Government of the People's Republic of Bangladesh

Ministry of Water Resources

Strengthening of WARPO

Organizational and Institutional Development

Final Report

December, 2011

Water Resources Planning Organization

Abbreviations and Acronyms

ADB	Asian Development Bank
BADC	Bangladesh Agricultural Development Corporation
BHWDB	Bangladesh Haor and Wetland Development Board
BIWTA	Bangladesh Inland Water Transport Authority
BOD	Board of Directors
BUET	Bangladesh University of Engineering and Technology
BWA	Bangladesh Water Act
BWDB	Bangladesh Water Development Board
BWFMS	Bangladesh Water and Flood Management Strategy
CDS	Coastal Development Strategy
CEGIS	Center for Environmental and Geographic Information Services
CSO	Chief Scientific Officer
CZPo	Coastal Zone Policy
DAE	Department of Agricultural Extension
DG	Director General
DoE	Department of Environment
DPHE	Department of Public Health Engineering
EC	Executive Committee
ECNWRC	Executive Committee of the National Water Resources Council
EGIS	Environment and GIS Support Project for Water Sector Planning
FAP	Flood Action Plan
FPCO	Flood Plan Coordination Organization
GIS	Geographical Information System
GoB	Government of Bangladesh
GPWM	Guideline for Participatory Water Management
HR	Human Resources
HRD	Human Resources Development
ICRD	Integrated Coastal Resources Database
ICZM	Integrated Coastal Zone Management
ICZMP	Integrated Coastal Zone Management Plan
IDS	Information and Data Services
IRLP	Indian River Linking Project
ISS	International Institute of Social Studies, The Netherlands
IWM	Institute of Water Modelling
IWRM	Integrated Water Resources Management
JRC	Joint Rivers Commission, Bangladesh
KPA	Key Performance Area
KSA	Knowledge, Skills, Attitudes and Abilities
LGED	Local Government Engineering Department
LGIs	Local Government Institutions
MoU	Memorandum of Understanding
MoWR	Ministry of Water Resources
MPO	Master Plan Organization
NAPA	National Adaptation Programme of Action
NGOs	Non Government Organization
NILG	National Institute of Local Government
NWMP	National Water Management Plan
NWP	National Water Plan

NWPo	National Water Policy
NWRC	National Water Resources Council
NWRD	National Water Resources Database
ODP	Organizational Development Plan
OGDA	Options for Ganges Dependent Area Study
PA	Personal Assistant
PC	Planning Commission
PCD	Program Coordinating Director
PCU	Program Coordination Unit
PEST	Political, Economic, Social and Technological
PIP	Priority Investment Programmes
PMIS	Project Management Information System
PSO	Principal Scientific Officer
RETA	Regional Technical Assistance of the Asian Development Bank
RRI	River Research Institute
SO	Scientific Officer
SSO	Senior Scientific Officer
SWMC	Surface Water Modelling Centre
SWOT	Strength, Weakness, Opportunity and Threat
SWRS	State of Water Resources System
ToT	Training of Trainer
WARPO	Water Resources Planning Organization
WASA	Water Supply and Sewerage Authority
WB	World Bank
WMIP	Water Management Improvement Project
WRP	Water Resources Panning

Executive Summary

The Water Resources Planning Organization (WARPO) is an exclusive multidisciplinary "apex planning organization" of Bangladesh. WARPO was established in 1991 as a government institution for macro-level planning for integrated management and development of water resources in the country. The Water Resources Planning (WRP) Act of 1992 provides the legal framework of WARPO as a statutory organisation. WARPO has taken substantive initiatives to strengthen its institutional and human resources capacity through formulation of the Organizational Development Plan (ODP) in 2006 and Regional Technical Assistance of the Asian Development Bank (RETA) in 2009. As a part of the continuous efforts, the Government of Bangladesh has undertaken the Water Management Improvement Project (WMIP) with assistance from the World Bank, which encompasses a major component on "Strengthening of WARPO: Organizational and Institutional Development". This component intends to support WARPO for performing more effectively using state-of-the-art technology for fulfilling the desired roles assigned in its policy framework.

The National Water Policyand the National Water Management Planhave renewed and envisaged future role of WARPO. With regard to performing increased mandates and providing services to its stakeholders, WARPO needs organisational strengthening, adequate human resources, enhancement of technical capacity of employees and logistic supports. As per the WRP Act, the NWPo, the NWMP and the CZPo, WARPO is responsible for macro level planning; acting as a "clearing house" under framework of NWMP for water resources projects; monitoring and evaluation of large projects, updating of the NWRD and serving as the secretariat of ECNWRC. Therefore, it is a prerequisite to strengthen WARPO's institutional and human resources capacity, so that it can act as a center of excellence in the water sector.

WARPO has enough room to manoeuvre for executing its main tasks with sufficient authority as an "organisation" under the Ministry of Water Resources. It is necessary to translate the original WRP Act into rules and regulations for illustrating the mandates and to explain other sections of the Act which will also enable the creation of a WARPO fund and establishment of collaboration with stakeholders. However, the WRP Act may be revised in the future to perform its mandates more extensively and to conceiveits future legal position. One of the ways to strengthen the position of WARPO is to activate the secretariat of the ECNWRC, which is a strong inter-ministerial body that can function as a powerful umbrella for WARPO in its dealing with stakeholders. Similarly regular meeting of Board of Directors (BOD) will also improve WARPO's organizational strength.

The Director General of WARPO should be competent to provide a dynamic leadership. The appointment of Director General should preferably be from WARPO. However, the appointment can take place through an open, competitive procedure if there is no suitable candidate within WARPO to which qualified professionals can apply with relevant backgrounds and expertise in the water sector. The tenure of the Director General of WARPO should be sufficiently long to make it possible to build a dynamic organization.

The two Directors of WARPO will lead and coordinate their area under the overall leadership of the Director General. The Directors should become more responsible for "knowledge/expertise" management. It is recommended that the "Director Planning" will coordinate the sections of Engineering, Water Resources, and Monitoring & Evaluation; while the "Director Technical" will

coordinate the Socio-Economic, Agriculture, Environment, Forestry and Fisheries, and Computer and Information sections.

The six main tasks derived from WRP Act and NWMP are organised in two areas, which largely represent (I) the macro planning & policy, conformity with NWMP checks, and monitoring and evaluation tasks; and (II) the data/information, research, networking, and conflict mediation tasks. It is necessary to link the different sections of WARPO through improvement of communication and information exchange regarding the task and project for organizing the role and responsibilities of the different sections.WARPO should create enough incentives and facilities for increasing the dynamism and efficiency of its professionals.WARPO should also be more active in getting regular budgetary funds from the government to replace some of the previously available external funds (project aid) for its activities. A 'WARPO Fund' should be created which can be utilized for its capacity development.

WARPO needs a permanent office building that can provide enough space and suitable working environment for its employees and for maintaining its sophisticated database system with IT hardware and software capacity. Thelibrary should be strengthened with physical space and adequate logistics and manpower to perform as the largest information resource centre for the water sector in Bangladesh. The transport facilities need to be strengthened to support the daily transport of professional staff to and from work as well as for project visits, networking with other stakeholders in the water sector etc.

The WARPO should take immediate steps towards filling current vacancies as well as gradual expansion of human resources as proposed in the ODP which will help to execute its six main tasks more efficiently. All the vacancies should be filled as soon as possible, in particular the PSO and SSO positions following approved manpower of WARPO. WARPO needs to be emphasized by increasing the number of professional staff in the areas of environment, climate change, socio-economic, and gender issues. This process of changing the professional mix of WARPO could take place during recruitment of the current vacancies and expansion of human resources as per the ODP.It is also proposed to make an additional change in the Service Rules of WARPO, in terms of creating positions for other disciplinary backgrounds.

Internal coordination among the sections and professional should be improved through coordination meeting, seminars, etc. An annual work plan should be prepared by WARPO which will serve as an instrument for following up the activities of each section and for evaluating the performance of the different sections as well as professionals.

Training programmes have been prepared as a part of the career development plan for WARPO professionals. A three-year training programme is proposed with a more detailed programme for the first year. The training courses are divided according to focus: (a) WARPO's mandates, legal framework, main tasks and relationship with stakeholders; (b) General skills, such as leadership, management, communication, and computer-based tools; (c) Office, financial and human resource management; and (d) Specialized technical courses and specific knowledge enhancement for professional staff. WARPO should develop a more precise training plan including training courses, participants, budget, and source of funding.

WARPO needs to strengthen its relationship with stakeholders that can be achieved through MoUs between the agencies for data sharing, collaborative research, etc. WARPO can provide benefits to

the stakeholders through checking conformity of water projects with the principles and guidelines developed in the NWMP (i.e. through its "clearing house" role under framework of NWMP). This will also strengthen the working relationship of WARPO with stakeholders.

WARPO should establish a 'Training Unit', initially with current staff from different sections and take necessary steps for gradual recruitment of permanent staff, and form a new Research & Human Resources Development Section. The unit should organize training, workshops, and seminars to build awareness among stakeholders about the current and future issues in the water sector of Bangladesh. Also, much investment in networking has to be undertaken, using an interactive website, small policy briefs, informative seminars, and short training model as tools. Training of stakeholders (GOs, NGOs and LGIs) on the NWMP, ICZM and issues related towater sector, creating guidelines to develop water projects in a sustainable and responsible manner and avoiding conflicts over water resources will be among the future tasks of WARPO. A general framework for a detailed training plan for stakeholders is also prepared. The WARPO should add more details to the training programmes for stakeholders based on available resources and funds.

WARPO should involve NGOs and LGIs in their activities as they have large networks at field level in the country. WARPO could provide resource persons for training programmes but also staff could participate in Training of Trainer (ToT) courses, which facilitates network building and brings WARPO officials closer to the types of worksby NGOs and LGIs. In relation to elected local government officials and bodies, it is recommended that WARPO keeps cooperation with the National Institute of Local Government (NILG), as it is the primary institution for training local government officials in Bangladesh. NILG has an enormous outreach and trains local government officials, where WARPO can offer training modules on water related issues. WARPO is welcome to provide expertise knowledge on coastal protection, river embankments, integrated water management, climate change impact and natural disaster management.

The main development partners (namely, World Bank, Govt. of Netherlands and ADB) for the water sector recognize that WARPO has its own position in the water sector. Development partners support the initiatives to institutionally strengthen WARPO. They also recommended that WARPO should have a permanent office building and be revived with dynamic leadership. WARPO can play a vital role in the water sector through functioning of the ECNWRC, performing its "clearing house" role under the framework of NWMP and taking a leading role in future large projects. It should also establish good linkage with NGOs and LGIs through establishing contacts with stakeholders and actively emphasizing its role as a macro-planner.

Finally, all government and non government and development partners in the water sector emphasis for immediate strengthening of WARPO so that WARPO can carry out its role and functions in water sector in Bangladesh. WARPO should involve as a partner organization with other leading planning bodies such as the Planning Commission. Through such joint efforts a more dynamic WARPO can be expected to develop and consequently set support from all agencies for its increasing responsible role in macro planning in Bangladesh.

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Chapter 1 Introduction

1.1 Background

In a strive to make a centre of excellence, the Water Resources Planning Organization (WARPO) had taken initiatives to strengthen its institutional and human resources capacity in the recent past. As part of the continuous effort, the Government of Bangladesh has undertaken the 'Water Management Improvement Project (WMIP) (2009–2015)' with assistance from the World Bank. The project has a major component on "Strengthening of WARPO: Organizational and Institutional Development" (Component 3B). The activities under this component will support WARPO to perform, more effectively using stateof the art planning tools, its roles as assigned in its policy framework. This technical assistance support includes organisational change, capacity development and training, procurement of equipment and creation of physical facilities for WARPO.

The Government of Bangladesh formulated the National Water Policy (NWPo) in 1999 with the intention of guiding future public and private actions for ensuring optimal development and management of water that benefit both individuals and the society at large. The NWPo provides directives and guidelines for fundamental and wide-ranging reforms of the water sector and its two principal organisations, the BWDB and the WARPO. In 2001, a Guideline for Participatory Water Management (GPWM) was approved by the National Water Resources Council (NWRC) to facilitate the process of participatory water management at all levels of water management in Bangladesh. A National Water Management Plan (NWMP), developed through WARPO,was approved by the government in 2004 with the main objective of developing a macro water management plan for operationlising the directives of the NWPo. The reform initiatives thus initiated by the government have created an enabling environment for taking concrete actions to move forward.

The Center for Environmental and Geographic Information Services (CEGIS) in a joint venture with the Institute of Social Studies (ISS), the Netherlands, has been engaged to provide consultancy services to carry out this study as mentioned in the Component 3B of the WMIP project. This report, entitled "Strengthening of WARPO: Organizational and Institutional Development", presents the analysis and recommendations focusing on three key issues as per the scope of work, -(a) Strengthening of WARPO, (b) Human Resources Development of WARPO, and (c) Human Resources Development for the stakeholders of WARPO.

1.2 Rationale

Water resources planning and management have been recognised as one of the key aspects of all development activities in Bangladesh. The Water Resources Planning Organization (WARPO) was created in 1992 as an exclusive government institution to facilitate macro-level planning for management and integrated development of the water resources of the country. The Water Resources Planning Act (WRP) of 1992 provides the legal framework of WARPO as a statutory organisation. The National Water Policy (NWPo, 1999) and the National Water Management Plan (NWMP, 2001) renewed the perspective on the future role of WARPO. Through the NWPo it has been assigned further responsibilities that involve conflict resolution or adjudication on cases involving two or more water user agencies. Some 13 ministries and 35 public sector agencies are directly involved in the water sector in various manners. As the country's principle water planning

institution it is important that WARPO develops in such a way that it's activities are directed/guided for ensuring optimal development and management of water resources that would benefit both individuals and the society at large and at the same time to achieve the environmentally sustainable water development schemes.

WARPO also prepared an Organisational Development Plan (ODP) in 2006 which explicitly explains the vision and mission of WARPO as well as the enabling environment of WARPO. The issues of strengthening WARPO were also discussed in the National Water Management Plan (NWMP, 2001) and the Regional Technical Assistance (RETA) report (ADB, 2009).

With regard to performing increased mandates and providing services to its stakeholders, WARPO lacks in organisational autonomy, adequate human resources, technical capacity of employees and logistic support. Under these circumstances, it is prerequisite to strengthen WARPO's Institutional and human resources to improve its capacity as a centre of excellence in the water sector.

1.3 Objectives

The main objective of this study is to assist WARPO for institutional strengthening to enhance its capability in water resources planning and other mandated tasks mentioned in different policy documents. However, the specific objectives of this study are to:

- analyze the existing role of WARPO within the water sector of Bangladesh, and its relations with its stakeholders in the government and elsewhere in the society, and
- strengthen and consolidate its role as well as develop the human resources capacity of WARPO and its stakeholders.

1.4 Methodology

The study has been carried out in four major steps - (a) analysis of the scope of work, (b) review of relevant documents and reports, (c) primary data collection, and (d) analysis of information and report preparation (Figure 1.1). The details of these steps are described below.

(a) *Analysis of the scope of work*

At the beginning of the assignment, the scope of work has been analysed through discussion with WARPO and relevant documents for better understanding of the activities to be carried out and deliverables to be submitted.

(b) *Review of relevant documents and reports*

The Water Resources Planning Act 1992 and the Organizational Development Plan (2006) of WARPO has been reviewed thoroughly to comment on whether they needed any modifications or not. In addition, the following reports and documents among others have been reviewed to have a better understanding for
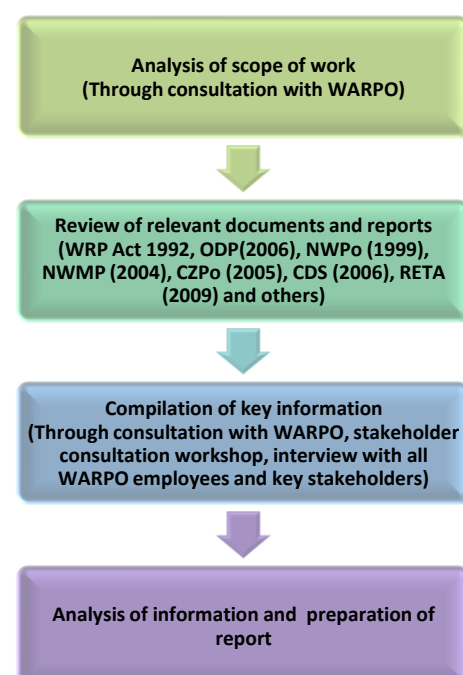
Figure 1.1: Approach of the study

strengthening of WARPO.

- "Final Report and Roadmap" as well as "Annexes" prepared under RETA supporting the IWRM (Bangladesh) project, 2009
- "Rules of Business (Revised up to 2009)" for WARPO
- National Water Policy, 1999
- Coastal Zone Policy,2005 and Coastal Development Strategy,2006
- National Water Management Plan Project: The Institutional Setting", *Topic Paper* No. 5, 1999
- "National Water Management Plan: Development Strategy", 2001
- "National Water Management Plan", 3 Volumes, 2001
- Annual Reports of WARPO
- "Activity Report on 'Clearing' of BWDB project Proposals (2007-2010)", 2010

(c) Compilation of key information

Besides literature review, primary data have beencollected through consultation with WARPO officials, stakeholder consultation workshop, and interviews with all WARPO employees and key stakeholders. Several meetings has been held with WARPO officials and management authority to gather information on the problems of WARPO's institutional set up and human resource development, and suggestions for improvement. In addition, an extensive survey of all available professional staff of WARPO was performed using a semi-structured questionnaire, which was filled in during personal interviews, to obtain information on qualification, expertise, responsibilities and further needs of the employees.

In the months of August/September 2011 the professionals of WARPO were interviewed to fill in the HRD questionnaire[1]. The questionnaire had been first tested at CEGIS instead of at WARPO (whose staff are the "target population"), in order to see its effectiveness and to avoid influencing WARPO personnel. The interviews were done unannounced. General information was provided by the management. Each interview was done under the condition that generally available HR data could be revealed to the WARPO management, but no specific personal details. The perceptions of professionals about WARPO in terms of strength, weakness, opportunities and threats have been assessed using the standard SWOT analysis method.

A stakeholder consultation workshop, attended by 33 participants from different organisations was held on 21st July 2011 at WARPO. The aim of the workshop was to get views and suggestions from government and non-government stakeholders for strengthening WARPO as well as to find out how WARPO could provide support to the stakeholders. Moreover, separate interviews (with a non-structured questionnaire) were conducted with key stakeholders (MoWR, BWDB, DPHE, LGED, DOE, PC, NILG and NGOs) and development partners agencies (WB, ADB, EKN) to learn about their individual opinion on the strengthening of WARPO.

A brief inventory of office space, logistics, transport and IT facilities was also prepared from data provided by the WARPO administration.

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[1] In the further reporting this will be referred to as the Human Resources Survey WARPO 2011

(d) Analysis of information and preparation of report

All data, collected through the above-mentioned methods, were analysed to find out the current institutional strengths of WARPO and human resources capacity. The major recommendations provided by WARPO and its stakeholders were also analysed. The results and findings are presented in this report covering three main issues - (a) Strengthening of WARPO, (b) Human Resources Development of WARPO, and (c) Human Resources Development for the stakeholders of WARPO. Earlier, an inception report and two interim reports were submitted to WARPO.

Chapter 2 WARPO: Institution, Mandates and Tasks

2.1 Institutional Set-up

The Water Resources Planning Organization (WARPO) is under the Ministry of Water Resources (MoWR) and governed by a Board of Directors (BoD) with representatives from nine ministries. WARPO was the successor of the Master Plan Organization (MPO), which was established in 1983 and was responsible for the preparation of National Water Plan (NWP) completed in 1987. The MPO started a second National Water Plan (NWP II) in 1989 and completed it in 1991. After the completion of NWP-II, the GoB established WARPO in 1991 as the exclusive government institution for macro-level water resources planning to manage water resources in a comprehensive, integrated and equitable manner.

Presently, WARPO is led by a Director General and two Directors; and organised in seven sections other than management, as listed below:

- Management (Director General, Director, Administration)
- Sections:
  - Engineering
  - Water Resources
  - Economic
  - Environment, Forestry and Fisheries
  - Agriculture
  - Monitoring & Evaluation
  - Computer and Information

The present total number of staff at WARPO is 87 of which professionals positions are 44 and supporting staff are 43. The distribution of professionals is shown in Figure 2.1.

Within the existing organisational set up, there is also a Program Coordination Unit (PCU) established as per the directive of the Coastal Zone Policy (CZPo). WARPO is responsible for implementing the Coastal Zone Policy and the Coastal Development Strategy. The PCU has the responsibility of co-ordinating, monitoring and harmonising the operation of the Integrated Coastal Zone Management (ICZM) process and serves as a service set-up for relevant government and non-government agencies, NGOs, LGIs, and private sector organisations active in the coastal zone. All activities of the PCU will be focused on the institutionalisation of the ICZM process. The PCU is headed by a Director of WARPO who will also act as a Program Coordinating Director (PCD). The PCU has a total of 12 professional positions under one of the directors of WARPO. The existing professionals of WARPO will work in the PCU through internal arrangement.

Board of Directors
(Parichalana Parishad)

Director General

Technical Committee

Executive Committee

Director/CSO   1

Director/CSO   1

Administration & Finance
Secretary	1
Deputy Secretary	1
Accounts Officer	1
Private Secretary	1
Accountant	1

Engineering Section
PSO	1
SSO (Water)	1
SSO (Health)	1
SSO (Navi)	1
SSO (Agri)	1
SO (Water)	1
SO (Health)	1
SO (Navi)	1
SO (Agri)	1
Cartographer	1

Water Resources Section
PSO	1
SSO (SW)	1
SSO (GW)	1
SO (SW)	2
SO (GW)	2
SO (Geologist)	1

Economics Section
PSO	1
SSO (Eco)	1
SSO (Socio)	1

Agronomy Section
PSO	1
SO (Soil)	1
SO (Crop)	1

Environment Forestry & Fisheries
PSO	1
SSO (Env)	1
SSO (Forst)	1
SSO (Fish)	1

Computer & Information Section
PSO (Senior System Analyst)	1
SSO (Prog)	1
SO (Asst.Prog.)	1
SO (Computer)	1
Librarian	1

Monitoring & Evaluation Selection
PSO	1
SSO (Moni)	1
SO (Mon.)	1

Secretariat Pool/Supporting Staff
Cataloguer	1	Library Attendant	1
Stenographer/PA	3	Draftsman(C&D)	1
UDA	1	Casher/S.A.A	1
Steno-Typist	5	LDA Cum Typist	2
Reproduction Asst	1	Driver	10
Reproduction Helper	1	M.L.S.S	10
Daftary	1	Guard	4
Sweeper	1		

Note:

Total employee:		87
	Professionals:	44
	Support staffs:	43

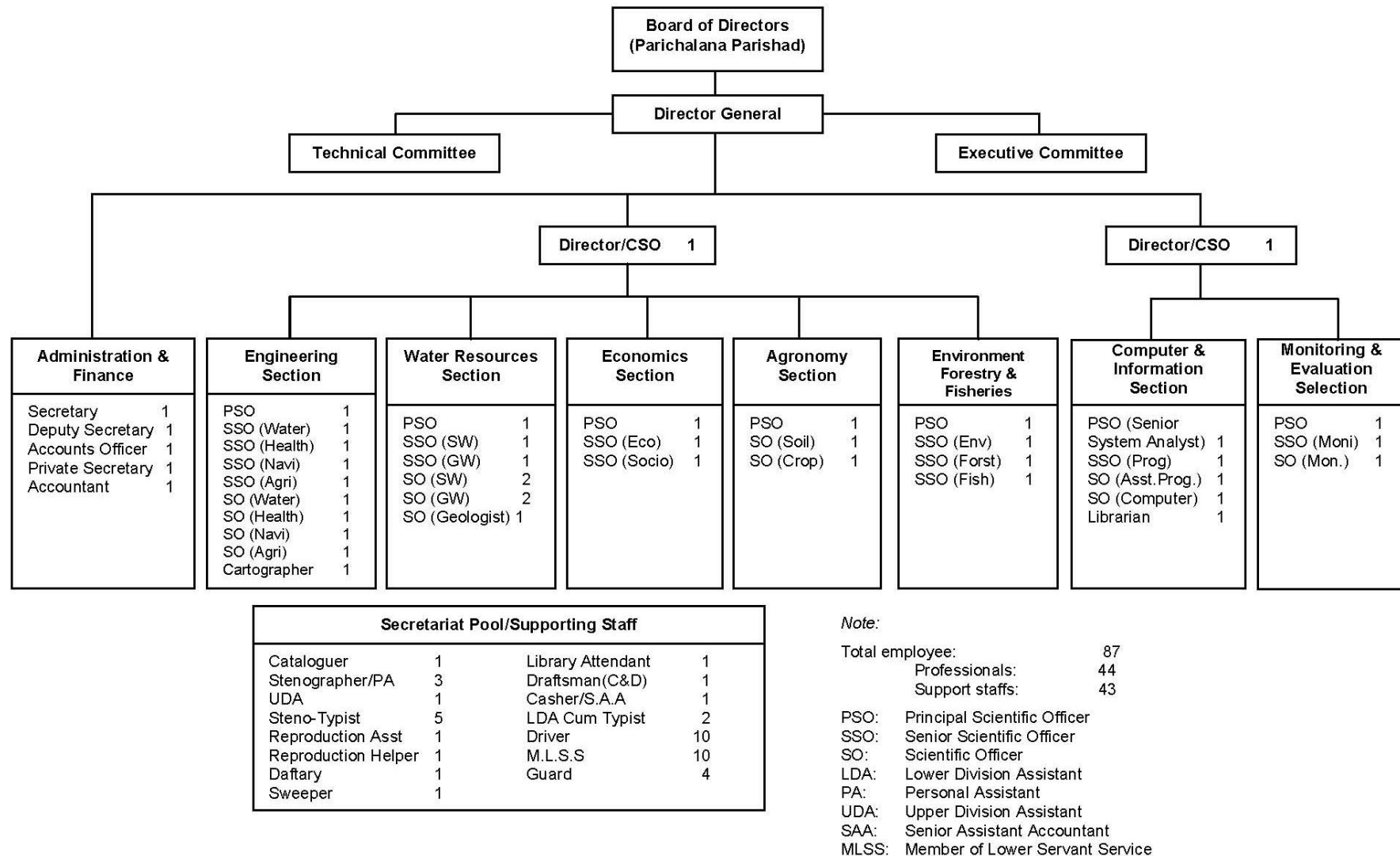|	
PSO:	Principal Scientific Officer
SSO:	Senior Scientific Officer
SO:	Scientific Officer
LDA:	Lower Division Assistant
PA:	Personal Assistant
UDA:	Upper Division Assistant
SAA:	Senior Assistant Accountant
MLSS:	Member of Lower Servant Service

Figure 2.1: Existing Organogram of WARPO

2.2 Key Achievements

WARPO has a successful history in the last two decades in water resources planning and management. These achievements are also important to understand WARPO's current position and functions. The key achievements of WARPO are described below in periodic order:

1992-1997	:	Emerging institution, starting activities with deputed officials
1998-2001	:	Development of NWPo (1999) and NWMP (2001) and NWRD
2002-2006	:	Development of NWMP (2001),CZPo, CDS, PIP, and ICRD, ODP; EMIN, NAPA, RETA; Increased mandates; approval of manpower (organogram) etc.
2007-2011	:	Updating NWRD, clearing of BWDB projects

In this early period, the organisation functioned with deputed officials (on secondment) from other institutions in the water sector and was not involved in the FAP-projects that were executed around this time. For the FAP-projects the GoB had created another organisation, which was the FPCO, solely for managing and coordinating the activities of international and national consultants engaged in 26 FAP studies. When the FAP-projects were completed they were merged with WARPO, including all relevant 26 nos. of FAP studies.By the end of this period (from 1997), the organisation started to recruit its own personnel.

1998-2001: Development of NWPo (1999) and NWMP (2001) and NWRD

During this period WARPO prepared the National Water Policy (1999), which became a very important document for water resource management of Bangladesh. WARPO received more mandates from the National Water Policy to perform. Furthermore, possibly the most important document on water resources in Bangladesh was produced, namely the National Water Management Plan (NWMP) which was completed in 2001, but was formally approved in 2004.

The NWMP may be the first and the largest, and most important planning document of the country that would integrate the water resources planning activities of 13 ministries and around 35 departments. In spite of its main importance and contribution to Integrated Water Resources Management (IWRM) in Bangladesh, the Plan was not always implemented or followed, possibly only for the part that was within the realm of the Bangladesh Water Development Board (BWDB). However, it is acknowledged by several agencies that they are now following the main framework of the NWMP.

The National Water Resources Database (NWRD) was developed at the same time. During this period there were many reputable consultancy companies active with WARPO, and there was dynamic leadership. This period might be considered as the "high tide" for WARPO. Presently, WARPO is updating NWRD under WMIP project and after this update, it will be handed over to the revenue budget for regular update.

2002-2006: Development of CZPo, CDS, PIP, ICRD and ODP

In this period WARPO implemented the Integrated Coastal Zone Management Plan Project and developed the Coastal Zone Policy (CZPo), the Coastal Development Strategy (CDS), Priority Investment Programmes (PIP), and the Integrated Coastal Resources Database (ICRD). At the end of

this period, when it became clear that the mandates for WARPO had increased such as derived from the Coastal Zone Policy (2005), the necessary manpower[2] and permanent office location were not realised. In this context, WARPO prepared an Organizational Development Plan (ODP) in 2006, with support from a Twining Mission, as well as an elaborate road map for institutional policy reforms, execution of mandates and expansion of human resources.

In addition, WARPO implemented several projects such as the 'South West Area Integrated Resources Management Project', the 'Environmental Monitoring Information Network for Water Resources (EMIN)', the 'National Adaptation Programme of Action (Water, Coastal areas, Natural disaster & health sector)', and the Regional Technical Assistance (RETA) for supporting the IWRM (Bangladesh) Project during this period. Furthermore, WARPO started monitoring the implementation of 'Guidelines for Participatory Water Management (GPWM)' in water sector projects. During this period (2006) WARPO's present manpower (87 employees) was approved by the government.

2007-2011: Updating NWRD, clearing of BWDB projects

WARPO completed a major study on the 'Impact Assessment of the Proposed Indian River Linking Project for Inter Basin Water Transfer', which was started in January 2006. WARPO also started the 'Strengthening of WARPO: Organizational and Institutional Development under WMIP (Comp. 3 B-1)' project, updating the NWRD under the 'NWRD maintenance and management (WMIP Comp. 3B-2) project' and the 'Reduction of Wetland around DhakaCity: Causes, Impacts and Possible Remedies' project. During the period 2007-2011 around 90 BWDB projects were "cleared" by WARPO. Besides regular projects, WARPO carried out other tasks such as, 'Monitoring and evaluation of NWMP' and started functioning as the Secretariat of ECNWRC.

In summary, the milestones of development activities of WARPO since 1987 are as follows:

- National Water Plan-I (NWP-I), 1987
- National Water Plan-II (NWP-II), 1991
- 26 Flood Action Plan (FAP Studies), 1988-2000
- Bangladesh Water and Flood Management Strategy (BWFMS), 1995
- National Water Policy (NWPo), 1999
- NWMP Development Strategy Report, 2001
- National Water Management Plan(NWMP), 2001
- Guidelines for Environmental Assessment of Water Management (Flood Control, Drainage & Irrigation) Projects, 2001
- National Water Resources Database (NWRD), 2001
- Options for Ganges Dependent Area Study (OGDA), 2001
- State of Water Resources System (SWRS), 2001
- Integrated Coastal Resources Database (ICRD), 2005
- National Adaptation Programme of Action (NAPA), 2005

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[2] With assistance of the Twinning Mission between Bangladesh and the Netherlands, in September 2006 WARPO developed an Organizational and Development Plan (ODP), with a corresponding action plan.

- Coastal Zone Policy (CZPo), 2005
- Coastal Development Strategy (CDS), 2006
- Impact Assessment of Climate Changes in the Coastal Zone, 2006
- Environmental Monitoring Information Network for Water Resources (EMIN) project, 2006
- Impact Assessment of the Proposed Indian River Linking Project (IRLP) for Inter Basin Water Transfer, 2008
- Regional Technical Assistance (RETA) for supporting the IWRM (Bangladesh), 2009
- BangladeshWater Act, 2012 (Draft)
- Reduction of Wetland around DhakaCity: Causes, Impacts and Possible Remedies, 2012

2.3 Review of Water Resources Planning Act, 1992

The Water Resources Planning (WRP) Act, 1992 has been reviewed in terms of looking into two major aspects: mandates of WARPO and institutional position within the GoB, as described below:

2.3.1 Mandates

In the Water Resources Planning Act of 1992 the mandates/functions of WARPO were defined as:

a. To formulate water resources master plans in an environmentally sustainable manner and to develop national water resources

b. To draw up national work plans and policy relating to scientific utilisation and conservation of water resources

c. To advise other organisations concerned regarding the development, utilisation and conservation of water resources

d. To co-operate with any institution in conducting studies involved in the development of water resources, utilisation and conservation and if necessary, conduct special surveys regarding any such matter

e. To evaluate and analyse matters which develop due to the undertaking of measures by any institution involved in the development, utilisation and conservation of water resources and to advise on such matters

f. To develop standards of education, training and professionalism relating to the utilisation of water resources

g. To collect and analyse information regarding the utilisation of water resources and to disseminate the same

h. To organise and conduct national and international seminars, conferences and workshopsregarding water resources

i. To perform such other functions as may be conferred by the government regarding water resources.[3]

In the initial period (1992-97) WARPO functioned exclusively with staff on secondment from other institutions in the water sector. At that time also another organisation functioned under the MoWR, namely the Flood Plan Coordination Organization (FPCO), which coordinated the Flood Action Plan

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[3]This is an unofficial translation of the Act of 1992, also literally used by the RETA (2009) report Vol. 2, Annex D.

(FAP). In 1996, the FPCO was merged with WARPO, with the custodian of the plans and studies realised under the FAP-projects.

WARPO received further mandatesin a different manner through: (a) the development of the National Water Policy (1999); (b) formulation of the Guidelines for Participatory Water Management (2001); (c) approval of the National Water Management Plan (NWMP, 2001); (d) adoption of the Coastal Zone Policy (2005).

According to the RETA report (ADB, 2009: Vol 2: D-2, 3) the most important additions to the mandates and tasks of WARPO were formulated in the National Water Policy (1999) with approval by the government. The mandates can be classified into "routine core services" and "periodic services":

The "routine core services" were seen by the RETA report (ADB, 2009) as:

   j. Establishment and maintenance of the National Water Resources Database (NWRD) and Management Information System
   k. Upkeep of water resource assessments
   l. Monitoring implementation of the National Water Management Plan (NWMP) andits impacts
   m. Adoption of a "clearing house" role for all water sector projects identified by different agencies and reporting to the ECNWRC on their conformity to the NWMP
   n. Serving as the Secretariat to the National Water Resource Council (NWRC) and the Executive Committee of the National Water Resource Council (ECNWRC)
   o. Responding to ECNWRC and NWRC requests for information and advice

However, a perusal of the original text of the Water Resources Planning Act 1992 shows that the above mentioned point (j) is already sufficiently covered in the articles (d) and (g) of the Act; the point (m) on the "clearing house" under the framework of NWMP is sufficiently covered by the articles (c) and (e); while the points (n) and (o) mentioned in the RETA report (ADB, 2009) are also addressed under article (i).

The RETA report (ADB, 2009) describes "periodic services" as:

   ▪ Managing the updating of the National Water Management Plan at regular intervals (assumed 5-year)
   ▪ Contributing to Five Year Plans
   ▪ Providing adhoc advice on policy, strategy, institutional, and legal issues
   ▪ Undertaking special studies, as may be required from time to time

Some of these could also be executed under the Water Resources Planning Act 1992. National Water Policy (1999) had added crucial new mandates to the originally stipulated ones and notes that after that year any new tasks that were added had already been described in the original mandates of WARPO as conceived (in a more generic manner) in the Water Resources Planning Act 1992.

On the various additions of mandates for WARPO, the RETA report (ADB, 2009: D-5) clearly concluded the following:

> *"Arguably, the most relevant, and the most necessary of the functions that expanded on the original Act were those described in the National Water Policy (1999). All of the others are essentially subsets of either the existing mandate of*

WARPO or of the functions described in the Policy. The Act needs revision to accommodate the functions newly described in the National Water Management Policy. Namely, activities related to a National Water Resources Database, monitoring implementation of the NWMP, and functioning as a 'clearing house'."

In fact, quite a number of the "newly" formulated mandates of WARPO can be found under different headings, or formulated in broader terms in the Water Resources Planning Act 1992. The real problem is that the articles 22 and 23 in which the formulation (successively) of "rules" and "regulations" was laid were never implemented, which actually should be seen as a priority.

2.3.2   Institutional Setting

Institutionally WARPO, as was laid down in the Water Resources Planning Act of 1992, is positioned under the MoWR. There was a substantially different institutional environment when WARPO was established. Initially WARPO was running with deputed staffs from different departments. Now WARPO has its own employees as well as deputed staff. Dependency on deputed staff is decreasing. WARPO takes services (in respect of research and study) mainly from two specialised public trust organisations, namely the Center for Environmental and Geographic Information Services (CEGIS) and the Institute of Water Modelling (IWM) under the ministry of Water Resources. CEGIS is legally mandated to provide technical support to WARPO in its mandated functions related to strategic planning and the establishment and maintenance of the NWRD (Article-3(iii) of the Deed of Trust of CEGIS). Therefore, WARPO now has a relatively strong position in performing its mandated tasks with technical support from CEGIS.

However, WARPO has limitations in attracting skilled manpower due to inadequate financial benefits and provision for professional career paths. It also has limited options to derive income from providing services, as government organisations are expected to provide services at nominal costs. Therefore the RETA report (ADB, 2009: D-7) pointed out the need to consider the following issues in a revision of the Water Resources Planning Act (1992):

> *"Lessons learned and experience from the manner in which CEGIS and IWM were established and financed to ensure that adequate financing is made available and to provide an operational modality that accommodates the needs of highly qualified technical specialists that are needed for WARPO to properly fulfil its mandate."*

Traditionally WARPO has been close to the BWDB, and this relationship has taken the form of dependency, as only senior officials from the BWDB were deputed to the position of DG-WARPO - sometimes for very short periods, which has not been advantageous for the organisation. Therefore, a recommendation was made in the RETA report (ADB, 2009) for "establishing a mechanism for appointing leadership in which merit, commitment, and interest are deciding factors" in this respect (Ibid, 2009).

2.4 Review of Organizational Development Plan

The Organizational Development Plan (ODP) was prepared by WARPO in 2006, which put forth recommendations on re-organisation of mandates, institutional setup, staffing and development of an action plan to implement the recommendations.

The ODP (2006) recommended a revision of the WRP Act 1992 for adjusting WARPO's legal establishment and mandates in view of the NWPo and the CZPo. Under the present study, it is observed that the mandates given in the NWPo and the CZPo are broadly covered within the mandates given in the WRP Act 1992. Detailed analysis of the proposal for a revision of the WRP Act 1992 is provided in section 2.5. As suggested in section 2.5, it will be much more beneficial if the WRP Act 1992 is translated into 'rules and regulations', as revising the Act will require much effort since WARPO will need to go through long bureaucratic processes and Parliament sanction.

The ODP (2006) also recommended an expansion of manpower considering the increased mandates of WARPO. The ODP (2006: 19) indicates the "existing situation" of professional staff, which has formally not changed since 2011, as no additional allocation of staff has been approved. The additional personnel required, as proposed in the ODP (2006), are CSO (3); PSO (3); Deputy Secretary (1); Deputy Director (1), SSO (26); SO (22); Assistant Secretaries (2); Accounts Officer (1); Medical Officer (1); Sub-Assistant Engineer (1); and 32 additional support staff (mainly drivers and computer operators). In total it was proposed to move from 87 allocated positions to 180.

According to the present record of WARPO, which was captured in the Human Resources Survey of WARPO in September 2011, there were only 28 professional posts (three of the professionals were on study leave) and 43 supporting staff positions were filled in September 2011. Furthermore, the ODP which was approved by the BoD of WARPO, with its proposed personnel extension, is still pending. There is a counter-proposal to approve 30 additional positions (the professional/support staff ratio is not known), but no decision has been made on this issue since 2006.

WARPO is relatively understaffed, and this is primarily caused by a large number of vacancies. Some of the senior professional positions such as four out of seven PSOs and seven out 13 SSOs are vacant. This means that there is an urgent need for promotion/recruitment, who will be able to lead the process of institutional strengthening of WARPO in the near future.

Regarding knowledge gaps, there are areas in which knowledge and experience should be strengthened: climate change (which is under the environment section); gender (for which specialisation is needed in the socio-economic section and which is also directly connected to water resources); and integrated resource management (in particular water and land). For a multi-disciplinary planning organisation the need for socio-economic expertise is observed to be minimal, and when this report was being written, the economic section was fully vacant, although another PSO was in charge. The monitoring and evaluation capacity was also found to be relatively weak (1 SO; 1 PSO in charge).

Furthermore, what will be crucial in the future operation of WARPO is that these sections will have to work together in a less ad-hoc manner than they are used to, and more organised around the main tasks under the various mandates of WARPO. This can be done in the form of a *matrix organisation*. Such matrix organisation can be flexible, and in each main task there will be certain regularity and also sudden priority activities. For each of the sections the job descriptions might indicate certain priorities (for example NWRD =1; Monitoring & Evaluation =2; etc.), regarding the involvement in the key tasks of WARPO. Further work will need to be undertaken within WARPO, based on the identified knowledge gaps and training needs, to redefine precise responsibilities for each professional staff member. The starting point should be that for each of the six (6) main tasks there will be one or more sections identified as lead sections, while leadership for the sections will

be decentralised to the two Directors assisted by CSOs, each coordinating the work/tasks of the three sections.

In addition, the ODP (2006) proposed a 'Research and Human Resources Development section' comprising a new setup with one PSO and one Deputy Director/ SSO (Information & Publication), one SSO and one SO. One SO (Library) in the existing set up, renamed as SO (Information & Publication), proposed to be stationed under this unit. It should be noted that WARPO requires additional permanent staff for carrying out regular training programmes. Professional inputs from its different sections will also be required. At the initial stage, a Training Unit could be set up with current staff from different sections, as proposed in section 3.2, to start the training programmes and then new skilled staff could be gradually recruited, and a new 'Research and Human Resources Development section' formed as per the ODP (2006).

Regarding the proposals that were made in the ODP (2006) for increasing the number of professional positions in WARPO and the future role of the organisation, the report suggests a rather flexible position. Taking into account the implementation status of the ODP, WARPO should focus on the core tasks that have been formulated and take necessary steps towards filling vacant positions as well as ensuring gradual implementation of the ODP.

> *Box 2.1: Conclusion*
> *a)* There are still many posts vacant in WARPO, therefore, WARPO should concentrate on filling vacant posts with dynamic staff immediately, and continue to take necessary steps for gradual increase of staff as per the ODP (2006).
> b) WARPO should create enough incentives and facilities for increasing the dynamics and efficiency of its professionals.
> c) As suggested in the ODP (2006), WARPO should establish a 'Training Unit', starting with current staff from different sections and take necessary actions for gradual recruitment of permanent skilled staff, and form a new 'Research and Human Resources Development section'.

2.5 Logistics and Facilities

In order to assess the administrative capacity for executing the main tasks formulated in section 2.3, the consultancy mission investigated the work-related facilities that are currently available to the professional and support staff of WARPO. The investigation included an assessment of office space (and its use), computer and IT-facilities, software (and website), and transport facilities. Although the latter are used for transport of personnel to and from work, they provided an indication for the existing physical capacity for networking with other organisations and site visits to projects, meetings, or seminars.

2.5.1   *Office, Residential and Transport Facilities*

The WARPO office is a four-storied building rented from a private owner. WARPO has currently a rental contract until June 2013. The office building is not large enough to provide space for current staff or to perform mandated tasks. A permanent office building is needed to provide all logistic support to its employees as well as to have a permanent address. Since its inception, the WARPO office has been relocated several times, which has caused loss of institutional memory (e.g. valuable reports, data, etc.) as well as sufferings to the employees in terms of inadequate space and logistic support. WARPO could not build a permanent setup for library or networking facilities or database

storage. The employees and stakeholders as well as earlier reports of the NWMP (2001) and ODP (2006) have strongly recommended shifting the office to a permanent building. Therefore, it is very essential for WARPO to have a permanent office building that will facilitate its employees to perform the mandated tasks more efficiently.

It has often been suggested (and brought to the attention of the MoWR) that WARPO, with other water related organizations in Bangladesh should be housed in one complex, to make coordination and networking with stakeholders much easier. A permanent office building for WARPO could be achieved by either arranging a separate office building or a combined office complex for all water related organizations. The government should take necessary action immediately in this regard.

At present there are no official residential accommodation facilities for WARPO employees. To make WARPO job lucrative and to boost morale of WARPO staff, provision for residential accommodation should be made.

In terms of transport facilities, WARPO has in total four vehicles (as per Tools & Plan), which are providing limited services in terms of daily transport of officials as well as for networking with other stakeholders, and field visits to projects being screened or evaluated. Therefore, WARPO needs more vehicles, especially one vehicle for each PSO and higher officials, as well as adequate number of vehicles for mid-level/ junior officials and for field visits.

2.5.2   Computer and IT Facilities

WARPO has reasonably good computer and IT facilities (both hardware and software) to sufficiently support the work of its employees as well as for storage and dissemination of the NWRD, although some update and improved maintenance are required. WARPO has computers, printers, photocopiers, projector, server, network switch, internet facilities, PABX system, fax system, camera, sound system in the conference room, data backup and storage facilities, scanner, plotter and power supply back up facilities (Table 2.1). WARPO has its own 'Computer and Information' section that maintains the computers and deals with IT related issues. Nevertheless, more IT staff and logistics are required to provide proper maintenance and troubleshooting support to all WARPO employees.

All professionals and some support staff have desktop computers and access to the internet, internal network and printers. However, the professionals and other staff need some introductory training on new versions of software. Some support staffswho are engaged in typing and printing and using the photocopier, need training on trouble shooting and maintenance of machines.

WARPO is currently updating and improving its computer and IT facilities for the update and maintenance of the NWRD under WMIP (Component 3B, S2 project). Updating of the NWRD with provision of web-based access to the data could ensure WARPO better and easy communication with its stakeholders. Regarding web-based access to the NWRD as well as intranet facilities within WARPO, proper maintenance of the 'server' is very essential, which needs to be improved.

Furthermore, WARPO can acquire climate change modeling software and tools and necessary hardware facilities (e.g. server, processors high speed internet), which can be used for research on climate change issues in Bangladesh.

The website of WARPO has various major components presenting its organizational profile, several reports on national policies, and plans for the water sector in Bangladesh. However, there is a lot of scope for improving the website further. There are basic documents to be found, but there is no

web-based link to the documentation centre. Short briefs (e.g. 1 or 2 page leaflets in Bengali/ English) about the NWMP or the NWPo or other important documents developed by WARP can be uploaded on the website, which will be useful to the users.

Table 2.1: Inventory of computer and IT systems

Items	Total Number	Present condition (*No. of items*)	Need repairing	Obsolete
		Functioning		
1. Computers				
Desktop computer	50	45	5	
Laptop	4	2	1	1
2. Projector	1	1		
3. Printer				
Network printer	3	2	1	
Normal printer	30	25	5	
4. Photocopier				
Automatic	1	1		
Normal	3	2	1	
5. Scanner				
Map scanner	3	2	1	
Normal	2	2		
6. Plotter	2	2	1	
7. Power supply backup system				
Generator	1	1		
UPS	40	35	5	
8. Camera	3	2		1

Source: CIS, WARPO, 2011

2.5.3   Management InformationSystem

With regard to human resource management and accounting, WARPO has an accounting system with software that includes some modules on HR information. However, it is not in use currently because of some difficulties with the software. It would be important to acquire some software packages in order to systematise the HR and financial data, and to manage them more efficiently. In addition, WARPO needs Project Management Information System (PMIS) software packages for efficient project management.

- ▪ Currently, WARPO has limited capacity for the screening ("clearing") and monitoring of project evaluation due to insufficient manpower and lack of administrative capacity and software support. This is hampering its administrative capacity for proper execution of its "clearing house" function, in particular for checking project conformity with the NWMP.

2.6 Assessment of SWOT

WARPO's organizational strengths, weaknesses, opportunities and threats, as identified by its professionals, are listed below:

Strengths:

- An exclusive 'apex planning organisation' for macro level water resources planning in Bangladesh
- Governed by a statutory body by the WRP Act (1992) which gives it a permanent status
- A multidisciplinary organisation carrying out mandated tasks
- The executive secretariat of the ECNWRC
- Acts as a "Clearing House" under the framework of NWMP for all water sector projects
- Has the capacity to maintain and disseminate the NWRD etc. as per the NWPo
- Its mandates are according to the CZPo, the CDS etc.
- Has service rules for its employees (enacted in 1996)
- Has an enriched library

Weakness:

- No permanent office building
- Inadequate coordination/integration among its sections
- Lack of research and development opportunity
- Insufficient manpower to carry out its mandated tasks
- Lack of skilled professional with advance technical knowledge
- Insufficient revenue budget
- Frequent change of Director General
- Under developed service benefits system
- Lack of proper logistic support
- Lack of autonomy (e.g. for filling of vacant posts)
- Absence of advanced management system
- Inadequate persuasion for submitted project proposals

- Absence of in-house training practices for HRD
- Inadequate initiatives for field experience, project monitoring and evaluation
- Lack of systemic documentation (data collection, maintenance, updating and dissemination the NWRD)

Opportunities:

- Scope for collaborative research with national and international organisations
- Ability to arrange training for other water sector organisations for better understanding of the NWMP
- Ability to conduct international conferences on current issues (climate change, water governance, environment)
- Scope for providing water education to school students
- Promotion of Integrated Water Resources Management (IWRM) concept in Bangladesh
- The custodian of local and regional water resources database and information system
- Recognition of IWRM vision in the NWMP at global level
- Support from development partners and the international community's to perform its mandates
- Support from many government agencies and public trust like CEGIS and IWM

Threats:

- Conflicts with other agencies if there is duplication of work,
- Inadequate positioning of WARPO compared to its mandates,
- Human Resources component of the ODP is not yet endorsed by the government.

Chapter 3 Strengthening WARPO

3.1 Key Activities

As per the WRP Act (1992), the NWPo (1999), the NWMP (2001), and the CZPo (2005), a preliminary list of key activities or main tasks has been drawn up for WARPO, which can only be realistically executed with its ODP proposed size and with the high quality that can be expected from a specialised "centre of excellence". The key six tasks are:

a) Macro-planning; update of the NWMP; macro-policy framework; additional policy development.
b) Serving as a "Clearing House" for water projects; checking of consistency with the NWMP, formulation of environmental policies and guidelines; and development of guidelines for clearing water projects.
c) Monitoring and evaluation of large projects and clusters of projects in view of the updated NWMP.
d) Update of the NWRD and the ICRD; responding to queries from other entities; offering relevant services through a Library and Documentation Centre; info and data-systems.
e) Serving as Secretariat of the ECNWRC & NWRC; linkage with other relevant ministries, agencies and departments in the water sector; conflict resolution and mediation.
f) Training/HR development; development of training models; policy briefs; informative seminars in other departments.

3.2 Responsibilities by Task

The six main tasks, as articulated in section 2.3, have been grouped together into two main areas:(i) the macro planning & policy, the "clearing house" and conformity checks with the NWMP, and monitoring/evaluation tasks and (ii) the data/information, research, networking, and training and the conflict mediation task and ECNWRC tasks.

Under the ODP (2006) the organisation was conceptualised in the form of sections that cooperate (as section or with individuals from a section together with others) on particular project tasks. The sections are coordinated by one of the two Directors and some changes in groupings have been made over time. There are no regular inter-section meetings or direct communication channels that promote more continued cooperation between the sections, which has caused problems of communication and information gaps between sections. By grouping the six consolidated key tasks of WARPO in two areas, and bringing these areas directly under each Director, these regular tasks of WARPO can be better linked to the sections.

As the vacancies in the leadership of WARPO need to be fulfilled in the short-run (), it will be also useful to think about the management structure. It is suggested to have each area under one of the two Directors, who is directly responsible to the DG (see the detailed matrix "Key Activities of Sections Regarding Main Tasks/Mandates of WARPO", in Appendix 1). Each Director, to be supported by CSO, also coordinates the work of the sections. These functions should have a task description which is less focused on general management and more on "knowledge and/or expertise management" of activities, which will also facilitate the very necessary move of changing WARPO

from an inward looking into an outward looking organisation, with broad networks and respect of the outside world achieved through recognition of it as a "Centre of Expertise".

Table 3.1: Proposed Section-wise Responsibilities and Tasks

Tasks / Sections	Task (a)	Task (b)	Task (c)	Task (d)	Task (e)	Task (f)
Engineering	■					
Water Resources		■				
Socio-Economic					■	
Agriculture	(i)					
Environment, Forestry and Fisheries	(ii)					
Monitoring and Evaluation			■			
Computer and Information				■		
Training Unit						■
Clearing House		■				

■   Lead Task
(i)   This section will lead tasks related to agriculture under any of the six tasks.
(ii)   This section will lead tasks related to environment, forestry and fisheries under any of the six tasks.

This division of labour and the connections between the Main Tasks of WARPO and the sections are captured in Table 3.1 (see for detailed matrix the Appendix 1). For each task it is indicated which section would be "in the lead", as it represents a main part of its work. However, these delineations should not be seen as walls between sections, as they also have to contribute on a regular basis to other main tasks. Furthermore, the standing practice remains that when a project or a special activity needs to be executed, a project team with professional staff of different sections involved will be formed. The Executive Committee of WARPO (formed by the Director General and the two Directors), in joint consultation will have an important role in developing these practical work arrangements.

The proposed primary linkages of sections with main tasks (see the detailed matrix in Appendix 1) indicate that the following sections are "lead section" for a particular task, while "contributing" to others:

- Engineering Section → Task: Macro-planning: Updating NWMP, and participation in other forms of national planning in the water sector; Updating the macro water-policy framework (based on the NWPo).
- Water Resources Section → Task: "Clearing house" and conformity check of water projects with the NWMP; Development of national guidelines for such conformity check.
- Monitoring and Evaluation Section → Task: Monitoring and evaluation of large water projects and clusters of smaller ones in view of the updated NWMP.
- Agriculture Section →Task: Agriculture related issues, which comes under key Tasks (a-e).
- Environment, Forestry and Fisheries Section →Task: Environment, forestry, fisheries, climate change, disaster management, issues, which comes under key Tasks (a-e).
- Computer and Information Section → Task: Update, maintenance and optimal use of the NWRD; Library, Information and Documentation Centre; Info and data-systems; Serving data queries from stakeholders and others.

- Socio-Economic Section → Task: Socio-economic, gender and equity issues; Conflict resolution and mediation. Linkages with other Ministries, Departments and agencies in the water sector, including NGOs and LGIs[4] ("lead section" partial task).
- Training Unit →Task: Training/HRD; Development of Training Modules for stakeholders; Development of Policy Briefs; Providing information and upholding networks through seminars, and joint research collaboration.
- The task for training and human resources development would be led by the Training Unit. This unit can be formed with existing professionals at this moment, headed by one PSO and supported by one SSO, two SOs and one PA. New staff can be recruited gradually for the unit depending on requirements as proposed in the ODP (2006).
- The proposed training unit can be established at the initial stage, which will lead the task of training and human resources development. The unit can be transformed into a 'Research and Human Resources Development' section as per the ODP (2006).

The WARPO library is the largest information resource centre for the water sector in Bangladesh. WARPO's professionals have a vision to enrich it with worldwide information. Therefore, the library should expand its physical space and upgrade its logistic support and professionals for organising it into the following units: (a) an archive room for books and reports (b) a digital archiving unit, (c) IT facilities (internet browsing, photocopy, scanning, etc.), (d) a journal and newspaper unit, (e) a help desk (information dissemination/ display/ books lent out), (f) and a reading space. More professionals will be required to be appointed at the library to provide better services to the users.

Regular meetings of the Board of Directors (BoD) should be arranged to strengthen and reconfirm the tasks and mandates of WARPO, and such inter-ministerial body can also strengthen and reconfirm the status of WARPO as custodian of the NWMP, as a macro-planning apex organisation, and as an "independent" mediator in conflicts related to water supply, use and distribution.

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[4] The networking task is also done by other sections in their respective domains.

> *Box3.1: Conclusion*
> a) Organise the work of the sections in WARPO around the six main tasks of the organisation, which would make it possible to link the sections more closely, improve communication and information exchange regarding regular tasks and particular projects.
> b) The six main tasks are organised in two areas, which largely represent (I) the macro planning & policy, conformity with NWMP checks, and monitoring and evaluation tasks; and (II) the data/information, research, networking, and conflict mediation tasks.
> c) The two directors/CSOs of WARPO lead and coordinate these two areas under the overall leadership of a Director General. The directors should become more responsible for "knowledge/expertise" management rather than general management.
> d) It is suggested that the "Director Planning" should coordinate the Engineering, Water Resources, Monitoring & Evaluation sections; and the "Director Technical" coordinate the Socio-Economic, Agriculture, Environment, and Forestry and Fisheries sections, as well as the Computer and Information Section.
> e) The directors will be also responsible for the execution of the two main task areas, defined as I and II and for creating a matrix organisation, which should be able to operate flexibly.
> f) The WARPO library should be strengthened with physical space and adequate logistics and manpower to perform as the largest information resource centre for the water sector in Bangladesh.
> g) To improve the organisational strength for WARPO the Board of Directors should have regular meeting for making WARPO more dynamic. The DG should see this as an important task.

3.3 Enabling Environment

The WRP Act 1992 is urgently needed to be translated into rules and regulations which could strengthen WARPO's role as an apex water resources planning organisation. Such formalisation of rules and regulations would also clarify the means of manoeuvring within the MoWR, and provide WARPO with more options to perform a central role in the NWRC and its Executive Committee (EC). Such development would in turn create more institutional "space" for WARPO. WARPO has made a proposal to revise the Water Resources Planning Act of 1992, with a view to changing its status from an "Organisation" to a "Department" to acquire all financial and legal authorities as a 'full government organisation'. WARPO should not endeavour to reformulate the Water Resources Planning Act of 1992, as it accords it a strong status with a substantial degree of freedom and autonomy but proposes clearly formulated rules and regulations that translate the Act into daily practice.

It would also promote the adoption of a more "outward looking" strategy towards its stakeholders and their recognition of WARPO's role as a planning organisation and an inter-mediator in cases of conflict in the water sector. However, the act may be revised in the future and WARPO can be positioned under the Planning Commission, if required, to perform its mandates more effectively. In the past there have been many discussions where WARPO should be placed, and alternatives such as the Planning Commission or the Prime Minister's Secretariat had been hypothesised (RETA, 2009). The focus should be on six key tasks, which accommodate all the mandates given in the WRP Act (1992), the NWPo (1999), the NWMP (2001), and the CZPo (2005).

The Water Resources Planning Act already provides a sufficient degree of freedom with regard to obtaining and utilising funds. This should be further explored, proposing and using regular budget revenues to execute the key mandates of WARPO. WARPO should focus more on an outward looking attitude, which would give much recognition (and visibility) with stakeholders, whether in government or in the water-related organisations of the civil society. WARPO should be more active in obtaining regular budgetary funds from the Government, replacing some of the previously available (project aid) funds for its regular activities. It should create a 'WARPO Fund' which can be utilised for its capacity development. Revenue funding is also needed for research projects or surveys (which are also mentioned in the Act, under article 7: "Functions of the Organization"), which would not only increase the knowledge base of WARPO, but also provide incentives to its individual professional staff.

Therefore, it is recommended that WARPO should make "rules and regulations" under articles 22 and 23 of the WRP Act 1992 with the following major provisions:

- Elaboration of the mandates of WARPO, which is mentioned in article 7 of the WRP Act 1992, in view of responsibilities given in other policies (e.g. NWPo) and plans (e.g. NWMP). For instance, the "clearing house" role of WARPO is sufficiently covered by the articles (c) and (e) of the WRP Act 1992. The articles (c) and (e) need to be elaborated so that WARPO can perform its clearing house role properly under the framework of NWMP. This will dispel any vagueness in the mandates and help WARPO and its stakeholders to understand clearly their respective roles and responsibilities.
- Required provisions for executing the mandates independently with minimal supervision from the MoWR or the BoD. For example, it needs to be clearly defined for which cases WARPO needs approval from the MoWR or the BOD. With these provisions, WARPO can function efficiently with clearly defined power of execution of any activities.
- Detailed terms of reference (e.g. core activities such as annual work plan, budget, meetings, policy review, recruitments, etc.) of the management committees/boards (DG, Directors/ CSOs, Executive Committee, BoD and Technical Committee). These defined terms of reference will oblige the management committees/ boards to play their roles, from which WARPO will be benefited.
- Provisions for the creation and management of a WARPO Fund (article 12 of WRP Act 1992). As explained in the ODP (2006) the source of the WARPO Fund may be:
  - o Percentage over training overhead for continuous training programmes offered through a 'Training Unit';
  - o Percentage over screening of projects under the 'clearing house' function as 'clearance fees';
  - o Percentage over project overheads implemented under the development budget for WARPO;
  - o Selling/ fees of value added data and information from the NWRD;
  - o Arranging international seminars/ workshops and charging a fraction on its overhead costs;
  - o Percentage over consultancy services provided by WARPO;
  - o Profitable investment of the WARPO Fund;
  - o Contribution from government, international agencies and donors;

    o   Loans and overdraft facilities from local banks, etc.

The WARPO Fund may be utilised for development activities, capacity building of WARPO staff, special incentives for WARPO staff, hiring individual specialists/ consulting firms, research activities, higher studies, survey projects, field visits, meeting expenses of seminars, workshops, report preparation, O & M of IT and NWRD, etc.

- ▪ Provisions for developing internal management instruments (e.g. annual work plan, monitoring and evaluation system, distribution of tasks among the sections, etc.).
- ▪ Provisions and modalities for collaboration with stakeholders/donor agencies over educational and research projects. The issues that could be elaborated in the "rules and regulations" of WARPO could include e.g. how WARPO can draw up MOUs/ Contracts with stakeholders; whether WARPO needs prior consent from the MoWR/BOD for signing any contracts with stakeholders; and whether WARPO can enter into any financial agreements with stakeholders.

3.4 Leadership and Priority

WARPO has been facing a number of leadership problems since its inception. The two most important reasons are:

Firstly, the DG WARPO on average has a very short tenure. So far, this has made it very difficult to lead the organisation in a dynamic manner, to invest in it, and to build external networks over time with stakeholders of central government institutions and agencies as well as Non Governmental Organisations (NGOs) and local government institutions (LGIs).

Secondly, all DGs have come so far from the BWDB, the main agency for water sector project implementation in Bangladesh, on secondment or at the end of their respective careers. Nearly all of them were engineers, and many of them had no or little experience or expertise in macro-planning, inter-sectoral water (and other natural) resource planning or in undertaking prospective studies, which would have been an advantage for WARPO.

Tenure of most DGs are very short period except one during the period 2002-07 who served for five consecutive years. The length of the tenure of the WARPO DGs before this period varied between 3.5 months to 2.4 years.

Over the whole period, and not taking into account the one exception, the average of tenure was 8 months, while if all the tenure periods (with the long single DG period already mentioned) are included the average tenure of a DG WARPO is still less than one year. This is by all means insufficient to lead an organisation in a dynamic manner. There was therefore no built up of networks in which the reputation of WARPO could be established and maintained.

As mentioned earlier, all the DGs came from the BWDB on deputation just before their retirement. In the 19 years of its existence, WARPO has had in total 22 DGs, which reflects the instability and volatility of its leadership.As the DGs came on secondment from the BWDB, they were not considered by some stakeholders as being sufficiently "independent" when it concerned macro-planning of water sector projects and the implementation of national water policy directives, but as rather dependent on the MoWR.

The Director General of WARPO should be upgraded to Grade-1 otherwise it will not be consistent with similar other government organisations. Although qualified and deserving candidates may not be attracted for this post for dynamic leadership with ability to work as apex planning organisation in Bangladesh. Similarly the pay grade of Directors of WARPO should be upgraded to Grade-2 for development of second tire dynamic leadership for WARPO.It was also decided by BoD on 18th August 1992 to upgrade the Director General and Director of WARPO should be Grade-1 and 2 respectively.
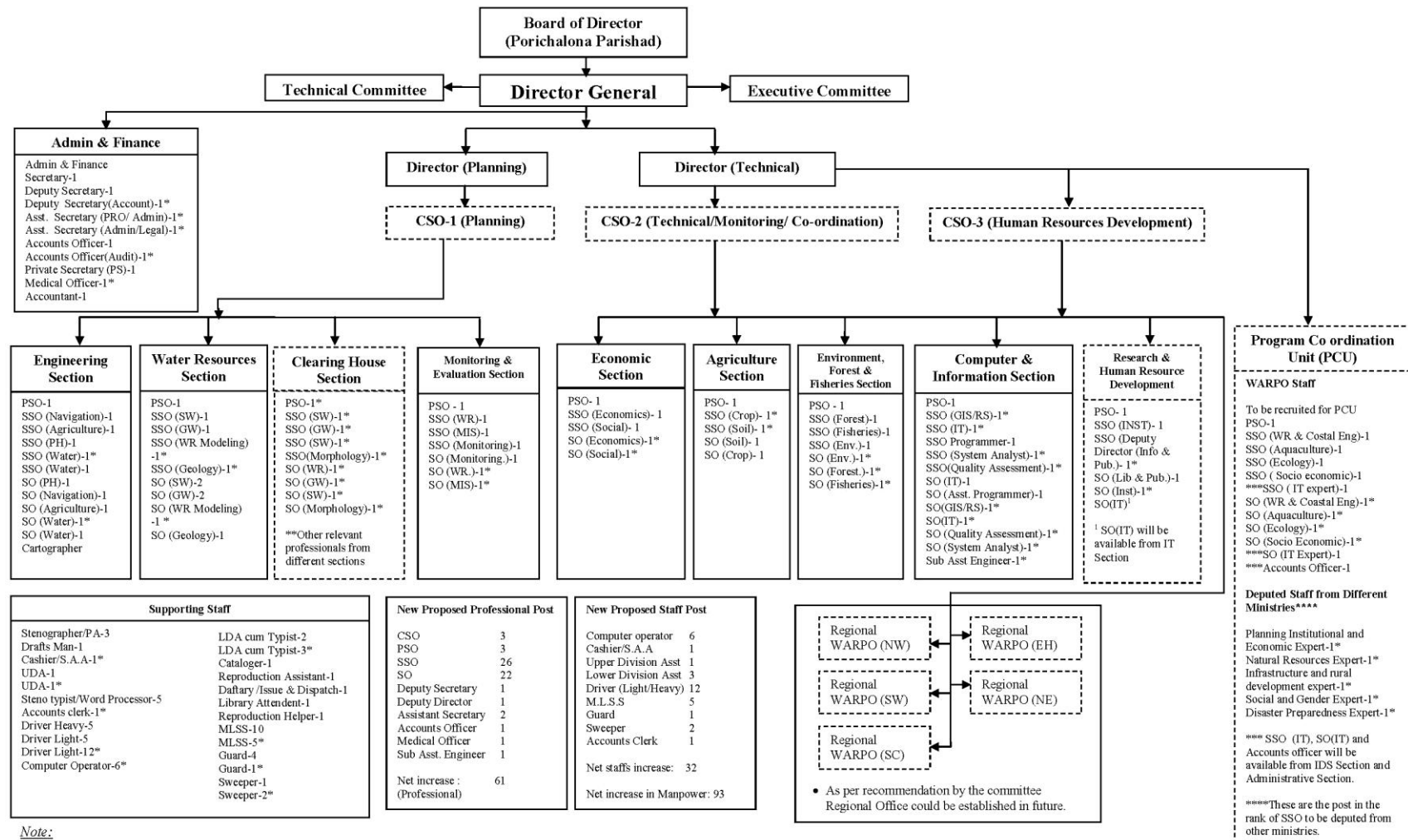
Figure 3.1: Proposed organogram based on ODP of WARPO

The capacity of WARPO in conflict resolution between water institutions is therefore questioned by stakeholders in the water sector, while this is one of its mandates.

The first (length of tenure) and the second (dependency on the MoWR) factor may have negative impact on the low performance of WARPO. In addition to this, the ambitiously formulated ODP, approved by the BoD of WARPO, was never pushed through or approved by the MoWR or other relevant ministries (such as the Ministry of Public Administration and the Finance Division of the Ministry of Finance. BoD should meet regularly to monitor the implementation of its decisions.

To overcome the above-mentioned problems of leadership, the DG should be appointed for a sufficiently long tenure so that he/ she can have the opportunity to perform better. The DG can be selected, preferably from within WARPO or through open procedure, led by a multi-disciplinary search committee of experts. The applicants can come from all sections of the government, but could also be "taken from the market", including experts from universities and research centres. DG can selected from WARPO through "promotion" of WARPO official or "deputation" or from "Market" (in case of necessity). The rank of the DG WARPO should be upgraded from Grade II to Grade I as per the decision taken in the first meeting of the Board of Directors (held on 21st September 1992). Accordingly the rank of 'Director' positions should be upgraded from Grade III to Grade II. Upgradation of the DG's rank will attract proper candidates to the position. The prospective candidate should not necessarily be an engineer, but may be somebody with expertise and experience in macro-planning, specific knowledge and experience in the water sector, and an academic background in economics, environment, natural resources, engineering or any other discipline in order to be suitable for the job.

In the current era of increased tensions regarding resource utilisation (especially in the water sector) and climate change, such a central institution which monitors the water sector and checks main initiatives, investment plans, and projects for conformity with the NWMP and NWPo, while also providing information and data to stakeholders on a regular basis (as a centre of excellence), is increasingly necessary.

> *Box3.2: Conclusion*
> a) The Director General of WARPO should be impartial and competent enough having strong dynamic leadership.
> b) The position of Director General should be upgraded to Grade-I and that of Directors should be upgraded to Grade-II.
> c) The DG-WARPO should be appointed, preferably from WARPO. If there is no suitable candidate within WARPO then the appointment can take place through an open, competitive application procedure for the post, to which qualified managers with different background and expertise in the water sector can apply.

Chapter 4 Human Resources Development of WARPO

4.1 Staffing and Mix of Disciplines

4.1.1   Current Staffing

The Human Resources Survey 2011 revealed that total number of personnel in WARPO is 87 of which 44 are professionals. Among the 44 professionals only 28 positions are filled out. Twenty-five professionals were interviewed. Findings are shown in the Table 4.1.

Table4.1: Distribution of professional staff in WARPO

Staff Status	DG	Director	Admin	PSO	SSO	SO	Library	Cartography	Total
Total Positions	1	2*	5	7	13	14	1	1	44
Vacancies				4	7	4			15
Study Leave						3			3

* Director, Planning was also the additional in-charge of the DG

Source: Human Resource Survey WARPO, August/September 2011, Dhaka

There are some bottlenecks in the organisation of WARPO. The largest share of vacancies is with the posts of the PSO and the SSO. Only 3 sections are led by PSOs. The other sections are led by a PSO in charge of another section or there is an SSO who is currently the PSO in charge (such as in the Environment, Forestry and Fisheries Sections. The Monitoring and Evaluation (M&E) Section seems quite understaffed, having a PSO (in charge) from another section and only one SO for M&E. A similar observation can be made for the Economics Section, which has (except for the PSO "in charge") no staff. There are also key positions vacant in the Engineering, Water Resources, and Environment, Forestry and Fisheries Sections (Table 4.2).

Table 4.2: Professional staff in different sections of WARPO

Staff status	Director General	Director	Administration	Engineering	Water Resources	Economic*	Agriculture	Environment, Forestry, and Fisheries	Computer and Information	Monitoring &Evaluation*
Allocation	1	2	5	10	8	3	3	4	5	3
Present		2	5	7	4		3	2	4	1

Source: Human Resource Survey WARPO, August/September 2011, Dhaka

*Note: PSOs for Economics and M&E section are taken in charge from other sections.

For the moment the original allocation of 44 professional staff and 43 support staff seems to be barely minimum to be able to work on the mains tasks. However, currently more than 30% of the allocation in the professional staff segment is vacant, as said, in particular in the senior positions. Filling these vacancies should be the absolute priority. Having the PSO (4) and SSO (7) positions that are currently vacant if filled with competent new staff will certainly make WARPO more dynamic immediately. In case of lengthy delays in this respect it might be advisable to look for temporary senior staff deputed from other agencies (for example for a period of one year), although the latter

solution has as drawback that less suitable candidates might be chosen by these agencies to be posted in WARPO.

4.1.2 *Professional mix of disciplines*

In Table 4.3 the professional mix of disciplines of WARPO is displayed. The overall current professional mix of disciplines shows a multidisciplinary team in the water sector. The 23 professional staff members of WARPO (excluding the Admin section), have a BA, BSc, MA, MSc (and in two cases a PhD) degrees. The two WARPO Directors respectively come from environmental and economic sciences. Most of the existing professionals (12) have (civil and water) engineering degrees (Table 4.3). If all current vacancies are filled, some of the disciplines (e.g. sociology, economics, environment, computer science, monitoring and evaluation, etc.) will be included in the multidisciplinary professional team. Moreover, recruitment of the additional positions proposed in the ODP (2006) will introduce many new disciplines in the team such as morphology, water resources modelling, GIS/RS, ecology, coastal engineering, etc. However, a few disciplines like anthropology, climate change, disaster management, sustainable water resources development, etc. are not represented yet in either the existing or the proposed organogram in the ODP (2006). Inclusion of these disciplines is very important when any research is conducted on the impact of water resource use on rural/urban livelihoods and plans for important interventions in those fields. Professionals from these disciplines will strengthen the multidisciplinary team of WARPO.

Table 4.3: Professional mix of disciplines in WARPO

Sections / Disciplines	Directors	Engineering	Water Resources	Economic	Agriculture	Environment, Forestry, Fisheries	Computer and Information	Monitoring &Evaluation	Total
Economics	1								1
Environment	1								1
Engineering(Civil/ WRE)		6	3				2	1	12
Agriculture		1			2				3
Geology			1						1
Soil Science					1				1
Fishery						1			1
Forestry						1			1
Computer Science							1		1
Library Science							1		1
Total	2	7	4		3	2	4	1	23

Source: Human Resources Survey WARPO 2011

In order to improve the professional mix of WARPO within its current provision as defined by the ODP (2006), all the vacancies should be immediately filled.

4.2 Coordination and Evaluation

Human Resources Survey WARPO 2011 reveals that internalcoordination and human resource management need to be increased. Regular section meetings, internal seminars on progress of regular work or particular projects, circulars, monthly or quarterly meetings, etc. are all useful instruments for improving such situation.

WARPO should make annual plans, which are to be discussed among all sections, and coordinated by the respective Directors for planning activities within the boundaries of the main tasks of WARPO. The linkage of the sections (and their individual professional staff) in less or more degree to these six tasks (areas I and II), as was suggested with the matrix-organisation, will also certainly improve internal coordination.

Insufficient linkage between professional staff and support staff seems also be a problem, as the latter are coordinated by the administration section, and support staff is also not evaluated in their performance by professional staff. Moreover, the support staffs are not motivated to work efficiently. In particular, such motivational management is very important in a situation with limited resources to get the optimal use out of human resources.

The professional and support staff of WARPO are evaluated annually by supervisors on their personal and work-related skills. The 'Annual Confidential Report (ACR)' for each employee needs to be signed by two staff members of higher rank (a PSO and SSO for an SO; a PSO and Director for an SSO; a Director and DG for a CSO and a PSO; and finally the MoWR for the DG). The ACRs are used for consideration of promotion and other benefits.

Apart from an annual performance evaluation system, regular performance reviews can also be an important element in terms of motivation. The performance review of professional and support staff can be done as an intermediate, more motivational instrument, which actually is based on a more equal two-way exchange of ideas. For example, the employee can express in a confidential manner a number of issues that present a problem, or a bottleneck. He/she can also express a desire to resolve a problem, receive a particular training, or suggest particular improvement in work surroundings, or in relation to a particular personal situation. In modern management this is often done to improve communication and trust and stimulate employees to do their utmost, as they see that management is closely following or monitoring (and not just evaluating) work (in) progress.

> **Box4.2: Conclusion**
>
> a) The communication and coordination between the sections should be improved through a series of activities such as regular meetings, internal information seminars (to provide updates on projects), and preparation of annual work plans for WARPO, which can be discussed and exchanged among the sections.
> b) Annual work plans should also be prepared by individual sections, which should be based on the six key tasks of WARPO. These work plans, would be necessarily forward looking.
> c) Linkages between professional and support staff in regular activities should be improved. Support staff should be allocated for each section based on requirement. Professional staff should also have a role in the annual evaluation of support staff with whom they work. This would provide feedback and could work as a means of motivation as well (if the evaluation results are shared with the employees).

4.3 Needs Assessment

Needs assessment for human resources development of WARPO was carried out based on the academic backgrounds of existing professionals, additional training followed by them and experience of working in different projects. This analysis is required in order to assess the need for further capacity building through human resources training. The results of the assessment are presented in the following sections.

4.3.1 *Present skill of staff*

In the Human Resources Survey 2011 all professional staffs were asked to indicate precisely which training they had received apart from their graduate and post-graduate studies. It can be noted that there have been quite a number of training efforts (in domestic and foreign institutes) for upgrading the expertise of WARPO's professional staff.   WARPO's professionals have received training mainly in the field of water resources planning/ IWRM, GIS/RS, environment/ EIA/SIA, project management, climate change/disaster management, communication and presentation skill, computer skills, financial/ procurement, and basic/ introduction training (Figure 4.1). Some of the professionals have also received training on specialised fields such as agriculture/irrigation, hydrological modelling, project monitoring and evaluation, library information management and human resources development. Furthermore, section-wise distribution of the training received by professionals show that most have received training on general fields (e.g. computer skill, basic training, communication and presentation skill, project management, financial/ procurement) along with relevant specialised courses (e.g. EIA/SIA, water resources planning/ IWRM, GIS/RS) (Table 4.4). Professionals of some sections have attended training programmes which are not linked with their job responsibilities, for instance, professionals involved in 'Admin & Finance' received training on EIA/SIA and GIS/RS (Table 4.4). For training, WARPO authority should select appropriate manpower for appropriate training which is linked to his/her job responsibilities.
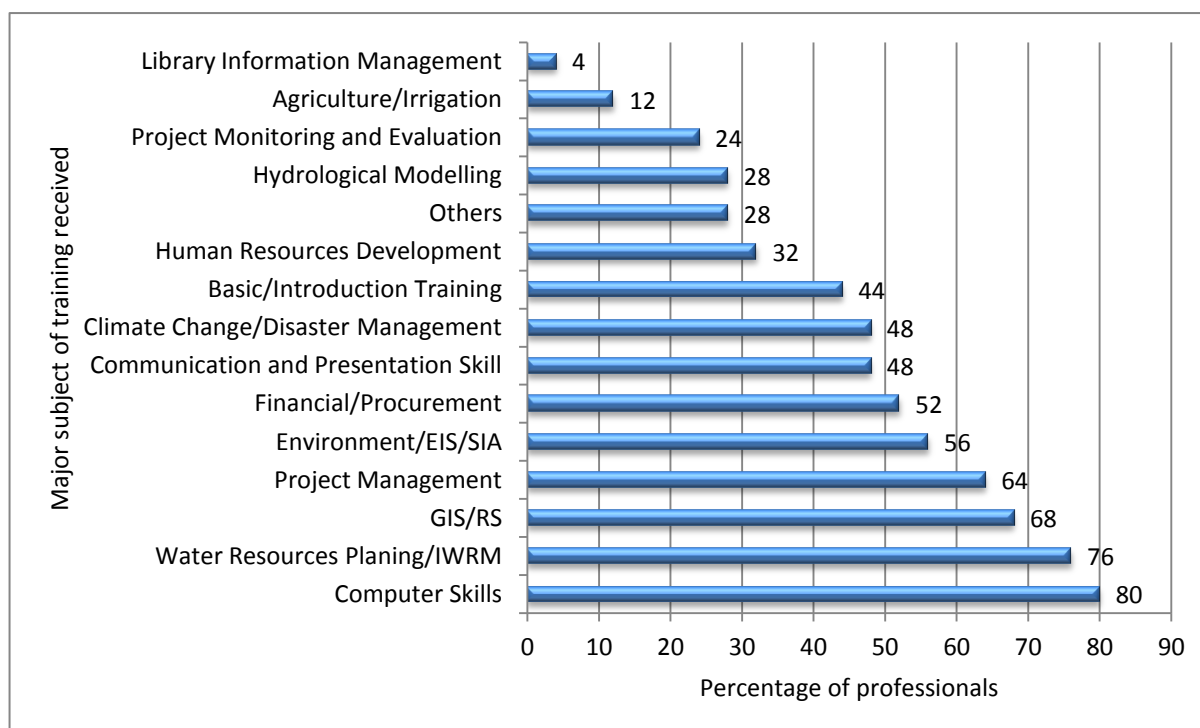
Figure 4.1: Major training received by WARPO professionals (replace EIS with EIA)

Chart data (Percentage of professionals):
- Library Information Management: 4
- Agriculture/Irrigation: 12
- Project Monitoring and Evaluation: 24
- Hydrological Modelling: 28
- Others: 28
- Human Resources Development: 32
- Basic/Introduction Training: 44
- Climate Change/Disaster Management: 48
- Communication and Presentation Skill: 48
- Financial/Procurement: 52
- Environment/EIS/SIA: 56
- Project Management: 64
- GIS/RS: 68
- Water Resources Planing/IWRM: 76
- Computer Skills: 80

Table 4.4: Training received by the WARPO professionals in different sections

Major fields of training	Admin & Finance	Engineering	Water Resources	Agriculture	Environment, Forestry & Fisheries	Computer and Information	Monitoring & Evaluation
General training programmes							
Basic/ Introduction training	■	■	■	■		■	
Communication and presentation skill	■	■	■	■	■	■	■
Computer skills	■	■	■	■	■	■	■
Financial/ procurement	■	■	■	■	■	■	
Human resources development	■		■	■	■		
Project management	■	■	■	■	■	■	■
Specialised training programmes							
Agriculture/ irrigation		■		■		■	
Climate change / disaster management		■	■	■	■		
Environment/ EIA/SIA		■	■	■	■	■	■
GIS/RS	■	■	■	■	■	■	■
Hydrological modelling		■	■			■	
Library information management						■	
Project monitoring and evaluation		■	■	■			■
Water resources planning/ IWRM	■	■	■	■	■	■	
Others	■	■		■	■	■	

According to Human Resources Survey WARPO 2011, WARPO professionals had attended 306 training courses, of which 57 were foreign and 249 domestic. The training programmes were usually organised under different projects and funded by the government or donor agencies. The data from the Human Resources Survey indicates a situation in which training opportunities are also taken for other reasons than according to a well-defined personal development plan. This might partly reflect that the government sometimes sends an offer to an institution for a particular training course, and the institution sends a number of people. However, there are also indications that training is seen as an interesting incentive for professionals.

The professional staff of WARPO should have more "content" related course "within" their areas of work. More training programmes, especially foreign training for junior professionals on specialised subjects, will be required to open their horizon and stimulate their professional work. Although in the survey questionnaire non-professional staff were not included regarding training followed and training needed, it does not mean that steno-typists, typists, photo-copiers, other supporting staff and drivers would not need some form of training to be able to do their jobs better and to receive some recognition for their work performance through incentives. Courses in software literacy, service behaviour, and even driving (refresher) lessons could be considered.

4.3.2 Capacity of Professionals

An overview of human resources capacity was made based on the detailed data gathered from the Human Resources Survey. This was done for the management (Director General, Director, Admin) and the various sections (Engineering, Water Resources, Economics, Agriculture, Environment, Forestry and Fisheries, Computer and Information, Monitoring & Evaluation) using 4 indicators, measured by section:

- Proportion of available staff in the allocated positions
- Academic backgrounds of existing professionals
- Major training courses attended by professionals
- Average number of project experience gathered by each professional

A summary of human resources capacity of WARPO with respect to the above mentioned indicators is presented in Table 4.5. It is observed that some sections (e.g. Water resources, Economic, Monitoring and Evaluation) are understaffed with respect to the allocated positions in WARPO organogram and therefore the sections cannot contribute properly to the tasks assigned to them.

Regarding the disciplinary mix (Table 4.5; but also "academic background" indicator in Table 4.5) of professionals in different sections, the following observations can be made:

- Overall the sections have inadequate professional/ academic background in socio-economic analysis of livelihoods, gender, development studies, and disaster management.
- Although the Engineering Section was seemingly conceptualised with a spectrum of multidisciplinary approaches (water, health, navigation, agriculture, and cartography) for macro-planning, all disciplines are not represented yet due to vacancies.

Table 4.5: Summary of present human resource capacity of WARPO

Sections/ Professionals	Staff Availability	Major academic Background of professionals	Specialised training received by professionals	Experience on no. of projects gathered by each section
Directors	100%	Environment, Economics	Climate change / disaster management; Environment/ EIA/SIA; GIS/RS; Hydrological modelling; Water resources planning/ IWRM	12
Admin. & Finance	100%	Arts, Accounting	Financial/ procurement; Human resources development; Project management	Provided support to all projects
Engineering	70%	Civil Engineering, Water Resource Engineering, Agricultural Engineering	Agriculture/ irrigation; Climate change / disaster management; Environment/ EIA/SIA; GIS/RS; Hydrological modelling; Project monitoring and evaluation; Water resources planning/ IWRM	7
Water Resources	50%	Civil Engineering, Geology, Water Resource Engineering	Climate change / disaster management Environment/ EIA/SIA GIS/RS Hydrological modelling Project monitoring and evaluation Water resources planning/ IWRM	10
Economics				
Agriculture	100%	Agriculture Soil-Water	Agriculture/ irrigation; Climate change / disaster management; Environment/ EIA/SIA; GIS/RS; Project monitoring and evaluation; Water resources planning/ IWRM	5
Environment, Forestry, and Fisheries	50%	Forestry, Fisheries	Climate change / disaster management; Environment/ EIA/SIA; GIS/RS; Project monitoring and evaluation;	12

Sections/ Professionals	Staff Availability	Major academic Background of professionals	Specialised training received by professionals	Experience on no. of projects gathered by each section
			Water resources planning/ IWRM	
Computer & Information Section	75%	Civil Engineering, Computer Science, Library and Information Science	Agriculture/ irrigation; Environment/ EIA/SIA; GIS/RS; Hydrological modeling; Library information management; Water resources planning/ IWRM	11
Monitoring & Evaluation	33%	Civil Engineering	Environment/ EIA/SIA: GIS/RS: Project monitoring and evaluation	2

Source: Human Resources Survey WARPO 2011

In addition to academic background, training on specialised issues help to develop human resources skills. As discussed in the previous section, it was found that the professionals of almost all sections of WARPO had received all kinds of specialised training courses. Although it seems that WARPO's professionals have rich academic backgrounds and have received training relevant to current issues in the water sector (e.g. IWRM, Climate change), they need to have their knowledge updated. In this respect, WARPO's professionals need further training on relevant issues in the water sector.

Professionals acquire knowledge and skill through their work experience. In this context, the "project experience" indicator provided information about the capacity of WARPO's professionals. It was estimated that the professionals of different sections had similar 'average number of project experience' ranging 2–3, and this range is higher for the senior staff. The 'Directors' have more project experience as they are the most senior among the staff of WARPO. Overall, it indicates that the professionals of different sections have limited project related work experience, particularly in large projects. Regular and large project related work experience would be essential for enhancing the knowledge and skills of professionals, especially junior and mid level professionals as well as for transferring knowledge of senior staff to the juniors.

4.3.3 Need for Capacity Development

Following areas of "gaps" per section were identifiedduring conducting the study. The gaps were not found to be the same for everyone in a section. The following gaps in capacity were identified for the sections:

For the *Management Section* (including the Director General, Directors, and the Administration section):

- General management, external relations, staff development, planning methods, and monitoring and evaluation
- Macro-planning (e.g. NWMP, NWPo, and CZPo)

For the *Administration*section:

- Accounting, finance, budgeting
- Staff development, HR management
- Performance evaluation, HR data systems

For the *Engineering* Section:

- Prospective planning methods
- Spatial planning (e.g. land use planning)
- Modelling of water resources and scenario analysis
- Socio-economic aspects of planning of water projects
- Translating macro-planning into guidelines for stakeholders

For the *Water Resources* Section:

- Ground water modelling
- Climate change modelling and water resources
- Trans-boundary river basin management
- Investment project analysis (EIA, SIA, C/B)
- Water Supply and Sanitation (WSS) project analysis
- Arsenic poisoning problems of ground water supply
- Water use/bottled water industries and ground water planning

For the *Economics* Section:

- Rural development and livelihood strategies
- Water and gender analysis
- Climate change and impact on rural livelihood (risk analysis)

For the *Agriculture* Section:

- Agricultural water use and water stress
- Shrimp culture and contested water use
- Integrated natural resources analysis (land, water, forestry) and environment

For the Environment, Forestry and Fisheries Section:

- Forestry, water resources use and environment
- Shrimp culture and contested water use
- Intensive fisheries and environmental impact analysis
- Integrated natural resources analysis (land, water, forestry) and environment
- Political ecology of rural resources in developing countries
- Protection and conservation of natural resource management

For the Computer and Information Section and Library officials:

- Web-based access to information
- Website design and maintenance
- Database maintenance and dissemination of information
- Integration of databases and interactive use
- Documentation centre (archiving, computer access to sources)

- ▪ Digitalisation of documents/ Library automation
- ▪ Computer/IT courses, system management

For the Monitoring and Evaluation Section:

- ▪ Project analysis (financial and economic)
- ▪ Project life cycle analysis
- ▪ Monitoring and evaluation of large water projects
- ▪ EIA, SIA, and C/B analysis tools
- ▪ Office Project Management

Cross-cutting issues that need to be learnt by the professionals of all sections:

- ▪ Computer and IT skills
- ▪ Concept of Integrated Water Resources Management (IWRM)
- ▪ EIA/SIA
- ▪ Climate change issues: impacts and options for mitigations, adaptations and losses and damages
- ▪ Disaster Management
- ▪ Project planning and implementation
- ▪ Project monitoring and evaluation
- ▪ Gender issues
- ▪ Coastal zone and marine resources management
- ▪ Office management and Public Procurement Rules (PPR)

Finally, the professionals, who will be engaged in the proposed Training Unit, will need special training/ ToT/ capacity building for organising training programmes.

4.4 Human Resources Development

For effective planning of Human Resources Development, the prerequisite is to ensure adequate manpower, capacity development of professional and logistic facilities. The ODP of the WARPO was approved by the BoD in 2006. It is proposed that the envisaged manpower of ODP should be approved by the Government (for details, please see Chapter 2: WARPO: Institution, Mandates and Tasks). It is the responsibility of the WARPO and MoWR to take the matter forward for getting approval of the Government.BoD should strongly monitor the implementation status of its decisions.

4.4.1   HRD Policy

Strengthening the organisational capacity of WARPO needs a comprehensive human resources development policy and plan. Based on the understanding of existing capacity of human resources and needs assessment of further requirements for skill development, as described in earlier sections in this chapter, the following points of policy guidance are proposed for human resources development of WARPO:

- ▪ Enhancing a multi-disciplinary dynamic professional team that will satisfactorily perform the core mandates of WARPO;
- ▪ Providing sufficient resources and ensuring a suitable working environment for all employees;

- Providing adequate benefits to all employees in an equitable manner for ensuring their career development paths;
- Taking necessary initiatives to improve the technical knowledge and skill of professionals as well as support staff, as appropriate;
- Ensuring equitable access to staff development opportunities, appropriate to their roles and responsibilities;
- Improving the human resource management and development system.

These points of policy guidance need to be implemented through a regular human resources development programme. A brief human resources development plan has been developed focusing on the above policy guidance, as presented in the following section.

4.4.2 HRD Plan

The human resources development plan of WARPO includes the major activities, responsibilities of WARPO and a tentative implementation schedule. The cost for implementing the activities can be estimated when these activities will be detailed out for implementation. The human resources development plan for WARPO is shown in Table 4.6.

Table 4.6: Human resources development plan for WARPO

Sl no	Main Activities	Responsibility	Tentative Schedule
1	Approval of new organogram	WARPO; Board of Directors (BOD) of WARPO; MoWR;	2012–13
2	Recruitment of professionals	WARPO; MoWR	2012–15
3	Establishment of Training Unit	WARPO	July – December 2012
4	Training and capacity building of professionals	WARPO	On regular basis
5	Building permanent office complex for WARPO	WARPO, BWDB and MoWR	2012-14
6	Procurement of logistics	WARPO	On regular basis
7	Allocation of support staff to each section, as required	WARPO	July to December,2012
8	Preparation of 'Rules and Regulations' under Water Resources Planning Act, 1992, especially mentioning the provision of benefits for employees.	WARPO; BoDof WARPO, MoWR	2012–13
9	Establishment of 'WARPO Fund'	WARPO; BoDof WARPO, MoWR	2012–13
10	Development of rules for capacity building of all employees of WARPO	WARPO; BoDof WARPO, MoWR	2012–13
11	Development and installation of human resource information management system	WARPO	2012–13
12	Upgradation of accounting system software	WARPO	July – December 2012

4.5 Training Plan

An overview of regular training activities for WARPO's staff brought to light the areas in which "knowledge gaps" existed. In some cases it was possible to identify training programmes specifically for a particular section. A general framework has been developed for a three-year training programme, which is divided into 4 main parts (see Table 4.7), with training focused on:

- WARPO's mandates, legal framework, main tasks and relation to stakeholders
- General skills, such as leadership, management, communication, computer-based tools
- Office, financial and human resource management
- Specialised technical study courses (including short courses, diplomas, MSc and PhD studies, etc.) and specific knowledge enhancement for professional staff

Table 4.7: General Framework for 3-year Training Programme of WARPO Staff

Sl. No.	Training Programmes	Objective	Target Group	Method	Schedule
1	Learning about WARPO's legal framework, mandates and tasks, core activities of each sections and professionals as well as relation with stakeholders	To learn about WARPO's roles and responsibilities	All employees of WARPO	In-house training; 1-2 day programmes Trainers:WARPO Officials and experts from outside.	July –June, 2013
2	General training (foundation course, leadership, communication skill, computer basics, etc.) Visit to water resources projects/ Organizations	To obtain basic skill for pursuing roles and responsibilities of respectivepositions	All relevant officials and staffs	Participation in regular training programmes of relevant training institutes in Bangladesh; Visit to other institutes/projects in Bangladesh by senior officers to share experiences	July 2012 – December 2013
3	Office, financial and human resources management, Rules, regulation & procedures (Administrative, Financial &	To learn modern office, financial and human resources management	Director/ PSO/ SSO/ SO; Admin, Librarian and Accounts officer;	Participation in regular training programmes of relevant training institutes in Bangladesh; Visit to other institutes in	July 2012 – December 2014

Sl. No.	Training Programmes	Objective	Target Group	Method	Schedule
	Tenders, etc.)			Bangladesh by senior officers to share experiences	

General Framework for Study Programme of WARPO Staff

Sl. No.	Training Programmes	Objective	Target Group	Method	Schedule
1	Training on special technical study courses including short courses, diplomas, MSc and PhD studies, etc.	To improve capacities of professional to perform the mandates of WARPO	All relevant officials	Participation in regular training programmes of relevant training institutes in Bangladesh and abroad; Participation in workshops/ seminars/ conferences by senior and mid level officers; Visit to institutes in Bangladesh and abroad by senior officers to share experiences	July 2012 – December 2014

The philosophy behind this general framework is that the first of the three years is used to have training related to the creation of a dynamic organisation, which is well-functioning, is outward looking, and is striving to become recognised by stakeholders in the water sector as an important "centre of excellence" that is visible and recognisable in its main tasks, mandates and activities.

During the first year also training courses including short courses, Diplomas, MSc and PhD studies, etc. can be planned with a more specialised technical character, which should particularly be followed in the second and third year.

4.5.1 Three-year training programme

From the above general framework a more concrete three-year training plan is conceived in this report. The specific number of participants was not set, as it is a question that should be decided upon by the overall management of WARPO. However, an attempt was made to show the relationship between the observed "knowledge gaps", the "needs" for training at home and abroad.

It can be seen from the proposed spectrum of courses that have been identified (see Appendix 3), that in the first place a selection of training courses is being presented from national institutions in Bangladesh, and that these are concentrated in the first and second year, while there are a series of courses abroad that are identified, which are included in the training plan for 2012-13, and furthermore for 2013-14 and 2014-15. Many of the training courses offered in 2012-13 and 2013-14

may also be available in 2014-15 (Table 4.8 and Table 4.9). Specialised training programmes in foreign institutes are mainly offered in 2013-14 and 2014-15 as processing for attending the training course will need time.

Table 4.8: Number of local training courses identified for WARPO (from 2012-13 to 2014-15)

Key areas of training programmes	Number of training programme		
	2012-13	2013-14	2014-15
WARPO's mandates, legal framework, main tasks and relation to stakeholders	2		
General skills, such as leadership, management, communication, computer-based tools	2	3	1
Office, financial and human resource management	2	2	1
Specialised technical courses (including short courses, diplomas, MSc and PhD studies, etc.) and specific knowledge enhancement for professional staff	8	12	4
Seminars/ workshops/ conferences			
Total =	14	17	6

Sources: CEGIS and a web-based search (2011)

Table 4.9: Number of foreign training courses identified for WARPO (from 2012-13 to 2014-15)

Key areas of training programmes	Number of training programmes		
	2012-13	2013-14	2014-15
WARPO's mandates, legal framework, main tasks and relation to stakeholders			
General skills, such as leadership, management, communication, computer-based tools			3
Office, financial and human resource management			5
Specialised technical courses (including short course, diploma, MSc and PhD studies, etc.) and specific knowledge enhancement for professional staff	5	33	47
Seminars/ workshops/ conferences	2	3	1
Total	7	36	56

Sources: CEGIS and a web-based search (2011)

WARPO should take the initiative to implement the training plan on a priority basis. In addition, WARPO professionals should participate in other relevant training programmes which are not identified in this report. The necessary funds can come from the development budget and through

different projects. An example of cost estimates for typical training / study programmes are given in Table 4.10. The total budget for the three-year training plan could not be estimated, as it depends on the programme and number of participants. Around 20-30% of the total budget should be allocated for local training programmes where a large number of WARPO staff can participate.

Table 4.10: Example of cost estimates of typical training/ study programmes

Training/ study programme	Duration	Country*	Tentative cost per person (including tuition fees, travel and other allowances) in BDT
Short courses on general and management issues	1 - 4 weeks	Bangladesh	40,000
Short courses on specialised/ technical issues	1 - 2 weeks	Bangladesh	30,000
Short courses on specialised/ technical issues	1 - 3 weeks	Abroad (UK/ The Netherlands/ Thailand/ India/ Australia/ Denmark/ USA/ Sweden/ Korea)	1000,000
Post graduate diploma in IT	1 Year	Bangladesh	70,000
MSc. Engg/ M. Engg/ MSc.	2 Years	BUET, Bangladesh	100,000
MSc in Development Studies/ Disaster Management	2 Years	DU, Bangladesh	200,000
MSc in Earth, Atmospheric and Environmental Sciences (by Research)	1 Year	University of Manchester, UK	3000,000
MSc. In Environmental Science (by research)	1.5 Years	Australian National University, Australia	5000,000

Note: *The name of the proposed institute and country for training can be changed as per requirement of WARPO

4.5.2   Training Plan for 1ˢᵗYear

For the first year 2012-13,31 training courses were identified in total, which all fit into the training needs as analysed above. A total of 14 no of training were identified in Bangladesh and are in 17 abroad.

A detailed overview of these courses is provided in the following with a brief outline of content, duration, institution or provider, and country. The costs are mostly given per participant, and there are details on the application process, as in most cases these are regular courses for which an individual participant must submit an application (supported by the employer). In each case an attempt was made to identify for which section the training course would be useful. As this was not possible in all cases, a more general reference has been made (Table 4.11, 4.12 and 4.13). Possible teaching modules or an overview of the contents of some training courses were also collected.

Table 4.11: Summary of Training Program for WARPO official: FY 1: 2012-13

SL No	Brief description of the Training Program	Tentative cost (lakh taka)	Method of Procurement	Tentative dates	Probable Place
1	*Local* Training/Conference/Seminar/Workshop/Meeting/Case study/research etc.	30.00	Through institution	August-December,2012 and January,2013	WARPO office, NAPD, Engineering Academy: Chittagong, BIAM, BPATC, CEGIS, IWM, ITN, etc
	Foreign				
2	**(a) Seminar/Workshop/ Conference/week** on Integrated Water Resources Management, Integrated Coastal Zone Management , Climate Change, Water Supply and Sanitation, Environment and Ecosystem	24.00	Through institution/University	August-December,2012	Netherlands/Belgium/France/USA/ Australia/UK/Thailand/Malaysia/ Singapore/India/Sweden/Qatar etc
	(b) Training and Short courses on Water Supply & Sanitation, Irrigation & Water Management, Strategic Environmental Assessment (SEA), Spatial Planning, Decision Support System & Management information System, Environmental Impact Assessment (EIA) & auditing, Integrated Water Resources Management (IWRM), Climate Change, Water Resources Planning, Project Management System and related training, Project Monitoring & Evaluation, Coastal Zone Management, Application of GIS & Remote Sensing in Water Resources Planning, Environmental Flow Assessment etc.	96.00	do	do	do

Table 4.12: Local Training Programme for WARPO official FY (2012-13)

SL No	Brief description of the Training Program	Method of Procurement	Tentative dates	Probable Place
1	Programme on learning about WARPO	Through institution	September-November, 2012 (Duration: 1-2 days)	WARPO office, Dhaka
2	Leadership & Strategic Planning programme	do	December, 2012	NAPD, Dhaka
3	General Computer Basics	do	October 2012 - June 2013	NAPD and other relevant organization, Dhaka
4	Management training at senior level	do	July 2012-June 2013	Engineering Academy Kaptai, Chittagong , Bangladesh and other relevant organization
5	Office Management & Financial Management	do	July 2012-June 2013	BIAM, Dhaka and other relevant organization
6	Policy Planning & Management	do	July, 2012-June 2013	BPATC, Dhaka and other relevant organization
7	Tailor made programme on Spatial planning	do	November 2012 – June 2013	CEGIS, Dhaka
8	Groundwater Modelling	do	November 2012 – June 2013	IWM, Dhaka
9	Specialized Course on Application on LFA in WSS Development	do	November 2012 – June 2013	ITN-Bangladesh and other relevant organization
10	Specialized Course on Arsenic Contamination in Bangladesh	do	July 2012 – June 2013	ITN-Bangladesh and other relevant organization
11	Specialized Course on Gender and Participation in WSS perspective	do	December 2012 – June 2013	ITN-Bangladesh and other relevant organization

SL No	Brief description of the Training Program	Method of Procurement	Tentative dates	Probable Place
12	Digital archiving of documents	do	July 2012 – June 2013	CEGIS, Dhaka
13	Planning & Project Management	do	November 2012 – march 2013	NAPD, Dhaka and other relevant organization
14	Project Feasibility/ Appraisal Study programme	do	July 2012 – June 2013	NAPD, Dhaka and other relevant organization

Note: * The name of institute for training can be changed as per requirement of WARPO

Table 4.13: Foreign Training Programme for WARPO Officials FY (2012-13)

SL No	Brief description of the Training Program	Method of procurement	Tentative Dates	Probable Country
(a)	**Seminar/Workshop/ Conference/week**			
i	Integrated Water Resources Management, Integrated Coastal Zone Management , Climate Change, Water Supply and Sanitation, Environment and Ecosystem, etc.	Through institution/University /Organization	July 2012 – June 2013	Netherlands/Belgium/France/USA/Australia/UK/Thailand/Malaysia/ Singapore/India/Sweden/Qatar etc
ii	World Water Week	do	August, 2012	Sweden
ii	COP 18/MOP 8 2012 - 2012 United Nations Climate Change Conference	do	November-December, 2012	Qatar
(b)	**Training,Short Courses and others**			
i.	Decentralized Water Supply and Sanitation	Through institution/University /Organization	September 2012 – June 2013	Netherlands/Belgium/France/USA/Australia/UK/Thailand/Malaysia/ Singapore/India/Sweden/Qatar etc.

SL No	Brief description of the Training Program	Method of procurement	Tentative Dates	Probable Country
ii.	Spate Irrigation and Water Management under Drought and Water Scarcity	Through institution/University /Organization	July 2012 – June 2013	Netherlands/Belgium/France/USA etc.
iii.	Ecosystem approach to fisheries: Monitoring and evaluation of resource use and fisheries impact programme	Through institution/University /Organization	July 2012 – June 2013	Australia/UK/Thailand/Malaysia/ Singapore/India/Sweden/Qatar etc.
iv.	Strategic Environmental Assessment (SEA) and Environmental Impact Assessment (EIA) Applying Systems Analysis and Spatial Decision Support tools	Through institution/University /Organization	July 2012 – June 2013	Netherlands/Belgium/France/USA etc.
v.	Climate Change and Development course	Through institution/University /Organization	July 2012 – June 2013	Australia/UK/Thailand/Malaysia/ Singapore/India/Sweden/Qatar etc.
vi.	Integrated Water Resources Management (IWRM)	Through institution/University /Organization	July 2012 – June 2013	Netherlands/Belgium/France/USA etc.
vii.	Water Resources Planning	Through institution/University /Organization	July 2012 – June 2013	Australia/UK/Thailand/Malaysia/ Singapore/India/Sweden/Qatar etc.
viii.	Project Management System and related training	Through institution/University /Organization	July 2012 – June 2013	Netherlands/Belgium/France/USA etc.
ix.	Project Monitoring & Evaluation	Through institution/University	July 2012 – June 2013	Australia/UK/Thailand/Malaysia/ Singapore/India/Sweden/Qatar etc.

SL No	Brief description of the Training Program	Method of procurement	Tentative Dates	Probable Country
		/Organization		
x.	Coastal Zone Management	Through institution/University /Organization	July 2012 – June 2013	Netherlands/Belgium/France/USA etc.
xi.	Application of GIS & Remote Sensing in Water Resources Planning	Through institution/University /Organization	July 2012 – June 2013	Australia/UK/Thailand/Malaysia/ Singapore/India/Sweden/Qatar etc.
xii.	Environmental Flow Assessment	Through institution/University /Organization	July 2012 – June 2013	Netherlands/Belgium/France/USA etc.
xiii.	Library management	Through institution/University /Organization	July 2012 – June 2013	Australia/UK/Thailand/Malaysia/ Singapore/India/Sweden/Qatar etc.
xiv.	Admin and Accounts	Through institution/University /Organization	July 2012 – June 2013	Netherlands/Belgium/France/USA etc.

Note: * The name of institute and country for training can be changed as per requirement of WARPO

Chapter 5 HRD for Stakeholders of WARPO

5.1 Stakeholders of WARPO

Since WARPO is dealing with planning in the water sector, the organisations working in the sector are considered as stakeholders of WARPO. The NWMP (2001) identified different government, non-government organisations/ departments and developments partners working in the sector. The stakeholders of WARPO can be divided into the following groups:

- Public agencies/organisations
- Semi-government agencies/organisations
- Autonomous bodies
- Local and international non-government organisations
- Private companies
- Local and foreign educational institutions
- Local and overseas research institute
- International organisations

A list of the major stakeholders of WARPO including the knowledge and commercial industries directly related to WARPO's activities is given in Appendix 6.

5.2 WARPO's Role for Stakeholders

The role of WARPO for its stakeholders and other agencies has been described in the Water Resources Planning Act 1992.

- To advise other organisations concerned regarding the development, utilisation and conservation of water resources;
- To cooperate with any institution in conducting surveys involved in the development of water resources, utilisation and conservation and if necessary, conduct special studies regarding any such matter;
- To evaluate and analyse matters which develop due to the undertaking of measures by any institution involved in development, utilisation and conservation of water resources and to advise on such matters;
- To develop standards of education, training and professionalism relating to the utilisation of water resources;
- To collect and analyse information regarding the utilisation of water resources and to disseminate the same. "

The National Water Policy 1999 also specified WARPO's role regarding stakeholders and other agencies, to act as a "clearing house" for all water sector projects identified by different agencies and to report to the ECNWRC on their conformity to the NWMP. Furthermore, the Coastal Zone Policy 2005 has given the mandate to WARPO to coordinate the development initiatives taken by different agencies in the coastal zone. A brief outline of the relation of stakeholders with WARPO with respect to its key mandates is presented in Appendix 4.

5.2.1   *Expectations of Stakeholders*

In order to discuss in detail the expectations of its stakeholders, a stakeholder meeting was organised by WARPO on the 21st of July, 2011, which was attended by middle and senior level staff of many agencies.

The main institutions represented at this meeting were:

- Ministry of Water Resources (MoWR)
- Planning Commission
- Bangladesh Water Development Board (BWDB)
- River Research Institute (RRI)
- Local Government Engineering Department (LGED)
- Bangladesh Inland Water Transport Authority (BIWTA)
- JointRiver Commission, Bangladesh (JRC)
- Bangladesh Haor and Wetlands Development Board (BHWDB)
- Bangladesh Agricultural Research Council (BARC)
- Department of Agricultural Extension (DAE)
- BangladeshUniversity of Engineering and Technology (BUET)

During the stakeholder meeting the following questions were raised to the participants:

- What is expected from WARPO as a macro-planning apex organisation in Bangladesh?
- As a water sector stakeholder, what do you think about the main roles-functions of WARPO?
- What are your suggestions for improvements or changes in its current functioning?
- What can WARPO contribute for technical knowledge and capacity building in other departments and agencies?

The stakeholders in the water sector were approached with the above questions and came to somewhat different, but still largely shared opinions about WARPO.

Summary of the expectations of the stakeholders, as discussed at stakeholder meetings+:

- WARPO can play an important role as an apex organisation in the water sector. There is an overall need for a planning organisation, and therefore WARPO should be strengthened.
- A macro policy framework (as already outlined in the NWMP) should be developed further, in which conflicts between the different water users (industry, irrigation for agriculture, river transport, consumers, marine resource use etc.) can be handled.
- The NWMP needs to be updated at least in broad lines, and all stakeholders need to be involved in that process of macro-planning. The Secretariat of the NWRC (and its EC) needs to be rejuvenated and further enhanced as an instrument of macro-planning and overview.
- One of the most important tasks for WARPO is maintaining the NWRD. This should not be done just every now and then, but on a regular basis. The NWRD, which is considered to be a main asset of WARPO, needs regular updating. This is also valid for the other important databases, such as the Integrated Coastal Resources Database. The revenue budget of the Government of Bangladesh should allocate a share towards regular updating of these databases. Also, any water related database created by other organisations could be shared with WARPO (e.g. the haor database).

- The tasks and mandates of WARPO need to be legally established. In particular the "clearing house" under the framework of NWMPfunction will need to be clarified and authority will be given to WARPO to exercise this function. Currently, WARPO is reviewing BWDB projects for checking their conformity with the NWMP and the added value to the planning of the projects. Other organisations, such as the LGED, the DPHE, WASA and the DAE, can also benefit from the 'clearing house' role of WARPO.
- There is a need for capacity building, research (with other stakeholders), and training. Local and foreign training will be very important to increase human resource capacity in this field.
- WARPO should also actively establish a series of MoUs with other stakeholders, including private as well as public institutions.
- WARPO can contribute to the distribution of knowledge to stakeholders. It needs to organise more workshops and training programmes. Knowledge can also be shared through joint field visits between WARPO and department officials/specialists. Finally, sharing of knowledge is extremely important and the NWRD can play a role here, although the access to the NWRD database needs to be improved. WARPO should give more effort to network building in order to promote access to this knowledge.

Other agencies, including the BWDB, the DPHE, the DoE and the Planning Commission that were not represented in this large meeting were subsequently interviewed at DG (or higher officials) level. The views of these stakeholders are presented in Appendix 5.

5.3 Working Arrangements with NGOs and LGIs

WARPO's role as a planning organisation can be potentially important with regards to the many NGOs that are active in the water sector, primarily in water supply and sanitation projects as well as Local Government Institutions (LGIs). Most of these organisations lack a macro-perspective and plan their interventions without being able to see the consequences of their projects beyond the boundaries of their direct stakeholders and livelihoods. Although it was not possible to investigate fully the current relation between WARPO and NGOs in the water sector, as well as LGIs, two important NGOs and a local government training institute were extensively interviewed. From these contacts it became clear that this relationship is relatively weak, although it should be easily revived through actions by WARPO. Key observations made by the two NGOs and the local government training institute are briefly presented in the following sections.

5.3.1   *Water Aid*

WaterAid indicated that they had recently interacted with WARPO, as they were asked to comment on the Draft Bangladesh Water Act. For the rest they had only incidentally communicated with WARPO or its officials in workshops or meetings in recent years.

The recommendation from WaterAid was that WARPO should expand their role in the water sector and the potential assistance it can render to its stakeholders. They also suggested that WARPO needed a clear strategy of interaction with NGOs in the water sector. Furthermore, WARPO should update the NWMP considering the current issues of water problems such as arsenic pollution in ground water.

WaterAid also agreed that some form of regulatory role of WARPO can be in place to control large-scale unplanned use of water by private companies and public water supply authorities. If WARPO is

going to be a "clearing house" under the framework of NWMPfor projects, then NGOs should be linked to this task. However, the clearing should be in broad strokes, not for the thousands of small projects that are initiated every year. The downside is that there is substantial inter-agency strife and problems in cooperation, which hamper all forms of coordination at macro-level.

5.3.2   NGO Forum

The NGO Forum for Drinking Water Supply and Sanitation is a large NGO having activities all over Bangladesh. Its main field of work is Water Supply and Sanitation. It has enormous experience and data at/from the field level. WARPO can play a significant role for the Forum and work together. WARPO seems to be unknown to many in the water field, with fruitful connections and linkages yet unexplored. Regarding increasing cooperation between WARPO and the NGOs, the NGO Forum observed that WARPO's institutional place needs to be clarified, well-arranged, firmly established and widely communicated, having strong linkage with LGED, DPHE or MoA rather than only with BWDB. WARPO and NGO-Forum can undertake joint efforts for developing training programmes on IWRM or other water related fields and share resource persons, as the latter provides extensive training programmes (even ToTs) for NGOs.

With regards to training inputs by WARPO specialists in the NGO sector through training modules, it is suggested that WARPO should first organise a seminar, for example about the NWMP (and NWRD) in which it can demonstrate what they know, what they can offer and how they can cooperate. WARPO should become involved as a provider of knowledge and technical expertise.

5.3.3   Role of WARPO with LGI

The relation of WARPO with elected local government organisations is practically non-existent, at least not existing in any visible manner. At central level WARPO works only with the LGED, which is part of the Ministry of Local Government, Rural Development and Co-operatives. Thus, although the NWMP and the NWPo recognised the macro level water related issues and identified goals and plans, these are unlikely to be known at the lower levels of elected government bodies.

It is therefore a task of WARPO to establish networks with local government institutions. This could be done easily, amongst others, through cooperation with the National Institute of Local Government (NILG). This institute provides short training courses for elected officials of local government at *upazila* and *union parishad* level. These trainings are run by local resource teams, which the NILG supports with developing training modules, while one staff member participates in each course guaranteeing its quality. It is therefore shifting its paradigm of work, through network expansion, using a multi-stakeholder framework.

As the local elected government officials have water supply and sanitation (WWS) projects as their main responsibility in local government policies, the NILG includes these issues prominently in the training courses. It works closely with the Department of Public Health Engineering (DPHE) to develop training materials and uses resource persons. When the central government finances new tube wells in a locality, it is (through the DPHE) also responsible for outlining its policies regarding drinking water supply. The NILG is involved in such event in the training aspects and human resource development at local level. However, regarding issues of agricultural water use, river embankments, coastal zone protection, and the influence of climate change, WARPO could provide inputs from a macro-perspective (NWMP, NWPo, CZPo) view.

The NILG is quite interested in having a network with WARPO (and the BWDB), and use resource persons from these central water institutions of Bangladesh in their training programmes. This would be a very effective way of bridging the gap in knowledge between central and local levels regarding integrated water management.

5.4 Training Need Assessment

A training need assessment for WARPO's stakeholders was undertaken during numerous discussions the team had with the government, NGO and LGI stakeholders. As mentioned above, the lack of continuous relationship of WARPO with its stakeholders, except for some such as the BWDB and LGED, makes it quite difficult to judge what specific training WARPO could provide to its stakeholders.

The training need for other agencies (stakeholders of WARPO) were initially assessed and discussed in the meetings held in July 2011 (including the stakeholders meeting on21st of July 2011) and the capacity of WARPO to provide such training, and later-on with the interviewed NGOs and the NLIG. WARPO officials have already prepared some modules which could be used as sample modules for training programmes for stakeholders. A main finding in this report with regards to training modules to be developed in WARPO, is the necessity to set-up a Training Unit focused on two purposes: (1) to pass on knowledge and expertise on the NWMP (and other major plans and policies) and the use of NWRD data by stakeholders; and (2) establish strong networks with stakeholders within and outside the government through training events and seminars, which will help to establish and strengthen WARPO as an "outward looking" organisation, recognised for its expertise and "independence" with regard to contentious issues in the water sector.

5.5 Training Plan

Taking the above explained limitations for WARPO into account and departing from the objectives, WARPO has to undertake training efforts for stakeholders and invest in the development of training modules, including setting up a Training Unit and developing specific tailor-made training modules, short courses and seminars for its many stakeholders in the water sector (government agencies, NGOs, LGIs, and possibly also for private companies). In Table 5.1 an overview is given for what should be strived for in the coming three year from 2012-13 to 2014-15. Although in the ToR a detailed year-1 plan was called for, the current minimal network with important stakeholders in the water sector, as has been shown in this report, does not allow the CEGIS/ISS team to do such detailed planning. This can be best done by the WARPO staff itself.

Table 5.1: General overview of the three-year training plan for stakeholders

Activities 2012-13	Activities 2013-14	Activities 2014-15
Develop a series of seminars inviting stakeholders to provide feedback on WARPO's role. Invite stakeholders regularly to WARPO to discuss advances in NWMP and NWRD	Develop a series of training modules and short courses, to be prepared and delivered in coordination with the training unit.	Make a year-plan for training, network and exchange of information activities, reaching further than the first selection of important stakeholders in the water sector. Expand and intensify cooperation with NILG
Facilitate stakeholders with data provided from NWRD,	Make a year-plan for training, network and exchange of	Include resource persons and key personnel from stakeholders

Activities 2012-13	Activities 2013-14	Activities 2014-15
and sign (and renew) a series of MoUs	information activities, focused on the BWDB, LGED, DPHE, PC, etc. and a number of important NGOs. To reach locally elected authorities, make an MoU with NILG	in training programmes that are followed by WARPO officials, to improve shared knowledge and strengthen networks.
Undertake a "needs" analysis through stakeholder meetings, bilateral visits to main stakeholders (BWDB, LGED, DPHE, DoE, PC, etc.) and NGOs/LGIs	Continue updating NWRD, and make links with databases that exist in the water sector governed and run by other stakeholders. Using CEGIS, undertake training of stakeholders to access the expanding database, and its use.	
Develop the WARPO website as an interactive medium for information		
Invite experienced resource persons from key stakeholders to become affiliated with WARPO for the development and execution of training courses/modules		
Set up a training unit, with modest goals at first. The training unit needs to make an inventory of "selling points", i.e. specific knowledge of WARPO professional staff which can be transferred and for which there is demand.		

With the aim of building the capacity of stakeholders, WARPO has already developed an outline of two training modules on 'Water policy and plans in Bangladesh' and 'Water resources planning'. The main objectives of these training modules are:

- Expanding the knowledge in Bangladesh about national plans and policies in the water sector (e.g. NWMP, NWPo, and CZPo).
- Improving networks between stakeholders in the water sector of Bangladesh, in which water is used indiscriminately very often without taking into account consequences for others or other sub-sectors.
- Translating the macro-planning function of WARPO through training and seminars into "outreach", influencing stakeholders to use scarce and sensitive water resources in a planned and coordinated manner.

WARPO can use resource persons and expertise from its own staff as well as from other specialised institutes (e.g. BUET, BWDB, CEGIS, IWM), NGOs and NILG. Table 5.2 shows the training module on

'Water policy and plans in Bangladesh' for Management Level Professionals and table 5.3 is the training module on 'Water Resources Planning' for junior/ mid level professionals

Table 5.2: Training Module on 'Water policy and plans in Bangladesh'

Time	Item	Presenter/Responsibilities
Morning	Inaugural session for max. 30 minutes.	Stakeholder's institutions Head/Ministry officials
	Evolution of WARPO, Mandate, Organogram, Achievements, missing behind and future planning	DG of WARPO/Director
	Tea break	
	An Overview of Water resources of Bangladesh	Director/PSO, WARPO
	NWMP & ICZM	Director/PSO, WARPO
	National Water Policy	Director/PSO, WARPO
	NWRD & ICRD	Director/PSO, WARPO
1-00 to 2-00pm	Break	
Afternoon	Water resources planning with consideration of "Climate Change"	Director/PSO, WARPO
	Water related disasters and its management	Director/PSO, WARPO
	Monitoring & Evaluation of water sector projects	Director/PSO, WARPO
	Concept of "Clearing House" and Conformity Checks with NWMP	Director/PSO, WARPO
	Tea break	
	Open discussion	Participants & all presenter
	Closing ceremony	Stakeholder's institutions Head/Ministry officials

Duration: 1 day; Number of Participants: 15-20 (max)

Table 5.3: Training module on 'Water Resources Planning' for junior/ mid level professionals

Day/Time	Item	Presenter/Responsibilities
Day-1	-Inaugural session -pre-course assessment -Evolution of WARPO, Mandates, Tasks, Organogram, Achievements, missing behind and future planning -Global water resource impression -Water Resources Planning Methods/Concepts -An Overview of Water resources of Bangladesh -River systems, hydrology, availability of GW&SW	Stakeholder's institutions Head/Ministry officials DG of WARPO/Director /PSO/SSO/SO, WARPO

Day/Time	Item	Presenter/Responsibilities
Day-2	-NWMP -ICZM -National Water Policy -NWRD & ICRD -Water resources planning with consideration of "Climate Change" -Water related disasters and its management -Monitoring & Evaluation of water sector projects -Concept of "Clearing House"/Conformity Checks -Introduction of WARPO library/Doc Centre	Director /PSO/SSO/SO, WARPO
Day-3	-Water rights -Existing rules Water regulations, Policies & Acts -Draft Water Act-2011 -Key Stakeholders & their functions in water sectors -Environment & water pollution -Economic/efficient use of water resources -Consideration of Fisheries development in Water Resource Planning - Open discussion/views/remarks of the participants -Post- course evaluation -Evaluation of course contents and presenter -Closing ceremony	DG/Director/PSO/SSO/SO, WARPO -Participants & all presenter -Stakeholder's institutions Head/Ministry officials

Duration: 3 days; Number of Participants: 20 (max)

Chapter 6 Conclusions and Recommendations

Through a review of legal provisions, the existing institutional capacity of WARPO and previous plans for strengthening it, this study has drawn some conclusions with recommendations. The major findings and recommendations for institutional strengthening and development of human resources of WARPO and its stakeholders are described below:

6.1 Institutional Strengthening of WARPO

- The WRP Act 1992 is urgently needed to be translated into rules and regulations which could strengthen WARPO's role as an apex water resources planning organisation. However, the act may be revised in the future and WARPO can be positioned under the Planning Commission, if required, to perform its mandates more effectively.The focus should be on six key tasks (given in section 3.1), which accommodate all the mandates given in the WRP Act (1992), the NWPo (1999), the NWMP (2001), and the CZPo (2005).
- The position of Director General of WARPO should be upgraded to Grade-I and that of Director Positionsof WARPO should also be upgraded to Grade-II.
- The BoD of WARPO should meet regularly and monitor the implementation of its decisions.
- The decisions taken by the BoD should be implemented immediately. MoWR and WARPO should take proactive role in this regard.
- There is a need to more activate the Secretariat role of the ECNWRC, which is a strong inter-ministerial body that can function as a powerful umbrella for WARPO to deal with stakeholders, and in particular when being confronted with conflicts over the use of scarce water resources, in which WARPO needs to mediate.
- The ODP (2006) of WARPO has approved by the BoD (meeting date, NNC). Additional manpower proposed in ODP (2006)should be approved by the Government immediately.
- Immediate steps should be taken towards filling current vacancies as well as ensuring gradual expansion of human resources as proposed in the ODP (2006). This will help WARPO to execute its main tasks more efficiently.
- WARPO should be more active in obtaining regular budgetary funds from the Government, replacing some of the previously available (project aid) funds for its regular activities. It should create a 'WARPO Fund' which can be utilised for its capacity development.
- A panel of experts from different universities or eminent specialist may be enrolled as POE (Panel of Experts) for over viewing and helping the updating of NWMP and other routine activities of WARPO.
- Until recruitment of required sufficiently skilled manpower,the major routine jobs may be outsourced to specialized institutions (partly). The specialized institutions shall work with the in-house personnel for accomplishing the listed job.
- Use of training skills in the job should be regularly monitored and contributions of training skills on the job should be evaluated for any promotion.
- A permanent office building is urgently required for WARPO to provide enough space for logistic support and suitable working environment for its employees.
- WARPO library should be strengthened as the largest information centre for the water sector in Bangladesh with fully automation facilities, enough space and manpower.

- Adequate transport facilities should be ensured by providing at least one vehicle for each section.
- Provision of residential accommodation for WARPO staff should be made like other Govt/autonomous organizations.
- WARPO should initiate implementation of seven programs portfolio of NWMP where WARPO is mentioned as lead agency for implementation of those programs.

6.2 Human Resources Development of WARPO

- The Director General should be competent enough having strong dynamic leadership and also sufficient longer periods.
- WARPO should execute the six main tasks with priority. These will be linked to the existing sections with a leading or shared role in the activities emerging from these tasks.
- WARPO should immediately initiate the research / casestudy on different topics with or without research partner like national and international research partners for development its professional capacity.
- The multidisciplinary role of WARPO as a water sector planning organisation needs to be emphasised.
- Internal coordination among the sections and professionals needs to be improved through coordination meeting, seminars, etc. Annual work plans should be prepared by WARPO which will be an instrument for following up the activities of each section.
- A separate training unit should be established for development of human resources of WARPO.
- Key areas of training program should include training course on macro planning specially designed for WARPO.
- Training programmes need to be planned as a part of career development plans. In the report a three-year training programme is proposed with a more detailed programme (with cost estimates) for year-1. WARPO needs to make a precise plan for the proposed training courses, indicating participants, actual budget and source of fund.
- BoD may provide a lump-sum allocation for capacity development of WARPO personnel.

6.3 Human Resource Development for Stakeholders in the Water Sector

- There is a need to strengthen WARPO's relation with stakeholders. This can be done through MoUs for data sharing, updating the NWRD, collaborative research, etc.
- WARPO can provide benefits to the stakeholders through checking conformity of water projects with the principles and guidelines developed in the NWMP (i.e. 'clearing house' role). This will also strengthen the working relationship of WARPO with stakeholders.
- Workshop, seminar, symposium, conference, fair, etc. should be organised to create awareness among stakeholders about the current and future issues in the water sector of Bangladesh. Also much effort in networking has to be undertaken using an interactive website, policy briefs, informative seminars, and short training modules. Training of stakeholders (GOs, NGOs and LGIs) with regard to the NWMP, IWRM, policyguidelines and conflict resolutionsshould be organised by WARPO as routine work.

- A general framework for a detailed training plan for stakeholders has been proposed. WARPO should prepare more detailed training programmes for stakeholders based on available resources and funds.

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Appendix 1: Detail Task and Sections of WARPO

Tasks* / Sections	Task-a	Task-b	Task-c	Task-d	Task-e	Task-f
Director-General	Overall Coordination and Supervision (+ Administration Section + ECNWRC Secretariat)					
Directors	Director Planning: Knowledge/Expertise Management of the Main Tasks relating toMacro Planning and Policy, Conformity Checks with NWMP, and Monitoring and Evaluation(Engineering, Water Resources, Monitoring & Evaluation Sections)			Director Technical: Knowledge/Expertise Management of the Main Tasks relating toData/information Dissemination, Research, Networking, Conflict Mediation(Economics, Agriculture, Environment/Forestry/Fishery Sections, Computer/Information Centre, Training Cell)		
Engineering	Lead Section for Task Update NWMP (pilot studies and main project for updating) Contribute to Guidelines Conformity Check Water Projects	Contribute to NWMP Conformity Check with specific expertise	Contribute to M&E of projects with specific expertise	Contribute Data (and analysis) to the NWRD database	Maintain active networks with LGED and NGOs/LGIs Contribute to the work of the ECNWRC	Info Briefs on NWMP and Macro Planning of Water Sector for Stakeholders Development of training model(s) on NWMP for LGED and NGOs/LGIs
Water Resources	Contribute with specific water planning expertise to NWMP	Lead Section for Task NWMP Conformity Check Establishing Guidelines Conformity Check Water Projects	Contribute to M&E of projects with specific expertise	Contribute Data (and analysis) to the NWRD database	Maintain active links with the BWDB and NGOs/LGIs Contribute to the work of the ECNWRC	Info Briefs on NWMP and Macro Planning of Water Sector for Stakeholders Development of training model(s) on NWMP for BWDB, BHWDB and NGOs/LGIs

Tasks* / Sections	Task-a	Task-b	Task-c	Task-d	Task-e	Task-f
Socio/Economic	Contribute to NWMP updates with specific socio-economic expertise (including livelihoods, gender)	Contribute to NWMP Conformity Check with specific expertise	Contribute to M&E of projects with specific expertise	Contribute Data (and analysis) to the NWRD database (also from external data bases, such as on Poverty, Livelihoods, Gender)	Lead Section Conflict Resolution and Mediation; Maintain active links with the Planning Commission (GED, Div. of Agriculture, RD and WR), NGOs/LGIs Contribute to the work of the ECNWRC	Info Briefs on NWMP and Macro Planning of Water Sector for Stakeholders Development of training model(s) on NWMP for PC and NGOs/LGIs
Agriculture	Contribute to NWMP updates with specific expertise on agricultural sector water use	Contribute to NWMP Conformity Check	Contribute to M&E of projects with specific expertise	Contribute Data (and analysis) to the NWRD database (also from external data bases, such as on agricultural production, irrigation)	Maintain active links with the Ministry of Agriculture and NGOs/LGIs Contribute to the work of the ECNWRC	
Environment, Forestry, Fisheries	Contribute to NWMP updates with specific expertise on environment, forestry and fisheries relating to water resources	Contribute to NWMP Conformity Check with specific expertise	Contribute to M&E of projects with specific expertise	Contribute Data (and analysis) to the NWRD database (also from external data bases, such as on climate change, forestry and fishery resources)	Maintain active links with the Ministry of Environment/Forestry, Ministry of Fisheries/Livestock, and NGOs/LGIs Contribute to the work of the ECNWRC	
Monitoring and Evaluation	Provide regular feedback from M&E of large water sector projects (lessons learned)	Assist in Conformity Check where needed	Lead Section for Task Monitoring and Evaluation of Water Sector Projects Contribute to Conformity Check of Planned Projects ("Clearing House")	Use data from the NWRD database for the M&E task	Maintain active links with various Ministries and NGOs/LGIs Contribute to the work of the ECNWRC	Info briefs on Project Monitoring and Evaluation Training models in M&E for Stakeholders

Tasks* / Sections	Task-a	Task-b	Task-c	Task-d	Task-e	Task-f
Computer &Information	Provide data for update of NWMP	Contribute with answering data queries	Contribute with answering data queries and store new data generated in NWRD Make data/documentation available	Lead Section for maintenance of and access to the NWRD Overall IT services, Library services, Serving data queries	Library/Documentation Centre provides information to stakeholders Access to the documentation centre will gradually become web-based	Facilitate Training in this thematic area
Training Cell	Facilitate training in this thematic area	Facilitate training in this thematic area	Facilitate training in this thematic area	Use archives of training modules Provide relevant training modules to the Library/Documentation Center	Facilitate training in this thematic area	Organize and coordinate training activities for other stakeholders Suggest training opportunities to WARPO sections/individual staff

Tasks*		
	a)	Macro-planning: Updating NWMP, and participation in other forms of national planning in the water sector; Updating the macro water-policy framework (based on the NWPo)
	b)	Executing a "clearing house" function for water projects by checking their conformity with the NWMP; Development of national guidelines for such conformity check.
	c)	Monitoring and evaluation of large water projects and clusters of smaller ones in view of the updated NWMP.
	d)	Update, maintenance and use of the NWRD; Library and Water Documentation Centre; Info and data-systems; Serving data queries from stakeholders and others.
	e)	Secretariat of the ECNWRC and NWRC; Linkages with other Ministries, Departments and agencies in the water sector, including NGOs and LGIs; Conflict resolution and mediation.
	f)	Training/HRD; Development of Training Models for stakeholders; Development of Policy Briefs; Providing information and upholding networks through seminars, joint research collaboration.

Appendix 2: WARPO DGs and length of tenure (1992-2011)

Sl. No.	Name	Total duration	From	To
1	Md. Tutiar Rahman	1.5 months	1-Jan-92	15-Feb-92
2	Md. Taslim Uddin	2 yrs	15-Jul-92	17-Jul-94
3	Liaquat Hossain	5.5 months	17-Jul-94	27-Dec-94
4	Md. Tutiar Rahman	1 yr	28-Dec-94	31-Dec-95
5	Masroor-ulHaqSiddiqi, BU	1 yr 6 months	31-Dec-95	30-Jun-97
6	Md. Abdul Wahab (In-charge)	3.5 months	30-Jun-97	12-Oct-97
7	A. K. M. Halimur Rahman	1 yr 5 months	12-Oct-97	10-Mar-99
8	Tauhidul Anwar Khan	1 yr 5 months	10-Mar-99	16-Sep-2000
9	Dr. M.A. Quassem	1 yr 3 months	17-Sep-2000	30-Dec-01
10	Giasuddin Ahmed Choudhury	9 months	30-Dec-01	5-Oct-02
11	Hossain Shahid Mozaddad Faruque	5 yrs 11 months	5-Oct-02	28-Feb-07
12	Kazi GolamMustofa	4 months	1-Mar-07	24-Jun-07
13	Md. Arzel Hossain Khan	9 days	25-Jun-07	4-Jul-07
14	Md. Enamul Haque	1 yr	5-Jul-07	20-Jul-08
15	Jalaluddin Md. Abdul Hye	6 months	20-Jul-08	28-Dec-08
16	Md. Shahjahan (In-charge)	2 days	28-Dec-08	30-Dec-08
17	Md. NuranNabi Choudhury	18 days	30-Dec-08	18-Jan-09
18	Jalaluddin Md. Abdul Hye	1 yr	18-Jan-09	26-Jan-10
19	Dhali Abdul Qaium	5 months	27-Jan-10	3-Jul-10
20	Dr. Md. Abu Taher Khandaker, PEng.	6 months	4-Jul-10	30-Dec-10
21	Md. Shahjahan (In-charge)	3 months	30-Dec-10	7-Apr-11
22	Md. MokbulHossain	4 months	7-Apr-11	21-Aug-11
23	Md. Shahjahan (In-charge)	5 months	21-Aug-11	1-Feb-2012
24	MohammadShahidur Rahman		1-Feb-2012	Present

Source: WARPO

Appendix 3: Two year training plan for WARPO

Training Programme for WARPO official for Year - 2: FY 2013-14

Sl.	Training program	Target group	Probable Training institutes/ organizer	Probable Country
1	Project Formulation, Appraisal and EIA	Relevant professionals and support staff	NAPD, Dhaka	Bangladesh
2	Foundation Training Course (FTC)	Do	BPATC, Dhaka / Engineering Academy kaptai, Chittagong	Bangladesh
3	English language course	Do	British Council, Dhaka	Bangladesh
4	Climate Change Training for Water Professionals	Do	BUET (IWFM, WRE depts.)	Bangladesh
5	Specialist Course on Riverbank Protection Work	Do	BUET (IWFM, WRE depts.)	Bangladesh
6	Short Course on ''Coastal Zone Management''	Do	BUET (IWFM, WRE depts.)	Bangladesh
7	Human Relationship & Courtesy	Do	Irrigation Extension Training Centre, BWDB, Kushtia	Bangladesh
8	Modern Office Management Course	Do	BPATC, Dhaka	Bangladesh
9	Development of WEB portals	Do	CEGIS, Dhaka	Bangladesh
10	Design and development of databases, MIS and IT solutions	Do	CEGIS, Dhaka	Bangladesh
11	Development of GIS databases, GIS based software and Web GIS	Do	CEGIS, Dhaka	Bangladesh
12	WISYS - Management of Information Systems for Integrated River Basin Development	Do	Danish Hydraulic Institute (DHI)	Denmark
13	Groundwater management	Do	K-water Academy	Korea
14	Water Resources Management	Do	K-water Academy	Korea
15	Flood Forecasting Systems	Do	K-water Academy	Korea
16	Financial Management of Water Organizations	Do	UNESCO-IHE (Duration: 3 weeks)	Netherlands
17	Changing Management and Management of Change in Water Institutions (Tailor made; on demand basis)	Do	ISS	Netherlands

Sl.	Training program	Target group	Probable Training institutes/ organizer	Probable Country
18	Scenario Development, Spatial Planning Support Systems and Collaborative Decision Support	Do	ITC (Duration:6 weeks)	Netherlands
19	River basin modeling	Do	UNESCO-IHE (Duration: 3 weeks)	Netherlands
20	Water and Environmental Law	Do	UNESCO-IHE (Duration: 3 weeks)	Netherlands
21	Data-Driven Modeling and Real-Time Control of Water Systems	Do	UNESCO-IHE (Duration: 3 weeks)	Netherlands
22	Water Resources Planning	Do	UNESCO-IHE (Duration: 3 weeks)	Netherlands
23	Multi-disciplinary Planning Methods of FCDI Projects (Tailor made; on demand basis)	Do	ISS	Netherlands
24	Universalizing Socio-economic Security for the Poor	Do	ISS (Duration: 11 weeks)	Netherlands
25	Climate change adaptation in agriculture and natural resources management	Do	Wageningen UR (Duration: 2 weeks	Netherlands
26	Climate Change Impacts and Adaptation - Analysis and Monitoring Techniques for Climate Change	Do	ITC (Start:01 Jul 2013; Duration:3 weeks)	Netherlands
27	Environment and Global Change: Uncertainty & Risk Assessment	Do	UNESCO-IHE (Duration: 10 days)	Netherlands
28	Training Program on Environment and Environmental Law	Do	BELA, Dhaka	Bangladesh
29	Project Planning, Implementation, Monitoring and Evaluation	Do	BARD, Comilla	Bangladesh
30	Urban Flood Management and Disaster Risk Mitigation	Do	UNESCO-IHE (Date: July; Duration: 3 weeks)	Netherlands
31	Postgraduate Diploma (PG. Dip.) in IT	Do	Institute of Information and Communication Technology (IICT), BUET	Bangladesh
32	Master of Science in Engineering (M.Sc. Engg) or Master of Engineering (M. Engg) in relevant engineering fields	Do	All Engineering Departments + IICT , BUET	Bangladesh
33	Master of Urban and Regional Planning (MURP)by Courses and Thesis/ Project	Do	Dept. of Urban and Regional Planning , BUET	Bangladesh
34	Master of Science (M.Sc.) in WRD	Do	Institute of Water and Flood Management (IWFM), BUET	Bangladesh

Sl.	Training program	Target group	Probable Training institutes/ organizer	Probable Country
35	Masters in Development Studies	Do	Department of Development Studies, DU	Bangladesh
36	M.Sc in Disaster Management	Do	Center for Disaster and Vulnerability Studies, DU	Bangladesh
37	M.Sc in Earth, Atmospheric and Environmental Sciences (by Research)	Do	University of Manchester, UK	UK
38	M.Sc in Environmental Science (by research)	Do	Australian National University	Australia
39	Remote Sensing & Digital Image Processing (at Hyderabad)	Do	Geological Survey of India Training Institute, Hyderabad, India	India
40	Short Course on Remote Sensing with special emphasis on Digital Image Processing	Do	Indian Institute of Remote Sensing, Dehradun	India
41	Climate Change and Sustainability	Do	TERI, New Delhi	India
42	Gender, Water & Equity	Do	India	India
43	Water Quality Protection	Do	International Cooperation Training of National Environmental Research and Training Institute. NETI	China, Korea, Japan
44	Air Quality Protection	Do	International Cooperation Training of National Environmental Research and Training Institute. NETI	China, Korea, Japan
45	Solid Waste Management	Do	International Cooperation Training of National Environmental Research and Training Institute. NETI	China, Korea, Japan
46	Urban Water Quality Management	Do	International Cooperation Training of National Environmental Research and Training Institute. NETI	China, Korea, Japan
47	Urban Solid Waste Management	Do	International Cooperation Training of National Environmental Research and Training Institute. NETI	China, Korea, Japan
48	International Cooperation on Environmental Protection in Northeast Asia	Do	International Cooperation Training of National Environmental Research and Training Institute. NETI	China, Korea, Japan
49	The Recycling-Based Society(Waste disposal and recycling)	Do	International Cooperation Training of National Environmental Research and Training Institute. NETI	China, Korea, Japan

Sl.	Training program	Target group	Probable Training institutes/ organizer	Probable Country
50	Global-warming Prevention Measurement	Do	International Cooperation Training of National Environmental Research and Training Institute. NETI	China, Korea, Japan
51	Second International Conference on Sustainable Watershed Management	Do	IGEM Research & Consulting	Sarigerme, Turkey
52	International Water Week 2013	Do	Amsterdam RAI – IWW project team	Amsterdam, The Netherlands
53	3rd Climate Change Technology Conference	Do	Concordia University, Montreal, QC.	Canada
54	Oracle Database 11g Administrator Certified Professional	Do	Oracle University	India/ Malaysia
55	Web based application development by using PHP-MySQL	Computer and Information Section	Asian Institute of Technology	Thailand
56	Certificate of Proficiency in Web Designing	Computer and Information Section	Aptech Limited	India
57	Training Program on Object Oriented Programming - .Net Track (C#)	Computer and Information Section	Bangladesh Association of Software and Information Services (BASIS)	Bangladesh
58	Red Hat Certified Security Specialist	Computer and Information Section	IBCS-PRIMAX Software (Bangladesh) Ltd.	Bangladesh
59	Higher study/Research (Full/Part-time) like MBA, Masters, Diploma etc.	Relevant professionals and support staff	Public/Private Universities	Bangladesh/ Abroad

Note: * The name of institute and country for training can be changed as per requirement of WARPO

Training Programme for WARPO official for Year-3:FY 2014-15

Sl.	Training program	Target group	Probable Training institutes/ organizer	Probable Country
1	Integrated Water Resources Management (IWRM) - Introduction to A Policy Framework for the Planning and Management Tools	Relevant professionals and support staff	Danish Hydraulic Institute (DHI), Denmark	Denmark
2	Integrated Catchment Hydrology - Introduction to Catchment Scale Processes and the Tools for Managing Water including Climate Change	Do	Danish Hydraulic Institute (DHI), Denmark	Denmark
3	IWRM as a tool for adaption to Climate Change (Climate Change in Integrated Water Management)	Do	UNESCO-IHE, Netherlands (Duration: 3 weeks)	Netherlands
4	Flood Risk Management	Do	UNESCO-IHE, Netherlands (Duration: 3 weeks)	Netherlands
5	Integrated Water Resources Management (IWRM)	Do	Stockholm International Water Institute (SIWI), Sweden	Sweden
6	Advance training program on Climate Change – Mitigation and Adaption	Do	Swedish Meteorological and Hydrological Institute (SMHI) funded by SIDA, Sweden	Sweden
7	Graduate Certificate in Water Conflict Management and Transformation;	Do	Oregon State University; Corvallis, OR (Institute for Water Resources, US. Army Corps of Engineers in Alexandria, Virginia, Washington, DC, USA)	USA
8	Negotiation and Mediation for Water Conflict Management I	Do	UNESCO-IHE, Netherlands (Duration: 3 weeks)	Netherlands
9	Environmental Monitoring and Modeling	Do	UNESCO-IHE, Netherlands (Duration: 3 weeks)	Netherlands
10	Adaptive management of natural resources: supporting decentralized forest and nature management for rural development	Do	Wageningen UR Centre for Development Innovation, Netherlands (Duration: 2 weeks)	Netherlands
11	International Training Course on Climate Change and Climate Risk Management in a Changing Urban Environment	Do	Asian Disaster Preparedness Center (ADPC), Thailand (Date: September ; Duration: 1 week)	Thailand
12	Water Security for Policy Makers and Practitioners	Do	University of East Anglia (Date: May 2012; Duration: 1 week)	UK

Sl.	Training program	Target group	Probable Training institutes/ organizer	Probable Country
13	Developing effective communication skills	Do	Engineering Academy kaptai, Chittagong, Bangladesh	Bangladesh
14	Human Resource Management	Do	NAPD, Dhaka	Bangladesh
15	Water management, crop production and landuse development	Do	Irrigation Extension Training Centre, BWDB, Kushtia, Bangladesh	Bangladesh
16	Good governance in water resources management project	Do	Irrigation Extension Training Centre, BWDB, Kushtia, Bangladesh	Bangladesh
17	Monitoring and Evaluation of Development Projects	Do	NAPD, Dhaka	Bangladesh
18	Environmental Impact Assessment of Rural Development Projects	Do	BARD, Comilla, Bangladesh	Bangladesh
19	Watershed and River Basin Management	Do	UNESCO-IHE, Netherlands (Date: 2-20 Jul 2012; Duration: 3 weeks)	Netherlands
20	Applied Groundwater Modeling	Do	UNESCO-IHE, Netherlands (Duration: 3 weeks)	Netherlands
21	Hydrological Data Collection and Processing	Do	UNESCO-IHE, Netherlands (Duration: 3 weeks)	Netherlands
22	Integrated Coastal Zone Management	Do	UNESCO-IHE, Netherlands (Duration: 3 weeks)	Netherlands
23	IWRM and Hydro informatics	Do	K-water Academy, Republic of Korea	Korea
24	Drinking Water Management	Do	K-water Academy, Republic of Korea	Korea
25	Public Expenditure Management	Do	Institute of Government Accounts and Finance, New Delhi, India	India
26	Financial Management	Do	Institute of Government Accounts and Finance, New Delhi, India	India
27	Financial and Regularity	Do	International Centre for Information Systems and Audit (iCISA), Nodia, India	India
28	Audit of Public Sector	Do	International Centre for Information Systems and Audit (iCISA), Nodia, India	India
29	General Management Program for Senior Executives	Do	Administrative Staff College of India	India

Sl.	Training program	Target group	Probable Training institutes/ organizer	Probable Country
30	International Training Program on Human Capabilities	Do	Institute of Applied Manpower Research, Delhi, India	India
31	Planning, Monitoring and Evaluation of Rural Development Program	Do	National Institute Rural Development , Hyderabad, India	India
32	Natural Resource Management for Sustainable Rural Livelihoods	Do	National Institute Rural Development , Hyderabad, India	India
33	Planning for Poverty Reduction and Sustainable Development	Do	National Institute Rural Development , Hyderabad, India	India
34	International Economic Issues & Development Policy (IEIDP)	Do	Research and Information System for Developing Countries, New Delhi, India	India
35	Digital Library Practices and Information Technology Application for Knowledge Management	Do	Fluid Control Research Institute, Kerala, India	India
36	M. Tech in Environment Management of Rivers and Lakes	Do	Indian Institute of Technology, Roorkee, India	India
37	Graduate Certificate in Water Resources Management	Do	Faculty of Science and Engineering, Flinders University, Australia	Australia
38	Graduate Diploma in Water Resources Management	Do	Faculty of Science and Engineering, Flinders University, Australia	Australia
39	Master of Water Resources Management	Do	Faculty of Science and Engineering, Flinders University, Australia	Australia
40	One Year "Problem Solving- Oriented training course leading to a Master's degree Disaster Management	Do	International Centre for Water Hazard and Risk Management (UNESCO-ICHARM)	Japan
41	Water – Related Disaster Management Course of Disaster Management Policy Program	Do	International Centre for Water Hazard and Risk Management (UNESCO-ICHARM)	Japan
42	PhD in Disaster Management	Do	International Centre for Water Hazard and Risk Management (UNESCO-ICHARM)	Japan
43	International Leader Training Program for Sustainable Use of Water and Resources	Do	University of Kitakyushu Fukuoka, JAPAN	Japan
44	International Program for Development Evaluation Training: Building Skills to Evaluate	Do	IPDET Program, Ontario K1S, Canada	Canada

Sl.	Training program	Target group	Probable Training institutes/ organizer	Probable Country
	Development Interventions			
45	Economic Foundations for Public Decision Making Training course	Do	Johns Hopkins University, Baltimore	Baltimore, USA
46	Environmental Law for engineers and scientists training course	Do	Johns Hopkins University, Baltimore	Baltimore, USA
47	Environmental Impact Assessment training course	Do	Johns Hopkins University, Baltimore	Baltimore, USA
48	Environmental Microbiology training course	Do	Johns Hopkins University, Baltimore	Baltimore, USA
49	Climate Change and Global Environmental Sustainability training course	Do	Johns Hopkins University, Baltimore	Baltimore, USA
50	Water Resources Planning Training course	Do	Johns Hopkins University, Baltimore	Baltimore, USA
51	Red Hat Certified Engineer (RHCE)	Do	IBCS-PRIMAX Software (Bangladesh) Ltd.	Bangladesh
52	CCNA	Do	BUET, Bangladesh	Bangladesh
53	Monitoring and Evaluation - Basic Course;	Do	MDF Training And Consultancy	China; Indonesia, Vietnam, Thailand
54	Monitoring and Evaluation - Advanced Course;	Do	MDF Training And Consultancy	China; Indonesia, Vietnam, Thailand
55	Policy Monitoring and Evaluation;	Do	MDF Training And Consultancy	China; Indonesia, Vietnam, Thailand
56	Project Cycle Management	Do	MDF Training And Consultancy	China; Indonesia, Vietnam, Thailand
57	13th International Conference on Urban Drainage 2014	Do	Centre for Storm water and Geohazard Management (CSGM), UniversitiTenagaNasional	Sarawak, Malaysia
58	Oracle Database 11g: RAC Administration	Computer and Information Section	Oracle University	India/ Malaysia
59	Certificate of Proficiency in Graphic Designing	Computer and Information Section	Aptech Limited	India
60	Certificate Course in Advanced Software Technology	Computer and Information Section	CMC Ltd	India

Note: * The name of institute and country for training can be changed as per requirement of WARPO

Appendix 4: Relation of stakeholders with WARPO with respect to key mandates of WARPO

Sl. No.	Task* / Stakeholder of WARPO	Task-a	Task-b	Task-c	Task-d	Task-e	Task-f
A	Government Organizations (Ministries/ Departments/ Divisions)						
A.1	Inter-ministerial						
1	National Water Resources Council (NWRC)					Executing secretarial tasks of NWRC	
2	Executive Committee of NWRC					Executing secretarial tasks of ECNWRC	
3	National Economic Council (NEC)		Support NEC for checking conformity of water sector projects				
4	Executive Committee of NEC		Support EC NEC for checking conformity of water sector projects				
A.2	Ministry of Water Resources (MoWR)						
5	Joint Rivers Commission (JRC)	Exchange information regarding updating or formulation of plan and			Disseminate NWRD data to JRC		Experts from JRC as trainer

Sl. No.	Task* Stakeholder of WARPO	Task-a	Task-b	Task-c	Task-d	Task-e	Task-f
		policies for water sector					
6	River Research Institute (RRI)	Technical support for updating NWMP			Use of NWRD and other documents as well as providing data		Experts from RRI as trainer
7	Center for Environmental and Geographic Information Services (CEGIS)	Technical support for updating NWMP		Technical support for M & E	Technical support for updating NWRD and dissemination		Training event management and experts from CEGIS as trainer
8	Institute of Water Modeling (IWM)	Technical support for updating NWMP		Technical support for M & E	Technical support for updating NWRD and dissemination		Training event management and experts from IWM as trainer
9	Bangladesh Water Development Board (BWDB)	Technical support for updating NWMP	Checking conformity of water sector projects	Checking conformity of water sector projects	Use of NWRD and other documents as well as providing data		Participating in training programs and expert input as trainer
10	Bangladesh Haor & Wetland Development Board (BHWDB)	Technical support for updating NWMP	Checking conformity of water sector projects	Checking conformity of water sector projects	Use of NWRD and other documents as well as providing data		Participating in training program and expert input as trainer
A.3	Ministry of Agriculture (MoA)						
11	Bangladesh Agricultural Development Corporation (BADC)	Exchange information regarding updating or formulation of plan and policies for water sector			Use of NWRD and other documents		Participating in training program
12	Department of Agricultural Extension (DAE)	Exchange information regarding updating or			Use of NWRD and other documents		Participating in training program

Sl. No.	Stakeholder of WARPO	Task-a	Task-b	Task-c	Task-d	Task-e	Task-f
		formulation of plan and policies for water sector			as well as providing data		
13	Soir RessourcesDevelopmentInstitute (SRDI)	Exchange information regarding updating or formulation of plan and policies for water sector			Use of NWRD and other documents as well as providing data		Participating in training program
14	Bangladesh Agricultural Research Council (BARC)	Exchange information regarding updating or formulation of plan and policies for water sector			Use of NWRD and other documents as well as providing data		Participating in training program
15	Bangladesh Agricultural Research Institute (BARI)	Technical support for updating NWMP			Use of NWRD and other documents as well as providing data		Participating in training program
16	Bangladesh Rice Research Institute (BRRI)				Use of NWRD and other documents as well as providing data		Participating in training program
A.4	Ministry of Local Government, Rural Development and Cooperatives (MoLGRD&C)						
17	Local Government Division						Participating in training program
18	Local Government Engineering Department (LGED)	Exchange information regarding updating or formulation of plan and policies for water sector	Checking conformity of water sector projects	Checking conformity of water sector projects	Use of NWRD and other documents as well as providing data		Participating in training program and expert input as trainer
19	Department of Public Health	Exchange information	Checking	Checking	Use of NWRD and		Participating in training

Sl. No.	Task* Stakeholder of WARPO	Task-a	Task-b	Task-c	Task-d	Task-e	Task-f
	Engineering (DPHE)	regarding updating or formulation of plan and policies for water sector	conformity of water sector projects	conformity of water sector projects	other documents as well as providing data		program and expert input as trainer
20	Dhaka Water Supply and Sanitation Authority (Dhaka WASA)	Exchange information regarding updating or formulation of plan and policies for water sector	Checking conformity of water sector projects	Checking conformity of water sector projects	Use of NWRD and other documents as well as providing data		Participating in training program and expert input as trainer
21	Chittagong WASA	Exchange information regarding updating or formulation of plan and policies for water sector	Checking conformity of water sector projects	Checking conformity of water sector projects	Use of NWRD and other documents as well as providing data		Participating in training program and expert input as trainer
22	Local government (Municipalities, District/Upazila/Union Council)	Exchange information regarding updating or formulation of plan and policies for water sector			Use of NWRD and other documents as well as providing data		Participating in training program
23	National Institute of Local Government (NILG)						
A.5	Ministry of Public Works						Participating in training program
24	RajdhaniUnnayanKartripakha (RAJUK)	Exchange information regarding updating or formulation of plan and policies for water sector					Participating in training program
A.6	Ministry of Science and Information & Communication Technology						
25	Bangladesh National Scientific				Use of NWRD and		

Sl. No.	Task* Stakeholder of WARPO	Task-a	Task-b	Task-c	Task-d	Task-e	Task-f
	and Technical Documentation Centre (BANSDOC)				other documents		
26	Bangladesh Council of Scientific and Industrial Research (BCSIR)				Use of NWRD and other documents as well as providing data		Participating in training program
A.7	Ministry of Defense						
27	Space Research & Remote Sensing Organization (SPARSO)	Exchange information regarding updating or formulation of plan and policies for water sector			Use of NWRD and other documents as well as providing data		Participating in training program and expert input as trainer
28	Bangladesh Meteorological Department	Exchange information regarding updating or formulation of plan and policies for water sector			Use of NWRD and other documents as well as providing data		Participating in training program and expert input as trainer
A.8	Ministry of Environment and Forest (MoEF)						
29	Department of Environment (DoE)	Exchange information regarding updating or formulation of plan and policies for water sector			Use of NWRD and other documents as well as providing data		Participating in training program and expert input as trainer
30	Department of Forest (FD)	Exchange information regarding updating or formulation of plan and policies for water sector			Use of NWRD and other documents as well as providing data		Participating in training program and expert input as trainer
A.9	Ministry of Communications (MoC)						
31	Department of Roads and	Exchange information					Participating in training

Sl. No.	Task* Stakeholder of WARPO	Task-a	Task-b	Task-c	Task-d	Task-e	Task-f
	Highways	regarding updating or formulation of plan and policies for water sector					program
A.10	Ministry of Shipping						
32	Bangladesh Inland Water Transport Authority (BIWTA)	Exchange information regarding updating or formulation of plan and policies for water sector	Checking conformity of water sector projects	Checking conformity of water sector projects	Use of NWRD and other documents as well as providing data		Participating in training program and expert input as trainer
33	Department of Shipping (DOS)	Exchange information regarding updating or formulation of plan and policies for water sector					Participating in training program
34	Bangladesh Inland Water Transport Corporation (BIWTC)				Use of NWRD and other documents as well as providing data		
35	Chittagong Port Authority (CPA)				Use of NWRD and other documents as well as providing data		Participating in training program
36	Mongla Port Authority (MPA)				Use of NWRD and other documents as well as providing data		Participating in training program
37	Bangladesh Shipping Corporation (BSC)						Participating in training program
38	Marine Academy				Use of NWRD and other documents as well as		Participating in training program and expert input as trainer

Sl. No.	Task* Stakeholder of WARPO	Task-a	Task-b	Task-c	Task-d	Task-e	Task-f
					providing data		
39	National Maritime Institute	Exchange information regarding updating or formulation of plan and policies for water sector			Use of NWRD and other documents as well as providing data		Participating in training program and expert input as trainer
A.11	Ministry of Fisheries and Livestock (MoFL)						
40	Department of Fisheries (DoF)	Exchange information regarding updating or formulation of plan and policies for water sector	Checking conformity of water sector projects	Checking conformity of water sector projects	Use of NWRD and other documents as well as providing data		Participating in training program and expert input as trainer
A.12	Ministry of Planning (MoPlan)						
41	Planning Commission	Exchange information regarding updating or formulation of plan and policies for water sector	Checking conformity of water sector projects	Checking conformity of water sector projects			Participating in training program
42	Bangladesh Institute of Development Studies (BIDS)	Exchange information regarding updating or formulation of plan and policies for water sector					Participating in training program and expert input as trainer
43	Bangladesh Bureau of Statistics (BBS)				Use of NWRD and other documents as well as providing data		
A.13	Ministry of Lands (MoL)	Exchange information regarding updating or formulation of plan and policies for water					Participating in training program

Sl. No.	Task* Stakeholder of WARPO	Task-a	Task-b	Task-c	Task-d	Task-e	Task-f
		sector					
A.14	Ministry of Industries (MoI)	Exchange information regarding updating or formulation of plan and policies for water sector					Participating in training program
A.15	Ministry of Food and Disaster Management (MoFDM)						
44	Disaster Management Bureau (DMB)	Exchange information regarding updating or formulation of plan and policies for water sector			Use of NWRD and other documents as well as providing data		Participating in training program and expert input as trainer
B	Development partners						
45	UN Organisation (UNDP, WFP, UNESCO, FAO, etc.)	Funding though large/ small projects					
46	Asian Development Bank (ADB) /World Bank (WB)						
47	Government of Netherlands						
48	DFID/ USAID/ CIDA/ SIDA/ DANIDA/ JICA						
C	Non-Government Organizations (NGOs)						
49	NGO Forum for Drinking Water Supply Sanitation	Exchange information regarding updating or formulation of plan and policies for water sector	Checking conformity of water sector projects	Checking conformity of water sector projects	Information sharing		Training event management and expert input as trainer
50	WaterAid	Exchange information regarding updating or formulation of plan and policies for water		Checking conformity of water sector	Information sharing		Training event management and expert input as trainer

Sl. No.	Stakeholder of WARPO	Task-a	Task-b	Task-c	Task-d	Task-e	Task-f
		sector		projects			
51	Other international, national and local NGOs working in WATSAN, CC and DM issues	Exchange information regarding updating or formulation of plan and policies for water sector					Training event management and expert input as trainer
52	Industries (e.g. bottled water company, others using huge amount of SW/GW)				Use of NWRD and other documents as well as providing data		Participating in training program
D	Universities/ Education/ Research Institutes	Expert inputs for updating or formulation of plan and policies for water sector					Training event management and expert input as trainer

Tasks*		
	a)	Macro-planning: Updating NWMP, and participation in other forms of national planning in the water sector; Updating the macro water-policy framework (based on the NWPo)
	b)	Executing a "clearing house" function for water projects by checking their conformity with the NWMP; Development of national guidelines for such conformity check.
	c)	Monitoring and evaluation of large water projects and clusters of smaller ones in view of the updated NWMP.
	d)	Update, maintenance and use of the NWRD; Library and Water Documentation Centre; Info and data-systems; Serving data queries from stakeholders and others.
	e)	Secretariat of the ECNWRC and NWRC; Linkages with other Ministries, Departments and agencies in the water sector, including NGOs and LGIs; Conflict resolution and mediation.
	f)	Training/HRD; Development of Training Models for stakeholders; Development of Policy Briefs; Providing information and upholding networks through seminars, joint research collaboration.

Appendix 5: Comments of Key Stakeholders about WARPO

The following more detailed comments were regarding the current and future role of WARPO:

Bangladesh Water Development Board (BWDB)

Bangladesh Water Development Board (BWDB), who is largest agency for implementing water sector projects in Bangladesh, expressed optimistic views on activities and mandates of WARPO. BWDB has partially implemented projects identified in NWMP, which was prepared by WARPO. However, BWBD suggested that the NWMP as well as ICZMP needs to be updated and implemented.

Further, BWDB urged that WARPO can function as 'clearing house' under the framework of NWMPonly when WARPO has the regulatory authority (possibly through Bangladesh Water Act). The BWDB thinks that WARPO can add value to the projects while checking conformity with NWMP. Also, BWDB believes that "clearing house" function for water projects should not only be exercised in relation to the BWDB, but needs to be extended to departments such as LGED and DPHE. In this regards, the manpower should be retrained, while also the research capacity of WARPO needs to be strengthened.

> *Box*
> a) The BWDB considers that NWMP and IZMP were very good but need to be updated
> b) NWRD is a very important database, and needs continuous updating
> c) WARPO does not have the authority to properly execute its mandated functions
> d) According to the BWDB, the Draft Bangladesh Water Act 2011, when approved by Parliament, will give WARPO a clear authority, which will contribute to its recognition by stakeholders.

Local Government Engineering Department (LGED)

The Local Government Engineering Department is involved in many rural infrastructure projects (roads, small-scale water projects, and schools). Since 1999 LGED is responsible for all water resources projects that cover areas below 1,000 hectares. LGED is in favour of strengthening WARPO, in particular as a "clearing house"under the framework of NWMP, but it currently seen as too much BWDB-dependent. LGED considers WARPO has very valuable and specialized knowledge in water sector, which can be utilized for long term planning for water resources availability and use in Bangladesh. WARPO can also contribute well in conflict arbitration. WARPO has been quite helpful in arbitrage cases around community participation in the South-West Area Integrated Water Resources Management Project. Therefore, LGED urged that WARPO need strengthening in terms of technical and human resources, particularly dynamic leadership.

Department of Public Health Engineering (DPHE)

The relation between the Department of Public Health Engineering (DPHE) and WARPO has previously been good, but got somewhat lost in recent years. DPHE's planning circle has recently

> *Box*
> a) WARPO is considered to have valuable and specialized knowledge in the water sector
> b) LGED generally favours a strengthening of WARPO, in particular its "clearing house" function
> c) LGED considers that long-term planning in the water sector is very necessary for Bangladesh and WARPO should play an important role in this

completed an updated Sector Development Plan (SDP)[5] 2011, which was prepared without consulting with the NWMP (2004). It indicates the institutional distance between DPHE and WARPO.

The DPHE had more coordination with WARPO in the past, when DPHE also had a deputed person in WARPO, which is not continuing in recent years. The position of DPHE is that a macro-planning organization like WARPO is needed in Bangladesh, specifically if that organization can assist in major water resources planning tasks. According to the DHPE, WARPO should look at all water sector projects/ programmes including FCDI projects and urban and rural water supply and sanitation projects while performing 'clearing house' roleunder the framework of NWMP. WARPO can have some regulatory role in water sector (as proposed in draft Bangladesh Water Act) to control indiscriminate use of water

Further, DPHE considers that WARPO should not be exclusively linked to Ministry of Water Resources, as it is conceived now, and indeed, the DG WARPO not necessarily needs to come from the BWDB only.

Box
a) According to DPHE there is an indiscriminate use of ground water (for irrigation and drinking water) and DPHE welcomes some regulatory authority by WARPO in this field
b) DPHE, which actually does its sector planning independent of WARPO, would see an added value in WARPO as planning organization, but considers it being now too close to the MoWR and the BWDB.

Department of Environment (DoE)

The Department of Environment (DoE) is concerned with the regulation and reduction of water, air, and soil pollution, mainly from industrial activities. DOE has got additional responsibilities for controlling filling up of water bodies and hills cutting through the amended Environment Conservation Act 2010. Also DOE feels that there must be some form regulation over indiscriminate use of surface and ground water. Further, there are critical issues like arsenic problems, trans-boundary river's water sharing which needs to be tackled. In this context, DOE urged that WARPO, being a national water resources planning organization, should play important role in sound water management in Bangladesh. The possible regulatory role of WARPO is seen as quite feasible by DoE, and suitable arrangements between DOE and WARPO for mutual benefit can be worked out.

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[5] LGD (2011), *Sector Development Plan: For the Water and Sanitation Sector in Bangladesh, FY 2011 to 2025*, Draft Final Report, 14 March 2011; DevConsultants, Bangladesh, in association with BETS Consulting Services Limited, Bangladesh.

> *Box*
> a) According to the DoE Bangladesh needs better macro-planning in crucial water sector, and WARPO could have that function in national water management
> b) There could be very fruitful cooperation between WARPO and the DoE as there are many initiatives being taken around climate change, environmental degradation, water pollution, and sea water rise.
> c) Water policy coordination of (international) river basins is seen as crucial, in which WARPO needs to be involved.

Planning Commission (PC)

All development projects related to water resources come for clearance and approval to the Agriculture, Water Resources and Rural Institutions Division (AWRD) of the Planning Commission (PC). At this moment this Division is not working with WARPO. It is also urged that WARPO should, apart from the already mentioned Departments, have close relations with the Ministry of Agriculture and with the BangladeshAgriculturalUniversity, as students can make use of the NWRD.[6] The PC and this Division would be happy to receive technical advice from WARPO (as part of the "clearing house" function), as there are many water-related projects, and sometimes the PC does not have sufficient expertise to judge them technically. There would be good ground for cooperation with the PC, in particular through agreements over the clearing of projects by WARPO. Regarding the functioning of WARPO, this Division of the PC expressed that this depends very much on having a dynamic leadership of WARPO.

> *Box*
> a) According to the PC, WARPO could play an important role in the field of water resources in Bangladesh
> b) There would be good ground for cooperation with the PC, in particular through agreements over the clearing of projects by WARPO, and its specialized role in macro-planning in the water sector

Views of Key Development Partners

Some of the key development partners in the water sector, namely the World Bank, the ADB, and the Kingdom of the Netherlands (EKN) were interviewed in depth about the current and future role of WARPO. Their views are given below:

The World Bank

The World Bank supports WARPO (and the BWDB) through WMIP, in particular through the component of Institutional Strengthening. In a conversation with the World Bank the following main issues relating to WARPO were brought forward. The World Bank appreciated that WARPO had great achievements in preparing the NWMP and the NWPo; nevertheless, NWMP is barely implemented.

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[6] WARPO does have these relations, and offers a 90% discount on the already nominal charges for use of the data from the NWRD.

The NWMP gave WARPO opportunities to build stable networks with other stakeholders but this did not happen sufficiently. The World Bank pointed out that the Secretariat of the ECNWRC, which is at WARPO, does not function well, as most people consider it as being dependent on the MoWR rather than representing the nine ministries involved. The Ministry of Water Resources, through its appointing of WARPO DGs exclusively from the BWDB, is seen as "monopolising" the work of WARPO and the Council, which has weakened the ownership of the other involved ministries.

According to the World Bank, the "clearing house" function of WARPO has also been insufficiently defined, and projects of BWDB were only cleared. Other ministries and departments simply do not pass on their water projects to WARPO, in spite of the mention of this "obligation" in the National Water Policy (1999). The World Bank suggested that WARPO should be revived and become a highly specialised agency.

The Asian Development Bank

The ADB has supported WARPO, amongst others through the RETA (ADB, 2009) study. It is critical of the current functioning of WARPO, but also supportive to the idea of strengthening it institutionally. According to it, WARPO had a vibrant period, with clear mandates, and developed the National Water Policy (1999). Thereafter the large task of making the NWMP (2004) was successfully completed. However, further work on the NWMP was not envisaged under the revenue budget of WARPO. The ADB considers that WARPO needs dynamic leadership, with sufficient length of tenure, and neither to be confined under the officials of the BWDB, nor exclusively under a water engineer.

The Embassy of the Kingdom of the Netherlands, (EKN)

The Government of The Netherlands has been traditionally a very important development partner in the water sector of Bangladesh. It currently co-finances the WMIP, which also has components to institutionally strengthen the BWDB and WARPO. More recently, further initiatives for future cooperation between Bangladesh and The Netherlands are being developed such as the preparation of the future "Bangladesh Delta Plan 2100". EKN believes that WARPO can have an important function in this kind of large project, although the NWMP, which was prepared by WARPO, was not implemented properly. In the IWRM approach, national planning and coordination with regional and local governments is very much needed. Therefore, EKN recommended that revival of the Secretariat of the NWRC and ECNWRC (and the role of WARPO in this) would be a good thing, as it will accord WARPO a key role in inter-ministerial coordination. Also EKN recommended that WARPO can play an important role in clearing water projects. This might lead to a situation in which the Planning Commission will have a check list for all water related projects, and WARPO's approval will be one of the checks to be made.

According to EKN, serious attention should also be given to a more permanent (physical) housing of WARPO. In fact, there should be a central location where all water institutions that now fall under the MoWR (BWDB, WARPO, RRI, JRC, BHWDB, CEGIS, IWM, and space for consultants) could be housed. Land could be allocated from the government, and the building could be co-financed. Thus,

WARPO can be revived with dynamic leadership as well as approval of the new Bangladesh Water Act.

Appendix 6: List of major stakeholders of WARPO

Type	Stakeholders of WARPO
A	**Government Organisations (Ministries/ Departments/ Divisions)**
A.1	**Inter-ministerial**
1	National Water Resources Council (NWRC)
2	Executive Committee of NWRC
3	National Economic Council (NEC)
4	Executive Committee of NEC
A.2	**Ministry of Water Resources**
5	Bangladesh Water Development Board (BWDB)
6	Joint Rivers Commission (JRC)
7	Bangladesh Haor & Wetland Development Board (BHWDB)
8	River Research Institute (RRI)
9	Center for Environmental and Geographic Information Services (CEGIS)
10	Institute of Water Modelling (IWM)
A.3	**Ministry of Agriculture**
11	Department of Agricultural Extension (DAE)
12	Bangladesh Agricultural Development Corporation (BADC)
13	Bangladesh Agricultural Research Council (BARC)
14	Soil Resources Development Institute (SRDI)
15	Bangladesh Agricultural Research Institute (BARI)
16	Bangladesh Rice Research Institute (BRRI)
A.4	**Ministry of Local Government, Rural Development and Cooperatives**
17	Local Government Division
18	Local Government Engineering Department (LGED)
19	Department of Public Health Engineering (DPHE)
20	Dhaka WASA (Water Supply & Sewerage Authority)
21	Chittagong WASA (Water Supply & Sewerage Authority)
22	Local government (Municipalities, District/Upazila/Union Council)
23	National Institute of Local Government (NILG)
A.5	**Ministry of Public Works**
24	RajdhaniUnnayanKartripakha (RAJUK)
A.6	**Ministry of Science and Information & Communication Technology**
25	Bangladesh Council of Scientific and Industrial Research (BCSIR)
26	Bangladesh National Scientific and Technical Documentation Centre (BANSDOC)
A.7	**Ministry of Defence**
27	Space Research & Remote Sensing Organisation (SPARSO)
28	Bangladesh Meteorological Department (BMD)
29	Bangladesh Navy
A.8	**Ministry of Home Affairs**
30	Bangladesh Coast Guard

Type	Stakeholders of WARPO
A.9	**Ministry of Environment and Forest**
31	Department of Environment (DoE)
32	Department of Forest
A.10	**Ministry of Communications**
33	Department of Roads and Highways (RHD)
A.11	**Ministry of Shipping**
34	Bangladesh Inland Water Transport Authority (BIWTA)
35	Department of Shipping (DOS)
36	Bangladesh Inland Water Transport Corporation (BIWTC)
37	Chittagong Port Authority (CPA)
38	Mongla Port Authority (MPA)
39	Bangladesh Shipping Corporation (BSC)
40	Marine Academy
41	National Maritime Institute
A.12	**Ministry of Fisheries and Livestock**
42	Department of Fisheries (DoF)
A.13	**Ministry of Planning**
43	Planning Commission
44	Bangladesh Institute of Development Studies (BIDS)
45	Bangladesh Bureau of Statistics (BBS)
A.14	**Ministry of Lands**
A.15	**Ministry of Industries**
A.16	**Ministry of Food and Disaster Management**
46	Disaster Management Bureau (DMB)
B	**Development partners**
47	UN organizations (UNDP, WFP, UNESCO, FAO, etc.)
48	Asian Development Bank (ADB) /World Bank (WB)
49	Government of Netherlands
50	DFID/USAID/CIDA/SIDA/DANIDA/JICA
C	**Non-Government Organizations (NGOs)**
51	NGO Forum for Drinking Water Supply Sanitation
52	WaterAid Bangladesh
53	Other international, national and local NGOs working in Water Supply and Sanitation, Climate Change and Disaster Management issues
54	Industries (e.g. bottled water company, others using huge amount of SW/GW)
D	**Universities/ Education/ Research Institutes**