



SDG 6 IWRM Support Programme

Stage 1: Stakeholder Consultation Report

SDG 6.5.1, degree of implementation of IWRM

Bangladesh

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Stakeholder Consultation Report for SDG 6.5.1

Abbreviation

BDP	Bangladesh Delta Plan
BWDB	Bangladesh Water Development Board
BADC	Bangladesh Agricultural Development Corporation
BARC	Bangladesh Agricultural Research Council
BARI	Bangladesh Agricultural Research Institute
BAU	Bangladesh Agricultural University
BCAS	Bangladesh Centre for Advanced Studies
BIWTA	Bangladesh Inland Water Transport Authority
BMDA	Barind Multipurpose Development Authority
BRRRI	Bangladesh Rice Research Institute
BSCIC	Bangladesh Small and Cottage Industries Corporation
BTMC	Bangladesh Textile Mills Corporation
BWP	Bangladesh Water Partnership
CSMP	Cyclone Shelter management Policy
CWASA	Chattogram Water and Sewerage Authority
DAE	Department of Agricultural Extension
DASCOH	Development Association for Self-reliance, Communication and Health
DBHWD	Department of Bangladesh Haor and Wetland Development
DDM	Department of Disaster Management
DLRS	Department of Land Records and Surveys
DMA	Disaster Management Act
DoE	Department of Environment
DoF	Department of Fisheries
DoFL	Department of Fisheries and Livestock
DPHE	Department of Public Health Engineering
DWA	Department of Women Affairs
DWASA	Dhaka Water and Sewerage Authority
GED	General Economics Division
GWP	Global Water Partnership
GPWM	Guidelines for Participatory Water Management
HMP	Haor Haster Plan
ICZM	Integrated Coastal Zone Management
IWM	Institute of Water Modelling
IWRM	Integrated Water Resources Management
JMP	Jalmahal Management Policy
JRC	Joint River Commission
KWASA	Khulna Water and Sewerage Authority LCS Labor Contracting Society
LGED	Local Government Engineering Department
MoEFCC	Ministry of Environment, Forests and Climate Change
MoLGRDC	Ministry of Local Government, Rural Development and Cooperatives
MoU	Memorandum of Understanding

MoWR	Ministry of Water Resources
NAP	National Agricultural Policy
NGOs	Non-government Organizations
NIP	National Industrial Policy
NPSWSS	National Policy for Safe Water Supply & Sanitation
NRCC	National River Conservation Commission
NWPo	National Water Policy
NWRC	National Water Resources Council
NWRD	National Water Resources Database
PWMR	Participatory Water Management Rules
RHD	Roads and Highway Department
RRI	River Research Institute
SDG	Sustainable Development Goal
SRDI	Soil Resource Development Institute
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
WARPO	Water Resources Planning Organization
WMOs	Water Management Groups

Executive Summary

Water plays an essential part in achieving the overall global agenda for Sustainable Development. One of the indicators to measure the progress of SDG goals are SDG indicator 6.5.1 which assesses the degree of integrated water resources management implementation. The status has been assessed through stakeholder consultation workshops. This report provides the progress of Bangladesh in connection with the SDG indicator 6.5.1 through stakeholder consultations.

Concerning stakeholders have been selected carefully by considering the multi-stakeholders agencies which include (i) Ministries and agencies who are directly working in water sector e.g. Ministry of Water Resources (MoWR), Bangladesh Water Development Board (BWDB), Water Resources Planning Organization (WARPO), Joint River Commission (JRC), Department of Bangladesh Haor and Wetland Development (DBHWD), Department of Public Health Engineering (DPHE), Department of Agricultural Extension (DAE), Bangladesh Agricultural Development Corporation (BADC), Barind Multipurpose Development Authority (BMDA), General Economic Division (GED) etc. and (ii) indirect and other water-related cross-cutting organizations as well as relevant NGOs. Apart from key stakeholders, participants from educational institutions, non-government organizations and water user associations working in different aspect of water resources have been selected as well.

Stakeholder workshops were carried out in two rounds, one held on the 21 July and the other on 25 July 2020. Acknowledging the prevailing pandemic predicament, the workshops have been organized through the Zoom, an online meeting platform. Discussions were held in the first round regarding the content and concept of the questionnaires under different sections of SDG 6.5.1 indicator as well as the process of scoring. The probable score of individual sub-indicators was described with justifications or explanation for better understanding of the stakeholders. Taking lessons from round one, the stakeholders moved into the second round where they were then provided with the baseline scores of 2017, upon which they gave their scoring. The average scores have then been calculated for the four sections as well as the SDG 6.5.1 average for Bangladesh following the guideline by UNEP. After the preparation of the draft, it has been shared with the MoWR, the key stakeholder. A consultation meeting has been done with the MoWR in this regard. Using their comments and suggestions, the report has been updated and circulated through the participants. Then, a consultation meeting for validation has been done with the key participants. Hence, by compiling all the suggestions and comments the report has been finalized.

UNEP provided a questionnaire with 34 questions divided into four sections named enabling environment, institutions and participation, management instruments and financing. This pre-defined questionnaire has been used during the workshop to conduct the survey.

Compare to the baseline score of 2017, the final average score for 2020 is increased to 58 from 50. Though this shows small apparent progress, yet from the detailed questionnaire, it has been observed that Bangladesh has made progress in many sections. As discussed earlier, the participants have provided the scores to all the question. The final scores with the baseline scores are presented in the following table and the section-wise result is presented in the following sections.

Survey Time	1. Enabling environment	2. Institutions and participation	3. Management instruments	4. Financing	SDG 6.5.1 IWRM score
Baseline, 2017	50	49	56	45	50
Survey, 2020	59	60	61	50	58

Enabling environment is the first section of the questionnaire that facilitates the policies, laws, plans and arrangements. The purpose for such enabling environment is to provide a set of solid foundations of water

governance structure while balancing out the social, economic and environmental demands for water resources. The average score is 50 and 58 respectively for the baseline 2017 and survey 2020. In the case of 1.2 (a) which is about sub-national water resources policies, the score is 60 in 2020 whereas there was no score in 2017. It is to be mentioned here that during the survey of 2020, the District, Upazila and Union levels have been considered as sub-national. In the case of Sub-national water resources regulations (laws, decrees, ordinances or similar), Integrated Minor Irrigation Policy, 2017; Integrated Minor Irrigation Ordinance, 2019; Groundwater Management Rules 2019; Groundwater management Act, 2018 has been used to support IWRM which was reflected in District level and score for 2020 being 50 whereas there was no score in 2017. After the baseline, Bangladesh Delta Plan, 2100 has been approved in 2018. the Industrial Water Use Policy, 2019 has been approved by the MoWR, the Land Easements Acceptance Act, 2020 has been prepared and the Minor Irrigation Policy, 2017, National Environmental Policy, 2018, Act for Groundwater Water Management in Agriculture, 2018, Bangladesh Water Rules, 2018, has been enacted. Besides this, Bangladesh Water Resources Development and Management Act, 2019 has been drafted and Bangladesh Water Resources Development and Management Rules are under preparation. As for planning, District Integrated Water Resources Management Guideline, 2019; Upazila Integrated Water Resources Management Guideline, 2019 and Union Integrated Water Resources Management Guideline, 2019 has been enacted. Delta Governance Council has been formed to guide the Delta Plan.

The section of the **Institutions and participation** focuses on cross-sectoral coordination, private sector and other stakeholder participation and gender perspectives. The average score for institutions and participation section has improved from those of the baseline. The average scores are 49 and 60 for the year 2017 and 2020 respectively. There is significant progress for this section. In 2020, the score is 60 for 2.2 (c) which is about the vulnerable groups, as the groups are addressed and consulted during the feasibility study phase of project formulation. There is also a provision of involving the vulnerable groups through 'Labour Contracting Society' or 'LCS' in carrying out earth-work for the O&M of different water resources development and management projects. LCS includes distressed, unemployed but fit for work people having no or less than 0.5 acres of lands. Moreover, for the donor-funded project, it is a requirement to involve vulnerable groups and ethnic communities.

The section of the **Management instruments** includes informed decision making, covering water availability monitoring and sustainable water use, pollution control, water-related ecosystems and disasters, and data and information sharing. The section of management instruments has also been improved. For 3.2a basin management instruments, the score was not given in 2017 since it was not applicable. However, some feasibility studies and basin-wide planning are ongoing which will enable basin-wide management. This led the experts to provide a score of 40. However, some feasibility studies are ongoing which lead the participants to provide the score. In the case of Aquifer management instruments, the score is 40 in 2020 which is higher compared to that of the baseline 2017 where the score is 20. This is because of the Groundwater Management Rules of 2019 and some policies about arsenic from DPHE which are the progress in this regard. The overall score for Management Instruments compared between the baseline 2017 and survey 2020 are found as 56 and 61 respectively.

The section of the **Financing** is for investments, including infrastructure, recurring costs and revenue-raising. The overall score in the year 2017 is 45 which has improved in the year 2020 where it is 50. In the case of the national budget for water resources infrastructure, the score has increased slightly to 82 in 2020 compared to that of 2017. The participants consider this as there is sufficient budget which is increasing but the recurrent budget is not enough and sometimes not available as per need. For Sub-national or basin budgets for water resources infrastructure and IWRM elements, the score was not provided in 2017 considering about the unitary governmental system of Bangladesh. But in 2020, the score of 45 has been provided as projects are now being planned and implemented considering the basin/hydrological region

approach of NWMP, BDP2100, Haor Master Plan (HMP) etc.

To conclude, the policies, acts, plans etc. provides a sound basis to implement IWRM. The instruments need to be updated regularly considering the effect of climate change and other improved implementation instruments. However, basin wise projects need to be prepared with the coordination of the relevant agencies. Moreover, the operation and maintenance budget of the projects needs to be enhanced than those of the present and should assure to make it available timely.

1. Introduction

1.1 Background

Water is an essential part to achieve the overall global agenda for Sustainable Development. The sustainable development goals (SDGs) has been adopted by 193 countries in the United Nations General Assembly in 2015. The vision is to end poverty, protect the planet and ensure peace and prosperity for all people. The SDGs have 17 goals with 169 targets to address the vision. Among the Targets, SDG Target 6.5 is “By 2030, implement integrated water resources management at all levels, through transboundary cooperation as appropriate”. SDG Target 6.5 is monitored through two indicators: Indicator 6.5.1 is Degree of integrated water resources management implementation and Indicator 6.5.2 is Proportion of transboundary basin area with an operational arrangement for water cooperation.

Water is used by different development sectors. As such, conflicts arise over the use of water where there is a limitation of water availability. The integrated water resources management (IWRM) generally solve the conflicts by ensuring sustainable management and use of water among the users. The progress of indicator 6.5.1 in a country is monitored by The United Nations Environment Programme (UNEP). Global Water Partnership (GWP) and the country water partnerships are collaborating with UNEP in this globally coordinated SDG monitoring effort.

Monitoring and reporting on SDG 6.5.1 are conducted based on the self-assessment survey every three years. The survey reviews the level of implementation of IWRM covering 34 parameters (questions) grouped into 4 sections i.e. enabling environment, institutions and participation, management instruments and financing. The first reporting was held in 2017 in Bangladesh and other countries of the UN which is considered as the baseline of the indicator.

This is the second round of the data collection of Bangladesh for monitoring and reporting of SDG indicator 6.5.1. As such, this survey and monitoring report will comprise the level of implementation of IWRM in 2020 for Bangladesh.

1.2 Objectives

The main objective is to assess the degree of integrated water resources management (IWRM) implementation, by assessing the four key components of IWRM. The specific objectives are to:

- Assess the current status of implementation of the SDG indicator 6.5.1
- Identify the progress of the IWRM implementation since the baseline (2017-18)
- Identify the challenges of further implementation of IWRM

1.3 Approach

Multi-stakeholders from different organizations were first selected. The consultation date has then been fixed after having consent from all participants. The workshop has finally been conducted using online zoom platform in two rounds on 21 July 2020 and 25 July 2020. Prof. Ainun Nishat has presided over the online workshop with a pre-defined questionnaire, as a part of the SDG 6.5.1 survey instrument. Comments and probable scores have also been collected and combined during the first round of the workshop. Finally, the scores have been validated and finalized evaluating the baseline on the second round.

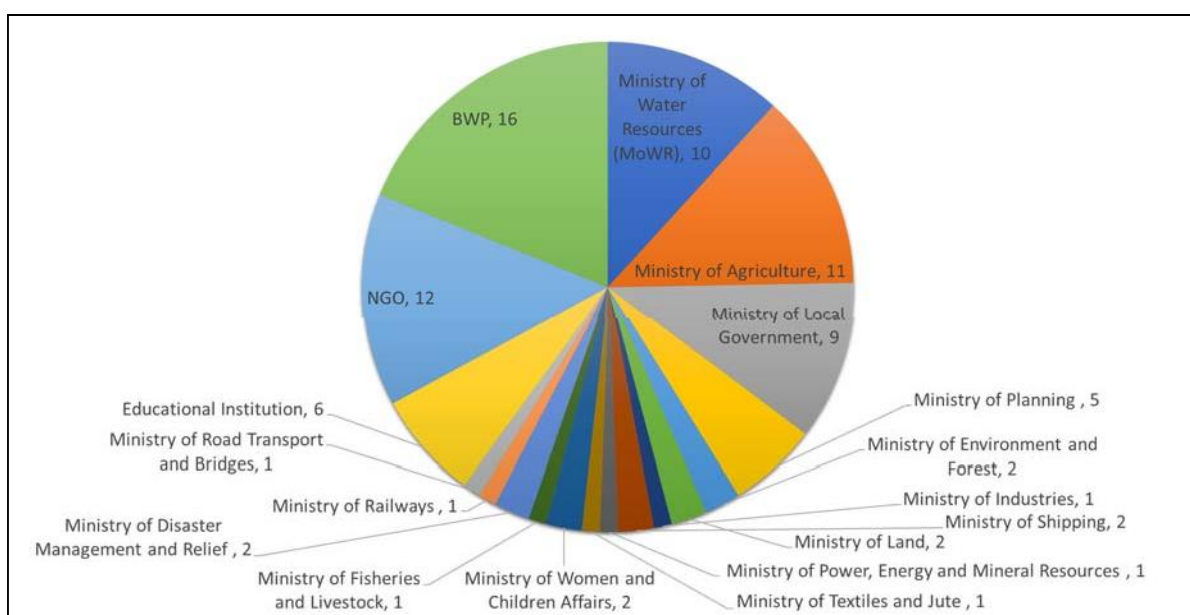
After the second round, the draft report has been sent to the Ministry of Water Resources (MoWR). A consultation meeting has been held at the MoWR. Based on the comments and suggestions from the MoWR, the report has been updated. Then the report has been shared with the participants from the first

and second round and a consultation meeting for validation has been held. Finally, by compiling all the comments and suggestions, the report has been finalized.

1.4 Identification of the Stakeholders

Selection of stakeholders is an important task for any workshop or survey. The stakeholders have been selected carefully by considering the multi-stakeholders agencies relevant with the key implementation of IWRM in the country which include (i) Ministries and agencies, directly working in water sector e.g. MoWR, BWDB, WARPO, JRC, DBHWD, DPHE and (ii) indirect and other water-related cross-cutting organizations along with relevant NGOs. Participants from Educational Institutions, non-government organizations and water user associations working in different aspect of water resources have also been selected. Figure 1.1 illustrates the number of participants from different government and non-government organization as the focal person of the respective organizations.

Figure 1.1: Number of participants from various ministries



The list of invited agencies is presented in Table 1.1 below.

Table 1.1: List of invited agencies for the workshop

Ministry	Organization	Ministry	Organization
Ministry of Water Resources (MoWR)	BWDB	Ministry of Local Government	LGED
	DBHWD		CWASA
	JRC		DWASA
	WARPO		KWASA
	IWM		DPHE

Ministry	Organization	Ministry	Organization
Ministry of Agriculture	BADC	Ministry of Planning	Agriculture, Water Resources and Rural Institutions Division
	BARC		GED
	BARI	Ministry of Environment and Forests	DoE
	BMDA	Ministry of Land	Land Administration Training Centre
	BRRRI		DLRS
	SRDI	Ministry of Industries	BSCIC
	DAE	Ministry of Shipping	NRCC
Ministry of Railways	Bangladesh Railway		BIWTA
The Ministry of Power, Energy and Mineral Resources	Petrobangla	Ministry of Textiles and Jute	BTMC
The Ministry of Women and Children Affairs	DWA	Development partners/ NGO	BCAS
Ministry of Road Transport and Bridges	Roads and Highways		BNKS
Educational Institution	BAU		DASCOH
	DU		Shushilan
	IWFM, BUET		UNDP
	KU		Uttaran
	KUET		WASH, BRAC
Ministry of Fisheries and Livestock	Department of Fisheries		WaterAid
Ministry of Disaster Management and Relief	DDM		World Bank
			GIZ

1.5 Indicator for IWRM Implementation

The questionnaires in 2020 have been updated slightly with the inclusion of some new indicators and some cases revision in the definitions of the indicators itself. Accordingly, the explanations for the sub-indicator or questions have been changed. In 2017, there were few questions related to sub-national issues. During that time the sub-national related indicators were defined areas having jurisdictions outside national level e.g. states, provinces, counties, regions or department. In the new questionnaire, the sub-national levels relevant to countries has been added to the description of these indicators in 2020. As such, answers to these questions related to the sub-national level were found to be not applicable (N/A) in 2017. Therefore, some changes in the assessment were observed between Baseline Year 2017 and Year 2020.

Table 1.2: Indicator Assessment

Indicators	Nos. of Sub-indicators used	
	Baseline 2017	Survey 2020
Enabling Environment	5	7
Institutions and Participations	9	12
Management Instruments	8	9
Financing	4	6

Total	26	34
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Definition-wise, the sub-indicator 2.2c has been changed and participation of vulnerable groups has been added in the questionnaire. The indicator 2.2d has also been changed where gender considerations have been included in the laws/plans or similar within the context of water resources management instead of gender-specific objectives and plans at the transboundary level.

In 2017, a total of 26 indicators related questions was assessed to calculate the average score whereas, in 2020, all 34 questions have been answered and accordingly assessed.

2. Findings on Enabling Environment

2.1 Introduction

A proper enabling environment establishes the rights and assets of all stakeholders. Enabling environment facilitates all stakeholders (i.e. individuals as well as public and private sector organizations and companies, women as well as men, the poor as well as the riches to play their respective roles in the sustainable development and management of water resources. The purpose for such enabling environment is to provide a set of solid foundations of water governance structure while balancing out the social, economic and environmental demands for water resources.

IWRM must be considered as a guiding strategy in creating the tools of this enabling environment to achieve efficient, equitable and sustainable water management.

2.2 Comparison of Scores

The rate of progress in case of enabling environment is given in Table 2.1 below. The detailed questionnaire with results is presented in a separate document named "IWRM Survey 2020".

Table 2.1: Score Comparison between baseline, 2017 and Survey 2020 for Enabling Environment

Sl. no.	Questions	Score		
		Baseline, 2017	Survey, 2020	Survey, 2020 Rounded
1.1 What is the status of policies, laws and plans to support Integrated Water Resources Management (IWRM) at the national level?				
a	National water resources policy, or similar.	70	75	80
b	National water resources law(s).	60	70	70
c	National integrated water resources management (IWRM) plans, or similar	60	70	70
1.2 What is the status of policies, laws and plans to support IWRM at other levels?				
a	Sub-national water resources policies or similar	N/A	60	60
b	Basin/aquifer management plans or similar, based on IWRM	40	50	50
c	Arrangements for transboundary water management	20	30	30
d	Sub-national water resources regulations (laws, decrees, ordinances or similar)	N/A	50	50
Average Score of Enabling Environment		50	58	59

From Table 2.1, it is found that the average score was 50 in the base year of 2017 while the score currently in 2020 is 59. In the case of 1.2 (a), the score is 60 in 2020 whereas no score was given in 2017 as this indicator was not considered. It is to be mentioned here that during the survey of 2020, the District, Upazila and Union levels are defined as sub-national therefore this indicator has been included in the assessment process. There are national policies (National Water Policy, 1999; National Policy for Safe Water Supply and Sanitation, 1998; National Environment Policy, 1992; National Agriculture Policy, 1999; Integrated Minor Irrigation Policy, 2017; National Fisheries Policy, 1998; Wetland Policy of Bangladesh) being implemented at the sub-regional level and also region specific policies e.g. Coastal Zone Policy exists. Considering all of these criteria, the participants have provided a score. In the case of Sub-national water resources regulations (laws, decrees, ordinances or similar), there are Bangladesh Water Act, 2013; Groundwater Management Act, 2018; Groundwater Management Rules 2019; being used to support IWRM in District level for which the score in 2020 is 50 whereas there was no score in 2017. After the baseline, Bangladesh Delta Plan 2100 has been approved in 2018, the Industrial Water Use Policy, 2019 has been approved by

the MoWR, the Land Easements Acceptance Act, 2020 has been prepared and the Minor Irrigation Policy, 2017, National Environmental Policy, 2018, Kabita policy-2018, Draft National Food and Nutrition Security Policy 2020, Act for Groundwater Management in Agriculture, 2018, Bangladesh Water Rules, 2018, has been enacted. Besides this, Bangladesh Water Resources Development and Management Act, 2019 has been drafted, Updated Bangladesh climate change strategy and action plan 2019 is in draft stage and Bangladesh Water Resources Development and Management Rules are under preparation. NAP formulation is under process emphasizing the water as the key areas. As for planning, District Integrated Water Resources Management Guideline, 2019; Upazila Integrated Water Resources Management Guideline, 2019, Union Integrated Water Resources Management Guideline, 2019, Strategic Action Plan of BWDB for Sustainable Water Resources Management to attain the Status of Prosperous Country by 2041 has been enacted. Delta Governance Council has been formed to guide the Delta Plan.

2.3 Policies, Laws/Acts and Plan to Support IWRM

During the past two decades, the Government of Bangladesh has formulated many policies intended to deal with various aspects of water resources management. The major policies which have direct impacts on water resources are as follows:

- The National Water Policy (NWPo, 1999);
- National Policy for Safe Water Supply and Sanitation (1998);
- National Environment Policy (1992);
- National Fisheries Policy (1998);
- National Agriculture Policy (1999);
- National Policy for Arsenic Mitigation (2004);
- Coastal Zone Policy (2005)
- Wetland Policy of Bangladesh
- Integrated Minor Irrigation Policy (2017)
- Industrial Water Use Policy, 2019 etc.

These policies are formulated in the context of the National Development Objectives, which aim to

- alleviate poverty and provide sustainable economic growth,
- provide food security,
- promote public health and safety, and
- protect the natural environment.

The setting of the appropriate legislative framework is most fundamental to the effective implementation of the National Water Policy. There are 41 pieces of legislation (NWMP, 2004) in Bangladesh which in some way address the water rights, water quality and water management. The legislation which is directly relevant to the Water Resources Management is the followings.

- Embankment and Drainage Act, 1952;
- Groundwater Management Ordinance, 1985;
- River Research Institute Act, 1990,
- Water Resources Planning Act, 1992;
- Bangladesh Water and Flood Management Strategy, 1995;
- Bangladesh Water Development Act, 2000;

- Bangladesh Water Act, 2013;
- Guidelines for Participatory Water Management, 2000;
- Participatory Water Management Rules, 2014;
- Bangladesh Water Rules, 2018;
- Coastal Development Strategy, 2006;
- National Water Management Plan -Development Strategy, 2001;
- Bangladesh River Conservation Commission Act, 2013;
- Bangladesh Environment Conservation Act, 1995 (amended 2010),
- Environment Conservation Rules, 1997;
- Fisheries Conservation Act, 1950;
- Forest Act, 1927
- Act for Groundwater Water Management in Agriculture, 2018

The list for plans and guidelines relevant to the IWRM is presented below:

- National Water Management Plan, 2004
- Bangladesh Delta Plan 2100
- Haor Master Plan, 2012
- Agricultural Master Plan for Southern Region, 2013;
- Bangladesh Climate Change Strategy and Action Plan (BCCSAP), 2009;
- National Adaptation Plan of Action, 2005 updated in 2009;
- Five Year Plan;
- Perspective Plan (2010-21)
- Updated Bangladesh climate change strategy and action plan 2019 (Draft)
- Bangladesh Country Investment Plan for Environment, Forestry and Climate Change, 2016-2021
- District Integrated Water Resources Management Guideline, 2019
- Upazila Integrated Water Resources Management Guideline, 2019
- Union Integrated Water Resources Management Guideline, 2019 etc.

2.4 Main Challenges/Gaps

The existing policies, plans, guidelines and legislative framework can be shown to provide a sound basis for IWRM plan in Bangladesh while setting up Enabling Environment. Among all the policies, the NWPo (1999) is the major policy in the water sector Bangladesh. This policy holistically advocates for social equity, conservation of natural environment and efficiency of water management as the basic components of IWRM.

It has been mentioned in Article 2 of NWPo that NWPo will be reviewed periodically and revised as necessary. However, till now the NWPo has not been reviewed and updated. Many situations have been changed during this time and new issues like climate change have emerged. So the review of the NWPo and its updating is imperative. Existing coastal zone policy (2005) is knowledge-based and also considered the issues of climate change. The coastal zone policy 2005 is the first-ever policy which is explicitly considered the issues of climate change and suggest appropriate measures.

The Bangladesh Water Act 2013 has been prepared by WAPRO under the Ministry of Water Resources

(MoWR) is a time worthy decision. However, other ministries also have policies related to water, such as the Ministry of Shipping with policies covering navigation and all waterway transportation. Therefore, the co-coordination among all water-related policies became a major challenge.

The Bangladesh Forest Act 1927 states that the government can stop any public or private way and watercourse to prevent the destruction of the forest. Therefore, no other laws of Bangladesh (including water regulations) are applicable within the forest area.

The Cyclone Shelter Management Policy (CSMP) 2011 describes for setting rainwater harvesting systems on top of cyclone shelters, to supply water for use by users of the shelters. But the policy can't be implemented due to lack of detailed guidelines about estimated demand for potable water, the number of latrines, water points, O&M system, management process etc.

The National Agriculture Policy (NAP) 2013 has provided no specific provisions for dealing with the tension between the landowner farmers and the shrimp cultivators. There are stipulations for the installation of tube wells on farmers' field for small-scale withdrawal of groundwater for activities like irrigation, but none for larger uses such as shrimp cultivation.

The NIP 2010 does not cover the provision of basic water facilities to help revitalize small scale industries and provide basic requirements to public sector enterprises. Effective guidelines are lacking in water pollution, scarcity and accessibility within the Disaster Management Act (DMA) 2012.

The Jalmahal Management Policy (JMP) 2009 included a set of criteria used to judge the eligibility of fishing cooperatives to lease areas for aquaculture in a Jalmahal (a large, flat bowl- like area that remains under shallow depth round the year) for a specific time. But there are no clear directives about the measures to be taken by the leaseholders to protect a Jalmahal and improve the surrounding environment.

2.5 Recommendations

Policy interactions and overlaps should be reviewed to understand the way as to how all relevant policies can be optimized as an interactive and mutually supportive system of legislation. The relevant government authorities should initiate the development of a micro plan to this end, and further review the Bangladesh Water Act 2013.

The issue of non-point water pollution should be incorporated with adequate guidelines in the Bangladesh Water Act 2013. The Water Act 2013 should be updated to reflect the previous stipulation of drinking water for all. There is also an opportunity to include indigenous knowledge and modern technology for the supply of safe drinking water as was in the previous policy.

The scope of these policies could be reconciled so that water regulations are also enforceable within forest areas -either by ensuring the recommended water policies been taken up by forest governance or by ensuring that the Bangladesh Water Act 2013 is applicable within forest areas.

Considering the importance of this aspect, the issue of industrial pollution should also be included in the NIP 2010.

The CSMP 2011 should be revised to include the required guidelines on water sources and needs, with a specific bottom-up participatory process to ensure safe water supply and sanitation.

Land-use zoning and prioritization may be a good instrument to reduce tensions between farmers and shrimp-gher owners and provide clarity on water use priorities.

Specific criteria could be introduced to include all basic facilities along with relevant types of industries so that the Bangladesh Small and Cottage Industries Corporation (BSCIC) Industrial Estate 2010 policy can be

made more effective. Issues of water pollution, scarcity and accessibility should be incorporated in the DMA 2012.

The JMP 2009 may be updated and specify a guideline so that proper measures can be taken by the leaseholders to protect a Jalmahal and improve the surrounding environment.

The regulatory framework has to be established for implementing the Bangladesh Water Act 2013; Resources mobilization should also be made faster. The Government should depend on the internal source of money, should search for the foreign grant but should avoid foreign loan step by step. For emergency action of river erosion and flood control, the emergency budgetary allocation should be faster.

3. Findings on Institutions and Participations

3.1 Introduction

This chapter points out the range and roles of institutional arrangement that help to support the implementation of IWRM. In the context of IWRM, governance is defined as the range of political, social, economic and administrative institutions to the sustainable development of water resources. This section identifies four institutional roles which must be fulfilled for water governance systems to achieve sound IWRM practices:

- a) Regulation and Enforcement;
- b) Water Supply and Sanitation Services;
- c) Coordination and Facilitation; and
- d) Capacity Building.



Source: www.gwp.org/en/learn/iwrm-toolbox/Institutional_Arrangements/

Figure 3.1: Four institutional roles to fulfil IWRM

3.2 Comparison of Scores

The rate of progress for enabling environment is given in the following Table 3.1. The detailed questionnaire with results is presented in a separate document named "IWRM Survey 2020".

Table 3.1: Score Comparison between baseline, 2017 and Survey 2020 for Institution and Participations

Sl no.	Questions	Score		
		Baseline, 2017	Survey, 2020	Survey, 2020 Rounded
2.1 What is the status of institutions for IWRM implementation at the national level?				
a	National government authorities for leading IWRM implementation	60	70	70
b	Coordination between national government authorities representing different sectors on water resources, policy, planning and management	50	60	60
c	Public participation in water resources, policy, planning and management at national level	70	75	80
d	Private sector participation in water resources development, management and use	40	45	50
e	Developing IWRM capacity	60	65	70
2.2 What is the status of institutions for IWRM implementation at other levels?				
a	Basin/aquifer level organizations for leading implementation of IWRM	20	30	30
b	Public participation in water resources, policy, planning and management at the local level	60	70	70
c	Participation of vulnerable groups in water resources planning and management	N/A	60	60
d	Gender included in the laws/plans or similar within water resources management	N/A	70	70
e	Organizational framework for transboundary water management	10	40	40
f	Sub-national authorities for leading IWRM implementation	N/A	60	60
Average Score of Institutions and Participations		49	60	60

From Table 3.1, it is found that the average score is 49 and 60 for the year, 2017 and 2020 respectively. The table also shows that during baseline 2017, the sub-indicator as of question 2.2 (c) was not present, again question 2.2 (d) was different during the baseline. Question 2.2 (f) was provided as N/A during the baseline.

In 2020, the score is 60 for 2.1 (b) because of the MoU made between BWDB, WARPO, LGED, DoF, DoFL, DAE, BADC, BMDA etc. because of which the government authorities are working together. WARPO is also coordinating the Integrated Coastal Zone Management (ICZM) with 34 agencies. WARPO is also clearing the water-related projects of different agencies considering the relevancy with national guidelines, policy, plans and acts for approval.

In 2020, the score is 60 for 2.2 (c), as the vulnerable groups are addressed and consulted in the feasibility study phase of project formulation. Moreover, for the donor-funded project, it is mandatory to involve vulnerable groups and ethnic communities. There is also a provision of involving the vulnerable groups through 'Labour Contracting Society' or 'LCS' in carrying out earth-work for the O&M of different water resources development and management projects.

LCS includes distressed, unemployed but fit for work people (both men and women) having no or less than 0.5 acres of lands. As per the directive of NWPO, people's participation is ensured at all levels of water resources planning and management following the Guideline for Participatory Water Management, 2000 (GPWM) and Participatory Water Management Rules (PWMR), 2014.

In 2020, the score is 70 for 2.2 (d) as gender participation is being ensured during the preparation and implementation of all plans, policies, and laws especially in water sector projects according to the GPWM. A

minimum of 30% and up to 50% participation particularly women are involved through WMGs and WMAs.

In 2020, the score is 60 for 2.2 (f) as many government organization has a district-level office to perform IWRM implementation. Moreover recently District IWRM Guideline, Upazilla IWRM Guideline and Union IWRM guideline for implementing Bangladesh Water Rules 2018 has been approved and functioning as Sub-national authorities for leading IWRM implementation.

3.3 Institutional Arrangements

Central Government Water-Related Institutions

The National Institutions relevant to the water sector comprise of 35 central Government organizations affiliated with 13 different Ministries (NWMP main report 2004). The key National agencies are as follows.

- National Economic Council;
- Delta Governance Council;
- Planning Commission;
- National Water Resources Council (NWRC);
- Ministry of Water Resources (MoWR);
- Water Resources Planning Organization (WARPO);
- Joint Rivers Commission (JRC);
- Bangladesh Water Development Board (BWDB);
- Bangladesh Agricultural Development Corporation (BADC);
- Bangladesh Inland Water Transport Authority (BIWTA);
- Ministry of Agriculture;
- Department of Agricultural Extension (DAE);
- Department of Fisheries (DoF);
- Ministry of Local Government, Rural Development and Cooperatives (MoLGRDC);
- Ministry of Environment, Forests and Climate Change (MoEFCC);
- Department of Environment (DoE);
- Soil Research Development Institute (SRDI);
- Department of Bangladesh Haor and Wetland Development (DBHWD);
- River Research Institute (RRI);
- Department of Forests.

Local Government Institution

Various levels of Local government are being established in Bangladesh under State Policy and recommendations of the Local Government Commission. All Local Government institutions were originated under the administrative responsibility of the Local Government Division of MLG&RDC. Local government institutions are as follows:

- Local Government Engineering Department (LGED);
- Department of Public Health Engineering (DPHE);
- City Corporations;
- Paurashava (Municipalities);
- Zila (District) Parishad;
- Upazilla (Thana) Parishad;
- Union Parishad.

Other Organizations

- NGOs;
- Academic;
- Private sector;
- Development Partners.

The following principle documents have been considered as Management Instrument tools which will help in the decision making in the water sector in Bangladesh.

- Setting up the National Water Management Plan (2004);
- Setting up the National Water Resources Database (NWRD);
- Management Information System in WARPO.

3.4 Main challenges/Gaps

For having more appropriate results related to IWRM and strengthening these works, online questionnaire surveys have been conducted with the National Water Expertise. Followings are some of the few reflections about online questionnaire survey on National Water Expert (Bangladesh).

While setting up appropriate Institutional framework in Bangladesh, it has been observed that the core organizations which have to play the central role in the Integrated Water Resources Management activities in Bangladesh according to their priority have drawbacks in their management and organizational structure. The integration between the core water management organizations is very limited.

WARPO, responsible for macro-level water resource planning in Bangladesh, has a shortage of manpower. WARPO is now centrally located in Dhaka. It has no regional offices of the competent authority for each hydrological region. However, the establishment of seven (7) divisional office is under approval. Existing staffing structure, the strength of WARPO are not sufficient to commensurate with its mandate and redefined functions effectively. But, the professionals of WARPO are attempting to complete their committed assignment with strong and appreciable confidence amid severe limitations.

Bangladesh Water Development Board (BWDB) is responsible for implementing all major surface water development projects and FCDI projects with command area above 1000 hectares. But there are lots of

gaps in BWDB management issue. Among them a shortage of manpower; constraining of the operational budget for emergency work such as river erosion mitigation; lack of communication skill; the slow rate of the internal management system; lack of Upazila level office for local water resources development; lack of proper management Information system (MIS) are mentionable.

Department of Environment (DoE) within MoEFCC, is mandated to regulate and enforce the environmental management including control of water pollution and to ensure that Environmental Impact Assessments are adequate. But DoE is also suffering from a shortage of manpower. There are no regional offices at every district. Other drawbacks include a lack of coordination with other organizations.

Local Government Engineering Department (LGED) is located within the Local Government Division. According to the NWPo, 1999, the Local Government will implement FCDI projects having a command area of 1000 hectares or less after identification and appraisal through an interagency Project Appraisal Committee. LGED has few problems: Political biasness, shortage of manpower, lack of coordination with other organizations.

Currently, the Department of Public Health Engineering (DPHE) is most important government body dealing with the water supply and sanitation, responsible for planning, designing, and implementing water supply and sanitation services in rural areas, and in urban areas outside Dhaka and Chittagong. DPHE is also responsible for Arsenic Mitigation in Bangladesh. Lack of ownership by the end-users tends to hinder the sustainable operation of the systems.

Each City Corporation is a corporate body which is responsible for raising taxes and other income. City Corporations of Dhaka and Chittagong are supported by Water Supply and Sewerage Authorities (WASAs) formed under the 1996 WASA Act. WASA is a corporate body under the authority of the Water Supply Wing of the Local Government Division and responsible for the provision and up-keep of potable water supply, sewerage and storm drainage. The WASAs are allowed to levy tariffs and fees at rates the Government Approves. Tariffs have to be approved by the central government and do not reflect the cost of water production.

Dhaka WASA is facing a serious water shortage. Over-exploitation of groundwater has reached critical levels and is causing serious environmental problems. Surface water in rivers is heavily polluted from industrial and domestic wastes. However, several projects are being studied to increase water supplies.

Local and International NGOs are providing goods and service normally associated with the public and private sectors. The NGOs are playing a significant role in the environment and water management planning. The private sector is closely involved in all aspects of water resources development and management by consulting, contracting, supplying equipment and training the agencies. Private sector activities have expanded significantly over the last 20 years and they are particularly active in minor irrigation, rural water supply and sanitation. But there is a lack of coordination between the GoB, private sector and NGOs.

The World Bank, the Asian Development Bank and numerous bilateral development agencies, notably the Dutch, Danish, Japanese, British and Canadian are active since long back in financing water development projects with technical assistance and capacity building. UNDP and other United Nations Agencies especially UNICEF are active in supporting water sector programs and rural developments. Proper monitoring is quite inadequate in the case of donor funding projects.

Academia is also active in water management. But due to lack of funding and technology, advance research activities such as in rainwater harvesting, conjunctive use of rainwater, groundwater and surface water etc. are quite inadequate.

WARPO has to work as a center of excellence with the help of the competent Authority for awareness building and coordination concerning IWRM. Under such circumstance, WARPO has to be strengthened through filling its missing gaps. WARPO along with universities and research organizations should research on IWRM and any other technical issues related to Water Sector. Feasibility study for the adaptation of new technologies should be carried out by WARPO with the help of the universities and research organizations. By establishing the Central Water Resources Training Unit, WARPO has to promote IWRM professionalism. Special attention has to be given on physical infrastructure development in Bangladesh such as the implementation of the Ganges Barrage, the Brahmaputra Barrage and the Meghna Barrage designated by NWMP. Bangladesh Water Development Board (BWDB), Department of Public Health Engineering and WASAs along with Technical Universities of Bangladesh have to take collaborative research Plan for long-term research and management of groundwater utility.

3.5 Recommendations

Proper researches and studies are needed to investigate IWRM and climate change impact in Bangladesh. DoE, Technical Universities, CEGIS along with WARPO have to take initiatives for in-depth studies of IWRM and Climate change issues in Bangladesh. One of the major competent of IWRM is environmental sustainability. A lot of gaps exists in this regard. Hence more studies are needed for the natural environment, aquatic ecology and in-stream water demand in Bangladesh. Department of Bangladesh Haor and Wetland Development (DBHWD) have to play a vital role in this regard in cooperation of BWDB, WARPO, CEGIS and Universities. Collaboration between BADC, DAE, BWDB, LGED and WARPO has to be increased because BWDB, BADC and DAE etc. are the major agricultural departments which play vital roles in the sector by using the water (both surface and groundwater) in irrigation. At present the administrative departments are centrally organized, seldom respond to user needs and demands, emphasizing construction rather improving services, and have insufficient dialogue and coordination. Step by step the country has to adopt the decentralized water management and to promote private sector participation. Environmental and Social Impact and water-related hazards have to be minimized by designated organizations. Such as flood and drainage congestion will have to be managed by BWDB; cyclone will be managed by BWDB, LGED etc. ECNWRC is to be strong for conflict resolution in water sector Bangladesh.

Proper implementation of NWMP is prerequisite for sustainable water resources development in Bangladesh. WARPO has to monitor the NWMP meticulously. NWMP has to be updated by considering its knowledge gaps and other emerging issues. NWMP program should be linked with IWRM tools. WARPO has to update the NWRD by continuous revenue and development budget. The data pricing policy has to be reviewed and updated from time to time. Training on NWRD is necessary. WARPO should articulate Memorandum of Understanding (MoU) to all data providing agencies. NWRD has to be fully web-enabled. Information is one of the central parts of the Integrated Water Resources Management (IWRM). Along with NWRD, WARPO has to be established and maintained the central Management Information System (MIS) on IWRM. It has also to ensure revenue budget and skilled personnel for maintaining MIS.

4. Findings on Management Instruments

4.1 Introduction

This section includes different water management tools/instruments that enable decision-makers and users to make rational and informed choices between alternative actions. It includes management programs, monitoring water resources and the pressures on them, knowledge sharing and capacity development. This includes informed decision making, covering water availability monitoring and sustainable water use, pollution control, water-related ecosystems and disasters, and data and information sharing

4.2 Comparison of Scores

Table 4.1 illustrates that the scores of Management Instruments for different questions in 2017 and 2020. For 3.2a basin management instruments, the score was not given in 2017 since it was not applicable for that time as per metadata. However, several feasibility studies and basin-wide planning are ongoing which will enable basin-wide management. This led the experts to provide a score of 40. In the case of 3.2b Aquifer management instruments, the score is 40 in 2020 which is higher compared to that of the baseline 2017 where the score is

20. This is because of the adoption of Groundwater Management Rules 2019; Groundwater management Act, 2018 and some policies about arsenic from DPHE which are the progress.

In the end, the overall score for Management Instruments compared between the baseline 2017 and survey 2020 are found as 56 and 61 respectively.

Table 4.1: Score Comparison between baseline, 2017 and Survey 2020 for Management Instrument

SI No.	Questions	Scores		
		Baseline, 2017	Survey, 2020	Survey, 2020 Rounded
3.1 What is the status of management instruments to support IWRM implementation at the national level?				
a	National monitoring of water availability (includes surface and/or groundwater, as relevant to the country).	80	85	90
b	Sustainable and efficient water use management from the national level, (includes surface and/or groundwater, as relevant to the country).	50	60	60
c	Pollution control from the national level	40	50	50
d	Management national level of water-related ecosystems from the national level	60	65	60
e	Management instruments to reduce impacts of water-related disasters from the national level	80	85	90
3.2 What is the status of management instruments to support IWRM implementation at other levels?				
a	Basin management instruments	N/A	40	40
b	Aquifer management instruments	20	40	40
c	Data and information sharing within countries at all levels.	80	82	80
d	Transboundary data and information sharing between countries	40	40	40
Average score of Management Instruments		56	61	61

4.3 Main Challenges/Gaps

The progress towards IWRM concerning management instruments in Bangladesh is good despite some constraints and challenges. The existing management instruments i.e. policy, plan, guideline and law provide a sound basis for the IWRM implementation in Bangladesh considering the principals of IWRM i.e. equity, efficiency, environmental sustainability. The instruments like the National Water Policy, 1999; National Irrigation Policy, 2013; Bangladesh Water Act, 2013 encourages the enhancement of surface water utilization for irrigation and other water uses. However, in the field level, the instruments are not ensured properly. Data and information sharing arrangements between China, India, Bangladesh and Nepal exist but is limited to hydro-morphological and meteorological data. So, it can be said that the management instrument is available but the coverage is limited. Lack of strong co-ordination amid different organization and unawareness of Technocrats, bureaucrats and political decision-makers also appears as some sort of hurdles in water resources planning and management.

Bangladesh is a lower riparian country in the basins of the Ganges, the Brahmaputra and the Meghna. Water regime, ecosystems and water availability in Bangladesh are affected by water use, land use and hazard management activities in upstream areas. Integrated river basin management is essential for the well-being of the people of the lower riparian country. This requires a cooperative effort by the co-basin countries based on the principles of equity and sustainable development. The Joint River Commission of Bangladesh should convey its endeavor to continue dialogue and research program and study amongst the co-riparian countries (India, Nepal, China, Bhutan and Myanmar) for long-term basin-wide Planning and Management of Water Resources.

4.4 Recommendations

The existing policy and plan should be reviewed and enhanced further and should also be followed in the field level for meeting up the future water-related socio-economic and environmental challenges. People's participation, as well as the operation and maintenance of the Small Scale Water management Project by the Community Group, should be ensured.

WARPO has to be strengthened through filling its gaps. In total more studies are needed for climate change, natural environment, aquatic ecology and in-stream water demand in Bangladesh to address the future challenges.

A lot of conflict arises in water resources planning. With the support of WARPO, the National Water Resources Council, the apex-level decision-making body in Bangladesh provides an excellent institutional framework to ensure that decisions affecting water resources cut across sectoral-lines and to the extent practicable reflect the interests of all stakeholders. Nevertheless, advancing IWRM is a process of incremental steps and the Bangladesh water- related sector is moving in the right direction towards the IWRM plan.

Collaboration between BWDB, BADC, DAE, LGED and WARPO has to be increased because BWDB, BADC and DAE etc. are the major agricultural departments which play a vital role in the sector by using the water (both surface and groundwater) in irrigation. WARPO has to work as a center of excellence with the help of the competent authorities for awareness building and coordination.

5. Findings on Financing

5.1 Introduction

This section concerns the adequacy of the finance available for water resources development and management from various sources on time. Finance for investment and recurrent costs come from many sources, the most common being central government budget allocations to relevant ministries and other authorities.

5.2 Comparison of Scores

Table 5.1 illustrates that the overall score in the year 2017 is 45 which has increased to 49 in the survey of 2020. In the case of the 4.1a National budget for water resources infrastructure, the score has increased slightly to 82 in 2020 in comparison to that 80 in 2017. However, due to rounding the survey results the score for this question becomes 80. The participant's view is that the budget has increased than previous years but the recurrent budget is inadequate and sometimes unavailable as per the project's requirement. However, the recurrent budget has also an increasing trend.

Table 5.1: Score Comparison between baseline, 2017 and Survey 2020 for Financing

SI No.	Questions	Scores		
		Baseline, 2017	Survey, 2020	Survey, 2020 Rounded
4.1 What is the status of financing for water resources development and management at the national level?				
a	National budget for water resources infrastructure (investment and recurrent costs).	80	82	80
b	National budget for IWRM elements (investments and recurrent costs)	60	65	70
4.2 What is the status of financing for water resources development and management at other levels?				
a	Sub-national or basin budgets for water resources infrastructure (investment and recurrent costs).	N/A	45	50
b	Revenues raised for IWRM elements	20	40	40
c	Financing for transboundary cooperation.	20	25	30
d	Sub-national or basin budgets for IWRM elements (investment and recurrent costs).	N/A	35	30
Average score of Financing		45	49	50

In the case of 4.2a Sub-national or basin budgets for water resources infrastructure and IWRM elements, the score was not provided previously in 2017 considering that in the national budget of Bangladesh the agency-wise sectoral allocations are made. Unlike the federal state government, there is no separate budget for regions (e.g divisions or districts). But in 2020, the score of 45 has been provided as projects are now being planned and implemented considering the basin/hydrological region approach of NWMP, BDP2100, Haor Master Plan (HMP) etc. though after rounding it becomes 50.

5.3 Main Challenges

Due time adequate financing is one of the important sections for the implementation of IWRM. on the other hand, financial requirements are increasing day by day due to the worsening situation of climate change and threats of drought and floods along with other natural calamities. It is not just about financing for water resources infrastructure, there are also funding needs for operation and maintenance as well as the integrating function such as governance, information gathering, monitoring, regulation, forecasting,

training and capacity building. In Bangladesh, the annual development budget is adequate for planned projects which includes all the component of IWRM but after completion of the project, the cost for recurrent components are not well monitored. In most cases, the operation and maintenance budgets are inadequate and sometimes not available. Therefore, during the contingency period, repairing and other mandatory works cannot be performed due to lack of funding.

Still, there is no transboundary basin wise projects and budget allocation. But some feasibility studies on basin wise projects are ongoing. BWDB collects irrigation service charges on different projects. But the revenue earning is very nominal. The local level water management organizations (WMOs) occasionally participates in the operation and management of the project. Joint Rivers Commission receives a budget for monitoring the Ganges water-sharing treaty. But there is an inadequate budget for transboundary cooperation projects or their developments.

5.4 Recommendations

Sufficient national budget should be allocated not only for planned projects and infrastructure development but also for the operation and maintenance of the same. After completing the projects, the cost for recurrent components should be well monitored and recurrent budget should be made available. Transboundary basin wise projects should be undertaken and adequate budget should be allocated in this regard. Irrigation service charge collection system should be easier and properly monitored so that water users can willingly pay and contribute to the revenue sector.

6. Overall Status of SDG 6.5.1

6.1 Comparing With Baseline

After completing the survey instrument during the workshop, the average scores have been calculated. The section of the enabling environment shows an increment of 8 comparing to the result from the baseline of 2017. The average score of Institutions and Participation in water resources management has been significantly improved and increased by 12 from the baseline.

On the fourth section i.e. financing, the score shows an increment of 4 from the baseline status. But in this case, the score of two questions has been included which were previously scored as N/A in the base year 2017.

The final average score has increased from 50 to 58 to that of the baseline. Though this shows little progress, yet from the detailed questionnaire, it has been observed that Bangladesh has made progress in many sections of the questionnaire. The comparison of final scores with the baseline scores is presented in Figure 6.1.

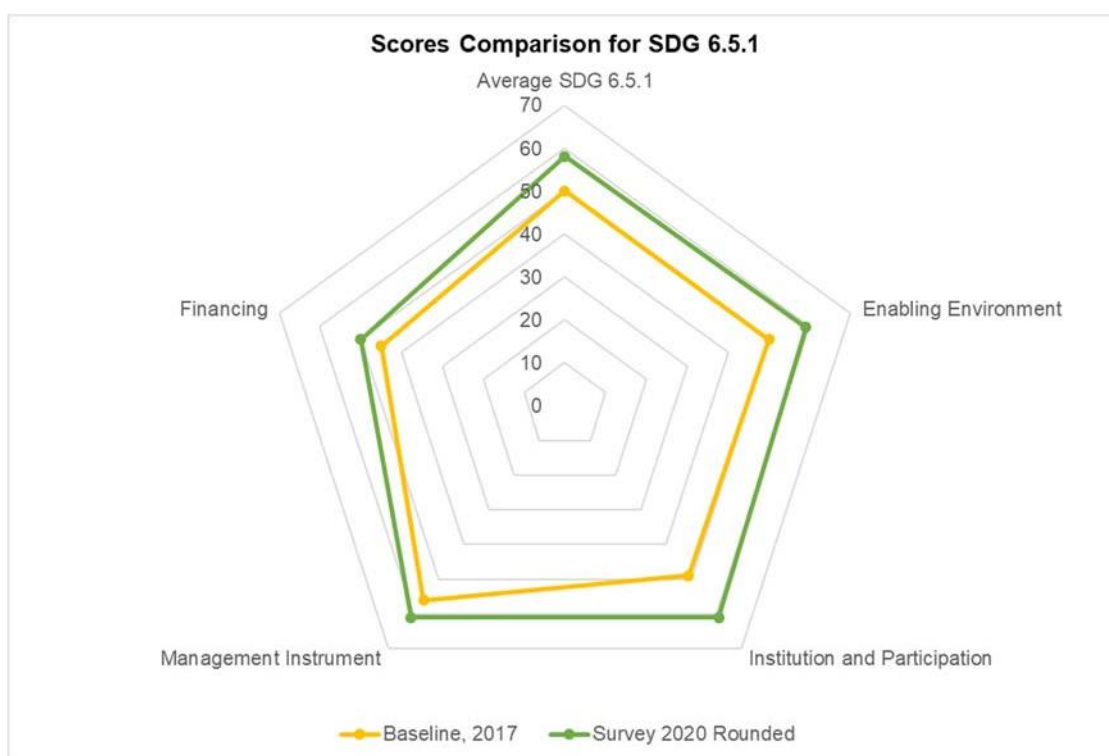
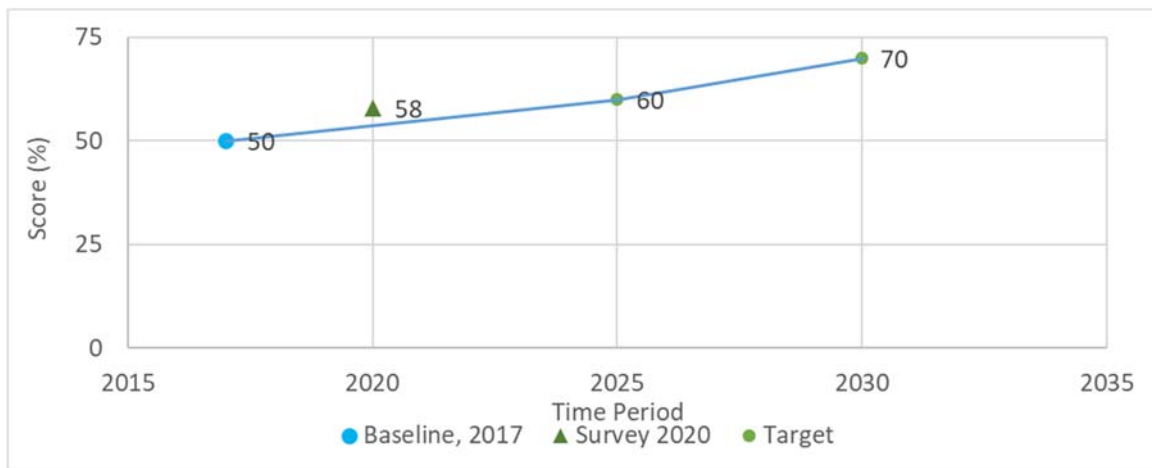


Figure 6.1: Final Score for Survey 2020 (Rounded) Comparing Baseline 2017

6.2 Achievable Target

Bangladesh has set the target to implement IWRM and is presented in Figure 6.2. By 2025 and 2030, Bangladesh desires to achieve the degree of implementation of IWRM by 60% and 70% respectively. The participants are very optimistic to achieve the target. They also think that the progress will be more than the interim target of Bangladesh.

The overall scoring shows that water resources management activities are aligned with the SDG goal and its targets. Bangladesh is on its way in achieving the SDG targets. With the support and concerted efforts from all the government agencies and relevant ministries, it is possible to fulfil the SDG target by the year 2030.



Source: Prepared based on the SDG tracker (<https://www.sdg.gov.bd/page/indicator-wise/1/82/3/0#1>)

Figure 6.2: Interim Progress of SDG 6.5.1 in Bangladesh

6.3 Recommendations

The existing water-related national policies, acts, plans etc. provide a sound basis to implement IWRM. However, the instruments need to be updated regularly considering the effect of climate change and other improved implementation instruments. Adequate attention needs to be given to ascertain as to what extent the policies, plans etc. have been translated fully into action, particularly at the program and project levels.

The institutional arrangement in Bangladesh is good and making progress regularly. Basin- wide planning has already started through BDP2100. However, the basin wise projects need to be formulated and implemented with the coordination of the relevant agencies. Better and stronger collaboration among ministries, agencies, institutions is needed for full attainment of IWRM. There is growing consensus among the experts that strong institutional arrangements with well-defined implementing procedures - supported by agreements and clear regulations- is the key to developing integrated trans-boundary water management. It is also crucial to adopt guidelines and formulate joint plans to approach the new emerging issues such as climate change adaptation and resilience, water-energy, water-ecosystems and water-food-energy nexus.

The main problem in management instruments is in data sharing with everybody. There are some arrangements to share the data with the government agencies. Most of the agencies have their database. The databases from every agency need to be centralized, web-based and updated.

Bangladesh has an adequate budget for implementing regular projects based on IWRM. But the operation and maintenance budget of the projects needs to be enhanced than those of the present and should assure to make it available timely. Government organizations are also collecting revenue irrigation services charges. However, there is some non-revenue cost also for the unauthorised irrigation connections. These problems may solve by valuing water and thus developing shadow prices for water, has been prioritized as a global action to achieve sustainable water resources management by the UN and the World Bank High-Level Panel for Water, of which the Hon'ble Prime Minister of Bangladesh is a member. Valuing water provides the basis for recognizing and considering all costs and benefits provided by water, including their economic, social and ecological dimensions.

Annex 1: List of Participants

Sl. No.	Name	Organization	Designation	Email Address
1	Prof Ainun Nishat		Chair of the Workshop	ainunnishat@yahoo.com
2	Mahmudul Islam	MoWR	Additional Secretary, Dev. Wing	adl.sec.dev@mowr.gov.bd
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4	Abu Yousuf Md. Rasel	MoWR	Senior Assistant Chief,	aumrasel@yahoo.com
5	Dr. Farida Perveen	DAE	Deputy Director (Project Implementation and Evaluation)	perveengis@gmail.com
6	Jahangir Alam Khan	DASCOH	Project Coordinator, IWRM Project	jahangiralamkhan@gmail.com
7	Md. Saiful Hossain	BWDB	Superintending Engineer	saiful1963.bd@gmail.com
8	Md. Ziaul Hoque	BADC	Chief Engineer (Minor Irrigation)	cemibadc@gmail.com
9	Janntul Ferdous	DWA	Research Officer (Planning)	ferdousjannat2019@gmail.com
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17	Gopal Krishna Debnath	LGED	Superintending Engineer	gopal_fkr@yahoo.com
18	Netai Day Sarker	DDM	Assistant Director (GIS)	netai@mail.com
19	Robiul Hasan	BUET	Research Assistant	
20	AKM Khusrul Amin	WARPO	Senior Scientific Officer	sso_fish@warpo.gov.bd
21	Tanvir Siddique	RHD	Executive Engineer	eers@rhd.gov.bd
22	Mohammad Zariab Hossain	GED	Sr. Asst. Chief	mzariab@yahoo.com
23	M A Akhtar Hossain	LGED	Additional Chief Engineer	ace.crelc@lged.gov.bd
24	Hasan Ahmmed	DoF	Deputy Director (Finance & Planning)	hasanahmmed2013@gmail.com
25	Mr. Moshiur Rahman PEng	BWP	President, BWP	moshiur57@yahoo.com
26	Dr. Nilufa Islam	BWP	Vice President	nilufaislam82@yahoo.com
27	Md. Siddiqur Rahman	BWP	Secretary General	siddiq.mda@gmail.com
28	Shahidul Islam	BWP	Executive Committee (EC) Member	shahidul.vosb@gmail.com
29	Dr. Md. Abdur Rashid	BWP	Treasurer	arashidiwm@yahoo.com

Sl. No.	Name	Organization	Designation	Email Address
30	Mukta Akter	BWP	Executive Secretary	mukti_009@yahoo.com
31	Md. Abdullah Al Mamun			
32	M Abdur Rakib	BWDB	SDE, planning 1	rakibsbh@gmail.com
33	Motaleb Hossain Sarker	CEGIS	Director, WRMD and Facilitator of the workshop	mhsarker@cegisbd.com; motalebsarker@gmail.com
34	A.T.M. Shamsul Alam	CEGIS	Director (in-charge), SEID	aalam@cegisbd.com
35	Farhana Ahmed	CEGIS	Sr. Specialist, RTD	fahmed@cegisbd.com
36	Md. Atiqur Rahman	CEGIS	Jr. Specialist, WRMD	atique.ce05@gmail.com

Annex 2: Agenda

Agenda of Day 1:

- 10:30 Welcome speech by BWP
- 10:40 Introduction from SDG 6.5.1 Focal Point Mr. Mantu Kumar Biswas
- 10:50 Presentation from CEGIS on the Workshop
- 11:30 Discussion on Workshop Process and Questionnaire fill up
- 12:30 Wrap up by Chair Prof. Ainun Nishat

Agenda of Day 2:

- ➔ 11:00-11:10 Welcome and Introduction to workshop
- ➔ 11:10-11:15 Brief Introduction from Focal Point MoWR
- ➔ 11:20-11:40 Key Note Presentation on SDG 6.5.1 - Background and overview and presentation (CEGIS)
- ➔ 11:15-11:20 Presentation from UNEP
- ➔ 11:40-12:15 Facilitated discussions
- ➔ 12:15-12:45 Facilitated discussions (continued)
- ➔ 12:45-13:00 Speech of Guests, Wrap-up and closing of the meeting

Annex 3: Facilitator's Comments

The training workshop was divided into two days. The first day was conceptualization about the workshop and the scoring process to fill up the questionnaire. All the participants cordially participate and learned the process. They have also learned to provide justification and logic as well as citing the relevant policies, and strategic documents. The diversified stakeholder organization participates in the workshop. The second and final day of the workshop was more successful because the participant gave their input properly and their discussion was both technical, logical and integrated. The workshop instrument loos good and well organized. All the participants were very cooperative which help to run the workshop properly and efficiently. But the time of this project is very less compared to the tasks.

Annex 4: Photos

Stakeholder Consultation Picture of First Round

Ministry of Water Resources
Online Stakeholder Consultation Workshop
 on
SDG 6.5.1: Degree of Implementation of IWRM

Engr. Motaleb Hossain Sarker
 Director
 Water Resources Management Division
 Center for Environmental and Geographic Information Services (CEGIS)



Degree of implementation (0 - 100%)		Degree of implementation (0 - 100%)	
Very low (0-25%)	Low (25-50%)	Medium (50-75%)	High (75-100%)
<p>A. National water resources planning, or strategy</p> <p>Being prepared (no)</p> <p>Policy Description (no)</p> <p>Key findings (no)</p>	<p>B. National water resources planning, or strategy</p> <p>Being prepared (yes)</p> <p>Policy Description (yes)</p> <p>Key findings (yes)</p>	<p>C. National water resources planning, or strategy</p> <p>Being prepared (no)</p> <p>Policy Description (no)</p> <p>Key findings (no)</p>	<p>D. National water resources planning, or strategy</p> <p>Being prepared (yes)</p> <p>Policy Description (yes)</p> <p>Key findings (yes)</p>



Stakeholder Consultation Picture of Second Round

Section 3: Management Instruments

Q3.1. What is the status of management instruments to support IWRM implementation at the national level?

Item #1	Survey (2017)	Validation (Present Value)	Population	Remarks
1	100	100	100	100%
2	100	100	100	100%
3	100	100	100	100%
4	100	100	100	100%
5	100	100	100	100%
6	100	100	100	100%
7	100	100	100	100%
8	100	100	100	100%
9	100	100	100	100%
10	100	100	100	100%
11	100	100	100	100%
12	100	100	100	100%
13	100	100	100	100%
14	100	100	100	100%
15	100	100	100	100%
16	100	100	100	100%
17	100	100	100	100%
18	100	100	100	100%
19	100	100	100	100%
20	100	100	100	100%
21	100	100	100	100%
22	100	100	100	100%
23	100	100	100	100%
24	100	100	100	100%
25	100	100	100	100%
26	100	100	100	100%
27	100	100	100	100%
28	100	100	100	100%
29	100	100	100	100%
30	100	100	100	100%

IWRM support program

- Custodian of SDG 6.5.1: United Nations
- Coordinated by GWP in collaboration with UN-WFP
- Support Programme is for three stages
- Stage 1 is Identifying Challenges [Preparation phase]

Stage 1

Identify challenges (3-3.1 assessment)

Stage 2

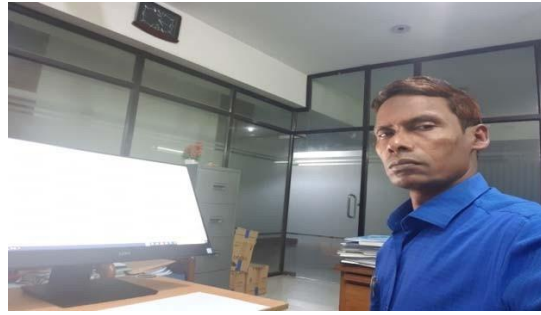
Preparatory phase (government ownership)

Consultation phase (Stakeholder engagement and input)

Consultation Picture at MoWR



Consultation Picture for Validation



CEGIS  Ministry of Water Resources  Bangladesh Water Resources

Online Stakeholder Consultation for Validation
on
SDG 6.5.1: Degree of Implementation of IWRM



Engr. Motaleb Hossain Sarker
Director
Water Resources Management Division
Center for Environmental and Geographic Information Services (CEGIS)

Annex 5: Expert Interview

After the successful completion of the workshop, few expert interviews have been conducted with different stakeholders. The list of the expert is presented below:

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The questions discussed during the interview and the responses are presented briefly below:

- a) What is the involvement of your organization on SDG 6.5.1 at the country level?

The expert from BWDB has said that the BWDB is the focal agency for the SDG 6.5.1. They are working to implement IWRM since long back. There are few ongoing projects from DAE which are directly linked with IWRM.

- b) In your opinion what are the major challenges to implement SDG 6.5.1 (i.e. IWRM)

The experts have addressed that there is data gap in Bangladesh. Besides financing is a problematic sector mostly for recurrence budget. The recurrence budget is not always adequate and sometime is unavailable during need. However, the recurrence budget has been increased a lot. The coordination between the agencies is a challenge.

DAE thinks the less water during the dry period, groundwater extraction monitoring is the most problematic area.

- c) Status and level of communication between GoB and private sectors/Agencies/NGOs to achieve the goal of SDG 6.5.1.

The irrigation using groundwater, a major part of irrigation, is managed by the private sector.

- d) How can we overcome the challenges due to COVID-19 pandemic for making progress of SDG 6.5.1 (i.e. IWRM)

Though during this COVID-19 situation, there is a general holiday in Bangladesh, the government service holders have provided their time for the progress of Bangladesh. However, transporting agricultural goods became a problem.

- e) Your recommendation and suggestions for making progress on IWRM implementation to achieve the goal set by UN by 2030.

Bangladesh is very rich in the aspect of the policy, Act etc. But there is a problem like taking action based on those policies, acts. Besides, the plans, policies need to upgrade in line with the changing environment, climate. If enforcing the policies, plans, and acts can be ensured, it is possible to achieve the goal set by the UN.