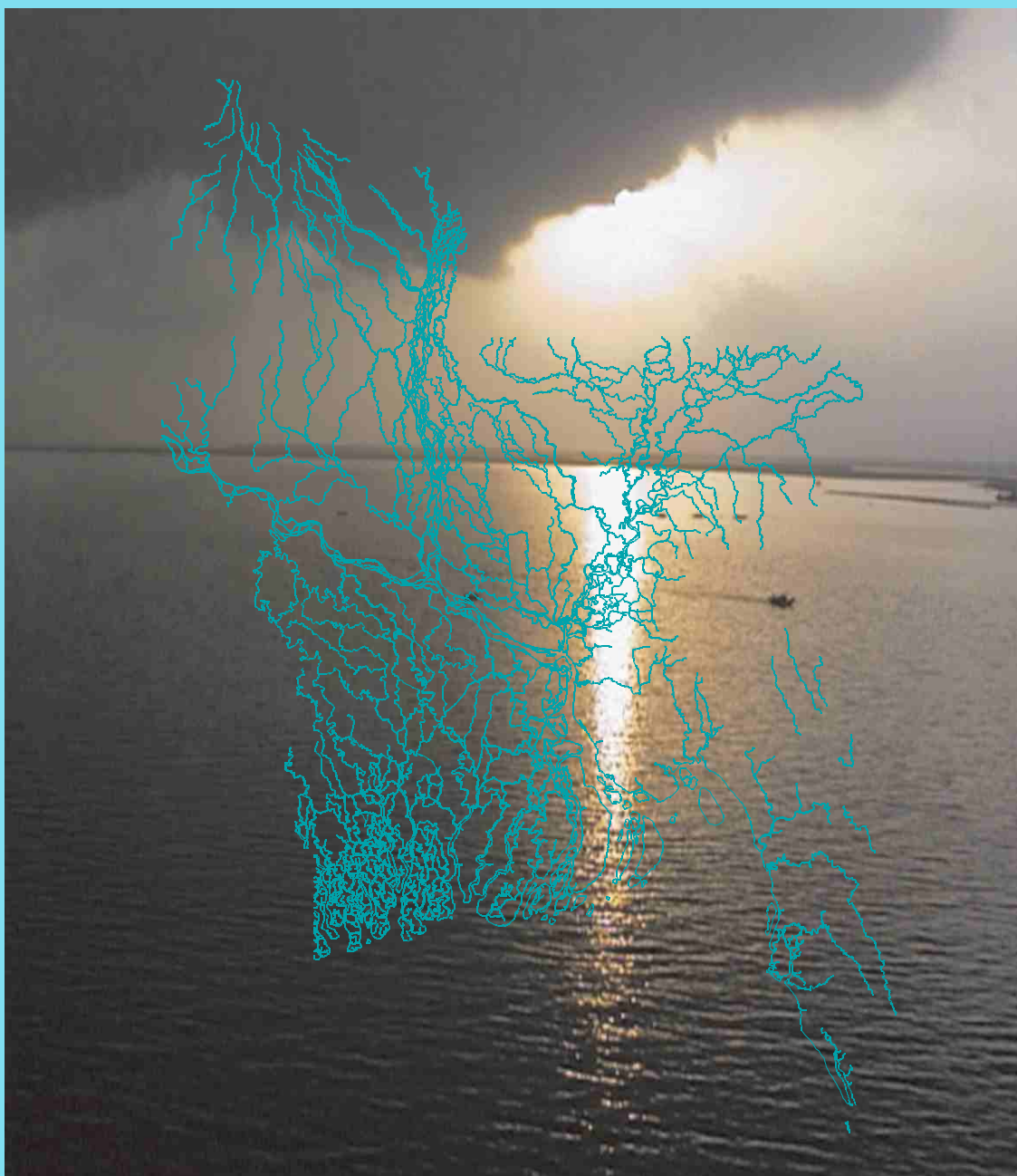


Annual Report

(July 2007 - June 2008)

Water Resources Planning Organization



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



Mr. M. Inamul Haque, Former Director General, WARPO presenting the Keynote paper in the National Dialogue on Developing Coordination Mechanism and Strengthening Apex Body in the Water Sector in Bangladesh organized by BWP and WARPO on 01 August, 2007



From left Mr. M. Inamul Haque, Former DG, WARPO, Mr. H.S. Mozaddad Faruque, Former DG, BWDB, Syed Mohammad Zobaer, Former Secretary, MoWR, Mr. Mahbubul Alam, Former Joint Secretary, MoWR and Mr. Tom van der Wekken, Team Leader, TC attending the Twinning Committee meeting in the Hague, Netherland from 5-9 November 2007



Mr. M. Inamul Haque, Former DG, WARPO seen in the Keynote paper presentation session at the First National Haor Conference on 6 March 2008



Mr. Arzel Hossain Khan, Former Director (Planning), WARPO seen in the International Training Program on Sector Wide Approach on Water Sector on 12-14 November 2007

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 nation wide water resources planning with holistic approach. It is a multidisciplinary organization with a team of highly qualified professionals from a wide range of specialized disciplines.

WARPO has mainly three major national assignments. Firstly, as the apex water sector planning organization it prepared the National Water Management Plan (NWMP) in 2001, that was approved by the National Water Resources Council (NWRC) on the 31st March, 2004 with the provision of updating the NWMP periodically. Secondly, it maintains a National Water Resources Database (NWRD) for use in planning exercises, studies and research. Thirdly, WARPO is to 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 with the help of Dutch Twining Mission to upgrade the WARPO capability appropriately to match its functions. Expansion of organization set up is now under the active consideration of the Govt.

In the mean time monitoring of the implementation of National Water Management Plan (NWMP) programs has been initiated. Review of NWMP has been undertaken under the “Regional Technical Assistance: Supporting Integrated Water Resource Management (Bangladesh)” project. The project has also undertaken to formulate the National Water Act as enunciated in the National Water policy. To facilitate updating of the NWRD, MoUs with different relevant water agencies were signed for data sharing and exchange. Under the “Water Management Improvement Project (WMIP)” procurement of goods and services to upgrade WARPO capability with respect to transport, computers and HRD programme were initiated during this period. Several seminars and workshops were organized both in house and open, on important water resources issues. All these activities were disseminated through three WARPO newsletters.

WARPO seeks whole hearted cooperation and support from all corners in achieving organizational and professional excellence. We extend our sincere thanks and gratitude to all who have helped us in finalizing this report.



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
BUET	-	Bangladesh University of Engineering and Technology
BUP	-	Bangladesh Unnayan Parishad
BWDB	-	Bangladesh Water Development Board
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
DoE	-	Department of Environment
DPHE	-	Department of Public Health Engineering
DPP	-	Development Project Proforma
ECNWRC	-	Executive Committee of the National Water Resources Council
EIA	-	Environmental Impact Assessment
EPWAPDA	-	East Pakistan Water and Power Development Authority

ERD	-	Economic Relation Division
FAP	-	Flood Action Plan
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
GoB	-	Government of Bangladesh
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 Modelling
IWRM	-	Integrated Water Resources management
JRC	-	Joint River Commission
KRB	-	Karnafuli River basin
KUET	-	Khulna University of Engineering and Technology
LFWRM	-	Legal Framework for Water Resources Management
LGED	-	Local Government Engineering Department
MDGs	-	Millennium Development Goals
MoU	-	Memorandum of Understanding
MoWR	-	Ministry of Water Resources
NAWASIC	-	National Water and Sanitation Information Center
NGOs	-	Non-Government Organizations
NPRS	-	National Poverty Reduction Strategy

NWMP	-	National Water Management Plan
NWPo	-	National Water Policy
NWRC	-	National Water Resources Council
NWRD	-	National Water Resources Database
ODP	-	Organizational Development Plan
PCU	-	Program Coordination Unit
PIPs	-	Priority Investment Projects
P-MIS	-	Program Management Information System
PoE	-	Panel of Expert
PPP	-	Preliminary Project Proposal
RAJUK	-	Capital Development Authority (Rajdhani Unnayan Katripakha)
RETA	-	Regional Technical Assistance
RRI	-	River Research Institute
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
TC	-	Technical Committee
TF	-	Task Force
TM	-	Twinning Mission
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 as a Statutory Body. 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 and Role 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.

Role of WARPO

The main role of WARPO defines the main functions of WARPO. The majority of the roles are of a routine nature:

- i. Apex Planning Body
- ii. “Clearing House”
- iii. Monitoring and Evaluation of Water Sector Intervention
- iv. Executive Secretariat to ECNWRC/NWRC
- v. Manage the National Water Resources Database and Information
- vi. Co-ordinate and Monitor Activities in the Coastal Zone

2 ACTIVITIES

2.1 COMPLETED ACTIVITIES

2.1.1 MoUs with Other Agencies for Data Sharing and Exchange

The Water Resources Planning Act 1992 and The National Water Policy (NWPo) have mandated WARPO to prepare and periodically update the National Water Management Plan (NWMP), to maintain, update and disseminate the National Water Resources Database (NWRD) and to maintain an Information Management System.

The 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.

During the period 2007-08, WARPO has signed MoUs for data sharing with Bangladesh Water Development Board and The Transport Sector Coordination (TSC) Wing of the Planning Commission to promote development of the National Water Resources Database (NWRD).

The objective of the MoUs is to establish the relationship and framework of collaboration between WARPO and those organizations with respect to sharing of data.

WARPO has signed an umbrella MoU with Bangladesh Water Development Board (BWDB) on 6 August, 2007 for data sharing. As per the MoU, WARPO can share its own data with BWDB and WARPO can access all BWDB data including those of projects. Type of data that can be exchanged from BWDB includes mainly tidal and non-tidal water level, tidal and non-tidal discharge, river cross section, sediment concentration, rainfall, evaporation, groundwater level, groundwater quality and salinity. All of these data have already been purchased, value-added and incorporated in the NWRD, except the data collected in the recent years.



Mr. H.S. Mozaddad Faruque, DG, BWDB and Mr. M. Inamul Haque, Former DG of WARPO are seen at the MoU signing ceremony of WARPO and BWDB on 6 August 2007

WARPO and the TSC Wing of the Planning Commission signed an MoU on 13 April, 2008 concerning collaboration in sharing data.

Type of data that can be exchanged from TSC includes mainly data on roads, railways, waterways and on-going & proposed transport section projects/programs undertaken by different organization/authorities.



Mr. A. M. M. Nasir Uddin, Member, Infrastructure, Planning Commission, Mr. M. Inamul Haque, Former DG of WARPO and Mr. Kamal Uddin Ahmad, Division Chief, Planning Commission are seen at the MoU signing ceremony of WARPO and TSC Wing

Overall perspective for NWRD has main focus on the enhancement of its use among nationwide user groups. For the sustainable NWRD, enhancement of use of this database is a must. Signing MoU for exchange of data is one of the long term actions for that purpose. Data sharing among different organizations could result in significant savings for data collection, enhanced use of data, and better decision-making.

So far WARPO has signed MoUs for data sharing with JRC, LGED, BWDB and TSC Wing of Planning Commission. WARPO hopes to establish similar protocol (MoU signing etc.) for smooth data sharing and exchange with different organization in the near future.

Protocol for data sharing between Computer & Information Section (CIS) of WARPO and Char Development and Settlement Project III (CDSP-III) of BWDB

On 19 September 2007, CDSP-III, a project of BWDB, has made a proposal to WARPO for establishing a data connectivity network to have an access to ICRD (Integrated Coastal Resources Database) of WARPO using the server facilities at WARPO premises. In this context, Computer & Information Section (CIS) of WARPO and CDSP-III of BWDB signed a protocol on 8 May 2008 at WARPO conference room. Director General of WARPO Mr. M. Inamul Haque presided over the chair and Mr. Hossain Shahid Mozaddad Faruque, Director General, BWDB was present as the Chief Guest of the ceremony.



Md. Siddiqur Rahman, PSO (CIS), WARPO and Mr. G M. Shamsur Rahman, PD, CDSP-III, BWDS are signing the protocol at WARPO Conference room on 8 May 2008.

For establishing this data connectivity network, WARPO will provide the server facilities due to request of CDSP-III and the data from ICRD. All other arrangement needed (including all physical & non-physical infrastructures etc.) will be made by CDSP-III. CDSP-III can access only those data layers (or part of data layers) of ICRD which are confined in the CDSP area and for which the data source/owner is WARPO. WARPO will disseminate the other data of ICRD, collected from another organization, according to the Data Dissemination Pricing Policy of WARPO.

According to this protocol, digital copy of all the CDSP-I, II & III databases along with metadata bases, knowledge bases and information, generated from these projects, will be transferred to WARPO at the end of the CDSP-III project.

This protocol for data sharing became effective upon signing by both the parties and will remain valid up to the end of CDSP-III project i.e. 1 July 2009.

2.1.2 NWRD Data Dissemination

NWRD is continuously disseminating data to different agencies, projects and researchers. During the year 2007-2008, about 20 external users including ICDDR, Bangladesh, WFP, BUET, KUET, Dhaka University, Rajshahi University, University of Queensland, Australia, Wheat Research Center etc. have collected spatial, temporal and other data for the planning, design and research purpose. Besides, NWRD also disseminate processed information, maps etc. to different external and internal users.

2.2 ONGOING ACTIVITIES

2.2.1 *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 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 is an eighteen months project, started in March 2007. The first draft Inception report of the project was issued in June 2007. Upon the receipt of comments and suggestion from different agencies and Panel of Experts on the Inception report the Terms of Reference (ToR) of the consultant was reviewed by the Steering Committees of the project. The Steering Committee meeting chaired by the Secretary MoWR held on 19 August 2007. Proposed changes of the ToR were done as per recommendation of the POE.



An Inception workshop on Impact Assessment of the Proposed Indian River Linking Project for Inter Basin Water Transfer was held at WARPO on 10 July 2007

A training Program was arranged on Environmental Impact Assessment (EIA) application in connection with the Environmental support component of the Project between 17-20 February 2008. Fifteen professionals from WARPO and CEGIS participated in the training program. Midterm report of the study was submitted in May 2008.



A training Program on EIA application in connection with the Environmental support component of the Project was held at CEGIS on 17-20 February 2008

The study project comprises of two components, namely the Water Resources Support Component and the Environmental Support Component. Following specific objectives to be pursued through Water Resources support component:

Investigation of probable scenarios of water withdrawal from common major rivers, The Ganges, The Brahmaputra and The Meghna;

Assessment of year round water resources availability of the common major rivers system under probable scenarios;

Quantify the probable impacts on flow regime during wet and dry seasons, river morphology, salt intrusion, flushing of contaminants, groundwater etc. for water withdrawal by India from the common rivers.

Following specific objectives to be pursued through Environmental Support Component:

Assess the water requirements for agriculture, fisheries, livestock, drinking water supply, water quality, navigation and salinity control for Bangladesh, based on available secondary information and literature review;

Carryout Environmental assessment for water requirements for sustainable bio-diversity, ecological and environmental protection for Bangladesh;

Carryout investigation of probable impacts on use of land, agriculture, fisheries, livestock, water supply, navigation, salinity control etc. in Bangladesh due to possible withdrawal of water by India and demand scenarios;

Carryout environmental study to quantify adverse impacts on bio-diversity and eco-system in Bangladesh due to possible withdrawal of water by India;

Carryout socio-economic study on probable impacts on the society, culture and overall livelihood of the country due to possible withdrawal of water by India; and

Assess responsibilities of the existing institution as regard future cooperation on Common River water sharing, data and information exchange and negotiation.

2.2.2 Regional Technical Assistance (RETA) Supporting Integrated Water Resource Management (Bangladesh) Project

To stimulate the adoption of a more strategic and sustainable approach to water resource development, ADB with financial support from the Government of the Netherlands, has prepared Technical Assistance (TA) to promote effective and efficient preparation of Integrated Water Resource Management (IWRM) plans.

The overall objective of the RETA supporting IWRM (Bangladesh) project is to facilitate and strengthen effective implementation processes of IWRM as outlined in the policy, plan and programs while meeting the World Summit on Sustainable Development (WSSD) commitments of the Government. Specific objectives include:

- (i) Operationalizing the functions of NWRC and ECNWRC for periodic review and guidance on sector policy, plan, and program formulation and implementation;
- (ii) Identifying operational gaps of National Water Policy and supporting specific actions to address those gaps;
- (iii) Strengthening the National Water Management Plan (NWMP) and its implementation process with better alignment with the Government's National Poverty Reduction Strategy (NPRS) with effective and monitorable indicators;
- (iv) Reviewing the performance of BWDB reforms and further steps to enhance their effectiveness;
- (v) Advising on the preparation process of comprehensive National Water Act;
- (vi) Support operationalizing essential roles of WARPO as identified in the Organizational Development Plan (ODP) of WARPO;

The duration of the project is 18 months. Implementation of the project was started from August, 2007 and it will be completed by January, 2009. The overall physical progress of the project is about 45% up to March 2008. Present ongoing works are: 1. review & identification of laps & gaps of NWPo, NWMP, Bangladesh Water Use Act & Water Resources Planning Act, 2. review of data system & recommendations (WARPO & BWDB) and 3. review and analyses of water tariffs and recovery. First Steering Committee meeting of RETA Supporting IWRM (Bangladesh) Project was held on 30 March, 2008 at MoWR under the chairmanship of the Secretary, MoWR. A proposal for a Legal Expert has been sent to the Asian Development Bank (ADB) by the TA Team to assist them in the preparation of draft Bangladesh Water Use Act.

2.2.3 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 subdivided 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 December 31, 2014. The project has been included in the Annual Development Programme of 2007-2008. WARPO is expected to procure Ten Desktop Computers, One Laptop Computers, One Multimedia Projector, One Photocopier, One WD Jeep, One Car and One Microbus 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.

2.2.4 Monitoring & Evaluation of National Water Management Plan (NWMP) and Guidelines of Participatory Water Management (GPWM) by WARPO

Water is a precious gift of ALLAH but it is not infinite. It is a scarce resource. The river systems in Bangladesh have shaped much of the history, economy and rich culture of the people of Bangladesh. Bangladesh suffers from recurrent flood, cyclone, riverbank erosion, drought and arsenic contamination. Climate changes and variability causes rise in sea level and other environmental effects. These problems need to manage in an efficient and equitable manner. But most of the rivers (53) originate from out side of Bangladesh. The then East Pakistan Water and Power Development Authority (EPWAPDA) prepared IECO Water Master Plan in 1964. Later Bangladesh Water Development Board (BWDB) formulated Water Sector Strategy in 1972 and Draft National Water Plan -1 in 1986. It is revised and published in 1991 in the name of National Water Plan-2. Devastated flood in 1987 and in 1988 prompted to the Flood Action Plan (FAP) resulting in a series of five regional plans and supporting studies. Following the FAP study, Bangladesh Water and Flood Management Strategy (BWFMS) report was prepared under Flood Plan Coordination Organization (FPCO) in 1995. It was also revised and updated in 1998.



Figure: Drought in south-west region

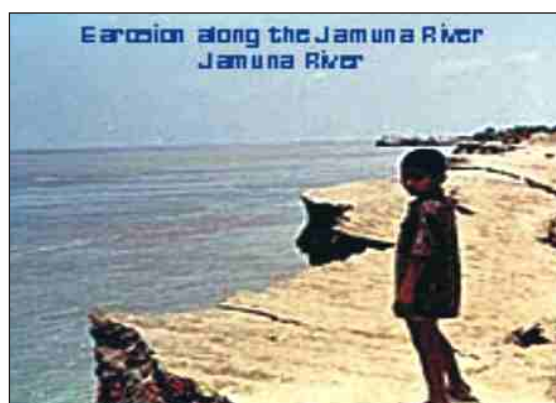


Figure: Jamuna River Erosion

All above mentioned Water Sector Development Plans were criticized for the following limitations:

An excessive focus on increased agricultural production (irrigation, drainage and flood protection) and less importance to environment and other in-stream demands;

Inadequate policy framework to respond to or objectives address; and,

No supporting strategy

It is also criticized for not addressing the social and environmental impacts of water resource development. In response to the recommendations of BWFMS government formulates a National Water Policy (NWPo) in 1999 to address the above issues. In 1996 FPCO was merged with WARPO, with a mandate to prepare National Water Management Plan (NWMP), monitoring the activities within water sector and to provide information and advices on best practice.

WARPO, formulated National Water Management Plan (NWMP) in 2001 (Approved on 31 March, 2004) which is based on the following national goals: 1. Economic Development, 2. Poverty Alleviation, 3. Food Security, 4. Public Health and Safety, 5. Decent standard of living for the people and 6. Protection of the Natural Environment.

NWMP have 84 specific programs under 8 Clusters. The overall objective of the plan is to achieve through different implementing agencies of Water sector. The development objectives of a project are the immediate objectives of the program, similarly development objectives of a program are immediate objectives of a Cluster and same way development objectives of a Cluster are immediate objectives of the plan and development objectives of the plan is overall objective of the country that is balance achievement of the national goal.

In spite of various constraints WARPO has initiated the monitoring of NWMP programs implemented by different stakeholders. For this purpose department wise data collection formats have developed and requested major actors of this sector, i.e. Bangladesh Water Development Board (BWDB), Local Government Engineering department (LGED), Department of Public Health Engineering (DPHE), Bangladesh Agriculture Development Corporation (BADC) Barendra Multipurpose Development Authority (BMDA), Dhaka WASA, Chittagong WASA, Rajshahi City Corporation, Khulna City Corporation, Barisal City Corporation, Sylhet City Corporation to send the data /information as per format. Bangladesh Water Development Board, Local Government Engineering Department and Barendra Multipurpose Development Authority responded very positively. BWDB sent data of 63 divisions. LGED gave data of all districts and BMDA gave its data of all the projects. Data from other organizations are yet to be received. WARPO is maintaining continuous contact with the stakeholders and pursuing for data/information. At the same time WARPO has started field level visit to collect data/information directly from field offices, monitoring of National Water Management Plan (NWMP) implementation and verifying the proposed projects for Clear as a part of clearing house role



Project site visit and discussion with farmers at Rangpur (left) and Proposed Project site visit with BWDB staff at Nilphamari (right) by Syed Abu Shoaib, SO, WARPO

Participatory Water Management;

National Water Policy;

The participation of all project affected persons individually and collectively, will be ensured in the planning, design, implementation, and operation and maintenance (O&M) of publicity funded surface water resources development plans and projects.

Local Government will be the principal agencies for coordination.

Community level self-help group (private) and NGO will also be relied to assist in the participatory process.

GPWM Implementation

BWDB:

Formulate and adopted Guideline for Peoples Participation (GPP) in 1994 under FPCO.

Formulate a few Guidelines on participatory process under SRP, CPP and WSIF

The GPP was approved by govt. in 1994 and it is revised in 1999.and

The Guidelines for Participatory Water Management is now in progress under IPSWAM

LGED:

Develop a guideline for SSFC & DS in 1986

Formulate another Guideline for the participatory process of small scale water resources development in 1999

Participatory Small Scale Water Resources Project is now in Inception stage

Government felt for a common Guideline for all stakeholders to avoid conflict and duplication and for this purpose MoWR constituted an Inter-Agency Taskforce with officials/experts from different organizations of water sector to formulate common guideline for participatory water management (GPWM).

Inter-Agency Taskforce formulates a Guideline (GPWM) and approved by government in 2000 with a directives of:

- i) Taskforce will monitor the implementation of GPWM in the field level
- ii) Taskforce will collect information from field level
- iii) Taskforce will send the collected information to WARPO.
- iv) WARPO will centrally monitor the implementation
- v) WARPO will compile, evaluate the received data, prepared progress report and will submit to MOWR twice in a fiscal year.

In compliance the directives two progress reports on implementation of GPWM have been prepared and submitted to Ministry of Water Resources once in June 2007 and another in January 2008.

2.2.5 Organizational Development Plan (ODP) for WARPO

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 an 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.

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, 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 strengthen 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.

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 scheduled to be commenced by 2008.

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.

Secretariat to ECNWRC and NWRC

In order to have adequate control in the coordination of NWMP implementation, WARRO 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, which started from 1st August 2007.

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.

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.

The first meeting of Programme Co-ordination Unit (PCU) was held in WARPO on 19 March, 2008. The meeting was arranged with a view to coordinating and monitoring the development activities of ongoing and proposed projects in the coastal zone in line with the Coastal Zone Policy (CZPo). The Focal Points of concerned line agencies/organizations/institutions attended the discussion meeting. After detail discussion the following decisions were made:

- i) The line agencies may be involved in the PIPs as supporting agencies with their specific proposals if the present status of PIPs permits;
- ii) Disaster Management Bureau will prepare their proposed PIP determining the title of the PIP and PCU will provide necessary support and cooperation;
- iii) The PCU meeting will have to be convened in every 6 month to make the coordination of activities in the Coastal areas dynamic;
- iv) PKSf will make an arrangement for providing their data to WARPO;
- v) The concerned line agencies will have to inform PCU about their any new PIP/PCU/DPP in the coastal areas; and
- vi) The concerned line agencies will have to inform PCU about description and progress of their projects which are under implementation in the coastal areas.



The first meeting of Programme Co-ordination Unit (PCU) was held in WARPO conference room on 19 March, 2008

2.2.6 Clearing House Role of WARPO

Background

The Government is committed to make efforts with "all necessary means and measures to manage the water resources of the country in a comprehensive, integrated and equitable manner." This approach essentially calls for improved governance in the planning and implementation of water sector projects. WARPO as an apex planning organization is responsible for ensuring that all water sector projects of the country follow the guidelines and rules issued by the Government for the implementation of Integrated Water Resources Management (IWRM) in the country.

The National Water Policy (NWPo) requires WARPO to act as a Clearing House *"for all water sector projects" identified by different agencies and report to the ECNWRC on their conformity with the NWMP*" (NWPo, (§5.00d (v)). It also requires that sector agencies of the Government and local bodies prepare and implement sub-regional and local water-management plans in *conformance with the NWMP* and approved Government *project appraisal guidelines*. WARPO therefore seeks to develop its clearing house role as a means to coordinate the management of the implementation of NWMP as envisaged by NWPo. During the approval of NWMP on 31st March 2004, the National Water Resources Council (NWRC) directed that the *"Water Resources Planning Organization (WARPO) will centrally coordinate and monitor the implementation of the National Water Management Plan in terms of whether all the programs of NWMP are being rightly implemented by the line agencies"*

Objectives

The clearing house role in the implementation of NWMP is viewed as procedures for screening all water sector projects by WARPO with regard to compliance of guidelines, manuals, standard etc. as per the requirements of NWPo. It is essentially a procedure to strengthen the present processes in the preparation, processing and approval of projects, primarily to assist the Planning Commission in technical aspects for project approval. The overall objectives of the clearing house role of WARPO are:

- To bring about and maintain discipline in water sector projects for effective and efficient use of water in a coordinated and integrated manner;
- To ensure transparency in all water sector projects in respect of social and environmental acceptance;
- To ensure that all the water sector projects are in compliance with NWPo, NWMP and all other approved Guidelines.

Rationale

Nearly half of the policy declarations in the NWPo are to be achieved by institutional development and by defining rules, procedures and guidelines, as well as standards and implementing them. From the above perspective it is important that every project should be designed from the outset to fulfill relevant policy directives. For this purpose all water sector projects have to follow the guidelines of Environmental Impact Assessment (EIA), Guidelines for

Participatory Water Management (GPWM), Guidelines for Social Impact Assessment (SIA) etc. Many of these guidelines, presently applicable for FCD/FCDI projects, need to be updated and progressively address the full spectrum of issues and projects and programs indicated by the NWMP.

More guidelines would be required for the development and management of water bodies and environmentally important areas, rural and urban water supply and sanitation, construction of infrastructures, bridges, roads and highways etc. It may be required to amend existing guidelines or develop new guidelines, and to have a common standard for the different agencies and district planners, and agreed upon by all parties to ensure best-practice procedures in the water sector.

WARPO intends to develop and update these guidelines, manuals and standards and ensure the best practices of these in plan formulation, study and approval mechanism. Resolution of conflicts, and avoiding overlapping and duplication of projects by different implementing agencies would need much attention to harness the best benefits out of it. Once these are implemented, many directives of NWPO and programmes of NWMP will follow automatically.

Generic Criteria

The generic criteria of project screening should be:

- conform with national goals, policies, plans and strategies;
- conform with IWRM envisaged in the NWMP;
- conform with relevant guidelines, manuals and standards as per NWPO;
- resolve conflict amongst various stakeholders;
- be socially acceptable;
- be environmentally sustainable;
- be technically sound, economically justified and financially viable.

Progress in the Implementation of "Clearing House" Role

In the 7th Board of Directors meeting of WARPO, it was decided that WARPO would give clearance to BWDB's projects, which it shall review within the purview of its clearing house role. Project proposals (DPP) on Rehabilitation of Left and Right Embankment of Gumti River and Rajbari Sadar/ town Protection from BWDB were cleared on 19 December 2007 and 12 June 2008, respectively. A general Circular has also been distributed to twenty agencies and Ministries about WARPO's intention of implementing "Clearing house" role and asking them to send project proposals and study reports for clearance.

2.2.7 *Twinning Mission Support*

After the expiry of Extended Twinning Arrangement (2006-2007) the 2nd Twinning Arrangement was signed on 02/03/2008 in the conference room of Director General, BWDB in between the representative of GoB and KoN. From Bangladesh side Mr. H.S. Mozaddad Faruque, Director

General, BWDB and from the Netherlands side Mr. Bert keijts, Director General, Rijks waterstaat, have signed the agreement. Twinning Committee members Mr. M. Mahbubul Haque, Joint secretary, MoWR and Mr. M. Inamul Haque, Former Director General, WARPO were present in the signing ceremony. Her Excellency Mrs. Bea ten Tusscher, the Ambassador of the Kingdom of the Netherlands and distinguished members of the Dutch delegation were also present on the occasion.

The occasion was graced by among others Mr. Jalal Uddin Mohammad Abdul Hye, Former Additional Director General, Planning, Mr. Abul Kalam Azad, Additional Director General, O&M-1, Mr. Md Habibur Rahman, Additional Director general, O&M-2, Mr. M. Azizul Haque, Chief Planning, Mrs. Shamsun Nessa, Secretary, BWDB and Mr. Md. Shahjahan, Director and Task Force Coordinator, WARPO.

The objectives of joint efforts and actions under the twinning arrangement are to:

- i. Provide the policy framework for the bilateral development cooperation relation, a long term basis for inter-agency/institutional collaboration in the management sector;
- ii. support the ongoing transformation process in the water sector of Bangladesh, with an emphasis on multidisciplinary cooperation, management structures, policy development and implementation, and division of tasks and responsibilities in the public sector between government bodies (i.e Bangladesh Water Development Board- Water Resources Planning Organization) and local water management organizations
- iii. Strengthening capacities in the field of integrated approaches for planning, implementation and maintenance of water and coastal resources and water related infrastructure, including sharing knowledge in transboundary river management.

Under the present agreement, cooperation can take among others, the following:

Informal exchange of views, supported by regular twinning meetings with as participants members of the side Rijkswaterstaat and member of the side of BWDB and WARPO

Training, seminars for specific target groups which can not otherwise be accommodated by WMIP

Traineeships for individuals or small groups, which can be facilitated under this twinning arrangement

Exchange of researchers/research works on applied research works on all aspects of BWDB and WARPO activities, which can be facilitated under this twinning arrangement

Cooperation between institutes in both countries, related to BWDB/WARPO and Rijkswaterstaat, to identify subjects in the field of knowledge sharing which are important for water management

From July 2007 to June 2008 the Twinning Mission visited WARPO three times i.e. in December 2007, March 2008 and May 2008. The following is a description of the activities of the Mission during that period are described below:

Activities of the XVIII Twinning Mission at WARPO

Twinning Mission (TM) XVIII visited Bangladesh from 25 November to 6 December 2007. During their stay they met Director General, WARPO on 27 November 2007 and discussed about Organizational Development Programme (ODP) process and WARPO strategy, ownership of change process, RETA including updating of NWMP, preparation of Water Act and WMIP issues etc. After the meeting two discussion sessions were held between the TM and WARPO Task Force members. The morning session



Meeting of Twinning Mission-XVIII members with WARPO Task Force in November 2007

started with an overall presentation on ODP made by Mr. Md. Shahjahan, Director & Coordinator, WARPO Task Force. A series of brief presentations were made on NWRD, HRD, Clearing House, Monitoring & Evaluation and RETA by Mr. Md. Siddiquir Rahman, PSO, Mr. Md. Alamgir, SSO, Mr. Syed Abu Shoaib, SO, Mr. Md. Akhtaruzzaman, SO and Mr. Md. Hasan Parvez, PSO respectively during the morning and the afternoon sessions. Finally Mr. Saiful Alam, PSO discussed about the updating of NWMP and exchanged views with the TM members. The TM members gave several observations on the presentations and put some important suggestion for further improvement. The TM met again with the WARPO Task Force (TF) on 4 December 2007. The TM members continued their discussion on some of the important issues that were presented on 27 December, 2007. Then a presentation was made by the TM on XVIII Report for wrap-up meeting. The TM XIII Report was modified in the light of observations made by the TF. A wrap-up meeting with the TM-XVIII was held in the Ministry of Water Resources under the chairmanship of the Secretary, MoWR on 5 December 2007. After thread bare discussions, the following decisions regarding WARPO were taken:

Some selected projects of BWDB would be sent to WARPO for clearance. After necessary clearance from WARPO these projects would be sent to the Ministry of Water Resources for further necessary action.

Activities of the XIX Twinning Mission at WARPO

The Twinning Mission XIX visited Bangladesh from 4-13 March 2008. During their stay they had discussion sessions with the WARPO officials on 4 and 11 March 2008. The meeting was chaired by Mr. Md. Shahjahan, Director and Taskforce Coordinator, WARPO. RETA consultants were also present in the discussion meeting. Mr. G.M. Akram Hossain, RETA consultant made a brief power point presentation on the contents



Workshop of RETA with Twinning Mission-XIX members at WARPO on March 2008

of RETA workshop scheduled to be held on 11 March 2008. The RETA Technical Assistant (TA) consultants shared their views on RETA issues with the Twinning Mission members and the WARPO officials. The TM members made several observations and put forward some important suggestion for further improvement. Besides, NWMP updating, ODP action plan and other related issues came up in the discussion.

On 11 March 2008, the TM members met Mr. M. Inamul Haque, Former Director General, WARPO. DG briefed the TM members about the overall progress of WARPO in connection with ODP action plan, status of BWDB project clearing, MIS related activities of M&E section, revising Water Resources Planning Act 1992 and non ODP activities e.g. Impact of Indian River Linking Project (IRLP). WMIP, HRD, recruitment issue of WARPO and shared experiences of his visit in Netherlands during November 5-9, 2008. After the briefing session with the DG the TM members participated in the overall routine presentation made by Mr. Md. Shahjahan, Director & WARPO Task Force coordinator. The TM members made few observations on the progress of Task Force activities in view of TM XVII and XVIII. They suggested to set milestones in view of ODP and non ODP action plan which are targeted for completion by 2008-2009.

RETA workshop started at 11:30 am. Mr. M. Inamul Haque, Former Director General, WARPO chaired the session. Welcome address was made by Mr. Md. Hasan Parvez, PSO (Engg.) & Project Coordinator, RETA. Mr. M. Muklesuzzaman, Policy and Institutional Expert, RETA Project made a Power Point presentation about the project.

Highlights of the presentation were: Project objectives, scope of work, Work Plan, Institutional Framework, Management Instruments etc. Cross cutting issues included review of draft Bangladesh Water Use Act (2000), Water Resources Planning Act (1992), NWMP update, BWDB-WARPO Data collection and Management System, Clearing House Role, NWRC and ECNWRC functioning. The workshop was attended by Mr. Md. Mannan Talukdar, Joint Chief, Mrs. Ayesha Begum, Deputy Chief, MoWR, Mr. Md. Mukbul Hossain, Additional Chief Engineer, Mr. Md. Azharul Islam, Superintending Engineer, BWDB, RETA Team Members and all the Task Force members of WARPO. The workshop was ended with effective participation of the distinguished participants.

A pre-wrap up session with the TM members was held in WARPO on 13 March 2008. Later on a wrap-up meeting with the TM XIX was held in MoWR on the same date chaired by Dr. Md. Ayub Miah, Secretary, MoWR. After detail discussions, the following decisions regarding WARPO were taken:

Specific action plan has to be developed by BWDB and WARPO Task Force on short-term and long-term basis and both agencies would constantly try to materialize the plan.

Activities of Twinning Committee-XX Members at WARPO

Two members from the Dutch Twinning Committee visited Bangladesh from May 27 to June 4, 2008. Objective of the TC-20 visit in Bangladesh was to review the progress of capacity building and strengthening of BWDB & WARPO in view of Third Twinning Arrangement (2008-2009) signed between GoB and GoN on 2 March 2008. WARPO Taskforce members had two exclusive progress information sharing meetings with the Dutch Twinning Committee (TC) members on 29

May and 3 June 2008, at the WARPO conference room. On 29 May, TC members had a short briefing session with Mr. M. Inamul Haque, Former Director General, WARPO. Then they met with WARPO Taskforce members and ADB appointed RETA consultant team for daylong progress information sharing meeting. The daylong discussion meeting was presided over by Mr. Md. Shahjahan, Director & TF Coordinator, Twinning Committee of WARPO. In the Morning session Mr. Hasan Parvez, RETA Coordinator



Meeting of Twinning Mission-XVIII members with WARPO Task Force in May 2008

made a short presentation at the request of the chair about the aims and objectives of RETA supporting IWRM in Bangladesh project and its latest status. The RETA team senior institutional specialist made a power point presentation on progress of RETA activities since its inception from early 2007 with special focus on Water Act (2001) revision, identifying NWMP updating on priority issues, knowledge and information gaps and steps/procedures of NWMP updating. Discussion session was widely participated by TC members and WARPO professionals. TC members suggested RETA team to work and frequent discussion with WARPO Taskforce members for developing NWMP updating framework, so it could be discussed with all water sector key stakeholders. In second session, WARPO TC sub-group Leaders had made their progress presentation in view of TC-19 strategic advices/recommendations eg. follow-up activities of TC-19. There were six presentations as follows:

1. Overall presentation on: Progress on Development Phase (ODP) & New Twinning Arrangement and Follow up Activities of TM-XVIII & XIX
2. Monitoring & Evaluation Activities of WARPO during TM10 & 20
3. Progress on RETA Supporting IWRM
4. Progress on Information & Database System
5. Progress on Program Coordination Unit (PCU) for ICZM
6. Progress on NWMP updating by WARPO professionals

Remarkable achievement from WARPO side was that preparation of a Preliminary Draft Framework for Action Plan achievable during the tenure of third Twinning Arrangement (2008-2009). TM-20 members appreciated the progress. They suggested that draft Framework Action Plan shall have to make more realistic and smart in view of achievable by 2008-2009. On 3 May 2008, there was a pre-wrap up session with WARPO. What WARPO presented and discussed on 29 May that was summarized with strategic advices/recommendations to be done by next twinning committee meeting (November 2008). TM members took final feedback from WARPO Taskforce members for presenting it to wrap-up meeting in MoWR on 4 June 2008. The wrap-up meeting was held on 4 May 2008, Chaired by Dr. Mohammad Ayub Miah, Secretary, MoWR. Both BWDB and WARPO progress presentation was made by Dutch Twinning Committee Team

Leader, Mr. Tom van der Wekken. BWDB and WARPO officials took part in the discussion. The Secretary also participated in wrap-up session and made some relevant comments. The Secretary, MoWR, thanked the team leader for comprehensive and articulated presentation.

2.2.8 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). Both the studies were launched officially in September 2005. WARPO professionals are actively participating in the activities. A two days long training program was organized by WARPO on "Risk-based evaluation of Brahmaputra water development" between 24-25 March 2008.

Project-1: Risk based Evaluation of Brahmaputra Water Development in Meeting Future Water Demand

The River Brahmaputra contributes two thirds of the total dry season trans-boundary river inflow and plays an important role in the overall socio-economic development of Bangladesh.

The proposed study investigated Barrage as long term development option of the Brahmaputra River to meet future demands for irrigation, navigation, fishery, municipal, industrial and domestic uses and also to arrest environmental degradation of the Brahmaputra Dependent Area (BDA) in Bangladesh. The study has developed a stochastic model, a set of criterion to enable assessment of the option for river development. Risk based performance indicators e.g. *resilience, vulnerability and reliability* has been used to provide detailed information on likely future behaviors of water development option under different likely hydro climatic scenarios. The tools and technique may be accepted for water resources planning and are expected to contribute in the future update of the National Water Management Plan. The two-year project is at the end of its completion.

Project-2: 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.

Research Project with IWM

WARPO has signed a MoU on 4 April 2008 with Institute of Water Modeling (IWM) to collaborate in one research project titled "Determination of Hydro-geological Parameter for Different Regions of Bangladesh using Different Methods: Phase-I". It is a one-year project. Two junior specialist and Senior Specialist from WARPO will be involved in the study.

The objective of the project is to estimate Hydro-geological Parameter for different region of Bangladesh for Groundwater Management and Modeling. Accurate estimation of hydro-geological properties (hydraulic conductivity, transmissivity, specific yield etc) is a pre-requisite for sound and sustainable development of groundwater resources. Decision-makers and planners need analysis tools and spatial distribution map of hydro-geological properties for groundwater. The agencies namely BWDB, BADC, DPHE, WASA and BMDA development are responsible for collection of hydro-geological data in Bangladesh. WARPO has developed a National Water Resources database (NWRD) to collate all these data set for the purpose of assessment and planning. The project will take full advantage of these data from different agencies to estimate the hydro-geological parameters and develop tools for its use in groundwater resources assessment.

2.2.9 Formulation of the Pricing Policy of ICRD (Integrated Coastal Resources Database) for Data Dissemination:

WARPO received a mandate through the 'Coastal Zone Policy 2005' to set up ICRD, which is linked to NWRD as a sub-set. ICRD is more than a simple database (better be termed as 'knowledgebase'). Data of different sectors of coastal zone of Bangladesh (19 coastal districts) are kept in ICRD. ICRD provides means to prepare an updated rich picture of vulnerabilities and opportunities in the coast, usable for decision makers and a basis for steering the policy processes.

WARPO has completed the development of the Integrated Coastal Resources Database in December 2005. Data from primary and secondary sources have been collected and compiled. Presently 421 data layers have been collected and generated for ICRD. The summary of data can be presented based on 6 indicators as follows:

Administration and Institutions (ADM): Administrative Area, Participation, FMOs/ CBOs, GoB Organizations, Informal Organizations, NGOs, Laws, Regulations, Policies etc.

Economics and Finance (ECO): Credit, Employment, Foreign Currency Earning, GDP, Savings, Wages, Agriculture, Fishery, Industry, Services, etc.

Funds and Interventions (FUN): Water, Health, Food Assisted Program etc.

Human beings and Social Conditions (HUM): Demography, Financial Assets, Gender Related Data, Education and Skills, Health, Income, Natural Assets, Physical Assets, Social etc.

Assets, Infrastructure and Services (INF): Agriculture Sector, Communication Sector, Education Sector, Health Sector, Power Sector, Protection, Transport Sector etc.

Natural Resources and Environment (NRE): Chars and Inter-tidal Areas, Estuarine Dynamics, Fish and other Aquatic Resources, Plain Land Forest, Shallow Aquifer, Homestead Gardens, Mangroves, Agricultural Land, Ponds and Ghers, Settlement Area/Industrial, Area/Infrastructure: Air, Humidity, Rainfall, Sunshine, Wind, Gas and Oil, Sand and Minerals, Deep Sea, Estuary Branches and Coastal Waters, Floodplains (Wetland), Perennial Water Body, River etc.

To make the ICRD data available to the users, a draft pricing policy for data dissemination has been prepared. A nominal price is charged to external users for accessing data of ICRD, which covers just a fraction of the cost for data copying, storage, maintenance, and payment made to the agencies and organizations for collecting and processing data. Data price is set on the basis of data categorization, value-added information and file size (kilobyte) of every data layer.

Data Category: To facilitate data pricing, ICRD data can be divided into four different categories:

Primary: Data of this category are generated or created by WARPO under different internal projects.

Secondary: Data of this category have been collected from secondary sources.

Public: There are some data layers that were collected from published books or from non-restricted sources.

Analyzed Information: the information derived/analyzed from raw data.

Data accessibility: There is some restriction on a particular data layer to access due to the confidentiality or strategic points. The accessibility of information is also restricted by the organizational categories e.g. within government agencies, open to all users or depends on the source agency's policy.

Value-added information: This criterion can be divided into two types:

Non Value-added: Non value-added information is those that are kept intact in the ICRD database without any change or quality improvement.

Value-added: There are some data layers whose quality have been improved or additional information have been added to it. These are value-added information.

Detail listing of the data layers defining the data categorization, accessibility and value-added information are presented in the draft pricing policy of ICRD.

2.3 FUTURE ACTIVITIES

2.3.1 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 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 in 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.

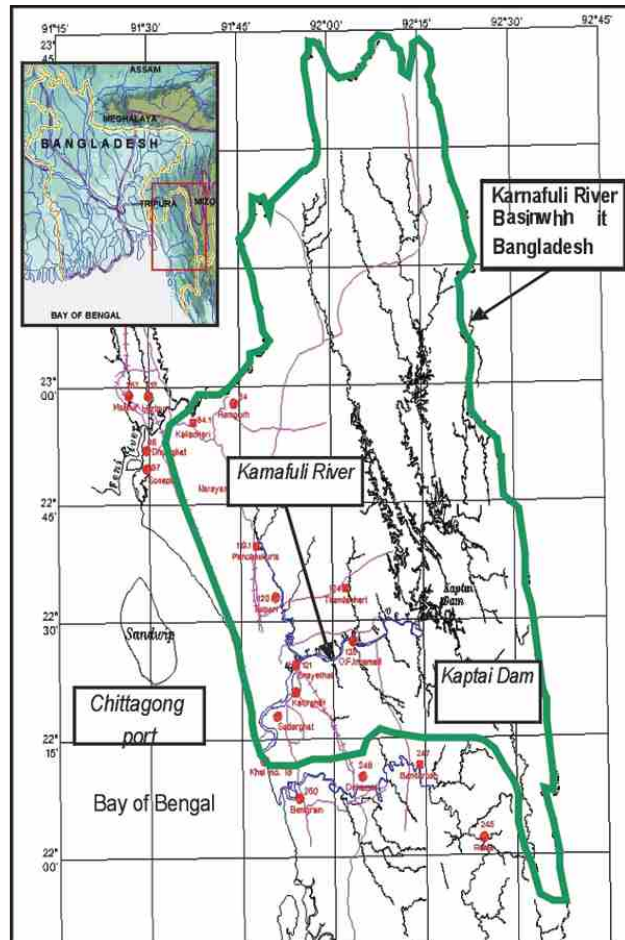


Figure: Karnafuli River Basin area within Bangladesh

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.

2.3.2 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.

A systematic methodology for the evaluation of alternative options for drinking water supply will be developed using tools developed at CEGIS to assist in the decision making process. Based on the analysis of information and results in the pilot areas a strategy and an implementation plan will be developed by WARPO for surface water use as drinking water sources.

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.

Monitoring, Evaluation and Reporting

The Steering Committee of the project will do the overall monitoring and evaluation of the progress of the study. A third party monitoring arrangement however has been created by the Local Government Division, Ministry of Local Government, and Rural Development and Cooperatives to monitor and evaluate the outputs of the project as required by the National Policy for Arsenic Mitigation and Implementation Plan, March 2004. The fourth meeting of the Committee on Implementation of the National Policy for Arsenic Mitigation and Implementation Plan held on 17th March 2005 created the following Committee for monitoring the project.

Third Party Monitoring	
SL. No	Committee members
1	Member (Physical Infrastructure), Planning Commission, Convener
2	Representative from ITN-BUET, Member
3	Professor Quazi Quamruzzaman, DCH
4	Dr. Ainun Nishat, IUCN

Reporting on the progress of the implementation of the project would be prepared by the Project Manager and reviewed by the "Third party monitoring" and the Steering Committee as well. To facilitate the monitoring of the progress of the project by the "Third party monitoring" a logical framework matrix would be used to evaluate the activities in terms of pre-defined indicators.

Present Status

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

2.3.3 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

2.3.4 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.

2.3.5 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.

2.3.6 Updating of National Water Management Plan (NWMP)

Background

The National Water Management Plan (NWMP) is a framework plan to implement the National Water Policy (1999) directives. The NWMP has also been prepared within the policy and strategy framework established by the Government. The National Water Policy (1999) provides the overall directives to articulate the specific goals and objectives for the water sector within the strategy and policy framework of the Government. The Bangladesh Water and Flood Management strategy (1996) also provides guidance for the preparation of the plan. NWMP is an Integrated Water Resources Management (IWRM) Plan to improve the efficiency of water resources management in the country.

Objective

Review new national policies and strategies and harmonize with new developments both nationally and internationally;

Develop and establish a framework for systematic evaluation and assessment of water resources management options within the broader multi-sectoral resources allocation context;

Assess Bangladesh's water and land resources and their medium and long term potentials and constraints;

Further strengthen the framework to enable stakeholder participation in the water sector planning process and conduct regular public reviews of progress;

Develop the capability of WARPO as an apex planning organization emphasizing technical, environmental, socio-economic and participatory planning;

Develop the capability of WARPO as an apex organization in the water sector through a clearing house role as an advisory and regulatory function in the water sector.

Develop capability for the "Monitoring and Evaluation" role of WARPO;

Finalize the Water Law, and planning guidelines for dealing with water sector planning and management issues;

Estimate a unified code of practice in Flood and Water Development and Management;

Transfer technical and managerial skills through intensive in-country and overseas training.

Scope of NWMP Update

Updating of NWMP: "Water Efficiency Plan"

Institutional development of WARPO

Reducing vulnerability to floods

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

Estimated Cost: Taka 1294.40 million

Present Status

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

2.3.7 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 2007 June 2008 included:

1. IPSWAM Programme, Technical report no. 5 10, BWDB Planning III, March 2007.
2. Development Project Proposal (DPP) for flood proofing and shelters in the Haor & Wetlands of Bangladesh: Protection against wave action for the abasan/asrayan projects in the haors and wetlands of Bangladesh (phase-I), Haor & Wetlands Deve. Board, May 2007.
3. Revised Development Project Proforma (RDPP) for emergency flood damage rehabilitation assistance project-2004 (Part-D: Water resources), BWDB, Recast June 2007.
4. Development of groundwater irrigation and its impact on agriculture, environment and socio-economic condition of lower gangetic plain, Bangladesh, Md. Aminul Haque, Anwar Zahid, March 2007.
5. উন্নয়ন প্রকল্প বাস্তবায়ন সংক্রান্ত আর্থিক ক্ষমতা, অর্থ বিভাগ, ডিসেম্বর ২০০৮.

6. Feasibility study for protection of Teesta River left bank from Teesta Barrage to Chandimari and Upstream of Teesta Barrage including shoals removal from the Teesta River bed near Teesta Barrage, final report, IWM, June 2007.
7. Feasibility study for flood control embankment and river bank protection on the left bank of Jamuna and right bank of Dhaleswari at Nagorpur and Chowhali, final report, main report, IWM, June 2007.
8. Mathematical modelling study for the feasibility study of flood control embankment and river bank protection on the left bank of Jamuna and right bank of Dhaleswari at Nagorpur and Chowhali, final report, (annexure I), IWM, June 2007.
9. Feasibility study for protection of the Padma left bank at Hasail-Garurgaon, Louhojang and Harirampur Upazila head quarter, final report, vol. I-main report, IWM, January 2007.
10. Development project proforma/proposal (DPP) for protection of Tilokpur to Polidaha Via Gouripur from the erosion of the left bank of River Padma in upazila Lalpur, district Natore, BWDB, Recast April 2007.
11. Feasibility study of Lalmohon-Charfesson Water Management Project i) Char Aicha and Char Manika accreted area ii) Char Kukri-Mukri accreted area iii) Char Kachuakhali accreted area, final report, BWDB Planning-1, February 2007.
12. সরকারী খাতে উন্নয়ন প্রকল্প প্রণয়ন, প্রক্রিয়াকরণ, অনুমোদন ও সংশোধন পদ্ধতি, পরিকল্পনা মন্ত্রণালয়, নভেম্বর ২০০৫.
13. DPP for construction of embankment and other ancillary works in tannery industrial area under Savar Upazilla in Dhaka district, BWDB, April 2007.
14. RDPP for construction of embankment on right bank of the River Atrai in Naogaon district, BWDB, April 2007.
15. Public expenditure management manual, Ministry of Finance, March 2005.
16. মঞ্জুরী ও বরাদ্দ দাবীর বিস্তারিত বিবরণ (বিস্তারিত উন্নয়ন বাজেট ২০০৫-২০০৬) পানি সম্পদ মন্ত্রণালয়, অর্থ মন্ত্রণালয়.
17. বাৎসরিক বাজেট ২০০৭-২০০৮, মঞ্জুরী ও বরাদ্দ দাবীর বিস্তারিত বিবরণ (অনুন্নয়ন) পানি সম্পদ মন্ত্রণালয়, অর্থ মন্ত্রণালয়.
18. বার্ষিক উন্নয়ন কর্মসূচী ২০০৬-২০০৭, পরিকল্পনা কমিশন.
19. ADB in Bangladesh on people's eyes: On Water policy review and project monitoring reports, CDP, July 2007.
20. Twinning Mission XVI, final report, February 16-28, 2007.
21. Second Small Scale Water Resources Development Sector Project: Distric water resources assessment Joypurhat, Thakurgaon, Manikganj, Naogaon, Chittagong, Feni, LGED, May 2006.
22. Bangladesh irrigation water rate ordinance, 1983.
23. বাংলাদেশ গেজেট, বাংলাদেশ পানি উন্নয়ন বোর্ড প্রবিধানমালা ২০০৩.
24. বাংলাদেশ গেজেট, সেচ, পানি উন্নয়ন ও বন্যা নিয়ন্ত্রণ মন্ত্রণালয় প্রজ্ঞাপন, ১৯৯২.
25. Serving the unserved: Consolidation of watsan success in CHT, vol. III-Advancing people towards technologies, NGO Forum for Drinking Water Supply and Sanitation, June 2007.
26. Research report 2006-2007 on Adaptive crop agriculture including innovative farming practices in coastal zone, BARI, July 2007.
27. Annual report (2006-2007) Development of integrated salinity management techniques for the coastal ecosystem of Bangladesh, BARI, July 2007.

28. Bangladesh national adaptation programme of action (NAPA), final report, UNDP, November 2005.
29. নিরুপমা ও আমি, ম. ইনামুল হক, ডিসেম্বর ২০০৬.
30. বৃহত্তর বাংলার ইতিহাস পরিচয়, ম. ইনামুল হক, ডিসেম্বর ২০০৩.
31. চিরন্তন ঈশ্বরবাদ, ম. ইনামুল হক, জুলাই ২০০৩.
32. তুলনারক বিবেক, ম. ইনামুল হক, জুলাই ২০০৩.
33. বাংলার অতীত, বর্তমান ও ভবিষ্যত, ম. ইনামুল হক, নভেম্বর ২০০৬.
34. ইসলাম ও মানবজাতি, ম. ইনামুল হক, জুলাই ২০০৩.
35. আবদুল হামিদ খান ভাষানী, ম. ইনামুল হক, অক্টোবর ২০০৫.
36. আর্সেনিক এবং আমাদের করণীয়, দি রোটারি ফাউন্ডেশন, জুন ২০০৭.
37. হাওর কৃষিপ্রাণবৈচিত্র্য রক্ষায় জনদলিল: কৃষি, প্রকৃতি, পরিবেশ, সংস্কৃতি,নীতিমালা ও অর্থনৈতিক ন্যায্যতা বিষয়ক জনসমীক্ষা, বারসিক, মার্চ ২০০৭.
38. Twinning mission XVII, final report, June 2-14, 2007.
39. Revised development project proforma for Khaliajuri flood control and drainage project (revised), BWDB, September 2007.
40. পানি পরিক্রমা, বাংলাদেশ পানি উন্নয়ন বোর্ড, সেপ্টেম্বর ২০০৭.
41. Newsletter, issue no. 13, WARPO, August 2007.
42. Revised Development Project Proforma for Jamuna-Meghna river erosion mitigation project (JMREMP), BWDB, recast September 2007.
43. Revised Development Project Proforma/Proposal (RDPP) for river protection & development and town protection project (phase III), (2nd revised), BWDB, recast August 2007.
44. Revised Development Project Proforma/Proposal (RDPP) for integrated planning for sustainable water management (IPSWAM) project, (First revised), BWDB, recast September 2007.
45. Bangladesh water resources and demands for the year 2025, BWDB, December 1986.
46. Dependable flows of border rivers, volume I, II, BWDB, December 1986.
47. Bangladesh Parliament Act, November 1974.
48. Water pollution control-A guide to the use of water quality management principles, UNEP/WHO, 1997.
49. আর্সেনিক সমস্যা নিরসনে জাতীয় নীতিমালা ২০০৪ ও বাংলাদেশে আর্সেনিক সমস্যা নিরসনে বাস্তবায়ন পরিকল্পনা, স্থানীয় সরকার, পল্লী উন্নয়ন ও সমবায় মন্ত্রণালয়, মার্চ ২০০৪.
50. Regional Technical Assistance (RETA) supporting integrated water resources management (Bangladesh), Implemented through RETA 6351: Process Development for Preparing and Implementing Integrated Water Resources Management Plan, Inception report, WARPO, November 2007.
51. নাগরিক কমিটি ২০০৬-এর উদ্যোগে প্রণীত: বাংলাদেশ রূপকল্প ২০২১, সিপিডি, আগস্ট ২০০৭.
52. Sixteenth Indo-Bangladesh Dialogue 11-13 December, 2007 (Concluding session summary of discussion and suggestions) CPD/IIC, December 2007.

53. Development project proforma/proposal (DPP) for Patuakhali town protection embankment project, BWDB, recast August 2007.
54. রাজধানী ঢাকার জলাবদ্ধতা : সমস্যা ও সমাধানের উপায়, শফি উদ্দিন সরকার (ইনস্টিটিউট অব ডিম্লেমা ইঞ্জিনিয়ার্স, বাংলাদেশ) আগস্ট ২০০৫.
55. Revised Development Project Proposal (RDPP) for water Management Improvement Project (WMIP), BWDB, Special revised December 2007.
56. Feasibility study for IWRM of Chalan Beel area including beel Halti development project, final report, main report (vol. I, II), November 2007.
57. Co-operative Societies Ordinance 1984, January 1992.
58. পানি পরিক্রমা, বাংলাদেশ পানি উন্নয়ন বোর্ড, ফেব্রুয়ারী ২০০৮.
59. ICZMP, Coastal Resources Database, series 2, volume 1-District Development
60. Plan Bhola, WARPO, December 2005.
61. ICZMP, Coastal Resources Database, series 2, volume 2-District Development
62. Plan Cox's Bazar, WARPO, December 2005.
63. WARPO Newsletter, Issue no. 14, December 2007.
64. Twinning mission XVIII, Final report, November 25-December 5, 2007.
65. International conference on Water and Flood Management, 12-14 March 2007, volume 1 and 2, BUET, March 2007.
66. Mathematical modelling & topographic survey for Integrated Water Resources
67. Management of Chalan Beel Area including Beel Halti development Project, final report, volume I-main report, volume II-appendices, volume III-user guide of MIS, IWM, June 2007.
68. Final report on environmental and social impact assessment (EIA/SIA) of Integrated Water Resources Management in Chalan Beel Area including Beel Halti development Project, CEGIS, June 2007.
69. খানিকটা গল্প তোমার, কাজী রোজী, ফেব্রুয়ারি ২০০৮.
70. বাংলাদেশ গেজেট, ২০০৬ সনের সরকারী তহবিলের অর্থ দ্বারা কোন পণ্য, কার্য বা সেবা ক্রয়ের ক্ষেত্রে স্বচ্ছতা ও জবাবদিহিতা নিশ্চিত করা এবং উক্তরূপ ক্রয়কার্যে অংশগ্রহণে ইচ্ছুক সকল ব্যক্তির প্রতি সম-আচরণ ও অবাধ প্রতিযোগিতা নিশ্চিত করিবার জন্য অনুসরণীয় পদ্ধতি নির্ধারণ সহ আনুসঙ্গিক বিষয়াদি সম্বন্ধে বিধানকল্পে প্রণীত আইন, জুলাই ২০০৬.
71. Prediction of River Bank Erosion along the Jamuna, the Ganges and the Padma rivers 2008, CEGIS, April 2008.
72. মধ্যমেয়াদি বাজেট কার্ঠামো ২০০৬/২০০৭-২০০৮/২০০৯, অর্থ মন্ত্রণালয়.
73. Impact assessment of the proposed Indian River Linking Project for inter basin water transfer, component-I: Water resources support/mathematical modelling, inception report (2nd revision) WARPO/IWM, April 2008.
74. Impact assessment of the proposed Indian River Linking Project for inter basin water transfer, component 2-Environmental support, inception report, final, WARPO/CEGIS, February 2008.
75. গল্প পঞ্চাশৎ, মকবুলা মনজুর, ফেব্রুয়ারী ২০০৮

4. PUBLICATION & PRESENTATION

4.1 PUBLICATION OF NEWSLETTER

The 13th 14th and 15th issues of the WARPO Newsletter were published in August 2007, December 2007 and April 2008 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 (2007 to 2008)

1. M. Inamul Haque

Former Director General, WARPO

M. Inamul Haque. 2008. Water Resources management in Bangladesh. Anushilan, Dhaka.

2. Dr. M. Aminul Haque

Senior Scientific Officer, WARPO

The following papers have been published in International Journals:

Aminul M.H. and Lee T.S. 2008. *Decision Support Tool for Water Management of Double Cropping Rice System: Water Allocation*. International Journal of Ecology and Development, 9 (W08): 57-68 (India)

Islam S.M., Zahid A, **Aminul M.H.** and Rashidul Hasan MAFM. 2007. *Problems and Prospects of Groundwater Irrigation Market in Bangladesh: A Case Study from Lower Gangetic Floodplain of Southwest Bangladesh*. Journal of Applied Irrigation Science, 42 (2): 157-171. (Germany)

Khusrul Amin A.K.M., **Aminul M.H.**, Akhtaruzaman M and Chowdhury N.N. 2007. *Variety and Seedling Age Affects Fine Rice Yield*. Korean Journal of Crop Science, 52 (2): 134-139. (Korea)

Najim M.M.M., Lee T.S., **Aminul M.H.** and Esham M. 2007. *Sustainability of Rice Production: A Malaysian Perspective*. The Journal of Agricultural Sciences, 3 (1): 1-12. (Sri Lanka)

3. A. K. M. Khusrul Amin

Scientific Officer, WARPO

The following papers have been published in International Journals:

A. K. M. Khusrul Amin, M. Aminul Haque, Md. Akhtaruzzaman, and Nazmun Nahar Chowdhury. 2007. Variety and Seedling Age Affets Fine Rice Yield. The Korean Journal of Crop Science. 52(2): 134-139.


H. Q. M. Mosaddeque, M. I. Talukder, M. M. Islam, **A. K. M. Khusrul Amin** and M. A. Alam. 2008. Screening of Some Restorer and Maintainer Hybrid Rice Lines against Sheath Blight (*Rhizoctonia solani*) Journal of Soil and Nature. 2(1): 23-29.




4.3 SEMINAR PRESENTATION BY WARPO PROFESSIONALS


The Seminar Presentation program at WARPO was started with the aim to increase the presentation skills of the professionals of WARPO. During the reporting period 13 seminars on different topics mainly related to the water resources sector were presented. The briefs of these presentations are given below:






Dr. Nilufa Islam, Director (Technical), WARPO delivering a presentation in the seminar presentation programme of WARPO

	<p>G. J. N. Murshed Principle Scientific Officer (Economics)</p> <p>Guidelines for Participatory Water Management(GPWM)</p> <p>05/07/07</p>	<p><i>The Highlights of the presentation:</i></p> <p>How the Guidelines take place Participation Participatory Water Management as Provided in NWPo Objectives, Scope Stakeholders Participatory Process Water Management Organization (WMO) Capacity Development Monitoring of the Application of the Guidelines Recommendation from WARPO</p>
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	Integrated Coastal Zone Management Plan (ICZMP) Project 2/08/07	<i>The Highlights of the presentation:</i> Rationale for ICZMP Major achievement of ICZMPP Bridging Phase of Institutionalization and Operationalization of Integrated Coastal Zone Management (ICZM) Approaches Activities of Programme Coordination Unit (PCU) Present status of PCU Institutionalization & Operationalization of ICZM approaches (2nd Phase) What WARPO Should Do?
	Mohammad Alamgir Senior Scientific Officer (Forest) Climate Change, Causes and Its Impacts 19/07/07	<i>The Highlights of the presentation:</i> Background Climate Change Causes of Climate Change Impacts of Climate Change National Efforts What we have to do?
	Akhter Hussain Bhuiya Former Secretary Personality Type 16/08/07	<i>The Highlights of the presentation:</i> Extrovert, Introvert and Ambivert What is Personality Psychological group Personality Traits Sigmund Freud's Classification
	M. Inamul Haque Former Director General Flood Management In Bangladesh 20/08/07	<i>The Highlights of the presentation:</i> The Brahmaputra, Ganges and Meghna basin Main rivers of Bangladesh Flood affected areas Surface water resources of Bangladesh Bangladesh National Water Policy 1999 Flood Embankment Erosion hit area Haor areas of Bangladesh Transboundary flood inflow 2007 Classification of Flood

	Inland Water 27/12/07	<i>The Highlights of the presentation:</i> Annual Generation Rainfall & Evaporation Surface Water Resources Total Rivers Regional conceptual geological Model Open & Closed Water Bodies Seasonal Variations Water & Human Life, Disasters, Economy, Ecosystem, Human Rights Rivers & Water bodies are Dying/Dead
	Emerging Issues in Water Sector 27/12/07	<i>The Highlights of the presentation:</i> Water as Basic Right Water as Historical Right Water as Economic Good Virtual Water Water Footprint Carbon Footprint
	World Wetland Day- 4th February 2/02/08	<i>The Highlights of the presentation:</i> The Brahmaputra, Ganges and Meghna basin Location of Haor and wetlands in Bangladesh Surface water resources of Bangladesh Flood in Bangladesh Indication about Haor, Baor & Wetlands in the NWPo What to do to save the wetlands
	Nahid Sultana Scientific Officer (Soil) Strategic Transport Plan (STP) for Dhaka City 18/11/07	<i>The Highlights of the presentation:</i> STP Background Defending STP Report & Positive Approach Bangkok the City of Elevated Express Way Singapore, a major Asian transportation hub Soil Condition & Zoning of Dhaka City Design for Stability and Adequate Bearing Capacity Strategies for Transport System Measures to Ensure Sound Road Transport WARPO View

	<p>Dr. Nilufa Islam Director (Technical) Seminar on Sustainable Water Resources Management for Development in the Asia Pacific Region Spain, October 22-30, 2007 3/12/07</p>	<p><i>The Highlights of the presentation:</i> The Climate: Overview The Climate: Rainfalls I & II The New Water Laws Criminal Law on This Issue Technical Visit Asian Group Water Council (Sec.33 L.A.) Visit to the Dry and Irrigated Area of Monegros</p>
	<p>Biological Diversity 22/05/08</p>	<p><i>The Highlights of the presentation:</i> Ecosystem Key issues in biodiversity Convention on Biological Diversity (CBD) Obligation Under CBD Ecosystem diversity & conservation Current situation and stocktaking Priority Environmental Issues Identifying Capacity Needs: Bioprospecting, ABS & Biosafety Biodiversity and Agriculture National Water Policy (1999) & National Water Management Plan Agriculture and Water Management Programmes Environment and Aquatic Resources Programmes</p>
	<p>Md Hasan Shahriar Scientific Officer (Geology) Fault 17/01/08</p>	<p><i>The Highlights of the presentation:</i> Definition of Fault Main Types of Faults Damages Due to FAULT Dauki Fault Problems to Study of Dauki Fault Faults in the South-East Himalyan Region The geologic history of the Dauki Fault Mechanism of Fault and Earthquake Earth Quake Risk in Bangladesh</p>
	<p>Md. Hasan Parvez Principal Scientific Officer (Engineering) Training Course on Changing Management and Managing Change for BWDB and WARPO Officials in Netherlands 3/04/08</p>	<p><i>The Highlights of the presentation:</i> The Netherlands Field Trip Water Board Zeeuwse Eilanden & Zuiderzeeland Kinderdijk Traditional Windmill Park Boat Tour to Biesbosch National Park & Rotterdam Harbour Maeslant Barrier The International Court of Justice Lesson Learn</p>

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 2007-2008, 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
Foundation Training	11 May - 24 June 2008	Kaptai Engineering Academy, Rangamati	1
Project Preparation in the Prescribed Proforma	21 April - 7 May 2008	Academy for Planning and Development (APD), Dhaka	1
Introduction to Computer Aided Analysis and Design of Civil Engineering Structure Using ETAB Software	4-18 April, 2008	Engineering Staff College, Bangladesh, Ramna, Dhaka	1
Risk-based evaluation of Brahmaputra water development	24-25 March 2008.	WARPO	20
PC Trouble Shooting	10 March - 13 April 2008	APD	1
English Language proficiency	24 February - 4 June 2008	APD	1
Training on "Environmental Impact Assessment (EIA)" Under IRLP.	17-20 February 2008	Center for Environmental & Geographic Information Services (CEGIS)	6
International Training on "Sector Wide Approach- Joint Learning Program"	12-14 November 2007	Ministry of Water Resources in Collaboration with the Royal Netherlands Embassy	2

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
Abu Taher Amanullah Principle Scientific Officer (Agriculture) Akhter Hossen Bhuiya Former Secretary Md. Alamgir Senior Scientific Officer (Forest)	Water Resources Management (Hydro-infra Development & Management) (Bangladesh)	13-28 March 2008	Korean International Cooperation Agency (KOICA), Korea
M. Inamul Haque Former Director General	Meeting on "Asian Water and Development Outlook"	4 - 9 November 2007	Singapore, ADB
	Meeting on "Twining Committee"	22 - 24 August 2007	Netherlands, RNE
Md. Shahjahan Director (Planning) Md. Hasan Parvez Principle Scientific Officer (Engineering)	Training on "Management Training for Senior Management under Twining Arrangement"	4 - 19 November 2007	The Hague, Netherlands
Dr. Nilufa Islam Director (Technical)	Seminar on Sustainable Water Resources Management for Development in the Asia Pacific Region	22-30 October, 2007	The Spanish Agency for International Cooperation (AECI), Ministry of Foreign Affairs
Saiful Alam Principle Scientific Officer (Water Resources)	Legal Framework for Water Resources Management (LFWRM)	20 October- 2 November 2007	International Development Law Organization (IDLO), Sydney, Australia

Water Management Training Course in Hague-Netherlands

Water Management Training course for the senior officials of Planning Commission, MoWR, WARPO and BWDB was organized by the Royal Dutch Embassy of Dhaka, Bangladesh in cooperation with the Rijkswaterstaat National Institute for Coastal and Marine Management in ISS Campus of Hague, Netherlands. The training program, were attended by sixteen senior officials of BWDB, WARPO, Planning Commission and MoWR



Group Photograph of participants in ISS Campus Hague-Netherlands along with Course Coordinator

from 3-19 November, 2007. Mr. Md. Shahjahan, Director (Planning) and Mr. Hasan Parvez, PSO (Eng.) From WARPO participated in this training course. During this training course Twinning Committee members, Director General, BWDB and WARPO, Joint Secretary Ministry of Water Resources headed by Mr. Syed Mohammad Zobaer, Former Secretary, MoWR, Bangladesh visited Netherlands for attending routine Twinning Committee Meeting with the Director General, Rijkswatersaat, Hague, Netherlands and they stayed there 5-9 November, 2007. GoN-GoB "Twinning Committee" members finalized the draft New Twinning Arrangement (2008-2009) in the meeting, which was held on 7 November 2007 at the office of the Director General, Rijkswaterstaat, Hague. The New Twinning Arrangement is going to be signed in March 2008 in between the "Ministry of Water Resources of Bangladesh" and "The Ministry of Transport, Public-works & Water Management of The Netherlands." in Dhaka, Bangladesh. The meeting also discussed about bi-lateral water management issue in view of achieving Millennium Development Goal (MDG). The objective of this Senior Official's "Water Management Training" course particularly part-2: "Changing Management and Management Change", was to focus on Organization, Governance, HRD, Leadership (for change) in public body such as BWDB & WARPO and in addition to other issues such as service orientation, empowerment, stakeholder influence, gender, water utilities and inter-institutional cooperation. The training course was mix of classroom-based (8 days) learning, training and teaching. Four daylong field visits were also included. Some of these visits, were organized by Dutch Water Board focusing the issues of decentralization versus merging, governance and stakeholders influence.

Seminar on Sustainable Water Resources Management for Development in the Asia Pacific Region held at Spain

The Spanish Agency for International Cooperation (AECI), self-governing body attached to the Ministry of Foreign Affairs and Cooperation through the State Secretariat for International Cooperation, organized a Seminar on "Sustainable Water Resources Management for Development in The Asia Pacific Region", for professionals responsible for Water Resources

Management in Asian countries (Bangladesh, Cambodia, The Philippines, Indonesia, East Timor, Sri Lanka, and Vietnam). The programme has been organized by TRAGSA at Zaragoza and Madrid in Spain, from 22 to 30 October, 2007, which was intended for the participants having



Mr. Md. Alauddin, Additional Director General, BWDB, Mr. Md. Abdul Mannan Talukder, Joint Chief, MoWR and Dr. Nilufa Islam, Director (Technical) of WARPO with all other participants seen in the picture

background as decision makers, planners, specialists, academicians from public and private organizations responsible for drawing up and planning policies related to water resources and familiarity with Integrated Management of Water Resources, specially those in which water is the main factor to produce (agriculture and related sectors) or to satisfy the essential needs, or water as an environmental risk. A total of 25 participants representing 7 countries including Bangladesh, Cambodia, The Philippines, Indonesia, East Timor, Sri Lanka, and Vietnam attended the seminar. From Bangladesh Mr. Md. Alauddin, Additional Director General, BWDB, Mr. Md. Abdul Mannan Talukder, Joint Chief, MoWR and Dr. Nilufa Islam, Director (Technical) of WARPO participated the 9 days programme. The seminar ended with an evaluation and suggestion for future actions to be taken by developing countries to promote human rights, and also to foster an equitable and participatory sustainable development.

Legal Framework for Water Resources Management Course at Australia, Sydney

Mr. Saiful Alam, Principal Scientific Officer of WARPO recently attended "Legal Framework of Water resources Management", a course held in Sydney, Australia between 22 September to 2 October 2007 to learn experiences in other countries. The course was organized by International Development Law Organization (IDLO) and funded by Australian Aid (Aus Aid). The objective of the course was to increase awareness about the legal regulating and policy



Mr. Saiful Alam PSO (Water Resources), WARPO with other participants

aspects for water resources management among the Asia Pacific Regional countries. About 27 participants from Bangladesh, India, Nepal, Srilanka, China, Lao-PDR, Cambodia, Vietnam, Thailand, Mongolia attended the seminar. The course has been very useful in the context of the ongoing activity taken up by WARPO to draft the Bangladesh Water Use Act.

KOICA Training on Hydro-Infra Development and Management (Bangladesh)

A sixteen days (13 March - 28 March, 2008) international training on "*Hydro-Infra Development and Management (Bangladesh)*" organized by Korean International Cooperation Agency (KOICA) was held at K-water Academy Daejeon, Korea. A total of fifteen (15) government official including ten (10) officials from Bangladesh Water Development Board (BWDB), three (3) officials from Water Resources Planning Organization (WARPO), one (1)



Participants of Hydro-Infra Development and Management (Bangladesh) training course

official from Ministry of Water Resources (MoWR) and one (1) official from River Research Institute (RRI) were attended in the training. Mr. Akhter Hossain Bhuiya, Secretary; Mr. Abu Taher Amanullah, Principal Scientific Officer and Mr Mohammad Alamgir, Senior Scientific Officer attended in the training from Water Resources Planning Organization.

The course consists of a formal orientation including Welcoming Reception, Video Presentation on Korea and KOICA's Activities, Class on Korea's Culture, Society and its Language, Presentation on daily life in Korea, Seoul City Excursion including outdoor practice, etc. The class room lecture divided in to five major sessions namely: Session I: Introduction to Water Resources and Investigation; Session II: Water Resources Development; Session III: Water Use and Management; Session IV: Water Management Applications; and Session V: Presentation and Discussion.

Apart from class lecture the participant also attended in a number of site visit i.e. : Hydrologic Observation Station; Groundwater Monitoring Site ; Nakdong River Estuary Barrage ; Hwabuk Dam Construction Site; Water Resources Operation Center (WROC); Gumi Multi-Regional Water Supply Facilities ; Ulsan Multi-Regional Water Supply Facilities etc.

The course ended with distribution of certificate to the participant by Director, K-Water Academy followed by a formal closing ceremony. The organizer as well as participant's hopes to effective implementation of the shared knowledge in the respective fields of the both countries.

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. 3.02 lakh was received from different organizations as cost for supplying water resources data and information.

The Total Budget and Expenditure during the Year 2007 - 2008 is presented below:

(In lakh taka)

Name of the Project	Revised Allocation for the year 2007-2008 (Total)	Expenditure up to June 08 (Total)	Source of Fund
<i>a) Technical Assistance Programme:</i>			
i) Impact Assessment of Indian River Linking Project for Inter Basin Water Transfer	121.00	92.93	GoB
ii) Regional Technical Assistance (RETA) Supporting Integrated Water Resource Management (Bangladesh) Project	56.00	42.00	ADB
iii) Water management Improvement Project (WMIP) Component 3B (WARPO)	91.50	-	IDA
Sub Total:	268.5	134.93	
Spent on Pay & Allowance	147.67	133.88	GoB
Others	60.39	52.88	
Sub Total:	208.06	186.76	
Grand Total	476.56	321.69	

WARPO Observe International Day for Biological Diversity

A discussion meeting was organised by Water Resources Planning Organisation (WARPO) to mark the International Day for Biological Diversity in the city with its Former Director General, M Inamul Haque in the chair. The meeting was arranged on 22 May 2008 at WARPO Conference Room, Banani Dhaka. The Chief Guest of the meeting was Mr. M.R.A.Taha, President, Bangladesh Nature Conservation Society. This year's theme for the day was 'Biodiversity and Agriculture'. Two papers were presented on 'Biological Diversity' and 'Agriculture' at the discussion.

Dr Nilufa Islam, Director (Technical), WARPO while presenting her paper on 'Biological Diversity' said "Biodiversity was endangered by introducing some alien species into the ecosystem of the country. Some species of both plants and animals that grow rapidly were brought in the country, but researches proved that those are harmful for the ecosystem in the long run. The alien species should be tested properly before their introduction into the ecosystem. Rapidly growing plants like Eucalyptus, Epil Epil and Akashia are harming the local species of trees, while introduction of Piranha and African Cat fish are killing the local species of fishes and genetically modified and hybrid paddy is harming the yields of local varieties of paddy".

Environmentalism Mohammad Iftekhar Hossain, while presenting his paper on 'Agriculture' said "Farming of crops, fishes and livestock should be conducted by local management to save the biodiversity. By creating awareness among people, we can save our endangered species".

Speaking as the chief guest, Mr. MRA Taha said protecting biodiversity of the country has no alternative to maintain its healthy environment and climate.

DG, WARPO said, "Renewable natural resources in a certain geographical area change with the change of seasons, but those can do a lot of damages to the environment and human life if alien species are introduced into that certain ecosystem."

The International Day for Biological Diversity is observed in 187 countries across the world according to a UN convention adopted in 1992. Bangladesh signed the convention on the same year and ratified that in 1994.



Seminar Programme on International Day for Biological Diversity at WARPO on 22 May 2008

