



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

Water Resources Planning Organization (WARPO)

Terms of Reference (ToR)

For

Selecting a Consulting Firm for Preparation of National Water Resources Plan  
(NWRP) (Package No. S-01)

Preparation of National Water Resources Plan (NWRP)

“জাতীয় পানি সম্পদ পরিকল্পনা প্রণয়ন” শীর্ষক কারিগরী প্রকল্প

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Terms of References (ToR) for  
“Preparation of National Water Resources Plan (NWRP)”

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**1. Introduction:**

The National Water Management Plan (NWMP), prepared between 1998 and 2001, serves as the Government of Bangladesh’s principal framework for implementing the National Water Policy (1999). The Plan was formally approved by the National Water Resources Council (NWRC) on 31 March 2004 and provides strategic guidance to line agencies across 13 ministries, while also promoting investment by private sector stakeholders and development partners. Conceived as a “rolling plan,” the NWMP is intended to be periodically updated to incorporate emerging knowledge, evolving priorities and changing socio-economic and environmental conditions. The original plan comprised a firm five-year implementation program (2001–2006), an indicative plan (2006 – 2011) and a long-term perspective extending to 2025. In April 2009, a study supported under the ADB-GoN Regional Technical Assistance (RETA) program undertook a qualitative assessment of NWMP implementation and provided recommendations to inform its future refinement and updating.

On May 2, 2013, the Government of Bangladesh enacted the Bangladesh Water Act, 2013 following an extensive consultation process. Article 15.1 of the Act mandates the Water Resource Planning Organization (WARPO) to present a draft National Water Resources Plan (NWRP) to the Council for approval as soon as possible. This plan must be prepared in accordance with the Water Resources Planning Act of 1992 (Act No. XII of 1992). Furthermore, Article 15.2 of Bangladesh Water Act, 2013 specifies the following elements to be included in the National Water Resources Plan (NWRP):

1. Description of water resources with present geographical location and mouza map;
2. Analysis of economic, natural, social, political, environmental, and ecological and institutional elements, characteristics, and impacts of water resources;
3. Scientific analysis of all data and information on water resources;
4. Development of overall planning, infrastructure for abstraction, distribution, use, protection and conservation of water resources, and formulation of instructions thereof for short, medium and long term;
5. Coordination with concerned Ministries, Divisions and organizations involved in the management of water resources;
6. Present and future use of water resources;
7. Integrated use of surface and ground water emphasizing the highest possible use of rain water;
8. Assessment of availability of water;
9. Determination of water quality standard;
10. Basin-wise development plan; and
11. Fixation of priority of water use.

In this context, Water Resources Planning Organization (WARPO) has initiated the preparation of National Water Resources Plan (NWRP) following Article 15 of the Bangladesh Water Act, 2013 and the existing National Water Management Plan. This initiative seeks to respond to emerging water sector challenges and to develop a resilient and robust framework for managing long-term water resources under exogenous and endogenous drivers.

The Government of Bangladesh has approved Bangladesh Delta Plan 2100 (BDP 2100) as a long-term, integrated strategy for sustainable and climate-resilient development. National Water Resources Plan (NWRP) is essential for operationalizing the water-related strategies of National Water Policy (NWPo) in alignment with BDP 2100. Since the completion of National Water Management Plan (NWMP) in December 2001, a new set of challenges and strategic priorities has emerged that must be addressed through national water resources planning. Key issues include climate change, arsenic contamination of groundwater, transboundary water cooperation and the impacts of rapid economic growth and population increase, all of which now need to be placed at the core of water resources planning. In addition, increasing saline intrusion into groundwater, deterioration of groundwater quality, declining groundwater levels, surface water pollution, evolving international policies and strategies, accelerating urbanization, natural resource management pressures, social and political developments, land-use change, disaster risk management, water supply and sanitation and the need for integrated strategic planning require enhanced emphasis within water resources planning and management frameworks.

The proposed National Water Resources Plan (NWRP) should be formulated to effectively operationalize the objectives of the existing and draft updated National Water Policy through the application of advanced scientific approaches, while supporting the nation's accelerated poverty reduction agenda. Accordingly, the strategies and actions under NWRP must be aligned with and responsive to key national policies and frameworks, including Land Use Policy (2001), National Policy for Arsenic Mitigation (2004), Pro-Poor Strategy for Water and Sanitation (2005), National Environmental Policy (2018), the Bangladesh National Adaptation Plan (NAP) 2022, the Coastal Zone Policy 2005 and other relevant policies and strategies.

## **2. Guiding Principles for the Preparation of the National Water Resources Plan (NWRP) framework:**

The vision of the NWRP is to establish a holistic and integrated framework for planning, development, allocation, use, protection and conservation of surface water and groundwater. Formulate a comprehensive framework for the NWRP that provides a structured approach to integrated water-resources planning and management. This framework will serve as a



strategic blueprint for sustainable, integrated and adaptive water-resource management in Bangladesh.

## 2.1 Policy context for National Water Resources Plan:

As water is essential for human survival, socio-economic development of the country and preservation of its natural environment, it is the policy of the Government of Bangladesh that all necessary means and measures will be taken to manage the water resources of the country in a comprehensive, integrated and equitable manner. The policies enunciated herein are designed to ensure continued progress towards fulfilling the national goals of economic development, poverty alleviation, food security, public health and safety, decent standard of living for the people and protection of the natural environment.

The National Water Policy will guide management of the country's water resources by all the concerned ministries, agencies, departments and local bodies that are assigned responsibilities for the development, maintenance and delivery of water and water related services as well as the private users and developers of water resources. Address issues related to the harnessing and development of all forms of surface water and groundwater and management of these resources in an efficient and equitable manner.

The water policy of the government aims to provide direction to all agencies working with the water sector and institutions that relate to the water sector in one form or another, for achievement of specified objectives. These objectives are broadly:

- a. To address issues related to the harnessing and development of all forms of surface water and ground water and management of these resources in an efficient and equitable manner
- b. To ensure the availability of water to all elements of the society including the poor and the underprivileged, and to take into account the particular needs of women and children
- c. To accelerate the development of sustainable public and private water delivery systems with appropriate legal and financial measures and incentives, including delineation of water rights and water pricing
- d. To bring institutional changes that will help decentralize the management of water resources and enhance the role of women in water management
- e. To develop a legal and regulatory environment that will help the process of decentralization, sound environmental management, and improve the investment climate for the private sector in water development and management
- f. To develop a state of knowledge and capability that will enable the country to design future water resources management plans by itself with economic efficiency, gender equity, social justice and environmental awareness to facilitate achievement of the water management objectives through broad public participation.
- g. To adopt, adjust and undertake initiatives to address emerging issues in line with the updated National Water Policy, including Climate Change, Blue Economy, Adaptive Delta Management (ADM), Water Pricing, Payment for Ecosystem Services (PES), Urban Water Management, Industrial Water Management, the National Adaptation Plan (NAP) and the Sustainable Development Goals (SDGs).

The Government recognizes that the process of planning and managing water resources requires a comprehensive and integrated analysis of relevant hydrological, topographical, social, political, economic, environmental and institutional factors across all related water-using sectors.

The intricate nature of drainage systems within the country requires that activity for planning and management of the nation's river systems is undertaken within the context of hydrological regions. The principal river systems create natural boundaries for these regions. The hilly areas of the east form another hydrological region. Henceforth, to address these issues the policy of the Government will be as follows:

a. The Water Resources Planning Organization (WARPO) will update the delineation of the hydrological regions of the country, based on appropriate natural features, for planning the development of their water resources.

b. WARPO will prepare, and periodically update, a National Water Management Plan (NWMP) into National Water Resources Plan (NWRP) addressing the overall resource management and allocation issues in each region and the whole of Bangladesh and providing directions for the short, intermediate and long runs. The plan will be executed by different agencies as determined by the Government from time to time.

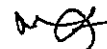
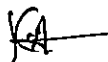
c. The NWRP and all other related plans will be prepared in comprehensive and integrated manner, with regard for the interests of all water-related sectors. The planning methodology will ensure co-operation across sectors and people's participation in the process.

The governance and management of the national water resources require a great deal of coordination of existing institutions and in some cases reform and creation of new community-based institutions. Water resources management extends across many water using sectors as well as political jurisdictions and geographically and hydrologically diverse areas. Properly functioning institutions are essential for effective implementation and administration of the country's water and related environmental resource management policies and directives.

The Government will restructure and strengthen, where appropriate, the existing institutions to ensure that the agenda for reform and the action plan is implemented efficiently. Two important principles will govern institutional restructuring. Firstly, there should be separation of policy, planning and regulatory functions from implementation and operational functions at each level of government. Secondly, each institution must be held accountable for financial and operational performance.

It is the policy of the Government that:

The Government will formulate a framework for institutional reforms to guide all water sector related activities. It will periodically review the mandates of all water sector



institutions and redefine their respective roles, as necessary to ensure efficient and effective institutions commensurate with changing needs and priorities.

The National Water Resources Council (NWRC) will coordinate all water resources management activities in the country. The Executive Committee of the National Water Resources Council (ECNWRC) will provide directives on all matters relating to the planning, management and coordination of water resources across all sectors, as may be required by the NWRC and also will guide water management institutions at the national, regional and local levels in the formulation and implementation of policies and plans for improved water management and investment. WARPO will be the exclusive government institution for macro-level water resource planning. It will also serve as the Executive Secretariat of the ECNWRC and a "clearing house" for all water sector projects identified by different agencies and reporting to the ECNWRC on their conformity to the NWMP.

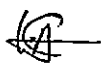
## **2.2 Regulatory context for National Water Resources Plan:**

It stated in section 15, Bangladesh Water Act 2013 the "Approval of National Water Resources Plan (1) As soon as possible, after the commencement of this Act, the Water Resources Planning Organization shall, through the Executive Committee, place for approval before the Council a draft of the National Water Resources Plan prepared in accordance with the Water Resources Planning Act, 1992 (Act No. XII of 1992)."

The Water Resources Management Plan is essential to provide for the integrated development, management, abstraction, distribution, use, protection and conservation of water resources. Achieving these objectives requires a comprehensive implementation framework aligned with the Government's development strategy, underpinned by recent legislation and regulations, including the Bangladesh Water Act-2013, the Bangladesh Water Rules-2018, and a robust institutional regulatory framework for water resources planning and management. It also necessitates institutional development and capacity strengthening at both central and local levels to ensure effective governance and sustainable water-resources management.

Before submitting a National Water Resources Plan to the Council for approval under sub-section 15(1), the Executive Committee shall, through inter-ministerial discussion and exchange of views, make sure that such plan is appropriate and consistent with this Act and with the National Water Policy.

The Executive Committee shall, after taking necessary measures under sub-section 15(3) BWA 2013, pre-publish a draft of the plan in the official Gazette for eliciting public opinion, and shall also take necessary steps for extensive publicity thereof through digital, electronic and print media. Any person may, within 90 (Ninety) days from the date of pre-publication of the draft in the official Gazette under sub-section 15(4) BWA 2013, submit or send any remark or suggestion on the National Water Resources Plan to the Executive Committee or



to any officer or organization authorized in this behalf by it, in writing or through digital or any other means.

The Executive Committee shall, upon analysis and consideration of the remarks and suggestions, if any, received under sub-section 15(5) BWA 2013, recast the National Water Resources Plan, and shall place it before the Council for approval. The Council may, after having been satisfied with the rationales of the plan upon discussion in its meeting, approve it or make necessary changes in it or direct the Executive Committee to make necessary changes therein. Upon approval by the Council, the Executive Committee shall publish the National Water Resources Plan in the official Gazette, and upload a copy thereof in the website of the Ministry of Water Resources.

Until National Water Resources Plan is adopted under sub-section 15(7) BWA 2013, the National Water Management Plan made by the Water Resources Planning Organization immediately before the commencement of this Act, shall, subject to being consistent with this Act and with the National Water Policy, continue to have effect, mutatis mutandis. The Executive Committee shall send a copy of the finalized National Water Resources Plan to all the organizations or appropriate authorities or local government institutions that are involved in undertaking, making or implementing Water Resource Development Project, and request them to undertake or implement such project, in furtherance of this Act, and of the National Water Policy, and to remain within the limits of the National Water Resources Plan.

The request-letter made under sub-section 15(10) BWA 2013 shall also contain among other contents that compliance with the provisions of this Act, or with the condition of a clearance certificate, or with the prohibition and condition of a protection order is mandatory, and non-compliance thereof without any reasonable ground is an offence punishable with imprisonment, and with compensation.

On finalization of the National Water Resources Plan under this Act, it shall create a binding obligation upon all the organizations or appropriate authorities or local government institutions to undertake, make or implement Water Resource Development Projects in accordance with the National Water Resources Plan.

**Notes:**

Key aspects of a holistic approach include:

- **Integrated Management:** It emphasizes breaking down traditional silos between different water-related sectors (e.g., agriculture, urban planning, industry and sanitation) and managing them in a coordinated way. This is often encapsulated by the concept of Integrated Water Resources Management (IWRM).
- **Ecosystem Connection:** Ecosystem Connection recognizes that the sustainability of water systems is inherently dependent on the condition of the surrounding



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environment, including soil health, wetlands and forests, often referred to as green infrastructure.

- **Stakeholder Collaboration:** A successful holistic approach depends on collaboration and consensus among a wide range of stakeholders including farmers, urban communities, policymakers, environmental organizations and industries to achieve equitable and sustainable outcomes.
- **Long-term Resilience:** It redirects emphasis from short-term, reactive interventions toward long-term planning and adaptive strategies that strengthen resilience to future challenges such as climate change, water scarcity and population growth.
- **Systems Thinking:** Instead of focusing on individual components or symptoms of a problem, it looks for fundamental underlying issues and considers how decisions in one area might create unintended consequences in another part of the system.
- **Balancing Needs:** It aims to balance competing demands for water (domestic, agricultural, industrial and environmental needs) to ensure long-term availability and quality for both current and future generations.

### 3. Objectives of the Project

#### 3.1 Overall Objective:

The overall objective of this assignment is to formulate a National Water Resources Plan (NWRP) in accordance with the mandate of the Bangladesh Water Act, 2013, particularly Article 15. The NWRP will be developed through a comprehensive review, update and enhancement of the National Water Management Plan (NWMP) 2001, incorporating all relevant policies, acts, rules, and strategic frameworks to ensure sustainable, integrated and coordinated management of the country's water resources.

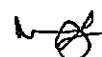
NWRP will operationalize the provisions of Bangladesh Water Act, 2013, Bangladesh Water Rules, 2018 and National Water Policy, 1999, Water Resources Planning Act, 1999 as well as issues of draft updated National Water Policy ensuring alignment with the Government-approved Development Strategy. It will function as an integrated and comprehensive framework to guide all stakeholders in the development, management and governance of water resources and water services across Bangladesh. The Plan will adopt a modern and adaptive water management approach addressing water security, economic efficiency and environmental sustainability, while responding to emerging sectoral challenges. Special emphasis shall be given on addressing emerging and cross-cutting issues, including climate change adaptation, Blue Economy initiatives, Adaptive Delta Management (ADM), water pricing mechanisms, Payment for Ecosystem Services (PES), urban water management, industrial water management and alignment with the Sustainable Development Goals (SDGs).



### 3.2 Specific Objectives:

The specific objectives of the project are:

1. Prepare a macro-level, integrated and holistic Water Resources Framework Plan for Bangladesh based on comprehensive quantitative and qualitative assessment of the water resources and critical review of the National Water Policy (NWPO), other key water-related policy and planning documents, including the National Water Management Plan (NWMP) 2001, in compliance with Article 15 of the Bangladesh Water Act, 2013;
2. Align the National Water Resources Plan (NWRP) with emerging and future water-management challenges of the long-term vision and strategic priorities in different related national policies and plans of the Government;
3. Develop a stakeholder-mapping framework to support participatory and inclusive integrated water-sector planning, ensuring effective engagement, coordination and accountability among relevant actors, with the ultimate goal of enhancing livelihoods and socio-economic well-being;
4. Assess water-resource availability by integrating land-use dynamics, seasonal variability, quality, evaluating medium to long-term potentials, constraints and risks to support sustainable water-resources planning for the integrated use, development and management of surface water and groundwater including the optimal utilization of rainwater;
5. Assess current and projected sectoral water demands to guide efficient, equitable and sustainable water-resources planning and allocation in alignment with the Bangladesh Water Act, 2013 and the National Water Policy 1999;
6. Assess external future uncertainties, including climate change impacts on water resources and formulate adaptive, resilient and flexible water-sector management strategies to address emerging risks and long-term variability of the water resources
7. Develop a phase wise holistic framework for water-sector interventions aligned with water availability and demand for different hydrological regions emphasis on environmental sustainability, ecosystem integrity and long-term resilience;
8. Identify and prioritize critical water bodies and floodplains for ecosystem conservation and restoration as a key tool for future management of water resources within a macro-level, integrated water-resources planning framework;



9. Establish robust Monitoring and Evaluation (M&E) tools for project clearance procedures and No Objection Certificate (NOC) processes and align with the National Water Resources Planning (NWRP) framework;
10. Develop an indicator-based Monitoring and Evaluation (M&E) framework to track the implementation, progress and outcomes of the National Water Resources Plan (NWRP);
11. Develop tools and comprehensive guidelines/manuals to strengthen the capacity of WARPO and other water-sector stakeholders to facilitate the effective and coordinated implementation of the National Water Resources Plan (NWRP).

#### **4. Scope of Work:**

The overall scope of this project is to prepare the National Water Resources Plan (NWRP), as mandated by Article 15 of the Bangladesh Water Act, 2013. This plan will be developed by building upon the successes and addressing the shortcomings of the NWMP, 2001. The Scope of work will comprise the following:

##### **4.1 Baseline Studies:**

Baseline studies of both surface water and groundwater encompassing quantitative and qualitative assessment are a fundamental prerequisite for effective water resources planning and management at regional and national scales. These baseline studies provide a clear and consistent understanding of current and future water availability, seasonal and spatial variability and prevailing water quality conditions across different hydrological regions. The scope includes the assessment of surface water resources, with particular emphasis on dry-season availability and water quality constraints; groundwater resources, considering quality issues such as arsenic contamination and salinity; land uses, categorized by land types (F0, F1, F2, F3, F4, etc.); environmental resources including wetlands, rivers, forests, estuaries and marine systems; and existing water-related infrastructure such as embankments, regulators and barrages.

In addition, scenario simulations particularly those related to climate change, as well as geopolitical and socio-economic developments are essential for future projections to be adopted in the preparation of the National Water Resources Plan.

Such evidence-based assessments enable decision-making and prioritization among competing water-using sectors, particularly in water-stressed regions. Overall, robust baseline studies establish the scientific basis for sustainable, equitable and climate-resilient water resources management at both regional and national levels. The Baseline Studies are as follow:

##### **4.1.1 Assessment of Surface water and Groundwater resources availability:**

The assessment of water-resources availability in both quantitative and qualitative terms, taking into account land-use patterns, seasonal variability, associated natural resources and

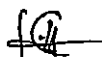
to evaluate their short, medium and long-term potentials, limitations and constraints based on different hydrological regions. It is essential to collect and review the existing policies, planning documents, frameworks, reports, guidelines etc. related to water resources plan and management in Bangladesh. The baseline reports for surface water and groundwater availability will address:

1. The scientific analysis of all available water resources data and information, including current and projected water availability, demand, use, allocation, prioritization of water uses and applicable water quality standards;
2. The pollution sources in rivers and other water bodies and to assess the extent and magnitude of pollution in terms of both water quality and quantity;
3. The salinity intrusion in the coastal aquifer as a result of over abstraction of groundwater, anticipated sea level rise to identify required strategic action to face future uncertainties of fresh water availability for the peoples in the coastal area;
4. The scientific investigation of existing and future river dynamics, morphology, deltaic progradation nature to assess the measures in river maintenance, erosion control, land accretion and Hilsa migration potential in the major rivers and coastal zones in Bangladesh;
5. The impact of exogenous future uncertainties, including climate change-induced effects on water resources, water-sector financing and the broader economy;
6. The present and future potential development of the highest possible use of rain water given emphasize on the integrated use of surface water and groundwater.

#### **4.1.2 Assessment of the sector-wise uses and demands of surface water and groundwater resources:**

To assess sector-wise uses and demands of surface water and groundwater resources across different hydrological regions in order to identify integrated and sustainable approaches for future interventions under the National Water Resources Plan (NWRP), taking into account water availability, seasonal variability, short, medium and long-term potentials and constraints. The assessment of sectoral uses, demands and allocation of the surface water and groundwater resources will address:

1. The stakeholder-mapping framework to ensure an active and participatory process within integrated water-sector planning, aimed at improving people's lives and livelihoods addressing supply and demand chain management of the water resources.
2. The analysis of the impact of economic, natural, social, political, environment, water export potential, ecological and institutional elements, characteristics on the water resources;



#### **4.1.3 Scientific assessment to identify water bodies and floodplains that need to be preserved for conserving aquatic, water-dependent ecosystems and future water resources management:**

The preservation and conservation of water bodies and floodplains will form a fundamental basis for macro-level water resources planning. The assessment will identify the water bodies and floodplains that need to be preserved in order to maintain aquatic and water-dependent ecosystems, facilitate groundwater recharge and reduce flood risks. These elements will serve as key tools for the sustainable management of water resources within a comprehensive macro-level, integrated water-resources planning framework.

#### **4.1.4 Preparation of a scientific assessment report for sectoral water allocation:**

The sectoral water allocation is a critical component of sustainable water resources management. A balanced allocation ensures economic development, environmental protection and social welfare. The distributing available water resources among different water-using sectors such as agriculture, domestic, industry, environment, fisheries and power generation is important to ensure equitable, efficient and sustainable utilization of water while balancing social, economic and ecological priorities. The sectoral water allocation shall be determined on a volumetric basis or through other internationally accepted methods and standards, as appropriate.

Industrial water use plays a significant role in national economic development; however, unregulated abstraction and inefficient pricing mechanisms can lead to overexploitation of water resources, environmental degradation and inequitable distribution. Under the National Water Resources Plan (NWRP), water pricing and revenue collection from industrial water users would be an essential instrument for sustainable water resource management. Water pricing and revenue collection from industrial water use under the NWRP program serve dual purposes: ensuring financial sustainability of water management systems and promoting responsible water use. A transparent, equitable and scientifically informed pricing framework is essential to balance industrial growth with long-term water resource sustainability.

A revenue assessment report for industrial water utilization shall be prepared to evaluate the financial performance and revenue generation associated with industrial water consumption under the sectoral water allocation framework to be adopted in the National Water Resources Plan (NWRP). The report aims to ensure that water allocated to the industrial sector facilitates cost recovery, enhances efficient utilization of water resources and supports sustainable economic growth, while maintaining the highest priority for drinking and domestic water supply.

This study presents the baseline assessment for establishing a structured revenue collection system from industrial water use as part of the National Water Resources Plan (NWRP) implementation program. The study evaluates current industrial water abstraction practices, existing regulatory mechanisms, pricing structures and revenue gaps. It proposes a

sustainable, transparent and equitable framework for water pricing and revenue collection to support long-term water resource management. The significant volumes of surface water and groundwater are abstracted by industries with limited volumetric monitoring and insufficient revenue recovery. Establishing a standardized tariff system and effective collection mechanism can enhance cost recovery, promote efficient water use and strengthen water governance under NWRP.

The reports shall formulate in alignment with the national water governance framework, including the National Water Policy and the Bangladesh Water Act. Furthermore, it must be consistent with a set industrial water pricing policy to promote transparency, equity, accountability and long-term financial sustainability in water resources management. The reports shall also formulate economical and efficient planning and allocation of water resources, consistent with the priority uses specified in the NWPo and BWA, 2013;

#### **4.1.5 Preparation of Reports for the stakeholder-mapping framework and institutional mechanism for the implementation of the National Water Resources Plan (NWRP):**

The assessment report will contain a stakeholder-mapping framework to ensure an active and participatory process in integrated water-sector planning. The framework will address institutional mechanisms for coordination among relevant ministries, departments and agencies involved in the water sector to support effective implementation of the National Water Resources Plan (NWRP).

The preparation of reports on the stakeholder-mapping framework and institutional mechanism for the implementation of the National Water Resources Plan (NWRP) aims to establish a structured, inclusive and coordinated governance system for effective water resources planning and management in Bangladesh.

The stakeholder-mapping framework will identify, categorize and analyze all relevant stakeholders involved in water resources management and planning at national, regional and local level giving priority on the women, children and marginalized communities. This includes government agencies, autonomous bodies, local government institutions, private sector entities, NGOs, development partners, academia and community-based organizations. The stakeholders would also include individuals involved in water resources management and planning at the national, regional, and local levels. Women, children and marginalized communities in salinity and drought prone areas need to be given special emphasis in the stakeholder-mapping framework and policy recommendations should be developed to ensure their effective involvement in water resources management and planning.

The preparation of stakeholder-mapping and institutional mechanism reports will provide a clear operational structure for implementing the NWRP in a coordinated, transparent and accountable manner. It will strengthen inter-agency collaboration, reduce institutional fragmentation and enhance sustainable water resources management in Bangladesh.



#### **4.1.6 Preparation of the review report on National Water Management Plan (NWMP) with gap analysis:**

The Consultant shall undertake a comprehensive review of the existing National Water Management Plan (NWMP) to assess its relevance, effectiveness and alignment with current national priorities, emerging challenges and international best practices in integrated water resources management. The review shall examine the overall framework, objectives, strategies, clusters, programs and implementation mechanisms of the NWMP, taking into consideration the changes in socio-economic conditions, climate variability, population growth, urbanization and sectoral water demands since the formulation of the Plan.

As part of the review process, the Consultant shall conduct a detailed gap analysis to identify inconsistencies, limitations and missing components within the existing NWMP in view of the present and future consequences and challenges in the water sector. The gap analysis shall evaluate policy, institutional, legal, technical, environmental and financial aspects of water resources management. Particular attention shall be given to cross-cutting issues such as climate change adaptation, ecosystem conservation, groundwater management, flood and drought risk management, water quality protection, environmental flows, and stakeholder participation.

Based on the findings of the gap analysis, the Consultant shall propose recommendations to address identified shortcomings and strengthen the preparation of the NWRP. These recommendations shall include priority actions, institutional strengthening measures, policy updates and strategic interventions required to enhance integrated and sustainable water resources management in Bangladesh.

During the formulation of the National Water Resources Plan (NWRP), the National Water Resources Database (NWRD) will be utilized and systematically evaluated to identify whether additional data, information, and data layers are required for the preparation of the NWRP. Any such data, information and data layers identified during this process will be recommended for incorporation into the NWRD. Furthermore, the National Water Resources Database (NWRD) will be updated and upgraded with new data, information and analytical outputs generated during the preparation of the National Water Resources Plan (NWRP). This process will strengthen the NWRD as a dynamic and reliable decision-support tool for sustainable and integrated water resources management in Bangladesh.

#### **4.1.7 Other study for the preparation of the NWRP:**

In addition to the specified tasks, the Consultant shall undertake any other relevant studies if necessary for the comprehensive preparation and effective implementation of the National Water Resources Plan (NWRP). These additional studies will be conducted based on emerging issues, stakeholder consultations, technical gaps and recommendations identified during the planning process.



The Consultant shall ensure that any additional study aligns with the objectives of the NWRP and is consistent with the principles of the National Water Policy. All findings and recommendations from such studies shall be properly documented and incorporated into the relevant chapters of the NWRP to strengthen its technical robustness, policy coherence and implementation feasibility.

#### **4.2 Preparation of National Water Resources Plan (NWRP):**

The National Water Resources Plan (NWRP) will serve as a comprehensive framework to ensure efficient and equitable water use, enhance water security, promote sustainability, strengthen climate resilience and improve governance across all water sector activities. The goal of preparing the National Water Resources Plan (NWRP) in Bangladesh is to establish a legally binding, integrated and sustainable national framework for water resources planning and management that ensures water security, climate resilience, equitable allocation of water resources, environmental protection and coordinated development in line with Bangladesh Water Act (BWA), Bangladesh Water Rules (BWR) as well as long-term consequences of water resources that will cover:

1. A comprehensive, integrated and legally binding framework for the development, allocation, use, protection and conservation of water resources;
2. Ensuring sustainable and equitable water management for domestic, agricultural, industrial, environmental and other sectoral needs;
3. Supporting climate resilience, disaster risk reduction and long-term planning for rivers, floodplains, wetlands, other waterbodies and groundwater;
4. Provide strategic guidance on policy harmonization, institutional coordination, stakeholder mapping and investment prioritization for macro-level water resources planning, taking into account future development trajectories, transboundary considerations and emerging challenges in the water sector.

##### **4.2.1 Preparation of Strategic Action Report:**

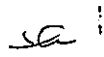
The National Water Resources Plan (NWRP) will be formulated based on a comprehensive assessment of the country's water resources, guided by the principles of preservation and conservation to ensure sustainable and equitable water management. The Plan aims to achieve long-term water security while supporting Bangladesh's current and future development trajectories. The existing clusters and programs of the National Water Management Plan (NWMP) will be reviewed, upgraded and updated in accordance with the strategies and management options developed through baseline and future scenario analyses.

This report focuses on outlining water resources management programs derived from baseline scenarios and strategic options for water resources planning and development. It assesses alternative macro-level options for water resources management and formulates strategic interventions to promote sustainable, integrated and climate-resilient water management in Bangladesh. The report is aligned with the National Water Policy (1999), Bangladesh Water Act (2013), Bangladesh Water Rules (2018) and different planning documents of other recognized developed and developing countries that have expertise in water resources planning and management. The plan will also consider relevant national and international development priorities and long-term planning frameworks.



The report will consider both present and future development trends across different sectors, infrastructure development, water availability, sectoral demand, abstraction, distribution and use, protection and conservation of water bodies and floodplains, as well as economic and financial considerations. The clusters and programs of the National Water Resources Plan (NWRP) will reflect the following issues:

1. The strategic approaches and established methodologies within the water-resources planning process, based on both quantitative and qualitative assessments of water resources using primary and secondary data, longer-term strategies and indicative interventions considering basin wise water resources management aspect and the delta dynamics as well as a review of the National Water Management Plan (NWMP) 2001;
2. The identified strategic actions will serve as the basis for formulating indicative interventions across three temporal planning horizons under the National Water Resources Planning (NWRP) framework: short-term (0–5 years), medium-term (6–15 years), and long-term (16–25 years). The National Water Resources Plan (NWRP) will be prepared in accordance with these time horizons, using hydrological regions as the primary spatial planning units, duly aligned with administrative boundaries and Bangladesh Delta Plan (BDP) hotspots. The Plan will comprise a prioritized portfolio of programs and projects, organized under defined thematic clusters and supported by comprehensive stakeholder mapping considering the outlined below:
  - a. The strategies and indicative interventions for the conjunctive use of surface water and groundwater, including the maximum utilization of rainwater and water export potential;
  - b. The strategies and indicative interventions for future water resources management that address the dynamically evolving delta system and adaptive delta management, climate change impacts, the decline and degradation of wetlands and shifting land-use patterns;
  - c. The strategies and indicative interventions considering basin wise water resources management aspect and the dynamic process of Delta system;
  - d. The strategies and indicative interventions based on an in-depth assessment of groundwater use, water-stressed areas and evaluation of zones with higher specific yield and analyze their implications for present and future development, integrating considerations of surface water pollution, groundwater–surface water interactions and other long-term water quality issues;
  - e. The strategies and indicative interventions that take into account the longer-term water utilization plan considering spatial and temporal variations in water availability, the water–energy–ecosystem nexus, water security, water allocation and prioritization, transboundary water issues, land-use patterns and broader socio-economic considerations;



- f. The strategies and indicative interventions for the potential increase of capture fisheries and integrated development of agriculture, livestock and fisheries sectors considering the exogenous factors and uncertainties, particularly the impacts of climate change on the availability and quality of water resources;
- g. The strategies and indicative interventions considering the scientific assessment to identify the water bodies and floodplains are needs to preserve to conserve the aquatic and water depended ecosystem;
- h. The strategies and indicative interventions considering the scientific investigation of existing and future river dynamics, morphology, deltaic progradation nature to assess the measures in river maintenance, erosion control, land accretion in the major rivers and coastal zones in the Bangladesh;
- i. The strategies and indicative interventions considering the current and future sectoral water-resource demands, allocation of water resources consistent with the priority uses specified in the NWPo and BWA ,2013.

#### 4.2.2 Preparation of Investment Portfolio:

The Investment Portfolio shall be prepared for three temporal planning horizons - short-term (0–5 years), medium-term (6–15 years) and long-term (16–25 years). It shall comprise a prioritized portfolio of projects and programs derived from the updated and upgraded clusters and programs of the National Water Management Plan (NWMP).

The Investment Portfolio shall also include comprehensive stakeholder mapping to support effective implementation, identifying key government agencies, local institutions, private sector entities and other relevant stakeholders associated with each project and program. Furthermore, a detailed outline of programs under each cluster, as presented in the main report (Strategic Action Report), shall be elaborated in the Investment Portfolio Report with detailed information, including policy relevance, objectives and scope, strategic linkages, indicative cost estimates and anticipated financial benefit, economic, socio-economic and environmental benefits of the programs under different clusters of NWRP along with the institutional and implementation arrangements as well as the regional applicability and linkage with the proposed investment priorities. The prioritization shall be guided by the strategies and management options developed for each hydrological region, taking into account regional hydrological characteristics, development priorities, climate resilience considerations and implementation readiness. In addition, monitoring and evaluation indicators shall be defined for each program to enable systematic tracking of progress and assessment of implementation performance under the NWRP framework.

#### 4.2.3 Preparation of Regional Plans:

Bangladesh exhibits substantial regional variability in geomorphological, hydrological, socio-economic and environmental conditions, necessitating the customization of water

resources management goals and objectives for individual regions. Accordingly, the Regional Plans shall compile Regional Water Management Programs, including a prioritized list of project concept notes for each hydrological region, prepared for three planning horizons—short-term (0–5 years), medium-term (6–15 years) and long-term (16–25 years). Each project concept note shall outline the indicative purpose, objectives, estimated investment cost, expected benefits and key outputs.

This report shall include the region-specific subsets of the overall National Water Resources Plan (NWRP), aggregated at the regional level. Separate sections are provided for each hydrological region, covering programs of national significance as well as regionally focused interventions. Each regional section includes: (i) A concise overview of regional characteristics and development challenges (ii) An articulation of how the NWRP strategies and interventions address region-specific issues (iii) Indicative cost and benefit estimates for regional programs under different clusters of NWRP or the regional components of shared, multi-regional programs and (iv) The relevant Program Summary Sheets along with project concepts notes.

#### **4.3 Monitoring and Evaluation (M&E) Framework:**

The Implementation Roadmap and M&E Framework and tools together ensure that the NWRP is actionable, time-bound, accountable and adaptive, providing a clear guide for sustainable water resources management across Bangladesh. The Implementation Roadmap and M&E Framework will include:

- a) Develop a functional, indicator-based evaluation and monitoring framework, along with appropriate tools, for the effective implementation of the National Water Resources Plan (NWRP). Establish a robust institutional coordination mechanism involving relevant ministries, departments and agencies across the water sector to ensure coherent, efficient and accountable execution of the NWRP. It also needs to develop participatory monitoring tools to systematically integrate people's needs, opinions and preferences into the monitoring, evaluation, and periodic updating of the National Water Resources Plan (NWRP) implementation;
- b) An institutional mechanism through coordination with relevant ministries, departments, and agencies involved in water sectors for the implementation of the National Water Resources Plan (NWRP);
- c) Develop a robust and functional Monitoring and Evaluation tools, in line with the Unified Code of Practice, to harmonize Project Clearance and No Objection Certificate (NOC) processes with National Water Resources Plan (NWRP) activities, ensuring the integrated use, development and management of surface water and groundwater consistent with sectoral water allocation and water-use priorities;
- d) A planning guidelines, manuals and tools for the capacity building of WARPO and relevant water sector stakeholders to execute water resource planning and management following the National Water Resources Plan (NWRP);



- e) Update and strengthen the data repository by integrating validated spatial and non-spatial data layers acquired during NWRP preparation into the National Water Resources Database maintained at WARPO, ensuring data consistency, interoperability and ease of access for effective planning and decision-making.

## **5. Expected Output:**

### **5.1 Baseline Reports:**

The Baseline Reports are one of the major outputs of the National Water Resources Plan (NWRP). The Baseline Reports would be compiled as different volume of the National Water Resources Plan (NWRP) as background documents. The Baseline Reports for NWRP include: a) Assessment of Surface water-resources availability; b) Assessment of water resources availability; c) The sectoral water allocation; d) The sectoral uses and demand of the Groundwater-resources; e) The assessment report to identify the water bodies and floodplains are needs to preserve to conserve the aquatic and water depended ecosystem; f) The assessment reports for the stakeholder-mapping framework and institutional mechanism and g) Other relevant study for the preparation of the NWRP

The Baseline Reports will determine the adaptive and flexible management approaches for current and future water-sector activities considering different strategies and option analysis. The Baseline Reports are:

#### **5.1.1 Assessment Reports for surface water and groundwater resources availability:**

- a) The assessment reports for surface water resources availability;
- b) The assessment reports for groundwater resources availability.

The assessment reports will evaluate water-resources availability in both quantitative and qualitative terms, taking into account land-use patterns and associated natural resources. The assessments will examine availability of surface water and groundwater, seasonal variation, the short, medium and long-term potentials, limitations and constraints of water resources across different hydrological regions.

#### **5.1.2 Assessment Reports for the sector-wise uses and demands of surface water and groundwater resources:**

- a) The assessment reports for the sector-wise uses and demands of surface water resources;
- b) The assessment reports for the sector-wise uses and demands of groundwater water resources;

The assessment reports will analyze sector-wise uses and demands of surface-water and groundwater resources across different hydrological regions to identify integrated and sustainable approaches for future interventions under the National Water Resources Plan (NWRP). These assessments will take into account water availability, seasonal variation as well as short, medium, and long-term potentials, limitations and constraints.



### **5.1.3 Report on sectoral water allocation:**

The report shall include a scientifically established baseline for the distribution of available water resources among various water-using sectors. The sectoral water allocation shall be determined on a volumetric basis or through other internationally accepted methods and standards, as appropriate. In addition, the report will present a comprehensive baseline assessment to support the development of a structured and transparent revenue collection system for industrial water use. This framework will form part of the implementation program of the National Water Resources Plan (NWRP) and will be aligned with a set industrial water pricing policy to ensure accountability, efficiency and financial sustainability. The outputs under this study are:

- a) Report on sectoral water allocation
- b) A revenue assessment report for industrial water utilization
- c) Industrial water pricing policy

### **5.1.4 Assessment Report to identify water bodies and floodplains that need to be preserved for conserving aquatic, water-dependent ecosystems and future water resources management:**

The preservation and conservation of water bodies and floodplains are critical for maintaining aquatic and water-dependent ecosystems, facilitating groundwater recharge, reducing flood risks and forming a fundamental basis for macro-level water resources planning. The assessment report will identify the water bodies and floodplains are needs to preserve for maintaining aquatic and water-dependent ecosystems, facilitating groundwater recharge, reducing flood risks.

### **5.1.5 Assessment Reports for the stakeholder-mapping framework and institutional mechanism for the implementation of the National Water Resources Plan (NWRP):**

The assessment report will contain a stakeholder-mapping framework to ensure an active and participatory process in integrated water-sector planning. The framework will address institutional mechanisms for coordination among relevant ministries, departments and agencies involved in the water sector to support effective implementation of the National Water Resources Plan (NWRP).

### **5.1.6 Retort on the review of National Water Management Plan (NWMP) with gap analysis:**

The review shall examine the overall framework, objectives, strategies, clusters, programs and implementation mechanisms of the NWMP, taking into consideration the changes in socio-economic conditions, climate variability, population growth, urbanization and sectoral water demands since the formulation of the Plan. As part of the review process, the Consultant shall conduct a detailed gap analysis to identify inconsistencies, limitations and missing components within the existing NWMP in view of the present and future consequences and challenges in the water sector that will be considered during the preparation of the NWRP.

### **5.1.7 Other relevant special studies if necessary for the preparation of the NWRP**

In addition to the core analytical activities, a set of other relevant special studies may be undertaken, as necessary, to support the comprehensive preparation of the National Water Resources Plan (NWRP). These studies will address emerging challenges, sectoral gaps and cross-cutting issues that may not be adequately covered under the above-mentioned baseline studies. The purpose of these special studies is to ensure that the NWRP is robust, forward-looking, climate-resilient and aligned with national development priorities.

## **5.2 National Water Resources Plan:**

### **5.2.1 Main Report of the National Water Resource Plan:**

The Main Report of the National Water Resources Plan provides the overarching framework for the integrated development, management, abstraction, distribution, use, protection and conservation of water resources. This report focuses on outlining water resources management programs derived from baseline scenarios and strategic options for water resources planning and development. It assesses alternative macro-level options for water resources management and formulates strategic interventions to promote sustainable, integrated and climate-resilient water management in Bangladesh. The report is aligned with the National Water Policy (1999), Bangladesh Water Act-2013, Bangladesh Water Rules-2018, and relevant national and international development priorities and long-term planning frameworks. The Main Report of the National Water Resources Plan (NWRP) shall address the following components:

#### **Part A: The Context:**

Summarizes the context within which the Plan has been prepared and the driving forces determining the need for future actions

#### **Part B: The Plan:**

Describes the Plan components and their expected impacts, how this fit into a management information system and the risks and the prospects for managing risks

#### **Part C: Implementation Arrangements:**

Describes the phasing of Plan components and funding requirements, sets out key linkages, describes how the Plan can be monitored and evaluated and finally actions are required.

### **5.2.2 Investment portfolio Report:**

The Investment Portfolio Report shall comprise a prioritized list of projects and programs derived from the upgraded and updated clusters and programs of the National Water Management Plan (NWMP). This report describes each of the component programmes by sub-sector, setting out Policy context, purpose and outline, financing and institutional arrangements, indicators, existing documentation, linkages and risks

The Investment Portfolio shall be prepared for three planning horizons—short-term (0–5 years), medium-term (6–15 years) and long-term (16–25 years). It shall comprise a prioritized portfolio



of projects and programs derived from the updated and upgraded clusters and programs of the National Water Management Plan (NWMP). The prioritization shall be guided by the strategies and management options developed for each hydrological region, taking into account regional hydrological characteristics, development priorities, climate resilience considerations and implementation readiness.

### 5.2.3 Regional Plans:

Regional Plans of NWRP shall compile Regional Water Management Programmes, including a prioritized list of project concept notes for each hydrological region, prepared for three planning horizons—short-term (0–5 years), medium-term (6–15 years) and long-term (16–25 years). Each project concept note shall outline the indicative purpose, objectives, estimated investment cost, expected benefits and key outputs.

This report presents region-specific subsets of the overall National Water Resources Plan (NWRP), aggregated at the regional level. Separate sections are provided for each hydrological region, covering programmes of national significance as well as regionally focused interventions.

### 5.3 Implementation Roadmap and Monitoring and Evaluation (M&E) Framework:

The Implementation Roadmap and M&E Framework will include:

- a) Appropriate tools for the effective implementation of the National Water Resources Plan (NWRP);
- b) A robust and functional Monitoring and Evaluation tools to harmonize Project Clearance and No Objection Certificate (NOC) processes with National Water Resources Plan (NWRP);
- c) A planning guidelines, manuals and tools for the capacity building of WARPO and relevant water sector stakeholders to execute National Water Resources Plan (NWRP).

### 5.4 National Water Resources Database (NWRD) & Repository:

The report will compile all data, information and knowledge acquired during the preparation of the National Water Resources Plan (NWRP) and incorporate it into the National Water Resources Database (NWRD). The database will serve as a central repository for storing, managing and sharing water-related data and information to support planning, decision-making, and monitoring under the NWRP.

All validated spatial and non-spatial data layers collected during NWRP preparation will be integrated into the NWRD, maintained by WARPO, to ensure effective planning, informed decision-making, and monitoring and evaluation (M&E) of NWRP implementation.

### 5.5 Summary Report:

The Summary Report of the National Water Resources Plan (NWRP) shall provide a comprehensive synthesis of all volumes, including an overview of programmes and indicative cost estimates organized by thematic clusters. This report will also provide the very short background of the formation of NWRP, context of the plan, policy and strategic framework, overview of the



plan, cross cutting programs, national and regional programs, Investment portfolio and development schedule, options for investment requirement and scope of funding, benefits, impacts and outcomes, risks and its management and implementation arrangement.

## **6.0 Major Deliverables:**

### **6.1 Baseline study Reports:**

1. The assessment Reports for surface water and groundwater resources availability;
2. The assessment Reports for the sector-wise uses and demands of surface water and groundwater resources;
3. The assessment reports for the stakeholder-mapping framework and institutional mechanism for the implementation of the National Water Resources Plan;
4. The scientific assessment Report to identify water bodies and floodplains that need to be preserved for conserving aquatic, water-dependent ecosystems and future water resources management
5. Sectoral water allocation Report
6. Industrial Water Use Pricing Policy along with Revenue Assessment Report for Industrial Water Utilization.
7. Retort on the review of National Water Management Plan (NWMP) with gap analysis.
8. Other relevant special studies if necessary for the preparation of the NWRP

### **6.2 National Water Resources Plan (NWRP):**

#### **6.2.1 Summary Report:**

To enable a quick overview of the Plan as a whole the Summary Report of the National Water Resources Plan (NWRP) shall provide a comprehensive synthesis of all volumes.

#### **6.2.2 Main Report:**

##### **Part A: The Context:**

Summarizes the context within which the Plan has been prepared and the driving forces determining the need for future actions

##### **Part B: The Plan:**

Describes the Plan components and their expected impacts, how this fit into a management information system and the risks and the prospects for managing risks

##### **Part C: Implementation Arrangements:**

Describes the phasing of Plan components and funding requirements, sets out key linkages, describes how the Plan can be monitored and evaluated and finally actions now required.

#### **6.2.3 Investment Portfolio:**

Describes each of the component programmes by sub-sector, setting out Policy context, purpose and outline, financing and institutional arrangements, indicators, existing documentation, linkages and risks.

#### **6.2.4 Regional Plans:**

The interventions under different programs needs to consider for different Hydrological Region.

#### **6.3 Monitoring and Evaluation (M&E) Reports and tools:**

##### **6.3.1** Appropriate tools for the effective implementation of the National Water Resources

Plan (NWRP). The Institutional Coordination Plan and stakeholder mapping shall be incorporated into the Monitoring and Evaluation (M&E) reports and tools of the NWRP.

**6.3.2** A robust and functional Monitoring and Evaluation tools to harmonize Project Clearance and No Objection Certificate (NOC) processes with National Water Resources Plan (NWRP).

**6.3.3** A planning guidelines, manuals and tools for the capacity building of WARPO and relevant water sector stakeholders to execute National Water Resources Plan (NWRP).

#### **6.4 Supporting Documents:** Supporting documents are:

##### **Published Project Reports:**

Supporting reports shall be reviewed and prepared under the project.

##### **Topic Papers:**

Discussion notes shall be prepared during the different phase of the project

##### **Other Reports:**

Reports on various specific subjects, including different studies prepared by consultant firm or team.

##### **Working Papers:**

Internal papers shall be prepared by consultant firm or team.

##### **Scenario Analysis and Strategy Options Report:**

Reports on the present and future scenarios of water resources shall be prepared during the formulation of the NWRP

##### **NWRD data holdings & Repository:**

All datasets, information, knowledge base and internal documentation necessary for the assignment shall be compiled and prepared by the consultant firm or team.

##### **Summary Booklet of NWRP:**

A Booklet is important to enable a quick overview of the Plan as a whole. The Booklet shall be prepared in both English and Bangla, ensuring consistency, clarity and alignment between the two versions.

All the above are available with WARPO, virtually all in electronic form.

## 7. Work Plan and Implementation Schedule:

A comprehensive work plan and implementation schedules for preparing the National Water Resources Plan (NWRP) are to be prepared and submitted by the consultant for the Client's approval prior to the official commencement of activities.

## 8. Duration of the Contract:

The national consultants will be procured up to June 2027 from the date of commencement according to the Contract. All tasks of the project, as described in the Terms of Reference (ToR), shall be completed within the stipulated project period. In case the project duration will be extended, the Consultant Firm shall not claim any additional payment for the extended period. The Consultant Firm agrees to undertake the assignment under a no-cost extension, if required.

## 9. Professional input:

The contract period for these services is until June 2027, commencing from the date of signing. The consulting organization will be responsible for conducting training program with supporting materials as a key component of the technology transfer strategy. It is estimated that the study, including relevant data collection, will require 24 local professional staff and approximately 184 person-months. The detailed staff requirements are provided in the table below:

National Consultant

Sl. No.	Designation of Professional	Number of Professional	Total Man-Month
1	Team Leader (Water Resources Planner)	1	12
2	Senior Planner and Policy Expert	1	12
3	Sociologist	1	8
4	Hydrologist	1	8
5	Hydrogeologist	1	8
6	Economist	1	6
7	Water Resources Modeler	1	8
8	Policy Analyst	1	8
9	Institutional Expert	1	6
10	Environmentalist (Climate Change Expert)	1	8
11	Fisheries Expert	1	6
12	Agronomist	1	6
13	Software Engineer	1	8
14	Water Resources Engineer (Ground Water Expert)	1	8
15	Database Expert	2	20
16	River Morphologist	1	6
17	RS and GIS Expert	2	16
18	Jr. Consultant (Civil Engineer, Hydrogeologist, Water Resources Planner, Forestry, Geography and Environment etc.)	5	30
	Total	24	184

### 10. Qualification and Responsibilities of the Personnel:

The educational qualifications, required experience, and tasks and responsibilities of the national consultants for this project are described in detail in **Annexure-1**.

### 11. Reporting and payment Requirement:

The following major reports must be submitted by the consultants:

Sl. No.	Report	Deadline	Copies	Task
1.	Draft Inception Report	End of the 2 <sup>nd</sup> Month	15 Copies	Task-1
2.	Stakeholder consultation on Draft Inception Report and finalize Inception Report	End of the 3 <sup>rd</sup> Month		
3.	Draft Baseline Reports (6 Baseline Reports)	End of the 5 <sup>th</sup> Month	15 Copies Each	Task-2
4.	Stakeholder consultation on Draft Baseline Reports and finalize Baseline Reports	End of the 6 <sup>th</sup> Month		
5.	Regional Stakeholder consultation for the preparation of the National Water Resources Plan (Strategic Action Report, Investment Portfolio, Regional Plans, Monitoring and Evaluation (M&E) framework Reports)	End of the 8 <sup>th</sup> Month		Task-3
6.	Draft National Water Resources Plan (Strategic Action Report, Investment Portfolio, Regional Plans, Monitoring and Evaluation (M&E) framework Reports)	End of the 8 <sup>th</sup> Month	15 Copies Each	
7.	Stakeholder consultation on Draft National Water Resources Plan (Strategic Action Report, Investment Portfolio, Regional Plans, Monitoring and Evaluation (M&E) framework Reports) and finalize Reports	End of the 9 <sup>th</sup> Month		
8.	Draft Monitoring and Evaluation (M&E) framework Report and Tools	End of the 10 <sup>th</sup> Month	15 Copies	Task-4
9.	Final Monitoring and Evaluation (M&E) framework Report and Tools	End of the 10 <sup>th</sup> Month	15 Copies	
10.	Submission of Final National Water Resources Plan (Strategic Action Report, Investment Portfolio, Regional Plans, Monitoring and Evaluation (M&E) framework Reports)	End of the 11 <sup>th</sup> Month	150 Copies	
11.	Dissemination Workshop on National Water Resources Plan	End of the 12 <sup>th</sup> Month		Task-5
12.	Submission of all supporting documents, data and information, model activities, training materials.	End of the 12 <sup>th</sup> Month		

\*Note: The cost of all workshops shall be excluded from the Consultant Procurement cost.

In addition to the above reports, the following documents are required to submit time to time. It is important to note that the report/documents quality must have to ensure according to Panel of Expert (PoE) and WARPO officials:

**\*Note:** The copyright for all data, reports, and related documents produced in this study is vested solely in WARPO. Consequently, these materials may not be used for any other project, by any individual or consultancy, without explicit authorization.

## 12. Mode of Payment:

All payment of the National Consultants will be made through satisfactory completion of key deliverables, as outlined below. All the reports must be approved by an internal team of WARPO professionals and the Director General of WARPO before making any of the above payment. All payments will be subject to deductions for VAT, Tax, and IT as per the latest government gazette.

Invoice/Bill no	% of contract amount	Against Deliverables
1 <sup>st</sup> Invoice	20%	Task-1
2 <sup>nd</sup> Invoice	20%	Task-2
3 <sup>rd</sup> Invoice	20%	Task-3
4 <sup>th</sup> Invoice	20%	Task-4
5 <sup>th</sup> Invoice	20%	Task-5

\* WARPO will obtain technical feedback from the Panel of Experts (PoE) to finalize the reports under this project. The Final Report will require approval from the Director General of WARPO. Subsequently, the plan will be submitted to NWRC through ECNWRC for final approval.

## 13. Duties and Responsibilities:

### 13.1 WARPO's Responsibilities:

The Consultant shall operate under the direct supervision of the Project Director (PD) of WARPO and will be fully responsible for planning and executing all field-level data collection activities. In carrying out these tasks, the Consultant will coordinate closely with WARPO professionals, who will provide technical guidance and accompany the team during field visits. However, the overall responsibility for ensuring the accuracy, quality, and timely completion of the data collection activities shall rest solely with the Consultant.

The Project Director shall ensure that the study achieves its objectives as outlined in the Terms of Reference (ToR) within the stipulated timeframe. This includes providing overall direction for the implementation of the study, closely monitoring its progress and taking timely corrective actions whenever any deliverable is anticipated to face delays.

The Consultant is required to meet regularly with the Project Director and Deputy Project Director to address technical and project management matters. Any unresolved issues shall be escalated to the Director General of WARPO. In support of the study, WARPO will provide the following data and facilities if available as per Data Dissemination Policies' Rules and Regulations of WARPO for consultancy services:

- Hydrological, hydro-morphological, hydro-geological and meteorological data from the National Water Resources Database (NWRD).
- Available satellite imagery and previous reports from WARPO's archives.
- Assistance in arranging data collection from field survey and other relevant agencies.
- Access to pertinent information from other study components.
- All data and reports, both utilized and generated by the study, are the exclusive intellectual property of WARPO.

### **13.2 Responsibilities of the Consultant Firm:**

The Consultant shall carry out all services specified under the "Scope of Works" and "Job Description of Professionals" with the highest degree of professional care, skill, and diligence. All activities shall be performed in accordance with sound engineering principles, accepted administrative and financial practices, and in the best interest of the Government. The Consultant shall remain fully accountable to the executing agency, WARPO, for the proper and complete fulfillment of these responsibilities.

The clusters and programs of the National Water Management Plan (NWMP) will be reviewed, upgraded, and updated in accordance with an established and systematic methodology. The overall framework and planning approaches of the macro-level plan will be defined during the inception phase through close consultation with the Water Resources Planning Organization (WARPO) and with the active participation of relevant stakeholders at the local, regional and national levels.

The proposed framework and methodological approaches of the National Water Management Plan (NWMP), along with all related reports, shall be reviewed and approved by the internal technical committee constituted by the professionals of the Water Resources Planning Organization (WARPO) prior to the submission to the Panel of Experts (PoE).

The Consultant shall remain fully responsible for the application of appropriate analytical tools, modeling techniques, GIS and remote sensing methods as required for the preparation of the National Water Resources Plan (NWRP). The Consultant Team/Firm shall also bear full responsibility for the procurement of any necessary data, satellite imagery or related materials required for analysis and preparation of the NWRP plan, including the development of baseline reports.

The Team Leader shall be directly responsible to the WARPO Project Director for the proper and timely execution of all study activities, as outlined in the Project's Terms of Reference (ToR).

All tasks of the project as described in the Terms of Reference (ToR), shall be completed within the stipulated project period. In the event that the project duration is extended, the Consultant Firm shall not claim any additional payment for the extended period. The Consultant Firm agrees to undertake the assignment under a no-cost extension, if required. Moreover, the consulting firm shall be responsible for addressing the following key issues:

- Make all necessary arrangements for field and site investigations, including field data collection and ensure required logistical support in the field under the supervision of WARPO officials.
- Establish and maintain a fully functional project office, including provision, operation and maintenance of transport vehicles, office equipment, stationery and utilities.

- Organize and deliver both theoretical and on-the-job training for WARPO professionals to facilitate effective technology transfer, including all supporting materials.
- Prepare and submit all reports as specified in the Terms of Reference (ToR), as well as any additional reports requested by WARPO.
- Cover all accommodation, per diem, and transportation expenses for WARPO officials during field visits, data collection and surveys.
- Provide manpower and logistical support to WARPO for conducting all trainings and workshops under this project.
- Bear the cost of acquiring necessary data, maps, and other materials from relevant agencies, adhering to government rates and coordinating closely with WARPO to prevent duplication.
- Hand over all collected data, study results and final reports to WARPO for inclusion in the National Water Resources Database (NWRD) upon project completion.
- Provide necessary support during the approval process of the draft National Water Resources Plan (NWRP) by the National Water Resources Council (NWRC), including documentation, preparation of concise briefs and presentations, as required.
- The Consultant is expressly prohibited from using, reproducing or distributing any project materials without the prior written consent of the Director General of WARPO.
- Any unauthorized use of project materials shall be considered a breach of agreement and may result in legal action by the Ministry of Water Resources.

#### **14. Training and Workshop:**

As a parallel intervention to the regular assignments, the consultant/consultancy firm (s) facilitate to organize the training programs and workshop mentioned in the Table 1 and Table 2.

##### **14.1 Training for Capacity Building:**

- a) The following Training programs in the table-1 will be conducted by Project Office to build the capacity of relevant stakeholders involved in the preparation and implementation of the National Water Resources Plan (NWRP). These trainings aim to enhance technical knowledge, planning skills and understanding of integrated water resources management among participants. The Consulting firm will design course curriculum and provide the course materials and manuals of the training programs. All other cost will be borne by Project Office. The Consulting firm will also facilitate to organize the training program.
- b) The consulting firm shall develop a structured course curriculum and prepare specialized training manuals to support the effective implementation of the NWRP by relevant stakeholders and implementing organizations.

Table 1. Training materials and manual for 'In-house and divisional district Training for WARPO Professionals and relevant stakeholders.

Item	Head	Title of Training	Quantity
A	Training (Head Office)	i) <b>Training on Policy and Legal Frameworks of NWRP:</b> Training on the relevant policy and legal framework governing water resources management, including national policies, acts, rules and regulatory instruments applicable to the preparation of the National Water Resources Plan (NWRP).	1
		ii) <b>Training on Monitoring and Evaluation (M&amp;E) Framework for Macro Planning of Water Resources:</b> Training on the development and application of Monitoring and Evaluation (M&E) frameworks for macro-level water resources planning, including indicator development, performance assessment mechanisms for the National Water Resources Plan (NWRP) and monitoring frameworks for No Objection Certificate (NOC) and project clearance activities.	1
		iii) <b>Basic Training on the Application of Remote Sensing, GIS and Database Management for Macro Planning of Water Resources:</b> Training on the application of Remote Sensing, GIS and database management systems to support macro-level water resources planning and the preparation of the National Water Resources Plan (NWRP).	1
		iv) <b>Professional Training on Governance Frameworks in Water Resources Management:</b> Training on water governance principles, institutional coordination, stakeholder engagement, and regulatory mechanisms relevant to water resources planning and management under the National Water Resources Plan (NWRP).	1
		v) <b>Training on Water Bodies and Floodplain Conservation and 7R Strategies for water resources management:</b> Training on conservation of water bodies and floodplains including the application of the 7R strategies (Reduce, Reuse, Recycle, Rainwater Harvesting, Recharge, Restore, Regulate) for sustainable water resources management.	1
		vi) <b>Training on Principles and Processes for determination of the Sectoral Water Demand and Allocation:</b> Training on the principles, methodologies, and procedures for assessing sectoral water demand and planning water allocation to support the preparation of the National Water Resources Plan (NWRP).	1
		vii) <b>Training on Computational Frameworks, Tools and Models for preparation of NWRP:</b> Training on the computational frameworks, analytical tools, and modeling techniques required for the preparation of the National Water Resources Plan (NWRP), including baseline assessment, future projections, scenario development, and strategic options analysis.	1
		viii) <b>Comprehensive Orientation on National Water Resources Plan (NWRP):</b> Training on comprehensive orientation on the National Water Resources Plan (NWRP), covering its objectives, scope, structure, methodology, regional planning approach, implementation mechanisms, and institutional arrangements.	1
B	Training (Divisional district)	<b>Comprehensive Orientation on National Water Resources Plan (NWRP):</b> Training on comprehensive orientation on the National Water Resources Plan (NWRP), covering its objectives, scope, structure, methodology, regional planning approach, implementation mechanisms, and institutional arrangements.	8
Total			16

\*Note: The cost of Training will be bear by Project Office.

## 14.2 Workshop for the preparation and dissemination of the NWRP:

The following workshops in the table-2 will be conducted by Project Office for the preparation and dissemination of the National Water Resources Plan (NWRP) to ensure broad stakeholder participation, knowledge sharing and consensus building. These workshops will be conducted at different stages of the planning process, including inception, interim, draft final and final stages to gather feedback and incorporate stakeholder inputs into the Plan. Participants will include representatives from relevant ministries, government agencies, local government institutions, academia, development partners, non-governmental organizations, private sector representatives and community stakeholders.

The Consulting firm will be responsible for organizing, facilitating and documenting the workshops, including preparation of workshop materials, presentations and proceedings. Feedback and recommendations received during the workshops will be carefully reviewed and incorporated, as appropriate, into the final NWRP to ensure a participatory, transparent and inclusive planning process. All other cost of the workshops will be borne by Project Office.

Table 2. Materials and manual for the Dissemination workshop/Awareness building campaign/Validation workshop (Division level).

Sl. No.	Descriptions	Quantity
1	Stakeholder consultation workshop on Draft Inception Report	1
2	Stakeholder consultation workshop on Draft Baseline Reports	2
3	Regional Stakeholder consultation for the preparation of draft National Water Resources Plan (Strategic Action Report, Investment Portfolio, Regional Plans, Monitoring and Evaluation (M&E) framework Reports) at District/Upazila/Union level	8
4	Stakeholder consultation workshop on Draft Monitoring and Evaluation (M&E) framework Report and Tools	1
5	Validation workshop on Draft Final National Water Resources Plan (Strategic Action Report, Investment Portfolio, Regional Plans, Monitoring and Evaluation (M&E) framework Reports)	1
6.	Dissemination workshop on Final National Water Resources Plan (Strategic Action Report, Investment Portfolio, Regional Plans, Monitoring and Evaluation (M&E) framework Reports)	1
Total		14

\*Note: The cost of all workshop shall be excluded from the Consultant Procurement cost.

**10. Requisite Qualifications, Experiences and Responsibilities of the National Consultants: (Annexure-1)**

SI	Professional	Educational Qualifications	Experiences	Responsibilities
1	Team Leader (Water Resources Planner)	He/She should have at least a Master degree preferably Doctorate degree or equivalent in Hydrogeology/ Water Resources or Hydraulic Engineering/Civil Engineering/ Hydro informatics from a reputed university.	He/she must have a minimum 20 years of experience in the related field and working experience in the management of national/international multi-disciplinary team and have working experience in a country similar to Bangladesh's land and water regime. He/she must have a working experience in Bangladesh or similar geographical areas as Project Manager/Team Leader or Deputy Team Leader/ Co-Team Leader in multi-national river	<p>His/Her tasks and responsibilities shall include but not be limited to the following:</p> <ul style="list-style-type: none"> <li>i. He/She will be responsible for providing strategic guidance and direction to the technical groups within the multidisciplinary team, ensuring effective coordination of all project activities.</li> <li>ii. He/She will be responsible for reviewing key policy and planning documents including NWPo 1999, NWMP 2001, BDP 2100 along with their implementation status and other relevant water resources development studies. Based on this review, he/she will identify the strengths and weaknesses of the existing NWMP and provide recommendations for its update and for the preparation of the NWRP.</li> <li>iii. He/She will be responsible for advising on, assessing, and analyzing model outputs related to water resources and impact assessments and for evaluating various strategic actions, development alternatives, and investment options in the water sector.</li> <li>iv. He/She will be responsible for preparing clusters, programs, and project concepts based on strategic approaches to address future challenges in the water sector, considering different spatial and</li> </ul>

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SI	Professional	Educational Qualifications	Experiences	Responsibilities
			<p>basin water resources project planning.</p>	<p>temporal frameworks for regional and investment portfolio reports under the NWRP.</p> <p>v. He/She will be responsible for supervising the project team in implementing the activities outlined in the Logframe.</p> <p>vi. He/She will be responsible for coordinating and supervising the technical team to ensure effective linkage between baseline assessments and strategy development, leading to the formulation of NWRP clusters and programs.</p> <p>vii. He/She will work jointly with the Co-Team Leader and other team members, sharing day-to-day responsibility for managing the professional services of all consultants involved in the preparation of NWRP reports.</p> <p>viii. He/She will be responsible for preparing key reports, including the baseline reports, Investment Plan, Institutional Coordination Plan, Water Resources Scenario Report, Water Export Report, Water Salinity Impact Report and Water Resources Assessment Report for the preparation of NWRP.</p> <p>ix. He/She will be responsible for incorporating basin-wise planning approaches and Water Use and Allocation Plans into the NWRP,</p>

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SI	Professional	Educational Qualifications	Experiences	Responsibilities
				<p>as well as for developing Monitoring and Evaluation (M&amp;E) tools of NWRP.</p> <p>x. He/She will be responsible for assisting in the preparation of all project documents, including baseline reports, NWRP reports and Monitoring and Evaluation (M&amp;E) tools, as well as for integrating No Objection Certificate (NOC) and project clearance processes into NWRP clusters and programs throughout the project period.</p> <p>xi. He/She will be responsible for providing detailed cost analyses of programs including their spatial and temporal frameworks under different clusters, to support the development of investment portfolios and regional plans during NWRP preparation.</p> <p>xii. He/She will be responsible for undertaking any other relevant activities necessary for the successful completion of the project.</p> <p>xiii. He/She will be responsible for supporting the Project Director (PD) and Director General (DG), WARPO, in the preparation of the NWRP.</p>

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SI	Professional	Educational Qualifications	Experiences	Responsibilities
2	Senior Planner and Policy Expert	He/ She should have Masters/PhD degree in Sociology/ Economics/ Public Administration or a related discipline from a well reputed university.	He/ She should have minimum of 15 years' experience in the evaluation of institutional functions and operations and training.	<p>His/Her tasks and responsibilities shall include but not be limited to the followings:</p> <ol style="list-style-type: none"> <li data-bbox="352 188 587 1112">i. He/She will be responsible for identifying the shortcomings of the existing NWMP and assessing its implementation status in order to develop institutional reform options for improved water governance, aligned with the future NWRP.</li> <li data-bbox="587 188 751 1112">ii. He/She will be responsible for developing an institutional framework, including stakeholder mapping, to support the implementation of NWRP clusters and programs.</li> <li data-bbox="751 188 938 1112">iii. He/She will be responsible for developing multidisciplinary training modules for WARPO and other organizations involved in NWRP implementation.</li> <li data-bbox="938 188 1102 1112">iv. He/She will be responsible for reviewing the roles and responsibilities of different agencies in the implementation of the NWRP and the Bangladesh Water Act, 2013.</li> <li data-bbox="1102 188 1386 1112">v. He/She will be responsible for preparing the Institutional Coordination Plan and for contributing to short-, medium-, and long-term planning of water resources, including analysis of current and future water use from environmental, ecological, socio-economic, political and institutional perspectives.</li> </ol>







SI	Professional	Educational Qualifications	Experiences	Responsibilities
				<p>vi. He/She will be responsible for assisting in the preparation of key reports, including the Investment Plan, Institutional Coordination Plan, Water Resources Scenario Report, and Water Resources Assessment Report during NWRP preparation.</p> <p>vii. He/She will be responsible for assisting in the preparation of basin-wise plans and Water Use and Allocation Plans.</p> <p>viii. He/She will be responsible for preparing urban planning strategies for different hydrological regions, aligned with NWRP clusters and program development initiatives.</p> <p>ix. He/She shall be responsible for assisting in the preparation of all project documents, including baseline reports, NWRP reports and Monitoring and Evaluation (M&amp;E) tools, throughout the project period.</p> <p>x. He/She will be responsible for developing robust and functional Monitoring and Evaluation (M&amp;E) tools to harmonize project clearance and No Objection Certificate (NOC) processes with the activities of the National Water Resources Plan (NWRP).</p>

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SI	Professional	Educational Qualifications	Experiences	Responsibilities
				<p>xi. He/She will be responsible for providing detailed cost analyses of programs, including their spatial and temporal frameworks under different clusters, to support the preparation of investment portfolios and regional plans during NWRP formulation.</p> <p>xii. He/She will be responsible for assessing and identifying river dynamics and associated water bodies and floodplains using GIS and surface water modeling technologies and for suggesting conservation options for water bodies and floodplains across different spatial scales.</p> <p>xiii. He/She shall be responsible for undertaking any other relevant activities necessary for the successful completion of the project.</p>
3	Sociologist	He/ She should have at least Master's degree in Sociology/ Economics/Geography or a related discipline from a well reputed university.	He/ She should have minimum of 15 years of experience in the field with communities. Candidate having Doctoral degree will be preferred. Experience of working in	<p>His/Her tasks and responsibilities shall include but not be limited to the followings:</p> <p>i. He/ She will be responsible to advise the scope of social assessment appropriate for the national water resources planning and assisting to incorporate the socio-economic consequences in the baseline studies and the clusters and programs of the NWRP.</p> <p>ii. He/She shall be responsible to assess and measure the social impacts of the projects, programs and clusters formulated under the NWRP for both with and without project scenarios.</p>

SI	Professional	Educational Qualifications	Experiences	Responsibilities
			<p>multidisciplinary EIA/SIA team in an interdisciplinary manner would be a great advantage.</p>	<p>iii. He/She shall be responsible to undertake the social assessments that ensure the equitable representation and consideration of the views of different socio-economic groups affected by water related hazard in the preparation of NWRP;</p> <p>iv. He/ She will be responsible to assess the additional requirement of the socio-economic data and information for NWRP preparation other than NWRD and suggest the data and information to incorporate the NWRD database;</p> <p>v. He/ She will be responsible to prepare training needs, training module and course curriculum for the relevant stakeholders to implement of the NWRP;</p> <p>vi. He/ She will be responsible to assist for preparing Investment Plan, Institutional Coordination Plan, Water Resources Scenario Report, Water Resources Assessment Report;</p> <p>vii. He/ She will be responsible to assist for preparing Basin wise Plan, Water Uses and Allocation Plan and Monitoring &amp; Evaluation Tools for NWRP;</p> <p>viii. He/She shall be responsible for assisting in the preparation of the baseline reports on stakeholder mapping, sectoral water demand, water tariff for industrial water use and water allocation reports throughout the project period.</p>
4	Hydrologist	He/ She should have at least a Master Degree or equivalent in	He/ She should have minimum 15 years' experience in the	His/her tasks and responsibilities shall include but not be limited to the following:







SI	Professional	Educational Qualifications	Experiences	Responsibilities
		<p>Hydrology/Hydrogeology/Geology/ Water Resources/ Hydraulic Engineering or a related discipline from a well reputed university.</p>	<p>assessment and management of groundwater resources using groundwater models. He/ She should have past experience in the management of multi-disciplinary team and should have an experience on Groundwater modeling.</p>	<p>i. He/ She will be responsible to assist the surface and ground water modelling activities to assess the present and future surface and ground water availability in the regional level considering the macro planning of water resources;</p> <p>ii. He/ She will be responsible to identify the technical, environmental, financial and economic aspect of the surface water conservation and water export potential considering future climate change scenarios;</p> <p>iii. He/ She will be responsible to assess present and future use and allocation of surface water and ground water for domestic, agricultural and industrial purpose under different climate change scenarios;</p> <p>iv. He/ She will be responsible to evaluate impacts and future potential of surface water withdrawal from rivers for the drinking water supply and other purposes, salinity intrusion in the coastal aquifer and determine appropriate mitigation measures;</p> <p>v. He/ She will be responsible to identify the opportunity for the conjunctive use of surface and ground water in the fresh water and saline water regions along with surface water quality report to determine available surface water resources to prepare an integrated program for NWRP.</p> <p>vi. He/ She will be responsible to assist for preparing Investment Plan, Institutional Coordination Plan, Water Resources Scenario Report, Water Export Report, Salinity Impact Report, Water Resources Assessment Report;</p>

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SI	Professional	Educational Qualifications	Experiences	Responsibilities
5	Hydrogeologist	He/ She should have at least a Master Degree or equivalent in Hydrogeology/Geology/ Water Resources or a related discipline from a well reputed university.	He/ She should have minimum 15 years' experience in the assessment and management of groundwater resources using groundwater models. He/ She should have past experience in the management of multi-disciplinary team and should have an experience on Groundwater modeling.	<p>vii. He/ She will be responsible to assist for preparing Basin wise Plan, Water Uses and Allocation Plan and Monitoring &amp; Evaluation Tools for NWRP;</p> <p>His/Her tasks and responsibilities shall include but not be limited to the following:</p> <p>i. He/She will be responsible for assisting groundwater modeling activities to assess groundwater availability and recharge potential at the regional level in line with macro-level water resources planning.</p> <p>ii. He/She will be responsible for identifying potential groundwater resources, assessing water quality, suitable abstraction locations and managed aquifer recharge potential across different hydrological regions, as well as evaluating environmental impacts on groundwater and surface water availability under future climate change scenarios.</p> <p>iii. He/She will be responsible for assessing present and future groundwater use for domestic, agricultural and industrial purposes under projected climate change scenarios.</p> <p>iv. He/She will be responsible for evaluating the impacts and future potential of surface water abstraction from rivers for drinking water supply and other uses, assessing salinity intrusion in coastal aquifers and determining appropriate mitigation measures.</p> <p>v. He/She will be responsible for assessing river dynamics and associated water bodies and floodplains using GIS and surface water modeling technologies, and for recommending options for conservation of water bodies and floodplains across different spatial scales.</p>

SI	Professional	Educational Qualifications	Experiences	Responsibilities
6	Economist	He/ She should have at least a Master degree preferably Doctorate degree or equivalent in Economics from a well reputed university.	He/ She shall have minimum 15 years' experience in relevant field and shall manage the team undertaking economic evaluation and financial analysis of the various alternate technically feasible National Water Resources Plans. He/ She should have experience and knowledge of the policy setting and	<p>vi. He/She will be responsible for assisting in the preparation of key reports, including the Investment Plan, Institutional Coordination Plan, Water Resources Scenario Report, Water Export Report, Salinity Impact Report and Water Resources Assessment Report.</p> <p>vii. He/She will be responsible for assisting in the preparation of basin-wise plans, Water Use and Allocation Plans and Monitoring and Evaluation (M&amp;E) tools for the NWRP.</p> <p>viii. He/She will be responsible for performing any other assignments as requested by the Team Leader and Project Director (PD).</p> <p>His/ Her tasks and responsibilities shall include but not be limited to the following:</p> <p>i. He/She will be responsible for developing a range of economically feasible alternatives for NWRP interventions based on integrated assessments of engineering, agronomic, social, environmental, ecological and institutional factors. The role includes applying appropriate economic tools such as shadow pricing and demand-supply analysis to enhance water use efficiency, as well as conducting comprehensive cost-benefit analyses of proposed projects and programs under the NWRP. He/She will also assess the economic and financial viability of NWRP implementation and formulate strategies to optimize overall economic returns.</p> <p>ii. He/She will be responsible for calculating the financial and economic returns of industrial and commercial water use, including</p>

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SI	Professional	Educational Qualifications	Experiences	Responsibilities
			<p>economic appraisal of agricultural and water resources projects for irrigation, drainage, water supply, flood management and control. Working experience in South or East Asia and rice based agricultural systems would be an advantage. A significant portion of this experience should include natural resource management, particularly in water resources-large water bodies, riverine systems, wetland management and related resources; and environmental appraisal and</p>	<p>sensitivity analysis considering key factors such as environmental externalities and social costs and benefits.</p> <p>iii. He/She will be responsible for advising on the macroeconomic implications of proposed NWRP programs and clusters and for overseeing and guiding macroeconomic studies as required.</p> <p>iv. He/She will be responsible for assessing and mapping resources at the spatial level to establish baseline economic conditions associated with Important Environmental Components (IECs).</p> <p>v. He/She will be responsible for assessing the economic consequences of environmental impacts arising from both individual and cumulative past projects and for providing appropriate recommendations based on the findings.</p> <p>vi. He/She will be responsible for assisting in the economic analysis of proposed NWRP projects and programs, including Environmental Assessment (EA) using standard economic evaluation techniques.</p> <p>vii. He/She will be responsible for analyzing proposed water resources projects and programs under the NWRP from environmental, ecological, socio-economic, political and institutional perspectives.</p> <p>viii. He/She will be responsible for developing optimal strategies for sustainable economic development in the formulation of the NWRP.</p> <p>ix. He/She will be responsible for assisting in the preparation of key reports, including the Investment Plan, Institutional Coordination Plan,</p>

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SI	Professional	Educational Qualifications	Experiences	Responsibilities
			<p>assessment including Initial Environmental Examination (IEE), Environmental Impact Assessment (EIA) in the short and long run scenarios and policy recommendations in developing countries.</p>	<p>Water Resources Scenario Report, Water Export Report, Salinity Impact Report and Water Resources Assessment Report.</p> <p>x. He/She will be responsible for assisting in the preparation of basin-wise plans, Water Use and Allocation Plans and Monitoring and Evaluation (M&amp;E) tools for the NWRP.</p> <p>xi. He/She will be responsible for evaluating the contribution of NWRP programs and clusters to national development in terms of GDP through financial and economic analysis.</p> <p>xii. He/She shall be responsible for assisting in the preparation of baseline reports on stakeholder mapping, sectoral water demand, water allocation, investment portfolio and projected revenue collection through implementation of industrial water tariffs throughout the project period.</p> <p>xiii. He/She will be responsible for providing detailed cost analyses and defining temporal and spatial frameworks for implementation programs under different NWRP clusters.</p> <p>xiv. He/She will be responsible for undertaking any other assignments as requested by the Team Leader and Project Director (PD).</p>
7	Water Resources Modeler	He/ She should have a Master Degree in Hydraulic/Hydrological Engineering or any	He/ She must have with overall experience of at least 15 years of experience in the field of Mathematical	<p>His/Her tasks and responsibilities shall include but not be limited to the following:</p> <p>i. He/She will be primarily responsible for developing mathematical models to estimate present and future water availability across different</p>

SI	Professional	Educational Qualifications	Experiences	Responsibilities
		<p>relevant field from a well reputed university.</p>	<p>Modelling. He/ She shall have a solid background in computational hydraulics and be a specialist in the use of hydrodynamic modelling software and interpretation of the model output in particular. Knowledge of Delft3D, MIKE-11, MIKE SHE, MOD FLOW &amp; MIKE-21 software and GIS will be given preference.</p>	<p>hydrological regions, as well as for reviewing the National Water Management Plan (NWMP) and conducting gap analysis.</p> <p>ii. He/She will be responsible for identifying, assessing, and compiling additional data requirements and data gaps in the National Water Resources Database (NWRD) to support the updating of existing regional and basin models for the preparation of the NWRP.</p> <p>iii. He/She will be responsible for reviewing existing, ongoing, and proposed water resources projects and assessing their cumulative impacts on the overall water resources system.</p> <p>iv. He/She will be responsible for reviewing water balances across different hydrological regions to evaluate alternative intervention options under various NWRP scenarios, and for updating these balances to address future water sector challenges, including climate change scenarios.</p> <p>v. He/She will be responsible for assessing landward salinity intrusion in surface water, groundwater and soil under different climate change scenarios and for integrating the findings into NWRP programs and interventions. He/She will also undertake miscellaneous tasks as required.</p> <p>vi. He/She will be responsible for developing models for groundwater quality and quantity assessment reports. He/She will also be responsible for assessing river dynamics and associated water bodies and floodplains using GIS and surface water modeling technologies</p>

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SI	Professional	Educational Qualifications	Experiences	Responsibilities
				<p>and for recommending options for conservation of water bodies and floodplains across different spatial scales.</p> <p>vii. He/She will be responsible for assisting in the preparation of key reports, including the Investment Plan, Institutional Coordination Plan, Water Resources Scenario Report, Water Export Report, Salinity Impact Report and Water Resources Assessment Report.</p> <p>Viii He/She will be responsible for assisting in the preparation of basin-wise plans, Water Use and Allocation Plans and Monitoring and Evaluation (M&amp;E) tools for the NWRP.</p> <p>ix. He/She will be responsible for developing robust and functional monitoring and evaluation tools to harmonize project clearance and No Objection Certificate (NOC) processes with the activities of the National Water Resources Plan (NWRP);</p>
8	Policy Analyst	He/ She should have a Master degree in Sociology / Political Science/Public Administration/ Economics/Water Governance or a related discipline from a well reputed university.	He/ She Should have professional experience of 15 years with rural communities preferably in Water Management Projects of which 5 years in the field of SIA. Doctoral degree in	<p>His/er tasks and responsibilities shall include but not be limited to the followings:</p> <p>i. He/ She will be responsible to assess the policy context for different projects, programs and under different clusters of NWRP;</p> <p>ii. He/ She will be responsible for field data collection for identification of different views of socio-economic groups for potential policy adoption in the water sector to cope the future challenges at different scenarios;</p>

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SI	Professional	Educational Qualifications	Experiences	Responsibilities
			<p>relevant field will be preferred. Familiarity with database and GIS application to social studies would be a great advantage.</p>	<p>iii. He/ She will be responsible to identify the future probable socio-economic impacts and social imbalance due to policy interventions in water sector by different organizations;</p> <p>iv. He/ She will be responsible to identify Women, children and marginalized communities in salinity and drought prone areas need to be given special emphasis in the stakeholder-mapping framework and policy recommendations should be developed to ensure their effective involvement in water resources management and planning.</p> <p>v. He/ She will be responsible to assess the different water related policies to incorporate different policy options for future water management in the NWRP programs;</p> <p>vi. He/ She will be responsible to assist to identify water related social needs for the marginalized communities in different hydrological regions to policy adoption in the NWRP programs;</p> <p>vii. He/ She will be responsible to assist for preparing Investment Portfolio, Institutional Coordination Plan, Water Resources scenario Report, Water Resources Assessment Report;</p> <p>viii. He/ She will be responsible to assist for preparing Basin wise plan, Water Uses and Allocation Plan and Monitoring &amp; Evaluation Tools for NWRP;</p> <p>ix. He/ She will be responsible for evaluate, reviews the existing policies and changing policy options. He will also be</p>

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SI	Professional	Educational Qualifications	Experiences	Responsibilities
9	Institutional Expert	He/ She should have an degree in Sociology/ Economics/ Public Administration or a related discipline from a well reputed university.	He/ She should have minimum of 15 years' experience in the evaluation of institutional functions and operations and training.	<p>responsible for incorporating new policies to cope the future challenges in the water sector.</p> <p>x. He/She shall be responsible for assisting in the preparation of the strategic action report and regional plan of NWRP.</p> <p>xi. He/ She will be responsible for any other assignment requested by Team leader and PD.</p> <p>His/Her tasks and responsibilities shall include but not be limited to the followings:</p> <p>i. He/ She will be responsible to identify the existing shortcomings of the agencies involved implementing the NWRP and develop institutional reform options for the Government in the water sector.</p> <p>ii. He/ She will be responsible to develop an institutional framework to implement the water sector programs in the NWRP and develop an associated training;</p> <p>iii. He/ She will be responsible to review the existing professional and discipline in WARPO to implement NWRP and propose a balanced multi-discipline approach for M&amp;E of NWRP programs and projects;</p> <p>iv. He/ She will be responsible to review the role of different agencies in the implementation of NWRP and propose institutional framework to involve the different stakeholders for effective implementation of NWRP;</p>

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Sl	Professional	Educational Qualifications	Experiences	Responsibilities
				<p>v. He/ She will be responsible for preparing Institutional coordination plan, short/medium/long term planning of water resources, present and future use of water resources, the analysis of water resources considering environmental, ecology, socio-economic, political and institutional perspective;</p> <p>vi. He/ She will be responsible to identify Women, children and marginalized communities in salinity and drought prone areas need to be given special emphasis in the stakeholder-mapping framework and recommendations should be developed to ensure the institutionalization of their effective involvement in water resources management and planning.</p> <p>vii. He/ She will be responsible to assist for preparing Investment Plan, Institutional Coordination Plan, Water Resources Scenario Report, Water Resources Assessment Report;</p> <p>viii. He/ She will be responsible to assist for preparing Basin wise Plan, Water Uses and Allocation Plan and Monitoring &amp; Evaluation Tools for NWRP;</p> <p>ix. He/ She will be responsible for any other assignment requested by Team leader and PD.</p>
10	Environmental ist (Climate Change expert)	He/ She should have at least a Master degree in Water Resources Engineering/	He/ She should have minimum 15 years of experience as Environmentalist in	<p>His/Her tasks and responsibilities shall include but not be limited to the followings:</p> <p>i. He/ She will be responsible to assess the environmental impact analysis of the proposed projects and programs under the NWRP</p>

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SI	Professional	Educational Qualifications	Experiences	Responsibilities
		<p>Environment science/ Geography/Ecology/ Geology or a related discipline from a well reputed university.</p>	<p>Water resources planning, project preparation, monitoring &amp; evaluation with at least 5 years' experience on reviewing of projects related with environmental and climate change issues. Higher degree and experience in NWMP formulation will be preferable.</p>	<p>considering Environmental Assessment (EA) of water resources projects using standard evaluation techniques;</p> <p>ii. He/ She will be responsible to assess the socio-economic and environmental assessments of water development activities in order to make recommendation to NWRP programs under different clusters considering different strategic options;</p> <p>iii. He/She will be responsible to review the EIA and EA assessment of the water sector projects in view of project clearance and NOC activities and hence recommend for WIA assessment for NWRP programs and projects;</p> <p>iv. He/ She will be responsible to prepare course curriculum for the WIA and EIA training for WARPO and relevant stakeholders;</p> <p>xiv. He/ She will be responsible to assess and identify the rivers dynamics and associated water bodies and flood plain using GIS and surface water model technology and suggest different options for conservation of water bodies and flood plain in different spatial distribution;</p> <p>v. He/she will be responsible to assist conceptualize the environmental flow assessment to NWRP programs and projects considering ecology, socio-economic, political and institutional perspectives;</p> <p>vi. He/ She will be responsible to assist for preparing Investment Plan, Institutional Coordination Plan, Water Resources Scenario</p>

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Sl	Professional	Educational Qualifications	Experiences	Responsibilities
11	Fisheries Expert	He/ She should have at least a Master's degree in biology/zoology/ fishery science or any relevant field from a well reputed university.	He/ She should have a minimum 15 years of experience in the assessment and evaluation of floodplain fisheries resources and working experience in multi-disciplinary EIA team	<p>Report, Biodiversity Report, Water Resources Assessment Report;</p> <p>vii. He/ She will be responsible to assist for preparing Basin wise Plan, Water Uses and Allocation Plan, Development and M&amp;E of NWRP programs and projects;</p> <p>viii. He/She will be responsible for developing strategies that incorporate ecological considerations for different hydrological regions, aligned with the NWRP clusters and program development initiatives.</p> <p>ix. He/She shall be responsible for assisting in the preparation of the strategic action and indicative interventions of NWRP considering the water-energy-ecosystem nexus, water security, ecology and biodiversity aspect.</p> <p>x. He/ She will be responsible for any other assignment requested by Team leader and PD.</p> <p>His/Her tasks and responsibilities shall include but not be limited to the followings:</p> <p>i. He/ She will be responsible to prepare an inventory of the present fisheries situation as baseline information and to assess the future potential of the inland fisheries to suggest integrated programs in the NWRP.</p> <p>ii. He/ She will be responsible to assess impact on the fisheries sector due to development activities and suggest proper</p>

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SI	Professional	Educational Qualifications	Experiences	Responsibilities
			<p>in an interdisciplinary manner. He/ She will have a thorough understanding of the Bangladesh fisheries eco-system and will have demonstrated significant field experience in fisheries data acquisition, analysis and reporting.</p>	<p>mitigation measures particularly for the open access floodplain fisheries during the NWRP preparation;</p> <p>iii. He/ She will be responsible to review the present activities of fisheries sector in different water development projects, particularly under the improved irrigation and drainage condition to determine their future development potential under different climate change and upstream development scenarios and prepare optimum development plan with particular attention integrating to resource allocation, conservation and its social impact;</p> <p>iv. He/ She will be responsible to examine in detail the existing and potential aquaculture facilities in Bangladesh and recommendation for the future co-sectoral development planning in an integrated way.</p> <p>v. He/ She will be responsible to assess and prepare the Hilsha Migration Route, conservation of water bodies potential for fishery sanctuary and suggest potential interventions to increase capture fisheries for NWRP Investment Portfolio.</p> <p>vi. He/ She will be responsible for any other assignment requested by Team leader and PD.</p>
12	Agronomist	He/ She should have a Master degree in Agriculture /	He/ She should have at least 12 years of relevant experience in	His/Her tasks and responsibilities shall include but not be limited to the followings:

SI	Professional	Educational Qualifications	Experiences	Responsibilities
		<p>Agronomy with Post Graduate/Doctorate degree in agriculture or any relevant field from a well reputed university.</p>	<p>agriculture related activities. He/ She should have practical experience in modeling monsoon cropping patterns, land use, and relate the pre- project and post-project conditions.</p>	<ul style="list-style-type: none"> <li>i. He/ She will be responsible for establishing baseline condition in respect of land resources and agricultural practices in the country;</li> <li>ii. He/ She will be responsible to analyze efficient water use in agricultural development considering the availability of water resources in different spatial distribution with special context of climate change;</li> <li>iii. He/ She will be responsible to prepare technically, socially and environmentally viable climate smart agricultural development plan taking into account the modern technology and efficient management of water resources under different climate change scenarios;</li> <li>iv. He/ She will be responsible to advise on appropriate agronomical methods and techniques to enable crop diversification for water conservation and effective water management;</li> <li>v. He/She will be responsible for assessing agribusiness opportunities and developing farm models to evaluate alternative scenarios for integration into the NWRP.</li> <li>vi. He/ She will be responsible to identify crop suitability in irrigated, rain-fed and seasonally flooded areas and develop realistic future cropping patterns aimed to optimizing crop production to incorporate in the programs of NWRP;</li> <li>vii. He/ She will be responsible to develop strategies to minimize or mitigate the adverse environmental impact of fertilizers and</li> </ul>




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SI	Professional	Educational Qualifications	Experiences	Responsibilities
13	Software Engineer	He/ She should have at least a Master Degree or equivalent in Computer Science/Computer Science and Engineering/Software Engineering or any relevant field from a well reputed university.	He/ She must have with minimum 12 years' experience in the software preparation, different kinds of tools. He/ She should have past experience in the management of multi-disciplinary team and should have an experience on surface	<p>pesticides to adopt alternative options and recommended programs for NWRP preparation;</p> <p>viii. He/ She will be responsible to assist for preparing baseline reports, Investment Plan, Institutional Coordination Plan, Water Resources Scenario Report, Water Resources Assessment Report align with the strategic action for sustainable agricultural production;</p> <p>ix. He/she will be responsible to assist for preparing Basin wise Plan, Water Uses and Allocation Plan and Monitoring &amp; Evaluation Tools for NWRP;</p> <p>x. He/ She will be responsible for any other assignment requested by Team leader and PD.</p>
			<p>His/Her tasks and responsibilities shall include but not be limited to the followings:</p> <p>i. He/ She will be responsible for the preparation of Monitoring &amp; Evaluation Tools for NWRP;</p> <p>ii. He/ She will be responsible to prepare tools and technique for the identification of the possible groundwater and surface water interaction, GIS based water quality and quantity assessment dashboard suitable for project clearance and NOC activities for integrated and sustainable water resources management and planning;</p> <p>iii. He/she will be responsible to the preparation of tools the groundwater quality and quantity report;</p>	

Sl	Professional	Educational Qualifications	Experiences	Responsibilities
			<p>water/ Groundwater models of WARPO and other monitoring tools preparation.</p>	<p>iv. He/she will be responsible to prepare a logical linkage to incorporate the project clearance and NOC activities to the NWRP program.</p> <p>v. He/ She will be responsible to assist for preparing Investment Plan, Institutional Coordination Plan, Water Resources Scenario Report, Water Resources Assessment Report;</p> <p>vi. He/ She will be responsible to assist for preparing Basin wise Plan, Water Uses and Allocation Plan and Development Result Framework (DRF) and Monitoring &amp; Evaluation Tools for NWRP;</p> <p>vii. He/ She will be responsible to prepare a functional, indicator-based evaluation and monitoring framework, along with appropriate tools, for the effective implementation of the National Water Resources Plan (NWRP). Establish a robust institutional coordination mechanism involving relevant ministries, departments and agencies across the water sector to ensure coherent, efficient and accountable execution of the NWRP.</p> <p>viii. He/She will be responsible for developing robust and functional monitoring and evaluation tools to harmonize project clearance and No Objection Certificate (NOC) processes with the activities of the National Water Resources Plan (NWRP);</p>
14	Water Resources Engineer	He/ She should have at least a Master Degree or equivalent in Hydrogeology/ Water	He/ She must have with minimum 12 years' experience in the assessment and	His/Her tasks and responsibilities shall include but not be limited to the following:







SI	Professional (Ground water expert)	Educational Qualifications	Experiences	Responsibilities
		Resources/ Hydraulic Engineering or any relevant field from a well reputed university.	management of groundwater resources using groundwater models. He/ She should have past experience in the management of multi-disciplinary team and should have an experience on Groundwater models of WARPO as well as MIKE-SHE	<p>i. He/ She will be responsible to update the groundwater models and assess ground water availability and recharge potential at regional level;</p> <p>ii. He/she will be responsible to identify the possible groundwater resources, water quality, suitable location for abstraction and managed aquifer recharge potential in the different hydrological regions and environmental impacts on ground and surface water availability under future climate change scenarios;</p> <p>iii. He/ She will be responsible to assess present and future use of groundwater for domestic, agricultural and industrial purpose in different climate change scenarios;</p> <p>iv. He/she will be responsible to evaluate impacts and future potential of surface water withdrawal from rivers for the drinking water supply and other purposes, salinity intrusion in the coastal aquifer and determine appropriate mitigation measures;</p> <p>v. He/ She will be responsible for the groundwater quality and quantity report preparation</p> <p>vi. He/ She will be responsible to assist for preparing Investment Project, Institutional Coordination Plan, Water Resources Scenario Report, Water Export Report, Salinity Impact Report, Water Resources Assessment Report;</p> <p>ix. vii) He/ She will be responsible to assist for preparing Basin wise Plan, Water Uses and Allocation Plan and Monitoring &amp; Evaluation Tools for NWRP;</p>

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SI	Professional	Educational Qualifications	Experiences	Responsibilities
15	Database Expert	He/ She should have at least a Master degree in Civil Engineering/ Computer Science and Engineering or any relevant field from a well reputed university.	He /She should have minimum 10 years of experience in Design and O&M of Water resources database with at least 5 years field experience on O&M of water resources database. Experience in NWRD/ICRD formulation will be preferable.	<p>x. He/She will be responsible for developing robust and functional monitoring and evaluation tools to harmonize project clearance and No Objection Certificate (NOC) processes with the activities of the National Water Resources Plan (NWRP);</p> <p>xi. He/ She will be responsible for any other assignment requested by Team leader and PD.</p>
				<p>His/Her tasks and responsibilities shall include but not be limited to the followings:</p> <p>i. He/ She will be responsible to provide suitable format and design criteria for all data during NWRP preparation to incorporate into NWDR database;</p> <p>ii. He/ She will be responsible to provide detailed cost analyses of the programs and temporal and spatial framework for the programs under different cluster for investment portfolio and regional plan during NWRP preparation;</p> <p>iii. He/ She will be responsible to collect and provide updated scenarios of the interventions, present status and stock of water sector projects database to the planning teams for the consideration of the NWRP investment portfolio;</p> <p>iv. He/ She would be especially responsible for analysis &amp; design of various water resources database for NWRP programs;</p> <p>v. He/ She will be responsible to assist for preparing Investment Plan, Institutional Coordination Plan, Water Resources Scenario Report, Water Resources Assessment Report;</p>

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SI	Professional	Educational Qualifications	Experiences	Responsibilities
16	River Morphologist	He/she shall have at least a Masters or higher degree in Civil Engineering/ Water Resources Engineering or any relevant field from a well reputed university.	He/She should have at least 10 years working experience and shall have minimum 10(ten) years of experience in works of similar nature in multinational river basin development project.	<p>xii. He/ She will be responsible to assist for preparing Basin wise Plan, Water Uses and Allocation Plan and Monitoring &amp; Evaluation Tools for NWRP;</p> <p>vi. He/ She will be responsible for any other assignment requested by Team leader and PD.</p> <p>His/Her tasks and responsibilities shall include but not be limited to the followings:</p> <p>i. He/ She will be responsible to review the past morphological changes of the rivers to understand the rivers dynamics and suggest the nature-based solution for future strategic interventions;</p> <p>ii. He/ She will be responsible to develop and simulate sediment transport model and morphological model to predict future changes of River dynamics and suggest different options for the river erosion control, flood protection and dredging programs in NWRP preparation;</p> <p>iii. He/ She will be responsible for analyzing and interpreting the surface water model results considering morphological changes of the rivers and associated water bodies and flood plain and suggest different options for conservation of water bodies and flood plain in different spatial distribution;</p> <p>iv. He/ She will be responsible to review and suggest technological and innovative solution for the bank protection and bank training activities and evaluate it performance;</p>

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SI	Professional	Educational Qualifications	Experiences	Responsibilities
17	RS and GIS Expert	He/ She should have the educational qualification equivalent to Masters in geography/ geology/ environmental sciences/ Civil engineering. A post-graduate degree in	He /She should have at least 10 years of experience in the field of RS and GIS, in the investigation and management of earth resources such as rivers, water bodies etc. Experience must	<p>v. He/ She will be responsible to prepare the strategic interventions through different options analysis considering river dynamics to adapt and manage the future water sector challenges and potential dimensions of the sedimentation;</p> <p>vi. He/ She should assist Team Leader for all the baseline reports preparation or any other job that may be required.</p> <p>vii. He/ She will be responsible to assist for preparing Investment Plan, Institutional Coordination Plan, Water Resources Scenario Report, Water Export Report, Salinity Impact Report, Water Resources Assessment Report;</p> <p>xiii. He/ She will be responsible to assist for preparing Basin wise Plan, Water Uses and Allocation Plan and Monitoring &amp; Evaluation Tools for NWRP;</p> <p>His/ Her tasks and responsibilities shall include but not be limited to the followings:</p> <p>i. He/ She will be responsible to assess and identify water-dependent ecosystems, water bodies and flood plain using GIS and RS technology and suggest different options for conservation of water bodies and flood plain in different spatial distribution.</p>

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SI	Professional	Educational Qualifications	Experiences	Responsibilities
		<p>GIS would be an advantage from a well reputed university.</p>	<p>demonstrate capability to handle all aspects of GIS in a support role for a team of specialists from engineering and science. Experience with ARC/INFO, Arc View and related software is required.</p>	<ul style="list-style-type: none"> <li>ii. He/ She will be responsible to use GIS and RS techniques for the assessment and monitoring of the water resources as well as baseline scenario development for the NWRP preparation;</li> <li>iii. He/ She will be responsible to assess the requirement of the development of GIS and RS cell or unit in WARPO to facilitate the water resources management and planning; the project clearance and NOC activities align with NWRP programs and cluster.</li> <li>iv. He/ She will be responsible to assess the existing spatial data layers in NWRD for the NWRP preparation and hence recommendations for upgrade and update of NWRD database;</li> <li>v. He/ She will be responsible to collect and analyzed relevant GIS and RS data required for NWRP preparation and incorporate to NWRD database;</li> <li>vi. He/she will be responsible to assist GIS and RS related activities to prepare Investment Plan, Institutional Coordination Plan, Water Resources Scenario Report, Water Resources Assessment Report;</li> <li>vii. He/she will be responsible to assist GIS and RS related activities to prepare Basin wise Plan, Water Uses and Allocation Plan and Monitoring &amp; Evaluation Tools for NWRP;</li> <li>viii. He/ She will be responsible to prepare baseline report on water bodies and floodplains that need to be preserved for conserving</li> </ul>

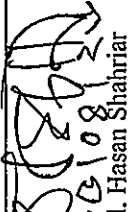
SI	Professional	Educational Qualifications	Experiences	Responsibilities
18	Jr. Consultant (Civil Engineer, Hydrogeology, Geography, Forestry and Environment etc).	He/ She should have at least a Master's Degree in Hydrogeology/Geography and Environment/Forestry/ Civil Engineering or an equivalent discipline from a well reputed University.	He/ She should have at least 3 years' experience in related field.	<p>aquatic, water-dependent ecosystems and future water resources management through the application of GIS and RS technology.</p> <p>ix. He/ She will be responsible for any other assignment requested by Team leader and PD.</p> <p>His tasks and responsibilities shall include but not be limited to the followings:</p> <p>i. He/ She will be responsible to survey and field data collection are required for the preparation of the baseline scenarios, reports and NWRP reports;</p> <p>ii. He/ She will be responsible to assess the existing spatial data layers in NWRD for the NWRP preparation and hence recommendations for upgrade and update of NWRD database;</p> <p>iii. He/ She will be responsible to collect and analyzed relevant GIS and RS data required for NWRP preparation and incorporate to NWRD database;</p> <p>iv. He/ She will be responsible for the data analysis and management related to Hydrogeology, Hydrology, morphology, Water Resources, GIS and RS etc for the preparation of the baseline scenarios, reports and NWRP reports.;</p> <p>v. He/ She will be responsible to assist for preparing Project concept notes, Investment portfolio, Institutional Coordination Plan, Water Resources Scenario Report, Water Resources Assessment Report under the supervision of Team leader and PD;</p>

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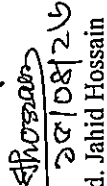
SI	Professional	Educational Qualifications	Experiences	Responsibilities
				vi. He/ She will be responsible to assist for preparing Basin wise Plan, Water Uses and water allocation plan, water pricing for industrial use and Monitoring & Evaluation Tools for NWRP under the supervision of Team leader and PD; vii. He/ She will be responsible for any other assignment requested by Team leader and PD.

  
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 Md. Hasan Shahriar


Principal Scientific Officer (Economics) (Additional Charge)  
 Water Resources Planning Organization (WARPO)  
 &  
 Member  
 ToR Review Committee  
 NWRP Project

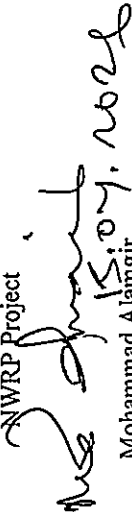
  
 ১৫/০৮/১৬  
 AKM Khusrul Amin

Principal Scientific Officer (Agriculture)  
 Water Resources Planning Organization  
 (WARPO)  
 &  
 Member  
 ToR Review Committee  
 NWRP Project

  
 ১৫/০৮/১৬  
 Md. Jahid Hossain

Principal Scientific Officer (Engineering)  
 Water Resources Planning Organization (WARPO)  
 &  
 Member  
 ToR Review Committee  
 NWRP Project

  
 M. Shahjahan Mondal  
 Professor, Institute of Water and Flood Management  
 Bangladesh University of Engineering and Technology (BUJET)  
 &  
 Member  
 ToR Review Committee  
 NWRP Project

  
 Mohammad Alamgir  
 Principal Scientific Officer (Environment, Forests  
 & Fisheries)  
 Water Resources Planning Organization (WARPO)  
 &  
 Chairperson  
 ToR Review Committee  
 NWRP Project