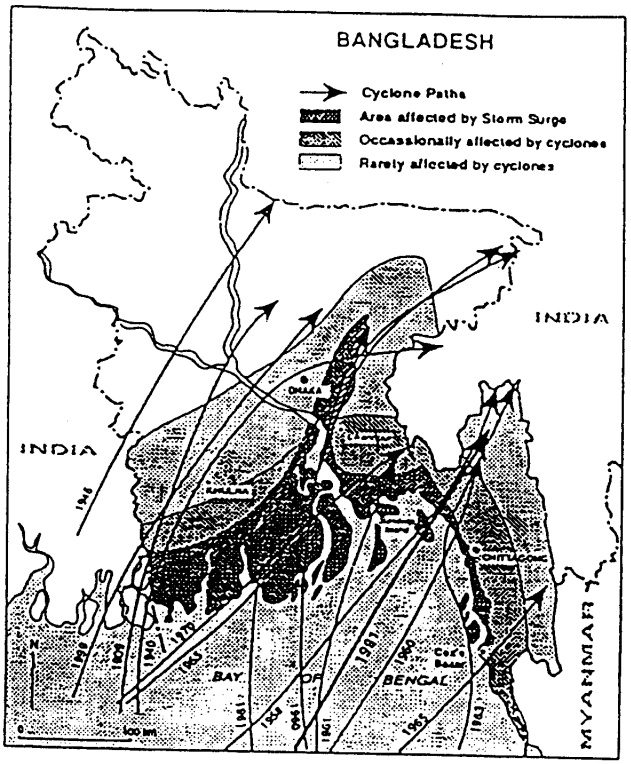
- Changing patterns of **land use**, both in the coastal zone (Including the growth of shrimp and salt production) and over the catchment as a whole that are affecting the coast's morphology and water resources characteristics.

- Declining viability of many distinctive and threatened coastal ecosystems, including the Sundarbans and other mangroves, coastal wetlands and marshes and off-shore marine habitats that are key spawning grounds.

- Widespread **pollution and resource degradation,** including 'hotspots' such as the coast north of Chittagong as well as more widespread processes.

- Poor access to many forms of **infrastructure & technologies** and many examples of technical interventions that are poorly adapted to the characteristics of coastal areas.

Figure 3: Path of Cyclones in Bangladesh



Source: Ericksen et al., 1996.

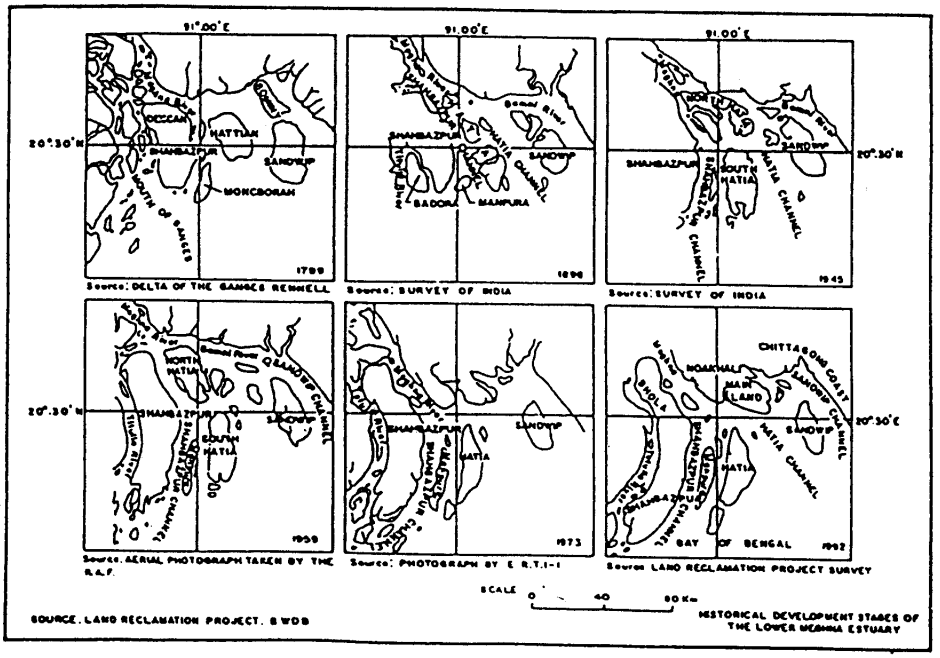


Figure 4: Changes in the structure of the lower Ganges-Brahmaputra Delta between 1789 and 1992

6

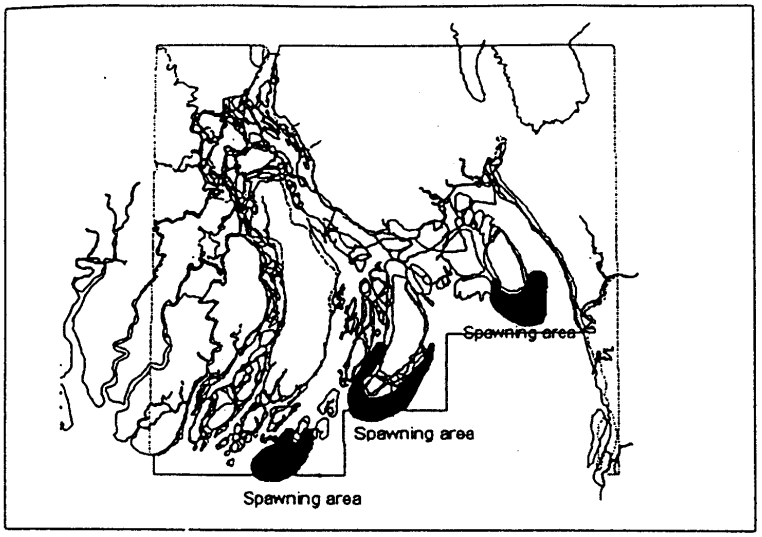
- Surface and sub-surface **salinisation,** including saline intrusion into freshwater aquifers some distance from the coast.

- Poor **resource management,** including the unsustainable exploitation of fish resources (Figure 5) and poor ground and surface water management (including drainage problems), the clearance of mangroves and other forests and soil fertility management.

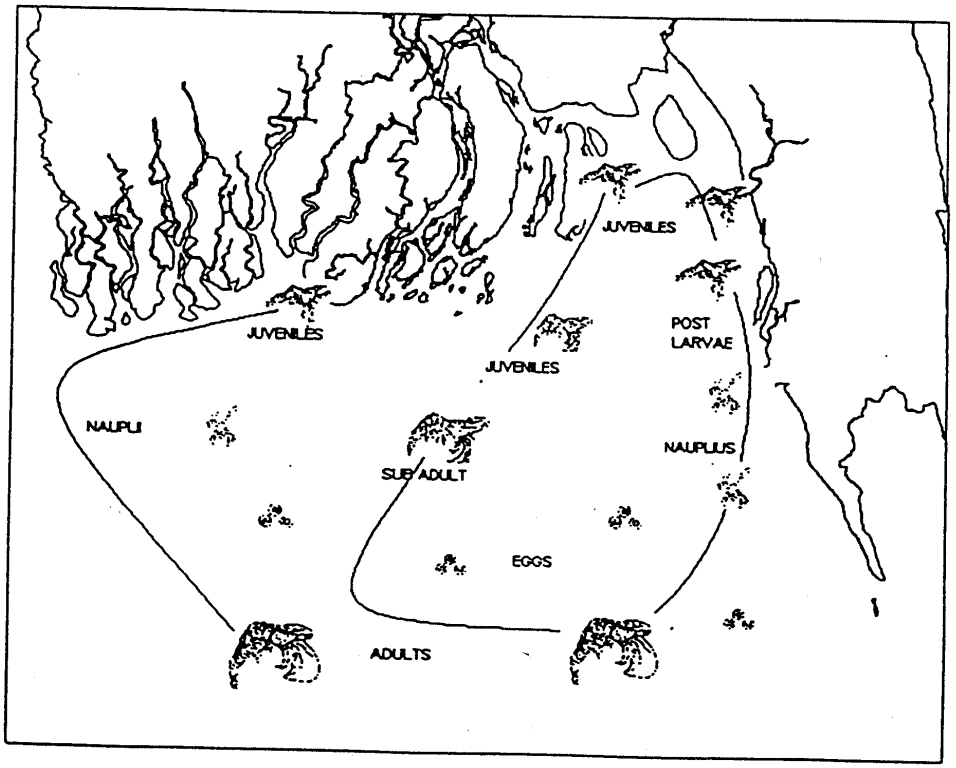
10. This long list of vulnerabilities, many of which are unique to the coast, creates a development context of insecurity, which in turn produces risk minimising strategies that discourage investment. The long-term development of the coast will depend upon creating greater security and reducing or eliminating many of these threats. Many of these vulnerabilities are extremely variable and, in some cases, intermittent in effect (for example, cyclones come only infrequently, but have a devastating effect when they arrive). Similarly, the processes of land erosion and accretion affects only some areas (especially the Meghna Estuary), and reflect such powerful and variable forces that predicting where land will appear or disappear is inherently uncertain. This means that the approach to ICZM in Bangladesh must be effective in coping with **uncertainty,** for the combinations of powerful and variable processes create the conditions within which the development of the coast will take place are themselves variable and unpredictable.

11. There are also untapped potentials in the coastal zone, including a greater range of **resource opportunities** than other parts of the country. This includes the potentials of Marine resources, the accretion of new land, oil and gas resources, the potential productivity of mangroves and other coastal ecosystems, the scope for development based around the ports and the undeveloped potentials of the coast for tourism development. These resource potentials offer opportunities that can form the basis of a process of **sustainable development** in the coastal zone. The key challenge to ICZM is to realise these potentials whilst mitigating or adapting to the Vulnerabilities through a process that builds upon the livelihoods of the people and provides these communities with links to and support from external institutions.

Figure 5: Spawning and nursery areas of Hilsa (*Tenualosa ilisha*) in Bangladesh



The life cycle of Bagda (*P. Monodon*) in Bangladesh



4. What is an Integrated Coastal Zone Management Program?

12. The goal of an integrated coastal zone management program (ICZM Program) is to create the circumstances through which the communities of the coastal area are able to cope with the multiple vulnerabilities they face and realise the zone's development potentials. The focus of an ICZM Program is on establishing a policy framework that defines and directs the development of the coastal zone. It does not mean that all activities are centrally managed. It does mean that they, should take place within a framework that creates harmonisation and removes conflicts. As part of this, the policy framework should itself be integrated into the wider fabric of **national policies and priorities,** as well as the international agreements and obligations to which Bangladesh is a signatory (Including conventions such as the Convention on Biological Diversity, The Ramsar Convention on Wetlands and the Convention on the Prevention of Marine Pollution).

13. This policy framework should clearly state the **development goals** that ICZM is intended to realise. It should also be linked to an **implementation strategy** that establishes and prioritises the actions needed to realise the goals set out in the policy framework. As such the ICZM Program (policy, goals and strategy) will be the basis for structuring the integration of many spheres of activity:

- **Laws, policies and procedures** in areas that affect the coast's development, including spheres such as land tenure, entitlements to and the management of common property resources and the means through which conflicts over resources are resolved.

- **Regular and continuous activities,** including service provision by government agencies such as health, local government and agricultural extension. It should also encourage and orientate the activities of non-government organisations and the functioning of markets.

- Security of life and property, both through the mitigation of environmental threats such as cyclones and the provision of institutions that provide law and order and the control of local people over their own lives.

- **Projects** in the coastal area that are based upon the policy framework, including an **Integrated Coastal Zone Management Project** (that will be a framework with a number of inter-linked sub-projects, including an activity to continue the development of the ICZM process) and **other projects** that are separate in management terms but integrated in goals and objectives.

14. Each of these types of activities can and does operate at different levels, with a broad distinction between the **macro level** (national and regional) and the **micro level** (households, communities and administrative levels immediately above them). Given the emphasis placed on people-led development, the development of ICZM should be linked as far as possible to the decentralisation processes that are one of the main priorities within contemporary Bangladesh.

15. This means that the **Thana level** is a natural focus of attention, with the ICZM activities that are aimed at micro-level development processes (for example, local level infrastructure development, agricultural extension activities, community development programs, community-based resource management) planned and implemented at Thana and community levels. It is also at this micro-level that the activities of government and non-government organisations need to be integrated. This will be particularly true for key areas of livelihoods development, resource management, land use and allocation, service provision and hazard mitigation.

16. This will not be the only level of activity, however, for there are aspects of the development of the coastal zone that are regional, national or even international in significance: the preservation of the Sundarbans, protection from and responses to cyclones, saline intrusions, shipping and trade and

others. These need to be planned and co-ordinated at the macro level. Of course, such developments influence what happens at the local level (and *vice versa),* so integration processes need to ensure that macro and micro are integrated. What this distinction does, however, is define the main emphases of different aspects of the ICZM Program. It should be rooted in local level development but take account of national needs and interests. The harmonisation of these different levels is one of the main challenges that the development of an ICZM Program will face.

5. A Starting Point: Development Goal & Objectives

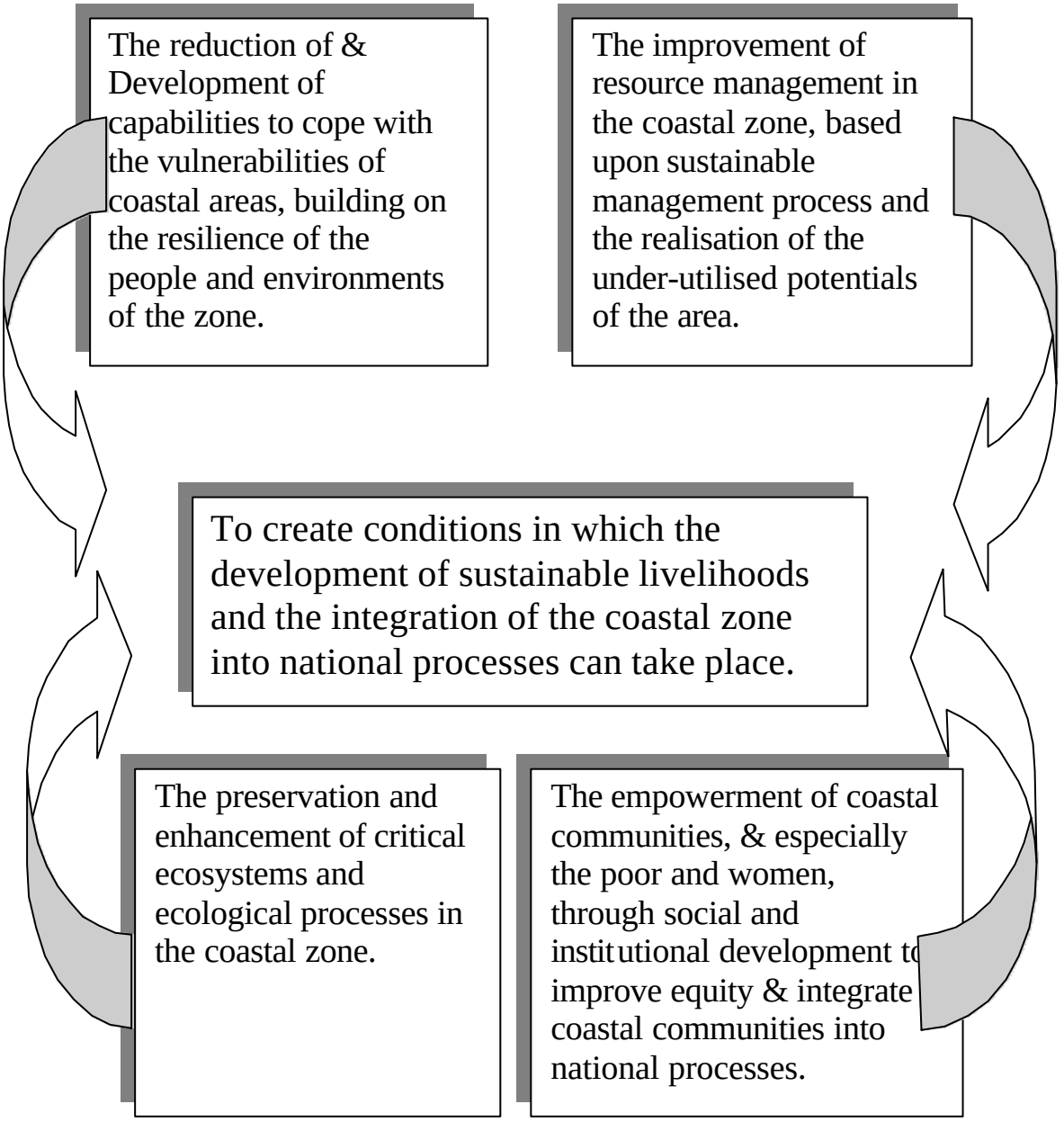
17. Building a consensus on the goals and objectives of an ICZM Program *will* take time (and is an integral part of the development process set out in section B), but such a process has to start from somewhere. The mission has, based on the consultations made, developed the following overall development goal and development objectives (see Figure 6) as a contribution to this process, but they are far from definitive and should be seen as a starting point only:

Development Goal

To create conditions in which the development of ***sustainable livelihoods*** *and the* ***integration*** of *the coastal zone into* ***national processes*** *can take place.*

18. This goal is rooted in the communities of coastal areas, with the overarching intention being to remove the vulnerabilities and realise the opportunities for these communities to develop their livelihoods in a sustainable and egalitarian manner. It is not simply about local-level processes, however, for there is a need to recognise the wider importance of many coastal issues and ensure that the zone is more fully integrated into the wider fabric of Bangladesh's society and environment.

Figure 6: Development Goal & Development Objectives for ICZM in Bangladesh
(the arrangement of the objectives around the goal is intended
to illustrate that they are inter-linked and not hierarchical)



19. Such a goal can be realised by many means. The development objectives set out here are intended to guide the process of development through which the goal will be realised:

Development Objectives

The reduction of and development of capabilities to cope with the **vulnerabilities** of coastal areas, building on the resilience of the people and environments of the zone.

The improvement of resource management in the coastal zone, based upon sustainable management processes and the realisation of the under-utilised potentials of the area.

The empowerment of coastal communities, and especially the poor and women, through social and institutional development to improve equity and integrate coastal communities into national processes.

The preservation and enhancement of critical **ecosystems** and ecological processes m the coastal zone.

20. Taken together, this set of development objectives will build towards the overall development goal through addressing the special challenges and building upon the special opportunities of the coastal zone. They define the context in which individual activities should be developed and set a direction for the building of a consensus on the development of the coastal zone.

6. Understanding the Coastal Zone

21. The basis for identifying what actions are needed for the coastal zone is to understand what the zone is. There have been several attempts to delineate the coastal zone in Bangladesh, producing radically different areas that the zone is meant to include (and indeed many of these single measures vary over time). Figure 7 relates a number of definitions used in the past to the four development objectives set out in section 5. The only conclusion that one can draw is that there is probably no single, all-encompassing definition that will serve every purpose, but nor is such a definition needed. The coastal zone is best understood in relation to process, not place. We need to understand the coastal zone in relation to particular types of challenge or opportunity. The best definition is one that meets such specific purposes.

22. Having said this, there is again a need for a functional definition, to understand where to start with building consensus and defining challenges. The one proposed by the mission is a simple one, based on the administrative units that will he central to the planning and implementation of an ICZM Program. As such, it is proposed that the starting point for defining the coastal zone should be all sea- and estuary-facing administrative Districts: that is, those facing the lower reaches of the Meghna Estuary up to Chandpur and those facing the Tentulla and Baleswar Rivers.

Figure 7: The Relationship Between ICZM Objectives and Coastal Zone Definitions

Coastal Zone Definition	**Reduction of Vulnerabilities**	**Improved Resource Management**	**Empowerment of Coastal Communities**	**Preservation of Ecosystems**
Tidal Influences: wide range along river, up to Sylhet	?	?	–	+
Cyclones, total area affected: southern half Bangladesh	+	?	+	?
Cyclones, storm surges: coastal region up to 50 km inland	+	?	+	?
Land Accretion & Erosion: immediate coastal margins	+	+	+	?
Salinity Problems: wide range, up past Khulna in West	–	+	?	–
Empoldered Area: wide area in West, narrow in East	+	?	?	–
Coastal Resources: wide range, especially off-shore into sea	+	–	+	?
Ecological Units: variable range on shore and off-shore	–	?	?	+
Administrative Units: medium range, up to 60 km inland	+	+	+	?

+ = positive relationship - = no relationship ? = not sure

7. Making a Start

23. This report is intended as a contribution to a debate. It is intended to stimulate, to provoke, to (it is hoped) move the discussion on ICZM in Bangladesh forward. But it is only a start. Many and formidable challenges lie ahead before a process of integrated and sustainable development in the coastal zone will emerge. Not least of these is the development of a consensus on what these challenges are and how they can be addressed. These should not be taken lightly, but nor should they be disabling, for there can be little doubt that such a process will bring great benefits to the communities of these areas and to Bangladesh as a whole.

24. Section B outlines a two year process to define an ICZM Program, including a set of new activities, the co-ordination of existing activities, a process of consultation and participation and a proposed institutional structure to achieve these demanding goals. This process will be demanding, but is achievable if all stakeholders work together with a spirit of co-operation and determination to make it work. The signs for this are good, including a demonstrated concern within the donor community to contribute to the process. The findings and recommendations of this mission are the first stage in this. The process set out in Section B is intended to define the structure through which this support will be channelled.

SECTION B: PREPARING FOR THE ICZM PROGRAM

8. The Preparatory Phase

25. Integration cannot be in place at once. Careful scheduling and co-ordinate preparatory actions are needed to plan for the ICZM Program. All preparatory actions that are needed to arrive at an ICZM Program in due time are in this report indicated as the Preparatory Phase. An important element of the preparatory process is to build ***consensus*** between all stakeholders involved. This implies that the Preparatory Phase is a process that is to be developed step-wise. This also implies that the output of the Preparatory Phase cannot be specified in too much detail in advance, for the process of identifying these actions should itself be consensus-based.

26. The Preparatory Phase will contain a number of steps and elements. The outcome of each step and the output of each element will by definition influence the next stage in other words, it is an **iterative process.** Any such process has to start somewhere (so to structure the process in the Preparatory Phase, these steps and elements have to be identified in broad terms in order to allow the involved stakeholders to reflect and participate and to contribute in preparation of the Program. A period of two years is considered to be sufficient to complete the Preparatory Phase.

27. The steps and elements of the Preparatory Phase should be identified and formulated in a way that they contribute to the development goal and objectives as defined above. This implies that the steps and elements cover a broad array of actions. The willingness to co-operate and the openness of all stakeholders to adjust their activities towards this process is of crucial importance, and a prerequisite for its success of the process to be executed in the coming years. The ***ownership*** of ICZM Program should not be limited to a single Government sector or a number donors, but should cover all stakeholders involved.

28. Finally, special attention is needed for the ***ongoing*** development projects those that are under *preparation.* There is no need for things to stand still in the ***Preparatory*** Phase On the contrary, an ICZM Program is intended to stimulate actions has towards the sustainable use of resources in the coastal zone of Bangladesh. It has consequently strongly recommended that ongoing projects and projects under preparation must be followed through and not be delayed, but they should also be adjusted in terms of their scope, objectives and institutional setting to allow for their integration into the development of the ICZM Program.

9. The Steps and Elements of the Preparatory Phase

29. As indicated, a *stepwise* approach in the Preparatory Phase is to be elaborated in further detail. It is not a simple, straightforward analysis type of exercise. It is a process of integrating information and experiences to arrive at the formulation of an ICZM Program. It should be emphasised that these are not sequential, but iterative, during the execution of the steps there might be multiple feed back loops to previous (work if new insights gained during the continuing integration gives a need to do so. It is essential, however, that the process becomes and remains transparent for the stakeholders involved. Distinction can be made in steps and elements. A step refers to the overall evolution of the Preparatory Phase, whilst an element is a concerted action within a step. The following five-step approach is proposed:

- Designing the Overall **Approach.**
- Defining the **Development Challenges**.
- Generating **Solutions.**
- Defining the **Strategy.**

- Formulating the **Program.**

These steps are discussed in the following sections to identify the elements that should be pail of the terms of reference for the Preparatory Phase.

9.1. Designing the overall approach

30. This report of the mission is a contribution to the starting point of the first step. It sets the ***agenda*** for the Preparatory Phase of an ICZM Program. The most important part of the first step in the Preparatory Phase is to agree on the design of the process and its organisation, including the institutional arrangements. The stakeholders and actors that should be involved in the process have to be identified and consulted in the light of the core objectives of the Program and institutional framework suggested. The institutional arrangements for and management of the Preparatory Phase are discussed in section 10.

9.2. Defining the development challenges

31. In the second step a common knowledge and understanding of the problems and opportunities of the coastal zone have to be grown. An inventory has to be developed of all problems and challenges of importance. The ***inventory*** should lead to a first ordering of problems and challenges, to allow for communication and interaction with all stakeholders, and to define the reference for the next step. This is crucial for consensus building. Problems and challenges to be inventoried include:

- The present social, economic and demographic conditions and trends.
- Patterns of livelihoods systems, vulnerability and coping strategies in different sections of the communities in the coastal zone.
- The resource base, including land, water, biotic and other resources, their uses and the trends in their condition.
- The present physical, morphological and environmental conditions and trends.
- Natural hazards and vulnerabilities and trends.
- The sources of marine pollution and trends.

9.3. Generating solutions

32. The third step within the Preparatory Phase should concentrate on possible solutions. The outcome of this step is to be a common knowledge and understanding of the ***different options*** to enhance resilience of the coastal communities, to develop the coastal resources in a sustainable manner and to restore and maintain critical environmental processes and biological diversity. Analyses should lead to a classification and combination of the different options and possible solutions for defining appropriate strategies. The development of common scenarios of driving forces inside and outside the Coastal Zone has to be included in this step, to stimulate future thinking in developing strategies.

3.3 These scenarios should use the best information available, but not be simple statistical projections. They should rather be inter-disciplinary analyses based on clear sets of assumptions. Demographic processes, climate change and associated accelerated sea level rise and changes in the river basins are components of these scenarios. A further grouping will facilitate the valuation of the different strategies and its alternatives, to be executed in the next step. The formulated strategies and specific options are the basis for communication and interactions with all stakeholders to build consensus and

to define the key issues for the next step in the ICZM process. Alternative strategies to enhance coastal resilience and its sustainable development potential could possibly include:

- The development of common scenarios for the driving forces to mould the development of the coastal zone.

- Identification of economic development opportunities for different parts of the coast.

- An integrated approach for the protection of people, livestock and infrastructure against natural hazards.

- A comprehensive strategy for land-use planning and zoning, including a specific component for land reclamation.

- The development of coherent and achievable strategies for environmental protection and the conservation of biological diversity.

- The mitigation of resource use conflicts.

- Integrating local livelihood mechanisms and strategies into the planning process and identifying options to enhance productivity and increase resilience.

9.4. Defining the strategy

34. The essence of step four is to create a **common vision** on the most promising strategies. Therefore it is essential to refine the strategies and translate them in terms of operations, actions and measures. Based on crucial relationships, packages of various combinations of operations, actions and measures may be formulated, investigated and categorised. The sensitivity of the outcome of the packages of operations, actions and measures, and their flexibility to adjust in the face of future developments, is to be studied and judged. Analyses of the impacts and side effects of these packages are also essential.

35. In order to evaluate these packages, a framework has to be developed in respect of the broad objectives of the sustainable development of the coastal zone. Information on costs, benefits and feasibility of the different packages has to be developed and evaluated, as do appropriate methodologies to undertake these tasks. The assessed packages and strategies are the basis for communication and interactions with all stakeholders for selection of the most promising ones based on the principle of consensus. Components of the strategy formulation step include:

- An inventory and grouping of possible operations, actions and measures to enhance specified development strategies.
- The development of a framework for monitoring and evaluation.
- Analyses and evaluation of possible operations, actions and measures combined in strategies.
- The selection of promising strategies based on a thorough discussion with all stakeholders involved.

9.5. Formulating the program

36. The final step in the Preparatory Phase is the ***decision making*** process. The components of the ICZM Program have to be formulated on the bases of the consensus that has been built in the previous steps. Elements of the ICZM Program include:

- Formulate the strategies within the context of the objectives of the ICZM Program.
- Identify institutional arrangements and co-ordination mechanisms to be put in place.
- Identify the resources of the stakeholders involved and delineate the tasks and responsibilities.
- Formulate the framework for monitoring of the Program formulation and implementation.

- Identify the potential sources of local resource mobilisation and the need and scope for external funding.
- Organisation and maintenance of the information base and define the methods and frequency of updating.
- Present the Program to decision-makers.

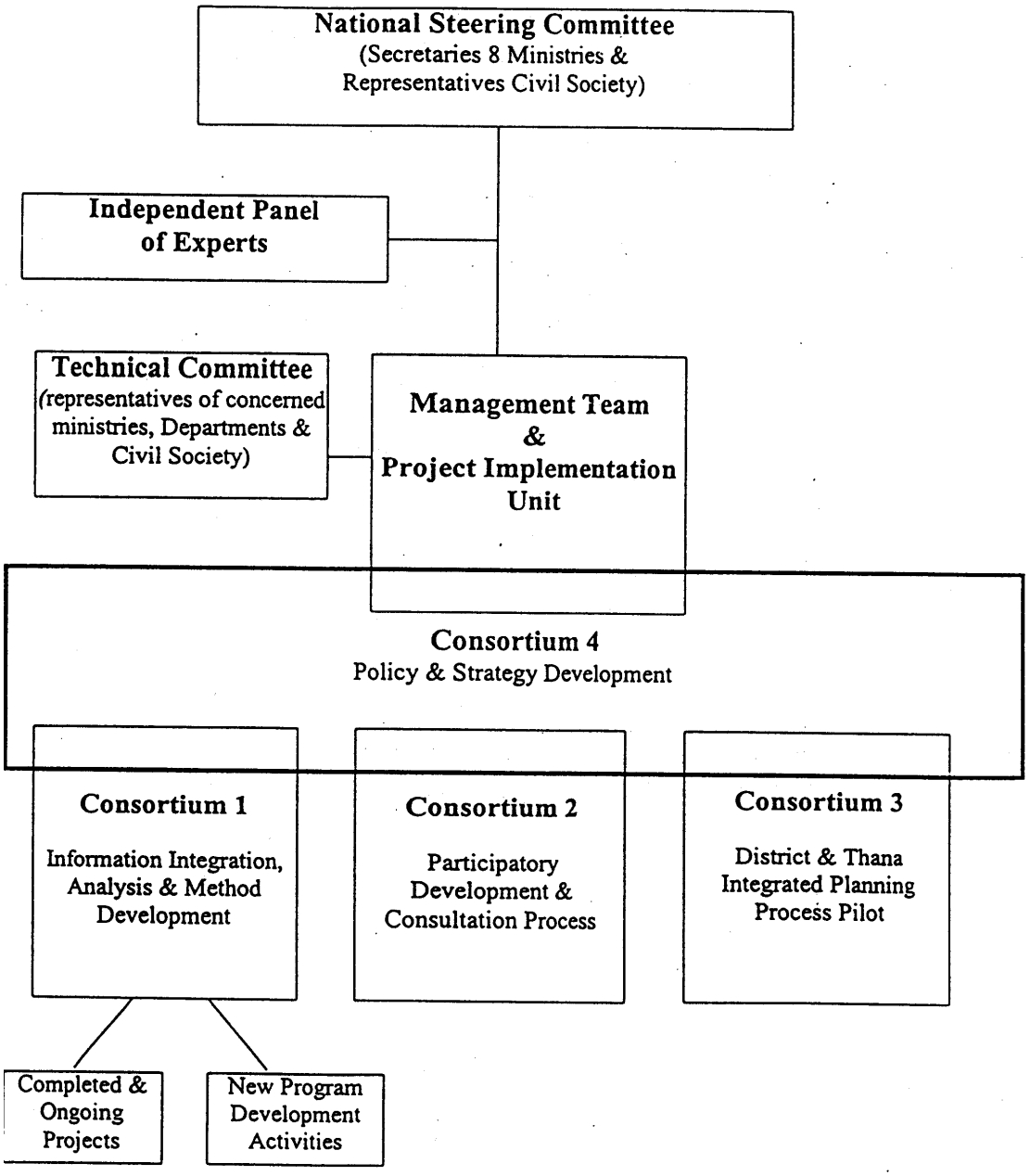
10. A Possible Institutional Structure for the Preparatory Phase

37. Figure 8 sets out a possible institutional structure for the 2-year ICZM Program Preparatory Phase. The structure reflects an attempt to balance two characteristics that this phase should have:

- The need to **build a consensus** on the need for, approach to and content of an ICZM Program. This consensus should be across all sectors of government (central and local) and between government and the wider civil society.

- The need to execute a demanding set of preparatory activities to establish th6^ structure and content of the ICZM Program. This will require high levels of professio nal competence and efficiency and careful management.

Figure 8: Possible Institutional Structure for ICZM Program Development



38. The structure tries to balance these two characteristics through two approaches:

1. Bringing together a wide range of Bangladeshi organisations that both have the appropriate professional skills and are representative of different constituencies to do the work.

2. Providing consultation and review systems that ensure the wider fabric of institutions and society are involved in all stages of the preparation process.

39. The apex of the structure is a high-level **Steering Committee,** that the mission recommends should be comprised of the Secretaries of eight ministries that represent different aspects of ICZM processes and representatives of the wider civil society interested in the issues (e.g. Chairperson of NGO apex body ADAB). This Steering Committee will derive its authority from the government and will provide the ultimate decision-making forum for the preparatory phase. The need for senior representation on this Steering Committee is emphasised, as the committee (which only needs to meet twice a year) will need to consider profound issues of law, policy and planning and must be a forum for open reflection, analysis and consensus building.

40. The Steering Committee should be assisted by **an Independent Panel of Experts** (IPOE), with a proposed composition of four permanent members (two local and two international) and a pool of resources to draw in additional expertise as needed. There is a need for a broad membership on the Steering Committee and a wide range of expertise in the IPOE, including representation of all key sectors for the coast's development, so the mission is of the clear opinion that the use of the same Steering Committee and LPOE as for the National Water Management Plan would ***not*** be an appropriate choice.

41. The main focus of the development of the ICZM Program will be a **Management Team** (MT), constituted under the authority of the Steering Committee. The MT in the opinion of this mission should be a small, highly professional group, but should specifically not be a contract to any individual consultancy firm. Rather, a composition of four professionals (two seconded from appropriate government agencies, if need be under consultancy conditions and two additional local experts) with an adequate support staff (a Project Implementation Unit) should be formed and located in an appropriate location. The MT will, under the authority of the Steering Committee, issue and supervise contracts and manage all aspects of the development of the program. They will have a prime responsibility for developing an integrated analysis, policy and strategy, and for doing so in a manner that also builds consensus across all stakeholders.

42. The mission also suggests that the MT be assisted by a Technical Committee (TC) that contains representatives of all concerned government departments and a wide representation of civil society. It will provide a forum for debate and review and will concentrate on the analysis and outputs (rather than contractual or management issues). It will play a key role in the integration process, including the review of all aspects of the preparatory phase and the screening of all, proposals for other projects and developments in the coastal zone.

43. The main bulk of the work done during the preparatory phase may be executed by what are described as four **Consortia.** These Consortia will be groupings of organisations each of which is given a join contract to develop a specific aspect of the program. To ensure ownership and appropriate design, it is proposed that each of the consortia be given responsibility for the development of detailed terms of reference (ToR) for the execution of their specific area. These ToR will then be reviewed by the MT, who will advise the Steering Committee or whether to accept them. The four Consortia are:

- **Consortium 1 : Information Integration. Analysis & Method Development**
  This Consortium will undertake the vital tasks of providing a knowledge base for the development and future operation on an ICZM Program. This will be based around the integration of the many existing information bases, but will include new realms of data on specific issues where this is needed. As such, the Consortium will have the scope for issuing sub-contracts on specific research

and knowledge development issues where agreed with the MT. Proposals for both the integration of existing, knowledge and the generation of new knowledge are made in this paper. The mission recommends that a consortium of some or all of BBS, BARC, LGED. EGIS and SWMC would provide the M'2hi balance of technical skills and representativeness.

- **Consortium 2: Participation Development & Consultation Process.** This essential exercise will be the key to ensuring that the preparation of priorities and approaches in the ICZM Program is built upon the needs and perspectives of the communities and institutions that will be both the implementers and beneficiaries of the program. There are recent experiences of such a process: most notably the NEMAP consultation process, but there is also a need to pay greater attention to the consultation of institutional stakeholders than took place within the MEMAP process. It is recommended that the task be assigned to ADAB and BIDS if they are willing to participate, as this would provide the appropriate mix of skills and representation of different interests.

- **Consortium 3: District & Thana Level Integrated Planning Process.** The local-level integrated planning and development process could best be developed through a pilot exercise. It will primarily be built on the decentralisation process and amongst others on experiences of government-NGO co-operation in planning and implementation of disaster management programs. To start with it will cover one District and two Thanas in that District. Such a local-level process will lie at the heart of a successful ICZM process, but experience in developing it is limited An appropriate grouping of government agencies and NG0s operating in coastal zone, with additional support from experienced institutional development professionals will be responsible for thus task. The scope for developing this component, at least in part, through the re-formulation of CDSP should be explored, as this would provide an existing presence in the coastal belt, but there would be a need to involve at least one major national NGO in this process.

- **Consortium 4: Policy & Strategy Development.** This grouping will be the core of the development of the final ICZM Program. This will be based on the integration of the work of the first three Consortia, interfaced with the considerations of the wider review process provided by the TC. It will also encompass specialist advice in key areas such as institutional development policy analysis and law. The Consortium will be directly managed by the MT (with one advisor a full-time task manager for this process), and will comprise of representatives of the other three Consortia (whose contract will include their contribution to this fourth Consortium) and other individuals and organisations agreed to have the required skills. The MT will prepare detailed ToR for review and approval by the Steering Committee (advised by the IPOE). The recommendations of this consortium will also need to be reviewed by wider constituencies, meaning that there needs to be an iterative interaction with the participatory consultation process undertaken by Consortium 2.

11. Ongoing and Planned Development Projects

44. The proposed institutional structure identified above gives a picture of how the two years preparatory phase could be organised and some idea of the main tasks that need to be undertaken during this phase. It has been noted that the development of the ICZM Program will not take place in isolation, but should rather learn from and integrate a number of existing initiatives within the process. These existing initiatives are discussed in this section.

45. In moving into the preparation of an ICZM Program is crucial to consider the ***position*** of ongoing and planned development projects. An overview of completed ongoing and new development projects with relevance to the coastal zone, is presented in Table 1. A total of 26 projects have been identified which have relevance for the development of the coastal zone (though there are undoubtedly others that are also relevant). In relation to the project-cycle these projects are categorised as completed,

ongoing, starting and in preparation. Moreover, the respective projects have been coarsely, assessed on character by indicating whether it is a study or research project, an investment project, or mixed. The project content is assessed in relation to the knowledge fields needed to develop the ICZN4 Program. These knowledge fields could broadly be divided as follows:

- Natural Risks and Hazards.
- Coastal Livelihood and Development Processes.
- The Management of Resources, their Degradation and Pollution.
- Coastal Ecosystems and Processes.
- Hydro Geo-morphological processes in the Coastal Zone.
- Land use, Physical Infrastructure and Demographic Processes.
- Social and Institutional Characteristics and Processes.
- Policy, Legislation and Procedures.

46. The assessment of the respective projects in the light of the above fields gives only some *indication* of what does exists or what will become available in the near future. The table however makes it clear that the fields of knowledge represent a wide range of disciplines. On the basis of the material that was available to the mission and based on the discussions with associated professionals, only an indication is given on the performances of the respective projects in the respective fields of knowledge.

able 1: Indication of the Knowledge Base of Completed and Ongoing Development Projects in the oastal Zone

				Policy, legislation and procedures	Social and institutional characteristics and processes	Land use, physical infrastructure and demographic processes	Hydro geo-morphological processes in the coastal zone	Coastal ecosystems and processes	The management of resources, its degradation and pollution	Coastal livelihood and development processes	Natural risk and hazards
R	C	Climate Change and Sea Level Rise NEDA	MoFE								■
M	C	Coastal Embankment Rehabilitation Project CERP I IDA	MoWR			■					■
R	C	Cyclone Risk Area Development Project EU	MoLGRDC			■	■				■
M	C	Delta Development Project DDP NEDA	MoWR		■	■			■		
R	C	Multipurpose Cyclone Shelter Programme UNDP/IDA	MoP		■		■				■
M	C	Land Reclamation Project LRP NEDA	MoWR			■	■				
R	C	South Eastern Regional Study FAP 5 IDA/UNDP	MoWR				■				
R	C	South Western Regional Study FAP 4 ADB/UNDP	MoWR				■				
R	O	Agriculture Research Management Project IDA	MoA			■			■		
M	O	Bay of Bengal Programme BOBP FAO	MoFL		■				■		
M	O	Char Dev. and Settlement Project CDSP NEDA MoWR LGRDC				■				■	■
I	O	Forest Resources Management Project FRMP IDA	MoFE						■		
M	O	Agriculture Serv. Innov. and Reform Project IDA/DFID/FAO	MoA			■			■		
I	O	Bola Irrigation Project ADB	MoWR			■			■		
M	O	Cyclone Preparedness Project CPP RC	MoDMR								■
I	O	Coastal Green Belt Project ADB	MoFE		■						
M	O	Khulna Jessore Drainage Rehabilitation Project ADB	MoWR		■		■	■	■		
M	O	Meghna Estuary Study MES NEDA/DANIDA	MoWR			■	■				
R	O	National Water Management Plan NWMP IDA	MoWR	■	■	■			■		
R	S	Coastal Land Use Zoning in the South West UNDP	MoFE			■		■	■		
M	S	Coastal Wetland and Biodiversity Project UNDP/GEF	MoFE					■		■	
I	P	Coastal Embankment Rehabilitation Project CERP II IDA	MoWR		■						■
R	P	Empowerment of Coastal Fishing Communities UNDP	MoFL		■				■	■	
I	P	Fourth Fisheries Project FFP IDA/DFID/GEF	MoFL		■				■		
M	P	Integrated Development of the Sundarbans ADB/GEF	MoFE				■	■	■		
M	P	Joint Actions for Livelihood Security JALS DFID	MoFL		■				■		
M	P	Noakali Aquaculture Project DANIDA	MoFL		■				■		

■ indicates roughly the core knowledge domain

Completed O Ongoing S Started P in Preparation

Research/Study I Investments M Mixed

47. It can however, be concluded from the assessment as given in Table 1 that ***little attention*** has been given in the past to increase the knowledge base for coastal livelihood and development processes. The same also counts for coastal ecosystems and related processes. Though many, of the projects have developed some activities in the field of policy formulation, legislation and connected procedures, it is clear to the mission that these are only small pieces of a bigger jigsaw puzzle, and that a clear development policy for the coastal zone is far from reality. Based on this insight, the mission considered the position of ongoing and planned development projects in the face of the upcoming ICZM Program.

11.1. Ongoing Development Projects

48. A critical success factor for the development of an ICZM Program is the way, how the knowledge that has been gained in preparing for these projects or during the execution of these projects can feed into the Preparatory Phase of the ICZM Program. The development of an ICZM Program should not be considered to be a threat for ongoing activities. On the contrary, the development of an ICZM Program offers a great opportunity to strengthen the effectiveness of the implementation and outcomes of these projects by putting them in a transparent context. To achieve this, efforts have to be made to adjust these projects to the extend necessary to the process of the Preparatory Phase. In doing so, ongoing projects should open a window and interact in partnership with the process of the Preparatory Phase for each step as identified. The ICZM Program preparation, as it evolves, can benefit strongly from the knowledge gained and will create new challenges. To prepare for this interaction, the following actions are recommended for consideration in the farther execution of ongoing projects:

- Consolidate the ongoing activities and interact with the preparatory process of the ICZM Program for defining new activities and integrating them into the ICZM Program framework.

- Prepare lessons learned in planning, execution and implementation of the project and feed them into the preparatory process of the ICZM Program.

- Organise and prepare the information base of the project in order to promote multi-use and shared benefits, and to become part of the knowledge base of the ICZM Program.

- Make adjustments to the project, and identify components that can be pursued to facilitate the preparatory process of the ICZM Program.

49. In view of the above, and on request of the donors who fielded the mission, specific comments have been made on some selected projects. In reference to the Meghna Estuary Study (MES) the mission suggests the following. The MES should increasingly focus during the remaining project period on the development of alternative strategies for:

- **Increasing physical security** against natural hazards through use of data and conclusions of the Multipurpose Cyclone Shelter Program, South -Eastern Regional Study, Cyclone Risk Area Development Project and Coastal Embankment Rehabilitation Project I & II.

- Land reclamation and development of accreted land, with specific attention paid to the analysis of **alternative scenarios** on the morphological development of the estuary and the identification of a range of strategies for development given the **uncertainties** that characterise the area. These strategies should not focus on land forming and erosion processes alone, but should be based on a coherent assessment of the future development options for different parts of the estuary, and existing and potential links between the existing narrowly defined project area and the broader coastal zone of which it is a part.

5. Concerning CDSP, the mission suggests that the project should be thoroughly redesigned and given a different orientation to concentrate on:

- **Integrated planning at District and Thana level,** including, appropriate mechanisms for defining priorities, allocating resources and implementing local-level development activities. This should seek to build on decentralisation processes and should ensure that the interests of all stakeholder groups are adequately represented. Under the changed structure and mandate, the project through the local level planning bodies may, design programs and activities to be supported by the World Food Program under its Food Assisted Rural Development activities.

- **Coastal zone agriculture,** based around an action research process to work with coastal farmers to develop appropriate crop diversification and cultivation options based on local knowledge systems and within a livelihoods framework. This should also pay specific attention to issues of credit inputs and marketing. This should build towards the development of agricultural development options & packages, including an assessment of the agricultural potential of the coastal zone. This should be implemented in close association with local NG0s and be integrated with the Thana planning exercise.

- **On-farm water management:** a critical constraint upon agricultural development in the coastal zone is the availability of adequate and timely water supplies. The salinity, of shallow groundwater resources limited the potential of shallow tubewell-based irrigation that is of critical importance elsewhere in Bangladesh. There is consequently a need for the optimisation of use of freshwater, including water harvesting, in-field water management, the management of drainage and salinity control options.

5 1. The CERP II will be under a preparatory phase during, the remainder of 1999. It is essential that this project is not disrupted, but equally the direction of such an important project that will influence the development of the whole coastal zone should fit within the evolving ICZM approach. It is consequently strongly recommended that the inception report of the preparatory consultancy for CERP II is reviewed by the Steering Committee for the ICZM Program, based on advice provided by, an independent review mechanism (the Technical Committee if it is constituted in time, a surrogate if it is not). It is also recommended that the criteria and methodology of the feasibility assessment for CERP II is informed by the ICZM process and should similarly be independently reviewed to ensure that it reflects the comprehensive nature of the issues raised.

52. Two projects planned to start in the near future *will* offer crucial insights into local livelihoods in the coastal area. These projects the Joint Actions for Livelihood Security in Coastal Communities (JALS, funded by DFID) and Empowerment of Coastal Fishing. Communities (UNDP), should consequently be developed with a very close integration xvith the knowledge development component of the ICZM Preparatory Phase. They should also develop some type of interaction the Thana-level planning process.

11.2. Planned Development Projects

53. The mission considers it crucial that planned development projects get integrated Within the ICZM Program. The investment components of these projects should be considered carefully in respect to the Preparatory Phase of the ICZM Program. The mission suggests that the planning and design of investment Projects, should be reviewed within the Framework of the ICZM Program for necessary changes and adaptations. The Study and Research Projects should be harmonised within the Framework of the ICZM Program to optimise resource utilisation and to make effective use of the generated new knowledge for policy formulations.

54. From this perspective, the mission suggests that in the preparation of the Coastal Embankment and Rehabilitation Project 11, the inception report and the final project proposal, should be subject of review by the Steering Committee, as proposed above. The mission further suggests

that alternative strategies for ensuring physical security against natural hazards and for land reclamation and development of the newly accreted land should be developed and tested particularly based on the experiences of the recent past. For example, to solve the problems of drainage congestion, experiences of the Khulna-Jessore Drainage Rehabilitation Project may be worth looking at in the formulation process of CERP II.

11.3. New Activities for the Development of the ICZM Program

55. The sections above have identified the overall structure of the Preparatory Phase for the ICZM Program and specified a number of the preparatory activities that could be executed in association with existing project funded by the Netherlands and the World Bank. Although valuable, these contributions to the Preparatory Phase will need to be significantly augmented by a range of specifically commissioned activities that will require additional funding. This includes the funding for the Management Team and the Independent Panel of Experts, and for some additional expertise that the MT will need to recruit for specific specialised activities.

56. This additional funding also includes two of the core consortia that will undertake essential aspects of the preparation process. These are the Data Integration Consortium and the Participatory Consultation Consortium. Proposals for the funding of these consortia are made in the *aide memoire* agreed at the end of the mission. In addition to these core activities, there are a number of key 'knowledge gaps', where existing data bases and analyses do not contain sufficient insights to allow the development of strategies on particular aspects of the coastal zone. These knowledge gaps could be filled, at least in part, by specially commissioned studies, for which additional funding could be sought once specific ToR have been prepared by the MT. These key knowledge gaps are:

- **The Assessment of Marine Ecosystems & Aquatic Resource Potentials & Sustain ability:** the present condition and future sustainability of the marine resources of the Bay of Bengal is poorly understood. There have been a number of studies on specific aspects of these resources, but these do not constitute a sufficient knowledge base for defining management strategies. This is particularly true for marine fishing, which is a crucial source of income for large numbers of households in the coastal zone. An assessment of these resources, the functioning of the ecosystems in which they exist (for example, the spawning grounds of key species are not clearly, identified) and strategies for their regulation and sustainable management needs to be undertaken,

- **Action Research: Community-Based Mangrove Development & Sustainable Management:** including an assessment of the experience of the ongoing CERP in this field but also including the potentials of mangroves for the sustainable production of a range of products. There should be a link to an NGO with extensive coastal zone experience that is able to provide an 'entry' to communities with which they are working. There is also a need to draw on international experience in this field, including studies of mangrove management in South and South-East Asia. Finally, there is a clear need to develop the approach in close association with the Forest Department and to land-use planning and categorisation activities in the Preparatory Phase.

- **Land-Use Categorisation and Identification of Criteria for Land-Use Planning and Zoning.** There is a limited understanding of land-use patterns and trends in the coastal zone, but what there is suggests widespread problems in existing patterns, including conflicts between incompatible uses. There is a need for a clearer knowledge base on existing patterns and future trends, with this also providing a basis for identifying land-use planning and zoning criteria for the ICZM Program. This should reflect the forthcoming National Land Policy, currently being developed by the Ministry of Land.

- **Shrimp Production**: development of sustainable production systems & mitigation of conflicts. That many conflicts exist around shrimp production is well known, but there is far less known about whether and where sustainable production systems could be developed and the means through which these conflicts could be mitigated. Such a study will encounter sensitive social and political issues and consequently needs to be base around an NGO with good coastal zone experience and the confidence of coastal communities in the areas in which the conflicts are found.

- **Assessment of Tourism Potentials & Action Plan for Tourism Development**: combination of desk-based and field research. The coastal zone of Bangladesh possesses many potential assets for tourism development (both domestic and for international visitors), but these assets are poorly developed and negligible tourism takes place. An inventory of these assets, of existing and needed infrastructure to take advantage of them and of the potential benefits (and costs) of tourism to coastal communities needs to be developed. This will provide the basis for an action plan for tourism in the coastal zone. Such a study should be conducted with the close co-operation of domestic and international tour operators.

- **Environmental Impact Assessment of Known Pollution 'Hot Spots' and Resource Degradation Processes.** There are a number of highly polluting activities in the coastal zone, including developments such as ship breaking north of Chittagong and the effects of industrial and port activities. These are believed to affect large areas of terrestrial and marine resources but their exact impact and potential mitigation measures have yet to be identified. An impact assessment that led to define mitigation measures would be a valuable component of the ICZM Program.

12. A Final Comment

57. This Concept Note has attempted to make a contribution to the development of approaches to the management of the coastal zone of Bangladesh. Section A gave a conceptual overview of the issues that, in the mission's judgement, Justify the development of a special approach to this part of the country and an approach that is rooted in human development experiences. Section B defined a possible process through which the development of an ICZM Program could be developed. On both of these issues, the thoughts set out here are a starting point, not the final word. The mission hopes that its work has helped, and firmly believes that this issue is of critical importance for the future of Bangladesh.

Table 2: List of Persons and Organisations Consulted

Dr. ATM Shamsul Huda	Secretary, Ministry of Water Resources
Mr. Md. Omar Farooq	Secretary, Ministry of Land
Mr. Azad Ruhul Amin	Secretary, Ministry of Disaster Management and Relief
Mr. Ayub Kaderi	Secretary, Ministry of Fisheries and Livestock
Dr. AMM Shawkat Ali	Secretary, Ministry of Agriculture
Mr. Shamsul Huq	Chairman, BWDB
Mr. Halimur Rahman	Director General, WARPO
Mr. Tauhidul Anwar Khan	Director, WARPO
Mr. Quamrul Islam Siddique	Chief Engineer, LGED
Mr. Monowar Hossain Chowdhury	Additional Chief Engineer, LGED
Mr. Mahiuddin Ahmed	Project Director, Coastal and Wetland Biodiversity Management Project, Ministry of Forest and Environment
Mr. Ahmed Emaduddin	Director, SWMC
Dr. M. Abdul Gani	Irrigation Engineer, World Bank
Dr. Aminul Islam	United Nations Development Programme
Mr. Simon Bland	Fisheries Adviser, DFID
Dr. Salehuddin Ahmed	Deputy Executive Director, BRAC
Dr. Salemul Huq	Executive Director, BCAS
Dr. Atiq A. Rahman	Director, BCAS
Professor Ainun Nishat	Country Representative, IUCN
Mr. Koen de Wilde	Team Leader, CDSP
Mr. Jaap Oosterman	Team Leader, MES
Mr. Malcom Walace	Team Leader, NWMP
Mr. Rob Koudstaal	Team Leader, EGIS
Mr. Mujibul Huq	Co-Team Leader, EGIS
Mr. Tim Martin	Technical Advisor, EGIS
Dr. Khaled Hasan	Remote Sensing Specialist, EGIS
Mr. Tony Hasselt	Initial Team Leader, CERP
Mr. Martin Gillham	Team Leader, Cyclone Shelter Project
Mr. Anders Malmgren-Hansen	Country Representative, Danish Hydraulic Institute.
Mr. G.J.de Graaf	Fishery Specialist, MES

Policy Note of GoB: Integrated Coastal Zone Management: Concept and Issues, 22 September 1999

INTEGRATED COASTAL ZONE MANAGEMENT:

CONCEPT AND ISSUES

POLICY NOTE OF THE GOVERNMENT OF BANGLADESH 22 September 1999

Based on the findings of a mission on 18 – 27 February 1999 of:

Principal Secretary to the Prime Minister (mission leader)
Secretary of Ministry of Water Resources
Secretary of Ministry of Planning
Secretary of Ministry of Fishery and Livestock
Secretary of Ministry of Land
Chairman Bangladesh Water Development Board
Chief Conservator of Forests

Government of the Peoples Republic of **Bangladesh**
Ministry of Water Resources

Off ice of the Secretary

Subject: Preparation of a Report on Integrated Coastal Zone Management . Output of Study tour by Senior Government Officials in February 1999.

A team of senior officials consisting of Secretary, Ministry of Water Resources, Secretary, Ministry of Planning, Secretary, Ministry of Fisheries and Livestock, Secretary, Ministry 01 Land, Chairman, Bangladesh Water Development Board and Chief Conservator of Forests undertook a tour of Thailand during February 18-27. 1999 to study in depth the ICZM practices in that country with Principal Secretary to the Prime Minister as the team leader. The tour was sponsored by the Coastal Embankment Rehabilitation Project (Phase-I) and funded by the EC.

2. Enclosed is a report prepared on the subject on the basis of participant's experience and tour impressions. This may be found useful in the preparation of an ICZM programme for Bangladesh.

(Dr. ATM Shamsul Huda)
Secretary

Encl: As sted.

Distribution:

1. HE Mr. Antonio de Souza Menezes
   Ambassador and
   Head of the Mission
   Delegation of the European Communities
   Dhaka.

2. HE Mr. DCB Den Haas Ambassador
   The Royal Netherlands Embassy
   Gulshan, Dhaka.

3. Mr. Frederick T. Temple
   Country Director
   The World Bank
   Bangladesh Country Office
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   Dhaka.

4. Mr Phiphit Suphaphiphat
   Resident Representative
   Bangladesh Resident Mission
   Asian Development Bank
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INTEGRATED COASTAL ZONE MANAGEMENT: CONCEPTS AND ISSUES

1. INTR0DUCTION

1.1 Administration in Bangladesh is highly departmentalized. Agencies under different Ministries of the Government have their own narrowly-focused mandate and single-minded devotion to the fulfillment of a mandate is considered to be a virtue. However, development problems do not occur departmentally; *they* appear *in* a complex web of interrelationships needing concerted efforts by more than one agency. Lack of co-ordination and its pernicious ramifications in our economy and society are no less evident than in coastal zone 'management. The concepts 'of Integrated Coastal Zone Management (ICZM) has emerged as a response to this sort of administrative malady.

1.2 Prior to a discussion of the various concepts associated with ICZM, it is necessary to have a working definition of what is meant by a coastal zone. This may then be followed by a description of the coastal environment, different activities carried out by the Government for improving those conditions and the intended and unintended consequences of those action. Such a description and analysis will then set the stage for a meaningful exploration of the different concepts and issues associated with ICZM.

Definition of a Coastal Zone

1.3 Coastal areas are diverse in function and form: they do not lend themselves well to definition by strict spatial boundaries. Unlike watersheds, there are no exact natural boundaries that unambiguously delineate coastal areas.

1.4 Nevertheless, for management purposes, a variety of landwards and seawards boundaries, ranging from fairly narrow and precise ones to much broader and nebulous ones have been utilized around the world. Management boundaries are pragmatic, being influenced by the geographic scope of relevant management concerns, including biophysical, economic, social, institutional and organizational aspects.

Therefore, the boundaries of a coastal area may change over time for management purposes, as the issues to be forged become more extensive or complex and require more far-ranging solutions.

1.5 We need not, therefore, worry much about our inability to develop a precise definition 61 a coastal zone. It is better to view this concept as a means of focusing attention on the emergence of an innovative framework for planning and management to help make wise and sustainable use of resources. In that spirit we may delineate coastal zone in line with recognized administrative boundaries in Bangladesh. To us, the coastal zone represents an area of transition where terrestrial and marine environments interact to form unique environmental conditions. For our purpose, the coastal zone of Bangladesh would include the greater districts of Chittagong, Noakhali, Barisal, Patuakhali and Khulna, as shown in Map 1.

2. THE COASTAL ENVIRONMENT IN BANGLADESH

2.1 Bangladesh has an area of about *147,570* square kilometers and a population of more than *125* million. Most of the country is drained by the Ganges, Brahmaputra and Meghna rivers, which constitute one of the largest river systems in the world. This system has its origin in the Himalayas and the Khasi-Jaintia Hills in the north of the country. While flowing through Bangladesh on its way to the Bay of Bengal, the system carries an estimated annual sediment load of 2.4 billion tons. These sediments are subjected to coastal dynamic processes generated mainly by river flow and tidal 'and wind actions, leading to accretion and erosion in the coastal area of Bangladesh.

A. MORPFIOLOGY

2.2 The coastal morphology of Bangladesh is characterized by:

(a) A vast network of rivers;
(b) An enormous discharge of river water heavily laden with sediments, both suspended and bed load;
(c) A large number of islands in between the channels;
(d) The Swatch of No Ground (a submarine canyon) running NE-SW partially across the continental shelf about 24 km south of the Bangladesh coast;
(e) A funnel-shaped and shallow northern Bay of Bengal, to the north of which the coastal area of Bangladesh is located;
(f) Strong tidal and wind actions;
(g) Tropical cyclones and their associated storm surges.

2.3 These factors act in complicated 'ways to bring about geo-morphological changes in the Bangladesh coast. Based on available information on the geo—morphological conditions and hydrological features, the coast of Bangladesh is about 710 km long and can be broadly divided into three distinct regions: the eastern, central and western regions. Map I shows these regions.

I) *Eastern region*

2.4 Morphologically the eastern coastline of Bangladesh from the Big Feni River to Badar Mokam (southern tip of the mainland) along Chittagong can be classified as a "Pacific type" coast running parallel to young mountain ranges. The cast coast is regular and unbroken and is protected along the sea by mud flats and submerged sands. A continuous strip of sand runs from Cox's Barn to Badar Mokarn and forms a long sea beach of about *145* km. The smaller rivers of the eastern region (Karnaphuli, Sangu, Matamuhuri and Nat) also contribute to the active nature of the area.

2) *Central region*

2.5 This region runs cast from the Tetulia River to the Big Feni Rivet estuary and includes the mouth of the Meghna River. This region is characterized by heavy sediment input, formation of chars (new lands) and bank erosion. This region *is* the most dynamic and most of the accretion and erosion occurs here. The coastline is highly broken arid consists of a series of islands formed by sediment deposits. The funnel shaped apex of the Bay of Bcng3l *in* this region is relatively shallow and the rivers and channels emptying into the bay change their courses rapidly. The general flow of water in this part of the bay is westward, heading towards the Swatch of No Ground. As a result, the inland in this region are subject mostly to erosion on their eastern sides and sedimentation on their western sides. Over the years, this effect has resulted in the appearance of the larger islands in this area (Hatiya, Manpura, Shabazpur. etc.), seeming to 'bead' westward. The general circulation pattern is different *in* the north-eastern part of the bay, however, where water in the Hatiya and Sandwip channels flows directly south-cast during outgoing tides. As a result, the erosion/sedimentation pattern for the islands in this area is different. In this area, erosion occurs on the northern side of the islands, while sediments are deposited along their southern edge. Sites of considerable activity include the northern

and southern tips of Hatiya and Sandwip islands. Much of the dynamic nature of this region is due to the fact that the three major rivers (the Ganges, Brahmaputra and Meghna) have joined to form this estuary.

3) *Western region*

2.6 The western region covers the portion of the Bangladesh coastline westward from the Tetulia River to the international border located at the Harjabhanga River. This region can be termed "Atlantic type in which the coastline in general *is* transverse to the structure of the continental margin. This is a stable region and is mostly covered with dense mangrove forests which lessen bank erosion so that scouring action is confined to the river channels, which are in general deeper than those in the other regions. Accretion does not occur much in this region, being mostly concentrated at a few points. The sediments earned by the rivers of the region flow almost directly south to the Swatch of No Ground, which exerts a great influence on tidal characteristics, sediment movement and deposition, and other hydrodynamic and morphological phenomena. The estuaries of West Bengal, including the Hooghly, are also apparently connected to the Swatch. Shallow submerged inner and outer bars formed from upland sediment supply, tidal currents and wave action characterize these estuaries at the present coastline.

B. EROSION AND ACCRETION

2.7 In a deltaic region, the premature decline and death of old rivers or sudden rise and violence of new ones are natural features of the Landscape.

2.8 Erosion and accretion were found prominent in the coastal area when major changes of river courses took place either by natural phenomena such as geological activities of subsidence or upliftment or by human interference, such as cross-dam, embankment, sluices etc.

2.9 Major stable accretions were found in the coastal belt of Patuakhali and southern part of Bhola district. The past rate of net accretion in this region was found to be 12 sq. km per year. Erosion at the rate of 3 sq. km and accretion at the rate of 15 sq. kin took place in the last 20 years. Islands in this region may grow by silting up of small channels. The past trend of erosion and accretion may continue to follow for the next 25 years.

2.10 Both erosion and accretion in the Meghna estuary region (i. e. northern part of Bhola district, Lakshmipur, Noakhali and Feni coastal belt, Hatiya and Sandwip area) were found to be prominent. The past rates of erosion arid accretion per year were detected as 20 sq. km and 28 sq. km respectively. So net accretion rate was 8 sq. km per year. This past trend of erosion and accretion may continue for the next 25 years but the net accretion may be a bit less. Major threat of erosion in the next 25 years may be in the region of northern part of Bhola, Lakshmipur coastline, north and northeastern parts of Hatiya, north and 'western parts of Sandwip. Slow accretion may take place in the southern pars of Hatiya and Noakhali mainland. Erosion and accretion in the Feni coastal belt is expected to be insignificant.

2.11 Erosion and accretion in the regions of Harinbhanga river to Rabnabad channel and Feni river to Shahapuri island may be insignificant in the next 25 years. Small patches of erosions and accretions may take place here and there.

C. CYCLONIC STORMS

2.12 Cyclonic storms are an important feature of the Bangladesh climate and have caused great suffering to people and damage to structures in the cyclone path. During the Last 125 years over 42 cyclones hit the coastal belt: 14 occurred during the last 25 years. The storms usually form in the south-east portion of the Bay of Bengal, move in a northerly or north-westerly direction and often turn north-easterly or easterly towards the

east coast of the country.

2.13 Two different types of cyclones form in the bay - one is the tropical cyclone, which forms during the pre- and post-monsoon seasons, and the other is the monsoonal depression, which develops during the SE monsoon season. Dynamically they are different. Tropical cyclones are the most destructive. Some examples of them are the May 1985 Urir Char cyclone, the November 1970 cyclone, the great cyclone of 1919, the Bakarganj cyclone of 1876 and the Barisa cyclone of 1584.

2.14 Cyclones generally cause damage in three, different ways: (a) storm surges. (b) flooding due to excessive rainfall and (c) wind blowing away houses and ships. About 90 per cent of cyclone casualties are caused by storm surges generated by cyclones.

2.15 Storm winds move at speeds of up to 240 kin per hour and cause widespread damage. The most destructive clement, however, is the water surge caused by a large mass of water at and around the storm center accumulating in a mound higher than the normal sea level and progressing with the storm as a wind driven storm surge. As the storm reaches the shallow water near the coast of the Bay of Bengal the surge is intensified as it sweeps inland. Coincidence of the storm's passage with high or low tides would tend to increase or moderate water damage.

2.16 Storm surges for recent cyclones have been noted to be some 3 to 6 m in height. Theoretical analyses of surge heights using data on actual cyclones and considering the shape and configuration of the Bay of Bengal and the coastline suggest that cyclonic storm surges of up to 7.5 m can be expected. Waves approaching the shore tend to expend their energy by running up a sloping beach and, thereby cause inundation to heights even greater than the true height of the offshore storm surge.

D. MANGROVEFORESTS

2.17 Some 24 million hectares of mangrove forests occur *in* coastal areas of subtropical and tropical countries of the world Mangroves are found along sheltered coastlines where wave activity tends to be minimal. The term mangrove refers to any of dozens of species of *trees* capable of living in saltwater and salty soil regimes.

2.18 Ecologically, mangrove communities have a variety of recognized roles in the areas where they occur. *A* prominent role is the production of leaf liner and detrital matter which is exported to the near shore coastal environment. The organic matter exported from the mangrove habitat is utilized in one form or another by the inhabitants of estuaries, near-coast waters, sea grass meadows, and coral reefs which may occur in the area. Most tropical commercial shrimps and many fish species are supported by this food source. Over 30 percent of the fisheries of Peninsular Malaysia (about 200 000 1) are reported to have some association with the mangrove ecosystem.

2.19 Mangrove ecosystems also provide a valuable physical habitat for a variety of important coastal species. Waterfowl and shorebirds are well known and highly valued inhabitants of wetlands, as are alligators and muskrats. Less evident, but equally important inhabitants are 'crabs, shrimp, and the important juvenile stages of commercial and sport fishes, along with numerous forage species of fish and invertebrates.

2.20 Shoreline mangroves are recognized as a buffer against storm-tide surges that would otherwise have a more damaging effect on low-lying land areas. Littoral strip mangroves planted by the Bangladesh Government in the 1980s are credited with saving thousands of lives and millions of dollars worth of property during the cyclone of 20 A~3ri1 1991 that ravaged the southeast coast of the country. Also, mangroves are often noted for their ability to stabilize coastal shorelines that would otherwise be subject to erosion and loss.

2.21 Bangladesh has one of the largest mangrove eco-system in the world. The mangrove forests of Bangladesh falls under two broad categories i.e., natural mangrove forest in the south-west of Bangladesh which is commonly known as Sundarbans, and the mangrove plantations which have been established along the coast and in the off-shore islands in the Say of Bengal. Sundarbans cover an area of 6,00.383 ha, 4,11,227 hectares of which is land and the remaining 1,89,159 hectares are bodies of water - creeks (khals), canals and rivers. Since initiation in 1966, an area of 1,38,740 hectares of newly accreted land have been planted with mangrove species. There is an overall seaward movement of the belt of mangrove forests as more silt and mud area, deposited at the mouth of the rivers. This gives rise to a permanent ecological transfer on the landward fringe to dry land vegetation above tidal influence.. The Chakaria Sundarbans in the delta of the Matamuhuri river, covering art area of *5071.4* ha, have been totally denuded to make room for shrimp cultivation.

E. CROP PROD UC77OiV

2.22 More than 85 per cent of the area of Bangladesh is flat alluvial plain criss-crossed by an intricate system of rivers and their innumerable tributaries and distributaries. The network of rivers, numbering about 230, about 24,000 km *in* Length and covering an area of 9,380 sq. km (6.5 per cent of the total 3rea of Bangladesh), is responsible for the deposition of silts on the alluvial soil during the rainy season. This increases soil fertility. In the coastal area, this is offset by saline intrusion and cyclonic storms.

2.23 The first large-scale attempt at management of the coastal environment has been the construction of embankments to prevent flooding and saline water intrusion under the coastal embankment project (CE?). The CEP *s* a complex' system of dikes and drainage sluices for flood protection in the coastal area. The project extends over a gross area of 14,100 sq.km which is subject to continuous or periodic incursion of saline water from the Bay of Bengal. The lands of the project area are at low elevation (within 1.5 meters) and subject to flooding from tidal action as well as by direct runoff from rainfall. The project *was* conceived to provide protection against these flood conditions in order to promote increased food production within the protected area. To protect these Lands from saline water intrusion/flooding an estimated 4800 km of embankment with 926 number of sluices lit a total number of 108 polders were constructed. The construction of dikes and sluices was started in 1961 and by 1992 most of the work bad been completed. The CEP has changed the hydrological regime of the whole coastal area. A huge volume of water flowing onto the polders has been stopped resulting it the reduction of water flow in the remaining channels. As a result, the silting up process of these channels has accelerated. The other serious impact of the embankment project is the rise of high tide levels in the rivers and the estuary with an increasing menace of the intensity of the tidal bores in the area.

F. FISHERIES

2.24 Fish in the estuaries and the sea constitute a major coastal resource. Unfortunately, reliable data and information on standing stock, potential yield and maximum sustainable yield are lacking. Weighing various assessments of heterogeneous quality and coverage, it appears that on the whole Bangladesh may be close to harvesting fish at the maximum yield which still allows the stock to renew itself naturally. Some studies also point to a gradual decline in fish availability.

2.25 This tragic decline in fish availability is a direct reflection of unplanned environmental disruption. Water projects have destroyed fish habitats over vast areas biocide applications and toxic chemical pollution from untreated industrial effluents have had unmeasured destructive effects and deforestation of mangroves has depleted the nutrient-rich stores that made Bengal's fisheries famous. These three causes of fishery decline

were consequences of the project approach to development, which ignores impacts not within the narrowly defined rate-of-return objective of the individual project

2.26 At the same, time as fish availability to Bangladeshis has been declining, however, fish (shrimp) exports have become the nation s second most important foreign exchange earner, after jute. This is welcome for Bangladesh, but unplanned and uncontrolled growth has meant destruction of mangrove forest areas, reduction in live-stock feed, reduction in tree biornass, reduction in the non-exportable shrimp/fish stock because of methods of shrimp larvae collection and likely over exploitation of the most desirable shrimp larvae themselves. It has also made water management in polders more difficult and led to serious weakening of embankments, setting the stage for a "natural disaster" of the first magnitude when the next cyclone strikes.

G. NAVIGATION

2.27 Inland navigation has always been a principal means of transport in Bangladesh. In the coastal areas, especially in the regions of Khulna and Barisal, it is still the major means of movement and transportation.

2.28 During the last 15-20 years, considerable and rapid deterioration has taken place in the river system and navigation routes especially in the coastal areas through massive siltation, channel instability and human interference. The main causes of the rapidly worsening situation are: the instability of rivers and erosion of river banks due to a high rate of rise and fall of the water level, siltation of the channel due to increased volume of sediment supply as well as reduction of the flood spillage area due to the construction of polders and the closure of small channels for flood control, resulting in the blockage of country boat routes.

H. POLLUTION

2.29 Bangladesh, like other developing countries, has emphasized the need for development of the industrial sector. However, many industries are heavy polluters. Among them are steel non-ferrous metals fertilizer pesticides, asbestos, cement, toxic chemicals and leather. Until very recently, however, scant attention was paid to the damage to the environment and ecology done by these industries. The absence of any legal framework for preservation of environmental quality and lack of public awareness about the issues involved have allowed companies to set up industries without any built in safe-guards against poflu6on of the environment.

2.30 Nearly 144 industries have been listed in eight industrial zones of Chittagong, namely, Kalurghat, Nashirabad/Sholoshahar, Patenga Kaptai, Bhatiari, Barabkunda and Fauzdarhat, situated on the bank of the River Karnaphuli and the coastal area of the Bay Of Bengal.

2.31 Most of the factories in Khulna city suburbs are situated in three industrial zones, namely, (a) Rupsa Indsutrial Zone, (b) Khalispur Industrial Zone and (c) Shiromony Industrial Zone

2.32 All industries discharge their untreated toxic waste directly into the River Kamaphuli or the bay. None of these industries have any existing or planned pollution treatment facility.

2.33 The townships and human settlements in the coastal areas of Bangladesh do not have any domestic waste treatment facilities and therefore effluents either directly or indirectly find their way untreated into the rivers and hence to the Bay of Bengal. A survey report of a waste-water expert mission in 1985 and DEPC data show that the two populous coastal cities of Chittagong and Khulna have poor sanitary conditions owing to a Lack of

sanitation facilities or the improper functioning of existing facilities. It is common practice to dump excreta in drains and canals which go to nearby rivers. Septic tank effluents are also dumped into the rivers and canals directly or indirectly and cause localized water pollution surrounding the drainage outfalls. The rivers, including the Karnaphuli and Passur, directly receive raw excreta daily from a vast number of people living on both sides of them.

3. CURRENT STATUS OF COASTAL RESOURCES MANAGEMENT

3.1 Since the liberation of the country, an estimated amount of USS 72 million of grant assistance and US$ 700 million of loan was invested in various development activities in the coastal area (Annexure I).

3.2 The consequences of various initiatives taken so far for coastal resources management have been mixed. The CEP constructed about 4,800 km of embankment to protect 1,336,000 ha of coastal land from saline water intrusion. By 1970, the work was completed after which both living conditions and agricultural production improved considerably. There is a dense canal system which is used for transport by boat in the wet season. A network of footpath between villages and along the larger channels provides for all movement during the dry season.

3.3 The negative effects of the project are no less pronounced these days, though these were very little understood when it had all begun. The natural nursery and grazing grounds of many marine and estuarine fish and prawn have been eliminated by these enhancements. These are also creating problems for drainage from polders during the rainy season and for communication as traditional navigation channels have become blocked by siltation.

3.4 Cross-dam techniques have been applied in Bangladesh and successful results have been achieved. The Noakhali cross-dam I and II have added a gross protected area of 900 sq. km and finally may be 'consolidated into an economical land of around 1.300 sq. km gross (900 sq kin net). However, the experience of the development of the vast tract of accreted land is riot encouraging. The use of the land was not optimized and these were grabbed by the powerful. These also encouraged premature settlement of chars Leading to soil destabilization and the tragedy of the 1985 Urir Char Cyclonic Disaster.

3.5 Land use in the coastal zone is found to be adhoc and unmanaged which results in misuse in some places and undue exposure of people to cyclone threats in others. In many Thanas, there are conflicts over land use between sectors as well as between people e.g. aquaculture use versus mangrove shelter-belts and agriculture versus shrimp cultivation. Also confrontations between forestry, livestock, aquaculture and other interests over future uses of newly accreted land are not uncommon. Too often, these conflicts are stirred up by unilateral action of central agencies, and local communities in the thanas end up as helpless victims.

4. INTEGRATED COASTAL ZONE MANAGEMENT: AN OVERVIEW

Nature of ICZM

4.1 Twenty five years of development efforts in the coastal areas bring to sharp focus the difficulty of managing any one particular coastal natural resource or advancing one economic sector in *the* absence of a comprehensive and integrated framework for policy planning and management. ICZM offers a means of balancing the competing demands of different users of the same resources and of managing the resources to optimize the benefits that is consistent with the country's goals.

4.2 ICZM incorporates modern principles of planning and resources management, intensive

information bases and interdisciplinary processes It has proved to be an effective general framework for dealing with conflicts arising from interactions of the various uses of coastal areas It aims at coordinated development and resources management.

Why ICZM?

4.3 A legitimate question asked about ICZM is the justification for its pursuit. How is the coastal area different from the rest of the country that we need such a programme? The simple answer is that the natural resources of the coastal areas are so different from their terrestrial counterparts as to require different and special forms of management. Coastal areas are important ecologically, as they provide a number of environmental goods and services. They frequently contain critical terrestrial and aquatic habitats, such as the mangrove forests, wetlands and tidal flats. Threats to the productivity of these unique resource systems arise from development activities and their side-effects. Therefore, a special and distinct management methodology, such as ICZM, is required.

4.4 The other special feature of the coastal zone is its multiple vulnerabilities out of periodic cyclone and storm surges, salinity intrusion, erosion, pollution, and overall lack of physical infrastructure. Coastal natural-resource uses reflect primarily subsistence agriculture with art emphasis on food production, e.g., paddy rice along with some cash crops and coastal fisheries which provide a major food and income source. Also important, in some areas, is aquaculture with an emphasis on shrimp production for the export market, and some salt production for domestic needs.

4.5 Major use pressure is exerted on the ecosystems and resources of the coastal zone, especially the near-shore zone, coastal islands and beaches. Land-use conflicts and clearly unsustainable uses may be found in these areas, as exemplified by migrants living in rude shelters on the beaches of Cox's Bazar.

4.6 There is a clear need for broad-based, multi-sectoral and long term development management, including community-based initiatives in sanitation, biomass preservation and collective management of coastal resources, including more detailed priorities such as ecosystem preservation of mangroves and fisheries habitat, maintenance o. biological, diversity and productivity, forestry management, containment of saltwater intrusion and population risk management. Also needed are institutional and regulatory actions which provide clear mandates, operational linkages and funding appropriations to support the land evaluation, land-use planning and other decision-support for policy analysis, formulation, implementation and monitoring.

Scope of ICZM

4.7 ICZM refers to a special type of governmental programme established for the purpose of conserving coastal resources or environments through control of development. Use of the term implies that the government unit administering the programme has distinguished a special coastal zone as a geographic area combining both ocean and terrestrial domains.

4.8 Among other things, an ICZ&M programme should deal with the following:

(a) Natural disasters like cyclone and erosion are routine affairs in the coastal area of Bangladesh. Embankments have been constructed for providing protection to life and property: but lack of proper maintenance greatly reduce their capacity to withstand the ferocity of the storms. Mangroves and other plantation form important natural defenses against wave action. ICZM is the best vehicles for combining coastal natural hazards prevention and resources conservation.

(b) Between the geographic extremes of the hinterland and the deep sea, falls the designated coastal zone of Bangladesh. This strip contains some of the most biologically productive and economically valuable habitats including estuaries, coastal wetlands and mangrove forests. But it must also be recognized that this area also contains dense human population and undergoes great environmental modification and deterioration through many economic activities. This emphasis on the land/water interface of the seacoast and its particular influences makes the ICZM process unique in the realm of integrated planning and management.

(c) Sustainability is an essential ingredient of [CZM. The criterion for sustainable use is that the resource not to be harvested, extracted or utilized in excess of the amount which can be regenerated. Sustainability is the alternative to resource depletion caused by excessive exploitation for short-term profit. It is true that achieving sustainability in coastal resources management is difficult in the face of mounting population pressure and governments desire for short-term foreign exchange earning. However, the ICZM gives the opportunity to make rational analysis of the whole situation and enables policy-makers to decide on the necessary trade-offs.

(d) Exclusive use of a particular coastal resource unit for a single economic purpose is discouraged by ICZM in favour of balance of multiple uses whereby economic and social benefits are maximized, and conservation and development become compatible goals.

Contrary to some current impressions, conservation and economic development are not conflicting ideas. In fact, well-planned conservation-oriented development will add to the general economic and social prosperity of a coastal community, while bad development will sooner or later have a negative effect. With innovative management based upon sustainable use, communities may be able to achieve a desirable balance without serious sacrifice to either short-term development progress or longer-term conservation needs.

In economic terms, the multiple-use concept requires that all actual and potential uses for resource utilization schemes be determined so as to ensure that the sum of the "opportunity costs" is minimal. Opportunity costs represent the value of those lost options (or opportunities) that would otherwise be derived from using other resources, as opposed to committing one resource for an exclusive use. For example, in determining the allocations of fresh water for either irrigation or fishery maintenance if the use of fresh. Water is exclusively for irrigation, then this imposes an opportunity cost for fisheries which equals the annual income which could have been obtained but is now lost due to its collapse. A major advantage in a balanced multiple-use programme for a coastal resource is that investment risk is lowered. The multiplicity of uses provides a hedge against failure of any one use of a resource and enables flexibility in face of unexpected change in the market or natural variation in the productivity of the resource.

(e) A major purpose of ICZM is the caretaking of common property resources of the wetside of the coast, such as coastal waters and mangrove forests: Management of common property is an important function of government and unfortunately, it often receives too low a priority.

How indifferent government could be to the concerns of ecosystem and natural resource damage in coastal areas is evident from leasing out of a large chunk of the Chakaria Sundarban in the Cox's bazar district for shrimp cultivation in the eighties. Such decisions are easily taken because the costs of conversion did not internalise externalities. The cost of destroying the Chakaria Sundarban was not borne by the shrimp cultivators but by the residents of the area suffering from enhanced salinity intrusion and more severe storm damages. Property and use rights are fundamental to the allocation of natural resources as they determine who has the legal right to control access to the resource. In ICZM the issue will

arise when ways of preventing environmental degradation or over-exploitation will be sought.

Because numerous economic sectors are influencing the coastal area, one must examine the economic “externalities” of each when any one sector attempts to gain the highest economic yield from its activities, it often attempts to avoid responsibility for its external effects. The ICLM process examines the effects of "externalities" of any one sector on other sectors, most importantly the effects of "dryside" (shoreland) private activities, upon the common resources of the "wetside” of the coastal area.

(f) The absence of quantifiable market values for a many “environmental” goods and services does not present an insurmountable problem because qualitative assessments of their significance can be incorporated into a carefully constructed analysis. However, while some factors can be quantified (e.g. expected changes in income levels), others are not quantifiable (impact upon traditional lifestyles). Both types of effects should be researched and brought together with other relevant information as pan of the package of factors o be considered.

(g) ICLM programmes require the highest level of public participation possible or appropriate. People who live along the coast and have traditionally used coastal resources may be greatly affected by new rules and procedures. Therefore, they must be involved in the formulation of new coastal policies and rules on resource use, if they are to support them.

(h) Every aspect of an ICZM programme relates to water in me way, requiring the creation of unusual and sometimes complex institutional arrangements. Water provides both the economic base and the social and cultural structure for coastal communities. It provides beaches and viewscapes and gives rise to traditions of fisheries and maritime shipping. But water also erodes beaches and floods coastal cities in response to storm events.

Because it operates at the water/land interface, every aspect of ICZM relates to water in one way or another, whether making provisions for marine commerce or withstanding the ravages of sea storms, or resource conservation, or pollution abatement. The water influence not only establishes special conditions, it also dictates unusual and complex institutional arrangements. In most countries a great variety of agencies have interests in coastal waters, interests that are sometimes complementary but more often competitive. The value of an ICZM programme is that it can serve to coordinate all the varied interests in coastal resources and coastal development.

Coastal areas and coastal resource systems are governmentally complex because of the degree of shared jurisdiction and the amount of common property resources involved. Therefore, ICZM activities need to involve all levels from national to village governments.

5. STEPS TOWARDS ICZM

5.1 An ICZM programme cannot be developed overnight. From the experience of other countries where substantial ICZM programmes have been established, it seems that the following broad preparatory steps are necessary preconditions for such a programme:

(a) Policy Formulation
(b) Strategic Planning
(c) Programme Development
(d) Implementation

Policy Formulation

5.2 ICZM discourages piecemeal approaches to coastal development in favour of a balance between a variety of compatible uses whereby economic and social benefits are maximized and conservation and development become compatible goals. The decision to proceed should be taken by a senior government authority to mark the political will to pursue it. Overall goals determined at government level must then be refined at area level into goals and objectives specific to coastal dwellers needs. Experience at the area level will highlight the need for action in support of integrated coastal management. Lessons learned in the implementation of policies at the area level will feed into the evaluation and adjustment of national goals and strategies. In other worth, the top-down and bottom-up processes mutually influence and feed into each other.

5.3 The policy process involves continuous learning. Among the factors are: expenses in the application of various policy instruments; new information provided by environmental monitoring and research; developments in economic and social activities; and revised objectives, according to emerging new factors. Given the long-term nature of much of the research, it is recommended to make provision for research in the strategy and plan; the results will be used in subsequent periodic reviews of plans. As confidence in the ICZM process widens, planners may address more complex issues calling for more research and more learning.

5.4 In general, ICZM is initiated with a concept paper. In most instances, the originating agency will have an appropriate mandate, for example, for regional planning or, perhaps, for the environment. One of the reasons for this is that such an agency would be likely to have a cross-sectoral mandate to institute the iterative process involving all the stakeholders likely to be involved. However, an inception paper may bc produced by, for example, a scctoral agency or a group of individuals outside the public sector with strong interest in the conservation and rearrangement of the coastal area; their aim would be to persuade other government agencies that integrated management is required. The agency that initiates the ICZM process will not necessarily be the one that will subsequently lead it.

5.5 The inception paper should identify the reasons for adopting an ICZM approach, describe in broad terms what is intended to: achieve, identify the main actors (line ministries, local municipalities, resource users, NGOs, etc.) indicate how the proposal will be: developed, identify a possible coordinating mechanism, and estimate the cost arid time required to develop an ICZM strategy.

5.6 The preparation of this paper should be an iterative process in which *it is* developed and refined by government g5 in cooperation with all other key interested parties. It is important that all of the affected groups be identified early and invited into the process from the very beginning.

5.7 The decision to proceed should be taken by the governmental including the line ministries with an interest in the planning and rearrangement of the coastal area(s) concerned. At this point, regional efforts or international assistance can play a catalytic role.

Strategic Planning

5.8 Strategic planning considers problems and opportunities regarding resources, economic development activities, and social needs in the coastal area and devises a strategy to accomplish ICZM objectives. A major purpose of strategic planning is to devise a programme that will promote compatibility between economic development and the long-term environmental and socio-economic needs of the community.

5.9 National development decisions have typically targeted single sectors and reflected too little concern about the impact these narrow decisions may cause on other sectors. The sectors, each with its own clientele; compete for funding, resources and political advantage. One purpose of strategic planning is to create the conditions for a consensus on ICZM.

5.10 As integral part of strategic planning, two kinds of activities are carried out at this stage. First is data collection and research. There is a need to collect the baseline information and to facilitate an understanding of the relationships between key factors in order to identify and prioritize. A typical coastal profile includes information highlighting the problems and causes for concern in the coastal area, related to social, biophysical, institutional and organizational characteristics of the area.

5.11 The ICZM strategy to be adopted is developed on the basis of the broad goals identified in the inception paper and on information collected. The strategy defines long-term objectives and identifies policy instruments to reach the agreed objectives. It is paramount for the objectives to be those of the people implementing the strategy, and so they are set following broad-ranging consultations arid debates. Objectives can be refined as the strategy progresses. There must be high level political support for the strategy.

5.12 The process itself and its costs and likely benefits must be fully understood. The commitment of key participants is essential and, if some cannot be induced to participate, a more limited strategy can be considered with a view to bringing others on board as the strategy gains in momentum and support.

5.13 In programme development, emphasis should be put on articulation of goals arid objectives and on the preparation of guidelines for development management, environmental protection: and multiple use planning. Such programmes should include mechanisms for the anticipation and resolution of conflicts and the preparation of the Coastal Master Plan.

5.14 ICZM should relate to the broader national economic planning process through components on resources planning. Land use planning, and economic planning. Advice should be available from ICZM for government agencies, developers and other stakeholders and to the general public regarding economic development options. The 1CZM entity should also transmit to the national planners any coastal needs for legislation, new programme, improved policy base, and interagency coordination.

5.15 The programme should address such peripheral aspects as natural hazards and watersheds. Natural hazards and mitigation should be integrated into the ICZM programme, including defenses against any sea level rise caused by global warming. Influence on watershed management should be gained in order to lower the risk of agricultural and other pollutants washing off the land arid entering coastal waters.

5.16 Regarding environmental restoration, all critical habitats that have been degraded should be rehabilitated to the highest possible level of productivity arid biodiversity. Current rehabilitation techniques require research and careful evaluation. The research should include prediction of the effects of environmental change (including climate change) on critical coastal habitats arid on living resources they support.

5.17 A Coastal Master plan is the final product of the basic 1C7..M planning activity. It provided

a detailed representation of the coastal zone and an inventory of the resources, an identification of critical areas, specifying those in need of special attention and those offering potential for development.

5.18 Objectives of the Master Plan could include any of the following: 1) maintain a high quality coastal environment; 2) identify and protect valuable species (and their intraspecific variations); 3) identify arid conserve critical coastal habitats and identify lands that are particularly suitable for development; 4) resolve conflicts among incompatible activities affecting coastal and ocean resources and the uses of space; 5) identify and control activities that have an adverse impact upon the coastal and marine environment; 6) control pollution from "point sources" and from land runoff as well as accidental spills of pollutants: 7) restore damaged ecosystems; 8) coordinate governmental efforts to promote the sustainable development of coastal and ocean resources; 9) balance economic and environmental pressures as they affect development and conservation of coastal and ocean resources; 10) provide guidance for coastal development planning to reduce inadvertent side effects; 11) analyse and prepare safer options for coastal development; and 1 2) raise public awareness.

5.19 En collecting data and synthesizing information for the Master Plan, the kinds of information needed for the strategic plan are those that will enhance the decision-making process that clearly depict the trade-offs. The Master Plan has a fixed time-frame to which the strategy of its creation must be adapted. And it must be recognized that each version of the plan is only an interim statement since the plan basis will be constantly changing and therefore in constant need of updating.

Implementation

5.20 Involvement by all levels of government will be required for coastal management programmes such as ICZM. At one end, the local governments are involved because they govern where development takes places, where resources are found, and where the benefits or penalties are mainly to be felt. At the other end, the Central Government has to be involved because responsibility arid authority for marine affairs inevitably rests there.

5.21 JCZM requires "horizontal integration" of all relevant national agencies (and their private sector clientele) as partners. While no hierarchical arrangement may be needed, or possible, there should be a lead agency or a coordinating office. In the initiation of an ICZM programme, strong, sectorally oriented agencies may be disturbed about their potential loss of power and autonomy that tonight result from creation of new institutions or reorganization of existing ones.

5.22 Experience shows that it may be more expeditious to set up a strong coordinating office in an appropriate ministry, or at the executive level, to administer the ICZM. In this way the actual programme work would be spread among various departments. This would be simpler than to structure a whole new department with autonomy.

523 In these circumstances the selection of the most appropriate institution is a critical part of the process as a whole. Among the critical that should be considered in this selection are the following:

- compatibility of the institution's mandate with its proposed functions as the coordinating agency;
- capacity to lever funding for ECZM from concerned ministries or a combination of national sources and donor funding;
- institutional experience in multisectoral planning or, preferably, integrated planning:
- long life expectancy and ability to survive changes in government;
- strong constituency base and ability to performs well in negotiations with line ministries in the ICZM process;
- a strong institutional capacity for ICZM driven by the culture, morale and technical competence within the organization, rather than dependence on a few committed

individuals;

- a holistic approach to policy issues;
- adaptability to new procedures and policy instruments;
- willingness to involve local communities.

5.24 Several potential weaknesses in institutional arrangements for ICZM will have to be overcome by the coordinating mechanism. Line ministries will not always have the necessary expertise arid resources available and they will naturally tend, in the beginning, to give priority to purely sectoral considerations. Appropriate priorities will become clearer once the objectives and polices of the integrated coastal area strategy have been incorporated into the objectives and policies of each sectoral plan.

6. RECOMMENDATIONS

6.1 In the light of foregoing discussions, there should not be any hesitation on the part of the Government to immediately start the process of ICZM. In fact, there had been couple of attempts to do this in the past. The first initiative was taken by the ESCAP Secretariat and a study was initiated in February 1986 with a team of experts headed by Professor S.H.K. Eusufzai, the then Member of the Planning Commission. The draft report was presented to an interministerial symposium on coastal environmental management held at Dhaka in June 1987 which was addressed by the Ministers of Planning and Agriculture This report was subsequently published and circulated. As a follow-up to this study another study, supported by the UNDP and coordinated by the Planning Commission was also completed in 1993. But the initiative did not go beyond publishing of reports. Rightly did a FAO Study in 1992 comment as follows: "Coastal resources conservation and bio-diversity preservation are more often restrained by political uncertainty and bureaucratic inertia than by shortage of scientific information" (Clark, 1992)

Needless to repeat that ICZM type programme cannot succeed without a strong political commitment. Hopefully, there will be no lack of it this time.

6.2 The institutional mechanism for development of the ICZM Master Plan is crucial. The administrative culture of Bangladesh is not supportive of an area-based super agency with a mandate to control all aspects of the coastal zone development. Line ministries and the national-level agencies under their control do not relish the phenomena of infringement upon their jurisdiction. What has succeeded in the past as co-ordination at planning level leaving implementation to respective line ministries and agencies Bangladesh approach to the ICZM may thus be a combination of both integration at the planning level while maintaining departmental autonomy during implementation. The integration sought here cannot be forced but should be mutually agreed upon by all stakeholders. The Master Plan cannot be prescriptive. The whole purpose of the ICZM exercise is to optimise the use of coastal resources and the best way to do this is through harmonization. Master planning process will ensure this 1 task of harmonization by resolving conflict and bringing about consensus.

6.3 If the contentions in pars 6.2 is acceptable, then the task is to designate a Ministry/Agency to carry out the master planning exercise. In deciding this issue, one may take into consideration the current status of the organisation in the coastal area, its level of involvement there and its capacity to handle this sort of multi-sectoral work. The Ministry of Water Resources / BWDB have been working in the coastal area since the early sixties and have executed the coastal embankment project. They have undertaken the survey of the Meghna estuary, carried out the land reclamation and char development and settlement projects in addition to numerous erosion control and land reclamation projects. The National Water Management Plan being developed by the Water Resources Planning Organisation (WARPO) will be ready by 2001 that will also deal with the coastal area at macro level within the plan framework. For these reasons, it is recommended that the Ministry of Water Resources maybe designated as the lead Ministry and the BW'DB or WARPO as the lead agency for carrying out the master planning exercise. Necessary interdepartmental co-ordination may be effected by a high powered interministerial Steering Committee (SC) under the chairmanship of the Honorable Minister for Water Resources with participation from all stake-holder Ministries and agencies under them. The SC may be assisted by a Technical Committee consisting of all relevant Heads of Departments and representatives from the Universities, NGOs and the Civil society.

6.4 For implementing the preparatory phase a very small but highly professional project office would be set up. Care would be taken to avoid unnecessary duplication in terms of both survey and investigation and data collection. Plenty of data are available in Bangladesh on coastal area and these only need to be collated and consolidate & These works, as far as possible, should also be done through existing institutions by enhancing their capability, if need be. But under no circumstances, should they be supplanted by consultants or by creating new organisations.

6.5 Finally initiating ICZM does not mean a moratorium on the execution of on-going or pipeline projects. All, activities should go on as programmed in the coastal area what as needed of ICZM as the harmonisation of all projects within the framework of the Master Plan.

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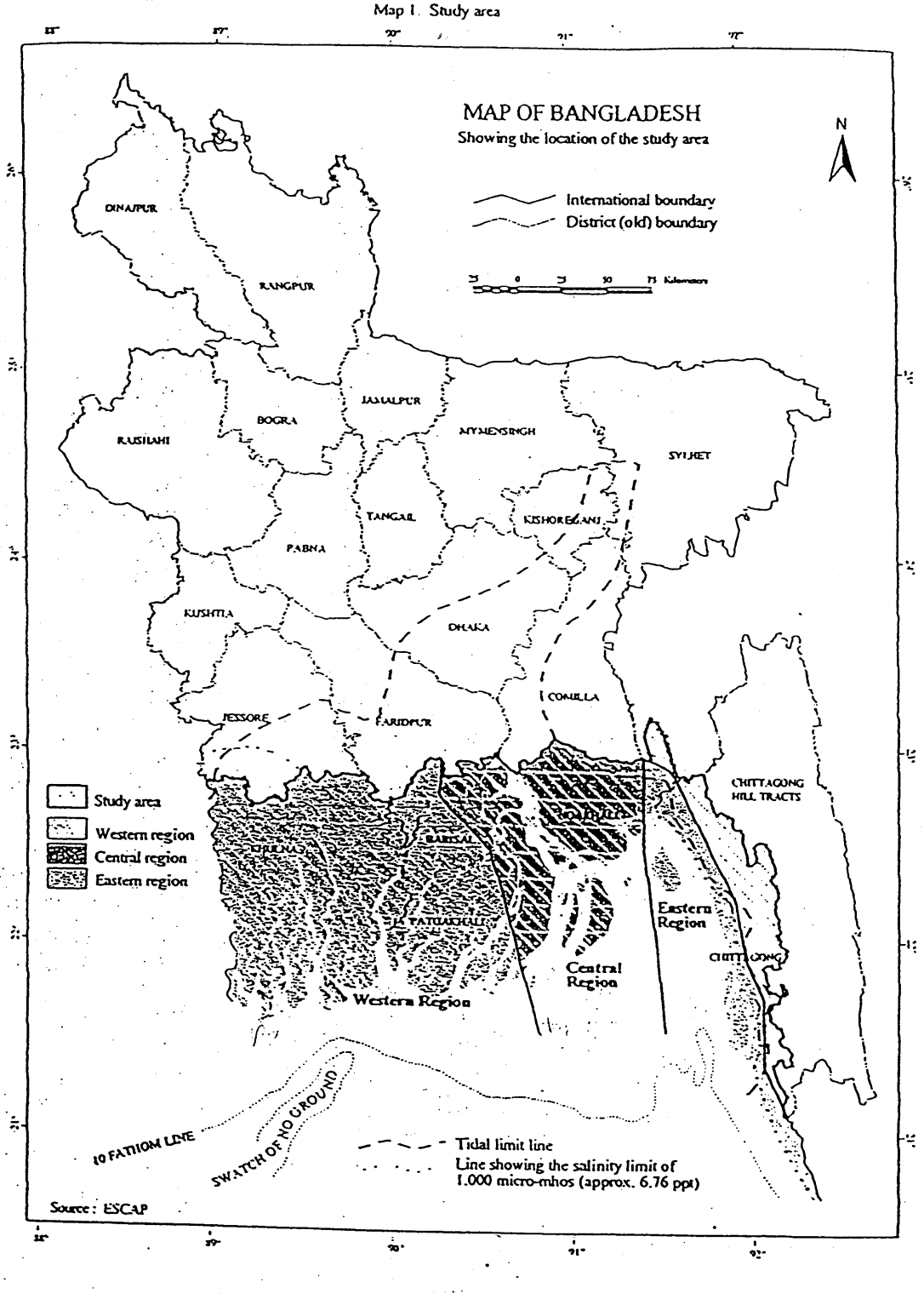
Map 1. Study area



ANNEX-I

DONOR SUPPORTED ACTIVITIES FOR DEVELOPMENT OF THE COASTAL ZONE

A. Grants

Donor/ Agency	Description of Asistance Agreement Date	Amount (Million US Dollar) Disbursement upto June'99
1. A.D.B.		
1.	Strengthening Social Forestry in the Coastal Region of Bangladesh (M/O Forest and Env.) 23.4.95	1.000
2.	Biodiversity Conservation in the Sunderbans, 3-6-97	0.220
3.	Khulna-Jessore Drainage Rehab. Dev. Project (BWDB), 17-12-93	0.264
4.	T.A. for South West Area Water Res. Dev. Project (BWDB) 23.12.93	0.100
5.	T.A. on Mongla Port Area Dev. Project 17.10.94	0.100
	Sub-total : 1 :	1.684
2. DENMARK		
1.	Patuakhali and Barguna Aquaculture Extension (D/O Fisheries) 04-11-96	0.412
2.	Greater Noakhali Aquaculture Exten Project (D/O Fisheries) 14-11-96	0.422
3.	Meghna Estuary Study (BWDB) 7-12-95	0.262
4.	Barisal Infrastructure RD-16, (LGED) 02-12-93	6.771
5.	Urban Water Supply & Sant. Project in Patuakhali & Barguna (DPHE) 22-12-96	2.376
	Sub-total : 2	10.243

Donor/ Agency	Description of Asistance Agreement Date	Amount (Million US Dollar) Disbursement upto June'99
3. E.C.		
1.	Coastal Embankment Rehab. Project.	23.204
2.	Coastal Mapping Project (Survey of Bangladesh) 26-2-97	2.822
3.	Foodgrains Storage & Handling Facilities for CTG. & Mongla Port 04-01-94	0.555
4.	BWDB System Rehab. Project. 16-7-90	0.592
	Sub-total : 3 :	27.173
4. F.A.O		
1.	Disease Prevention & Health Management in Coastal Shrimp Culture 16-3-97	0.083
2.	Coastal Fish Management Project of the Bay of Bengal (RADP allocation 1998-99)	0.023
	Sub-total : 4 :	0.106
5. GERMANY		
1.	Construction of Cyclone Shelter (PMED) 12.10.1995	8.286
2.	Cyclone Rehab. Project (Grameen Bank)	0.672
	Sub-total : 5 :	8.958
6. JAPAN		
1.	Removing Abandoned Govt. Cell of Chittagong Chemical Complex.	0.082
2.	Management of Environmental Sea Pollution of CTG Port (RADP allocation 1998-99).	0.010
3.	Feasibility Study for Extension & Enlargement of Mohora Water Treatment including Supplimentary Works (RADP allocation 1998-99).	0.002
	Sub-total : 6 :	0.094

Donor/ Agency	Description of Asistance Agreement Date	Amount (Million US Dollar) Disbursement upto June'99
7.Netherlands		
1.	Meghna Estuary Study (BWDB) 7-12-95	1.059
2.	E.I.P. (BWDB) 11-02-93	1.123
3.	Char Dev. & Settlement Project (BWDB) 11.8.94	3.172
4.	Char Development Project (BWDB) 28-4-98	1.326
	Sub-total : 7 :	6.680
8. SAUDI ARABIA		
1.	Reconstruc. of Coastal Embkt. (BWDB) 14.7.91	0.117
2.	Constn. of Jetty at Kutubdia (BIWTA) 14-7-91	0.212
3.	Water Supply in 11 Coastal District Project (DPHE) 14.7.91	1.330
4.	Construc. of School, Mosque, Clinic & Multipurpose Building (M/O. Edu.) 14.7.91	9.834
	Sub-total : 8 :	11.493
9. UNDP		
1.	BGD/84/056 Integrated Resources Dev. of Sundarban Forest 23.7.90	0.571
2.	Multi Cyclone Shelter Study (PC) 2.2.92	0.035
3.	Community Empowerment for Rural Poverty Alleviation in Patuakhali Through BARD 19.3.97	0.148
	Sub-total : 9 :	0.754
10. AUSTRALI		
1.	Hilsha Fishery Research in Bangladesh 23-1-97	0.185
11. FINLAND		
1.	Addl. Fund for Mapping of Coastal Area (BIWTA) 26-6-95	1.354
12. FRANCE		
1.	Shrimp Acquaculture Improv. & Dev. (D/O. Fish.) (Treasury Part) 15.2.98	0.002

Donor/ Agency	Description of Asistance Agreement Date	Amount (Million US Dollar) Disbursement upto June'99
13. I.D.B		
1.	Reconst. of School, Madrasha Damaged by Cyclone (M/O. Edu.) 04.1.92	2.000
14. I.D.A		
1.	Bangladesh Port System Development Project Master Plan and Trade Facilitation Study (RADP allocation 1998-99).	0.557
15. SWEDEN		
1.	Assistance for EIP (BWDB) Phase-III 24.2.88	1.288
16. U.S.A.		
1.	Manag. of Aquatic Ecosystem Through Comm. Husbandry 6.5.98	0.004
	Sub-total : (10 ... + 16) :	5.390
	Grand Total : (1 ..... + 16) :	72.575

B. LOANS

Donor/ Agency	Description of Assistance Agreement Date	Amount (Million US Dollar) Disbursed
1. A.D.B.		
1.	Chittagong Port, 0143-BAN(SF), 14-11-73	0.311
2.	Chittagong Port, 0144-BAN, 14-11-73	1.686
3.	Khulna-Mongla Road 0298-BAN(SF), 16-5-77	14.633
4.	Acquaculture Development 0329-BAN (SF), 19-12-77	11.463
5.	Bhola Irrigation 0593-BAN (SF) 20-1-83	24.918
6.	Khulna Coastal Embank Rehb., 0819-BAN (SF)	12.577
7.	Second Forestry Project, Credit No. 1634 BD, 19.12.1985	
8.	Second Acquaculture Dev., 0821-BAN (SF), 20-5-87	28.070
9.	Forest Resources Managt. Project Credit No. 2397 BD, 10-7-92	
10.	Cyclone Damaged Road Rec., 1149-BAN (SF), 6-1-92	26.700
11.	Second Bhola Irrig. Project. 1159-BAN (SF), 04-8-92	23.336
12.	Khulna Jessore Drainage Rehab., 1289-BAN (SF), 17-12-93	11.195
13.	Coastal Greenbelt Project 1353-BAN (SF), 18-4-95	4.224
	Sub-total : 1 :	159.113
2. I.D.A.		
1.	Coastal Area Rehabilitation, 18-10-72	25.000
2.	Chittagong WASA, 09-4-73	7.682
3.	Barisal Irrigaion, 29-4-75	18.282
4.	Karnaphuli Irrigation, 28-1-76	17.098
5.	Muhuri Irrigation Project, 01-7-77	21.00
6.	Greater Khulna Power Distr., 18-6-79	28.000
7.	Second Chittagong WASA, 4-4-80	20.000
8.	Mangrove Afforsestation, 27-6-80	6.956
9.	Chittagong Urea Fertilizer, 10-2-82	17.047
10.	Chittagong Port Project, 21-5-82	43.950
11.	Supplementary Assistance for BWDB (Muhuri Irrigation), 25-7-84	6.992
12.	Supple Asstt. for CTG. Port Aut., 25-7-84	8.431
13.	Shrimp Culture Project, 14-2-86	18.036
14.	BWDB System Rehab. Project, 23-3-90	24.238
15.	3RD Fisheries Project, 8-6-90	14.084
16.	Coastal Embankment Rehb. Project 21-11-95	24.240
	Sub-total : 2 :	301.036
3. I.D.B		
1.	Chittagong Urea Fertilizer, 01-3-82	31.990
2.	Primary School Cum Shelter, 27-11-96	0.920
3.	Greater Khulna Dist. Poverty Alleviation Project. 17-9-97	3.398
4.	Water Supply Project at Coastal Area (RADP allocation 1998-99).	3.918
	Sub-total : 3 :	40.224

Donor/ Agency	Description of Assistance Agreement Date	Amount (Million US Dollar) Disbursed
4. JAPAN		
1.	Goalpara-Barisal Trans. Line, 27-1-77	17.874
2.	CTG Airport Dev. (Eng. Service), 13-9-93	1.971
3.	CTG. Airport Development Project, 26-6-95	13.959
4.	Chittagong Urea Factory, 07-1-82	67.504
5.	Chittagong Urea Fertilizer-II, 26-1-83	24.571
6.	Chittagong Urea Fertilizer-III, 22-1-87	22.090
7.	CTG. Steel Mills Rehab., 04-7-86	0.220
8.	CTG. Caustic Soda Plant Rehab., 26-12-88	14.617
9.	Upliftment of CTG Airport into a suitable international Airport (RADP allocation 1998-99).	14.536
	Sub-total : 4 :	173.342
5. O.P.E.C.		
1.	Greater Khulna Powers Station, 28-8-79	8.500
2.	Rural Development Project-19, Structure-Greater Barisal District (Revised) (RADP allocation 1998-99)	1.031
	Sub-total :	9.531
6. I.F.A.D.		
1.	Cyclone Aff. Rural Households, 8-11-91	9.772
7. FINLAND		
1.	Mapping for developing Bangladesh, Phase-1, Coastal Area (RADP allocation 1998-99)	1.134
8. WORLD BANK		
1.	4th Fisheries Project (RADP allocation 1998-99)	0.041
9. ITALY		
1.	Chittagong WASA Madunaghat Water Supply Project (RADP allocation 1998-99)	0.002
10. SOUTH KOREA		
1.	Greater Khulna Electricity Distribution Project, Phase-2, (RADP allocation 1998-99)	1.237
11. CHINA		
1.	Construction of Bridge over Gabkhan river on Barisal-Jhalokati-Bhandaria-Perojpur Road (RADP allocation 1998-99)	1.031
	Sub-total : (6... + 11) :	13.217
	Grand Total (1.....+11) :	696.463

Source : i) Economic Relations Division, Ministry of Finance, Government of Bangladesh. *Flow of External Resources into Bangladesh* (As of June 30, 1998) Dhaka, 1999.

ii) Revised Annual Development Programme, 1998-99. Planning Commission, Government of Bangladesh.

Currency	Exchange Rate (US$)
US$	1.000000
A$	0.612651
DKR	0.145005
ECU	1.085553
FM	0.192307
DM	0.552395
FF	0.164731
YEN	0.007057
DFL	0.490040
SR	0.266613
SDR	1.331735
IDR	1.331735

*US$ 1 = Tk. 48.50

Proposed Second Coastal Embankments Rehabilitation Project and Integrated Coastal , Zone Management Plan

IDA/NEDA Preparation Mission

Aide Memoire

Introduction

1. A joint International Development Association (IDA) and the Netherlands Development Assistance (NEDA) mission consisting of Jan Weijenberg, Benson Ateng, Imtiazuddin Ahmad, Md. Abdul Ghani, Peter Jipp, Walter A. Garvey, T. C. Sarker, Mahtab Alam (IDA), Peter de Vries, Zahir Uddin Ahmad (NEDA), Sarwat Chowdhury and Gertjan de Graaf(Consultants), assembled in Dhaka on September 21, 1999 and worked in Bangladesh up to October 7, 1999. The main objectives of the mission were to review the consultant's Inception Report for the proposed Second Coastal Embankments Rehabilitation Project (2nd CERP), and follow up on the work on the proposed Integrated Coastal Zone Management (ICZM) Plan, including making arrangements for the implementation of a PHRD Grant. The mission met with key government officials, the team of consultants assisting the Government of Bangladesh (GOB) in preparing the proposed 2nd CERP, NGOs, beneficiaries, and other donors active in the sector, including the L~cal Consulta,tive Group (Water Subgroup). This Aide Memoire was discussed on Wednesday, October 6, 1999 at a wrap-up meeting chaired by Dr. A.T.M. Sharnsul Huda, Secretary, Ministry of Water Resources (MaWR). Members of the mission would like to thank the Secretary, MaWR, the Chairman, Bangladesh Water Development Board (BWDB), and other Government officials for their support and assistance.

2. The Aide Memoire is divided into two sections: (A) ICZM Plan and (B) 2nd CERP . Preparation. It highlights the main agreements reached with GOB and the consultants, issues that the mission wishes to draw to the attention of GOB at this time, and actions that need to be taken with respect to the preparation of 200 CERP and ICZM.

A. ICZM Plan

3. Background. Recently GOB, IDA, and the Netherlands Government have had extensive discussions concerning the need for a comprehensive strategy not only for the coastal protection system but also for the long-term economic and social development of the coastal zone. On the basis of these discussions and a study tour to examine related experiences in East Asia, GOB has prepared a policy note entitled: Integrated Coastal Zone Managenlent: Concepts and Issues.
4. The Government's policy note envisages the development ofa strategy and management plan for the coastal zone. The strategic objectives of the ICZM Plan would be to: alleviate rural poverty and improve rural livelihoods in the coastal zone by reducing vulnerability to natural hazards, supporting responsible and sustainable resource use, developing wu-ealized resource potential, adapting to climate change, and mitigating against environmental/resource degradation. The immediate objectives of the Plan would be to:

    - mitigate against and better manage natural disasters as a result of storm surges caused by cyclones (reducing the risk of loss of life and damage to property); and

    - improve the management of natural resources in the coastal zone and mitigate against the negative effects of human-induced natural resource degradation (saline intrusion, waterlogging, erosion and deforestation), biodiversity/habitat loss (both marine and land. based), climate change (sea level rise), and environmental pollution.

5. The ongoing CERP and the preceding Priority Works Program were formulated as pan of the emergency response to the severe cyclone damage suffered by the Coastal

Embankment System (CES) in 1991. Quick decisions were made on which polders to rehabilitate based on existing model analysis, and on implementation arrangements particularly for the afforestation component. During CERP implementation, it was detemlined that a different strategy was needed if long-term sustainability of coastal embanlanent system performance was to be assured. One essential pillar supporting the proposed ICZM Plan would thus be a sustainable coastal protection system that would minimize the risk of loss of life and property from extreme weather events in the Bay of Bengal, particularly tropical storms and cyclones. A second pillar would include a network of safe havens (shelters or raised areas of refuge) while a third would be a modern disaster preparedness and response system. These three pillars would provide a secure foundation for the ICZM Plan by securing the enabling conditions for long-term investment and social development.

6. Development of the ICZM Plan would involve extensive consultations with local stakeholders including local government, civil society, NGOs, and the private sector in the coastal zone as well as concerned central government agencies. Land use planning and responsible coastal fisheries, forestry and marine resources management would be necessary, as would the resolution of existing resource use conflicts. Modem infrastructure including communications and transportation would have to be planned. A modem integrated coastal resource information system will be needed to support these planning and consultation activities. Preparation of this program is expected to take approximately 3 years, and implementation up to 15 years.

Institutional Arrangements for ICZM

7. The mission agrees with GOB's proposed institutional arrangements for the ICZM Plan. As outlined in the ICZM Concepts and Issues note prepared by GOB, the evolving program of ICZM calls for "horizontal integration" of all relevant national agencies as well as the private sector as partners. Preparation ofICZM Plan should avoid a traditional "top down" approach. Therefore, setting up of an autonomous new department with supreme authority over the entire range of activities would not be consistent with the concept of ICZM. However, past experience has shown that a strong coordinating office at the executive level or at an appropriate ministry could facilitate interest and active participation in such a program by various relevant agencies and sectors. The following institutional arrangements for the ICZM Plan preparation are laid down in GOB's policy note:

- Interministerial Steering Committee (SC): The SC will coordinate the interdepartmental activities with participation from all stakeholder ministries and agencies under their jurisdiction. This high-level committee will be chaired by the Minister for Water Resources, and will set the policy and agree on the strategy for ICZM Plan preparation. The SC should preferably meet at least quarterly.

- lnterministerial Technical Committee (TC): The TC will assist the Steering Committee, and will comprise all the relevant heads of technical departments and representatives from universities, NGOs and the civil society. For example, members of the TC may include the president of the Chamber of Commerce in Chittagong, the Association of Development Agencies in Bangladesh (ADAB), etc. There would be close interaction between the SC and TC. The TC will meet at least once a month in the preparatory stage of the ICZM Plan, and report to the SC on a regular basis. The Secretary, MOWR, will chair the TC.
- The Water Resources Planning Organization (W ARPO): As agreed, W ARPO is well suited for macro level planning, and would be the appropriate agency to locate the ICZM Plan preparation team.

8. A "small highly professional project office" proposed in the policy note will be responsible for developing the preparatory phase of ICZM, and its end product would be the ICZM Plan, which will be a framework within which future activities and projects in the coastal zone will be implemented. This is an unprecedented initiative in Bangladesh. The coastal zone is complex and of great economic and social interest to the country. The staff of the project office must therefore be a combination of multidisciplinary professional experience and skills.

9. It was agreed that the small highly professional project office be called the ICZM Pro am Development Office (PDO). This office, located at W ARPO, will be constituted as a separate and independent unit under the mandate of the SC, and will report directly to the TC and its chairman, the Secretary, MOWR. The PDO will not be a part of the structure of WARPO, but ma¥ evolve into a future Coastal and Estuarine Development Unit as agreed within the context of the formulation of the Second Meglma Estuarine Study (MES ll) Project. To assist in project and contract administration, limited support and accounting staff will be made available to W ARPO.

10. To start off the ICZM planning process, it was agreed that an interim manager/team leader initial Period of one year. It was further agreed that the new team leader recruited for the MES II take UD this interim function. For years two and three, the Netherlands would be willing to consider providing funds under the umbrella T APP for an internationally recruited resource planner. In addition, it was agreed that four senior national experts be recruited for the first three years through an Open and transparent competitive process includig advertisements in process including advertisements in national and international newspapers. Because of the high level of professional qualifications and experience required for this assignment, the mission suggests that the compensation package be competitive with the Private sector to attract sufficient qualified candidates. These experts. should have background and experience in various relevant and complementary disciplines including: science and policy aspects of bio-diversity conservation (e.g. fisheries, forestry, and various other aquatic and land species), technical aspects of environmental quality (including marine and coastal pollution issues), engineering, agronomy and

soil science, environmental or resource economics (with skills in dealing with environmental values and externalities as a consequence of development work, in this case coastal area development), social aspects of developmental work (including gender issues), institutional development (with emphasis on community involvement and public participation), public awareness and education.

11. **GOB Counterparts**. It was further agreed that about five GOB counterparts would be recruited from relevant GOB agencies and departments to complement the work of the four national experts and to receive on-the-job training in ICZM concepts. Recruitment would be based on merit rather than agency affiliation. Counterpart sciff would be released by their respective agencies on the basis of deputation. The budgetary implications for this arrangement would be worked out by the MOWR during preparation of the umbrella T APP for the ICZM preparation phase.

12. **Provision for Advisory Services**. It was agreed that, to facilitate the planning of the above institutional arrangements, the PDO/SC will have access to approximately one-person year of Specialised advisory services. These advisers should be the leading experts in their field, and Would be engaged when needed.

13. In line with the March 1999 Aide Memoire, THE NETHERLANDS would be willing to consider funding the above experts and services as per the following budget. It would also be Willing to consider complementing the funding for ICZM preparations (e.g. complementary funds for the development of the Integrated Coastal Resources Data Base) through its ongoing and planned funding of MES and CEGIS.

Budget Title	Person Years	Cost
interim Manager/Resource Planner	1 .	*
Senior National Experts (4 experts)	12	$500,000 Senior
International Resource Planner	2	$300,000 Advisory Services
	I	$300,000 Logistics! Office Equipment!
Computers		$200,000
Limited Support & Accounting Staff etc.		
Total		$I ,300,000

*To be funded under MES II.

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Implementation Arrangements for the PHRD Grant

14. The Japanese Government has approved a Grant ofUS$865,OOO to assist GOB in the preparation of the ICZM Plan. IDA is the administrator of the Grant while GOB is the implementer. Specifically, the Grant is to be used to finance: (a) development of an Integrated Coastal Resources Data Base (ICRDB) to be used for natural resources, environmental, social assessments, and planning and (b) a Participatory Stakeholder Consultation Process at the local community, regional, and national levels to ensure that integrated coastal management and priority project interventions are based upon the needs of local communities and institutions.

15. The ICRDB would be built through the integration of existing databases available with institutions (for example, CEGIS, SWMC, BARC, FD, DOE, DOA, DOF, LGED, BIDS, BBS, ARIs), and combined with data obtained through field investigations Knowledge gaps need to be filled. This ICRDB will only be a valid tool if it serves as an information system, whereby all The stakeholders share, check, and regularly update their data. A similar system is presently being built by W ARPO, with the assistance of CEGIS, for the support of the National Water Management Plan (NWMP). It was agreed that the above mentioned institutions will conclude a

Memorandum of Understanding (MOU) which will include quality assurance. and protocols to be Respected for the sharin2 of data and in return. open access to oarticioatin2 institutions. In addition, the MOU should lay down the rules for making data available to organizations not included among the signatories of the MOU such as universities, NGOs, etc. It was also agreed that CEGIS will be the lead agency to support W ARPO for the development of the database. W ARPO will conclude a contract with CEGIS to be funded from the PHRD Grant. The signed MOU will be an integral part of this contract.

16. It was further agreed that the contract to carry out the consultation process would be Awarded to a consortium of NGOs on the basis of quality based selection methods in accordance with the IDA Guidelines for Selection and Employment of Consultants. W ARPO will sign the contract with the consortium of NGOs.

17. The mission was informed that GOB has designated W ARPO as the agency responsible for implementing the activities to be funded under the Grant. T APP is to be prepared by the Director, Planning III, BWDB, with the cooperation of Project Director, Meghna Estuary Study and Char Development and Settlement Project. The mission was also informed that GOB has constituted an Inter-ministerial Technical Committee to supervise the drafting of the TAPP, and a list of names and terns of reference for the Committee was provided. A draft T APP is to be submitted to the Ministry of Water Resources by November 7, 1999. It is expected to be approved by the Planning Commission by November 30, 1999. The Grant Agreement can be signed between GOB and ll)A as soon as the T APP is approved.

18. It was agreed that since other T A facilities from different sources are likely to be needed to fund other activities in the course of ICZM Plan preparation. it would be preferable to prepare one umbrella T APP instead of a different T APP for each activity. The umbrella T APP would be prepared in such a way that it would allow funding of anticipated activities as funds become available. Additional T A grants will be sought to be used for anticipated activities such as assessment of marine resources, and engineering services to design a *Safe Havens Construction Program* to respond to the urgent need to save lives of coastal zone dwellers subject to extreme natural disasters caused by tidal bores and storm surges, as well as the preparation of a modem disaster preparedness and response system.

19. Assessment of *marine ecosystems and aquatic resource* potential and their sustainability will be an important building block for the preparation of the ICZM Plan. The mission will prepare a preliminary assessment of available data. Based on this assessment and on an inventory of ongoing and planned activities, IDA will assist GOB in preparing terms of reference for a full marine resources assessment, as well as additional investigations and studies that would be needed. A first draft of the TOR will be made available for discussion by the end of October 1999. Funding for the additional studies and investigations needed to complete the marine resources assessment should be sought from interested donors or possibly GEF.

Proposed Terms of Reference for the ICZM Program Development Office

Introduction

1. Bangladesh is one of the most densely populated countries in world, and also extremely Vulnerable to natural hazards. More specifically, the coastal zone of the country is most vulnerable to the frequent onslaught of natural disasters. In the recent past, Bangladesh faced severe losses of lives and property from natural disasters (for example, 500,000 lives in the 1970 cyclone; 138,000 lives in the 1991 cyclone). The case of Bangladesh clearly shows that density of population and disaster vulnerability are closely linked as enormous pressure is placed on the environment, either as a locus of economic activity or of habitation. Mitigating against and managing natural disasters have therefore increasingly become a central focus of the GOB.
2. 2. Recently GOB, IDA, and the Netherlands Government have had extensive discussions concerning the need for a comprehensive strategy not only for the coastal protection system but also for the long-term economic and social development of the coastal zone. On the basis of these discussions and a study tour to examine related experiences in East Asia, GOB has prepared a policy note entitled: Integrated Coastal Zone Management: Concepts a/ld Issues. As outlined in the policy note, the evolving program of ICZM calls for "horizontal integration" of all relevant national agencies as well as the private sector as partners. Preparation of ICZM Plan should avoid a traditional "top down" approach. Therefore, setting up of an autonomous new department with supreme authority over the entire range of activities would not be consistent with the concept of ICZM. However, past experience has shown that a strong coordinating office at the executive level or at an appropriate ministry could facilitate interest and active participation in such a program by various relevant agencies and sectors. The Government has therefore suggested that a "highly professional project office" (program Development Office or PDO) be established for this purpose.

Objective

3. The goal of the Government policy for ICZM is to:

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- mitigate against and better manage natural disasters as a result of storm surges caused by cyclones (reducing the risk of loss of life and damage to property)

- .improve the management of natural resources in the coastal zone and mitigate against the negative effects of human-induced natural resource degradation (saline intrusion, water logging, erosion and deforestation), biodiversity/habitat loss (both marine and land-based), climate change (sea level rise), and environmental pollution; and

- create opportunities for sustainable economic development.

4. To achieve this goal, GOB has outlined a process o(preparing an ICZM strategy and comprehensive plan in its policy note of September 22, 1999. The PDO will facilitate and coordinate the task of preparing this ICZM strategy and comprehensive plan, which will be a framework within which future activities and projects in the coastal zone will be developed and implemented.

The Organization

5. The PDO, located at W ARPO, will be constituted as a separate and independent Unit under the mandate of an Interministerial Steering Committee', and will report directly to a Technical] Comminee2 and its chairman, the Secretary, Ministry of Water Resources. Initially, the PDO will not be a part of the structure of W ARPO, but may evolve into a future Coastal and Estuarine Development Unit as agreed within the context of the

formulation of the Second Meghna Estuarine Study (MES II) Project. To assist in project and contract administration, limited support and accounting staff will be made available to W ARPO. In the preparatory phase of ICZM, the PDO will operate for three years (see Appendix A for budget).

Staffing

6. The staff of the PDO will be a team of multidisciplinary, multisectoral professionals.

(i) Team leader/resource planner: The PDO will be organized and managed by an internationally recruited team leader/resource planner. An interim team leader will be appointed for an initial period of one year. The internationally recruited team leader for the Meghna Estuary System II (MES II) will take up this function. For years two and three, the Netherlands would be willing to consider providing funds under the umbrella T APP for an internationally recruited resource planner/team leader. The team leader should have extensive experience in coastal zone resource planning and regional development.

(ii) Four senior national experts will also be recruited over the next six months. These experts should have background and experience in various relevant and complementary disciplines including: science and policy aspects of bio-diversity conservation (e.g. fisheries, forestry, and various other aquatic and land species), technical aspects of environmental quality (including marine and coastal pollution issues), coastal and marine engineering (including the morpho-dynamics of an estuarine environment), soil science and agronomy, land use planning, environmental and resource economics (with skills in dealing with environmental values and externalities, in this case coastal area development), social aspects of development (including gender issues), institutional development (with emphasis on community involvement and public participation), public awareness and education.

(iii) About five GOB counterparts, with similar background, would be recruited from relevant GOB agencies and departments to complement the work of the four national experts and to receive on-the-job training in ICZM concepts and continue work on ICZM related activities in the long run. Recruitment would be based on merit rather than agency affiliation. Counterpart staff would be released by their respective agencies on the basis of deputation.

(iv) ICZM advisers: To facilitate and support its work, the PDO/SC will have access to approximately one-person year of short-term specialized advisory services. These advisers

[1] Following the GOB's policy note, the Interministerial Steering Committee (SC) will coordinate the interdepartmental activities with participation from all stake-holdcr ministries and agencies under their jurisdiction. This high level committee will be chaired by thc Minister for Water Resources, and will undertake policy decisions on thc ICZM (see Appendix B).

[2] The Technical Committee will comprise all relevant heads of technical dcpar1mCnlS and representatives from universities. NGOs.
and civil society.

should be the leading experts in their field, and would be engaged when needed. The Technical Committee will review the ten11S of reference and approve the recruitment of each adviser on a case by case basis.

Activities

7. The PDQ will, during these three years, be responsible for:

(i) Developing an ICZM strategy;

(ii) Preparing the comprehensive ICZM Plan;

(iii) Identifying, formulating and appraising activities, studies and projects which will constitute building blocks for the ICZM preparation;

(iv) Proactively monitor the implementation of planned and ongoing activities in the coastal zone, review the outputs and expected outcomes of these activities and advise the Technical Committee and Steering Committee on their relevance, feasibility, and contribution to the overall ICZM strategy. Such activities would include:

New activities, such as:

- Integrated Coastal Resources Data Base (ICRDB); and

- Participatory Stakeholder Consultation Process;

Planned activities, such as:

- Safe Haven/Disaster Preparedness & Response System (Cyclone Shelters); Marine Ecosystems and Aquatic Resource Assessment; and
- Market Incentives for Mitigation Investment (MIMI) Study for Disaster Prevention

Ongoing activities, such as:

- Second Coastal Embankment and Rehabilitation Program (2nd CERP);
- har Development & Settlement Project (CDSP);
- limate Change Adaptation Study;
- National Water Management Plan (NWMP);
- Fourth Fisheries Project (FFP);
- Forest Resources Management Project (FRMP);
- Sustainable Environmental Management Project (SEMP)
- Coastal Land Use Zoning;
- Meghna Estuary Study (MES);
- Sundarbans Biodiversity Conservation Project;
- Khulna-Jessore Drainage Project;
- Gorai River Restoration Project;
- Coastal and Wetland Biodiversity Management Project;
- Empowen11ent of Coastal Fishing Communities for Livelihood Security Project;
- Joint Actions for Livelihood Security Project; and
- Bay of Bengal Program;

(v) Coordinating and facilitating the exchange of data and information among the above mentioned activities as well as other initiatives;

(vi) Reporting regularly on program preparation progress to the Techenical Committee and initiating and preparing working papers, briefs, and policy notes for consideration and guidance by the Steering Committee in order to ensure the Committee's full participation in the ICZM strategy and plan formulation process; and

(vii) Integrating elements of the preparation process as well as other relevant information, documents, and knowledge into the ICZM Plan.

8. The PDO will begin operations from January 1,2000 with the employment of the interim manager. Other staff of PDO should be in place by June 30, 2000. A recruiting committee (which will be selected by the ICZM Techenical Committee) will make ultimate decisions on recruitment of staff. More specifically, during the first year of its existence, the PDO will take up the following activities:

- The team leader will assist in facilitating PDO staff recruitment and making the PDO Office operational;

- Establish detailed PDO work plan with clear milestones;

- Integrate the outputs and expertise of the MES project including the survey results and data collected into the ICRDB information system and the ICZM planning procession.

- Furthermore, the PDO will provide managerial arrangements to safeguard regular survey and monitoring;

- Monitor the implementation of the activities identified in the Techenical Assistance Project Proforma (T APP);3 and

- Prepare a vision and the strategy for ICZM which provides the basis for Plan preparation in years 2 and 3.

Output

9. The output of the PDO will be the ICZM Plan due in 2002. This plan will lead to future coastal zone related investments undertaken by the GOB with support from various donors (see Appendix D). ,

[3] During the IDA/Netherlands Government Sept-Oct 99 mission. it was agreed with the GOB that: since various Technical Assistance
(T A) facilities from different sources are likely to be needed to fund other activities in the course of ICZM Plan preparation, it would
be preferable to prepare one umbrella T APP instead of a different T APP for each activity. The umbrella T APP would be prepared in
such a way that it would allow funding of anticipated activities as funds become available.

Appendix A

Funding

The Netherlands would be willing to consider funding the above experts and services as per the following budget. It would also be willing to consider complementing the funding for ICZM preparations (e.g. complementary funds for the constitution of the Integrated Coastal Resources data Base) through its ongoing and planned funding of MES and CEGIS.

BUDGET.

tile	Person Years	Cost
Interim Manager/Resource Planner	1	*
Intenior National Experts (4 experts)	12	$500,000 enior
International Resource Planner	2	$300,000 Independent
Advisory Services	1	$300,000 logistics Office
Equipment! Computers		$200,000 Office Lease/Limited SuD12ort
& Accounting! staff etc.		
		total $1,300,000

*to be funded under MES ll.

E. *Proposed Terms of Reference for the ICZM Steering Committee*

Objective

The Interministerial Steering Committee (SC) will provide policy guidelines on issues related to the coastal areas.

Membership

This high level committee will be chaired by the Minister for Water Resources and will include representatives (at the Secretary level) of Ministries of Water Resources, Planning, Fisheries and Livestock, Land, Forestry and Environment, Shipping, Agriculture, Local Government and Rural Development and the BWDB. The PDO will be the Secretariat for this Committee.

Activities

The SC will preferably meet at least quarterly. Specific activities of the SC will include:

- Adoption and presentation to the Government of the ICZM vision, strategy, and plan;
- Based on policy notes and briefs prepared by the PDO or any other reports on or planned activities in the coastal zone, decision on broad policy guidelines for sustainable coastal zone development in the country;
- Overall coordination of development processes in the coastal zone, including the resolution of conflicts of interest and duplication of efforts; and
- Providing feedback to other ministries, and National Committees that are involved in or carrying out activities in the coastal zone.

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Appendix C

Proposed Terms of Reference for the ICZM Technical Committee

Objective

ICZM Technical Committee (TC) will assist the Steering Committee in the overall coordination of ICZM Plan preparation.

Membership

The TC will comprise all the relevant heads of departments from the Ministries of Water Resources, Planning, Fisheries and Livestock, Land, Forestry and Environment, Shipping,, Agriculture, Local Government and Rural Development, and the BWDB and representatives from universities, NGOs and the civil society. The Secretary, Ministry of Water Resources, will chair the TC. In addition membership of the TC may include the president of the Chamber of Commerce in Chittagong, the Association of Development Agencies in Bangladesh (ADAB), the Director General of WARPO, etc. The PDO will act as Secretariat to the TC.

Activities

There would be close interaction between the SC and TC. The TC will preferably meet at least once a month in the preparatory stage of the ICZM Plan, and report to the SC on a regular basis. Specific activities of the TC may include:

- Monitoring PDO performance and program development on a regular basis;
- Providing guidance to the PDO work as needed including recruitment of staff, and other activities;
- Ensuring the PDO access to data and information needed to prepare the ICZM Strategy and Plan; and
- Acting as Project Steering Committee (PSC) for all coastal development projects such as, CDSP, 2nd CERP, and MES.

Steps towards an ICZM Plan