

# **Knowledge Management Approaches and Social Communication**

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Social Communication**

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## GLOSSARY

Sundarban	-	Natural Mangroves Forest in Bangladesh
Jamuna, Meghna	-	The Main Rivers of Bangladesh
Sangbad	-	News
Sangstha	-	Organization
Dwip	-	Island
Unnayan	-	Development
Sangkalpa	-	Promise
Gono	-	People
Samity	-	Society

Purbanchal, Janmabhumi, Rajpothar Dabi (Evening), Gramer Kagoj and Prabartan, Anirban, Tathya, Probaho, and Janabarta,	}	Local Newspaper
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Bhorer Kagoj, Janakantha, Prothom Alo, Sangbad, The Daily Star, Ittefaq, The New Age, Jugantar and Aajker Kagoj.	}	National Newspaper
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Muksudpur Sangbad and the Janakantha.	}	The fortnightlies
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## ABBREVIATION

AMARC	-	World Association for Community Radio Broadcasters
BBC	-	British Broadcasting Corporation
BBS	-	Bangladesh Bureau of Statistics
BFIS	-	Bangladesh Financial Information Services
BRDB	-	Bangladesh Rural Development Board
BIDS	-	Bangladesh Institute of Development Studies
BIWTA	-	Bangladesh Inland Water Transport Authorities
BNNRC	-	Bangladesh NGOs Network for Radio and Communication
BSS	-	Bangladesh Sangbad Sangstha
BTRC	-	Bangladesh Telecommunication Regulatory Commission
BWDB	-	Bangladesh Water Development Board
CBOs	-	Community Based Organisations
CDS	-	Coastal Development Strategy
CEP	-	Coastal Embankment Project
COAST	-	Coastal Association for Social Transformation Trust
CODEC	-	Community Development Center
DCFRN	-	Developing Countries Farm Radio Network
DSIs	-	Decision Support Indicators
DUS	-	Dwip Unnayan Sangstha
ECFC	-	Empowerment of Coastal Fishing Communities (project)
FAIRS	-	Foundation for Amateur Radio International Service
FAO	-	Food Agricultural Organization
GKP	-	Global Knowledge Partnership
ICRD	-	Integrated Coastal Resources Database
ICT	-	Information and Communication Technology
ICZM	-	Integrated Coastal Zone Management
IKB	-	Integrated Knowledge Base

NGO	-	Non-Governmental Organizations
NWRD	-	National Water Resource Database
PCU	-	Program Coordination Unit
PDO	-	Program Development Office
PDO-ICZMP	-	Program Development Office for Integrated Coastal Zone Management Plan
PGUS	-	Pirojpur Gono Unnayan Samity
RBI	-	Resource Base Indicators
SAARC	-	South Asia Association for Regional Cooperation
SDNP	-	Sustainable Development Network Project
SDIBD	-	Sustainable Development Information for Bangladesh
SEMP	-	Sustainable Environment Management Plan
UNDP	-	United Nations Development Program
UNESCO	-	United Nations Educational, Scientific and Cultural Organization
VOA	-	Voice of America
WACC	-	World Association for Christian Communication
WARPO	-	Water Resources Planning Organization
WP	-	Working Paper
YPSA	-	Young Powers Social Action

## 1 INTRODUCTION

### 1.1 Background

The 1999 GoB Policy Note on Integrated Coastal Zone Management (**PDO-ICZMP, 2002a**) emphasizes the need to improve the understanding of coastal zone processes and establish a system for collecting data and synthesizing information that will directly serve the decision making process with clear analysis and depiction of trade-offs among various implementation alternatives. This includes knowledge for policy development, participatory decision-making and co-ordination of programs and intervention planning. Given the fact that such understanding of the complex natural, human and economic processes in the coastal zone is far from complete, a knowledge management approach and social communication is considered to be a key component of the coastal development strategy. Following knowledge management approaches an indicator framework has been developed to structure and organize knowledge on integrated coastal zone management. Accordingly a profile of the Bangladesh coast and an integrated coastal resources database (ICRD) accommodating available data is being developed.

### 1.2 Definition

Knowledge is a condition obtained by a person or an institution and is a dynamic continuously developing phenomenon, and builds up through practicing, acquisition, refinement, communication, leveraged and deployment. In the context of integrated coastal zone management (ICZM) condition obtained by institutions, organizations, communities, professionals and other bodies and individuals involved in formulation of policy, development strategy, action plan, and implementation and monitoring of the ICZM process are referred.

Knowledge management, in this context is recent development though knowledge always plays role in every decision making process and management is an inbuilt mechanism. However, data management is fairly common and a link of data and knowledge could make the position a little clear. An important distinction should be made between the terms “data” and “knowledge”. Data are facts, measurements or descriptive elements whereas knowledge is a condition obtained, reflecting understanding of different processes and human behavior. Data are usually value free; they lead to knowledge through interpretation and analysis, and are subject to perceptions and beliefs and thus are not value free. The initiative of ICZM in Bangladesh considers knowledge management and aims to establish a knowledge base that incorporates database and goes beyond, captures relevant experiences as well as research output and methodologies.

Data, information and knowledge are very much related. Distinction among these three items is not discrete rather floating from data to information to knowledge with considerable over lapping, at least in the understanding of a wider array of users. Among these, data management is quite established and common, information management follows data management. On the other hand knowledge management is quite recent phenomenon. Data management deals with data only while information management includes data management. Knowledge management however encompasses management of data, information and knowledge. Depending on the sectors, contexts,

Information System (IS) is an organized method of transforming data into information that can be used for decision-making. The systematic use of collected and stored data to achieve specific ends is **information management**. Also known as IM or Informatics (Website 1).

**Knowledge management** is a concept in which an enterprise gathers, organizes, shares, and analyzes its knowledge in terms of resources, documents, and people skills. Knowledge management involves data mining and some method of operation to push information to users (Website 2).

Knowledge in the ICZM context shall be the basis of bringing change in behaviour of many of the direct and indirect stakeholders through social communication for achieving the goals of ICZM. To achieve that there is a need for information and knowledge sharing as well as multi-directional communication between and among all the key actors in the process. This paper shall propose knowledge management approach and social communication strategy and action plans to facilitate those communication processes of the Programs successor, the Program Co-ordination Unit (PCU).

### 1.3 Purpose

In the context of ICZM in Bangladesh, the purpose of the knowledge management and social communication is to:

- ◇ gather, assimilate, improve, update and make available data, information and knowledge on the coastal zone and livelihoods of coastal area dwellers for all stakeholders involved in developing and implementing ICZM;
- ◇ through a co-operative approach, engage organisations and projects involved in coastal development in collecting, collating knowledge and constructing and maintaining a dynamic and sustainable knowledge system on the coastal zone;
- ◇ integration of domain knowledge, indigenous (local) knowledge and experts knowledge to generate decision making parameters and establish a (near) intelligent knowledgebase system
- ◇ support development of the coastal development strategy
- ◇ serve as a specific means for social communication of knowledge both horizontally and vertically among many stakeholders (multidirectional communication) and for raising awareness and to informing and influencing to initiate ICZM process; and
- ◇ Identification of knowledge gaps and filling

### 1.4 Formulation Process

*Foundation:* The 1999 GoB Policy Note on Integrated Coastal Zone Management (PDO-ICZMP, 2002a) gave the basis of Knowledge Management Approach (KMA) and accordingly is being developed to facilitate and support ICZM process in Bangladesh.

*Conceptualization:* During September 2003 a brainstorming session on conceptual development for knowledge management approach (KMA) initiated the development process. Professionals from the ICZM partner organizations participated and contributed in evolution of the approach. The Knowledge base taskforce members discussed KMA development in 1<sup>st</sup> Taskforce meeting held on

projects, consultation with agencies, task force members and national/ international experts provided guidelines in drafting the approach.

*Review:* Intensive internal review by in house professionals including experts from WARPO and GoB experts from 4 different ministries and consultant team. The final draft was presented to the Knowledge Base Task Force (composed of members from different agencies and sectors) and was distributed on 26/06/2004. Suggestions and comments from the members further enriched the KMA for ICZM in Bangladesh.

The social communication strategy and action plan development started with a brain storming session on 13<sup>th</sup> October 2004. A wide range of people were invited including representatives from government agencies, NGOs, academic institutions, local NGOs, international organizations etc. More than 15 invitees attended the session, while four key actors who could not attend were subsequently visited and their experience and suggestions noted. In addition information was collected from another ICZM Program in Sri Lanka.

The preliminary draft was developed based on the contributions from the brain storming session and was discussed internally, after which the first full draft was circulated for feedback to the participants of the brainstorming session. The second meeting was held with key actors to discuss the draft report and on the basis of the feedback received the report was finalized. Appendix 1 includes lists of contributors for the KMA and social communication separately.

## 1.5 Structure of the report

This chapter provides background, purpose and introduces knowledge management and social communication. Following the introductory chapter the report has two parts. Part A contains Knowledge Management Approaches and Part B contains Social Communication. Part A includes Chapter 2 that defines and describes knowledge arena for ICZM and includes knowledge needs, existing knowledge, and status of e-governance and as such sets the stage for developing approach. Chapter 3 brings in knowledge management approaches including principle, partners, access, capacity building and coordination. Chapter 4 describes methods including ways and means such as user group formation, knowledge generation, quality control, standardization, communication, protocols, policy advocacy and out reach and dissemination. Chapter 5 includes tools for knowledge management.

Part B includes chapter 6 that presents state of the art in social communication in ICZM, chapter 7 defines communication principles, chapter 8 sets communication strategy, chapter 9 proposes action plan to listen and respond, chapter 10 is the action plan to disseminate information and raise awareness and finally chapter 11 is on implementation and follow up

The limitation of this approach could be mentioned as although some elements of the action plans might be implemented immediately, their focus is the period beyond December 2005.



## **Part A**





## 2 KNOWLEDGE ARENA FOR ICZM

Integrated Coastal Zone Management (ICZM) refers to management of the coastal zone in an integrated approach that includes natural system, physical settings and human interactions there in. Management activities concentrate and work for sustainable economic development, to keep ecosystems healthy and optimize sustainable turnover from the coastal system. Coordination of sectors functional in the coastal zone is essential to keep up integrity of the system and minimize conflicts and detrimental acts. As such for ICZM, knowledge is necessary on the state of the coastal resources including natural, physical, human, social, and financial conditions and trends there in (state of resource base, output and trends) and also on the input in to the system in terms of interventions both software (e.g. adoption of policy, strategy, legal aids and institutional mechanism) and hardware interventions (infrastructures) that bring changes in resource bases and output. The goal is however to enhance coastal livelihood i.e. outcome (regional economic growth, community well-being and sustainable environment). Thus knowledge arena for ICZM covers data, information and knowledge on the input in to the coastal system, output from the system and outcome at community level including trends. On the other hand knowledge on pressure, states and responses of the resource bases and their correlation to the input system and impacts on the human well-being are also very much in ICZM knowledge arena. As such an indicator framework has been developed that guides structuring knowledge arena for 'ICZM' in Bangladesh and at the same time instrumental in monitoring various states and processes.

### 2.1 Existing knowledge: State of art for ICZM

The book, 'Where Land Meet the Sea: A Profile of the Coastal Zone of Bangladesh' prepared by PDO-ICZMP, is expected to become a reference document for information on the natural, human, socio-economic, infrastructure and institutional situation and processes in the coastal zone. It includes 'baseline' information and relevant knowledge on different aspects of the coastal zone. Extensive efforts were made in collecting and compiling basic data, information and experiences from different sources and analyzing, processing and assimilating them to become a set of baseline information and relevant knowledge for ICZM. Purpose of the profile is to bring existing data, information, experience and knowledge on coastal matters together, and to summarize the "state of the art". The profile is expected to be useful for policy makers, planners, coastal managers, other government agencies, researchers, educators and communities, through:

- providing an objective reference document on the state of resources of the coastal zone;
- describing coastal livelihoods and economic activities;
- identifying main trends and changes over time in the main characteristics of the coastal resources system; and
- summarizing institutional arrangements for the coastal area, and related topics

Table of contents of the profile is presented in Appendix 2.

In addition an inventory of the available data has been made and structured for the recently designed

*Complete inventory and collection, collation and compilation of the ICZM knowledge shall be a dynamic task and shall be emphasized and piloted in the 2<sup>nd</sup> phase of the ICZM initiative.*

## 2.2 Present status: e-governance

Emerging electronic media and facilities fostered knowledge generation, archiving, communication and in fact knowledge management by large are boosted tremendously. Management of knowledge in future shall depend largely on the e-governance. Support to ICT Task force program of planning commission conducted a comprehensive Study of e-Government initiatives in Bangladesh supported by JICA. The data for the study was collected covering 303 government institutions throughout Bangladesh covering a total of 35,658 officers and 103,126 staff from July through September 2003. Following are the findings (Taifur, 2004);

### ***Hardware Infrastructure***

- PC-Employee ratio at Ministry/ Division level is 0.22
- PC-Employee ratio at Department/ Corporation is 0.065
- PC-Employee ratio in Academic Institutions is 0.23

### ***Connectivity Infrastructure***

- 79% of Ministries/ Divisions are currently connected to the Internet
- 76% of Departments/ Corporations are currently connected to the Internet
- 75% of Academic Institutions are currently connected to the Internet
- Internet-connected PC-Employee ratio at Ministry/ Division level is 0.045
- Internet-connected PC-Employee ratio at Department/ Corporation level is 0.01
- Internet-connected PC-Employee ratio in Academic Institutions is 0.1
- At the Ministry/ Division level, 79% of offices connect to the Internet connect through dial-up only.
- At the Department/Corporation level, 77% of offices connect to the Internet connect through dial-up only.
- In academic institutions, 42% of offices connect to the Internet through dial-up only.
- At the Ministry/ Division level, about 11.6% of the offices have broadband and about 7% have radio-link connectivity.
- At the Department/ Corporation level, about 10% of the offices have broadband and about 4.2% have radio-link connectivity.
- At academic institutions, 8.3% of the offices have broadband, and about 12.5% have radio-link connectivity.
- 6 government offices have VSAT.
- At the Ministry/ Division level, about 40% have LAN.
- At the Department/ Corporation level, about 36.8% have LAN.
- In academic institutions covered in the survey, about 54% have LAN.

- At the Department/Corporation level, about 50% use the Internet for official e- mail purposes, about 42% for searching information and about 32% for downloading files.
- In academic institutions, about 21% use the Internet for official e-mail purposes, about 25% for searching information and about 25% for downloading files.
- At the Ministry/Division level, a little more than 8% of the officers use e-mail directly and about 5% of the officers use e-mail through computer operators.
- At the Department/Corporation level, on an average, 6.5% officers use e-mail directly while about 5.75% officers use e-mail through the help of computer operators.
- In academic institutions, 42.4% of the officers use e-mail directly and about 38% of the officers use e-mail through computer operators.
- Percentage of offices with websites: Ministry -24%; Division -50%; Department -14%; Corporation -14%; Academic Institution -25%.
- Percentage of offices with customized software: Ministry -24%; Division -60%; Department - 25%; Corporation -41 %; Academic Institution -50%.

### ***IT Training***

- At Ministry/Division level, percentage of officers trained in IT is 28% and percentage of staff trained is 29%.
- At Department/Corporation level, percentage of officers trained in IT is 23% and percentage of staff trained is 7%.
- In Academic Institutions, percentage of officers trained in IT is 6% and percentage of staff trained is 4%.
- About 28% of the Ministries/Divisions have in-house IT training facilities.
- About 27% of the Departments/Corporations have in-house IT training facilities.
- About 50% of Academic Institutions have in-house IT training facilities.

### ***Maintenance of IT Systems***

- About 56% of Ministries/Divisions have outsourced maintenance.
- About 51 % of Departments/Corporations have outsourced maintenance.
- About 46% of Academic Institutions have outsourced maintenance.
- About 16.3% of Ministries/ Divisions have no mechanism for IT Maintenance.
- About 15.7% of Departments/Corporations have no mechanism for IT Maintenance.
- About 15.2% of Academic Institutions have no mechanism for IT Maintenance.
- About 18.6% of Ministries/Divisions have maintenance being handled under projects.
- About 7.6% of Departments/ Corporations have maintenance being handled under projects.

### ***IT Human Resource***

- About 58% of the Ministries/ Divisions have no IT human resource.
- About 65% of Departments/ Corporations have no IT human resource.
- About 35% of Academic Institutions have no IT human resource.

- Increased Productivity (77%);
- Easier Access to Needed Information (71%);
- Preservation of Documents and Information (63%);
- Easier Sharing of Documents (60%);
- Improved External Communication (49.5%);
- Improved Internal Communication (45.5%).

### ***Success Factors in the Implementation of e-Government***

The survey respondents have prioritized the success factors for implementation of e- Government in the following order (the figures in bracket represent the percentage of offices which have put the following as a success factor):

- Initiative from Top-Level Officials (77%)
- Initiative from Mid-Level Officials (30%)
- Assistance from Donors (26%)
- Regular IT Training (16%)
- Initiative from Low-Level Officials (15%)

### ***Issues to Overcome for Successful Implementation of e-Government***

The survey respondents have prioritized the hindrances to successful implementation of e- Government in the following order (the figures in bracket represent the percentage of offices, which have put the following as a hindrance):

- Lack of Adequate Training (69%)
- Lack of Adequate Hardware (59%)
- Insufficient Maintenance (55%)
- Lack of Telecom Facilities (37%)
- Power Failure (35%)
- Lack of ICT Awareness (22%)
- Lack of Legal Infrastructure (22%)
- Lack of Bangla Interfacing (21%)
- Fear of Change (19%)
- Mindset Against Computers (18%)
- Lack of Acceptance of IT Systems (10%)

## **2.3 Present status: Knowledge requirement**

Knowledge requirement has been considered as substantial for each of the program element beginning with an elaboration of opportunities, problems and challenges and, particularly, in formulating a comprehensive policy document. Even more detailed understanding of conditions and processes of the coastal zone have been considered required in defining and prioritising a coastal development strategy (CDS). Additional to these implicit knowledge requirements, the Policy Note

understanding of the patterns and their implications, which shall be built on the partner's experiences.

## 2.4 Indicator framework: the driving structure for ICZM knowledge arena

Indicator framework functions as the driving structure for describing knowledge arena for ICZM and subsequently develop a knowledge base. Indicator framework introduce/describe the livelihood from a coastal perspective; identify problems and potential of the coastal zone; prioritise interventions; assess, monitor and evaluate interventions. Indicators for ICZM aim to measure conditions and trends of the coastal zone in terms of inputs, outputs and outcome of either autonomous developments or dedicated actions and interventions, such as those intended to be undertaken in the context of a coastal development strategy. The Indicator Framework considers *three sets of indicators*:

- *management input indicators (MIIs)*, which represent changes in the established institutional arrangements; formulated policies and plans; or direct interventions under implementation (e.g., characterized by public expenditures for the development of coastal infrastructure);
- *output or resource base indicators (RBIs)*, which characterize changes in the state of the local resource base consisting of natural, physical, human, social and financial resources; and
- *outcome or decision support indicators (DSIs)*, measuring the “value” of changes in the resource base (outputs) in terms of policy objectives, such as literacy rates and poverty reduction, in general representing objectives of the sustainable development.

Indicators serve *policy-making level, strategy formulation level* and *action level*. Again the indicator framework is generic in the sense that only “dimensions” are identified for which specific indicators could be developed. It is ICZM-specific as in the process of identification and selection; these dimensions were verified on the basis of their relevance for ICZM. The processes and knowledge including descriptive information necessary for ICZM are also referred in the indicators frame, which shall be a priority to consider. The framework however also identifies sets of indicators (A combination of MII, RBI and DSI) to characterize the coastal zone (PDO-ICZMP, 2003a), district level vulnerabilities, livelihood or well being indicators; and a set of aggregated key indices (living in the coast; indicators) for coastal development.

Thus, Indicator Framework elaborates and guides to determine knowledge requirement (data, processes and knowledge) on physical, natural, and human system (includes livelihood and socio-economics). The institutional arena including policy, plan, strategy and legislations in one hand and the management interventions input on the other are also integral part of the mentioned knowledge system. ***As such the Indicator Framework has been considered as tools for determining knowledge requirement for ICZM.***

To describe and characterize the coastal zone and ICZM process various stakeholders require knowledge at different temporal and spatial resolutions. It is impossible and unnecessary to list the requirements of such huge knowledge by all the stakeholders. Attempts have been made to guide the knowledge requirements arena at dimension level of different categories and components of the ICZM indicators frame of management input indicators, Resource base indicators and decision

locations, different timescale, various sectors, disciplines, political and institutional domains, policies, management aspects and education. Screening existing literature, reports and documents on availability of knowledge and gaps in compatibility of the ICZM process and in light of the Indicator Framework knowledge gaps has been compiled for ICZM. From the review of the existing knowledge it has been found that knowledge gap exists due to inaccessibility, inability to interpret and assimilation and non-existence (acquisition measures and research needed to fill gaps). However, knowledge gap is time and context specific and naturally shall evolve or surface as the user become aware of the need of knowledge for ICZM in a point in time.

During 2004 a review has been done on the requirement of data / information /knowledge to feed the indicators (needs assessment) that characterizes the coastal zone. Review of the existing literature on the coastal conditions and assimilation of the existing knowledge resulted in to a profile of the coastal zone, i.e. a 'state of art' of knowledge. Analysis of the assimilated knowledge and knowledge need determines the knowledge gap within the context and given time frame. Relevant reports, publications, working documents, inception reports, study findings and terms of references of projects/organizations/institutions/initiatives have been screened to extract the call for research, survey, studies and analysis which substantiated the knowledge gaps up to 2004 for ICZM in Bangladesh. Inter tidal phenomenon, empoldering effect on the coastal zone, erosion and accretion process and value of biodiversity are few examples of knowledge gaps. However, along with knowledge as such routine data collection and analysis and interpretation shall continue to fill knowledge gaps. Appendix 5 includes compiled and analyzed knowledge gaps (2004) and means to reduce gaps have been indicated in the parenthesis. However, descriptions of means to reducing knowledge gaps are presented in knowledge gap report of the project.

## **2.6 Present status: Knowledge Management**

Different organizations store data, information and knowledge relevant to their specific sector or activities in various ways. They also have their own dissemination mechanisms. For example National Water Resources Data Base, Sustainable Development Networking Program, Environmental Curricula development for primary and secondary level, Bangladesh NGOs Network for Radio and Communication (BNNRC), Mass line Media Center, Bangladesh Rice Knowledge Bank and Resource Center of Coastal Development Partnership (CDP). NGOs active in the coastal zone also maintain and disseminate information and knowledge. A brief description of these selected activities of knowledge management initiatives have been described in Appendix 6. It is mentioned these initiatives are not specifically for and limited to Coastal zone.

## **2.7 Knowledge representation**

Knowledge on ICZM shall be represented in the knowledge base in a structured manner in line with the indicators framework that structures knowledge statements on specific matters and or data under categories, components/subcomponents and identifies dimensions. Following the dimensions one shall enumerate and describe specific parameters and variables (in case of knowledge shall be textual and or numerical). 'The state of art' knowledge (includes data, information and knowledge) under each of the categories and or components/subcomponents shall be structurally archived in the

There are various dimensions of knowledge under any categories. For example, there are relations of water level in the Jamuna and Bangali river system, i.e. hydrological data of closely related system has relations and to understand impact of the water regime on the area one has to consider both the system and relations there in. Knowledge base shall identify this sort of relationship of knowledge and accumulate such relational knowledge within a knowledge domain e.g. hydrological system (intra domain knowledge) and between knowledge domains for example relational knowledge between hydrological regime and fisheries (inter domain knowledge). On the other hand there are local knowledge (community at local level obtained knowledge over years from their own experiences and predecessors) on various aspects of ICZM. Similarly, experts generated huge knowledge (includes mental comprehension and synchronization of the experts on various subjects, locations, time frame) that includes experiences of several years spread over whole range of geographical locations and again over the entire range of sectors and disciplines.

*Domain knowledge (includes intra and inter domain knowledge), local/indigenous knowledge and experts knowledge shall be identified, recorded and structurally archived to be retrieved and remain functional in the back drop of knowledge base while analysis and decision making process is undertaken and gradually the knowledge base system shall become (near) intelligent system.*

Knowledge shall be gathered, generated, accumulated and archived as per user's demand in one hand and shall be having provision for retrieval in a versatile and efficient format. In the context of growing IT **Terminological Knowledge Representation Systems** (TKRSs) that make use of terminological languages (or concept languages) shall be used in archiving knowledge. In concept languages, concepts represent the classes of objects in the domain of interest, while roles represent binary relations between objects. Complex concepts and roles can be defined by means of suitable constructors applied to concept names and role names.

A knowledge base built by means of concept languages is generally formed by two components: The '*intentional*' one, called TBox, and the '*extensional*' one, called ABox. The '*intentional*' level specifies the properties of the concepts of interest in a particular application. A TBox is a finite set of inclusions. An interpretation I is a model for a TBox T if I satisfies all inclusions in T.

Retrieving information in actual knowledge bases (KBs) built up using one of the systems (Several systems are available, like, ALCNR, KRYPTON, NIKL, BACK, LOOM, CLASSIC, KRIS, K-REP) is a deductive process involving both the schema (TBox) and its instantiation (ABox).

The more a TKRS language is expressive, the higher is the computational complexity of reasoning in that language 'General-purpose languages for TKRSs are intractable, or even un-decidable, and tractable languages are not expressive enough to be of practical interest'. A TKRS is (by definition) general-purpose; hence it must provide tractable and complete reasoning to a user. So a highly expressive terminological language, like ALCNR may be used for knowledge management in the context of Integrated Coastal Zone Management of Bangladesh.





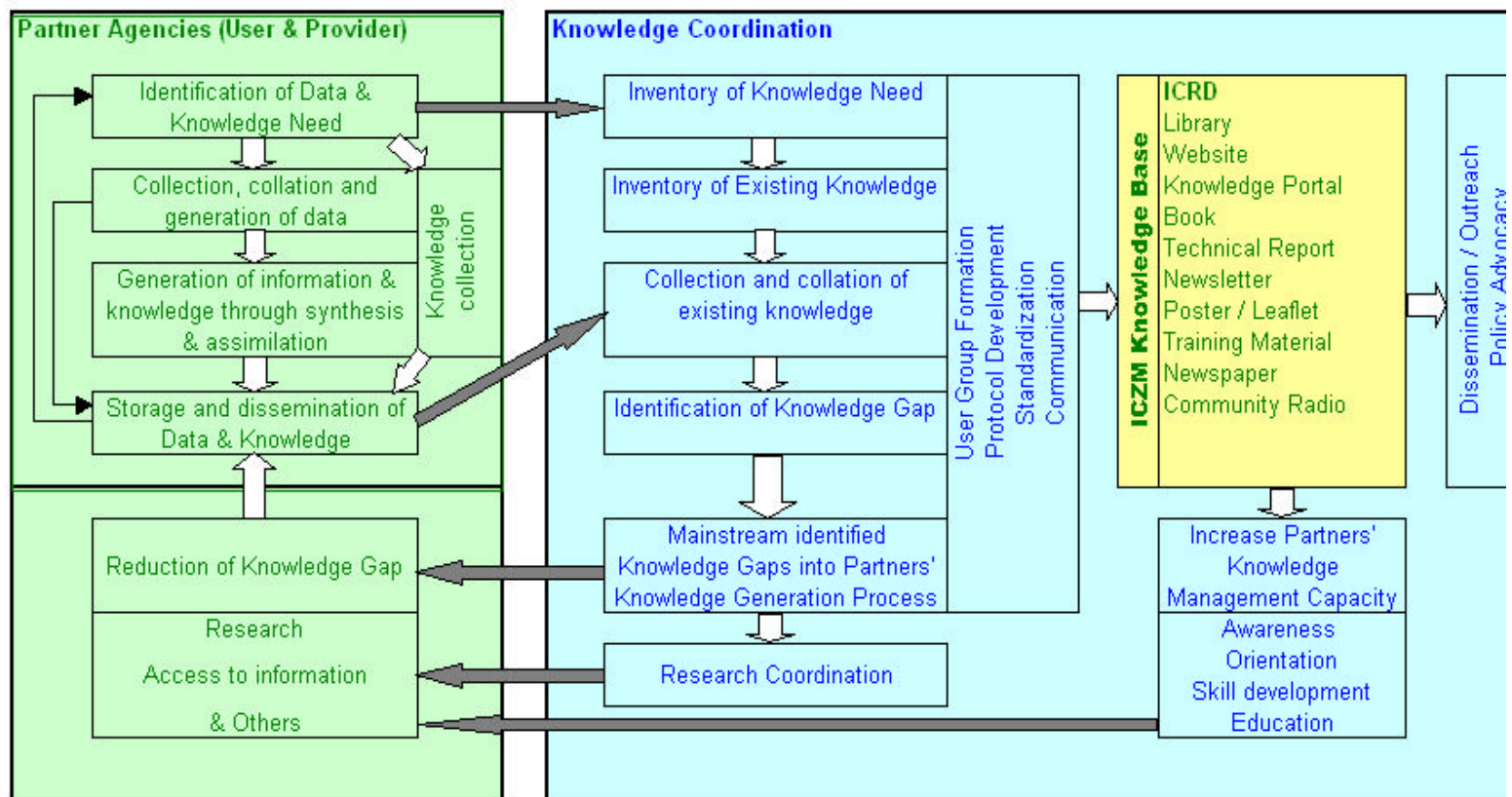
### 3 APPROACHES: KNOWLEDGE MANAGEMENT

The development of knowledge management approach is based on an assessment of who the main users of the knowledge are. It also requires co-operation with other actors for generation and supply of data and information and integration of coastal knowledge available in their own activities and design process. Effective engagement of the users and partners is the key to successful knowledge management and therefore, for effective co-operation a sound communication, assimilation and dissemination procedures shall be in place. In addition to the PDO-ICZMP project itself, potential users include: policy makers, development partners and other agencies at national and regional levels; government implementing agencies and professionals at regional and project levels; and community and functional organizations (such as water user associations, cyclone preparedness volunteer groups) at a local level.

Knowledge management is contextual and involves a series of actions depending on the scope to perform knowledge management functions. Integrated Coastal Zone Management (ICZM) requires knowledge at different resolutions and by various stakeholders. Certain knowledge is available in a moment to a person or institution and at the same time there are nonexistence of certain needed knowledge. Again there are limitations of access to knowledge. Establishing access to knowledge shall make some knowledge available to others and still there shall be gaps that have to be filled in by acquisition and generation.

ICZM stakeholders at different levels do not some time even know what they need. Awareness in this instance shall generate understanding of the need and thus become knowledgeable of what they need. Awareness building is also knowledge enhancing and shall be the first step of knowledge management. Knowledge management includes among others awareness development, identification of knowledge need, who needs what, inventory available knowledge (state of art), access to knowledge (protocols), knowledge gaps identification, knowledge acquisition, knowledge generation, communication and dissemination.

Stakeholders at various levels with different responsibilities and mandates are not properly oriented to ICZM or sustainable development and or others like gender issues etc. In order to bring ICZM professionals on board orientation training by large shall be instrumental. On the other hand skill development training is necessary for key ICZM professionals. Again, for over all leveraging of needed knowledge education has to be introduced in the routine curriculum of academic institutions. Figure 1 shows the flow diagram of Knowledge management approach.



**Figure 1: Schematic diagram of Knowledge Management Approach**

### 3.1 Principles

Knowledge management for the integrated coastal zone management follows following principles;

- Driving structure behind the knowledge management is the Indicator framework.(PDO-ICZMP,2003 a)
- Holistic in nature, user driven and need based
- Participatory through out the process
- Includes qualitative information, experience along with structured data
- Standardized, formatted and universal data, information and knowledge management

### 3.2 Partners and networking (user)

The knowledge is only relevant in association with user who determines knowledge need and knowledge gaps in their own perspective. Likewise, knowledge management requires co-operation with other actors in coastal zone, including i) the generation and supply of data and information, ii) the integration of coastal data / knowledge available to them which are generated through their own activities and design process, and iii) cooperation and networking among different knowledge-related activities (e.g. interaction between different forums, research units of different key players in the coastal zone and integrated knowledge base of ICZM).

#### Potential users

- National level: Policy makers, planners, GoB agencies, donor agencies, NGOs, media and professionals
- PCU structures and facilitates Integrated Coastal Zone Management
- Project level: Government agencies, project managers (including GO and NGO) and professionals
- Research organizations, e.g. Universities, research institutes
- Local level: Community Based Organisations (CBOs), e.g. Water User Associations, Fishermen Group
- International organizations (like, FAO, UNDP, etc.)

From the very beginning PDO-ICZMP has networked with a wide range of organizations related to the coastal zone. After all, the mandate of the Program is to make an ICZM Plan but it is not itself involved in implementing any projects or programmes in the coastal zone. To facilitate planning the Program developed a wide network of partner organizations that are themselves actively involved in the area, including governmental and non-governmental organizations, profit and not-for-profit organizations, local government institutions and community based organizations. The successor of the Program, the PCU, will have a similar mandate.

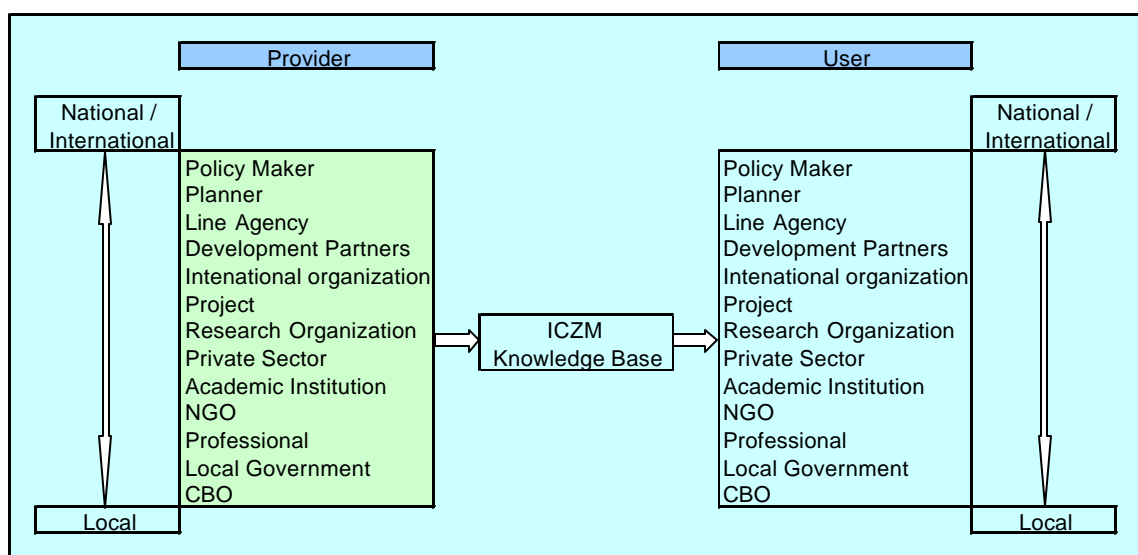
As with the coastal population, there is considerable variety amongst the partner organizations. Again, actual communication activities will only be successful to the extent that they have been made taking into account the key characteristics of the organizations concerned

Traditionally the development partners had a major say in development related investments, as the GoB's own resources and those of the commercial sector were limited. Gradually the volume of the government's own investments in relation to that of the donors is increasing as is the volume of the private commercial sector share of total investment. Nevertheless the donors still are an important player in poverty alleviation efforts like ICZM.

### Potential partners

ICZM sets out to integrate its knowledge base with that of other institutions (Figure 2). It will draw data and knowledge on the coastal zone from them and supply them with data, and knowledge that will support their activities. The potential partners could be identified as follows:

- National: GO institutions that gather and analyse data (e.g. BBS), but also the developers of the PRSP, development partners agencies, national NGOs that gather local data related to livelihoods of coastal area households.
- Local/ project level: NGOs and development partners operating in the field
- Private sector as a potential partner, especially via encouraging improved communications infrastructure in the coastal zone.



**Figure 2: Potential knowledge providers and users of knowledge Base**

Special focus shall be given to operationalizing the coastal community level organisations (CBOs) as key participants in the process of knowledge sharing and use. However, these community organisations do not demand such inclusion (they have a series of other urgent priorities), and lack skills to make effective use for data or knowledge. The forth coming CDS, the strategy to implement the coastal zone policy shall specify the roadmap of coastal development and the institutional arrangements to implement the development. The knowledge management approach of the ICZM

### 3.3 Communication

Achieving the goals of ICZM will require change in behaviour of many of the direct and indirect stakeholders. To achieve that there is a need for information and knowledge sharing as well as multi-directional communication between all the key actors in the process. PDO-ICZMP has already done a lot in the area of communication and based on that experience a strategy and an action plan is proposed in following chapters to facilitate those communication processes of the Programs successor, the Program Co-ordination Unit (PCU).

World-wide communication strategies are becoming more participatory, more multi-directional and comprehensive. From the start PDO-ICZMP has put much emphasis on information sharing and integrated knowledge management, the latter being one of the six outputs of the Program (for a more detailed overview of the communications related activities of PDO-ICZMP to date, see section 2.2). Both international developments in the area of information dissemination and change management and the Mid Term Review of the Project point in the same direction; ICZM needs a more systematic and multi-directional approach towards communication. To describe the intended multi-direction communication and distinguish it from the still more top-down approach of social marketing, the Program has opted to use the phrase 'social communication'. Social communication strategy for ICZM and an action plan including implementation and follow up is included in following chapters.

### 3.4 Access to information

Access to information is a vital issue in knowledge management. The intellectual proprietary rights, secrecy, ownership and mandate etc. creates hurdles to the users to access to information and resulting in to information and or knowledge gaps due to inaccessibility, though the particular knowledge has already been generated and or acquired. In order to make knowledge available to the users a protocol has to be formulated and streamlined.

### 3.5 Capacity building

Knowledge management in the present context is purposive i.e. to reach the objectives of ICZM. In the entire chain of the ICZM development a series of key players are involved. Capacity of this array of stakeholders is crucial for attaining functional ICZM. Capacity building shall be pursued right from the central coordination level to the users at grass root level and all stakeholders along the knowledge system chain. Capacity building requires awareness raising, orientation, skill development training and education. Awareness raising through information dissemination campaign among the partner organizations shall generate need of the organization and through training relevant organizational capacity shall increase to a level to implement and adopt ICZM process. Examples are,

- ◇ Understanding of the data and knowledge requirement for ICZM shall lead individual agencies to adjust their respective data collection procedure to incorporate data demand for ICZM
- ◇ A standard multi-faceted information flow system could be established among the partners of ICZM, bringing them in similar level of understanding.

what they need and why. Integrated coastal zone management requires a great variety of actions by different parties at different spatial and temporal variations. To realize sustainable development of the coastal zone a series of stakeholders at different levels with diversified mandates and responsibilities are involved. It is of crucial importance that all stakeholders including primary level users at grass root level through to the policy makers at national level understands their role in attaining ICZM and performs accordingly. Awareness building shall be the first step to bring the range of stakeholders on board for ICZM.

Dissemination and awareness raising have traditionally been tasks of the government and its agencies. Whether to make people aware of their general rights and duties, the need to drive according to agreed rules or the need to maintain the environment, citizens are 'bombarded' with a 1001 messages from all sides. The basic nature of these messages can either be to the direct benefit of the citizen or mainly to the benefit of others, as in advertising.

It is now widely accepted that non-commercial parties interested in sharing information and changing behaviour for the benefit of the audience, can make use of a number of the methods and tools used in advertising.

### **3.5.2 Orientation**

The professionals working in Government agencies (across the sectors, i.e. horizontally spread) at all levels (vertically from local to central level), professional bodies, NGOs, private sectors, functional organizations including users, professionals, managers, policy makers, politicians and civil societies need orientation on the ICZM and its approach, principles, mechanism, protocols and the process for better performance. Orientation program shall be conducted for all agency professionals so that the agencies take a coastal approach in their management and other functionalities to perform their activities in the coastal zone.

### **3.5.3 Skill development**

In order to manage natural systems, physical systems and human systems and to optimize maximum sustainable yield understanding of systems is a must. The array of stakeholders who are responsible for management of the system shall be properly trained to enhance their skill. Training of these professionals shall be inbuilt in the routine training program of the agencies and other bodies involved in ICZM. Training module and training manual shall be developed for all levels including the policy maker level (e.g. PATC), agency level (e.g. DoF), at district level (e.g. district administration), Upazila level (e.g. Upazila administration), union Parishad and for the functional organizations at village level. Training shall be provided to all level professionals, coastal managers, practitioners and functional and professional bodies on a routine basis. Skill development training shall be initiated in the 2<sup>nd</sup> phase of ICZM where entire system chain players (grass root level to national level) shall be provided training for the designated pilot area, e.g. a district.

### **3.5.4 Education**

Formal courses on ICZM at various educational institutions shall allow routine development of the ICZM professionals. Formal courses on ICZM have been initiated recently in Bangladesh at higher

developing a course with assistance under the BUET-DUT (Delft University of Technology, the Netherlands.) link program.

Coastal Zone Management is a short course under environment discipline at the **North South** and **Presidency Universities**, two private universities of Bangladesh.

**DoE (Department of Environment) and NCTB** (National Curriculum and Textbook Board) has developed environmental Curriculum at the Primary and Secondary level under Sustainable Environment Management Programme (SEMP). The broad based objective of the program is “to build capacity at all levels for sustainable environment management through introduction of environmental issues in training and education at the primary and secondary levels.” It aims to create and strengthen the awareness, knowledge, attitude, skills and participation of the students. In this respect, entire nation stands as the immediate target group of the project. Developed set of environmental curricula shall be followed at primary and secondary levels of formal education.

The coastal zone policy supports and intends to expand the formal courses at other universities as well as to mid level (e.g. year eleven and twelve).

### 3.6 Knowledge Coordination

Knowledge base houses a wide range of knowledge items that includes ICRD, knowledge portals, and library where along with books on coastal matters, reports, journals, periodicals and awareness materials, CDs and media packages are available. Website is another means that disseminates knowledge to the users. Knowledge coordinator in this instance shall be custodian of the knowledge base. All agencies and parties functional in the coastal zone shall maintain their independent role of knowledge management functions and then there shall be a central coordination. The custodian coordinator shall maintain the knowledge base that involves carrying out of ICRD functions (continuous update of the archived data, analysis, interpretation and assimilation of the data to extract information, be in a position to receive data from the suppliers and disseminate to the users and others) among others. A protocol for the ICRD shall facilitate and sustain the ICRD functions. ICRD shall be the heart (core) of the knowledgebase accommodating functional relationship of the structural data and the domain knowledge, local knowledge and expert’s knowledge on the topics. Demand driven development of knowledge portals, maintenance and updating of library and websites, assess and develop other knowledge items (e.g. awareness materials, training module, training manual etc.) for dissemination is some of the functions of the knowledge coordination.

#### 3.6.1 Acquisition & Archiving

The knowledge coordinator will have the mandate and responsibility of acquiring domain knowledge, local knowledge and expert’s knowledge and gather data on various aspects of the coastal zone and archive in to the integrated coastal resources knowledge base (IKB). Acquisition shall include simply receiving various knowledge, information and data from collectors and also digitize data from hard copies (maps etc), capturing from satellite imageries, aerial photos and others. Coordinator shall also collect expert’s reports and other materials (experts knowledge on coastal aspects and on issues in particular) and; take initiative to collect available and recorded

### **3.6.3 Assimilation**

Assimilation of available knowledge (in a given point of time) covering the coastal zone shall be periodical version of the coastal zone profile, knowledge portals and other knowledge items that accommodates details of coastal conditions and processes. At the same time there shall be issue based synthesis of 'state of art' e.g. shrimp sector. Similarly area based synthesized publications e.g. book on Cox's bazaar. Again comprehensive knowledge accumulation and electronic presentation, e.g. generate knowledge portals on various issues, events, communities, periods and space (e.g. critical ecosystems) are few examples of assimilated knowledge item. The knowledge coordinator shall carry out the assimilation function being guided by users demand. Knowledge coordinator shall also record experiences of the coastal events from various bodies that shall include domain knowledge and facilitate individuals or institutions in disseminating and leveraging knowledge, e.g. facilitation of issue based findings presentation.

### **3.6.4 Transaction**

The knowledge coordinator shall carry out knowledge transaction function. Receive and archive knowledge, information and data on one hand, utilizing data and information to prepare and develop various knowledge items as mentioned in the previous section. On the other hand coordinator shall disseminate collected data, info and knowledge to the user. A protocol shall guide and facilitate coordinators functions.



## 4 METHODS

Agencies, organizations or individuals functional in the coastal zone based on their necessity shall identify knowledge needs and inventory existing knowledge and identify knowledge gaps for that point in time. This process shall be dynamic. Accessing relevant knowledge base shall fill in knowledge gaps. Knowledge, which is necessary and not available, shall be generated. Research council shall identify and list research items and shall coordinate research conducted through relevant agencies and academic institutions. Generated knowledge shall be provided to the knowledge coordinator maintaining protocol. It is expected that one should be member of the user group and be in the network for knowledge transactions. There shall be various methods and means for knowledge management. Following are envisaged;

### 4.1 User Group formation

Formation of user group shall facilitate stakeholders to be organized and be in the network and shall be able to contribute in the formation of the knowledge base at large and data archive in particular. Function of the user group shall be generating demand for data/information/knowledge. The coordinator shall organize acquisition, analysis, interpretation, generation and leveraging and others to meet the demand. User group shall also be functional in development of the IKB. There shall be another networking of the knowledge generator. The user groups developed demand shall be communicated in a functional way to the knowledge generator network to be taken care of.

### 4.2 Knowledge generation

Coastal zone management involves understanding of over all and specific coastal conditions including natural, physical, human, socioeconomic and institutional arena as a whole as well as the system and processes that governs the ever-dynamic coastal zone.

It requires a great deal of knowledge (including data; information; and knowledge) to understand the systems and processes. Knowledge requirements vary on the changing perspectives of the stakeholders over time and space and again on the scales (micro, meso and macro) and thus evolve as the process and entire mechanism including human interactions, policy regimes and inputs changes. To serve the management requirements based on the perspectives and aspirations of the stakeholders one need to generate knowledge (which are not available) through research and survey. Analysis of the existing information should also generate new knowledge.

To generate new knowledge and information one of the most important processes is routine field data collection and dedicated analysis. Presently primary sources of data collection are very thin and set up under a very old system. For example, we do not have even a single data station for monitoring the cyclonic surge in the Bay and in land although this is considered to be the cause of worst disaster. Thus, the absence of infrastructure and system at the field level to collect routine data and information results in non-existence of knowledge.

#### 4.2.1 Research / Creation

- ◇ People's participation in the democratic process
- ◇ Possible impact of climate change on Bangladesh coast
- ◇ Status of islands and chars
- ◇ Forest health index map
- ◇ Water use map
- ◇ Fisheries resources map
- ◇ Land use and zoning

Moreover, the organizations will develop scientific methodologies, modeling tools, models, information management systems, etc. to create new knowledge and reduce the existing gaps. Following are few examples;

- ◇ Cyclone Shelter Information Management System
- ◇ Development of portal on inventory of completed and existing program in CZ, lessons learned, primary data, problems in implementing and O&M, etc.
- ◇ Digital Terrain Model; A 50-meter resolution DTM for the coastal zone
- ◇ Fisheries resource assessment tool

Upgrading of hydrodynamic models to morphological and ecological models and link these to hydro informatics module for socio-economic and environmental analysis towards developing a holistic knowledge of the system

#### **4.2.2 Major actors**

Research for knowledge generation shall be continuous process and research organizations and individuals shall contribute in the process. In the context following research organizations shall be major actor;

- Universities and academic institutions (DU, CU, KU, Marine academy etc.)
- Government Research Organizations (WARPO, FRI, BFRI, BARC, RRI, BRRI, etc))
- Research cell of the line agencies (e.g. Livestock)
- Others (NGOs, CEGIS, IWM, etc)

### **4.3 Quality control**

The Knowledge Coordinator will ensure and maintain highest possible quality of data, information and knowledge. Quality control shall be an essential element of data management. Random, systematic or non-homogeneous errors may all be introduced in the observations due to measurement/ sensing, transmitting, recording or processing. Random errors are inherent in the act of observation or measurement. Systematic errors are associated with the measuring techniques, measuring devices and computation techniques. Errors due to non-homogeneity are usually caused by substantial change in environment introduced by human activities or by accidents in nature. All these sources of error must be minimized to improve standards of reliability and accuracy.

#### **4.3.1 Quality Control in data Collection**

management that such plans be prepared or a conviction that such plans, once prepared, would attract funding.

#### **4.3.2 Centralized Quality Control**

Additional quality control can be made when data from many sources is collated. An error in rainfall observation may be difficult to detect by an agency solely responsible for collecting rainfall data, but detectable by an agency which also has access to data on groundwater levels and flow.

This ability to further improve the quality of data is only useful if the data collection agency and the central agency foster a relationship of mutual respect. Queries about anomalies need to be treated as genuine attempts to improve the data set, and not a challenge to the authority. In addition the central agency, which shall be mandated to analyze and limited interpretation of data as per the users demand and thus generate information and knowledge. Information and knowledge also has to comply with the quality standard.

#### **4.3.3 Feedback from Users**

No quality control system is perfect, and errors will inevitably slip through most QC procedures. The number of such errors can be reduced over time if there is feedback from users of the database so that whenever errors are detected, they can be checked and corrected in the database itself.

There is ample evidence that much of the FAP studies detected errors in the data they collected from various agencies, and made adjustments accordingly. There is little evidence that these errors were reported back to the data collection agencies and corrected, so every project repeats the same expensive and time consuming checks. IKB, developed by the users/ partners shall introduce the mechanism of receiving feed back from the user and shall promote practicing the same.

### **4.4 Standardization**

Data is constantly collected and processed by government data collection agencies, NGO's and projects. Data collected by agencies under legal mandates, generally covers the whole country and is continuous, whereas most data from NGOs and projects covers only a limited area and limited time periods. Government agencies often have specialized divisions within their organizational structure to collect and process data and make it available for use by other divisions within the same agency, to other agencies, and if needed to the Bangladesh Bureau of Statistics.

Lack of coordination between government agencies on data collection, processing and dissemination has resulted in many organizations and projects building their own databases, in particular on natural resources and micro level socio-economic conditions. These databases are mostly incompatible, as they use different systems, inconsistent because they are based on different sources and fragmented because they serve limited purposes. In particular project-databases – that often contain valuable and detailed information – use to get lost after closing the project because of these incompatibilities and inconsistencies. This situation triggered an important objective of ICZM and the PDO-ICZMP Project: the establishment of a representative, coherent and consistent, reliable and accessible source of information, the ICRD.

However, standard format and ISO standards shall be followed in development of the ICRD as in case of NWRD. The strategy shall be promoting others to be in the similar format so that the ICRD and other databases of the coastal zone are compatible and could be linked even over the Internet.

#### 4.5 Protocol (Directives)

There shall be standard formats of data archiving and storing as mentioned earlier. A protocol mentioning the data formats and structure guidelines shall able different data bases to be compatible. Data access policy shall be in the protocol. Different agencies now collect data and develop their own database and there is no central database that houses data from all the agencies. A nodal point (e.g. knowledge coordinator) within the transaction system chain could be instrumental in smooth functioning of data, information and knowledge communication. Data management protocol could be an instrument to over come the constraint of data access. At present there is no national level protocol. However, there are protocols at different agencies that gather data, for example, BBS, BWDB, WARPO, and BIWTA etc. A national level protocol has to be developed to operationalize sound communication of knowledge item across the entire system both vertically from the grass root to the national level and also horizontally across the sectors at all levels and more appealingly collected data goes to the central data base and disseminated in any form to the users as and when asked for. However, a comprehensive data management protocol for the water sector has been designed under a project that shall enable WARPO to develop and establish water sector data management protocol and shall make NWRD (National Water Resource Database) functional in smooth transaction of data.

#### 4.6 Policy advocacy

Review of the relevant policies, laws and regulations, office procedures and practice regarding data and information transaction shall identify constraints of free flow of information. Accordingly steps shall be taken to adjust these instruments in favor of free information flow. To make this happen persuasion at policy and other relevant level shall be conducted and finally a knowledge management protocol shall be developed.

On the other hand to make the initiative of knowledge management functional sustainable effort shall be extended for adjustment in the relevant policies and office procedures to include various costal and environmental issues and scenarios to the curriculum of a variety of programs across the sectors professional training modules. For example initiatives shall be taken to include lecture on ICZM, Bangladesh in training courses in PATC. Similar initiatives for the agencies training courses shall be taken, e.g. in the training courses designed for the fisheries officials in DoF and other agencies.

Again the coastal developmental issues shall be included in the education system. Efforts shall be extended to include content on ICZM in the curriculum of the higher secondary certificate students.

#### 4.7 Outreach and dissemination

Dissemination and outreach is the vital activity of the knowledge management system. Knowledge

information shall lead the Knowledge coordinator to a position to develop various knowledge items as per users demand. The knowledge items that are relevant shall be web enabled and be organized in a package (knowledge portals) to be in the web for open access to the users maintaining data protocol. There are various means of dissemination and outreach, following chapter describes tools, action plan including media and mechanism.



## 5 TOOLS

### 5.1 Integrated Coastal Resources Database (ICRD)

Tools are necessary to operationalize the functionality of the knowledge base. A knowledge base shall be a basic tool for knowledge management for ICZM. Integrated Coastal Resources Data Base (ICRD), the coastal zone database shall be in the heart of the knowledgebase. ICRD shall be developed maintaining the international standards, shall be versatile and be compatible and linked to the NWRD. It is to be mentioned that the ICRD shall be developed introducing relevant knowledge along with data, in the backdrop of the database, which shall remain active to consider introduced knowledge of the backdrop while functioning and thus become more and more proactive in serving the knowledge function of the initiative.

The ICRD has been conceived as an important tool in bringing about the required interactions between and among agencies in the coastal zone: a focal point for information from and for others. As such, it is considered an important tool for ICZM.

Three main characteristics make the ICRD different from the NWRD.

- First, the ICRD will cover only the coastal zone and not the whole country. The ICZM approach considers three kind of data: (i) input data, representing, for example, the departmental activities and the investments in the coastal zone; (ii) output data, reflecting the conditions of the different resource bases; and (iii) outcome data in terms of decision support variables.
- Secondly, the ICRD aims to develop operational links with project databases to become a more dynamic tool than the static NWRD.
- Finally, ICRD develops to be knowledgebase and intends to be intelligent system that shall serve user with knowledge

The structure of the ICRD will be based on an indicator framework for ICZM that has been developed by the PDO-ICZMP Project (2003). This framework also aims to provide a common structure to link project databases with ICRD and link the ICRD with the NWRD.

### 5.2 Meta data system

*Establishing an operational link between ICRD and Other coastal projects.* Once the ICRD is established, it is intended to elaborate its function as a node in a web-based operational network of sharing data and information, in particular with major projects in the coastal zone. This can be directed and installed through establishing meta data systems in a versatile format and globally practiced mechanism.

### 5.3 Knowledge portal

Knowledge portals are organized websites/CDs that facilitate structured access to the available information and knowledge of specific subjects, such as livelihoods in the coastal zone or the Sunderbans. Knowledge in this context includes up to date surveys and databases, but also

The structure of knowledge portals preferably follows a conceptual model or logical sequence of cause – effect relations. The KPED concentrates mainly on the physical processes of the Meghna Estuary. The logical sequence of the processes of estuary development starts from *forces and inputs* (geology, climate, hydrological cycle, tide, fresh water input, sediment input, natural calamities, human interventions), goes through *resulting processes* (e.g., salinity processes, wind-storm-waves and sea-level changes), and combines these processes to the *patterns of water circulations and sediment and salinity distribution*. All of these determine the physical environment of the estuary (flooding and drainage, soil resources, fresh water resources, erosion and accretion and channel development). The KPED provides the relationships between different physical factors and their impacts on the different key issues influencing the lives and livelihoods of the people living in the estuary.



## **Part B**



## 6 STATE OF THE ART IN SOCIAL COMMUNICATION IN ICZM

### 6.1 Introduction

Communication of the knowledge across the ICZM professionals and stakeholders by large shall leverage needed knowledge and bring competency of the ICZM players including direct stakeholders through policy makers to function positively for ICZM process. As such social communication is a key process and has been accounted for knowledge management.

From the beginning the PDO-ICZM has been very active in collecting and disseminating information. This chapter first deals with the different ways in which the Program has collected data on the coastal zone, its people, their needs and resources etc. Where possible qualitative and quantitative information on the various activities are given. The third section goes into the different ways in which PDO-ICZM has disseminated the information that it has collected. Again numbers and a more narrative description are given. The third and fourth section list the variety of media and mechanisms used by partner organizations to collect data and information and those used to disseminate information.

### 6.2 Data collection and knowledge generation in PDO-ICZM

A **survey on Perceptions of Direct Stakeholders on Coastal Livelihoods (PDSCL)** was carried out amongst 100 coastal men and 100 coastal women, based on a purposive sampling in May-August 2002. The sustainable livelihood framework (SLF) promoted by DFID was used as a conceptual tool in designing the survey and analyzing the data. Findings of the survey were presented in September 2002 in Working Paper WP004 (PDO-ICZMP, 2002b). The survey brought grass root voice to the PDO policy planner.

Three **case studies** have been done (in 2003) on local level institutional arrangements to identify models of good practices. During these case studies extensive consultation with local people, project personnel and stakeholders were made and their views were collected. The case studies were done on Khulna-Jessore Drainage Rehabilitation Project, Char Development and Settlement Project and Empowerment of Coastal Fisher folk Community for Livelihood Security Project. Reports on the urban poor of the coastal zone and local level institutional arrangement was also prepared with consultation of local people.

As a part of the Integrated Knowledge Base component of ICZMP, PDO has been facilitating a **series of lecture sessions** conducted by different organizations or agencies to share their research findings, views on coastal issues, etc. So far eight lecture sessions have been arranged in which representatives from government agencies, NGOs, mass media, coastal projects, eminent personnel, etc. took part. On an average people from ten agencies have participated in the sessions.

The following **workshops** have been conducted:

- Regional workshops on coastal issues and problems: Four regional workshops in four different locations (Khulna, Noakhali, Chittagong and Patuakhali) was held in 2001 on coastal issues and problems with participation from an average 40 government officers, NGOs, local projects, mass

- National workshops: A number of national workshops have been arranged on coastal zone policy, coastal projects, coastal issues, etc. with on average around 35 participants such as agencies chiefs, departmental heads, project personnel, NGOs, government representatives, etc.
- Regional consultation on Coastal Development Strategy: Four regional consultations were held in 2004 four regions (Barisal, Noakhali, Chittagong and Khulna) on initial feedback on the Coastal Development Strategy. Average attendance was around 45.

**Agency forums** are planned for 2005 to stimulate more vertical integration within agencies. An agency forum will be composed of relevant officials from the HQ and the field level (19 coastal districts or coastal field stations where the agency does not have a district-wise structure). The Forum will be coordinated by respective FP whose tasks are when and where to convene the forum, logistic arrangements, follow-up, etc. Agency forums will be convened to discuss thematic and practical issues to conceptualize and operationalize ICZM approach in respective sectors. Each agency will attempt to organize two forums and would address the following issues/topics. The first forum will be organized to create awareness and have a general understanding about the following:

- ICZM functions, principles and experiences;
- Strengths and opportunities of line agencies

These would help in achieving an analogous thinking within the agency and would help in putting the livelihood perspective as an integral component of the conceptualization and planning process. These would further help in stocktaking of the past and ongoing activities in the perspective of coastal development and would enable to draw lessons that need to be consolidated and strengthened. The second forum will address action-oriented topics. Among these are:

- Identification of agency priorities;
- Input for coastal development in the form of PIP.

These would directly contribute to the formulation of a Coastal Development Strategy (CDS) from an agency perspective. By October 2004 already two forums (in BWDB and FD) have been convened.

In the past years the project officials have made numerous **project and focal point visits**. These included visits to important coastal projects like (like, CDSP, ECFC, KJDRP, Salt Project, IPSWAM, etc.) and to activities of the coastal NGOs (like, COAST, CODEC, YPSA, etc.). They have discussed with the project personnel and the beneficiaries, which provided valuable insight on coastal issues and reflected the grass root level practitioners and primary stakeholder's voice. The project officials also made routine visits to the established focal points. Besides the project visits, the officials of the PDO-ICZMP have on average attended 5 workshops, meetings and discussion sessions per month arranged by other agencies or departments.

### 6.3 Dissemination and awareness raising by PDO-ICZM

A **newsletter in Bangla** (named Tatarekha) is published quarterly. The newsletter contains articles on coastal issues, projects people's livelihood, etc. It is sent to all (more than 1, 300) Union Parishad

**Integrated Coastal Resources Database (ICRD)** has an important function in structuring a sustainable ICZM. The ICRD has been conceived as an important tool in bringing about required interactions between and among agencies in the coastal zone. The ICRD output aims to structure a database and information so as to make usable information available and accessible to all stakeholders of the coastal area. The database is expected to be operation by 2005.

The **PDO-ICZM website** is a component of the Integrated Knowledge Base (web address – [www.iczmpbangladesh.org](http://www.iczmpbangladesh.org)) that shares information on the coastal zone and building partnerships for ICZM in Bangladesh and as such disseminates information on the partner's activity in the coastal zone. The web-site is updated on a regular basis to capture recent achievements and development of the project activities in particular and the coastal zone in general. The web site stimulates ICZM process. Currently the number of hits per month is not recorded.

The **library** contains around thousand books, reports, articles, and newsletters, CDs on coastal issues. The library is open to outside visitors interested on coastal issues and frequently visited. Accumulation of relevant knowledge materials and housing is a continuous effort to enrich the library and it is seen as an important facility of any coordination unit in the future. The Project will continue to expand and improve the library.

**Reports and documents** are published regularly on different coastal issues. Findings and synthesis of views are published. So far around 40 reports / working papers have been published. The reports are sent to relevant agencies and people. On an average each report is send to 60 agencies / persons.

An effort to collect and maintain **press clippings** in-house – proved to be an important mechanism to get information on events, issues, activities and people's response in the coastal zone. The press clipping contains all news, articles published in 2 Bangla and 3 English national dailies and it is updated regularly.

A **brochure** in English has been developed containing information about the project achievements, outputs, partners, salient features of the coastal zones, important actors working for the development of the coastal zone. The brochure, of which 3,000 copies were printed, is used a primary vehicle to disseminate the information about the project.

A **book titled 'Where land meets the Sea: A Profile of the Coastal Zone of Bangladesh'** has been published by the University Press Limited in a first print run of 500 copies. The book contains comprehensive information on natural conditions, human conditions, infrastructures, socio-economic conditions and institutional arrangements.

An **abridged Bangla version** shall be prepared based on the English text and 3,000 copies of it printed. A simple and unambiguous text covering coastal zone conditions including natural, physical and human systems shall be extracted from the English version of the coastal zone profile and shape a Bangla version. Target groups for Bangla version coastal zone profile could be any stakeholder interested and needs data, information and knowledge to contribute in the ICZM process. In particular, it will be endeavored to reach local level stakeholders including local level agency officials, local government representatives, local mass media, local NGOs, private sector entities and the civil society.

livelihoods, livelihood options, future scenarios and role of the local resource users and communities in the resource management. The booklet also intends to bring readers into realization of the need for integrated and collective resource management and generate interest of the multiple stakeholders to be a part of the planning and implementation process for sustainable resource management. A total of 19 separate booklets (in bangla) are expected to be drafted, reviewed and finalized for printing by December 2004. For each district 1000 copies of the booklet will be printed for distribution.

#### 6.4 Data collection and knowledge generation by ICZM partner organizations

During the above mentioned brainstorming session partner organizations mentioned the use of the following media and mechanisms (alphabetical order) to collect data and generated knowledge:

Demonstration	Participatory land use survey
Diary	Participatory rural activities (PRA)
Face to face meetings	Participatory workshop
Facilitating press conference (on behalf of local people)	People speaking for themselves
Issue based meeting	Political meeting
Knowledge sharing meeting	Post card
Local level meeting	Questionnaire
Need assessment	Regular focal meeting
Participatory action plan	Report card
	Unnamed complaint letter

Of these face-to-face meetings are generally considered the most effective when it comes to gathering data and generating knowledge and understanding.

#### 6.5 Dissemination and awareness raising by ICZM partner organizations

Partner organizations mentioned the use of the following media and mechanisms (alphabetical order) for disseminating information and raising awareness:

Advertisement	Mobile phone
Amateur radio network	News letter (Bangla)
Booklets	NGOs
Case studies	Ono Natak
Community Organizer	Overhead projector

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	comments with their name and photograph
Flip chart	Radio (Local and National)
Focal group discussion	Reports
Folk drama	Satellite image
Internet (Website, email)	Savings book (21 point promissory)
Knowledge exchange visit (People of one area meet with people of another area)	Signboard/billboard
Leaflets	Small group meeting
Letter (Office directives to UP)	Symbols/signals (Flags etc)
Local paper	Through experts
Manual	Training
Maps	TV spots (Very effective for illiterate people)
Massage (voluntary with hand mike)	Union Parisad (UP) level meeting
Meeting minutes	Uttan meeting (Public gathering in the yard of house)
Meeting with Water Management Groups (WMG)	Video show
Mobile library	Weekly meeting
	Workshop

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The participants at the workshop agreed that face-to-face meetings, folk drama, Uttan and other meetings as well as posters and leaflets were among the most effective means of disseminating information.





## 7 COMMUNICATION PRINCIPLE

### 7.1 Introduction

Communication as an art and a science has developed enormously over the last century. This process has been driven particularly by the needs of the commercial advertisement sector. As a result, there are now many different methods and tools available to facilitate effective communication. This chapter deals briefly with those methods and tools that are most relevant to a social communication strategy and action plan. These methods and tools are applied to ICZM in the next three chapters.

Section two deals with the starting point of all communication, the process of identifying the key issue to be communicated as well as the intended outcomes and related issues. Section three briefly looks at common constraints and the following section at a variety of opportunities that exist related to communication. The following section deals with the other obvious element of communication that is the key audiences and also suggests ways of prioritizing them. Section six looks at the process of formulating key messages that flow from all the other relevant factors identified earlier. The second but last section deals with the common ‘levers for changing minds’, which may be relevant to different audiences and at various times during the communication process. The final section summarizes the theory on the steps between communication and changed behaviour.

It may be pointed out here that communication and the intended changing of minds is not just an outwards activity that people do, but also an inner process. People listen and even ‘talk’ to themselves, processing new information, reprocessing old data and in the process often gradually change their minds. Therefore although much of this chapter is written from the perspective of outward communication, most of it applies just as much to the inner process through which we change our own thinking about certain things and our behaviour.

For more details and for a wider variety of approaches the relevant literature and websites may be consulted.

### 7.2 Key issues, outcomes and related issues

For communication to be effective it has to be focused. Therefore it is necessary for the organisation that wants to communicate, to be clear about what it wants to communicate and what outcomes it expects from the communication. These simple facts may seem obvious, but are often not systematically practised.

Focusing communication means deciding on a limited number of key issues and messages. This is often more easily said than done, particularly in a complex situation like ICZM. There are hundreds of issues and even more possible messages. The question then is, who and how does one decide on the key issues. Usually this is done in collaboration with the main actors involved in the process. Nevertheless the leadership of the lead organization has to make the ultimate decision on what the key issues are.

In the case of PDO-ICZMP the participatory process has culminated in the formulation of a (draft)

their human capacity through modern education. The first expected outcome then would be that all girls and boys in the school going age attend and if possible complete primary education. A second outcome would be that a very high percentage of children in their teens attend and complete either general or vocational secondary education. A third outcome would be that those with the capacity for higher education have a chance to attend and complete university.

At this stage of the analysis of the communication process it is helpful to also list 'related issues'. These are issues that the communicator may not be able to address directly but must be aware of. For instance, in the example of education a related issue might be that parents are so poor that they want to keep their children at home to help with various income saving or generating activities. In the case of secondary education the law and order situation in a certain area may be such that parents are reluctant to let their daughters attend a secondary school if that involves travelling a considerable distance.

### 7.3 Common constraints

There are always a variety of limiting factors, constraints, which affect the effectiveness of communication. Those constraints limit the ability of the communicator to get his/her message across. In chapters 5 and 6 we will identify constraints specific to ICZM, but here we will list the most common limiting factors;

Financial limitations, both for communication itself and for following up on desired change

- ◇ A short term approach, which does not ensure the long term and sustained process of communication necessary for change
- ◇ Information overflow, with many organizations and individuals wanting to communicate their own messages to the same audiences
- ◇ Indifference of key actors
- ◇ Insufficient capacity/skills for effective communication by those who must do the actual communication
- ◇ Self interest, misappropriation and corruption key actors
- ◇ A general reluctance on the side of the people to trust messages from government agencies.

### 7.4 Common opportunities

Alongside the limitations are potentially beneficial factors, or opportunities, which will facilitate effective communication. They help maximize the impact of communication without any cost to the communicator as he/she can simply 'go with the flow'. Again the next few chapters will go into the ICZM specific opportunities, but in Bangladesh the following general factors support improved two-way communication:

- ◇ An increase in the literacy rate of the population
- ◇ An increase in the general awareness of the population of their rights and duties as citizens
- ◇ A slow but steady strengthening of the democratic process fuelled by increased voter

- ◇ A legal framework that is becoming more citizen-friendly, with for instance a 'right to information act' in the making (although there is a clear implementation gap)
- ◇ An international context, mediated through various networks, NGO and the Bangladesh development partners, that has poverty alleviation, human rights, democratic values, transparency, decentralization etc. high on the agenda.

## 7.5 Key audiences

An enormous variety of people and interest groups have a stake in communication or are able to influence its outcome one way or another. For instance, in the case of ICZM, these interest groups include the fisherman in the Bay of Bengal, the government servant posted on a remote island, the Managing Director of the world's largest oil company and the owner of a foreign fishing fleet. Each of these interest groups has a different level of 'voice'. However, the biggest interest group, that is the babies and toddlers born in the coastal zone right now, does not have any 'voice' at all. Many of the ICZM interventions will only have their full poverty alleviation impact by the time they become adults while those who now have a major say may no longer be around.

Given the variety of potential audiences it is obviously necessary to be selective and prioritize them. In this strategy audiences have initially been selected on the basis of the following broad classification;

- ◇ Direct stakeholders, that is people living in the coastal zone and their organizations
- ◇ Intermediaries, that is people working with, for or on behalf of the coastal zone and its people as well as their organizations
- ◇ Policy makers and investors, that is members of parliament, members of the government, commercial investors and developing partners.
- ◇ Direct stakeholder audiences have been further identified and prioritized based on the following criteria:
- ◇ Their relevance to poverty alleviation through ICZM, that is their level of poverty and their numbers
- ◇ Their reliance on or control over coastal specific resources for their and others livelihoods.

The criteria used to further identify and then prioritize the intermediary, policy-making and investor audiences for this strategy include:

- ◇ The level of direct impact the group has on the coastal zone
- ◇ The ability of the group to influence lives and livelihoods in the coastal zone (in terms of environment, social, economic, political or legislation)
- ◇ The extent to which the perceptions or behaviour of the group need to change to allow effective and sustainable use of the natural and human resources in the coastal zone.

## 7.6 Formulating key messages

Being aware of the key issues, desired outcomes, related issues, common constraints as well as opportunities and key audiences, it is possible to formulate key messages relevant to particular

be that sending their children to school now is the best investment to ensure care in their old age. A key message to the Ministry of Education might be that the poorest families need income support if they are to send their children, particularly their girls, to school (as was indeed the key message from campaigners some years ago in case in Bangladesh). Finally the Home Ministry may be made aware that improved law and order would contribute to better education of girls.

## 7.7 Levers for changing minds

Gardner, in a helpful listing of steps to change minds<sup>2</sup> mentions seven key levers. The listing below is based on Gardner's steps (p 15-18), made relevant to the ICZM context in Bangladesh. They are presented here as they are useful in analysing the kind of steps that are needed to communicate effectively, depending on the background of specific audiences.

*Reason* is particularly relevant to those in who's worldview reason takes a major place. Generally this applies to those educated in the exact (rather than the human) sciences. As Gardner writes: "A rational approach involves identifying of relevant factors, weighing each in turn, and making an overall assessment. Reason can involve sheer logic, the use of analogies (comparisons based on similarity), or the creation of taxonomies (division into ordered groups or categories)" (p 15)

*Research and scientific findings* are particularly effective in convincing those who understand their relevance, i.e. policy makers, donors and senior staff of partner agencies. In fact, in many countries grassroots movements have made effective use of scientific data, received from supportive intermediary organizations, in their efforts to convince politicians and policy makers.

*Resonance*, that is a gut-feeling that a message is right, is a very powerful force in convincing people. It is usually found if the message relates directly to people's basic understanding and/or experience of life. Resonance is what is caught in the English proverb: "That rings a bell" and often "convinces the person that further considerations are superfluous" (p 15).

*Representative redescription* is a somewhat difficult way of saying that a message can be presented in a number of different forms; as a story, as a picture, in print, in drama etc. Presenting a message in different forms is useful as different approaches 'tick' with different people. Furthermore, individuals are more easily convinced if they receive a message through a number of their senses. Some people respond best to open discussions, others to speeches or lectures, some are easily convinced if they can see something for themselves, others depend on logically presented arguments, music, poetry, hands-on experience, comparisons with the natural world, religiously relevant messages etc. etc.

*Resources and rewards* are a major help in moving groups reluctant to change in the right direction through positive reinforcement. An example is an organization that wants to shift away from quantity to quality of work (i.e., from a disbursement to a service orientation). As soon as the promotion and yearly increment system are de-linked from the previous focus on volume and geared to the quality of service delivery, staff will quickly see where their future is. The same applies to monitoring and evaluation; whatever is monitored (and rewarded) will be done.

*Real world events* are events that affect many individuals such as wars, floods, winning an

depending on the audience. In Bangladesh resistance in rural areas can be challenged by linking to proposed change to existing traditions (saving a fist full of rice per day, planting a tree to pay for a new-born daughters wedding in 20 years time etc.). Resistance to change can be done indirectly through folk drama, TV series etc., depicting the desired outcome (environmentally friendly behaviour, non-smoking, conflict resolution etc.). Resistance from vested interests can be challenged by creating win-win situations, offering people alternative livelihood and/or status options.

Gardner concludes his section on levers of change by stating; “... *mind change is most likely to come about when the first sic factors operate in consort and the resistances are relatively weak. Conversely, mind changing is unlikely to come about when the resistances are strong, and the other factors do not point strongly in one direction.*” (p. 18).

## 7.8 Choosing appropriate communication media/mechanisms

As detailed in chapter 9, there is a wide variety of media/mechanisms available for social communication. Which one is most suitable in any given situation depends on all of the factors mentioned above as well as on the available budget. In practice communication is more effective if it makes use of a variety of media/mechanisms, is clear and consistent in its content and if it is continued for a reasonable period of time.

## 7.9 Steps towards change

Change does not happen overnight and a staged process might be needed to help people move from awareness to changed behavior. The following steps are taken from a government campaign in the US to lower levels of alcohol consumption in colleges (<http://www.collegedrinkingprevention.gov/-Reports/Journal/dejong2.aspx>)

- **“Awareness.** A media campaign needs to raise consciousness of the problem, prompt reevaluation of personal risk and encourage consideration of individual or collective action
- **Knowledge and beliefs.** The campaign must bring about a change in beliefs and attitudes about the behavior being promoted. It is critical to anticipate and address the audience's points of resistance.
- **Behavioral skills.** Behavior change often requires the development of new skills (e.g., self-monitoring, refusal behaviors), which can be taught using media by modeling or step-by-step instruction.
- **Self-efficacy.** The conviction that one can execute a particular behavior (called self-efficacy) is predictive of subsequent behavior change. Observing others' experience is an important way of developing efficacy expectations.
- **Supports for sustaining change.** Learning and maintaining a new pattern of behavior requires that people know how to monitor their behavior; apply self-reinforcement strategies; and anticipate, eliminate or cope with stimuli that trigger unwanted or competing behaviors. Mass communications can be used to teach these self-management techniques.”

These steps suggest that a long term, concerted effort will be needed to translate information into



## 8 ICZM SOCIAL COMMUNICATIONS STRATEGY

### 8.1 Introduction

After the general overview of methods and tools in communication in the previous chapter, this chapter deals with the specific ICZM social communication strategy. It covers the overall approach and methodologies of the social communication strategy that underlie the action plans presented in the two following chapters. After describing the overall objective of the strategy and the strategy framework, the next section deals with empowerment through knowledge. This is followed by a section on the three main 'audiences' of the ICZM's social communication, i.e. the people living in the coastal zone, the partner organizations (intermediaries) and the policy-makers and investors. The following two sections then deal with the two main components of the strategy, first of all 'listening and responding' and then 'disseminating information and raising awareness'.

### 8.2 Objectives of the strategy

The objective of the social communication strategy is to support the goal of poverty alleviation through ICZM by providing a systematic framework that enables optimal, multi-directional communication among the key actors, i.e., the PCU, the coastal people, its partner organizations and the policy-makers and investors.

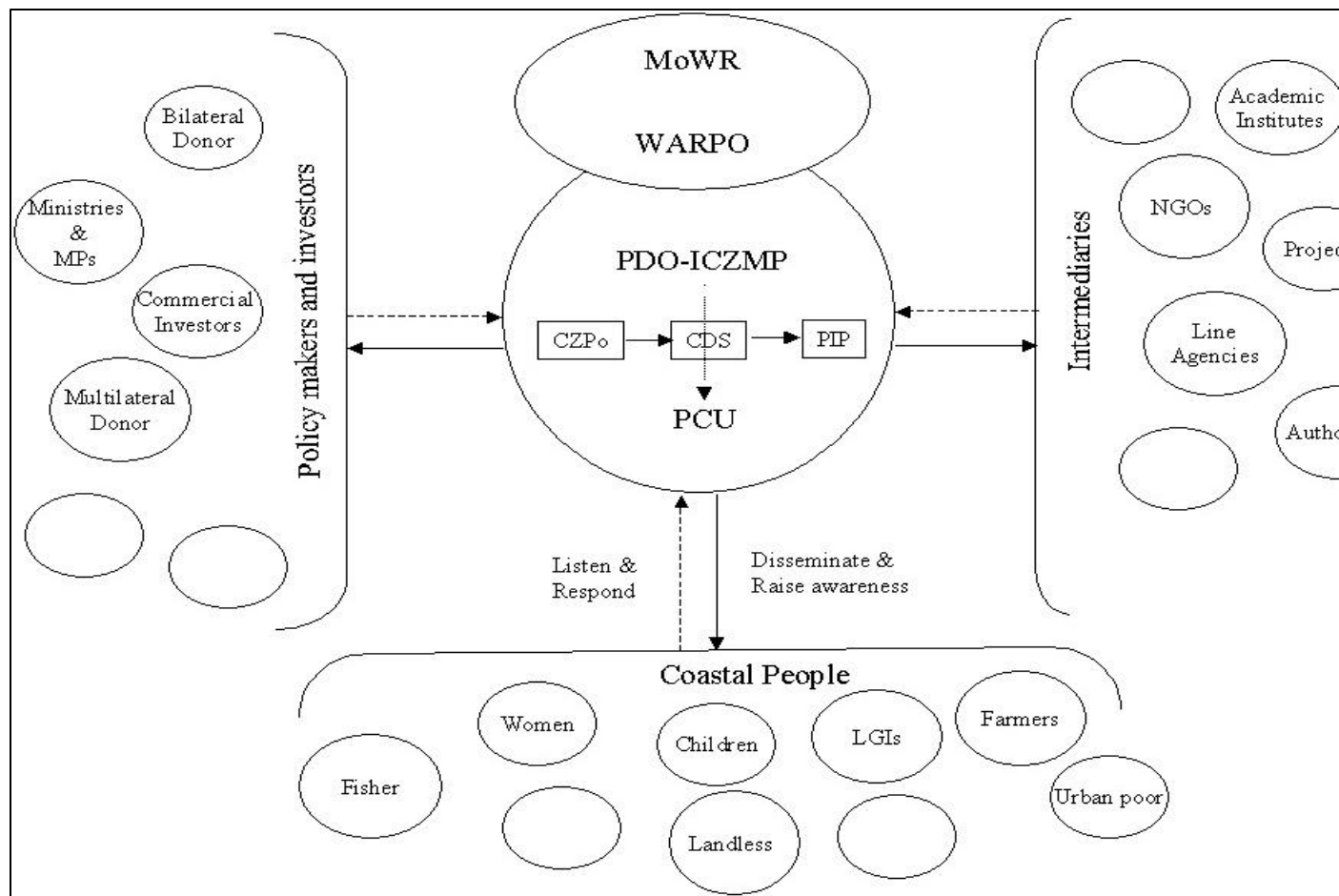
### 8.3 Strategy framework

The overall framework of the ICZM Social Communication Strategy is a staged process of multi-direction communication, ultimately aimed at changed behaviour on the part of the participants, through a transparent process of increased knowledge. That knowledge comes from key messages transmitted through various media and mechanisms of communication and involves a wide variety of audiences, all sending, receiving and responding to those messages.

The social communication process is multi-directional with all those involved, including the PCU and all the Partner Organizations as well as the coastal people both communicating and listening. Figure 3 is a graphical depiction of this process. In the centre is the current PDO-ICZMP fulfilling a facilitating/coordinating role in the overall ICZM process. As of the end of 2005 the PDO-ICZMP will come to completion and as of 2005 a Program Coordination Unit (PCU) is expected to continue to coordinate and facilitate the ICZM process. Both PDO and PCU function under the auspices of the Ministry of Water Resources (MWR) and the Water Planning Organization (WARPO).

The whole ICZM process is founded on the resources and needs of the coastal people (bottom of Graph 1). The 35+ million people in the coastal zone belong to many different interest or stakeholder groups, of which only a few are named in the graph. Over the years the PDO-ICZMP has listened carefully to the main interest groups. Mainly, though not exclusively, on the basis of the input from the coastal people, the Program has developed a Coastal Policy (CPo), resulting in a Coastal Development Strategy (CDS) itself leading to Priority Investment Plans (PIPs).

On the left hand side of the graph are the policy makers and investors. They are linked to the



**Figure 3: Framework of social communication strategy**



The graph then depicts the overall framework for the ICZM Social Communication Strategy. It should be pointed out that there are many more communication flows than shown in graph 1. For instance policy makers interact with investors, and investors interact amongst each other. Furthermore each of the interest groups can interact with all of the others, both within their own group or with those in other groups. For example, line agencies interact directly with relevant interest groups of coastal people and they in turn sometimes interact directly with members of parliament.

Within this overall framework, the actual communication process broadly follows the following steps:

- ◇ Prioritization of key issues/concerns
- ◇ Defining expected outcomes
- ◇ Identifying relevant constraints and opportunities
- ◇ Naming key audiences
- ◇ Formulating key messages
- ◇ Choosing media/mechanisms appropriate to the above
- ◇ Increased knowledge/awareness
- ◇ Changed behaviour

## 8.4 Empowering people through knowledge

One of the basic assumptions behind this communication strategy is that “knowledge is power”. That assumption is the main reasons why one of the six outputs of PDO-ICZMP is an ‘integrated knowledge base’. As part of that output the Program has produced a “Knowledge Management Approach” which, amongst others aims to increase the access of the potential users to the information available.

In the strategy framework information, knowledge and messages are but a means to the end of behavioural change. Fundamentally the desired change is what is necessary for ICZM to contribute to poverty alleviation through sustainable management of natural resources and increased capacity of the community to improve their livelihood conditions (CDS, September 2004, p 4). The steps and the changes necessary to achieve such poverty alleviation vary widely. For instance, increased awareness of the scarcity of groundwater may lead a farmer in the coastal zone who uses a deep tubewell for irrigation to stop doing so. Another example would be the government changing the guideline for the number of domestic water supply tubewells from the nationwide norm of 25 households to 5 in coastal char areas in recognition of the much more dispersed settlement pattern.

## 8.5 The coastal people

Of the three main ‘audiences’ of the communication strategy, the 35+ million people living in the coastal zone are the *raison d’être* for ICZM. After all, the coastal people as the direct stakeholders, are not only at the centre of the ICZM goal, alleviating poverty, but they are also the main actors. Their individual and joint actions are the ultimate factor that determines the success of ICZM.

In short, the coastal people are made up of many different interest groups, with very different levels of access to resources and with very diverse capabilities and skills. In the social communication strategy and particularly in the action plans this wide variety in ‘audiences’ in the coastal zone is acknowledged. In fact while working out the action plans into specific communication activities, knowing and relating to the key characteristics of the specific audience will be crucial to success.

## 8.6 The ICZM partner organizations

From the very beginning PDO-ICZMP has networked with a wide range of organizations related to the coastal zone. After all, the mandate of the Program is to make an ICZM Plan but it is not itself involved in implementing any projects or programmes in the coastal zone. To facilitate planning the Program developed a wide network of partner organizations that are themselves actively involved in the area, including governmental and non-governmental organizations, profit and not-for-profit organizations, local government institutions and community based organizations. The successor of the Program, the PCU, will have a similar mandate.

As with the coastal population, there is considerable variety amongst the partner organizations. Again, actual communication activities will only be successful to the extent that they have been made taking into account the key characteristics of the organizations concerned.

## 8.7 The policy-makers and investors

Policy-makers are the ultimate decision makers. While there might be some discussion on who is and who is not a policy-maker, for the purpose of this communication strategy two groups are relevant: members of parliament (law-makers) and ministers (most of them heading a Ministry). They decide on the laws and policies applicable in Bangladesh.

There are three main types of investors:

- ◇ the government, using its own resources
- ◇ the development partners, through loans and grants to the GoB
- ◇ the private commercial sector.

Traditionally the development partners had a major say in development related investments as the GoB’s own resources and those of the commercial sector were limited. Gradually the volume of the government’s own investments in relation to that of the donors is increasing as is the volume of the private commercial sector share of total investment. Nevertheless the donors still are an important player in poverty alleviation efforts like ICZM.

## 8.8 Listening and responding

The first step in any social communication is listening. In this paper listening to the coastal people and to partner organizations is highlighted mainly because it has traditionally been underrated in communication strategies by governments worldwide. That missing link in turn is one of the main reasons why so much awareness raising strategies and the like have been less effective than hoped for.

## **8.9 Disseminating information and raising awareness**

Dissemination and awareness raising have traditionally been tasks of the government and its agencies. Whether to make people aware of their general rights and duties, the need to drive according to agreed rules or the need to maintain the environment, citizens are ‘bombarded’ with a 1001 messages from all sides. The basic nature of these messages can either be to the direct benefit of the citizen or mainly to the benefit of others, as in advertising.

It is now widely accepted that non-commercial parties interested in sharing information and changing behaviour for the benefit of the audience, can make use of a number of the methods and tools used in advertising. Detail action plan for information dissemination and awareness raising is included in chapter 10.

In line with good governance principles such information dissemination and awareness raising must be done in a transparent matter. Therefore methods and tools used in manipulative communication, such as hidden messages in video or audio clips, are not part of this strategy. The next two chapters present broad action plans to implement this ICZM social communication strategy.



## **9 ACTION PLAN TO LISTEN AND RESPOND**

### **9.1 Introduction**

This chapter deals with the first of the two socio communication action plans; how to facilitate listening and responding. The chapter briefly describes the basic assumption behind the action plan, then deals with the overall framework, lists the main stakeholders (audiences), highlights relevant constraints and opportunities, discusses key concerns and finally lists the relevant media and mechanisms that may be used to implement the action plan.

### **9.2 A learning attitude**

This action plan to facilitate multi-directional listening and responding is built on the assumption that the main partner organizations and their staff involved in the ICZM process have a learning attitude. This attitude is now becoming more widespread, but cannot be taken for granted. There are still organizations with a culture of superiority that has little or not time for the ‘illiterate masses’. Likewise there are some individuals who consider themselves so learned that they have the right to ‘preach’ at others, with no need to listen at all.

Luckily those with such a superiority complex are declining in number. Those that are still of this mind set are unlikely to be able to be part of this listening and responding component of the strategy. Where possible they should be engaged in components of the ICZM that rely the least on listening and responding. However, if such individuals are crucial to the success of the ICZM, then they may be approached through a pre-emptive, sensitive and personalize dissemination and awareness raising approach.

### **9.3 Overall framework**

In representative democracies like Bangladesh, the main avenue for the voice of the people to be heard is through the various elected representatives. As mentioned before this document does not deal with the current nor any possible future institutional arrangement to facilitate the bottom to top communication through those systems.

This action plan deals with the generic ways and means to facilitate listening and responding. These are applicable to any organization or individual in the ICZM process but here the focus is on how to facilitate the communication from the direct stakeholders to the intermediary organizations and policy/financing level. In other words, in this component of the ICZM social communication process they are the ‘audience’ for the direct stakeholders.

### **9.4 Main interest groups**

Who then among the 35+ million people living in the coastal area, are the main interest groups, who need to be listened to? In section 3.5 two criteria were proposed; first of all the relevance of the audience to poverty alleviation through ICZM, and secondly that is their level of poverty and their numbers as well as their reliance on or control over coastal specific resources for their and others

- Representatives of organized interest groups of any of the above
- Members of Parliament from the coastal zone

This list is broadly prioritized according to the number of people involved. It may be noted however that the last three categories of people are much lower in number than the others, but because they represent much larger numbers they are key interest groups to be listened to.

## 9.5 Constraints

General constraints were identified in previous chapter. In the case of PDO-ICZMP the following additional limiting factors need to be taken into account in the action plan to listen and respond;

- i. Remoteness of many communities, resulting in a higher cost of communication
- ii. Lack of law and order, fuelling the general limitation of self-interest, misappropriation and corruption amongst government servants and politicians
- iii. The fact that PDO-ICZMP is only a planning exercise, with possible investments years down the line, and interest groups unclear about its relevance to their lives and livelihoods.

## 9.6 Opportunities

The constraints are matched, if not overtaken, by the opportunities that facilitate the PDO-ICZMP efforts to facilitate listening. Apart from the general facilitating factors (particularly those related to improving communication facilities), the following supportive factors are relevant:

- A GoB policy note indicating a commitment towards ICZM, aiming at a Coastal Zone Policy, a Coastal Development Strategy and Priority Investment Plans
- A commitment in principle on the side of the development partners to invest in ICZM related activities
- The national and international interest in climate change and therefore renewed interest in the coastal zone of Bangladesh
- The national and international interest in sustainable environment management in which the Sundarbans, shrimp cultivation as well as inland and coastal fisheries are focus points
- The pilot-program potential that a successful mechanism for implementing the ICZM has and that might result in GoB designing similar regional development models for other parts of the country
- A history of PDO-ICZMP (the PCU's predecessor) cooperating closely with all relevant partners resulting in a very good reputation in this field.

## 9.7 Key concerns

The PDO-ICZM process of listening and responding to direct stakeholders and relating the outcome to information from other sources, resulted in the identification of seven strategic priorities (CDS, September 2004, pp 12-13). While those priorities are thus based on input from the coastal people, it is necessary to continue to involve the direct stakeholders in the process of working out these

concept notes are in fact one of the main tasks which the PDO-ICZM can still do in the remaining part of its tenure (31 December 2005).

This process of participation should continue as the PIPs are approved and funded and implementation starts. The Implementing agencies will have to develop and implement ways and means to continue the process of listening to and responding to the direct stakeholders. Without the details of the PIPs, this action plan cannot go into this level of detail, but the PDO-ICZM and its successor the PCU can at least ensure the following:

- ◇ a commitment to involving direct stakeholders in all stages of PIP implementation
- ◇ a budget to engage qualified field and officer level staff to ensure that listening and responding to direct stakeholders can be done and recommendations can be implemented
- ◇ sufficient time and flexibility in the implementation to allow stakeholder participation.

To stimulate ongoing participation by direct stakeholders, wherever possible PIPs should follow a two-pronged approach:

- ◇ short-gestation activities giving quick and visible results desired by the people
- ◇ long term activities that tackle the fundamental problems and allow full exploitation of the unique potential of the coastal zone.

Apart from these general guidelines on how to ensure ongoing listening and responding to the coastal people, the specific concerns concerning the seven strategic priorities mentioned in table 1 may be taken into account.

**Table 1: Strategic priorities and areas needing more listening and responding**

Strategic Priorities	Area needing more listening and responding
Safeguarding the availability of fresh water	It may take years before the necessary long term solutions will yield fruit. In the mean time the coastal people are suffering, particularly the women and children. They must be assisted to get access to at least safe drinking/cooking water as soon as possible. Their active involvement in interim solutions will facilitate the long term solutions.
Optimizing the use of coastal land in the exposed zone	The participatory management of newly protected and developed areas should be given high priority.
Integrated and decentralized approach to regional water resources management	Success in this kind of 'reform' depends heavily on creating a win-win situation for the agency staff involved. Among others this involves a shift from downsizing to rightsizing as well as offering an attractive, meaningful and worthy future for the specialists involved.
Increasing the levels of service provision and administration	The specific social and geographical conditions in the coastal zone, such as concentration of valuable natural resources and the dispersed settlement pattern, mean agency guidelines on service density (tubewells per HH or police per km <sup>2</sup> ) may need to be adjusted.
Reducing the dependency on traditional agriculture in the rural areas	Shifting from traditional to non-traditional income generating activities requires a wide variety of simultaneous changes. People are unlikely to accept just any kind of activity so a range of alternative employment opportunities must be created with the individuals making their own choice.
Sustainable and equitable management of the coastal fish and forest resources	Commercial interests may push for profit maximizing approaches that may not have much poverty alleviation impact nor are likely to be sustainable. Participatory and small-holder options should be given priority even when the

## 9.8 Media and mechanisms

In table 2 a range of media/mechanisms is given, with a brief description and some comments. These media/mechanisms may be used in the 'listening and responding' action plan. Each ICZM related activity, be it the PIPs or the programs that are developed based on the PIPs, will have to make its own specific action plan on how to listen and respond appropriately.

**Table 2: Media and mechanisms to listen and respond**

Media/mechanism	Description	Comments
<b>Face-to-face meeting<sup>4</sup></b>	Personal meetings are the main mechanism for much of the ICZM work, as it ensures effective two-way and understanding communication and understanding between the various interest groups	Senior staff may use field visits less formally, spending more time interacting with direct stakeholders
<b>Fieldworkers</b>	Interviewing grassroots level staff can be an effective way of gathering information about an area or a particular interest group	It is important that field staff are trained to 'listen' and their output should be verified
<b>Issue based meeting</b>	Way for an interest group to define its position, develop a strategy and an action plan	Listen to a variety of interest groups
<b>Local level general meeting</b>	Way for different interest groups to discuss their differences of opinion and possibly arrive at a shared position	The LGI may gradually play a bigger role in local conflict resolution
<b>Public hearing/consultation</b>	Way for intermediaries to present possible plans for action to direct stakeholders and get their feedback	Used in many countries as part of a formal participatory planning process
<b>Local folk drama</b>	Analysing local folk drama is an indirect way of finding out what the concerns of direct stakeholders are	Useful to find out less obvious undercurrents
<b>Local clubs (youth)</b>	Channel for the opinion of the more modern direct stakeholders to voice their concerns	Window toward the future
<b>Radio listeners groups</b>	Channel for radio listeners linked to a particular radio station to make their voice heard	Relatively well organized and approachable
<b>Professional bodies</b>	Voice of organized professional interest groups	Needed because of investments
<b>Local Government Institutions</b>	Voice of the elected representatives	Involve more systematically
<b>Issue-based protest/lobby groups</b>	Focused approach by (potentially) program affected persons to protest	Be aware of quite lobbying by vested interests
<b>Participatory Rural Assessment</b>	Well established method with different 'tools' focused on both needs and resources assessments and prioritization	Include resources, not only needs
<b>Appreciative Inquiry<sup>5</sup></b>	Relatively new method of approaching communities, focusing on their strengths and potential (rather than needs)	Offers a more positive approach than most others
<b>Questionnaires</b>	Useful if statistically valid quantitative data is needed	Expensive but sometimes necessary
<b>User report cards<sup>6</sup></b>	Score cards on which service users can score their opinion on key indicators of specific services/programmes	Useful for ongoing participatory monitoring of service providers
<b>Facilitating press</b>	By making the necessary organizational and technical	Useful when urgent action is



Media/mechanism	Description	Comments
	media	
<b>Sending postcards</b>	Cheap way for large numbers of direct stakeholders to put pressure on political leaders and development partners	Useful as a lobbying mechanism
<b>E-mail PCU via commercial internet shop</b>	Channel that will be used more and more in future by direct stakeholders and their representative to communicate with the Program	Likely to become more and more important in future
<b>Letters</b>	A formal way for direct stakeholders and/or their representatives to pass on information to the Program	Likely to slowly decline
<b>Anonymous complaint letters</b>	A formal way for program affected persons to send complaints to the Program	All PIP should have a formal complaints procedure
<b>People speaking for themselves</b>	An effective way for direct stakeholders to communicate concerns at local regional or national levels meetings and in radio or TV programs and	Under used
<b>Printed media clipping services</b>	Analysis of all printed matter related to the coast, focusing on for instance district or thematic issues	Consider sub-contracting out to a capable NGO or commercial firm
<b>Community radio<sup>7</sup></b>	Issues covered by regional community radio programmes focused on the coast	Likely to give local people more voice
<b>Radio programmes</b>	Analysing radio programs is one way to find out what messages people get and this may reflect their opinions	Not all that effective in the listening and responding process
<b>TV/video programmes</b>	Analysing TV programs is one way to find out what messages people get and this may reflect their opinions	Not all that effective in the listening and responding process



## 10 ACTION PLAN TO DISSEMINATE INFORMATION AND RAISE AWARENESS

### 10.1 Introduction

This chapter deals with the second of the two social communication action plans, how to accomplish disseminating information and raising awareness. The chapter briefly describes the main assumption behind the action plan, then deals with the overall framework, lists the main audiences, highlights relevant constraints and opportunities, lists the PDO-ICZMP strategic priorities, discusses the key issues that flow from these priorities as well as the key messages, then lists the relevant media and mechanisms that may be used to implement the action plan and finally draws all of that together in a table combining key messages, audiences and media/mechanisms.

### 10.2 Messages that communicate

As already indicated (section 7.5) social communication related to ICZM involves a wide variety of audiences. The success of the information dissemination and awareness raising action plan heavily depends on how well messages are ‘translated’ into the language of each specific audience. Here ‘language’ does not only mean English or Bengali or even a dialect (Chittagonian) but also applies to the worldview of the audience.

When the audience is similar to that of the communicators, for instance staff in relevant government departments, then such ‘translating’ is not too difficult. Nevertheless even then there can be confusion as was the case when a sociologist in a BWDB project insisted that direct stakeholders be involved in all stages of the development of a polder, particularly in the ‘design’. BWDB staff strongly objected, because to them ‘design’ meant a highly specialized part of the purely civil engineering process. For the sociologist ‘design’ had a much broader meaning covering the main parameters of the polder; its purpose, the minimum and maximum water levels that it would allow, whether or not it would still allow navigation etc.

When the audience is very different from that of those who want to communicate a message, then ‘translation’ becomes even more crucial. The Bengali words chosen, the ideas, concepts, stories and images must convey the intended message as closely as possible. Anthropological books are full of examples of how poor ‘translation’ has often resulted in people understanding the very opposite of what the communicator intended.

In summary, messages must communicate. When mass media like the printed word, radio or TV are used it is therefore crucial to field test the script among the intended audiences and fine tune them to ensure that the message comes across.

### 10.3 Overall framework

This second action plan of the ICZM social communication strategy deals with the generic ways and means to facilitate information dissemination and awareness raising. These ways and means are applicable to any organization or individual in the ICZM process but here the focus is on how to facilitate the communication flow from the PCU to the various audiences.

- **Direct stakeholders**, that is people living in the coastal zone and their organizations, prioritized on the basis of:
  - Their relevance to poverty alleviation through ICZM, that is their level of poverty and their numbers
  - Their reliance on or control over coastal specific resources for their and others livelihoods:
    - ◊ Women and children
    - ◊ Rural wage labourers
    - ◊ Small farmers
    - ◊ Fishers
    - ◊ Urban wage labourers
    - ◊ Union Parishad members from the coastal zone
    - ◊ Representatives of organized interest groups of any of the above
    - ◊ Members of Parliament from the coastal zone

BIDS<sup>8</sup> has developed income and human poverty indices and classified all districts in six categories from best to worst. Of the eighteen coastal districts none fall in the worst income or human poverty category, but eight fall in the second worst class of income poverty. Of those only Shariatpur also falls in the second but last human poverty category and can therefore be classified as the 'poorest' coastal district. Of the eight second poorest districts the following three districts fall in the third lowest human poverty category: Patuakhali, Noakhali, Bhola. One district, Jhalakati falls in the fourth lowest human poverty category. In 2001 these five poorest coastal districts together had a population of 5.5 million. These five districts could initially be the geographic focus of the ICZM.
- **Intermediaries**, that is people working with, for or on behalf of the coastal zone and its people, prioritized on the basis of:
  - The level of direct impact the group has on the coastal zone
  - The ability of the group to influence lives and livelihoods in the coastal zone (in terms of environment, social, economic, political or legislation)
  - The extent to which the perceptions or behaviour of the group need to change to allow effective and sustainable use of the natural and human resources in the coastal zone.

### **Government Departments**

- Department of Public Health Engineering
- Local Government Engineering Department / IWRMU
- Department of Women and Children Affairs
- Department of Agricultural Extension
- Department of Fisheries
- Department of Livestock Services
- Department of Environment
- Forest Department
- Bangladesh Meteorological Department

**Corporations**

- Bangladesh Parjatan Corporation

**Bureaus**

- Disaster Management Bureau
- Bangladesh Bureau of Statistics

**Authorities**

- Chittagong Port Authority
- Mongla Port Authority
- Bangladesh Inland Water Transport Authority

**Other government agencies**

- Water Resources Planning Organization
- Planning Commission
- Directorate of Land Records and Surveys
- Bangladesh Navy
- Coast Guard
- Bangladesh Agricultural Research Council
- Bangladesh Space Research and Remote Sensing Organization
- Bangladesh Computer Council

**Semi-government agencies**

- IUCN Bangladesh
- Palli Karmi Shanhayak Foundation
- Bangladesh Institute of Development Studies
- etc.

**Academic institutions**

- Bangladesh Agricultural University
- Bangladesh University of Engineering and Technology
- Dept. of Mass Communication, Dhaka University
- Chittagong University
- Dhaka University
- Khulna University
- CEGIS
- Institute of Water Modelling
- River Research Institute

**Projects**

- Char Development and Settlement Project
- Integrated Planning for Sustainable Water Management

**Non-government agencies**

- Centre for Environment and Geographic Information Systems
- Bangladesh NGO Network for Radio Communication
- Speed Trust
- etc. etc.

**Commercial partners**

- Chittagong Chamber of Commerce and Industry
- Khulna Chamber of Commerce and Industry
- Impress Telefilm Ltd.
- etc.

- **Policy makers and investors**, that is members of parliament, members of the government, commercial investors and developing partners, prioritized on the basis of:
  - ◇ The level of direct impact the group has on the coastal zone
  - ◇ The ability of the group to influence lives and livelihoods in the coastal zone (in terms of environment, social, economic, political or legislation)
  - ◇ The extent to which the perceptions or behaviour of the group need to change to allow effective and sustainable use of the natural and human resources in the coastal zone:

**Ministries**

- Ministry of Water Resources
- Ministry of Agriculture
- Ministry of Fisheries and Livestock
- Ministry of Environment and Forest
- Ministry of Disaster Management and Relief
- Ministry of Local Government, Rural Development and Co-operatives
- Home Ministry (Law and order)
- Ministry of land
- Ministry of Planning
- Ministry of Finance
- Ministry of Shipping
- Ministry of Education
- Ministry of Civil Aviation and Tourism

**Parliament**

- Members of parliament from the coastal zone
- Other MPs who are a member of relevant standing committees

**Investors**

- Development partners:
  - Royal Netherlands Embassy
  - Department for International Development

- Commercial fishing fleet owners
- Gas and oil companies
- Ship breaking companies
- etc. etc.

## 10.5 Constraints

In section 3.3 general constraints were identified. In the case of PDO-ICZMP the following additional limiting factors need to be taken into account in the action plan to disseminate information and raise awareness;

- iv. Remoteness of many communities, resulting in a higher cost of communication
- v. Lack of law and order, fuelling the general limitation of self interest, misappropriation and corruption amongst government servants and politicians
- vi. The fact that PCU has only a coordinating mandate, with possible investments years down the line, and direct interest groups unclear about its relevance to their lives and livelihoods and partner organizations about its relevance to them
- vii. Information overflow, with many organizations and individuals wanting to communicate their own messages to the same audiences

## 10.6 Opportunities

The above mentioned constraints are matched, if not overtaken, by the opportunities that facilitate the ICZM dissemination efforts. Apart from the general facilitating factors mentioned in section 3.4 (particularly those related to improving communication facilities), the following supportive factors apply to ICZM:

- A GoB policy note indicating a commitment towards ICZM, aiming at a Coastal Zone Policy, a Coastal Development Strategy and Priority Investment Plans
- A commitment in principle on the side of the development partners to invest in ICZM related activities
- The national and international interest in climate change and therefore renewed interest in the coastal zone of Bangladesh
- The national and international interest in sustainable environment management in which the Sundarbans, shrimp cultivation as well as inland and coastal fisheries are focus points
- The pilot-program potential that a successful mechanism for implementing the ICZM has and that might result in GoB designing similar regional development models for other parts of the country
- A history of PDO-ICZMP (the PCU's predecessor) cooperating closely with all relevant partners resulting in a very good reputation in this field.

## 10.7 ICZMP strategic priorities

- ◇ Safeguarding the availability of fresh water
- ◇ Optimizing the use of coastal land in the exposed zone
- ◇ Integrated and decentralized approach to regional water resources management
- ◇ Increasing the levels of service provision and administration
- ◇ Reducing the dependency on traditional agriculture in the rural areas
- ◇ Sustainable and equitable management of the coastal fish and forest resources
- ◇ Reducing vulnerability through social protection

## 10.8 Key issues, expected outcomes and related issues

Implementing the strategic priorities requires the communication of both general and specific messages. These strategic priorities lead to expected outcomes described as targets in the CDS (p 18-27). Each of those outcomes involves the communication of specific information to very specific audiences, mainly in the concerned departments and ministries. This action plan does not deal with that level of details but those charged with the responsibility of ensuring that those outcomes are achieved will have to get into these details. They may find it useful to use the formats of this action plan to specify both the messages, the specific audiences and the most suitable media/mechanisms .

## 10.9 Key messages

Each of the strategic priorities of the DCS does not only have very specific messages, but also some more general ones. These have been summarized in table 3 below. After identifying the expected outcomes of the ICZM number of key messages for the ICZM Social Communication Strategy have been identified. They are based on the key issues, required changes, constraints, opportunities, and target audiences previously identified. These key messages detail the main issues listed above, indicating the specific information that needs to be conveyed to various target audiences.

**Table 3: Strategic priorities and key messages**

Strategic Priorities	Key message
Safeguarding the availability of fresh water	<ul style="list-style-type: none"> <li>◆ realization that a ‘business as usual’ approach means the current lack of fresh domestic water supply will become even worse</li> <li>◆ realization of the need for increased research in technological and/or social alternatives to deep tubewells</li> <li>◆ widespread realization that ground water must be reserved for domestic water supply and that all other agricultural and industrial usage must be stopped</li> </ul>
Optimizing the use of coastal land in the exposed zone	<ul style="list-style-type: none"> <li>◆ appreciation by policy makers and investors that newly accreted land in the coastal zone can become a contributor to Bangladesh achieving the MDG poverty alleviation goal</li> <li>◆ a widespread understanding that optimal and sustainable utilization of newly accreted lands requires large, coordinated investments in infrastructure and institutional arrangements</li> <li>◆ widespread acceptance of the need for innovative institutional arrangements for the management (operation and maintenance) of coastal water resources infrastructure, blending input from local stakeholders, LGIs and government agencies</li> </ul>
Integrated and decentralized approach to regional water	<ul style="list-style-type: none"> <li>◆ understanding that water management interventions in the coastal zone (such as building polders) can cause drainage congestion upstream</li> </ul>



Strategic Priorities	Key message
	increase the impact of the services ♦ a realization that structured interaction between the agencies and the direct stakeholders can increase the impact of the services
Reducing the dependency on traditional agriculture in the rural areas	♦ widespread realization that crops depending on sweet water, particularly if provided through irrigation, undermine domestic water supplies and must be reduced by providing alternative income generating opportunities in coastal agricultural (saline resistant crops, salt farming), aquaculture (replacing capture fisheries), industry (gas and oil) and tourism
Sustainable and equitable management of the coastal fish and forest resources	♦ widespread realization that the current exploitation of the natural resources of the coastal zone is neither equitable nor sustainable
Reducing vulnerability through social protection	♦ widespread awareness that the contribution of the coastal zone to poverty alleviation is sub-optimal because of the high risk of living and working in the area and therefore need special social protection arrangements such as crop and property insurance schemes

## 10.10 Media and mechanisms

The media/mechanisms mentioned in table 4 below might be used to implement the information dissemination and awareness raising component of the ICZM Social Communication Strategy. The relevance to the four main audiences is indicated by the shaded area in which 4 is very suitable, 2 somewhat suitable, 1 limited suitability and no number not unsuitable.

**Table 4: Media, mechanisms and their application**

Media / mechanism	Description	Target audiences/size	DS	IO	P/I
<b>Face-to-face meetings<sup>9</sup></b>	Personal meetings are the main mechanism for much of the ICZM work, as it ensures effective two-way and understanding communication and understanding between the various interest groups	All levels but particularly at the national and the international policy level (20-2000)	2	4	4
<b>Fieldworkers</b>	Grassroots level staff are often crucial in the communication process and if trained and supervised properly can have a major impact	Depending on the agency concerned (20-2000)	4	2	
<b>Letters</b>	Letters are a formal way to give specific individuals key information, particularly in informing them about upcoming or recent events	Key individuals (20-500)		4	4
<b>E-mail</b>	E-mail is essential for regular and cost effective communication and informal information sharing between partners in the ICZM process	National and international indirect stakeholders such as staff of GoB agencies, NGOs and donors		4	4
<b>Leaflets/booklets</b>	Leaflets and booklets are easy to produce, even in low quantities, and can provide information or promote specific issues in some detail	Literate, homogeneous target groups, from 50+	4	2	
<b>Public</b>	Public meetings are useful for open	Homogeneous and	4	1	

Media / mechanism	Description	Target audiences/size	DS	IO	P/I
	and sharing than some other mechanisms				
<b>Discussion workshops/ fora</b>	Discussion workshops/fora offer a mechanism for relatively small groups to share, discuss and learn about specific key issues in depth and achieve consensus on key issues	Heterogeneous small groups (5-20)	1	4	4
<b>Training workshops</b>	Training workshops offer a mechanism for relatively small groups to learn key skills	Homogeneous small groups (5-20)	1	4	
<b>Exchange visits</b>	Taking audiences to see activities close to the intended outcome with their own eyes and interact with the key actors	Small groups (5-20), from the grassroots to the policy level	4	4	4
<b>Bangla newsletter</b>	A Bangla newsletter can raise relevant issues, inform people of developments, opportunities and invite their participation in various activities	Literate direct stakeholders, i.e. 54% of the men and 47% of the women, totalling 17+ million coastal inhabitants	4	4	
<b>English newsletter</b>	An English newsletter can raise relevant issues, inform people of developments, opportunities etc. and invite their participation in various activities	Various level of indirect stakeholders, such as staff or relevant GoB agencies (10,000+), NGOs (5000+) and donor agencies (1000+)		4	2
<b>E-letter</b>	Can be in Bangla or English and is likely to become more important in future	Various levels of mainly indirect stakeholders such as staff or relevant GoB agencies (10,000+), NGOs (5000+) and donor agencies (1000+)	1	4	
<b>Bangla newspaper articles</b>	Newspaper articles on key issues are a mechanism to reach a wide audience at both local and national levels	National direct and indirect stakeholders (1 million +)	2	4	
<b>English newspaper articles</b>	English newspaper articles (some of them also available via internet) on key issues are a mechanism to reach key indirect audiences	National and to some extent international level indirect stakeholders such as law and policy makers and donors (10.000+)		2	4
<b>Scientific publications/ case studies</b>	Mechanism for sharing the ICZM experience with the international scientific community	ICZM related researchers and academics		4	2
<b>Press releases</b>	Press releases for use by mass media on current events and issues	Specific national audiences		4	
<b>Press conferences</b>	Press conferences are a way to communicate specific information via the mass media	National and international audiences		2	2
<b>Printed reports</b>	Detailed technical reports on particular issues, targeted at specific organisations or groups, and providing essential background information	National and international law and policy makers as well as key staff of GoB agencies, NGOs and donors		4	4
<b>Website</b>	Low cost mechanism for disseminating information at the national and international level, particularly in sharing lessons learnt	National but particularly international audience of ICZM practitioners and		4	4

Media / mechanism	Description	Target audiences/size	DS	IO	P/I
<b>Dhaka PCU library</b>	Creates access to written and audio-visual information not otherwise easily accessible	Mainly indirect stakeholders such as staff of GoB agencies, NGOs and donor agencies (1000+) and scientists/researchers (100+)	1	4	2
<b>Press clippings</b>	Monitoring and recording events relevant to ICZM	Mainly indirect stakeholders such as staff of GoB agencies, NGOs and donor agencies (1000+) and scientists/researchers (100+)	1	4	1
<b>Radio programmes</b>	Radio is an effective way of reaching the people living in the coastal areas, particularly the most remote areas and islands	Direct stakeholders (100% of the coastal inhabitants with access to the radio frequencies (FM, MW, SW) used)	4	1	
<b>General TV programmes/videos</b>	With relatively little funding <sup>10</sup> general TV programmes/series can sometimes be shifted to a coastal setting, reach a wide audience at both local and national levels	Direct and indirect stakeholders	4	4	
<b>Specific TV programmes/videos</b>	TV programmes on key issues can reach a wide audience at both local and national levels	Direct and indirect stakeholders	4	4	1
<b>Local and national events</b>	Local and national events offer a good mechanism for the PCU to have contact with a large audience at a local or national level and to get 'into the picture' of those not directly related to the coastal area		1	4	4

(DS = direct stakeholders, IO = Intermediary Organizations and P/I = Policy makers and Investors)

## 10.11 Reach and effectiveness of media

Each of the above mentioned media and mechanisms has its own reach (people potentially reachable through that media) and effectiveness (level of impact). Without going into much detail a few salient facts and figures about the coverage of particularly the mass media is given in the table below.

**Table 5: National media reach**

Media	Urban			Rural			National		
	1995	1998	2002	1995	1998	2002	1995	1998	2002
Radio	42%	42%	21.1%	36%	39%	30.4%	36%	39%	29%
Television	64%	69%	83%	24%	34%	50%	31%	42%	61%
Newspapers		32%	40%		10%	18.7%	12%	15%	25.8%
Magazines		16%			2%			4%	8%
Cinema	20%	22%		11%	16%		12%	17%	16.4%

(Source: National Media Surveys, 1995, 1998, 2002, with 2002 survey result partially released by the Bangladesh Center for Communication Program as quoted on page 7 of the *Media Directory 2004*, BCDJC, Dhaka)

the trend it is most likely that by the time of writing this strategy two out of every three people in Bangladesh has access to TV, even if they do not own a set themselves. According to the “1998 National Media Survey”<sup>11</sup> at that time on average 23 persons in the rural areas and 11 in urban areas watch TV at a time from one set. Figures for 2002 are not yet available.

Another trend that is clear from the table above is the rapid rise in access to newspapers and magazines. The rising literacy rate and the growing number and percentage of people with disposable income no doubt fuel this trend. At the same time the economic viability of the printed media is under pressure. According to the “2004 Media Guide”<sup>12</sup> only about twenty or so of the more than 900 printed publications are making profit. In fact the overall number increased gradually and at 1325 peaked in 1993 under the Interim Care Taker Government. After that the number declined to just over 800 in 1996 to again start rising after that to 990 in 2000/01.

According to the ‘Department of Film and Publications’, in its February 2003 report, *Jugantor* is the most widely circulated national daily with 270,010 copies circulated. Four other dailies print over 100,000 copies. At that time circulation of any of the English papers was less than 40,000.

## 10.12 Linking messages, audience and media

In table 6 on the next page the above mentioned messages, target audiences and media/mechanisms have been brought together. This table shows how all the methods and tools can be brought down into a specific action plan for disseminating information and raising awareness.

This table should be read as an example (i.e. indicative only) because at the time of writing this strategy (October 2004) no final decision has been made about the choice of strategic issues, let alone the key messages to be communicated etc. etc. It may be noted that a number of messages to specific audiences using particular media/mechanisms can be combined.

For more on how this framework may be applied in due course, see the last and final chapter of this strategy.

**Table 6: Key messages, audiences, media and mechanisms**

Issue	Key messages	Target audience	Media/mechanism
Safeguarding the availability of fresh water	a ‘business as usual’ approach means the current lack of fresh domestic water supply will become even worse	Department of Agricultural extension	Face to face meetings Reports Field visits
		Sweet water dependent coastal industries	Face to face meetings Reports Scientific papers
		Farmers	TV Radio Leaflets/booklets/posters
	urgent need for increased research in technological and/or social alternatives to deep tubewells	Department of Public Health Engineering	Face to face meetings Reports
		UNICEF	Face to face meetings Reports
		Appropriate	Face to face meetings

Issue	Key messages	Target audience	Medium/mechanism
	widespread realization that ground water must be reserved for domestic water supply and that all other agricultural and industrial usage must be stopped	Ministry of Agriculture	Face to face meetings Reports
		Commercial Enterprises	Face to face meetings Reports
		Farmers	TV Radio Leaflets/booklets/posters
Optimizing the use of coastal land in the exposed zone	appreciation by policy makers and investors that newly accreted land in the coastal zone can become a contributor to Bangladesh achieving the MDG poverty alleviation goal	Members of parliament/Ministers	Face to face meetings Reports TV/video
		Commercial investors	Face to face meetings Reports
		Development partners	Face to face meetings Reports Field visits
	a widespread understanding that optimal and sustainable utilization of newly accreted lands requires large, coordinated investments in infrastructure and institutional arrangements	Members of parliament/Ministers	Face to face meetings Reports
		Commercial investors	Face to face meetings Reports
		Development partners	Face to face meetings Reports Field visits
	widespread acceptance of the need for innovative institutional arrangements for the management (operation and maintenance) of coastal water resources infrastructure, blending input from local stakeholders, LGIs and government agencies	Bangladesh Water Development Board	Face to face meetings Reports
		Relevant GoB Departments (see CDSP)	Face to face meetings Reports English newsletter
		Local Government Institutions	Bangla newsletter Field visits to CDSP Reports
		Direct Stakeholders	Public meetings Field visits to CDSP
Integrated and decentralized approach to regional water resources management	understanding that water management interventions in the coastal zone (such as building polders) can cause drainage congestion upstream	Ministry of Water Resources	Face to face meetings Reports
		Development Partners	Face to face meetings Reports International Scientific Papers
	acceptance of the need to develop integrated regional water management plans	Ministry of Water Resources	Face to face meetings Reports
		Bangladesh Water Development Board	Face to face meetings Reports Exposure visits (abroad)
		Local Government Engineering Department	Face to face meetings Reports Exposure visits (abroad)
		Development Partners	Face to face meetings Reports International Scientific Papers
	acceptance of the need to restructure the	Ministry of Water	Face to face meetings

Issue	Key messages	Target audience	Media/mechanism
n	commitment to a larger share of some line agency budget allocations for the coastal zone where special conditions warrant such an increase	Relevant government departments	Face to face meetings Reports Case studies
		Home Ministry	Face to face meetings Reports
	a realization that better coordination between the government agencies can increase the impact of the services	Bangladesh Water Development Board	Face to face meetings Reports
		Relevant government agencies	Face to face meetings Reports Field visits to CDSP etc.
	a realization that structured interaction between the agencies and the direct stakeholders can increase the impact of the services	Bangladesh Water Development Board	Case studies Field visits to success case Field visits abroad
		Relevant government agencies	Case studies Field visits to success case Field visits abroad
		Local Government Institutions	Bangla Newsletter/case studies Field visits to success case
Reducing the dependency on traditional agriculture in the rural areas	widespread realization that crops depending on sweet water, particularly if provided through irrigation, undermine domestic water supplies and must be reduced by providing alternative income generating opportunities in coastal agricultural (saline resistant crops, salt farming), aquaculture (replacing capture fisheries), industry (gas and oil) and tourism	Coastal population	TV Radio Bangla Newspaper
		Relevant Ministries and departments	Face to face meetings Reports Case studies on alternative IGAs
		Commercial investors	Face to face meetings Reports Case studies on alternative IGAs
		Development Partners	Face to face meetings Reports Case studies on alternative IGAs
Sustainable and equitable management of the coastal fish and forest resources	widespread realization that the current exploitation of the natural resources of the coastal zone is neither equitable nor sustainable	Coastal population	TV Radio Bangla Newspapers English Newspapers
		Policy makers	Face to face meetings Reports Case studies
		Commercial investors	Face to face meetings Reports Case studies
	more equitable and sustainable arrangements to use the natural resources are available	Coastal population	TV Radio Bangla Newspapers English Newspapers
		Policy makers	Face to face meetings Reports Case studies
		Commercial investors	Face to face meetings Reports

## 11 IMPLEMENTATION AND FOLLOW-UP

### 11.1 Implementation

This ICZM social communication strategy and its two action plans will be implemented by the PCU, successor of the PDO-ICZM. The PCU is likely to become operational as of 1 January 2006. Between now (October 2004) and 2006 the PDO-ICZM may do the following to ensure the PCU can in due course implement the strategy and the action plans;

- updated the strategy and the action plans in the light of the changing Coastal Development Strategy, particularly the strategic priorities and related targets (outcomes)
- merge the strategy and the action plans in the knowledge management output
- conduct consultations with direct stakeholders on the most advanced concept notes (the papers that in due course lead to Priority Investment Plans)
- ensure that the PCU budget has sufficient provisions to allow implementation
- ensure that the PCU budget allows for independent monitoring and evaluation
- ensure that the PCU manning schedule includes provisions to facilitate implementation.

It is worth noting that the PCU will probably be funded on a ‘project’ basis. However, if the ICZM process is to have any lasting impact, a much longer (20-30 years) and steady effort will be needed to ensure success and sustainability. This may only happen if the PCU becomes embedded in the permanent set-up of the Ministry of Water Resources and/or WARPO.

Furthermore it may be pointed out that according to current thinking the PCU’s mandate will be one of ‘facilitating and coordinating’, not controlling and monitoring. In that context the focus of implementation will be on strengthening existing communication media, mechanisms and nodes in the network relevant to the ICZM. This too will facilitate long term sustainability.

Finally all parties involved in the ICZM process are free to use any or all parts of this strategy to increase the effectiveness of their own involvement in the ICZM process.

### 11.2 Participatory monitoring and evaluation

The social communication strategy and action plans of the PCU will have to be monitored, evaluated and up-dating from time to time, preferably by an independent firm/organization.

On-going monitoring is particularly necessary in case of expensive mass media campaigns. In that case the activity should include a field testing phase, in which the response of the intended audience is carefully assessed and the campaign fine-tuned.

At reasonable intervals (2-3 years) the impact of the strategy and the action plans should be evaluated. Where possible, evaluations should be done in a participatory way.

### 11.3 Priority Investment Plans

Based on agreed concept notes PDO-ICZM will prepare at least a number of PIPs to be implemented by

- ◇ sufficient time and flexibility in the implementation to allow stakeholder participation.
- ensure that PIPs finalized under PDO-ICZM include provisions to implement a ‘dissemination and awareness raising’ action plan, including:
  - ◇ a budget that allows implementation of the action plan
  - ◇ a manning schedule that includes qualified staff to facilitate the implementation of the action plan.



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# **Appendix**



## APPENDIX 1: LIST OF CONTRIBUTORS FOR KMA AND SOCIAL COMMUNICATION

Knowledge Management Approach development banked on existing initiatives and build on. Contributions of the following individuals at this stage of development are kindly acknowledged.

Sl. No	Name	Designation	Organization
1.	Mr. Md. Habib Ullah Majumder	Joint Secretary	MoWR
2.	Md. Bazlur Rahman	Assistant Secretary	
3.	Mr. Kazi Liakat Ali	Administrative Officer	
4.	Mr. A. H. M. Kaushar	Director, Planning III	BWDB
5.	Mr. Md Musharraf Hossain	Director	
6.	Mr. Md. Altaf Hossain Khan	Conservator of Forest	Forest Department
7.	Mr. Shamsul Huq	Divisional Forest Officer	
8.	Mr. Md. Abul Kashem	Statistical Officer	BBS
9.	Mr. Md Azgar Ali	Statistical Officer	
10.	Dr. Engr. Mostafa Kamal Farooque	Project Director	Department of Environment
11.	Mr. Ehsanul Karim Chowdhury	Administrative Officer	
12.	Dr. Wais Kabir	Chief Scientific Officer	BARC
13.	Mr. Jalaluddin Md Abdul Hye	Deputy Executive Director (P & D)	IWM
14.	Dr. Rezaul Rahman	Associate Professor	IWFM, BUET
15.	Dr. Md. Akhteruzzaman	Technical Manager	SUFER Project, DfID
16.	Mr. Ahmadul Hassan	Technical Advisor	CEGIS
17.	Mr. Jagganath Dutta	Sr. Design, Moni. and Evalu. Specialist	CARE-Bangladesh
18.	Mr. Md. Abdul Baten	Principal Scientific Officer	WARPO
19.	Mr. Kazi Rezaul Karim	Senior Scientific Officer	WARPO

### List of contributors for KMA and social communication

Social communication approaches, strategy and action plan development being benefited from the earlier initiatives. The contribution of the following individuals to this strategy is kindly acknowledged:

Dr. A. M. Chowdhury, Executive Director, Bangladesh Computer Council

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Mr. Mohammad Showkat Osman, Research Officer, PDO-ICZMP

## APPENDIX 2: TABLE OF CONTENTS - WHERE LAND MEETS THE SEA: A PROFILE OF THE COASTAL ZONE OF BANGLADESH

<b>PART 1: INTRODUCTION</b>
Background, Delineation of the coastal zone, Traditional coastal development, The process of change, Definition and implementation of integrated coastal zone management, Limitations, Intention and structure of the Profile
<b>PART 2: NATURAL CONDITIONS</b>
GEOGRAPHY; Geographical setting and characteristics, Genesis of the Delta, Bay of Bengal, Islands and chars
CLIMATE; Seasons, Rainfall, Evaporation and humidity, Temperature, Sunshine, Wind
GEOLOGY AND SOILS; Geological history, History of the formation of Bangladesh, History of the formation of the delta and estuary, Geomorphology, Soils, Typology, Soil nutrient status, Agro-ecological zones, Acid sulphate soils, Land type, Mineral resources
HYDROMORPHOLOGY; The water resources system, Introduction, Rivers and channels, Flood plains, Intertidal lands, Ponds and beels (lakes), Groundwater aquifers, The sea, Fresh water inflow, Tides, Waves, Salinity processes, Sediments, erosion and accretion, Sediment transport processes, Sediment characteristics & concentrations, Accretion and erosion, Remote sensing and surveys
ECOLOGY; Aquatic ecosystem, Marine ecosystem, Brackish water ecosystem, Freshwater ecosystem, Terrestrial ecosystem, Forests, Interspersed / Interconnected ecosystems, Floodplain ecosystem, Mangrove ecosystem, Island ecosystem, Peninsula ecosystem, Conservation of the ecosystems and biodiversity
HAZARDS; Cyclones, Storm surges, Tornados, Floods, Drought, Earthquakes, Arsenic levels, Salinity, Water logging, Pollution, Global climate change and sea level rise
<b>PART 3: HUMAN CONDITIONS</b>
DEMOGRAPHY; Population, Characteristics: Rural, Urban, Age- and sex-composition; life expectancy, Ethnic composition, Migration patterns and trends, Population Projection
GENDER ASPECTS & STATUS; Gender in the coast, Gender status analysis, Women's participation in public life, Gender in CZ: disparity & status
LIVELIHOODS; Education, Health and health services, Drinking water and sanitation, Housing, Livelihood activities, Land distribution, Social stratification, Income and poverty, Vulnerabilities
<b>PART 4: INFRASTRUCTURE</b>
INFRASTRUCTURE FOR LAND AND WATER MANAGEMENT AND DISASTER PREPAREDNESS; Polders, Cross dams, Erosion protection, Disaster Preparedness, Domestic water supply
INFRASTRUCTURE FOR ECONOMIC ACTIVITIES; Agriculture, Fisheries and aquaculture, Forestry, Industry, Tourism
INFRASTRUCTURE FOR HEALTH, EDUCATION, SERVICES AND TRANSPORTATION; Health infrastructure, Sanitation infrastructure, Education infrastructure, Public services, Transportation
<b>PART 5: SOCIO-ECONOMIC CONDITIONS</b>
SOCIO-ECONOMIC SETTING; National economic significance of the coastal zone, Gross Domestic Product (GDP), Private sector, Labor force and employment situation, Income and expenditure
ECONOMIC ACTIVITIES; Agriculture, Forestry, Fisheries, Aquaculture, Industrialization, Tourism
FINANCIAL RESOURCES; Investments, Social safety nets & micro-credits, Savings
<b>PART 6: INSTITUTIONAL ARRANGEMENTS</b>
INSTITUTIONS AND ORGANIZATIONS; National government institutions, Local government institutions,

POLICIES, STRATEGIES AND PLANS; The coastal zone in national strategies and long-term plans, The coastal zone in sector policies, National plans of coastal zone relevance, Policy note on ICZM, Coastal Zone Policy (CZPo), Coastal Development Strategy (CDS)
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PROJECTS
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KNOWLEDGE BASE & MANAGEMENT; Introduction, Knowledge Management Approaches, Data collection and monitoring, Databases on water and other natural resources, National Water Resources Database, Proposed Integrated Coastal Resources Database (ICRD), Knowledge Dissemination & Communication, Capacity Building for Knowledge Users
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## APPENDIX 3: DATA LAYERS IN THE PROPOSED INTEGRATED COASTAL RESOURCE DATABASE (ICRD)

As on December 2004

Sl. No	Group	Component	Sub-component	Name of the Data Layer
<b>Existing Data layers in ICRD</b>				
1	NRE	Land	Agricultural Land	Agricultural Land Types, 1999
2	NRE	Land	Agricultural Land	Soil Properties (Physical) in Selective Islands
3	NRE	Land	Agricultural Land	Soil Properties (Chemical) in Selective Islands
4	NRE	Land	Agricultural Land	Soil Conditions
5	NRE	Land	Ponds and Ghers	Pond and Shrimp Ghers (Area), 2001-02
6	NRE	Land	Settlement Area/Industrial Area/Infrastructure	Land Used Information
7	NRE	Land	Settlement Area/Industrial Area/Infrastructure	Godown Facility
8	NRE	Land	Settlement Area/Industrial Area/Infrastructure	Utilities Information
9	NRE	Land	Settlement Area/Industrial Area/Infrastructure	Irrigation Facilities
10	NRE	Land	Settlement Area/Industrial Area/Infrastructure	Social Information
11	NRE	Land	Settlement Area/Industrial Area/Infrastructure	Educational Institutions
12	NRE	Land	Settlement Area/Industrial Area/Infrastructure	Health related Information
13	NRE	Land	Settlement Area/Industrial Area/Infrastructure	Agricultural Product
14	NRE	Land	Settlement Area/Industrial Area/Infrastructure	Development Projects
15	NRE	Ground Water	Shallow Aquifer	Shallow Aquifer of Some Thanas
16	NRE	Meteorological Condition	Wind	Wind Speed of Selective Area, 2000
17	NRE	Meteorological Condition	Wind	Cyclone Landfall of Selective Area, 2001
18	NRE	Fish and other Aquatic Resources	Fish and other Aquatic Resources	Fish Catch from Main Sources
19	NRE	Fish and other Aquatic Resources	Fish and other Aquatic Resources	Fish Catch by Species, 2000-2001
20	NRE	Non-renewable Resources	Gas and Oil	Natural Gas Field Information, June 2004
21	NRE	Non-renewable Resources	Sand and Minerals	Mineral Resources
22	NRE	Health of Ecosystems	Mangroves	Threatened Living Things
24	ECO	Macro Economics	Foreign Currency Earning	Investments and Export in EPZs
25	ECO	Sectoral Economic Activities	Agriculture	Plantation in Selective Area
26	ECO	Sectoral Economic Activities	Agriculture	Crop Production of Some Districts, 1998-99
27	ECO	Sectoral Economic Activities	Agriculture	Rice Production
28	ECO	Sectoral Economic Activities	Agriculture	Agriculture Labor Households, 1996
29	ECO	Sectoral Economic Activities	Agriculture	Rural Households by Farm size, 1999
30	ECO	Sectoral Economic Activities	Agriculture	Forest Coverage, 2001
31	ECO	Sectoral Economic Activities	Agriculture	Forest Products from Sundarban, 2001
32	ECO	Sectoral Economic Activities	Industry	Salt Cultivation of Some Thanas, 2002-03
33	ECO	Sectoral Economic Activities	Industry	Handloom Units, 1991
34	ECO	Sectoral Economic Activities	Industry	Brick Kiln Information
35	ECO	Sectoral Economic Activities	Industry	Visitor Arrivals by Zone
36	ECO	Sectoral Economic Activities	Services	Growth Center, 1996
37	ECO	Sectoral Economic Activities	Fishery	Harvesting Method by Selective Area, 2002
38	ECO	Sectoral Economic Activities	Fishery	Employment Status by Livelihood Groups, 2002
39	ECO	Sectoral Economic Activities	Fishery	Shrimp Fry Collectors of Selective Area, 2002
40	ECO	Sectoral Economic Activities	Fishery	Marine Craft and Gear, 2000-2001
41	ECO	Sectoral Economic Activities	Fishery	Marine Fisheries Status, 2003

Sl. No	Group	Component	Sub-component	Name of the Data Layer
53	ADM	Institutions and Organizations	NGOs	NGOs Distribution
54	ADM	Institutions and Organizations	NGOs	NGOs Distribution by Sectoral Activities
55	ADM	Institutions and Organizations	NGOs	National NGOs Members
56	ADM	Institutions and Organizations	NGOs	NGO projects
57	ADM	Institutions and Organizations	NGOs	NGOs Activities over Street Children
58	ADM	Institutions and Organizations	Informal Organizations	Non-profit Institutions of Selective Districts
59	ADM	Administrative Area	Administrative Area	Administrative Units
60	ADM	Administrative Area	Administrative Area	District and Upazila Name
61	ADM	Administrative Area	Administrative Area	Protected Areas
63	FUN	Safety Nets	Food Assisted Program	VGD Allocation by Thana
65	FUN	Safety Nets	Food Assisted Program	Rural Development Program of WFP
67	FUN	Safety Nets	Food Assisted Program	Boyoshko Bhata Program
68	FUN	Safety Nets	Food Assisted Program	Dustha Mohila Bhata Program
70	HUM	Demography	Demography	Life Table for Bangladesh Population, 2000
74	INF	Protection	Protection	Cyclone Shelter Number
75	INF	Protection	Protection	Cyclone Shelter (Purpose Built) Number
76	INF	Protection	Protection	Polder (124) Features of Selective Districts
77	INF	Protection	Protection	Flood Protection Infrastructures of Selective Districts
78	INF	Communication Sector	Communication Sector	Telephone Connection by Zone
79	INF	Protection	Protection	Cyclone Shelter Information By Thana
80	INF	Agriculture Sector	Agriculture Sector	Aquaculture Production Infrastructure
81	INF	Agriculture Sector	Agriculture Sector	Fisheries Service Centers
82	INF	Agriculture Sector	Agriculture Sector	Storage Facility of Selective Districts
83	INF	Agriculture Sector	Agriculture Sector	Pumps Installation
84	INF	Agriculture Sector	Agriculture Sector	Rice Processing Infrastructure
85	INF	Agriculture Sector	Agriculture Sector	Irrigation Projects
86	INF	Agriculture Sector	Agriculture Sector	Irrigation Units
87	INF	Power Sector	Power Sector	Power Plants of BPDB
88	INF	Power Sector	Power Sector	REB Stations
89	INF	Power Sector	Power Sector	Power Volt Sale of Selective Districts
90	INF	Power Sector	Power Sector	Wind Turbine Installations
91	INF	Transport Sector	Transport Sector	Export and Import at Ports
92	INF	Transport Sector	Transport Sector	Mooring Places for Ferries in Selective Districts
93	INF	Transport Sector	Transport Sector	Railway Route of Selective Districts
94	INF	Transport Sector	Transport Sector	Road Density
95	INF	Transport Sector	Transport Sector	Roads Statistics of Selective Districts
96	INF	Health Sector	Health Sector	Health Facilities
97	INF	Health Sector	Health Sector	Family Planning Assistant
98	INF	Health Sector	Health Sector	Hospital Status
99	INF	Health Sector	Health Sector	Sanitary Latrine Sales Center of Selective Districts
100	INF	Health Sector	Health Sector	Sinking Deep Tube Well
101	INF	Health Sector	Health Sector	Rural Water Supply by Thana, 2002
102	INF	Health Sector	Health Sector	Rural Water Supply by District, 2001
103	INF	Health Sector	Health Sector	Tube Well Number in Selective Districts
104	HUM	Human and Household Assets	Education and Skills	Primary Educational Status
105	HUM	Human and Household Assets	Education and Skills	Literacy Percentage for Urban Population, 1999
106	HUM	Human and Household Assets	Education and Skills	Literacy Rates
107	HUM	Human and Household Assets	Education and Skills	Educational Status, 1991
108	NRE	Health of Ecosystems	Mangroves	Educational Data (BANBEIS) by Upazilla
109	INF	Education Sector	Education Sector	Educational Data (BANBEIS) by District
110	HUM	Human and Household Assets	Health	Arsenic Contamination in Drinking Water
111	HUM	Human and Household Assets	Health	Household by Type of Latrine
112	HUM	Human and Household Assets	Health	Households by Source of Water
113	HUM	Human and Household Assets	Health	Health Status of Children
114	HUM	Human and Household Assets	Health	Infant Mortality Rate and Fertility Rate, 1997
115	HUM	Human and Household Assets	Health	Calorie and Protein Intake
116	HUM	Human and Household Assets	Health	Morbidity from Disease
117	HUM	Human and Household Assets	Health	Sanitation Behavior

Sl. No	Group	Component	Sub-component	Name of the Data Layer
129	HUM	Natural Assets	Natural Assets	Household by Land Holding Group
130	HUM	Natural Assets	Natural Assets	Land Owned by Farm Size
131	HUM	Natural Assets	Natural Assets	Land Ownership Pattern
132	HUM	Natural Assets	Natural Assets	Agriculture Land Per Person, 1996
133	HUM	Natural Assets	Natural Assets	Agriculture Land Holding Status, 2001
134	HUM	Physical Assets	Physical Assets	Household as Per Cattle Holding, 1996
135	HUM	Physical Assets	Physical Assets	Household by Electricity Connection in Selective Districts
136	HUM	Physical Assets	Physical Assets	Household by Wall Material in Selective Thanas, 1991
137	HUM	Physical Assets	Physical Assets	Households by Roof Material by Selective Thanas, 1991
138	HUM	Physical Assets	Physical Assets	Households (Urban) by Roof Material by Selective Thanas, 1992
139	HUM	Physical Assets	Physical Assets	Housing Condition, 1991
140	HUM	Physical Assets	Physical Assets	Physical Asset Ownership, 1991
141	HUM	Physical Assets	Physical Assets	Households with Electricity Connection, 1991
142	HUM	Physical Assets	Physical Assets	Electricity Supply Status, 2001
143	HUM	Income	Income	Household by Main Source of Income, 2002
144	HUM	Income	Income	Households by Poverty Measures, 1998
145	HUM	Income	Income	Household Expenditures, 2002
146	HUM	Income	Income	Poverty Incidence, 1999
147	HUM	Demography	Demography	District Area and Population
148	HUM	Demography	Demography	Population in Rural and Urban Settings
149	HUM	Demography	Demography	Migration Direction (Domestic)
150	HUM	Demography	Demography	Religious Communities of Selective Districts
151	HUM	Demography	Demography	Population Distribution in Urban, 1991
152	HUM	Demography	Demography	Household and Population by Sex, 2001
153	HUM	Demography	Demography	Household Characteristic
154	HUM	Demography	Demography	Immigrants Number
155	HUM	Demography	Demography	Life Expectancy at Birth
156	HUM	Demography	Demography	Life Expectancy at Birth by Year
157	HUM	Demography	Demography	Migration (Lifetime Internal) of Bangladesh
158	HUM	Demography	Demography	Migration Status, 1991
159	HUM	Demography	Demography	Population by Age Group, 1991
161	HUM	Demography	Demography	Population of Municipalities and SMA, 2001
162	HUM	Demography	Demography	Population of Urban in Selective Districts, 1999
163	HUM	Demography	Demography	Population Projections
164	HUM	Demography	Demography	Migration of Respondents of PDSCL
165	HUM	Demography	Demography	Sex Ratio by Age Group, 2001
166	HUM	Demography	Demography	Upazila Statistics, 2001
167	HUM	Demography	Demography	Urban Slums Statistics in Selective Thanas, 1997
168	HUM	Demography	Demography	Tribal Population, 1991
169	FUN	Safety Nets	Food Assisted Program	Population Percentage Comparison for Selective Divisions, 1991
175	HUM	Human and Household Assets	Health	Acid Attack Cases, Division wise Comparison
176	HUM	Human and Household Assets	Health	Violent Occurrences, Division wise Comparison
203	NRE	Land	Ponds and Ghers	Pond and Shrimp Gher Area
204	NRE	Meteorological Condition	Rainfall	Cyclonic Storm Chronology
205	NRE	Meteorological Condition	Wind	Cyclonic Floods (Historical)
206	NRE	Meteorological Condition	Wind	Cyclone Landfall Distribution (Monthly), 1891-1991
207	NRE	Meteorological Condition	Wind	Cyclone Path in Bangladesh
208	NRE	Meteorological Condition	Wind	Cyclone Land Fall Information (Recent Past)
209	NRE	Meteorological Condition	Wind	Cyclones Occurrence over 200 Years
214	NRE	Sea	Estuary Branches and Coastal Waters	Tide Level Variation (Mean) over Year
215	NRE	Sea	Deep Sea	Wave Height Prediction
216	NRE	Surface Water	River	Main River Length
217	NRE	Surface Water	River	Drainage Systems with Major Rivers in KJDRP
219	NRE	Surface Water	Floodplains (Wetland)	Floodplain of Major Types

Sl. No	Group	Component	Sub-component	Name of the Data Layer
				KJDRP
242	ADM	Institutions and Organizations	FMOs/ CBOs	WMA Sample By-laws of (in Bangla) in KJDRP
243	ADM	Institutions and Organizations	FMOs/ CBOs	Local Level Institutions of CDSP with Domains
244	ADM	Institutions and Organizations	FMOs/ CBOs	LADC Information in CDSP, 2002-2003
245	ADM	Institutions and Organizations	FMOs/ CBOs	Local Level Institutions of CDSP
246	ADM	Institutions and Organizations	FMOs/ CBOs	VO and Different Institutions Relationship
247	ADM	Institutions and Organizations	FMOs/ CBOs	SPC Information in CDSP, 2002-2003
249	ADM	Institutions and Organizations	FMOs/ CBOs	PC and SPC Structure
250	ADM	Institutions and Organizations	FMOs/ CBOs	Institutions Facilitated by ECFC
251	ADM	Institutions and Organizations	FMOs/ CBOs	Water Management System of CDSP
252	ADM	Institutions and Organizations	NGOs	NGOs Sectoral Distribution
253	ADM	Institutions and Organizations	GoB Organizations	Institutional Linkage in Fisheries Sector
254	ADM	Institutions and Organizations	GoB Organizations	NARS Organogram
255	ADM	Institutions and Organizations	GoB Organizations	SBSUA Project's Implementing Arrangement
256	ADM	Institutions and Organizations	Informal Organizations	Institutional Environment Components
257	ADM	Institutions and Organizations	GoB Organizations	Knowledge Base Indication of Development Projects
258	ADM	Laws and Regulations	Laws	Laws Related to ICZM
259	ADM	Laws and Regulations	Regulations	Environment Treaties
260	ADM	Laws and Regulations	Laws	Notification on Aquaculture and Hatchery Declared Industry
261	ADM	Laws and Regulations	Laws	Bangladesh Water and Power Development Board Order, 1972
262	ADM	Laws and Regulations	Laws	Notification on Shrimp Fry Catching
263	ADM	Laws and Regulations	Laws	Notification and ordinance on
270	ADM	Laws and Regulations	Laws	Land Management Manual
271	ADM	Laws and Regulations	Laws	Marine Fisheries Ordinance 1964
272	ADM	Laws and Regulations	Laws	Notification on Banning Shrimp Fry Import
273	ADM	Laws and Regulations	Laws	Notification on Land Development tax
274	ADM	Laws and Regulations	Laws	Notification on Shrimp Committee Revised
275	ADM	Laws and Regulations	Laws	Notification on Shrimp Committee
276	ADM	Laws and Regulations	Laws	Notification on Tank Act
277	ADM	Laws and Regulations	Laws	Notification on Shrimp Land
278	ADM	Laws and Regulations	Laws	Shrimp Sector Legal and Institutional Review
279	ADM	Laws and Regulations	Laws	Notification on Shrimp Tax on Benefited Land
280	ADM	Laws and Regulations	Laws	Tanks Improvement Act 1939
281	ADM	Laws and Regulations	Laws	The East Bengal Protection and Conservation of Fish Act, 1963
282	ADM	Laws and Regulations	Laws	Fish and Fish Product Ordinances, 1983
283	ADM	Laws and Regulations	Laws	Fish Protection and Conservation Rules, 1985
284	ADM	Laws and Regulations	Laws	Fish Protection and Conservation Ordinance, 1982
285	ADM	Laws and Regulations	Laws	Water Pollution Ordinance
287	ADM	Mechanism of Participation	Participation	Guidelines for PC in CDSP
288	ADM	Mechanism of Participation	Participation	Guidelines for Fishing Village Selection of ECFC
289	ADM	Mechanism of Participation	Participation	Guidelines for SPC in CDSP
290	ADM	Mechanism of Participation	Participation	Guidelines of CDSP, GPP, and GPWM
291	ADM	Mechanism of Participation	Participation	Guidelines of O&M for WMC in CDSP
318	ECO	Macro Finances	Wages	National Women Policy
325	ECO	Macro Finances	Wages	Agriculture Wage Rate Fluctuation
326	ECO	Macro Finances	Wages	Agriculture Daily Wage Rates
329	ECO	Sectoral Economic Activities	Fishery	Shrimp Export Earnings for Bangladesh
333	ADM	Institutions and Organizations	GoB Organizations	Government Project Coverage for Urban
336	ADM	Institutions and Organizations	NGOs	NGOs Activities in Southwest Region
337	ADM	Institutions and Organizations	NGOs	NGOs Distribution by Activity and Location
338	ADM	Institutions and Organizations	FMOs/ CBOs	Investment in IGAs of KJDRP, September 2002
339	ADM	Institutions and Organizations	FMOs/ CBOs	WMO Contribution and Assessed Revenue in the KJDRP
340	ADM	Institutions and Organizations	FMOs/ CBOs	WMOs Funds Raised in KJDRP, September 2002
341	ADM	Institutions and Organizations	FMOs/ CBOs	WMA - WMF Committee of KJDRP

Sl. No	Group	Component	Sub-component	Name of the Data Layer
352	ADM	Laws and Regulations	Laws	Shrimp Related Laws and Relevance
355	ECO	Macro Economics	Employment	Labor Force (Active)
356	ECO	Macro Economics	Employment	Livelihood Activities Combination
357	ECO	Macro Economics	Employment	Private Sectors Contribution in Economy
358	ECO	Macro Economics	Employment	Livelihood Group (Major) Distribution
360	ECO	Macro Economics	Employment	Occupations of Slum Dwellers of Selective Area
361	ECO	Macro Economics	Employment	Occupations of Floating Population of Selective Area
363	ECO	Macro Economics	Employment	Fisher Household Statistics
366	ECO	Macro Finances	Wages	Agriculture Daily Wage in Char Mora Dona
369	ECO	Sectoral Economic Activities	Agriculture	Irrigation Status in Selective Districts, 1998-99
370	ECO	Sectoral Economic Activities	Agriculture	Female Headed Farm Households by Zone
372	FUN	Expenditures on Natural Resources Management	Water	Expenses in CDSP Area (2000 - 2002)
373	ADM	Institutions and Organizations	NGOs	NGOs Services to Disadvantaged Children in Selective Districts
374	ECO	Macro Economics	GDP	Sectoral Distribution of GDP
375	NRE	Surface Water	River	Coastal River
<b>Data layers collected from NWRD</b>				
17	NRE	Surface Water	River	Tidal Water Level of BWDB
20	NRE	Surface Water	River	Salinity (Monthly) of BWDB
21	NRE	Surface Water	River	Sediment Data of BWDB
23	NRE	Surface Water	River	Water Level Stations of BIWTA
25	NRE	Surface Water	River	Tidal Water Level Stations Overview
26	NRE	Surface Water	River	Salinity Levels
27	NRE	Surface Water	River	Salinity Impact in Sundarban
29	NRE	Surface Water	River	Surface Water Quality in Chittagong
31	NRE	Surface Water	River	Surface Water Quality in Khulna
33	NRE	Surface Water	River	Tidal Water Level Stations
34	NRE	Surface Water	Perennial water body	Beels Area
44	NRE	Chars and Inter-tidal areas		Islands and Chars Information
51	NRE	Forests	Plain land forest	Forest Land Information
55	NRE	Meteorological conditions	Wind	Wind Speed (Average)
67	NRE	Meteorological conditions	Rain fall	Rainfall (Average), 1999
69	NRE	Meteorological conditions	Other	Relative Humidity (Average)
71	NRE	Meteorological conditions	Other	Sunshine Hours
72	NRE	Meteorological conditions	Other	Temperature (Maximum and Minimum)
83	NRE	Fish and Other Aquatic Resources		Fish Catch form Beel
85	NRE	Fish and Other Aquatic Resources		Fish Catch from Boar
87	NRE	Fish and Other Aquatic Resources		Fish Catch Data
89	NRE	Fish and Other Aquatic Resources		Fish Catch from Flood Land
91	NRE	Fish and Other Aquatic Resources		Fish Catch from Captain Lake
93	NRE	Fish and Other Aquatic Resources		Fish Catch from Marine Source
95	NRE	Fish and Other Aquatic Resources		Fish Catch from Pond
97	NRE	Fish and Other Aquatic Resources		Fish Catch from River
99	NRE	Fish and Other Aquatic Resources		Fish Catch from Shrimp Farm
101	NRE	Fish and Other Aquatic Resources		Fish Catch form Water Area

Sl. No	Group	Component	Sub-component	Name of the Data Layer
182	HUM	Human and household assets	Health	Disease and health Parameters, 1998
237	HUM	Income		Household Income (Average)
242	HUM	Income		Hard Core and Basic Poverty
311	ECO	Sectoral Economic activities and production system	Agriculture	Crop Loss by Natural Calamities
319	ECO	Sectoral Economic activities and production system	Agriculture	Crop Prices at Harvest
323	ECO	Sectoral Economic activities and production system	Agriculture	Rural Households Distribution
326	ECO	Sectoral Economic activities and production system	Agriculture	Cropping Status, 1996
328	ECO	Sectoral Economic activities and production system	Agriculture	Rural Households by Farm Category
351	ECO	Sectoral Economic activities and production system	Fishery	Shrimp Area
352	ECO	Sectoral Economic activities and production system	Fishery	Shrimp Production Information
353	ECO	Sectoral Economic activities and production system	Fishery	Marine Craft and Gear Information
354	ECO	Sectoral Economic activities and production system	Fishery	Fish Catch from Inland Waters
355	ECO	Sectoral Economic activities and production system	Fishery	Fish Catch from Ponds
356	ECO	Sectoral Economic activities and production system	Fishery	Fish Catch from Main Resources
498	ADM	Administrative area		Administrative Units
499	ADM	Administrative area		Union Name
<b>Data layers to be collected</b>				
1	ADM	Policies		Water Supply and Sanitation Policy (National)
2	ADM	Policies		Rural Development Policy (National)
3	ADM	Policies		Education Policy (National)
4	ADM	Policies		Industrial Policy
5	ADM	Policies		Health Policy
26	ADM	Plan		Environmental Management Plan
27	ADM	Plan		Water Management Plan (National)
28	ADM	Plan		Disaster Management Program
29	ADM	Plan		Forestry Master Plan
30	ADM	Plan		Tourism Master Plan
31	ADM	Institutions and organization	GoB organizations at different level	Mandates and Activities of GoB
32	ADM	Institutions and organization	GoB organizations at different level	Authority Level (National, Zila and Upazial)
33	ADM	Institutions and organization	GoB organizations at different level	Ongoing and Upcoming Project/Plan of Different Agencies
34	ADM	Institutions and organization	GoB organizations at different level	Focal Points of Coastal Related Activities
58	ADM	Institutions and organization	Informal organizations	Line Agencies Description
59	ADM	Institutions and organization	Informal organizations	Overseas Organization
60	ADM	Institutions and organization	Informal organizations	Institution Information (Research and Educational)
61	ADM	Institutions and organization	Informal organizations	International Organization
62	ADM	Institutions and organization	Informal organizations	Community Center
63	ADM	Institutions and organization	NGOs at different level	Mandates and Activities of NGOs
131	ADM	Laws and regulations	Regulations	Rules and Regulation (Govt.)
132	ADM	Laws and regulations	Regulations	Rules and Regulation (NGOs)
141	ADM	Strategies		ADP from National Funding
142	ADM	Strategies		ADP from International Funding
143	ADM	Strategies		Bio-Diversity Convention
144	ADM	Strategies		Wetlands Convention (Ramsar)
145	ADM	Strategies		Marine Pollution Prevention Convention
147	ADM	Administrative area		Economic Zone (Exclusive)

Sl. No	Group	Component	Sub-component	Name of the Data Layer
247	ECO	Sectoral economic activities and production system	Industry	Fish (Dry) Processing Industries
248	ECO	Sectoral economic activities and production system	Industry	Salt Production and Processing Industries
249	ECO	Sectoral economic activities and production system	Industry	Agro Processing Industries
250	ECO	Sectoral economic activities and production system	Industry	Shipping Industries
251	ECO	Sectoral economic activities and production system	Industry	Ship Breaking Industries
252	ECO	Sectoral economic activities and production system	Industry	Industry
253	ECO	Sectoral economic activities and production system	Industry	Industrial Effluent by Category
254	ECO	Sectoral economic activities and production system	Industry	Salt Cultivation Farms
255	ECO	Sectoral economic activities and production system	Industry	Tourist Spots (Major)
256	ECO	Sectoral economic activities and production system	Industry	Tourist Spots (Potential)
257	ECO	Sectoral economic activities and production system	Industry	Tourist Spots Accessibility
258	ECO	Sectoral economic activities and production system	Industry	Tourist Spot
259	ECO	Sectoral economic activities and production system	Industry	World Heritage Sites
261	FUN	Expenditures on natural resources management	Fish	Fishing Expenditure and Investment
262	FUN	Expenditures on natural resources management	Forest	Forest Plantation Expenditure and Investment
266	FUN	Expenditures on rural and urban infrastructure	Roads	Road Construction Expenditure and Investment
267	FUN	Expenditures on rural and urban infrastructure	Electricity	Electricity Supply Expenses
268	FUN	Expenditures on rural and urban infrastructure	Communication (tel)	Tele-Communication Expenses
270	FUN	Expenditures on rural and urban social services	Education	Educational Expenditure and Investment
271	FUN	Expenditures on rural and urban social services	Health	Health Sector Expenses
272	FUN	Expenditures on rural and urban social services	Family planning	Family Planning Expenses
273	FUN	Expenditures on rural and urban social services	Sanitation and water supply	Sanitation and Water Supply Expenses
274	FUN	Production and income generating activities	Extension services	Extension Services Expenses
275	FUN	Public safety and well-being	Law enforcement	Law Enforcement Expenses
276	FUN	Safety nets	Housing	Housing Expenditure and Investment
277	FUN	Safety nets	Disaster management	Disaster Management Expenditure and Investment
286	HUM	Demography		Population Occupation
287	HUM	Demography		Working Class Information
340	HUM	Human and household assets	Health	Waste Water Sources
341	HUM	Human and household assets	Health	Water Supply by Thana (Rural)
342	HUM	Human and household assets	Health	Water Supply by Thana (Urban)
343	HUM	Human and household assets	Health	Nutrition by Thana
344	HUM	Human and household assets	Health	Water Supply System
412	INF	Communication sector		Mobile Phone Communication
413	INF	Communication sector		Internet Communication
420	INF	Health sector		Health Centers

Sl. No	Group	Component	Sub-component	Name of the Data Layer
442	INF	Protection		Earthquake Magnitude
443	INF	Protection		Earthquake Damages
444	INF	Transport sector		Shipping/Port
450	NRE	Chars and Inter- tidal areas		Chars and Islands
451	NRE	Chars and Inter- tidal areas		Land Reclamation (Char)
452	NRE	Chars and Inter- tidal areas		Khaslands (Char)
453	NRE	Chars and Inter- tidal areas		Islands Communication
454	NRE	Chars and Inter- tidal areas		Cox's Bazar Sea beach
455	NRE	Chars and Inter- tidal areas		Kuakata Sea beach
456	NRE	Chars and Inter- tidal areas		Detail Information of St. Martin
457	NRE	Chars and Inter- tidal areas		Detail Information of Nijhum Dwip
459	NRE	Fish and Other Aquatic Resources		Fish habitat
460	NRE	Fish and Other Aquatic Resources		Aquatic/Fisheries Species
481	NRE	Forests	Mangrove plantations	Mangrove Forest Species (Flora)
482	NRE	Forests	Plain land forests	Social Forest
483	NRE	Forests	Plain land forests	Reserved Forest
484	NRE	Forests	Plain land forests	Terrestrial habitats (Flora)
485	NRE	Forests	Plain land forests	Animals and Wild Life
486	NRE	Forests	Plain land forests	Birds
487	NRE	Forests	Natural mangroves (Sundarban)	Mangrove Species (Natural)
489	NRE	Ground water	Shallow aquifer	Aquifer (Shallow)
490	NRE	Ground water	Shallow aquifer	Groundwater Level Declination
493	NRE	Ground water	Deep aquifer	Aquifer (Deep)
494	NRE	Health of ecosystems	Homestead gardens	Habitats (Flora)
495	NRE	Health of ecosystems	Homestead gardens	Homestead Area
498	NRE	Health of ecosystems	Marine	Marin Plants Products
499	NRE	Health of ecosystems	Marine	Seaweeds and Sea grass
500	NRE	Health of ecosystems	Marine	Coral Reef
501	NRE	Health of ecosystems	Marine	Coral Ecosystem
502	NRE	Health of ecosystems	Marine	Crab, Oysters, clams, mollusks culture etc.
503	NRE	Health of ecosystems	Marine	Sea turtle, crocodiles, sea snakes etc.
504	NRE	Health of ecosystems	Wetlands	Phytoplankton
505	NRE	Land	Agricultural land	Soil Salinity
506	NRE	Land	Agricultural land	Soil Attribute Data
507	NRE	Land	Agricultural land	Soil Salinity Distribution
518	NRE	Land	Settlement area/ Industrial area/ Infrastructure	Soil Mapping Unit
519	NRE	Land	Settlement area/ Industrial area/ Infrastructure	Land use
520	NRE	Land	Settlement area/ Industrial area/ Infrastructure	Land use (Change)
521	NRE	Meteorological conditions	Air	Air Quality
522	NRE	Meteorological conditions	Rainfall	Strom Charge
523	NRE	Meteorological conditions	Rainfall	Storm Surge by Thana
524	NRE	Meteorological conditions	Wind	Cyclone Center
525	NRE	Meteorological conditions	Wind	Cyclone Frequency
526	NRE	Meteorological conditions	Wind	Cyclone Zone
543	NRE	Non-renewable resources	Gas and Oil	Potential Zone (Natural Gas and Oil)
546	NRE	Non-renewable resources	Sand and minerals	Natural Coal
547	NRE	Non-renewable resources	Sand and minerals	Marine Pollution
548	NRE	Non-renewable resources	Sand and minerals	Biomass Fuels
549	NRE	Non-renewable resources	Sand and minerals	Heavy Mineral
554	NRE	Surface Water	Floodplains (wetland)	Flood
555	NRE	Surface Water	Floodplains (wetland)	Damages
557	NRE	Surface water	River	Siltation
558	NRE	Surface water	River	Erosion and Accretion



## APPENDIX 4: INDICATORS FRAMEWORK FOR ICZM

## Management Input Indicators (MIIs)

Input category	Component / Subcomponent		Dimensions
Institutional arrangements (=context for management)	Institutional and organizational infrastructure (at national, regional and local level)		<ul style="list-style-type: none"> <li>- Structure of organizations and their mandates</li> <li>- Administrative boundaries</li> <li>- Capacities; financial, personnel</li> <li>- Linking mechanisms (protocols) for harmonization and coordination</li> </ul>
	Laws and regulations		<ul style="list-style-type: none"> <li>- Environment related acts, ordinances</li> <li>- International treaties / conventions</li> <li>- Standards</li> <li>- Licenses</li> <li>- Special area declarations</li> <li>- Financial incentives</li> </ul>
	Mechanisms for democratic control and participation		<ul style="list-style-type: none"> <li>- Representation of people in formally electoral bodies</li> <li>- Participation in the process of planning, decision making, design, implementation and control</li> </ul>
Policies/strategies and plans (=intentions of management)	Policies (Overall and Sectoral)		<ul style="list-style-type: none"> <li>- Objectives</li> <li>- Implementation arrangements</li> <li>- Reference to CZ</li> </ul>
	Strategies and Plans (Overall and Sectoral)		<ul style="list-style-type: none"> <li>- Objectives</li> <li>- Targets</li> <li>- Reference to CZ</li> </ul>
Direct interventions (=implementation of management intentions within the existing context)	Rural and urban infrastructure		<ul style="list-style-type: none"> <li>- Investments (in roads, electricity, communication, cyclone shelter / flood protection, etc.)</li> <li>- Current expenditures (in roads, electricity, communication, cyclone shelter/flood protection, etc.)</li> </ul>
	Rural and urban social services		<ul style="list-style-type: none"> <li>- Investments (in education, health, family planning, sanitation and water supply, etc.)</li> <li>- Current expenditures (in education, health, family planning, sanitation and water supply, etc.)</li> <li>- Awareness</li> </ul>
	Natural resources management (water, land, fish, forest, etc.)		<ul style="list-style-type: none"> <li>- Monitoring and assessment</li> <li>- Control and enforcement</li> <li>- Dissemination and awareness</li> </ul>
	Safety nets	Food assisted program	- Volume (disbursements in national programs)
		Housing	- Effects (people reached)
		Disaster management	
	Public safety and well-being		<ul style="list-style-type: none"> <li>- Efforts (public spending in law enforcing agencies)</li> <li>- Effects (rate of disposal of criminal cases)</li> </ul>
	Production and income generating activities	Extension services	- Volume (budgets allocated in different area)
		Micro-credit	- Effects (people reached)

**Resource Base Indicators (RBIs)**

Resource Base category /	Component / Subcomponent		Dimensions
Natural resources	Land	Agricultural land	Area Quality
		Settlement area / Industrial area / Infrastructure	Area Quality (safety)
		Ponds and ghers	Area Physical condition Productivity
	Surface Water	River	Area
		Perennial water body	Water levels / flows Salinity Pollution Sediment quantity Sediment quality Connectivity Productivity Diversity
		Floodplains	
	Groundwater	Shallow aquifer	Volume Quality Abstraction
		Deep aquifer	
	Sea	Estuary branches and coastal waters	Area Water levels / flows Salinity Pollution Sediment quantity Sediment quality Productivity Diversity
		Deep sea	
	Chars and inter-tidal areas		Area and elevation Erosion / accretion Soil conditions
	Forests	Natural mangroves (Sundarban)	Area
		Mangrove plantations	Productivity
		Plain land forest	Diversity
		Hill forest	
	Meteorological conditions	Air	Air quality
		Wind	Distribution
		Rain fall	Variation including extreme events
		Other (Humidity, Temperature, Sunshine, Evaporation)	
	Fish and other aquatic resources (includes fresh water and marine fish, crab and shrimp)		Productivity Diversity
	Non-renewable resources	Gas and oil	Availability (reserves) Quality Abstraction
		Sand and minerals	
Physical resources	Physical infrastructure	Protection (e.g. from flood, cyclone)	Infrastructure quantity
		Agriculture sector (irrigation, drainage)	Quality / capacity of the provisions

Resource Base category /	Component / Subcomponent		Dimensions
	Technology		Use of equipment (e.g., use of HYV, tractor) Use of fertilizers, etc
Human resources	Demography		Size of the population Composition Distribution Migration
	Health		Physical status Diseases
	Education and skills		Primary Secondary & above Vocational training
	Awareness		Safety Environment
Social/ institutional resources	Institutional structure	GoB organizations at different levels	Availability and capacity
		NGOs at different levels	Access and quality
		FMOs/ CBOs registered and non-registered	Violence
		Informal organizations	
	Cultural and social network ;		Membership Leadership Contribution
Financial resources	Savings	Private sector	Deposited funds
		Public sector	
	Revenues		Collected funds (from LDT, IPTT)
	Wages		Total amounts paid Fluctuations
	Credit	Conventional banking system	Amounts
		Micro Finance Institutions	Available Access
	Remittances		Quantity

**Decision Support Indicators (DSIs)**

Category of development	Component / Subcomponent		Dimensions
Economic growth	Gross regional product		Annual GRP
	Foreign currency earning		Annual regional export earning
	Employment		Employment rates Rural/urban distribution Fluctuations (seasonal) Disguised unemployment
	Marketable surplus in agriculture		Volume Value Fluctuations (seasonal)
	Supply-demand conditions	Food items	Value of CPI
		Non-food items	Fluctuations (seasonal)
Improvement of livelihoods and well-being	Income and expenditure	Income	Levels
		Expenditure	Distribution (Gini)
	Assets	Natural	Owned properties Access to common properties
		Physical	Owned properties (houses, household amenities such as radio, TV etc.) Access to new technology (e.g. HYV, fertilizer etc.) Access to utilities, local facilities
		Human	Health Education and skills Knowledge & awareness
		Social	Composition of HH Level of empowerment Cohesion and conflict resolution
		Financial	Savings Investments Debts / loans
	Poverty		Levels Distribution
	Vulnerabilities	Food insecurity	Availability Access Utilization
		Income insecurity	Employment Access to labor markets Use of income
		Water insecurity	Availability and access Quality (Salinity and arsenic)
		Health and life insecurity	Nutrition Disasters Law and order Environmental hygiene Availability and access to medical facilities

Category of development	Component / Subcomponent		Dimensions
	Gender	Economic conditions	Control of production means Participation in labor force Income and expenditures
		Health and nutrition	Access to food Access to health facilities Maternal care
		Knowledge and skills	Level of education and training Applicability of education and training Awareness
		Socio-cultural and political environment	Security Age of marriage Mobility Participation in decision making
Sustained natural environment	Estuarine dynamics		Drainage conditions Morphologic dynamics Fresh / salt water balance
	Health of ecosystems	Mangroves	Habitat area
		Marine	Productivity
		Homestead gardens	Biodiversity
		Wetlands	Endangered species Isolation

## APPENDIX 5: KNOWLEDGE GAPS

(Parenthesis indicates means to reduce gap)

- Linking mechanisms (protocols) for harmonization and coordination (creation, dissemination)
- Resource user's understanding of laws, regulations, standards, licenses (interpretation and dissemination)
- Legislation on ICZM issues (creation, interpretation and dissemination)
- Understanding of rules & international conventions related to marine fisheries (interpretation and dissemination)
- Participatory planning, decision-making, design and implementation and control (Accumulation, dissemination)
- Interpretation and implementation mechanism of various policy instruments (interpretation and dissemination)
- ICZM concept and tools including decision support systems and communication means (interpretation and dissemination)
- Impact of various inputs in to the system for ICZM (creation: monitoring)
- Detail land use including patterns and trends at sub district level (creation: monitoring)
- Criteria for land use planning and zoning (interpretation and dissemination)
- Digital Terrain Model with a 50 m resolution (creation and dissemination)
- Sustainable shrimp production system and conflict mitigation measures (Assimilation and dissemination)
- Volume, quality and abstraction of groundwater from shallow and deep aquifers (creation and dissemination)
- Sediment behavior and distribution in the deep sea and along the coast (creation and dissemination)
- Hydrology / hydraulics of the accreted area with tidal movement and velocities (creation and dissemination)
- Morphology and morphological processes (creation and dissemination)
- Predictive methods for future shaping of coastal zone (creation and dissemination)
- Analysis of land values gained and lost through erosion and accretion (Assimilation and dissemination)
- Bathymetry of the shallower parts of the Bay of Bengal (creation and dissemination)
- Salinity profile, Tidal behavior, Cyclone and Storm surge prediction (creation and dissemination)
- Erosion / accretion, topography, soil condition in the chars and inter-tidal areas (creation and dissemination)
- Biodiversity (Ecosystem level, species level and genetic level for both flora and fauna) (creation: monitoring)

- Assessment mechanism of fisheries, productivity, population dynamics of important species (creation and Dissemination)
- Spawning ground of the key fish species, Location of fishing grounds for demarsal stock (creation and Dissemination)
- Fisheries management (improved fishing technique, trawl, hilsha, pelagic potentials, fish health, artisanal gears, fisheries resource mapping, value adding, fish drying techniques) (creation and Dissemination)
- Impact of natural gas extraction (creation and Dissemination)
- Availability of sand and minerals creation, assimilation and dissemination)
- Guidelines and strategy for sustainable polder development (assimilation and dissemination)
- Soft methods for embankment and foreshore erosion control (assimilation and dissemination)
- Innovative and appropriate (friendly) water control structure (creation and dissemination)
- Status of cyclone shelter (Assimilation: state of art)
- Efficient honey collection method (creation and dissemination)
- Harnessing techniques of solar, wind and tidal energy (creation and dissemination)
- Low-cost economically beneficial techniques for making handicrafts (creation and dissemination)
- Turtle cultivation technology (creation and dissemination)
- Salt and water logging tolerant crops (creation and dissemination)
- Cropping techniques in saline environment (creation and dissemination)
- Male and female population migration pattern over the year (creation and dissemination)
- Physical status of human health (Assimilation and dissemination)
- Quality of education received by the students (Creation: Monitoring and evaluation)
- People's awareness on environmental hygiene (Assimilation and dissemination)
- Accessibility of people to GoB departments and NGOs (creation: monitoring and dissemination)
- Extent of CBOs and informal organizations (creation and dissemination)
- Extent and effect of violence (creation and dissemination)
- Deposited funds in the private sector (creation and dissemination)
- Spatial and seasonal fluctuations of wages (creation and dissemination)
- Female agricultural wage rate (creation and dissemination)
- Information on the accessibility of the poor people in ICZM institutions (creation and dissemination)
- Remittances received in each years and their destination (creation and dissemination)
- Regional distribution of export earning (Assimilation and dissemination)
- Fluctuations in employment and disguised unemployment (Assimilation and dissemination)
- District level distribution of income and expenditure (Assimilation and dissemination)

- Disaggregated information on income, expenditure, savings, investments and debts ( creation and dissemination)
- Effect of floods from eastern hill catchments (creation and dissemination)
- Health security in rural-urban and rich-poor strata (Assimilation and dissemination)
- Food security in rural-urban and rich-poor strata (Assimilation and dissemination)
- Water security and access to sanitation in rural-urban and rich-poor strata (Assimilation and dissemination)
- Decision making process, women's access to and control over production means (Assimilation and dissemination)
- Applicability of education and training (creation and dissemination)
- Awareness of coastal women regarding sustainable development and their position (creation, dissemination)
- Security, Mobility and Participation of women in decision making (creation, dissemination)
- Quantifiable market values of environmental goods and services (creation, dissemination)
- Pollution hot spots (creation, dissemination)
- Forest health index map (creation, dissemination)
- Effect of industries (especially ship breaking) and port activities on coastal health
- Protection and conservation techniques of coral reefs (creation, dissemination)
- Conservation of indigenous varieties of rice and other crops (creation, dissemination)
- Comprehensive estimates of pollution load and their effect in the water-bodies
- Impact of land based pollution (creation, dissemination)
- Impact of coastal aquaculture (creation, dissemination)
- Research on toxicity levels in fish/shellfish (creation, dissemination)
- Suitable and appropriate knowledge to identify interventions regarding accretion and erosion (creation and Dissemination)

Assessment techniques for calculating project benefits and impacts (creation: monitoring and evaluation)



## APPENDIX 6: EXISTING KNOWLEDGE MANAGEMENT INITIATIVES: SOME EXAMPLES

### 1 Bangladesh Bureau of Statistics (BBS)

Bangladesh Bureau of Statistics is the national organization to collect, create and maintain data. It is the central organization of maintaining and storing data under the Ministry of Planning. It carries out regular census like, population census, agriculture census, etc. Different surveys, like, poverty monitoring survey, sample registration systems, household expenditure survey, labor force survey, child nutrition survey, health, demographic survey and social statistics, small area and community level statistics, food for works and vulnerable group feeding, etc. It publishes Monthly Statistical Bulletin, Statistical Yearbook, Statistical Pocketbook, Yearbook of Agricultural Statistics, Foreign Trade Statistics regularly along with many other census and survey reports. The reports are available from the publication department of the organization at reasonable price. BBS also maintains a website containing some data and information on Bangladesh. The address of the website is [www.bbsgov.org](http://www.bbsgov.org).

### 2 National Water Resources Database (NWRD)

Water Resources Planning Organization (WARPO) has the mandate to create, maintain and update a National Water Resources Database and information management system according to the National Water Policy. The primary activity of the National Water Resource Database (NWRD) is to meet the demand of water resource planners for a consolidated and reliable data bank. The data in NWRD has been collected from different sources in many different formats (digital and paper) and the maps produced in different scales and projections all are stored in different locations. NWRD possesses more than 300 data layers in several main groups. These are: *Base data, Surface water, Ground water, Soil and agriculture, Fisheries, Forest, Socio-economic, Meteorological, Environment and Images*.

***The main activities of the NWRD are:*** *Collection of data, Processing of data, Storing of data, Quality control, Development of application tools, Development of metadata bases, Documentation of database and Dissemination of data*

### 3 Sustainable Development Networking Program

The Bangladesh Institute of Development Studies (BIDS) is implementing the Sustainable Development Network Project (SDNP). The objective of the project is to create an appropriate tool - the SDN - for achieving and facilitating exchange of information/knowledge among development partners, academia, policy makers and the civil society, both national and international, in order to design and implement unique plans for sustainable development in Bangladesh.

The Sustainable Development Networking Program (SDNP) is a global catalytic initiative launched by the United Nations Development Program (UNDP) in response to Agenda 21, which articulated the need for improved information dissemination to support sustainable development. The program is geared towards facilitating communication between users and suppliers of sustainable development information in developing countries.

SDNP has developed a Web-Portal at [www.sdnbd.org](http://www.sdnbd.org). It is far more than a Website, and the back end

Management; Five Year Plans; and so forth. These were selected following United Nations guidelines and similar web sites.

Multiple avenues are offered to reach the desired information, taking advantage of the powerful underlying database. It is sorted into various headings such as News and Views, Conventions and Treaties; Current Issues, the SEMP program, Data and Maps, UN Days and Summit information, and so forth. It can be searched by keyword, or in more advanced format with multiple search options by field.

A wide diversity of information is available, from full databases; to maps; to archived articles; to reports downloaded in various forms; to a daily updated news service relating to sustainable development. Daily updating and supplementation of the news through established link to the press clubs is undertaken.

The data is received from many sources, the main ones being:

- Ministries and Government Agencies
- SEMP Partners
- International sources, including ongoing searches conducted by SDNP
- Daily news report from the Press Clubs
- SDNP Partnerships and collaborations
- Door to door collection by SDNP team
- Supplements, publications in newspapers and other documents publicly available.

In addition to the Web Portal, SDNP has also engaged in related non-Web based dissemination activities:

- Production and circulation of CDs of sustainable development topics. The first was produced on World Environment Day on July 6th 2001; repeated in 2002. They contain a wide selection of reports and other material on tropical issues, on the World Summit on Sustainable Development, SDNP activities and others.
- An Electronic List, called SDIBD (Sustainable Development Information for Bangladesh), which posts about twenty to thirty message weekly to about 170 subscribers relating to sustainable development in Bangladesh, culled from the volume of material gathered by SDNP.
- SDNP has also taken out newspaper advertisement to draw attention to various relevant UN International Days.
- The development of regional nodes, one in each of Bangladesh's main regions and including physical connectivity, has consistently been included amongst SDNP prime objectives. Though it is suffering from delays already regional nodes have been established in the Chittagong, Barisal and Khulna cities of the coastal zone.

Apart from these, SDNP is facilitating the development of a Bangladesh Financial Information Services (BFIS) of the Bangladesh Sangbad Sangstha (BSS) where users are fed with the latest

Environment Management Programme (SEMP) and being implemented by the Department of Environment. National Curriculum and Textbook Board (NCTB) is the co-agency. Both DoE and NCTB have been working together with exchange of ideas, experiences and expertise. The project will continue up to the year 2005.

This project is a subprogram under the broad goal of building national, local and community capacities for sustainable management of the environmental aspects in training and education at the primary and secondary levels of formal education.

This concept was developed from the felt need to educate the general masses of the people about the endless wisdom of nature and the environment they lives within. However, this project is a step forward to reach the agenda 21 adopted at the earth summit, which entails certain actions to be taken nationally and globally during the twenty first century for imparting sustainability to all developmental undertakings.

## **4.2 Aims and objectives**

The broad based objective of the program is “to build capacity at all levels for sustainable environment management through introduction of environmental issues in training and education at the primary and secondary levels.”

It aims to create and strengthen the awareness, knowledge, attitude, skills and participation of the students. In this respect, entire nation stands as the immediate target group of the project.

The strategy is grounded on the coordination of the needs of both the actors: the Department of Environment and the National Curriculum and Text Board. Besides, an analysis of SWOT (Strength, weakness, opportunity and threat) aspects will also form the basis of the strategy.

## **4.3 Areas for intervention**

The areas for intervention of this project is concentrated in the major areas are: development of appropriate curricula for the primary and secondary levels of formal education, development of training manuals for teachers, followed by actual training and development of audio-visual aids for education.

## **4.4 Expected outcome**

The expected output of the project is a set of environmental curricula to be followed at primary and secondary levels of formal education. Moreover, an updated set of textbooks on environment for the students and teaching aids to the teachers and training on the environmental curricula will be availed.

## **4.5 Activities performed**

As per the work plan following activities has taken place from the year 1998 to the 2<sup>nd</sup> quarter of 2004

- ◇ signed the letter of agreement, shared of LoA with DoE, appointed a project director and prepared project implementation plan;
- ◇ resource mobilization;
- ◇ recruited project support personnel and national consultants;
- ◇ formulated coordination committee with the government and non government institutions:

- ◇ developed the environmental education curricula/materials for primary and secondary levels in 3 streams of the formal education;
- ◇ conducted orientation /training of teachers on environmental education for primary and secondary levels in 3 streams of formal education;
- ◇ introduction of environmental education materials at the primary and secondary levels in the 3 streams;
- ◇ development of documentary and audio-visual aids for environmental education;
- ◇ workshops and project review meeting conduction;
- ◇ organize overseas fellowship for PIO officials on the environmental education, curricula development and related issues;
- ◇ reporting and documentation;
- ◇ publish reports, textbooks, other teaching materials and aids;
- ◇ monitoring and evaluation.

#### **4.6 Future activities**

The following activities will be undertaken between the 3<sup>rd</sup> quarter of 2004 to end of 2005

- ◇ organize working group meetings;
- ◇ organize subcommittee meetings constituted by the inter ministerial technical committee;
- ◇ organized field visits in connection with project and related activities has started in the 4<sup>th</sup> qtr of 1999 and will continue up to the last qtr of 2005;
- ◇ organized study tours to the institutions/organizations/centres of excellence involved in environmental education in the neighboring regional and developed countries;
- ◇ curriculum dissemination training for class teachers of primary, ibtedaye grades III, IV, V, secondary, dakhil and technical and vocational grades;
- ◇ Introduction of environmental education materials at the primary and secondary levels in the 3 streams and environmental education dissemination through mass media;
- ◇ project closing workshop;
- ◇ submission of the final report;
- ◇ monitoring and evaluation;
- ◇ initiate plan of activities for the future.

### **5 Bangladesh NGOs Network for Radio and Communication (BNNRC)**

Bangladesh NGOs Network for Radio and Communication (BNNRC) is a changed name of Bangladesh Coastal NGO Network for Radio and Communication (BCNNRC). BCNNRC has established during April 2000 and registered as trust in the Ministry of Law, Justice and Parliamentary Affairs with the auspicious of 9 coastal non-government organizations (NGO) with lead initiatives from COAST (Coastal Association for Social Transformation Trust). This name change has been formalized on 5 April, 2003 considering the fact of all members urged to have national converge. Those 9 organizations are COAST of Bhola and Coxsbazar, Dwip Unnayan Sangstha (DUS) of Hatiya, Young Powers Social Action (YPSA) of Chittagong, Sangkalpa Trust of Barguna, Pirojpur Gono Unnayn Samity (PGUS) from Pirojpur, BRIDGE) from Khulna, Integrated Social Development Effort (ISDE) of Chokoria,

communication facilities”. In respect of name change the basic logic is not to limit the work only in coastal areas that the network should work whole over the country, accordingly initiatives has already taken to reshape or increase the membership especially with proper representation of the regions of the country.

As it has decided in the very formation stage the network likes to work in the ICT (information and communication technology) sub sectors of amateur radio, formation of radio listeners club, community radio and television, internet radio, telephone facilities, internet line in coastal and rural areas, power generation through solar and wind mill and citizen band radio.

### **5.1 Major activities done so far**

**Amateur Radio:** During June 2000 the network has organized a training with funding support from OXFAM-GB especially to create amateur radio operators in coastal areas, accordingly two NGO leaders succeeded to pass the examination and commissioned two amateur radio stations both respectively in Barisal and Chittagong. After formation of BTRC (Bangladesh Telecommunication Regulatory Commission) a stagnate situation has created and for last three years no amateur radio examination have held and no new license has issued. BNNRC continuously pursued the chairman of BTRC gave applications and hearing. Very recently a committee has been formed to conduct the examination, dates have been fixed, and BNNRC chief executive officer is also the member of the committee. Amateur Radio examination held during 12-15 January 2004. BNNRC invite application from nationwide and prepare 200 people by 4 days of course in cooperation with FAIRS (Foundation for Amateur Radio International Service) and COAST. Inauguration and concluding have done in such a way that it has got coverage in national media and thereby got popularity in general media. Promoting Amateur Radio is fundamental to build alternative emergency communication system especially in remote areas, international friendship without interference from government and promotion of research in the sector.

**Community Radio:** BNNRC is the member of South Asia media group promoted by UNESCO, the network has participated in Kotmale-Srilanka workshop in this regard during 2001. In country the network has given a presentation on community radio in an inter ministerial meeting organized by the Ministry of Science and Technology. The network is also cooperating with MMC (Mass Line Media Center) another leading organization involved in media and with other organizations in this regard to have a favorable policy environment.

Government is going to prepare a national broadcasting policy i.e., considering to allow non-government private radio especially FM through a concrete policy (although it has already done for BBC and VOA). BNNRC is pro active to pursue the government to allow FM especially to NGOs and community. i.e., in this respect private, public and community sector should have a fair play like what is happening in other countries, even in SAARC countries.

Preparation of Government Participation in World Information Summit: BNNRC was the member of the government committee on preparation of participation in the summit. The network has cooperated with the Ministry of Science and Information Technology for a seminar on the issue to inform the nation and media on the issue during December 2002.

during February 2003. BNNRC was also co sponsor of the Global Knowledge Partnership (GKP) conference held in Dhaka during 2002. BNNRC members have actively participated in the workshop.

**Membership:** There are two types of membership, i.e., as trustee and as partners. A person from coastal area or an organization working in the coastal area can be the member of the organization. The members should have following criteria, i.e., they have to be non-partisan in politics, and trustee members are not be allowed to get subsidy or any sort of allowances. They must be inhabitants of the 19 coastal districts or working in those districts and who have knowledge on electronic media will get preferences.

The Board of Trustee must have at least three meetings in a year. At least six-chapter committee will be formed in regions; the chapter committee will meet at least once on six-month basis. All the trustees and partners will meet together at least in one general meeting once in a year.

### **Contact**

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[Contact e-mail : info@bnnrc.net](mailto:info@bnnrc.net)

## **6 The Mass-line Media Centre (MMC)**

Mass-line Media Centre (MMC) is a media related NGO, which upholds the philosophy that the access of the grassroots level people to the media expedites the process of participation. MMC was emerged back in 1995 by the initiative of a group of renowned and respectable citizens as a reflection of their thoughts on social welfare and development arena and envisaged to follow a decentralized communication policy for the promotion of human rights and democracy. Till then MMC is working with the vision that freedom of opinion, expression and free flow of information in the media is ensured.

However, the mission of MMC is to strengthen local media through skill development and training of the media professionals, networking among the development workers, social leaders, human rights activists, and civil society members who play a vital role to change the existing centralized media for an alternative and people oriented system.

MMC has its coverage over nine coastal districts of Chittagong and Barisal Divisions. The head office of MMC is located in Dhaka, while the two media centres and one media sub-centre are established in Noakhali, Patuakhali and Barisal.

### **Contact**

Head Office

1/20, Humayun Road, Block B, Mohammadpur

Dhaka 1207, Tel 88-02-9125077, 8123446, Fax 88-02-9121627, email: [massline@bangla.net](mailto:massline@bangla.net)

## **7 Bangladesh Rice Knowledge Bank**

The rice growing environments in Bangladesh are very diverse, varying from drought prone high lands

feedback. BRKB contains rice knowledge to address the regional as well as national issues associated with rice production and training. It started with rice but extends promise to be expanded to non-rice technologies in future. The extension service providers are the immediate beneficiaries of the BRKB. However, ultimately farmers will be benefited from it. The address of the web site is [www.brkb.org](http://www.brkb.org). The major content of the Knowledge Bank are -

### **Rice Knowledge - National Perspective**

- Fact Sheets - Mainly for Extension Workers
- Reference materials - Mainly for Trainer, Planner etc.
- Materials for Farmers

### **Region Specific Knowledge**

- Northeast, Northwest, Barind, Southwest, Southeast, Greater Dhaka, Greater Mymensingh

### **Research Management**

- Fact Sheets
- Reference Materials

### **Extension Methods**

- Reference Materials
- Fact Sheets
- Posters

### **Integrated Rice Farming System**

- Fact Sheets - For Extension Workers
- Reference Materials
- Policy and other Resources

### **Training Information**

- Needs and Opportunity Assessment Techniques
- Training of Trainers Courses - National Perspective
- Region wise Need Based Training Courses

In addition to the above mentioned clusters of information probations for ***Region wise Feedback from Users*** are also there in the website.

## **8 Resource Center of Coastal Development Partnership (CDP)**

The Coastal Development Partnership (CDP) was originally conceived as a coordinating secretariat for a network of NGOs to relieve the sufferings of the people of the waterlogged areas under the Coastal Embankment Project (CEP). Declared objectives of CDP are:

Services to the information seekers: Apart from several newspaper readers every day, CDP Resource Center provides specific information to information-seekers.

- a. Services to the information seekers: Apart from several newspaper readers every day, CDP Resource Center provides specific information to information-seekers.
- b. Newspapers collection: The newspapers arriving regularly at the Resource Center include local dailies Purbanchal, Janmabhum, Rajpother Dabi (Evening), Gramer Kagoj, Prabartan, and National dailies Bhorer Kagoj, Janakantha, Prothom Alo, Sangbad, The Daily Star and the fortnightlies Muksudpur Sangbad and the Janakantha. Irregular purchases include local dailies Probaho, Anirban, Tathya and Janabarta, and national dailies Ittefaq, The New Age, Jugantar and Aajker Kagoj.
- c. Compilation of Newspaper Clippings: Newspaper clippings are compiled on different subjects including climate change, environment, floods, earthquakes, salinity, shrimp, waterlogging, floating agriculture, riverbank erosion, riverbed silting, river re-excavation, aborigines, road accidents, law and order, arsenic, agriculture, women and child repression, rape, human trafficking, sex workers, dowry, acid terrorism, fishers, suicides, murders, mass arrests, extremists, labor movements, journalist killings, Khulna City, etc.
- d. Exchange of Letters: On special days letters are sent to partner organizations.
- e. Exchange of Publications: Copies of various publications are received at the Resource Center from different organizations. CDP also distribute publications published by CDP and other organizations.
- f. Database maintenance: CDP maintains and regularly update a database.
- g. Training Activities: CDP develop training materials and give training to the staffs of partner organizations.



## APPENDIX 7: INITIATING PARTNERS ORGANIZATIONS FOR ICZM

Organization / Agency	Secto :	Type of Organization
<b>Government / Semi-Government</b>		
Bangladesh Agriculture Development Corporation	Agriculture	Management
Bangladesh Agriculture Research Council	Agriculture	Research Information Collection and Dissemination
Bangladesh Atomic Energy Commission	Minerals	Research
Bangladesh Bank	Economics and Finance	Management
Bangladesh Bureau of Educational Information and Statistics	Education	Information Collection and Dissemination
Bangladesh Bureau of Statistics	Information	Information Collection and Dissemination
Bangladesh Export Processing Zone	Industries	Management
Bangladesh Inland Water Transport Authority	Water resources	Management
Bangladesh Inland Water Transport Corporation	Transport	Management
Bangladesh Institute of Development Studies	Development	Research
Bangladesh Meteorological Department	Meteorology	Information Collection and Dissemination
Bangladesh Parjatan Corporation	Industries	Management
Bangladesh Petroleum Corporation	Minerals	Management
Bangladesh Rice Research Institute	Agriculture	Research
Bangladesh Jute Research Institute	Agriculture	Research
Agriculture Information Services	Agriculture	Information Collection and Dissemination
Directorate of Food	Agriculture	Management
Bangladesh Railway	Transport	Management
Bangladesh Road Transport Authority	Transport	Management
Bangladesh Rural Development Board	Rural Development	Management
Bangladesh Small and Cottage Industries Corporation	Industries	Management
Bangladesh Telephone and Telegraph Board	Communication	Management
Bangladesh Textile Mills Corporation	Industries	Management
Bangladesh Water Development Board	Water resources	Management
Barisal City Corporation		Management
Bangladesh Livestock Research Institute	Agriculture	Research
Rural Development Academy	Rural Development	Research
Bangladesh Academy for Rural Development	Rural Development	Research
Rural Development & Cooperative Division	Rural Development	Management
Cooperative Department	Rural Development	Management
Local Government Division	Rural Development	Management
Directorate of Relief and Rehabilitation	Relief and	Management

Organization / Agency	Sector	Type of Organization
Directorate of Technical Education	Education	Management
Directorate of Secondary and Higher Education	Education	Management
University Grants Commission	Education	Management
Ministry of Health & Family Welfare	Health	Management
Directorate of Women's Affairs	Social and Women Affairs	Management
Directorate of Youth Development	Social and Women Affairs	Management
Implementation, Monitoring & Evaluation Division	Economics & Finance	Management
Chittagong City Corporation		Management
Chittagong Development Authority		Management
Chittagong Water Supply and Sewerage Authority		Management
Department of Environment	Environment	Management
Department of Fisheries	Agriculture	Management
Department of International Development		
Department of Land Record Survey	Land	Management
Department of Livestock	Agriculture	Management
Department of Social Services	Social and Women Affairs	Management
Departmental of Agriculture Extension	Agriculture	Management
Directorate of Primary Education	Education	Management
Directorate of Public Health Engineering	Water	Management
Disaster Management Bureau	Disaster	Management
Economic Relations Division, Finance Ministry	Economics & Finance	Management
Forest Department	Agriculture	Management
Bangladesh Forest Research Institute	Agriculture	Research
Geological Survey of Bangladesh	Gas, Oil and Mineral resources	Research
Khulna City Corporation		Management
Khulna Development Authority		Management
Khulna University	Education	Research
Local Government Engineering Department	Rural Development	Management
Mongla Port Authority		Management
National Board of Revenue	Economics & Finance	Management
Planning Commission		Management
Police Department		Management
Power Development Board		Management

Organization / Agency	Sector	Type of Organization
<b>Project</b>		
Greater Noakhali Aquaculture Extension Project		Management
Empowerment of Coastal Fishing Community for Livelihood Security Project		Management
Patuakhali – Barguna Aquaculture Extension Project		Management
Fourth Fisheries Project		Management
Smallholder Livestock Development Project in Five Southern Districts		Management
Sustainable Environment Management Program		Management Research
Coastal and Wetland Biodiversity Management at Cox's Bazar and Hakaluki haor		Management
Reducing Vulnerability to Climate Change Project		Research
Coastal Embankment Rehabilitation Project		Management
Char Development and Settlement Project		Management
Sundarban Biodiversity Conservation Project		Management
<b>NGO</b>		
Action Aid		Management Research
ASA		Management Research
Association of Development Agencies in Bangladesh		Management Research
Bela		Management Research
BRAC		Management Research
CARITAS		Management Research
Oxfam		Management
Proshika		Management Research
<b>Other</b>		
Bangladesh Agriculture University		Research
Center for Environmental and Geographic Information System		Research
United Nation International Children Emergency Fund		
United Nations Development Program		
World Bank		
Chittagong University		Research
Grameen Phone Limited	Communication	Management