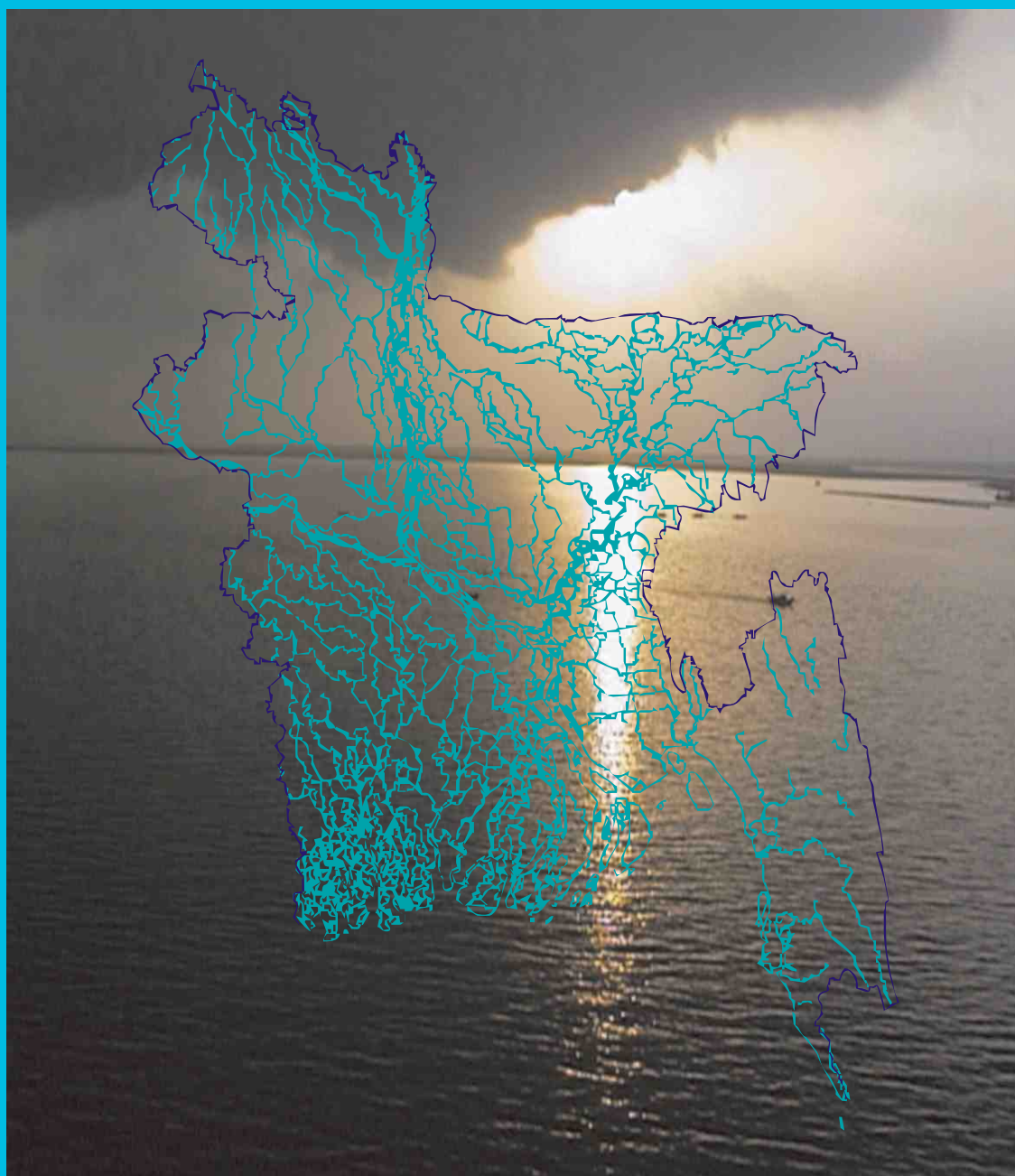


Annual Report

(July 2008 - June 2009)

Water Resources Planning Organization



Government of the People's Republic of Bangladesh
Ministry of Water Resources



Honorable Minister, Mr. Ramesh Chandra Sen, MP, MoWR receiving a set of NWPo and NWMP from Mr. Jalauddin Mhohammad Abdul Hye, Director General, WARPO at his visit to WARPO on 10th June 2009



From left Professor Asif Nazrul, DoL, DU, Dr. Mohammad Ayub Miah, Former Secretary, MoWR, Dr. C. S. Karim, Former Advisor, Ministry of Agriculture & Water Resources, Mr. Jalauddin Mhohammad Abdul Hye, Director General, WARPO and Dr. Ainun Nishat, Senior Adviser, Climate Change of Asia Region, IUCN at the National Workshop on Draft Bangladesh Water Act at Rajendrapur on 29th October 2008



Dr. Nilufa Islam, Director (Technical), WARPO delivering presentation on ICZM at the ICZM Final Workshop on 28th January 2009



Mr. Md. Shahjahan, Director (Planning), WARPO addressing at the closing ceremony of the training course on IWRM at the River Basin Level in Japan on 5th September 2009

PREFACE

Water Resources Planning Organization (WARPO) was established in June 1992 by the Government of the People's Republic of Bangladesh under the Ministry of Water Resources with the principal function of nationwide water resources planning. The apex water sector planning organization WARPO prepared the National Water Management Plan (NWMP) in 2001. The Plan was approved by the National Water Resources Council (NWRC) on the 31st March, 2004. WARPO maintains a National Water Resources Database (NWRD) for use in planning exercises, studies and research. WARPO also act as a Clearing House for all water sector projects to ensure that projects are in conformity with the National Policies and Plans. Very recently a Program Coordination Unit (PCU) has been established according to the Coastal Zone Policy (CZPo) and Strategy to coordinate and monitor the development activities in the coastal area.

An Organizational Development Plan (ODP) has been prepared to upgrade WARPO's capability appropriately to match its functions. Expansion of organizational set up of WARPO is now under active consideration by the Govt.

Under a recently completed project called "Regional Technical Assistance: Supporting Integrated Water Resource Management (Bangladesh)" WARPO drafted National Water Act as enunciated in the National Water Policy to implement the National Water Management Plan. Under the ongoing project called "Water Management Improvement Project (WMIP)" initiative has been taken for the updating and upgrading of National Water Resources Database. WARPO also undertook a study relevant to Ganges and Brahmaputra water resources management in a basin wide approach. Presently under the "Clearing House" function WARPO is reviewing project proposals from BWDB and reporting to the Ministry and Planning commission concerning compliance to the NWPo and NWMP. WARPO regularly disseminates its activities through its newsletters.

WARPO seeks wholehearted cooperation and support from all corners in achieving organizational and professional excellence.



Jalaluddin Md. Abdul Hye PEng
Director General
Water Resources Planning Organization

LIST OF ABBREVIATIONS

ABS	- Access and Benefit Sharing
ADB	- Asian Development Bank
APD	- Academy for Planning and Development
BADC	- Bangladesh Agricultural Development Corporation
BAMWSP	- Bangladesh Arsenic Mitigation Water Supply Project
BARC	- Bangladesh Agricultural Research Council
BDA	- Brahmaputra Dependent Area
BELA	- Bangladesh Environmental Lawyer Association
BIDS	- Bangladesh Institute of Development Studies
BIWTA	- Bangladesh Inland Water Transport Authority
BMDA	- Barind Multipurpose Development Authority
BUP	- Bangladesh Unnayan Parishad
BWFMS	- Bangladesh Water and Flood Management Strategy
BWP	- Bangladesh Water Partnership
CBD	- Convention on Biological Diversity
CBO	- Community Based Organisation
CDS	- Coastal Development Strategy
CDSP-III	- Char Development and Settlement Project III
CEGIS	- Centre for Environmental and Geographic Information Services
CPP	- Compartmentalisation Pilot Project
CZPo	- Coastal Zone Policy
DCH	- Dhaka Community Hospital
DDC	- Development Design Consultant
DDCC	- District Development Coordination Committee
DEM	- Digital Elevation Model
DPHE	- Department of Public Health Engineering
DPP	- Development Project Proforma
ECNWRC	- Executive Committee of the National Water Resources Council
EPWAPDA	- East Pakistan Water and Power Development Authority
ERD	- Economic Relation Division
FCD/FCDI	- Flood Control Drainage/ Flood Control Drainage and Irrigation
FPCO	- Flood Plan Coordination Organization
FRI	- Fisheries Research Institute
FZRM	- Flood Zoning and Risk Mapping
GBM	- Ganges-Brahmaputra-Meghna
GCP	- Ground Control Points
GDP	- Gross Domestic Product
GIS/RS	- Geographical Information System / Remote Sensing
GoN	- Government of Netherlands
GPP	- Guideline for Peoples Participation
GPWM	- Guidelines for Participatory Water Management
ICDDR	- International Centre for Diarrhoeal Disease Research

ICRD	- Integrated Coastal Resources Database
ICZMPP	- Integrated Coastal Zone Management Plan Project
IDA	- International Development Association
IPSWAM	- Integrated Planning for Sustainable Water Management
IRLP	- Indian River Linking Project
IUCN	- International Union for the Conservation of Nature
IWFM	- Institute of Water and Flood Management
IWM	- Institute of Water Modeling
IWRM	- Integrated Water Resources management
KRB	- Karnafuli River basin
KUET	- Khulna University of Engineering and Technology
LFWRM	- Legal Framework for Water Resources Management
MDGs	- Millennium Development Goals
MoU	- Memorandum of Understanding
NAWASIC	- National Water and Sanitation Information Center
NPRS	- National Poverty Reduction Strategy
NWPo	- National Water Policy
NWRC	- National Water Resources Council
ODP	- Organizational Development Plan
PCU	- Program Co-ordination Unit
PIPs	- Priority Investment Projects
P-MIS	- Program Management Information System
PoE	- Panel of Expert
PPP	- Preliminary Project Proposal
RAJUK	- Rajdhani Unnayan Katripakha
RETA	- Regional Technical Assistance
RSF/ PSF	- Rapid Sand Filter/Pond Sand Filter
SIA	- Social Impact Assessment
SPARRSO	- Space Research and Remote Sensing Organization
SRP	- Systems Rehabilitation Project
SSFCDS	- Small Scale Flood Control and Drainage Scheme
TA	- Twinning Arrangement
TPP	- Technical Project Proposal
WASA	- Water and Sewerage Authority
WFP	- World Food Programme
WMIP	- Water Management Improvement Project
WMIS	- Water Management Information System
WMO	- Water Management Organization
WSIP	- Water Sector Improvement Programme
WSSD	- World Summit for Sustainable Development

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1 THE ORGANIZATION

Background

The Water Resources Planning Organization (WARPO) created in 1991 as an exclusive government institution for macro-level planning for management and integrated development of water resources of the country. The Water Resources Planning Act No.12 of 1992 provides the legal framework of WARPO. The Act provides the outline of WARPO's responsibilities in the water sector. In 1999 the National Water Policy (NWPo) gave a fresh perspective on the future role of WARPO. The role of WARPO as outlined in the Act and policy was examined during National Water Management Plan (NWMP) Project, which identified the major roles of WARPO. The National Water Resources Council (NWRC) approved the NWMP on 31st of March 2004. Coastal Zone Policy (CZPo, 2005) has further entrusted an additional role of that entails coordinating all activities in the coastal region through Program Coordination Unit (PCU), which is housed in WARPO. In view of the directives from the NWPo, NWMP, CZPo, MDG and PRS an Organizational Development Plan (ODP) with mission, vision and major role of WARPO has been prepared.

Mandate

WARPO's present mandate comes from Water Resources Planning Act No.12 of 1992. The National Water Policy (NWPo 1999), NWMP (2001) and Coastal Zone Policy (CZPo 2005) has provided additional directives for extended mandate of WARPO. WARPO's proposed revised mandates are given below as derived from Water Resources Planning Act (1992), NWPo, NWMP and CZPo:

Mandates according to Water Resources Planning Act (1992)

- (i) *To formulate water resources master plans in an environmentally sustainable manner and to develop national water resources;*
- (ii) *To draw up national work plans and policy relating to scientific utilization and conservation of water resources;*
- (iii) *To advise other concerned organizations regarding the development, utilization and conservation of water resources;*
- (iv) *To co-operate with any institution in conducting surveys involved in the development of water resources, utilization and conservation and if necessary, conduct special surveys regarding any such matter;*
- (v) *To evaluate and analyze matters which develop due to the undertaking of measures by any institution involved in development, utilization and conservation of water resources and to advise on such matters;*
- (vi) *To develop standards of education, training and professionalism relating to the utilization of water resources;*
- (vii) *To collect and analyze information regarding the utilization of water resources and to disseminate the same;*
- (viii) *To organize and conduct national seminars, and having obtained the prior approval of the Government, international seminars, conferences and workshops regarding water resources;*
- (ix) *To perform such other functions as may be conferred by the Government regarding water resources.*

Mandates from NWPo (1999)

- (x) *To provide administrative, technical, and legal support to the ECNWRC.*
- (xi) *To advise the ECNWRC on policy, planning, and regulatory matters of water resources and related land and environmental management.*
- (xii) *To prepare and periodically update the National Water Management Plan.*
- (xiii) *To setup and update the National Water Resources Database (NWRD) and Information Management System.*
- (xiv) *To act as a "clearing house" for all water sector projects identified by different agencies and reporting to the ECNWRC on their conformity to the NWMP.*
- (xv) *To undertake any special study, as may be required by the ECNWRC, for fulfilling the objectives and programmes envisaged in the National Water Policy and the Bangladesh Water and Flood Management Strategy.*
- (xvi) *Standards of effluent disposal into common watercourses will be set by WARPO in consultation with DOE.*

Mandates from Coastal Zone Policy (CZPo 2005)

- (xvii) *To co-ordinate the development initiatives taken by different agencies in the coastal zone;*
- (xviii) *To establish the Program Co-ordination Unit (PCU) at WARPO.*

Other Mandates as conceived/emerged from NWMP, NWRC and Others

- (xix) *To centrally coordinate and monitor the implementation of the "National Water Management Plan";*
- (xx) *To develop Water Management Information System (WMIS) and Monitor and Evaluate the impacts of the National Water Management Plan (NWMP) and others projects;*
- (xxi) *To prepare and update National Water Law revising and consolidating the laws governing ownership, development, appropriation, utilization, conservation, and protection of water resources."*
- (xxii) *To prepare and update regional and sub-regional plan related to water resources utilization, interventions with in the framework of IWRM;*
- (xxiii) *To prepare and update the National Water Policy (NWPo) and any other policy including regional and sub-regional policy related to Water Resources Management;*
- (xxiv) *To resolve interagency conflicts related to water development and management and report to ECNWRC;*
- (xxv) *To conduct and help in providing specialized, multi-disciplinary and cross-sectoral training on Integrated Water Resources Management (IWRM) and Information Technology and other related fields to relevant agencies;*
- (xxvi) *Upkeep water resources assessment, delineate sub-regions and zones and assist relevant agencies in establishing water stress areas, flood vulnerable areas, zones for brackish aquaculture for planning of new projects and regulations for location of new industries on the basis of water availability and effluent discharge possibilities etc;*
- (xxvii) *To coordinate and monitor and evaluate the implementation of CZPo and CDS and PIP in the activities of ICZM through Program Coordinating Unit (PCU)*

Mission, Vision of WARPO

To formulate a strategic plan for WARPO's development based on the mandate and emerging demand for the implementation of NWMP, it is required that its Mission, Vision and Role are clearly defined.

Mission:

The Mission of WARPO is to achieve sustainable water resources development in Bangladesh by pursuing Integrated Water Resources Management (IWRM).

Vision:

The vision of WARPO is to become the apex organization in macro-level planning, - a center of excellence for the management and integrated development of water resources in the country; the central coordination body for all relevant activities in the water sector; the custodian of National and Regional Water Resources Database and Management Information System, and to act as secretariat to NWRC and ECNWRC.

8th meeting of the Parichalana Board of WARPO

The 8th meeting of the Parichalana Board of WARPO was held on 01 July 2008 in the conference room of WARPO. Dr. C. S. Karim, Former Advisor, Ministry of Agriculture & Water Resources and Chairman of the Parichalana Board presided over the meeting. Mr. Md. Shah Alam, Member (Agriculture), Dr. Md. Ayub Miah, Former Secretary, MoWR, Mr. M. Abdul Aziz, NDC, Secretary, Ministry of Agriculture, Mr. Sekh Khurshid Alam, secretary, LGD, MoLGRD, Mr. Jafor Ahmed Chowdhury, Secretary, Ministry of Planning, Mr. Shekh Enayet Ullah, Secretary, Ministry of Navigation, Mr. A. H. M. Rezaul Karim, NDC, Secretary, MoED, Dr. Md. Mahbubur Rahman, Secretary, Ministry of Communication and Mr. M. Inamul Haque, Former Director General, WARPO were attended presented at the meeting.



Dr. C. S. Karim, Former Advisor, Ministry of Agriculture & Water Resources and Chairman of the Parichalana Board is presiding over the meeting

Following Decisions were taken:

1. Approval of the minutes of the 7th Parichalana board's meeting. DG, WARPO will arrange the Board Meeting in every four months.
2. The Clearing House issue of WARPO will have to present to ECNWRC to send it to NWRC.
3. The revised proposal of Organizational Development Plan (ODP) of WARPO will have to send to MoWR,
4. i) MoWR was requested to contact to ERD for financing of PPP of updating of NWMP-2001
ii) Decision was taken to send the PPP of updating of NWMP to Planning commission
5. Discussed and decision taking in the point 2.
6. Discussed about the matter of WARPO Office building & decision taken that the matter of the building "Pani bhaban Complex" at Green Road will have to move first. How much space WARPO will get & will that space enough for WARPO, one report will be placed on to next meeting

9th meeting of the Parichalana Board of WARPO

The 9th meeting of the Parichalana Board of WARPO was held on 10 November 2008 in the conference room of WARPO. Dr. C. S. Karim, Former Advisor, Ministry of Agriculture & Water Resources and Chairman of the Parichalana Board presided over the meeting. Mr. Md. Shah Alam, Member (Agriculture), Dr. Mohammad Ayub Miah, Former Secretary, MoWR, Mr. M. Abdul Aziz, NDC, Secretary, Ministry of Agriculture, Mr. Sekh Khurshid Alam, secretary, LGD, MoLGRD, Mr. Jafor Ahmed Chowdhury, Secretary, Ministry of Planning, Mr. Shekh Enayet Ullah, Secretary, Ministry of Navigation, Mr. A. H. M. Rezaul Karim, NDC, Secretary, MoED, Dr. Md. Mahbubur Rahman, Secretary, Ministry of Communication, Mr. Jalaluddin Muhammad Abdul Hye, Director General, WARPO were also presented at the meeting.

Following Decisions were taken:

1. Approval of the minutes of the 8th Parichalana board's meeting
2. i) PDPP of Updating NWMP will have to send to the Ministry of Water Resources with in next 10 days (20/11/08)
ii) One sub committee will form leading by Additional secretary, MoWR along with a representative from Planning Commission & WARPO to review the manpower of proposed Organizational Development Plan (ODP).
3. A meeting will be arranged as early as possible for analysis the Clearing house Role of WARPO
4. "ODP manpower review Sub Committee" will submit a report on the need assessment of the proposed additional manpower in the light of ODP.
5. Proposed "ODP manpower review Sub Committee" will submit a report after reviewing the proposal of WARPO building or land.

Honorable Minister Visited WARPO

Honorable Minister, Mr. Ramesh Chandra Sen, MP, Ministry of Water Resources paid kind Visit to Water Resources Planning Organization (WARPO) on 10th June 2009, Mr. Jalauddin Mhohammad Abdul Hye, Director General, WARPO, received the Honorable minister. Honorable Minister was accompanied by Ms. Riti Ibrahim, Additional Secretary, MoWR. Director General, WARPO, made a power point presentation on WARPO's mandated tasks and activities, on-going program, achievements and outputs in view NWPo, NWMP, CZPo and Coastal Development Strategy. Honorable Minister expressed his full satisfaction over the performance of WARPO since its creation. He thanked D.G, WARPO and all Scientists/Professionals.



Honorable Minister, Mr. Ramesh Chandra Sen, MP, MoWR, Ms. Riti Ibrahim, Additional Secretary, MoWR, Mr. Jalauddin Mhohammad Abdul Hye, Director General, WARPO and others are seen in the meeting.

2. ACTIVITIES

2.1 COMPLETED ACTIVITIES

2.1.1 *Regional Technical Assistance (RETA) Supporting IWRM (Bangladesh) Project*

Background

The water policy of the Asian Development Bank (ADB), approved in January 2001, promotes national water sector reforms, integrated water resources management (IWRM), and improved water services for the poor. In addition, the policy commits ADB to regional and subregional cooperation by helping to assess the water sector and to exchange data, enhancing awareness and understanding of water sector issues, and supporting water partnerships and exchanges in ADBs developing member countries.

In 2002, the World Summit on Sustainable Development (WSSD) called for all countries to develop IWRM and water efficiency plans by the end of 2005. During the summit a number of governments and financing institutions including the ministry of Foreign Affairs of the Netherlands, committed financial assistance to encourage institutionalization of changes designed to promote more strategic and coordinated decision-making. These commitments included that of the Ministry of Foreign Affairs of the Netherlands to make an initial contribution to ADB, through a separate technical assistance (TA) arrangement, for the purpose of supporting the process of developing IWRM plans in Bangladesh, Indonesia, Pakistan, and Viet Nam. The specific outputs of the project to (i) contribute to an IWRM Implementation Plan including Road Map, (ii) support specific actions (in the context of the plan) that promote IWRM and improved service delivery, and (iii) conduct stakeholder workshops to disseminate information and solicit feedback.

Key Activities

i) Enabling Environment

Draft Bangladesh Water Act: The proposed Act would translate the National Water Policy into law and thereby ensure integrated management, development, and equitable utilization of the countries water resources. The available draft has undergone an extensive review process. It is expected to become law in 2010. Considerable interest has been generated in the draft legislation including the requirement for specific reference to water resources and their management in CHT. A copy of the draft Bangladesh Water Act was submitted to the CHT Regional Council (CHTRD) on 25 June 2009 for their further review and comment. Any additional comments will also be consolidated and reflected in an updated version.

Water Resources Planning Act: The Act (1992) simply announced the creation of a new organization describing its mandate in general terms but without a set of rules to make it effective. The Act requires amendment to ensure functioning of WARPO as per directives of NWPo (1999), NWMP (2004) and CZPo (2005) and staff composition consistent with evolving requirements of the sector. It is expected to be completed by October 2010.

A National Water Code: The latter term has frequently been used interchangeably with the Bangladesh Water Act but is considerably different in purpose. A code, covering the complete system of law within the water sector would assemble all of the various pieces of legislation to ensure consistency and synergy in application. No work has yet been initiated to this end.

ii) Institutional Framework

Bangladesh Water Development Board (BWDB): The TA Team worked with the Government of the Netherlands financed Twinning Mission to provide input for strengthening day-to-day management of the Board. Two workshops were held jointly with the Twinning Mission, and also a separate workshop that addressed management issues within BWDB.

Interagency Coordination: The efficacy of the Memorandum of Understanding (MOU), a commonly used tool to promote data sharing, was reviewed through two workshops and it was concluded that the MOUs need to also incorporate WARPO's role to coordinate activities of Water Sector in macro planning and as to acting as a clearing house.

Water Resources Planning Organization: WARPOs Organizational Development Plan to support WARPO in promoting and performing day to day activities is under process of approval with the Ministry. It is expected to be approved by December 2009.

iii) Management Instrument Related

Data Management Systems: The TA Team reviewed the steps being undertaken by the Water Management Improvement Project (WMIP) to improve management of data systems. Through discussions with various agencies involved in collecting and managing data, modernization of these systems was explored. It is expected to be completed by December 2010.

National Water Management Plan (NWMP): The National Water Management Plan (NWMP) was finalized in 2001 and finally approved by the Executive Committee of National Water Resources Council (ECNWRC) in March 2004. It was envisaged that the Plan would be updated every five years to reflect social, physical, and political change. The TA Team worked with WARPO to develop an updating process. It is expected to be completed by July 2010.

Water Tariff and Cost Recovery: The existing system was analyzed and, based on discussions with WARPO, suggestions and amendments were proposed.

IWRM Road Map: Progress towards integrated water resources management in Bangladesh has been good. Much remains to be done though primarily in the areas of translating policies and plans into ground reality. The vehicle for this is the institutions responsible for service delivery and despite reform programs, more improvement is needed. Nevertheless, advancing IWRM is a process of incremental steps and the Bangladesh water-related sector is clearly moving in the right direction. The purpose of the IWRM road map is to propose a set of actions that strengthen IWRM in Bangladesh and which can realistically be taken up within the proposed time frame.

Open Forum and Dissemination Workshops

An open forum discussion on RETA Supporting Integrated Water Resources Management was held on 21 June 2009 at the Spectra Convention Center, Dhaka. The Forum was chaired by eminent economist Dr. Kazi Kholiquzzaman Ahmad, President of the Bangladesh Economic Association. Ms. Rita Ibrahim, Additional Secretary of the Ministry of Water Resources attended the forum as the Chief Guest. Lively discussion and interaction among the participants were generated in the Forum in which all the NGO representatives participated. The



Ms. Riti Ibrahim, Additional Secretary, MoWR, Mr. Jalaluddin Md. Abdul Hye, DG WARPO and others are at open forum discussion on RETA Supporting IWRM held on 21 June 2009

discussions included general appreciation of ADB's support to prepare and implement Integrated Water Resources Management in Bangladesh, as well as critical remarks about inadequate involvement of the stakeholders and the civil societies in the preparation of the report and dealt with a number of important issues related to water right and access to water. The issue of water use right and access to water figured prominence in the whole discussion. It was emphasized that right of the poor people to use open water for free fishing which is their main source of protein supply must be ensured and protected in clear language in the proposed Bangladesh Water Act.

A Dissemination Workshop on the draft final report on RETA Project Process: Development for Preparing and Implementing IWRM Plans in Bangladesh was held on 25 June 2009 in Dhaka. This was a high profile event with participation from a range of water sector-related line departments, ministries, academia and other relevant institutions. The workshop was well received and provided a combination of formal morning sessions to present RETA concepts and outputs, overall contextual relevance for water sector and most importantly, the road map for implementation of RETA recommendations. A presentation was also made by ADB, Regional Sustainable Development Department (RSDD) representative regarding ADB initiatives in river basin management. The afternoon session comprised group work on various elements of the overall study to generate a range of views on three main topics: (i) requirements to create an enabling environment to implement improvements in the sector; (ii) review of institutional framework and identification of strengths and weaknesses; and (iii) management instruments to

raise profile of WARPO. These sessions also provided opportunity to provide comments on the draft final report and other outputs of the RETA, such as (i) organizational development plan for WARPO and BWDB; (ii) role of WARPO as a "clearing house" for approval of water sector-related projects; (iii) updating of the National Water Management Plan (NWMP); and (iv) draft Bangladesh Water Act, 2008 and RETA roadmap for subsequent related actions such as updating Water Resources Planning Act, 1992.



Mr. Jalaluddin Md. Abdul Hye, DG WARPO delivering his speech in the Dissemination Workshop on RETA Project

2.1.2 NWRD Maintenance and Management

Computer and Information Section of WARPO is the key section dealing with principally the ICT activities including the development and maintenance of National Water Resources Database (NWRD), maintenance of Network and Computer system, and management of WARPO Library system. The section is also aiming to help other sections of WARPO for appropriate use of the information and for smooth functioning through providing technical support. The Worth mentioning activities of the section during 2008-09 are described below:

Contract for Consultancy Services of Maintenance, Updating and Dissemination of NWRD under Water Management Improvement Project (WMIP), Component 3B-2 (Contract Package No. WARPO/ S2)

One of the mandated key functions of WARPO is to establish and update the National Water Resources Database (NWRD) and make the data available for all concerned towards proper water resources planning and management. During the course of the National Water Management Plan

Project (NWMPP), the National Water Resources Database (NWRD) has been set up at WARPO to meet the demand of planners to provide data from a single database of a single organization. The NWRD project was a parallel project within WARPO to collect and store data relevant to the water sector of Bangladesh. Phase-I of NWRD project was from September 1998 to June 1999 and Phase-II covered July 1999 to June 2002. An operational database was established before July 1999.

The primary objective of establishing the NWRD is to meet the demand of water resource planners by continuous updating of existing database and enhancing it with more information and transforming it to the knowledgebase information. NWRD integrate land use, land cover, climate, environment, socio-economic in conjunction with surface and groundwater hydrology; and use state-of-the-art GIS to maximize data management and decision making in different water issues.

The demand of integrated database outside WARPO is growing over time since the establishment of NWRD. Considering the demand of NWRD, the existing data layers will be updated with the use of advance methodology along with the metadata and tools. The component *3B-2 (Maintenance, Updating and Dissemination of National Water Resources Database) of Water Management Improvement Project (WMIP)* is the gateway for further development and enhancement of NWRD. The project is funded by the International Development Association (IDA) with co-financed by the Government of the Netherlands. The Project is being implemented over a period of about 5 (five) years from May 2009 to June 2014.

WARPO signed the contract with CEGIS on 19 May 2009 for the consultancy services. Mr. Jalaluddin Md. Abdul Hye, Director General, WARPO chaired the signing ceremony. Mr. Narayan Chandra Day, Joint Secretary, MoWR, Mr. Mollah Ruhul Alam, Project Director, WMIP-PCU, BWDB and Mr. Md. Taslimul Islam, Deputy Secretary, MoWR and WARPO officials were present in the occasion at WARPO conference room. Mr. Giasuddin Ahmed Choudhury, Executive Director, CEGIS and Mr. Md Shahjahan, Director (Planning), WARPO and Project Coordinator, WMIP-Component 3B signed in the contract document on behalf of the respective organizations. The contract will expire on June 30, 2014.



Mr. Jalaluddin Md. Abdul Hye, DG, WARPO, Mr. Narayan Chandra Day, Joint Secretary, MoWR, and other officials are seen at the NWRD contract signing ceremony on 19 May 2009 at WARPO

The overall scope of the consultancy services is to assist WARPO in the following activities:

- Update existing and incorporate new layers of data related to water resources, environment and others needed for water resources planning and management;
- Development and update of advanced tools and techniques for data processing and analysis;
- Introduce and apply advanced technology for data capturing in order to improve the quality of data;
- Use of advanced techniques and development of policies for easy data transfer, dissemination and data sharing amongst wider user groups;

Develop and implement project management information system (P-MIS) and make data available to users easily and efficiently;

Develop and implement of monitoring and information system of NWMP programmes; and

Establishment of a high resolution Remote Sensing (RS) Reference Bank and corresponding Ground Control Points (GCP).

Launching Meeting of consultancy services for Maintenance, Updating and Dissemination of National Water Resources Database (NWRD) under Water Management Improvement Project (WMIP), Component 3B-2 (Contract Package No. WARPO/ S2)

A Launching meeting of consultancy services for Maintenance, Updating and Dissemination of National Water Resources Database (NWRD) was held on June 4, 2009 at WARPO conference room to introduce the project component and to establish the connectivity between WARPO and key stakeholders in respect to the project work.

Ms. Riti Ibrahim, Additional Secretary, Ministry of Water Resources, Government of the People's Republic of Bangladesh graced the occasion as the Chief Guest and Mr. Jalaluddin Md. Abdul Hye, Director General, WARPO chaired the launching meeting. 53 esteemed officials from different organizations namely BADC, BARC, BARI, BBS, BFD, BHWDB, BIDS, BMD, BUET, BWDB, CEGIS, DAE, DMB, DoFi, DPHE, DWASA, IWM, JRC, LGED, MoWR, RRI, SPARRO, SRDI, and WARPO were present and made the occasion lively with their valuable suggestions and expectations on NWRD in open discussion session



Ms. Riti Ibrahim, Additional Secretary, MoWR, Mr. Jalaluddin Md. Abdul Hye, DG WARPO and esteemed representatives from stakeholder organizations are seen in NWRD launching meeting on June 4, 2009 at WARPO

NWRD is the major source of water related data in the country and contains data of different agencies, organizations and projects. The NWRD maintains a countrywide database on administrative units, surface water, groundwater, meteorological, socio-economic, soil and agriculture, environment, forest, and fisheries information.

Inception Meeting on consultancy services for Maintenance, Updating and Dissemination of National Water Resources Database (NWRD) under Water Management Improvement Project (WMIP), Component 3B-2 (contract package no. WARPO/ S2)

The Draft Inception Report for Maintenance, Updating and Dissemination of National Water Resources Database (NWRD) submitted on 15 June, 2009. The draft report was distributed among different stakeholder organizations including MoWR and WARPO professionals for their feedback on the issue.

On 24 June 2009, an Inception Meeting was arranged at WARPO conference room to share the approach, methodology, work plan etc, of the Draft Inception Report with the related stakeholders. Dr. Nilufa Islam, Director (Technical) and Convener of the NWRD Reports/Bulletin Evaluation and Finalization Committee of WARPO presided over the meeting. 37 representatives from organizations namely BADC, BARC, BARI, BFD, BMD, BUET, CEGIS, DoE, DoFi, DMB, IWM, JRC, LGED, SoB, SPARRSO, SRDI, WMIP-PCU, World Bank and WARPO were participated in the meeting and made their valuable comments on the draft Inception Report.



Dr. Nilufa Islam, Director (Technical), WARPO and representatives from stakeholder organizations are seen in NWRD Inception Meeting on June 24, 2009 at WARPO

NWRD Data Dissemination

Around 300 external users like agencies, projects, universities, individual researchers have already been benefited from the use of the National Water Resources Database System. Continuously NWRD data are being supplied to internal and external users for different types of research, planning, design, evaluation, monitoring and implementation purpose.

During the year 2008-2009, 12 external users have collected spatial, temporal and other data for the purposes cited below:

Sl. No.	Name of Organization	Purpose of Data Use (Name of Project/Research/Thesis etc.)	Name of Data Layers Disseminated from NWRD
1.	International Water Management Institute (IWMI), Sri Lanka	A project focusing on water availability and access, poverty, and productivity of water and identifying technological, social and policy interventions in different parts of the Indo-Gangetic basin (IGB).	Daily Meteorological data (Rainfall, Temperature, Humidity, Wind Speed, Sunshine Hours), Daily Water Level data, Daily River Flow data.
2.	The WorldFish Center, Bangladesh and South Asia Office, Dhaka	Analysis the water poverty/productivity of 'Gorai-Modhumati Sub-basin' for IGB-Basin Focal project (IGB-BFP)	Digital Elevation Model, Land Elevation Point, Catchments Boundaries of MPO, Statistical Analysis of Water Level and Discharge, Aquifer Transmissivity, Land Use, Waterbodies, Fisheries, BWDB Project Locations, Environmental Parameters etc.
3.	Student, Bangladesh University of Engineering & Technology (BUET), Dhaka	Post graduate project work, "A Study on offtake morphology and conveyance characteristics of Arial Khan river".	Cross section, Water Level and Discharge of Arial Khan river
4.	Institute of Water and Flood Management (IWFM), BUET, Dhaka	Formulation of a research project in the coastal areas of Bangladesh	ADCP and Bathymetry data of Meghna Estuary Study (MES)
5.	Students, KU Leuven University, Belgium	To study on the river side areas of Dhaka city and their impact on the city as a whole (compare wet and dry season), behavior and shifting of the Buriganga and Turag rivers.	Bank lines of Major Rivers on 1973, 1980, 1984, 1993, 1997 and 1999, Detail Rivers 1989 and 1997, Perennial Waterbodies 1989 and 1997, Statistical Analysis of Water Level, Flood & River Bank Erosion etc.
6.	Asian Development Bank (ADB), Bangladesh Resident Mission, Dhaka	Internship project "Recommendations for cyclone disaster mitigation measures in Bangladesh".	Coastline 1997
7.	Student, BUET, Dhaka	Postgraduate thesis entitled "Spatial Planning of Cyclone Shelters based on Vulnerability Analysis".	BWDB Embankment Locations, Industries Location, Roads, Railway Network, etc.
8.	Bangladesh Bridge Authority, Dhaka	Padma Multipurpose Bridge Project	Bathymetry Data conducted by FAP-24
9.	Sheba Phone, Dhaka	For network optimization issue	Thana boundary, Feeder Road Type A of RHD
10.	International Union for Conservation of Nature (IUCN), Bangladesh Country Office, Dhaka	For developing a report on 'Food Security in Coastal Region of Bangladesh'.	Daily Non-tidal Discharge
11.	Water Management Improvement Project, Programme Coordination Unit (WMIP-PCU), BWDB, Dhaka	Scheme Database Inventory and Mapping under WMIP	BWDB Project Locations, BWDB Schemes Information
12.	Irrigation Engineer	For consultancy	Soft copy of 'National Water Management plan (NWMP) Reports'

Technical support for other WARPO sections/activities:

Computer and Information section provided technical help for the preparation of identity cards for WARPO officials and staffs.

2.2 ONGOING ACTIVITIES

2.2.1 Water management Improvement Project (WMIP) Component 3B (WARPO)

Background

The Water Management Improvement Project (WMIP) has been conceived as an instrument for carrying forward the momentum already generated by the Government on its own initiative, which has created an enabling environment for taking concrete action. The project seeks to consolidate and build on the achievements made so far by introducing participatory approaches for rehabilitation and improvement at the scheme level, for strengthening operation and maintenance and for institutionalizing these changes in the main organizations in the water sector. It also intends to develop a dependable database and a pragmatic analytical framework to facilitate the emergence of an integrated water resources management regime.

Objectives

The overall objective of WMIP is to alleviate rural poverty by creating better livelihood opportunities for the local people. This is sought to be achieved by enhancing the capacity of the local community in order to improve the performance of the water management systems. This objective will contribute significantly to the sector goals of increasing agricultural and inland fisheries production and mitigating the adverse impacts on environment by past interventions in the water regime.

The secondary objective is to enhance institutional performance of the country's principal water sector institutions, particularly BWDB and WARPO. This is expected to result in reduced vulnerability and enhanced livelihood opportunities for the beneficiaries, and will also create a favorable environment for improved water resources management by the core water institutions in partnership with the beneficiaries.

Components of the Project

The proposed project consists of three components: (i) System Improvement and Management Transfer, (ii) O&M Performance Improvement, and (iii) Institutional Improvement. Since this is a framework type project, the number of schemes included in component 1 and 2 are notional and will be continuously reviewed during project implementation. Component 3 is further sub-divided into three parts:

Component 3A: BWDB Institutional Improvement

Component 3B: WARPO Institutional Improvement

Component 3C: Program Coordination and Monitoring.

Component 3B: WARPO Institutional Improvement

The project activities under this sub-component would support two core activities, namely, 3B-1: Strengthening of WARPO Organizational and Institutional Development and 3B-2: Maintenance, Updating and Dissemination of National Water Resources Database (NWRD). The item 3B-1: includes TA consultancy (foreign and local) for Institutional Support, local and foreign training, workshops and seminars on Integrated Water Resources Management, office equipment and facilities, and transport vehicles. The item 3B-2: would also include a consultancy service (foreign & local) for maintenance, updating and dissemination of NWRD.

Implementation Arrangement

WMIP will be implemented over a period of 7 years starting from FY 2007-2008. It will be implemented by the main organization in water sector i.e. Bangladesh Water Development Board and Water Resources Planning Organization. Water Resources Planning Organization will implement Component 3B.

Scope of Work under Component 3B

a) Strengthening of WARPO

Activities under this component will support WARPO and the Ministry of Water Resources (MoWR) to perform more effectively the respective roles that have been assigned to them in the existing policy framework. The support will include TA for organizational change, capacity development and training, procurement of transport vehicles and equipments, and creation of physical facilities.

b) Human Resources Development of WARPO

A series of capacity building initiatives will be taken during the project implementation period with a focus on further strengthening of the planning and monitoring capabilities of WARPO professionals through on-the-job training as well as establishment of stronger links with water sector agencies. Continuous training and exposure to experiences abroad are important components in building capacity of WARPO professionals. This activity will also help other personnel working in the water sector including the Ministry of Water Resources, the Planning Commission and the IMED to enhance their planning capabilities.

c) Human Resources Development of other organizations

There is a need to develop other professionals working in water sector through offering them different courses. This will be done by WARPO with the active cooperation of such partner organizations as BUET, SPARRSO, IWM, CEGIS, RRI, LGED, BARC, BIDS and FRI. There is also a provision for training of persons from different organizations connected with the implementation of the NWMP.

d) Updating of National Water Resources Database (NWRD) and IT Support

For purposes of planning, implementation, monitoring and evaluation, water resources managers need access to a wide range of data and information. To upkeep the overall planning process it is necessary to update the database on a regular basis and delineate the knowledge gaps in the sector.

e) Establishment of High Resolution RS Reference Bank and Ground Control Points (GCP)

The overall activity is to establish a high resolution RS Reference Bank and corresponding Ground Control Points (GCP).

f) Network Development

Various agencies are involved in developing their own databases, which are valuable in water resources planning. Unfortunately, there is no system in place, which would allow planners of water resources development and management agencies to have a comprehensive understanding of the present status of data availability in the country. Nor there is any mechanism, which would allow easy access to these data.

Meaningful and operational networks are crucial in performing a proper planning function for IWRM. Examples are: a network of NWMP implementing agencies, and a network of supporting institutes.

g) *P-MIS Development and Implementation*

Under the NWMP project, a Project and Program MIS (P-MIS) has been developed that needs to be upgraded and implemented.

h) *Integrated Design of P-MIS with NWRD*

Update and transfer present MS ACCESS database to Oracle database and also making link with NWRD. Develop strategic position paper and work plan, which among other things: design a set of corresponding indicators; identify the links with the NWRD and propose the corresponding tools; develop procedures for routine data collection; and define deliverables.

i) *MIS Development for NWMP Programme Implementation and Monitoring*

Under this component MIS will be developed for Monitoring and Evaluation of NWMP programmes. This MIS will be linked with P-MIS and NWRD Development. Under this component necessary tools will be developed for evaluating and reporting.

j) *Review and update of ICRD as a Subset of NWRD*

To provide operational link to NWRD, the principal objective of ICRD will be followed to accomplish the ICRD as an open database with access for all concerned users and developed as a subset of NWRD and full mutual access.

Financing of the Project

The total cost of the project is US\$ 136.7 million equivalent. The International Development Association (IDA) financing would be around US\$ 102.26 million, the Government of Netherlands financing would be around US\$ 20.00 million, and the Government of Bangladesh financing including the beneficiary contribution would be around about US\$ 14.44 million. The IDA financing will be on credit basis whereas the Government of the Netherlands support will be as grant administered through the IDA. WARPO portion of financing amounting to about US\$ 3.40 million will be from the Dutch Grant.

Present Status of Project

The Development Credit Agreement of the Project (Credit Number 4359-BD) has been signed between People's Republic of Bangladesh (GoB) and International Development Association (IDA) on 8th October, 2007. The implementation of the project has been started from December 01, 2007 and is expected to be completed by June 2015. The project has been included in the Annual Development Programme of 2007-2008. WARPO has procured Ten Desktop Computers, One Laptop Computers, One Multimedia Projector, One Photocopier, One WD Jeep and One Car during the current fiscal year.

Main activities like (i) WARPO's Organizational and Institutional Development and (ii) Improvement, Updating and Dissemination of National Water Resources Database (NWRD) will be taken up for implementation from the next financial year. ToRs for consultancy services have been prepared and approved and Request for Proposals for procurement of consultancy services under preparation.

2.2.2 *Clearing house Role of WARPO*

Introduction

Board of Directors of WARPO in its 7th meeting (17/10/06) took the decision that "WARPO will clear the projects of BWDB on experimental basis". WARPO effectively started clearing of BWDB projects from December 2007. The procedure of clearing projects is based on the "Scope

of Work" for "Clearing house" outlined in the Organizational Development Plan (ODP, 2006). Comments on the project proposals are documented and based on which a "Clearing matrix" summaries compliance of the project to the predefined criteria. *A sample of Project Clearing Matrix of WARPO is given at the back cover of this Annual Report.* Generally the comments are discussed with the relevant BWDB members in a review meeting and clarifications on certain issues are sought before finalizing the clearance of the project. Between December 2007 and December 2009 WARPO carried out examination of 45 proposed projects.

Projects Reviewed

Following are the number of projects under each category:

<u>Project Category</u>	<u>No. %</u>
i) Flood Control (FC);	1
ii) Flood control, drainage and Irrigation (FCDI);	9
iii) Drainage (D)	3
iv) Irrigation (I);	5
v) Erosion control (EC);	26
vi) Institution	1
Total	45

Flood Control, Irrigation and Drainage (FCDI)

As indicated in the NWPo, future rural FCD interventions are likely to concentrate on rehabilitation and, where possible, scheme handover, rather than new projects. Any new FCDI project proposal in the rural area is a non-NWMP project which should follow strict procedure of detail feasibility study including environmental and social assessment. Any rehabilitation of FCDI should also follow environmental audit with environmental management plan.

Flood control projects are proposed in the cluster "Agriculture and Water Management" and "Major Cities".

Irrigation (IRR)

NWMP interprets that public irrigation schemes may be taken up where justified, with or without protection and drainage works. Irrigation projects are covered in the cluster "Agriculture and Water Management ". There were three irrigation (IRR) projects screened by WARPO under "Clearing house" during this period (Appendix-A).

Drainage (DR)

The issue to reduce flood intensity, crop damage reduction through reducing drainage congestion without impacting the environment Policy directs to "*De-silt watercourses to maintain navigation channels and proper drainage*". Drainage projects are covered in the cluster "Major Rivers" and "Agriculture and Water Management" of NWMP. However drainage improvement has been proposed as an integral part of four FCDI and FCD project proposals during this period.

Bank Protection from Erosion (EC)

There are clear directives about protecting important places, properties, and industries from erosion. Erosion control projects are covered in the clusters "Major River" and "Town and Rural Areas" cluster of NWMP.



A field visit by WARPO officials at Gybandha under Clearing house role of WARPO

Compliance to National Water Policy and National Water Management Plan

Majority of the projects proposed by BWDB is in conformity with National Water Policy and National Water Management Plan.

Poverty Reduction Strategy

Clearing house requires that following issues are closely examined as relevant in each category of the project:

- Will the investment aid land-lessness and pauperization?
- Affected /displaced people are planned for proper rehabilitation?
- Any income to be generated for poor rural men & women (tk/person)?
- How much the project will generate employment in the project?
- Is there any provision for compensation of the project-affected people?

Therefore project formulation should take care to address the issue related to poverty in light of the above.

Participatory Water Management

There is a clear directive of the NWPo to follow guidelines for participatory Water Management (GPWM) in all project preparation. However majority of project has been prepared without rigorous participatory approach of consultation with the stakeholders. In all FCDI projects' excepting few there has been some kind of consultation during the feasibility study. In case of bank protection scheme there is hardly any stakeholder participation following GPWM in appraisal. It is recommended that assurance of cost recovery from the stakeholders during and after the implementation of the project especially the O&M cost is required as per policy directives.

Almost every FCDI, I project lacks in attaining commitment from the stakeholders about recovery of O&M cost of the project as directed by the Policy

Integrated Water Resources Management (IWRM)

"Clearing house" screening intends to examine the implementation of IWRM in the project following the issues in relevant category of projects:

Irrigation Project:

- Potential use of groundwater should be limited to safe yield of groundwater aquifer;
- Surface water development should be in conjunction with the use of groundwater for overall efficiency;
- Surface water development should not disturb the water bodies linked with bio-diversity;
- Surface water use for agriculture should be planned integrating uses of others e.g navigation, flushing for water quality, fishery, salinity control, sedimentation;
- Rules for water allocation for in-stream needs (ecological, water quality, salinity control, fisheries and navigation) during low-flow periods
- Minimum flow in the stream/khal must be maintained to provide adequate habitat for dominant species;
- Upstream use of irrigation water should be taken into consideration of downstream water uses;

Flood control Project:

- Flood control project should have minimum interference on fisheries;
- Participation of the beneficiaries should be integrated with the O&M of the project;
- The impact of the flood control project should have minimum impact in terms of change in flood regime, e.g. increase depth, duration of inundation in the adjacent area;
- Integrating land acquisition with the overall benefits of the project;

Duplication or Conflict:

The project is examined whether the project is overlapping with any other project of other organizations or individual/ group initiatives or a duplication of the previous project. For this type of check it is required a good map showing all the existing and proposed project by different organization, which is always missing in the proposal. A reliable database has been developed under District Water Resources Assessment (DWRA) being implemented by LGED which provides list and map of the projects completed, ongoing and proposed project by different agencies. However it is desired these information are incorporated in the pre-investment or feasibility report for such examination.

Apart from that possibility of conflict among the stakeholders in the project area should be investigated during feasibility study through public consultation. Possible conflicts about embankment cut, cross passage of fish across embankment, conflict of upstream and down stream use of same water sources; public acceptance about land acquired/proposed for acquisition etc will be investigated examining the feasibility study. Unfortunately many project proposal do not contain feasibility study. It is advised that full feasibility report should prepared before its implementation.

Environmental Assessment:

It is mandatory to undertake environmental assessment for any intervention. Any FCDI projects require full EIA is carried out in the feasibility stage. Rehabilitation of any FCD require environmental audit for its rehabilitation. Irrigation project requires at least initial environmental

examination to be carried out during pre-investment study. Unfortunately new FCDI, rehabilitation of FCD have been found not to comply with the requirement.

In case of bank protection projects there was no environmental examination or assessment in majority of the.

Social Impact Assessment

It is mandatory to undertake social assessment for any intervention. It is expected that social assessment will be incorporated in the feasibility study. In absence of detail social assessment public consultation may be carried out to address the envisaged social issues, women and children are given priority in the consultation. Assurance is required that women participation (gender issue) been given due consideration during planning stage. Few excepting some FCDI projects Social Impact Assessment have been carried out.

Guidelines for Project Assessment

There exist a Guideline for project Assessment for flood control, drainage and irrigation project developed during FAP project. It is expected that the guideline is followed in the assessment in the feasibility report. It is required that alternative options are adequately examined and appropriate procedures are followed in the project assessment. All most all projects cost benefit are analyzed as per guidelines. However assumptions in costing (O&M) and benefits are not always considered properly. There is a need for development of guidelines for river bank protection projects, Irrigation projects, drainage projects updating the existing GPA.

Appropriate tool and procedure

It is required that adequate tool and procedure is followed in the feasibility study of each project. The methodology adopted and the models and other applications need to be of acceptable according to recent standards. It was found that bank protection schemes are very often uses option analysis using modeling techniques. There is a Manual for Erosion Control Assessment by WARPO, developed during FAP 21-22. "Clearing house" requires that the methodologies described in the manual should be followed in any bank protection schemes.

Recommendations

- i) New guidelines and manuals are required to be prepared and old one updated to aid project preparation in the water sector. New guidelines will have legal weight whereas manuals will be advisory only.
- ii) BWDB is required to follow the existing guideline GPWM for participatory planning of projects;
- iii) BWDB is required to follow existing manual "Guidelines and design manuals for standardize bank protection structure of WARPO (FAP 21)" for bank protection in the assessment of bank protection projects.
- iv) DPP should incorporate linkages of the project objectives with those of the National Water Policy and National Water Management Plan;
- v) BWDB should carry out pre-feasibility/ Feasibility study before preparing DPP for any project.

2.2.3 Organizational Development Plan (ODP) for WARPO

Water Resources Planning Organization (WARPO) created in 1991 is an exclusive government institution for Macro-level planning for management and integrated development of water resources of the country and mandated to formulate water resources master plans in an environmentally sustainable manner and to develop national water resources. The Water

Resources Planning Act No.12 of 1992 provided the outline of responsibilities of WARPO. The National Water Policy (NWPO, 1999), the Coastal Zone Policy (CZPO, 2005), and the National Water Management Plan (NWMP) have extended and further elaborated the role of WARPO. WARPO's ODP defines its role in the policy, planning and regulatory functions, as well as its strategies, structures and the processes required to improve its effectiveness to fulfill the Government's commitment in the water sector. ODP provides a revised organogram with increased manpower and a list of activities to implement the key role of WARPO. The key role of WARPO is to prepare and update the National Water Management Plan (NWMP) periodically, monitor and evaluate the implementation of NWMP, and clear the projects that comply with the directions of the policies and plans of the Government. It is also required that WARPO acts as the Executive Secretariat to NWRC and ECNWRC, maintains a National Water Resources Database and establish a Program Coordination Unit (PCU) to monitor and coordinate relevant activities in the coastal zone as an area of priority.

Overall Progress of ODP:

In the proposed ODP, WARPO request to extend its manpower to perform its mandated function. WARPO proposed to extend its manpower 207 instead of existing 87 posts. But the ministry requests WARPO to make it rational and as per ministry order of 19th November, 2008 a committee have been formed to justify the proposed manpower of WARPO. The 4 members committee was headed by Mr Monjur Hossain, Additional Secretary, MoWR, as Convenor and Dr Nilufa Islam Director (Technical) WARPO as Member Secretary. The other two members of the committee was Mr Dhali Abdul Qaium, Chief Training, BWDB and Engineer Mr. Mohammed Jafar Ullah Senior Assistant Chief, Irrigation Wing of Planning Commission, Bangladesh

The ToR of the committee was:

- Review the last one year activities of WARPO professional as per their charter of duties
- Justification of WARPO Proposal for additional 120 post
- Recommendation on WARPO manpower and others

After 3 meeting (30/12/2008, 06/01/2009 and 19/01/2009) the committee finalized the report and submitted to Secretary, Ministry of Water Resources on 19/01/2009.

The finding of the report was:

- The committee agreed to increase manpower in justified manner
- Committee recommend to increase the manpower 93 instead of 120 as proposed by WARPO

As per recommendation of the committee Ministry of Water Resources requested WARPO to send an executive summary of the revised additional 93 post signed by DG WARPO. Summary Report signed by DG, WARPO sent to ministry on 25th August, 2009 with adjustment of revised (93) manpower and To&E within the Organogram. Ministry further requests to send two (2) more copies through page by page signed in October, 2009. As per request the final copy of ODP sent to MoWR on October, 2009.

Honourable Minister, MoWR, Mr. Ramesh Chandra Sen visited WARPO on 10th June 2009. He was briefed about the activities of WARPO and progress of clearing house function. He felt the need of additional manpower as proposed in ODP and agreed to expedite the process.

Implementation Role of WARPO

Clearing house

WARPO's role of "Clearing House" is viewed as the responsibility of screening all water sector projects based on criteria such as compliance with guidelines, manuals, and standards etc as per requirements of the NWPo, NWMP and NWRC. The clearing house role is also seen as a vehicle to coordinate all efforts by the agencies in the implementation of NWMP. The clearing house role will impact upon the development of a coordinating mechanism for the implementation of NWMP as desired by NWRC in its directives of 31st March 2004. A process has been further strengthened to implement the role of Clearing House initially by clearing BWDB projects as directed by the 7th Board of Directors of WARPO. Apart from that all relevant organizations and concerned ministries has been informed about WARPO's intention to check duplication, overlapping of projects apart from compliance of the project with the NWMP.

Progress under Clearing House Function:

The 8th Board of Directors (BoD) meeting decided to place the Clearing House issue to ECNWRC. Again the 9th BoD meeting of 10-11-2008, decided to place clearing house issues to ECNWRC after gathering experiences with the clearing exercises of BWDB projects. DG, WARPO instructed TF sub-group leaders to prepare report on clearing experiences of BWDB projects progressed so far. A brief report on experience of clearing 40 BWDB projects to be placed in next ECNWRC Meeting.

A working paper on Clearing House has already been submitted to MoWR for discussion in ECNWRC and endorsement of its expanded Clearing House functions on R & HD & LGED. At this stage it is clear that BWDB understood the necessity of involving WARPO in the formulation process of projects. Now, representatives from WARPO are being included in the project formulation process in the form of Task Force and Technical Committee. They are now jointly visiting the projects and are providing their valuable inputs to facilitate the clearance of projects. DPEC and PEC has made it now mandatory that WARPO should give clearance all BWDB projects.

Monitoring and Evaluation

The role of monitoring and evaluation would be pursued especially from the point of view of the review of projects/programs and their impacts on water resources in implementation of NWMP. According to NWMP, strengthening of WARPO's function of monitoring and evaluation requires additional manpower. Nevertheless, in spite of the shortage of manpower WARPO has already undertaken some activities for reviewing the implementation of NWMP programs. The process is expected to be expedited under the WMIP project, which is commenced by 2009.

Progress under Monitoring and Evaluation:

Monitoring & Evaluation of the implementation of NWMP programs require strengthening of WARPO through adequate manpower as per ODP. A fresh proposal of additional manpower submitted to MoWR in the prescribe format of Establishment along with TO&E. Draft conceptual framework for MIS Criteria/Indicator/Tools & Methods is to be finalized under on-going WMIP projects. WARPO incorporated the funding demand to GoB in Mid Term Budget (2008-2009 to 2010-2011). Honorable Minister, MoWR assured in the 10th BOD Meeting held on 25 October, 2009 that WARPO will be given additional fund for implementation of ODP. Comprehensive comments prepared for updating GPWM in view of its applications problem which is submitted to Convenor, Chief Engineer, LGED of the Task force committee on 8th November 2009.

Apex Planning Organization/ Macro Planning

The strategy for the development of the organization as an Apex Planning body requires adequate control over and skill development for policy formulation, assessment, options and strategy selection, drafting of plans etc. It also requires activities envisaged under short-term strategy primarily revolving around future updating of NWMP. A modest increase in manpower under the different sections of WARPO has been suggested to fill gaps in specialized disciplines required for macro planning.

Progress under Macro-planning:

Although the proposed manpower under ODP yet not in place, however WARPO trying to perform its activities as per action plan envisaged in ODP. Preliminary NWMP updating road map prepared and incorporated in RETA Report. A PDPP for updating of NWMP incorporating present Govt. priority issues, e.g. Capital River Dredging. The Draft PDPP of "Updating NWMP" (submitted on 5 July 2009) has been recast according to the guidelines of the ministry and resubmitted on 14 September 2009. A Committee has been formed by MoWR on "Water Sector and Dredging headed" to be chaired by DG, WARPO at the directives of PM office. The committee comprises of members from BWDB, BIWTA, CEGIS and IWM. Two members have been co-opted from Port Authorities. The committee is to formulate a concept note illustrating Policy, strategy and a list of projects for river dredging.

A DPP on Karnaphuli River Basin Management on IWRM prepared and submitted to MoWR on 22nd January 2009. The DPP has been recommended in a DPEC meeting held on April 2009. WARPO & BWDB prepared Thematic Report for PRSP 2009 incorporating water related priority programs targeted to pro-poor growth and poverty reduction, and sent to MoWR on 08-07-09. WARPO submitted a concept note incorporating present Govt. water related priority agenda for Sixth Five Year Plan (SFYP), sent to MoWR on 05-10-09. A comprehensive list of study programs included in the Plan, which are to be implemented during the SFYP. WARPO also prepared a concept note for Development Forum Meeting which is to be held on May, 2010 at Dhaka.

Secretariat to ECNWRC and NWRC

In order to have adequate control in the coordination of NWMP implementation, WARPO needs to establish its position as the Executive Secretariat of the ECNWRC as required by NWPo. The essential function of the Executive Secretariat to ECNWRC will be to provide administrative, technical, and legal support as well as advise ECNWRC on policy, planning, and regulatory matters. The role of an apex planning body and clearing house may effectively be synchronized with this position in the overall water sector activities. In order to address important and complex issues primarily relevant to the resolution of conflicts in the water sector, a neutral position of WARPO is required. Implementing the role of the Executive Secretariat to ECNWRC will enable WARPO to establish such a neutral position. WARPO will also act as the technical secretariat to NWRC (NWMP, 2001) through establishing a Project Management Information System (PMIS). It is envisaged that the roles of ECNWRC and NWRC and their functions will be further reviewed under Regional Technical Assistance (RETA) for supporting IWRM (Bangladesh) project.

Progress under ECNWRC:

An internal Taskforce is constituted to revise the Water Resources Planning Act, 1992. The Taskforce has prepared the draft after a thorough review of the existing one. The revised draft is submitted to DG, WARPO. Meanwhile a proposal is submitted to MoWR with a request to form a high level inter-ministerial committee to amend the Act. Final Report of RETA supporting IWRM (Bangladesh) approved by the Steering Committee. Bengali Version of Draft Bangladesh Water

Act is under preparation. The final report of RETA submitted on 29 August, 2009. It has been mentioned in the TPP (Technical Assistance Project Proforma / Proposal) that the final report should be submitted to ECNWRC. Working papers for ECNWRC on RETA report submitted to MoWR on October 2009.

Information and Database System

WARPO's support to "Information and Database System" is implemented primarily through its role as custodian of NWRD. WARPO needs to become the centre for all appropriate, corrected data, information and knowledge available to a wider range of users and agencies engaged in planning, design, implementation, monitoring, evaluation and research in water and related sectors. It is therefore required that a comprehensive and continued data management effort including establishment of efficient data sharing and exchange protocol among external and internal users is developed. Apart from the routine updating, maintenance and dissemination of NWRD, further enhancement would be required to support the Clearing House role and Monitoring and Evaluation of NWMP. A modest increase in manpower with wider specialization has been suggested for WARPO's extended mandate and for fulfilling its different functions. There is a plan to conduct a major program under WMIP spread over seven years to strengthen WARPO's capacity in implementing the information and database system.

Progress under IDS

IDS section of WARPO enriched with highly valuable water sector database i.e. NWRD, ICRD of ICZMP etc. WARPO Library need to be strengthened through digitizing water sector documents i.e. IECO, FAP, MPO, NWP-I & NWP-II etc. For retention of enriched water sector database & Library, frequent shifting of WARPO building must be avoided. For smooth operation & maintenance of Server & Computer Network, regular fund from revenue budget is necessary. As like as other section IT of WARPO suffers seriously from shortage of manpower.

Maintenance, Updating and Dissemination of NWRD (WMIP: Component 3B-2)' is ongoing. The Inception Meeting of WMIP: Component 3B-2, held on 24 June 2009; and finalized the Inception Report on 29 June 2009. Updating of Data Inventory and Data Needs Assessment is ongoing and about 101 Agencies are identified for data inventory and needs assessment. Administrative Boundary 2001 and Socio-economic data of BBS source are updated. 5 new data layers are already included. Data Dissemination Policy is under finalization process. In house training is ongoing to equip the WARPO professional.

Program Coordination Unit (PCU)

According to the Coastal Zone Policy (CZPo), WARPO is the lead agency for facilitating the coordination activities in the coastal zone through PCU. WARPO's role in this is therefore to coordinate activities in the coastal areas through a mechanism of linkage that will impact upon regional as well as local government institutes in carrying out development activities. In response to the directives of CZPo, the PCU was established at WARPO on 2nd July 2006 by an executive order from the Ministry of Water Resources.

The PCU comprises 22 professionals and three supporting staff. As per the Coastal Development Strategy (CDS) thirteen professionals will be engaged in the PCU through an internal arrangement of the existing WARPO staff. In addition, five professionals will be recruited from different Ministries on deputation. The remaining seven (four professionals and three supporting staff) will be recruited directly.

In an effort by the government to initiate an integrated coastal zone management, a process called the Integrated Coastal Zone Management Plan Project (ICZMPP) was implemented by WARPO in February 2002 and concluded in 31 December 2005. Based on the experiences and lesson

learned during the project, WARPO intends to continue maintaining communication with the District Development Coordination Committee (DDCC) and focal points of stakeholder agencies through the PCU. Coordination and communication will be maintained as well with the Union Parishad through the conventional mechanisms used by different line agencies.

Progress under PCU:

PCU Established in WARPO as per CZPo. A total of 23 Priority Investment Programme (PIP) and 2 District Development Plan (DDP) already prepared, Remaining 17 DDP and more PIP will be prepared.

An Identification Mission for ICZM arranged by EKN fielded Bangladesh on 15th January to 1st February 2009. A wrap-up meeting was held on 01 Feb. 2009 in MoWR chaired by the Secretary, MoWR. The decision of the meeting was 'The Ministry of Water Resources, The Water Resources Planning Organization (WARPO) and the Development Partners would act soon on the immediate actions recommended by the Mission and the full pledge implementation of the suggestions and recommendations of the Mission would follow.

Identification Mission submitted the final report on March 2009. ICZM Mission recommend the ICZM will be implement in three phase:

Phase 0: September, 2009 to June 2010, Preparation of ICZM project documents and support PCU

Phase I: July 2010 to June 2014, for three years TA support project

Phase II: July 2014 to June 2018, for four years preparation of ICZM program

As per recommendation by Identification Mission 3 professionals of WARPO are already deputed in PCU. Two consultants recruited by ENK have already appointed on 1st September 2009 in WARPO and they started working. Implementation of Phase- 0 already started from September 2009. A Focal Point (FP) meeting also conducted in 15th December, 2009 where 32 participants from 22 organization attended and shared their opinions.

2.2.4 Twinning Mission Support

Background

In order to share experience and knowledge as well as to achieve the reform process, a five year Twinning Arrangement between the Ministry of Water Resources of the Govt. of Bangladesh and the Ministry of Transport, Public Works and Water Management of the Govt. of the Netherlands was signed on 22 November, 2000 which was valid until 22 November, 2005. Latter on Twinning Arrangement was extended for another two years (2006-2007). As a follow up of the Twinning Arrangement I & II, to continue the activities of the Mission, Twinning Arrangement-III was signed on 2 March, 2008 which will remain in force for two years and will expire by the end of 2009.

Objectives of Twinning Arrangement

The objectives of the joint efforts and actions under Twinning Arrangement are as follows:

Provide a long term basis for inter-agency/institutional collaboration in the water management sector;

Support the ongoing transformation process in the water sector of Bangladesh;

Strengthen capacities in the field of integrated approaches for planning, implementation and maintenance of water and coastal resources and water related infrastructure including

Activities of the XXI Twining Committee at WARPO

Twinning Committee XXI members were visited Bangladesh from 2-12 November 2008 in view of implementing 2nd Twining Arrangement (MoU) which was signed on 2nd March 2008 in between Govt. of Bangladesh and Govt. of Netherlands. WARPO have one full day session with TC and TF members of WARPO on 4 November 2008. Before beginning of the session TC members had a briefing session with Director General of WARPO. After the session an overall presentation was delivered by Taskforce coordinator followed by sub group presentations. The program continued with progress sharing of RETA study project in presence of RETA consultant team. Overall RETA progress was briefed by Mr. Hasan Parvez, PSO (Eng.) and RETA project Coordinator.



Mr. Md. Shahjahan, Director (Planning) and TF Coordinator, is conducting the Dutch Twining Mission Meeting

Activities of the XXII Twining Committee at WARPO

The Twinning Mission XXII visited Bangladesh 21-28 January 2009. Under the preview of the General Umbrella ToR, the specific ToR of this Twinning Mission (TM-22) in view of WARPO was as follows:

- Briefing with Director General WARPO

- Overall presentation by Director (Planning) & Task Force Coordinator

- Review Progress Taskforce activities of WARPO and consultation session with sub-groups

- Prepare Management Training Program, 2009

- Review of WMIP progress on WARPO component: 3B (Updating NWRD & Institutional Development & HRD)

- Progress Review on Draft Water Act & NWMP updating framework



Mr. Md. Shahjahan, Director (Planning) and TF Coordinator, is conducting the Dutch Twining Mission

Activities of the XXIII Twining Committee at WARPO

The Twinning Mission XXIII visited Bangladesh from 29 March to 08 April 2009. During their stay they met Director General, WARPO on 31 March 2009 and discussed about the objectives of Twining Arrangement-III, goals to be reached at the end of 2009, the progress of WARPO Task Force activities etc. After the meeting two discussion sessions were held between the TM and WARPO Task Force members. The TM members met again with the WARPO Task Force members in a pre



Twinning Mission and WARPO officials are seen in the meeting

wrap-up meeting on 03 April, 2009. Mr. Tom Van der Weeken, Team Leader, TM presented the draft report on the progress of Action Plan and exchanged views with the WARPO Task Force. A wrap-up meeting with TM-XIII was held in the Ministry of Water Resources, chaired by Ms. Riti Ibrahim, Additional Secretary, MoWR on 08 April, 2009. Mr. Tom Van der Weeken, Team Leader, TM presented the overall progress of sub-group activities of WARPO Task Force. Director General, WARPO made few observations mentioning low progress of WARPO activities in terms of Monitoring & Evaluation, continuous upkeep of NWRD, NWMP update etc. He said that all these works are not progressing in line with ODP Action Plan because of shortage of man power. In view of increased mandates of WARPO, DG made a proposal in the meeting requesting EKN through Twinning Committee to assist WARPO in providing some T.A Consultants (junior & mid level) until the additional manpower is recruited in WARPO. Representative from EKN and Team Leader of TM agreed in principle and suggested DG to proceed this issue in prescribed format as done by BWDB earlier.

Activities of the XXIV Twinning Committee at WARPO

The Dutch Twinning Committee -XXIV visited Bangladesh from 14-25 June 2009. During their stay in Bangladesh, WARPO had two days session with the mission members on 17 & 23 June 2009. The Mission members were Mr. Tom V Wekken, Team Leader and Dr. Jaap de Heer. The Mission had a first preliminary meeting with the Mr. Jalaluddin Mohd. Abdul Haye, Director General, WARPO on 17 June, 2009. He briefed the Team Leader about overall progress and problems of WARPO activities in connection with action plan of Organizational Development Plan (ODP) .eg. Clearing house functions, Monitoring & Evaluation, ICZM second phase activities, Revision of Water resources Planning Act of WARPO, Draft Water Act (2008), Updating Status of NWMP, Progress of WARPO WMIP Components (Package-S1 & S2). After briefing session with Director General, Twinning Committee members had day-long session with Taskforce Members which was chaired by Mr. Md. Shahjahan, Director Planning & Taskforce Coordinator, Twinning Committee, WARPO as of ToR of present Twinning Committee:



Twinning Mission members at WARPO

- Progress of WMIP project Activities, especially the Institutional aspects and HRD
- Review progress Taskforce Activities of WARPO & Consultation session with sub-groups
- Strategic Advice of TC-23 and follow up Activities

Second session was commenced with the overall presentation from the chair reflecting summary progress of six sub-groups and Regional Technical Assistance (RETA) Study output eg. status of Water Act (2008), NWMP updating road map and progress on ICZM second phase activities. After overall presentation, six sub-group presentations which is organized under six main implantation role of WARPO were presented by subgroup leaders.

On 23 June, 2009 Twinning Committee and WARPO had a half day pre-wrap session to discuss and reaching consensus on problems and prospects identified in detailed progress review consultation meeting which was held on 17 June 2009. It was agreed that in the wrap up meeting (which was held in MoWR on 24 June 2009) following main recommendations would be raised:

Present Govt. Choice regarding the water sector, as River Management and especially dredging as a way to train rivers get much attention

In the update of NWMP, an overall vision on river management is needed and WARPO will take care

TM recommends WARPO to really take the lead in ICZM

All these main recommendations were presented in Twinning Committee-24 wrap-up session & discussed and the decisions were taken below:

- 1 More participants should be included from Ministry of Water Resources in the taskforce and also in the sub-groups especially on Human Resource Development;
- 2 Project Director (PD), Water Management Improvement Project (WMIP) will take every step to release fund immediately in favor of management training so that MT should be held during September-November 2009;

2.2.5 NWRD maintenance and management

Activities of Maintenance, Updating and Dissemination of National Water Resources Database (NWRD) under Water Management Improvement Project (WMIP) Component 3B-2 (Contract package no. WARPO/S2)

Updating of Existing Data layers: Presently, NWRD contains 406 data layers that are categorized into 10 broad groups. Each group is classified into several data types. Each data type contains data layers composed of **time series, spatial or attribute data**. To upkeep the overall planning process it is necessary to update the database on a regular basis and delineate the knowledge gaps in the sector. All the existing data of NWRD **will be updated with recent information available in respective data collecting agencies under component 3B-2 of WMIP. WARPO** has signed the contract for Consultancy Services for Maintenance, Updating and Dissemination of National Water Resources Database (NWRD) on 19 May 2009. From June 2009, Updating of Administrative Boundaries of Union, Thana/Upazila, District and Division from Population Census 2001 Book published by Bangladesh Bureau of Statistics (BBS) are going on. Also, the updating of socio-economic data from BBS source (Population Census 2001, Household Information, Agriculture Information, Tribal Population.etc.). are in progress.

2.2.6 Impact Assessment of the Proposed Indian River Linking Project for Inter Basin Water Transfer

WARPO has undertaken the study project entitled *Impact Assessment of the Proposed Indian River Linking Project for Inter Basin Water Transfer* to evaluate possible implications of the proposed Indian plan of water withdrawal from the Ganges and the Brahmaputra. The estimated cost of the study project is Taka 279.38 lakh to be provided by the Government of Bangladesh.

The study project comprises of two components, namely the Water Resources Support Component and the Environmental Support Component. The purpose of the study is:

- To develop a clear understanding of the adverse impact of the IRLP on Bangladesh;
- Establish the nature and magnitude of the impact on a credible scientific footing, and;
- To support the Bangladesh Negotiation Team by providing them with data and analyses that will withstand rigorous scientific review by analysts of IRLP and its sponsors and backers.

The Institute of Water Modeling (IWM) and the Center for Environmental and Geographic Information Services (CEGIS) in association with Development Design Consultant (DDC) Ltd. have been contracted as consultants to carry out the study. A six-member team called "Panel of

Expert (PoE)” from IWFM of BUET, IUCN, BIDS, BELA & BUP has been appointed to advise and guide the activities of the study project.

The Project was an eighteen months project, started in March 2007 and ended in December 2009.

2.2.7 On-going Collaborative Research Projects

WARPO has been involved in a number of applied research projects in collaboration with different institutes in the country.

Research Project with IWFM, BUET

WARPO is involved in two collaborative research projects with the Institute for Water and Flood Management (IWFM) of the Bangladesh University of Engineering and Technology (BUET) and Institute of Water Modelling (IWM). The study with IWFM was launched officially in September 2005. WARPO professionals are actively participating in the activities.

Development of a Water Resources Model as a Decision Support Tool for National Water Management

Implementation of Integrated Water Resources Management (IWRM) requires an analytical framework comprising a system of model and tools to assess the impacts of different management options and analyze alternative strategies under different external scenarios. The Water Resources System Model forms the central part of these water management tools.

The research project will develop a grid-based water resources model in the context of the country's flood plain hydrology. The model comprises a coarse resolution global hydrologic model for the Ganges-Brahmaputra-Meghna (GBM) basin, a fine resolution National Level Hydrologic Model and a wetland focused Water Balance Model for Haor basin for wetland management in the Northeast region of Bangladesh. This is a three-year project, which is expected to enhance computational capacity in macro level planning of WARPO.

2.3 FUTURE ACTIVITIES

2.3.1 NWRD maintenance and management:

A. Activities of Maintenance, Updating and Dissemination of National Water Resources Database (NWRD) under Water Management Improvement Project (WMIP), Component 3B-2 (Contract package no. WARPO/ S2)

Updating of National Water Resources Database (NWRD) and IT Support

For purposes of planning, implementation, monitoring and evaluation, water resources managers need access to a wide range of data and information. The tasks involved are:

Updating existing data layers and metadata

NWRD prepared a data inventory report of about 24 organizations related to the water sector and has made an assessment of the needs of users within and outside WARPO. Under WMIP, the data inventory and the need assessment will be updated on a routine basis. At present, 406 data layers are available in NWRD. These will be incorporated more than 50 data layers from CDSP in recent times. These data layers will also be updated and additional layers are to be included following the recent information available with such data sources as the Bangladesh Bureau of Statistics (BBS) census, BWDB (hydro-meteorology) and others as well as GPS (survey, satellite imagery, and field surveys). Metadata will be updated accordingly for each of the updated layers describing the overall process of data generation. The existing river models will be used to generate and update data for NWRD. Model-GIS interface will be used to generate flood maps for different flood frequencies for planners and water managers.

Output

- Need assessment report on the basis of last NWMP requirement and external users;
- Updated inventory of data layers available with different data holding agencies;
- Incorporated or updated data layers on hydrology, hydrometeorology, social and environmental and other features and metadatabase for NWRD;
- Incorporated and updated value added model results; and
- Flood maps of different flood frequencies.

Establishment of a service and help desk in WARPO

To improve the use of the database within WARPO, training alone is not sufficient. A set of exercises can be developed to retrieve data, do simple analyses, and print and plot the results from every data users workplace. Under this activity, consultant will also provide the services to procure hardware and software for WARPO. Assist in establishing a service and helpdesk for internal and external data users and developing additional dissemination material to establish a NWRD help desk for internal WARPO support and network assistance.

Output

- A design document for development of on-line help desk of NWRD;
- Assistance for preparation of maps, data analysis, presentation and plotting results and network trouble shooting;
- Assessment and documentation report for service and help desk at WARPO; and
- On-job training and facilitation of WARPO professionals on use of database and application tools and system.

Operational Network and Establishment of Computer system

Under this item, necessary steps will be taken to operate and maintain WARPO's computer systems. This includes personnel and material support for such activities as professional assistance for keeping the existing hardware and software configuration operational, network maintenance, Internet support, all sorts of IT, Website support and IT training.

Output

- A guideline for smooth functioning of NWRD and WARPO computer system.

Quality Control Guidelines and Quality assessment

Develop *Quality Control Guidelines* for collection, processing and presentation of both spatial and time series data with the ultimate aim of improving and guaranteeing the quality of the data.

Output

- Finalization of reports on two (Time Series and Spatial) quality control guidelines;
- Procedures and systems within WARPO for data quality assessment based on *Quality Control Guidelines*; and
- Measures for quality improvement of spatial data layers.

Web-enabled NWRD Database and tools development

Develop a web-application for NWRD to make individuals to access the NWRD in a secure and robust way through the Internet Explorer or Netscape browser running on individual PCs. This activity will cover the pilot test of web casting of NWRD.

Output

Updated existing web enable database application with more user friendly and wide accessibility options;

Web enabled metadata base on the Internet;

Update and improvement of some of the important existing tools for searching, viewing and editing; and

A web-enabled WARPO library system with linkages with other such library system including library systems of BWDB, CEGIS, IWM and other Organizations.

Present Status

Tentative Work Schedule for the year 2008-2009 and 2009-2010 has been prepared.

B. Maintenance of Network and Computer System of WARPO:

Procurement of Equipment under Water Management Improvement Project (WMIP)

Need Assessment and Procurement Plan for Computer hardware and software will be prepared for improving and smooth functioning of the computer & network system of WARPO.

C. Other Routine Activities

Besides the aforesaid activities under WMIP (Component 3B-2), some of other routine activities of the Computer and Information section are briefly described below:

Dissemination of data and information from NWRD to external and internal users

Network maintenance including management of servers and IT supports

Procurement and installation of computer H/W, S/W and ancillary equipment

Maintenance of inventory of all hardware, software and accessories, inventory of users and issue registers

Maintenance of virus protection facilities, backups facilities, and licenses.

Maintain and update intranet and internet facilities including website, mailing system (Mail server, users accounts)

Scanning, CD-writing, Digitizing etc..

Digital data analysis, map production

Presentation material preparation

Maintain the digital archive of documents, reports, presentation etc. as available from different sections of WARPO

Activities for Twinning Mission

Providing IT support of projector, laptop and digital camera for different seminars, workshops, conferences and meetings of WARPO

2.3.2 *Impact Assessment of Climate Change in the Coastal Region of Bangladesh with possible Adaptation Measures*

Background:

Bangladesh is already experiencing climate related hazards like floods, droughts, cyclones and others, which are being aggravating following climate change (and variability). Its flat deltaic topography with very low elevation makes it more vulnerable to climate change. About 80% of the land is floodplains with very low mean elevation above sea level with the rest made up of hills and elevated lands.

The country is highly vulnerable to climate change as its economy is heavily reliant on climate-sensitive sectors like agriculture and forestry, and its low-lying densely populated coastline is threatened by sea level rise. Bangladesh is located in the lower part of the world's 3 largest rivers (the Ganges, the Brahmaputra and the Meghna) where these rivers meet with the sea. Major part of the rainfall occurs during monsoon. Hence, monsoon flooding is a regular phenomenon in Bangladesh. The combined effect of this monsoon flooding and climate change-induced sea level rise poses an extra threat to the coastal region of Bangladesh. The frequency and intensity of natural disasters like floods, cyclones, storm-surges, tidal bores and droughts are very high in Bangladesh and which will be exaggerated due to changed climate.

Bangladesh has about 710 km long coastline. The coastal zone is low-lying with 62% of the land have an elevation of up to 3 metres and 86% up to 5 metres from mean sea level. The Bay of Bengal is a northern extended arm of the Indian Ocean. Impacts of sea level rise will spread in a wide range of areas and sectors existing in the coastal zone. These areas and sectors are basically natural and man-made. The natural systems in the coastal zone consists of variety of land forms and eco-systems which have important conservation value such as estuary, islands, coral reefs, sandy beaches, wetland including mangroves. These natural systems will respond to sea level rise in their own ways, in which some systems are likely to be seriously damaged and even disappear in the worst case.

On the other hand, the reduced flow from upstream and salt water intrusion from downstream due to sea level rise could change the temporal and spatial variation of salinity which could eventually affect the total eco-system of the coastal region of Bangladesh. Hence, it is crucial to predict the degree and extent of the possible impacts of sea level rise as a basis for preparing responses to climate change.

About 28% of the population lives in coastal zone. The population is expected to increase from 36.8 million in 2001 to 43.9 in 2015 and to 60.8 million by 2050 (PDO-ICZMP, 2005a). A one meter rise in sea level would inundate 17% of Bangladesh (Ali and Huq, 1989), has a great impact on social, economic and overall environment of Bangladesh.

Objectives

The main objective of the project is to assess the potential impacts of sea-level rise and increase of precipitation (climate change) on flooding, agriculture, forest, coastal environment and livelihood of the coastal communities of Bangladesh and devising of potential adaptation measures.

Specific Objectives:

- Prediction of climate change impacts on coastal flooding for the year 2030, 2050 and 2100 in accordance with fourth assessment report of IPCC (AR4, 2007) and SMRC;
- Assessment of inundated area of Coastal districts at upazilla level in respect of changed scenario ;
- Risk assessment due to increased intensity of cyclone , storm surges, salinity intrusion & droughts;
- Assessment of vulnerability & risk of damages of coastal infrastructure;
- Investigation on tidal penetration and salinity intrusion during dry season
- Impact assessment on agriculture, forestry, fisheries & biodiversity.
- Population exposure and degree of impacts
- Socio-economic impacts on livelihoods of coastal communities
- Develop capability of WARPO as Apex planning organization in dealing with climate change issues; and
- Explore options to adapt with the climate change.

Expected Outputs

The expected outputs will be as follows:

- Baseline condition on coastal flooding, tidal penetration and salinity intrusion;
- Baseline condition on livelihood of coastal community;
- Inundated area due to climate change for the projected year 2030, 2050 and 2100;
- Assessment of risk of damages of coastal infrastructure;
- Impact on agriculture, forestry, fisheries & biodiversity.
- Impacts on livelihood of coastal community
- Potential physical adaptation measures and community based adaptation measures

Implementation Arrangement:

WARPO will have the overall responsibility of implementing the project. A steering committee chaired by the Secretary, MoWR will be established. The committee will be consists of representatives from relevant ministries, departments, agencies and experts concerned. The committee will be responsible for overall guidance, interministerial coordination, review and approval of reports.

On the other hand a Project Technical Committee (TC) with representative from relevant organizations as experts having appropriate positions in their organization will be formed. The committee will assist WARPO to access data and information needed and provide guidance to the steering committee in the project implementation

Relevance with other Development Programs of the concern sector:

The project will provide lists of action plans to be implemented by concerned agencies that use of water resources or affects the water resources. Agencies concerned including their respective Ministries are BWDB, BADC, Local Government Division, LGED, BRDB, DPHE, WASAs, BIWTA, BMD, DMB, DoForest, DoFisheries, DoE, DAE etc.

Estimated Costs: 230 Lakh taka

Present Status: The PPP has been sent to ERD by the Ministry of Water Resources (MoWR) for funding from Cool Earth Partnership, Japan.

2.3.3 Surface Water Development Plan for Alternative Source of Drinking Water Supply in Arsenic Affected Areas

Background

The Government of Bangladesh has made significant commitments for the improvement of water, sanitation and hygiene for the people of Bangladesh. These commitments reflect the Millennium Development Goals (MDGs), poverty reduction through the PRS and other national targets for water and sanitation.

The Bangladesh Government has adopted the “National Policy for Safe Water Supply and Sanitation 1998” with the purpose of ensuring that all people have access to safe water and sanitation services at an affordable cost and also to ensure that development in the water supply and sanitation sector is equitable and sustainable. A “Sector Development Framework for Water and Sanitation sector” has been prepared for the implementation of the policy. In order to assess the impact on poverty reduction actions “The Pro-poor Strategy for Water and Sanitation” has been adopted.

Arsenic contamination of groundwater in shallow aquifers has prompted the Government to adopt a “National Policy for Arsenic Mitigation 2004 & Implementation Plan for Arsenic Mitigation in

Bangladesh” to mitigate the effects of arsenic on the people and environment in a holistic and sustainable way.

The study would enable to identify all the surface water sources and provide a suitable framework to prioritize safe water supply options for implementation. The project is relevant with the goal and objectives of the five-year plan. Arsenic mitigation in Bangladesh is a priority issue. Therefore, implementation of this project will provide arsenic free safe water to the distressed people in arsenic affected areas.

Purpose

Use of surface water for drinking requires proper evaluation and management of surface water resources. The project would make a detailed assessment of the availability of surface water resources, its usability in terms of quality and quantity and sustainability of sources and develop a strategy to popularize the use of surface water for arsenic mitigation.

Overall Objectives

The overall objective of the project is to develop a comprehensive understanding of the availability of surface water resources and develop a plan for its best utilization for the purpose of arsenic mitigation and safe drinking water supply in the affected areas. The specific objectives are as follows:

- Assess surface water resource availability;
- Develop a methodology for systematic appraisal of different alternative options for drinking water supply;
- Operate and maintain river sand filter as an option for safe and low cost drinking water in arsenic affected areas
- Develop a strategy and implementation plan for surface water use as sources of drinking water supply in arsenic affected areas

Scope of Work

- i) Inception and literature review
- ii) Problem analysis
- iii) Development of a conceptual framework
- iv) Design and development of a database
- v) Development of a computational framework
- vi) Development of strategies/options
- vii) Implementation of RSF/PSF in the pilot area
- viii) Evaluation of strategies/options
- ix) Development of a Strategy and Implementation Plan
- x) Field investigations and stakeholder consultations

Outputs

- i) In-depth surface water resources availability and quality analysis in the arsenic affected areas;
- ii) Development of a GIS database on contamination and resources available in all the sources;
- iii) A computational framework and tools to evaluate alternative options for drinking water supply;
- iv) A report on a strategy and implementation plan for using surface water as an alternative source in the arsenic affected areas.

Implementation Arrangement

WARPO will have the overall responsibility of implementing the project. A Steering Committee, chaired by the Secretary, MoWR, will be established. The Committee will be composed of representatives from Ministries, agencies and experts concerned. The committee will be responsible for overall guidance, inter-ministerial coordination, review and approval of reports.

A Project Technical Committee (TC) with representatives from 8 different organizations/agencies as experts having appropriate positions in their departments will be formed. The committee will assist WARPO to access data and information needed, and provide guidance to the Steering Committee in the policy directives for the study.

Inputs from Partner Agencies

NWRD will be used extensively for information on the availability of surface water resources. Update of information on resources availability will be contributed by model studies and satellite image analysis for identifying water bodies (static, flowing) etc. IWM and CEGIS will assist with their models and GIS expertise to generate the database.

Secondary information will be collected from NAWASIC (DPHE), BAMWSP, BWDB, DoE and NGOs involved in the implementation of alternative options for safe water supply in arsenic affected areas for the purpose of the study. The hydrological data to be used include rainfall, evaporation, water level, discharge, groundwater level and salinity monitored through the network of BWDB, BIWTA, DPHE and other sources in the area.

Social acceptability analysis will be done for the existing options in the area and some of the surface water options will be implemented in pilot areas. Collaboration with the Dhaka Community Hospital and International Training Network - BUET (ITN-BUET) or any other NGOs may be made to assist in the implementation of the water supply systems in special study areas.

Cooperation Arrangements

The project would be implemented by WARPO in cooperation with partner agencies like BWDB and DPHE. No additional agreement on cost sharing or any other cooperation agreement with the partner agencies would be required.

Project Budget

The total budget of the study would be Tk 58.632 million.

Present Status

The Ministry of Water Resources has approved the project on 1st August 2005. Possible funding arrangements for its implementation are still under investigation.

2.3.4 Updating of National Water Management Plan (NWMP)

Background

The National Water Management Plan (NWMP, 2001) has been prepared through a series of projects which was approved by the National Water Resources Council (NWRC) on 31st March 2004. The Plan promotes the coordinated development of water and related resources with its main focus on water supply and sanitation especially in the urban areas. It was intended that the NWMP would be updated every five years periodically. In the mean time WARPO has prepared its Organizational Development Plan (ODP) with the assistance of Dutch Twinning Mission; the Plan outlines the activities required for the updating of NWMP. WARPO carried out "Regional Technical Assistance (RETA) supporting IWRM (Bangladesh), April 2009" aided by ADB-GoN, which made some subjective analysis of the NWMP implementation and also made several recommendations setting direction of NWMP preparation.

Since the completion of NWMP in December 2001 new problems, objectives and new priorities of actions have emerged; there are some issues to be looked into a fresh, e.g, climate change, arsenic identified, development in the co-riparian countries and also international policy and strategies have changed. The first Poverty Reduction Strategy Paper was introduced for the period from 2005 to 2007 and a second Poverty Reduction Strategy Paper (NSAPR 2) was prepared in 2008. The two strategic blocks of NSAPR 2 has direct relevance to the NWMP and these are: critical areas of focus for pro-poor economic growth, which includes water resources development and management; and human development, which includes water supply and sanitation. The strategy for water resource development (except for water supply and sanitation) presented in this NSAPR 2 is broad and somewhat open-ended. The proposed revised and updated NWMP has the potential to provide strong direction to the accelerated poverty reduction planning process. New policies strategies e.g. Coastal Development Strategy and Coastal Zone Policy (2005), Land Policy, Arsenic Mitigation Policy (2004)., Pro-Poor Strategy for Water and Sanitation Sector in Bangladesh (2005), National Sanitation strategy etc need to be reflected in the formulation of strategies and actions in the NWMP.

Objective of the Project:

In line with the necessity of updating NWMP aforesaid the overall objective of the project has been set to update the National Water Management Plan (NWMP) 2001, addressing emerging new challenges, planning needs, institutional reforms, refine the long-term national water management strategy and revise the portfolio of programs of the NWMP for the medium and the longer term. Specific objectives are as follows:

- i) Update the National policies and Strategies and harmonize with new developments both Nationally and Internationally;
- ii) Assess the implementation of NWMP;
- iii) Development and establishment of a framework for systematic evaluation and assessment of water resources management strategies within the broader multi-sectoral resources allocation context;
- iv) Assess Bangladesh's water and land resources and their medium and long term potential and constraints;
- v) Strengthen the framework to enable stakeholder participation in the water sector planning process and regular public review of progress;
- vi) Prepare planning guidelines, manuals, standards etc for dealing with water sector planning and management;
- vii) Establish a unified code of practice in the Flood and Water development and Management.
- viii) Implementation of Organizational Development plan of WARPO

Output of the Project:

The updated National Water Management Plan will have four main categories of outputs. These are:

- A) Plan: Updating of the National Water Management Plan comprising four main components:
 - (i) a consensus document consolidating the policy and strategy framework set by Government within which water sector plans are to be developed,
 - (ii) a long-term Water Management Programme to the year 2035, and within this a Priority Programme to the year 2015, identifying structural and non-structural measures and their expected impacts to be implemented at national and regional level,
 - (iii) an investment portfolio of national, regional and sub-regional projects prepared by sector agencies and screened by WARPO, and

- B) Institutions: A well trained and operational WARPO according to Organizational Development Plan (ODP)
- C) Instruments: a People's Participation and Consultation System (PPCS) to support future planning efforts, criteria and procedures for screening projects for inclusion in the investment.
- D) Reports: A series of working papers and reports providing background to technical aspects of the supporting studies and recommendations on institutional, legislative, economic and environmental issues.

Scope of Work of the Project:

- i) Review the implementation of NWMP and investigate what results or impacts emerged out of the implementation of programs, evaluate how effective and efficient the programs has been.
- ii) Analysis of water resources system, demand and impacts of variety of options under different scenarios;
- iii) Investigation of groundwater use and its implication with the present development situation combining arsenic and other quality problems as long-term implication;
- iv) Investigation of salinity intrusion in the coastal aquifer as a result of increase abstraction, anticipated sea level rise and define required strategy in the coastal area;
- vi) Investigation of existing measures in river maintenance, erosion control, land accretion and coastal zone management;
- vii) Investigation on long-term implication of climatic changes and propose appropriate responses in the short, medium and long term plan;
- viii) Assess the in-stream demand and establish key indicators for the sustained development of environment;
- ix) Review of current status of Arsenic mitigation, future extent of contamination and the implications for food safety, domestic water supplies and appropriate strategies suggested;
- x) Establish a reliable database with information of water quality, identification of pollution points, distribution of pollution and exposure to ecosystem, human health including standardization of quality parameters etc;
- xi) Upgrade the ongoing NWRD updating process under the Water Management Improvement Project (WMIP) with additional tools and data layer for required for planning;
- xii) Carry out People's Participation and the associated consultation process to incorporate people's needs, views and preferences during updating of NWMP;
- xiii) Develop manuals, guidelines, standards required for water sector planning and management;
- xiv) Update program portfolio of NWMP for implementation in the short term, medium and longer term. The implementation plan will include responsible implementation body along with their responsibilities, list of resources required, time and phasing and costs involved.
- xv) Examine investment portfolio of national, regional and sub-regional projects prepared by sector agencies to establish “clearing house” role of WARPO.
- xvi) Establish a procedure for routine monitoring and evaluation of NMWP implementation at WARPO;
- xvii) Implement other important role of WARPO as illustrated under the Organizational Development Plan;
- xviii) Review of vulnerability and risks due to all water related natural disasters such as erosion, flood and cyclone and update the structural and non-structural options for its mitigation;
- xix) Preparation of guidelines for planning, implementation and maintenance of roads, highways, railways and cross drainage structures, brings and flood mitigation embankments, appurtenant structures and water ways carried out in an integrated manner with emphasis on unimpeded drainage;

Expected date of Commencement and Completion

Start date: July 20010

Completion date: June 2013

Estimated amount and cost of the proposed project

Total estimated cost of the Project is 115.2 crore TK (16.57 million US \$). Expatriate support would cost 22 percent of the cost to employ 161 person-month and Local expertise would cost about 45 percent (including special studies) of the cost to employ 554 person-month.

2.2.5 Karnafuli River Basin Management (Bangladesh) on IWRM

Background

Bangladesh is criss-crossed by hundreds of rivers and streams. The basin area of all the major rivers falls in Bangladesh and its neighboring countries. So far management of water resources had been on a sectoral basis. Present concept implies management with a holistic approach through Integrated Water Resource Management (IWRM) at basin scale.

The Karnafuli River is situated in the south-eastern part of Bangladesh. Originating from the Lushai hills in Mizoram, India, it flows 270 km southwest through Chittagong Hill Tracts (Rangamati district) and Chittagong into the Bay of Bengal. Innumerable streams join the river carrying water from upstream catchments area. The total basin area is approximately 12,500 sq.km. Most of which lie within Bangladesh. The topography of the part of the Karnafuli river basin is fairly flat and low but the upstream portion falls in hilly areas. The basin area is shown in Fig. 1. The Karnafuli Hydro-power station, the only hydro-electric power plant in Bangladesh, was constructed in Kaptai in 1962. An earth-filled dam on the Karnafuli River created the Kaptai Lake, which acts as the water reservoir for the hydropower station. The

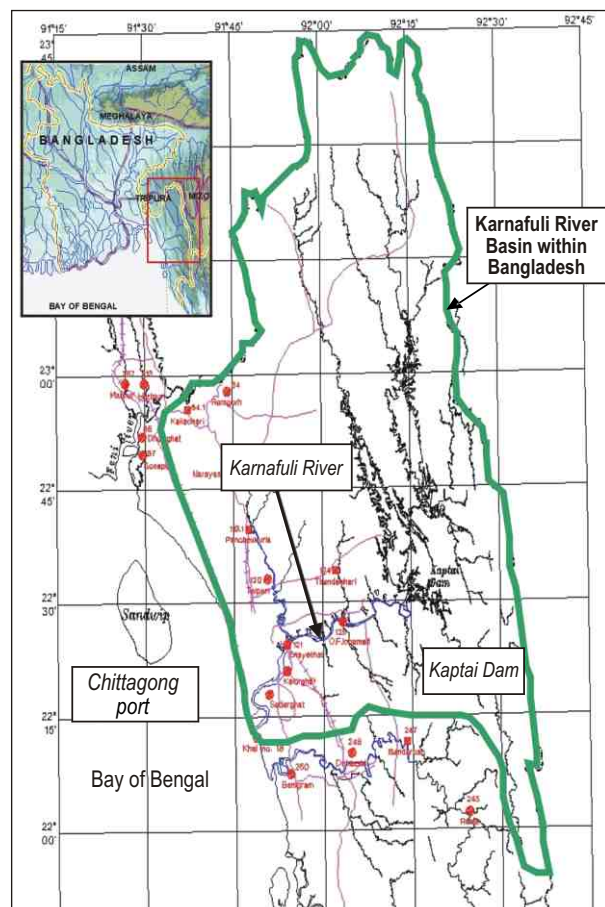


Figure: Karnafuli River Basin area within Bangladesh

The power plant produces a total of 230 megawatts of electricity. The mouth of the river hosts Chittagong sea port, the main port of Bangladesh. The climate in Bangladesh is that of a typical monsoon zone and is clearly divided into rainy and dry seasons. The Karnafuli River basin (KRB) area lies in the path of heavily moisture-laden monsoon winds. The rainy season extends from June through September and about 80% of the annual rainfall is concentrated in this season. The average annual rainfall in the area is estimated at 2200 - 3600 mm. Although the humidity is 35% - 45% from November through March, it becomes 80% or even higher during the rainy season. Wind is generally considered to be mild except during strong thunderstorms and cyclones. The maximum wind velocity recorded is 60 m/s. Such winds occur generally in May through October.

Five to ten cyclone taking place in the Bay of Bengal in one year, one-third hits Bangladesh. One of the highest recorded tides due to cyclone was 6m to 9m in Chittagong in 1970. Another major cyclone occurred in 1991.

Goal

The goal of the project is to ensure the sustainable Integrated River Basin Management of the Karnafuli river basin (within Bangladesh).

The objectives of the project are:

To ensure the sustainable Integrated River Basin Management (Within Bangladesh) of the Karnafuli River basin.

Supporting continuous efforts in the process of establishing Integrated Coastal Zone Management (ICZM) in Bangladesh as specified in Coastal Zone policy (CZPo) and Coastal development strategy (CDS).

To improve the capacity of stakeholders in decision making and Basin level Management of Water Resources

To ensure dissemination of information and data to all stakeholders and obtain feedback for transparent decision-making and ownership building.

To increase the understanding of river basin management, including roles of different organisations, use of management tools to facilitate integrated management of common resources.

Present Status

Study Proposal for Karnafuli River Basin (within Bangladesh) Management on IWRM was sent to Ministry of Water Resources on 22-01-2009. PEC (Project Evaluation Committee) meeting on Study Proposal for Karnafuli River Basin (within Bangladesh) Management on IWRM was held in the Ministry of Water Resources on 27-04-2009 under the chairmanship of the secretary, Ministry of Water Resources. The study proposal has been corrected following the decisions taken in the PEC meeting and sent it to Ministry of Water Resources on 19-07-2009 for further action.

2.3.6 Strategies for Reducing Vulnerability to Floods

Background

Bangladesh has witnessed several unprecedented floods. Severe floods are ruining the economy of the country and causing immense hardship to the people. The Bangladesh Water and Flood Management Strategy (BWFMS) summarized the lessons learnt in 1995 through implementation of FAP and recommended a combination of structural and non-structural measures for future flood management in the country. It is important now to review the current approach of the country to flood management and develop revised strategies to reduce future vulnerabilities originating from flood disaster.

Objectives

The overall goal of the study is to develop a comprehensive understanding of recent floods and propose actions/guidelines to facilitate future preparedness in facing major floods through policy and practices and thereby reducing vulnerabilities due to flood. The specific objectives are as follows:

To learn lessons from the past to prepare for the future.

To facilitate changing the conventional mind set and influencing present practices to become more proactive for combating flood.

To develop a protocol for damage assessment by different sectors.

To develop a sector-wise user manual that can be used as a standard guideline for flood preparedness.

To conduct an environmental assessment with focus on urban flooding in Dhaka City and propose actions to be embodied in the Master Plan.

To facilitate preparation of a transitional strategy linked with the long-term policies and strategies for major floods.

Proposal for a medium-term and long-term plan of action.

Scope of Work

The study will encompass the following major tasks:

- Analysis of recent major flood events (with special focus on flood 2004)

- Assessment of damages due to flood

- Flood vulnerability assessment

- Managing urban flood in Dhaka city

- Comprehensive and integrated flood management policy and strategy for Bangladesh

Duration: June 2005 up to December 2006 (as per PPP)

Estimated Cost: Taka 240 million

Present Status

The project has been proposed to be implemented through donor assistance. The Preliminary Project Proforma (PPP) of the project has been sent to ERD by the Ministry of Water Resources for finding prospective assistants.

2.3.7 Flood Zoning and Risk Mapping for Floods in Bangladesh

Background

After the devastating flood of 1998, Bangladesh once again witnessed an unprecedented flood in the year 2004. The majority of the country went under water for at least one month. Disruptions and damages to economic activities and loss of lives/properties caused by the flood were quite significant. The floods of 1987 and 1988 drew a lot of attention and a Flood Action Plan (FAP) was initiated. The Government declared the Bangladesh Water and Flood Management Strategy (BWFMS) in 1998 as an outcome of the FAP studies. Many of the BWFMS concepts were carried forward onto the National Water Policy (1999). Bangladesh needs to think seriously about a long-term strategy for flood. Since there is a risk of reoccurrence of such floods in the mid-term it is also prudent to prepare a medium-term strategy as well as a long-term strategy based on all previous experience. The strategy should be based on the most effective combination of measures to secure and enhance the community's asset base and measures to provide improved external services. In this context, Flood Zoning and Risk Mapping (FZRM) is considered to be urgently needed.

Objectives

The specific objectives are:

- Analyze all major recorded floods in terms of flooded area and damage
- Classify (ranking) the major floods in terms of depth, duration and frequency
- Classify flooded areas (zoning) as severe, moderate, mild and none in terms of depth, duration and frequency
- Flood risk assessment and mapping

Duration: July 2006 up to June 2008 (according to TPP)

Estimated Cost: Taka 50 million

Present Status

The PPP of the project has been sent to ERD by the Ministry of Water Resources for finding prospective development partners.

2.3.8 Development of Updated Digital Elevation Model (DEM) for Bangladesh

Background

After the devastating floods of 1987, '88 and '98 Bangladesh experienced the fourth unprecedented flood in 2004. The majority of the country went under water for more than a month. There is no comprehensive plan for an effective flood forecast and warning system for the management of the huge volume of floodwater coming from the neighboring countries and reduction of damage. A Digital Elevation Model (DEM) generated from updated land level data in this context is expected to provide one of the essential means of establishing an effective and visually understood flood forecasting and flood management system for the food and livelihood security of the poor and vulnerable groups.

Objective

Objective 1: The objective of the project is to develop an updated land level database in the form of DEM and topographic maps for Bangladesh with an ultimate objective to support:

- Development of an effective and people oriented flood forecast and warning system for the flood prone areas;
- Extension of irrigation and drainage facilities to different areas and increase of food security for the people;
- Development of land classification for different purposes including food production, fisheries and aquatic resources, and urbanization with the aim to conserve the social, economic and environmental needs of the future;
- The DEM will also be useful for flood and disaster management, relief and rehabilitation as well as infrastructure development purposes.

Objective 2: Acquire the latest technique of topographic survey at the national level to be able to update the DEM database at shorter intervals of time.

Duration: July 2006 up to June 2009 (as per PPP)

Estimated Cost: Taka 1479 million

Present Status

The PPP of the project has been sent to ERD by MoWR for finding development partners.

2.3.9 Integrated Coastal Resources Database (ICRD), (ICZMP-Phase II) Knowledge management & dissemination

Knowledge management and dissemination is one of the vehicles for establishing coordination and institutionalization of the ICZM process. The knowledge base shall bring and unite the users/partners for ICZM and provide the basis for a holistic decision-making process for the sustainable development of the coastal zone. Emphasis will be given on social communication approaches.

Activities

The major activities will include the following:

- Maintenance and updating of 'Integrated Coastal Resources Database' ICRD (established under the ICZMP project) as the core of the knowledge base

- Preparing guidelines for structuring project database

- Establishing linkage between National Water Resources (NWRD) database and ICRD

- Establishing a 'Resource Center' where coastal zone management related books, reports, and documents from Bangladesh and overseas countries would be maintained. This will become a reference center for all coastal managers. The existing facilities of the WARPO library will be increased.

- Outreach and dissemination through web site, newsletter, library and awareness materials

- Communicating knowledge both horizontally and vertically through partnership development, workshops/scientific meetings and others

- Knowledge coordination including acquisition (receive from partners and knowledge generator), archiving and assimilation and transaction. Establishing protocols for smooth transaction of data and knowledge

- Formation and functioning of knowledge user groups and knowledge generator networks for regular identification of knowledge gaps and pursue knowledge generation

- Tools development for functional operationalization of the knowledge system.

- Supporting knowledge dissemination and social communication through radio and TV.

Output

The expected outputs are as follows:

- Updated and maintained ICRD

- Linkage between NWRD and ICRD

- Improved WARPO library facilities

- Improved knowledge dissemination

Implementation of activities on Information and Data System functions under ODP.

3 WARPO LIBRARY

Responsibilities of the WARPO Library

Maintain and update the web-enabled library information system

Needs assessment of library materials on a regular basis

Inventory of the existing information resources (books, journals, reports, booklets, brochures etc.) available in the country

Collection of available information resources including collection of publication (hard copy & soft copy)

Digitization of hard copy materials

Newspaper clippings



As per the utilization of the WARPO library during the period under review, the following may be referred to:

A number of 38 potential external users from donor agencies, NGOs and other non-government offices, semi-government and autonomous bodies, universities, etc., visited this resource center to browse documents of their interest and needs and to capture information/data relevant to their academic and/or professional purposes.

A total of 110 new documents, reports, journals, newsletters etc., were added to the library during the reporting period, and a considerable number of books, documents, etc., were lent out to WARPO professionals.

Some of the important books/reports/journals that enriched the library during July 2008 June 2009 included:

1. Cyclone Sidr in Bangladesh: damage, loss and needs assessment for disaster recovery and reconstruction, International Development Community, April 2008.
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১৩. সচিবালয় নির্দেশমালা ২০০৮, সংস্থাপন মন্ত্রণালয়.
১৪. উৎসে আয়কর কর্তনের সংক্ষিপ্ত সার ও আয়কর তথ্যাবলী, মোঃ লিটন, সেপ্টেম্বর ২০০৮.
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১৬. ভ্রমণ ভাতা ও পেনশন বিষয়ক বিধি-বিধান, মোঃ এনামুল হক, মার্চ ২০০৭.
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88. CEGIS Special bulletin, April 2009.
89. Enclosed waters-poverty rights, technology and ecology in the management of water resources in Palakkad, Kerala, Jyothi Krishnan, 2009.
90. বাংলাদেশ গেজেট, গণপ্রজাতন্ত্রী বাংলাদেশ সরকারের সকল মন্ত্রণালয়, বিভাগ, সংযুক্ত ও অধীনস্থ দপ্তরসমূহ এবং বাংলাদেশ সুপ্রীমকোর্ট কর্তৃক জারীকৃত বিধি ও আদেশাবলী সম্বলিত বিধিবদ্ধ প্রজ্ঞাপনসমূহ, এপ্রিল ২০০৯.
91. Report of the task force on sustenance of navigation and restoration of natural course and flow of Buriganga River, Ministry of Water Resources, October 2008.

4. PUBLICATION

4.1 PUBLICATION OF NEWSLETTER

The 16th and 17th issues of the WARPO Newsletter were published in September 2008 and May 2009 respectively containing information on all activities of WARPO and its ongoing projects. It also contains news of important meetings, seminars, training and workshops, especially related to the water sectors that were attended by WARPO officials.

4.2 PUBLICATION BY WARPO OFFICIALS (2008 to 2009)

The following papers have been published in International Journals:

1. Dr. Nilufa Islam

Director (Technical), WARPO

Nilufa Islam, Mohammad Alamgir and M. Aminul Haque. 2009. Integrated Coastal Zone Management in Bangladesh. Proceedings of the 2nd International Conference on Water and Flood Management. Volume 1. pp 275-282.

2. Dr. M. Aminul Haque

Senior Scientific Officer, WARPO

M Aminul Haque, Nahid Sultana and AKM Khusrul Amin. 2008. Major Constraints of Groundwater Agriculture Development in Bangladesh: Overview of Institutional and Policy Issues. *Journal of Environmental Science, Technologies and Engineering*. 8 (11 & 12): 44-52.

3. Nahid Sultana

Scientific Officer, WARPO

Nahid Sultana, M. Aminul Haque and Syed Fazle Elahi 2009. Evaluation of Surface Irrigation Water Quality in Muktagacha Upazila of Bangladesh. *Songklanakarin Journal of Science and Technology*. 31(2):229-235.

4. Syed Abu Shoaib

Scientific Officer, WARPO

Syed Abu Shoaib, M Aminul Haque, and Nahid Sultana. 2009. River Basin Management For Economic and Ecosystem Development. *Journal of Environmental Science, Technologies and Engineering*. 9 (3): 18-24.

5. TRAINING AND WORKSHOP

Since the establishment of WARPO, emphasis has been given on developing the skills and knowledge of its professionals through on-the-job training, higher studies, workshops, seminars, etc. at home and abroad. During 2008-2009, officers of WARPO attended different training programs at home and abroad. The details are furnished below:

A) Local Training (Professionals)

Name of the Training Course	Duration	Organizing Agency	No. of the participant
Modern Office Management	03-07 May 2009	RPATC, Dhaka	1
Computer Application & English Language	5 23 April 2009	RPATC, Dhaka	1
Training Course on Oceanography: Principal & Application	01 April- 31 May 2009	NOAMI, Dhaka	2
Medium Term Budget Framework	16 March 2009	FIMA, Dhaka	2
Environmental Development and Disaster Management	08-12 March 2009	RPATC, Dhaka	1
64 ACAD Training	15 February - 30 April 2009	BPATC, Savar, Dhaka	1
Training on Conduct and discipline Course	02 - 12 February 2009	RPATC	1
Training of Trainers (ToT) Course on IWRM Practice: Case Study of IPSWAM	17 22 January 2009	CEGIS, Dhaka	2
Introduction of Arc GIS 9.1	13-15 January 2009	Dhaka University	1
E-Governance & E-Commerce	11-29 January 2009	APD, Dhaka	1
GIS, Database for flood management and flood analysis	16-27 November 2008	IWM, Dhaka	2
Self Development Skills for Project Executive	9-13 November 2008	APD	3
Climate Change Training for Water Professionals	18-20 October 2008 and 17-19 November 2008	BUET, Dhaka	4

B) Foreign Training/Workshop/Conference/Seminar/Meeting

Name of the participant	Name of the Training/Workshop/Conference/Seminar/Meeting	Duration	Name of the country with organizing Agency
Dr. Nilufa Islam Director (Technical)	Least Developed Countries Fund (LDCF) Evaluation Analysis Workshop	13-14 May 2009	Nairobi, Kenya
	Consultation Workshop for Consolidate “the Programme of Sustainable Water Resources Management for Development in the Asia-Pacific Region.”	11-12 December 2008	Manila, Philippine
Md. Siddiqur Rahman Principle Scientific Officer Saiful Alam Principle Scientific Officer	Training Workshop on Integrated Flood Management	11-14 May 2009	Tehran, Iran
Md. Hasan Parvez Principle Scientific Officer	Regional Launch Workshop of the Center for River Basin Organizations and Management (CRBOM)	27 April-01 May 2009	Solo City, Indonesia
Jalaluddin Md. Abdul Hye PEng Director General	Seminar on 5th World Water Forum	16-22 March 2009	Istanbul, Turkey
	Mississippi River Flood Control and Bank Protection Works in Louisiana/ Mississippi Under US Army Corps of Engineer.	15-22 November 2008	Louisiana/ Mississippi, USA
Nur Mohammad Khan Principle Scientific Officer Saiful Alam Principle Scientific Officer	Management Training Under Twinning Mission	04-20 October 2008	Netherlands
A. K. M. Khusrul Amin Scientific Officer	International Training Workshop on “Integrated Coastal Zone Management-2008”	01 September-01 October 2008	Thailand
Fahmida Akhter Senior Scientific Officer	Integrated Watershed Management	18-30 August 2008	Kasetsart University, Thailand

Consultation Workshop on “Sustainable Water Resource Management for Development in the Asia-Pacific Region” at Manila

Dr. Nilufa Islam, Director, WARPO participated in a Consultation Workshop held in Manila from 11-12 December, 2008. The workshop was held based on the conclusions of the Spain Workshop for validating the first draft of the Programme Proposal on Sustainable Management of Water in the Asia-Pacific Region, held on 22 -30 October, 2007. A group of technical personnel from the government, non- government, academic and multilateral organizations, representative from six Asian countries (Bangladesh, Sri Lanka, Vietnam, Cambodia, Indonesia and the Philippines) attended the workshop. The



Dr. Nilufa Islam, Director (Technical), WARPO & other participants are seen in the picture

Philippines involved in the Spain Programme and again met to discuss, clarify and consolidate the final Programme Proposal. The main objective of the Consultation Workshop was to validate and elaborate a final Programme Proposal that will serve as a basis for future cooperation of AECI, the Spanish Cooperation Agency, in the field of water resources management in the Region. The Workshop also provides an opportunity to learn about the role of the institutions participated in the Workshop and exchange views and comments which enriched the Regional Programme Proposal.

International Training Course on Integrated Watershed Management

International Training Course on Integrated Watershed Management was held in Thailand during 18-30 August 2008. The course was organized by Kasetsart University, Bangkok and supported by Thailand International Development Cooperation Agency (TICA). A total of 25 participants from 20 Afro-Asian countries including Afghanistan, Bangladesh, Botswana, China, Egypt, Ethiopia, Indonesia, Iran, Jordan, Kenya, Malawi, Mauritius, Myanmar, Nepal, Sri Lanka, Sudan, Timor Leste, Vietnam, Uganda and Thailand took part in the course. From Bangladesh, Fahmida Akhtar, Senior Scientific officer, WARPO and



Ecotourism in Doi Inthanon National Park, Thailand

Mr. Mohd. Enamul Haque, Assistant Chief (Planning), MoWR attended the course. The training course provided knowledge from both lecture sessions and field trips. It entailed principles of integrated watershed management, watershed ecosystem, people participatory process, and other effective watershed management schemes employed in Thailand such as check dam, watershed classification, vetiver grass for soil erosion control, early warning for flash flood and landslides, ecotourism, GIS application, EIA, highland watershed management etc. There were 10 field trips at national parks, hydrological research center and early warning system, head watershed, highland upper watershed and royal development study center etc. The expected results of the

training course were to build up participant capacity in integrated watershed management and to create a participants network for future cooperation. The end day consisted of country presentations by the participants on integrated watershed management and lessons learnt from this training course.

Consulting Partners (CP) Meeting and Stockholm Water Symposium (SWS) at Stockholm

Dr. Nilufa Islam, Director (Technical) participated in the Consulting Partners (CP) Meeting of Global Water Partnership(GWP) at Stockholm from 15-17 August, 2008 and Stockholm Water Symposium from 17-23 August, 2008. The annual GWP Consulting Partners meeting in Stockholm 15-17 August brought together 165 delegates from 75 countries. This year's focus was the 2009-2013 Strategic Plans. In plenary sessions and working groups, the Consulting Partners, from more than 80 organisations and all members of the GWP net work, contributed significantly to the development of the strategy. The World



Bangladesh Group Visited the Bangladesh Embassy of Sweden

Water Week in Stockholm 17-23 August concluded with 2400 scientists, leaders from governments and civil society declaring that slow progress on sanitation will cause the world to badly fail the **Millennium Development Goals** while weak policy, poor management, increasing waste and exploding water demands are pushing the planet towards the tipping point of global water crisis. Action is crucial, stakes are high and time is running out were key messages coming from the World Water Week in Stockholm. Sanitation and hygiene, climate, water management, ecosystems and business issues were prominent programme focal points throughout the week. Attention was brought to the "water footprint" of consumers, business, industry and agriculture and what individuals and business can do to measure and reduce their impact on shrinking water resources. The theme of the year 2008 was **Progress and Prospects on Water: For a Clean and Healthy World**. The 2009 World Water Week in Stockholm will convene August 16-22 under the overarching theme "Water - Responding to Global Changes: Accessing Water for the Common Good."

6. FINANCIAL MANAGEMENT

WARPO is a macro level national organization with the mandate of a statutory Public Authority under the Ministry of Water Resources, Government of the People's Republic of Bangladesh. The annual expenses of the organization are borne by the development and revenue budget of the Government.

The development budget was made available through the Annual Development Program (ADP) for on-going development projects under WARPO. Moreover, an amount of Tk. 0.80 lakh was received from different organizations as cost for supplying water resources data and information.

The Total Budget and Expenditure during the Year 2008 2009 is presented below:

(In lakh taka)

Name of the Project	Revised Allocation for the year 2008-2009 (Total)	Expenditure up to June 09 (Total)	Source of Fund
a) Technical Assistance Programme:			
i) Impact Assessment of Indian River Linking Project for Inter Basin Water Transfer	157.00	53.76	GoB
ii) Regional Technical Assistance (RETA) Supporting Integrated Water Resource Management (Bangladesh) Project	104.00	81.43	ADB
iii) Water management Improvement Project (WMIP) Component 3B (WARPO)	175.00	93.78	IDA/Netherlands Grant
Sub Total:	436.00	228.97	
Spent on Pay & Allowance	175.38	162.24	GoB
Others	69.62	66.15	
Sub Total:	245.00	228.39	
Grand Total	681.00	457.36	

