To: Offerors

Date: October 26, 2023

From: Procurement and Partnerships Team, INVEST Project; Implemented by DAI Global LLC

Subject: Request for Proposals (RFP) INVEST-131: Conceptual Study for the Mongla-Ghasiakhali Canal Upgrading Project

Due: 1:00 PM Eastern Standard Time (EST) on **November 30, 2023**

Dear Offeror:

Enclosed is a Request for Proposals (RFP) to support the implementation of DAI's INVEST project funded by the United States Agency for International Development (USAID). DAI invites firms to submit a proposal for work as part of the USAID/Asia Bureau Transaction Advisory Fund buy-in.

I. RFP Process and deadlines: This solicitation will result in the award of one (1) Firm Fixed Price subcontract. The ceiling of the awarded subcontract is expected to be $500,000. Please note that Offerors should submit a proposal that is priced competitively for the stated work.

1. Submission of Questions – Questions must be submitted in English no later than **1:00 PM EST on November 6, 2023** via email to INVEST_Procurement@dai.com. DAI will aim to respond to these questions in approximately three business days.

2. Submission of Proposal – Proposal must be submitted in English no later than **1:00 PM EST on November 30, 2023** via email to INVEST_Procurement@dai.com, copying Katherine_Tilahun@dai.com. The subject line of the email should be your organization name, followed by "Submission under RFP INVEST-131: Conceptual Study for the Mongla-Ghasiakhali Canal Upgrading Project." Please certify in your submission email a validity period of 60 days for the price(s) provided. In order to submit a proposal, offerors must have at least initiated the process to obtain a SAM UEID. If the UEID has not yet been issued, offerors should note that in the submission and update INVEST at INVEST_Procurement@dai.com once it is issued. Please limit file submissions to 10 megabytes or less.

II. Composition of Proposal: Your organization's proposal should comprise the following submission documents. The Technical Proposal and Cost Proposal should be prepared as separate files for independent evaluation, as follows below. Technical proposals should be submitted as a fifteen (15) slide presentation, using 12-point standard font size. Graphics may be included, so long as text is clearly legible with a minimum font size of 10. If text or graphics are of poor resolution, the information provided may be excluded from consideration. Submissions in PowerPoint or PDF are acceptable, although PDF is

preferred along with an accompanying PowerPoint document. Please provide a copy of your cost proposal in Excel format; offerors may use the attached cost/budget template.

Part 1 – Technical Proposal

Please limit your technical proposal to no more than fifteen (15) slides. The technical proposal is composed of the following three (3) sections:

1. **Technical Approach** – Offeror will detail their approach to fulfilling the accompanying Scope of Work (SOW). The approach will clearly indicate how the proposed activities will result in the successful achievement of the objectives as detailed in the SOW and completion of all deliverables and milestones as proposed within the stated timeline. Offeror should describe the technical approach to each of the Tasks described in the Terms of Reference (ToR) provided, as well as the proposed timeline for completion, with due reference to set methodologies and data collection/validation approaches. The offeror should also include a clearly defined work schedule, which clearly lays out the timeframe for the completion of the key milestone deliverables described in the ToR and the interim deliverables described under the Tasks.
2. **Institutional Capacity –** Offeror should provide details about the experience, networks, expertise, and capacity of their firm (or firms if partnering arrangement is proposed) to implement the proposed approach and complete the work as described. This should also include past performance information for similar activities as those planned under this proposal and note any previous experience working as partners if a partnering arrangement is proposed. Specifically, the Offeror should include institutional experience conducting the Tasks described in the ToR and have successfully completed at least two previous technical studies or assessments for similar inland waterway and lock projects. Offerors should indicate if they can draw from relevant previous experience in Bangladesh or comparable country contexts.
3. **Management Plan/Staffing Structure –** Offeror should include details of personnel who will be assigned to the activities described in the technical approach along with their proposed roles and responsibilities. The Offeror should propose candidates for each of the required personnel described in the ToR, as well as any additional technical specialist. Additionally, the Offeror should include a clear management plan in narrative form for the development, review, and submission of deliverables, including a milestone schedule that indicates their proposed timeline for implementation.

   The offeror is permitted to engage in partnering arrangements if it will aid in providing best value to USAID, regardless of whether organizations belong to the USAID Finance and Investment Network managed by INVEST. If a partnering arrangement is being proposed, please describe the nature of the arrangement, the specific technical value being contributed by each member of the team, and the appropriate management, oversight, and coordination controls to ensure successful delivery. INVEST encourages firms to form partnerships between international and local firms to ensure that teams bring the technical capabilities and local context that will be required for this work.

In addition to the above, please include the following inputs, which will not be counted as part of the 15-slide limit and format may be PDF or Word:

- Two (2) examples of past performance (i.e., case studies) relevant to this activity (limited to two (2) pages per example)
- CV(s) of any individuals proposed in the staffing plan to conduct this activity (limited to two (2) pages per individual).

A cover page will be considered a non-counting page, and offerors should include one and list on it the names of all firms participating in the bid. No additional annexes or documentation are requested nor should be submitted.

Part 2 – Cost Proposal

The subcontract type for the presumptive work will be Firm Fixed Price, awarded as a subcontract by DAI Global, LLC. The cost proposal should not exceed $500,000. Please include your total proposed fixed price along with details for specific deliverable pricing. The offeror must also include a cost breakdown of the hourly rates for proposed personnel, any other direct costs, indirect costs, and fees if applicable, with a build-up to their total proposed price or include substantiating price reasonableness documentation/justification. Cost breakdowns included will be utilized to determine price reasonableness. The offeror should use the attached cost/budget template for guidance, but are not required to use it, as long as the cost proposal captures the necessary elements (i.e. deliverables table with breakdown of how the deliverable totals were calculated). The successful offeror will need to demonstrate that the proposed rates, fees, etc. are reasonable and will be required to provide documentation during subcontract negotiations to substantiate costs, as needed. Please limit file submissions to 10 megabytes or less.

III. Evaluation of Proposal: DAI will use best value determination for the award of this Request for Proposal. A best value determination means that, in DAI's estimation, the selected offer will provide the greatest overall benefit to USAID in response to the requirements stated in this RFP. DAI may also exclude an offer from consideration if it determines that an Offeror is "not responsible," i.e., that it does not have the management and financial capabilities required to perform the work required. DAI reserves the right to check the past performance, references, and other pertinent offeror information in making award decisions. Proposals will be evaluated against a stated number of factors including: the overall proposed approach, past performance, specific qualifications in the identified approach and sectors, and other evidence substantiating the bidder's ability to deliver, including budget and time frame considerations.

1. **Technical Proposal:** The Technical Proposal will be scored and evaluated separately from the cost proposal. Technical panel reviewers will evaluate the offeror on the following factors, consistent with the offerors' technical proposal. The Technical Proposal will be evaluated against the following criteria:

a. Technical Approach (50 Points): Points for this section will be awarded based on the information presented in the technical approach. The offeror will be scored based on its presentation of a clear approach which reflects the requirements of this specific activity, demonstrates depth of understanding of the context and objectives, and also incorporates the offeror's competencies. Specifically, the technical approach should clearly demonstrate the reasonableness and efficiency of the approach for each Task. In particular, the Offeror should demonstrate how the proposed technical approach aligns with international best practices and adheres to national requirements in Bangladesh while covering the necessary tasks laid out in the Terms of Reference. At a minimum of the technical approach should describe the specific methodology/assessment tool(s) to be adopted for each task, with direct reference to the following**:**

- Specific indication on how the technical approach for each task will result in the required outputs/deliverables;
- Adherence to specific guidelines and current industry standards;
- How these methodology/assessment tools will be adopted / applied within the context of Bangladesh.

The proposed technical approach should also demonstrate a strategic and appropriate methodology for stakeholder engagement and consultation, both at the national and subnational levels, at each key stage of the activity. At a minimum, the technical approach should include the specific engagement mechanisms to be used for each key stakeholder and the plan for the two key workshops (one at the national level in Dhaka and one at the subnational level in Khulna).

b. **Institutional Capacity (30 Points):** Points for this section will be awarded based on information presented in the corresponding section and any submitted case studies (i.e., examples of past performance). The Offeror should demonstrate any knowledge, technical experience and past performance of timely and successful delivery of similar inland waterways projects and their ability to leverage local staff and experts to execute the required tasks on the ground. Preference will be given to firms and/or consortia that have past performance in minimum two past relevant inland waterways projects. Firms with similar experience within Bangladesh within the transport sector are also preferred.

c. **Management Plan/Staffing Structure (20 Points):** Points for this section will be awarded based on the qualifications of proposed staff, clear delineation of the roles and responsibilities of each proposed staff and each proposed firm (if firms are partnering), and the demonstrated efficacy and clarity of the management plan. The proposal should provide a clear management plan in narrative form for the development, review, and submission of all associated deliverables, including a proposed milestone schedule. If the offeror is submitting a proposal with partners, the proposal should describe the nature of the arrangement (i.e., added technical value), the division of labor among the partners, and the appropriate management controls to ensure successful delivery. The offeror should demonstrate their

ability to meet the requirements for the required personnel qualifications as outlined in the ToR through the CVs included in Annex, as well as the Organizational Chart. The Offeror should also demonstrate the readiness of the staff to execute the Conceptual Study in the timeline indicated by sharing:

- Management plan for proposed activities, including clearly identified roles for each partner (if applicable);
- Timeline and deliverables that will result in objectives of SOW being met;
- Experience of staff to successfully implement objectives of the SOW; and
- Knowledge of and experience working with similar local government stakeholders.

2. **Cost Proposal:** Total price and associated cost build-up will be evaluated separately from the technical approach, with due consideration for realism, price reasonableness, and allowability consistent with U.S. government cost principles. Evaluation for this section will be dependent upon all information presented by the Offeror in their deliverable table and supporting cost information, as well as its alignment with the proposed technical approach.

IV. Offeror's Agreement with Terms and Conditions: Please visit the INVEST Procurement Hub website (scroll down to "Terms and Conditions") for RFP Terms and Conditions.

The completion of all RFP requirements in accordance with the instructions in this RFP and submission to DAI of the technical and price proposals will constitute an offer and indicate the Offeror's agreement to the terms and conditions in this RFP and any attachments hereto. DAI is not required to accept and/or evaluate proposals that do not conform to the instructions of the RFP, and additionally, DAI may reject all proposals and not award a subcontract for this RFP. DAI reserves the right to award a subcontract without discussion and/or negotiation; however, DAI also reserves the right to conduct discussions and/or negotiations, which among other things may require an Offeror(s) to revise its proposal (technical and/or price). By submitting an offer, Offerors agree to comply with the general terms and conditions for an award, including Representations and Certifications compliance. Offerors must provide full, accurate, and complete information in response to this solicitation. By submitting an offer, Offerors certify that they have not/will not attempt to bribe or make any payment to DAI employees in return for preference. Issuance of this RFP in no way obligates DAI to award a subcontract, nor does it commit DAI to pay any costs incurred by the Offeror in preparing and submitting the proposal. DAI reserves the right to award a subcontract to one organization or to issue multiple awards to different organizations based on the results of our evaluation.

Thank you,
DAI INVEST Procurement and Partnerships Team
INVEST_Procurement@dai.com

Scope of Work (SOW) under RFP INVEST-131
USAID INVEST: Mobilizing Private Investment for Development
Conceptual Study for the Mongla-Ghasiakhali Canal Upgrading Project
USAID/Asia Bureau Transaction Advisory Fund

Introduction

USAID seeks to unlock the potential of private capital to drive inclusive growth. Increasingly, private investors and businesses are looking to emerging markets for better returns and new market opportunities. Specifically, USAID can leverage its resources – grants, technical assistance, guarantees, and convening power – to help raise awareness of investment opportunities, lower transaction costs, and mitigate the risk of investments that generate positive social, economic, and environmental impact.

Through INVEST's flexible buy-in mechanism, USAID Missions and Operating Units can access an unprecedented network of firms and individuals that have the range of technical expertise needed to identify opportunities and effectively mobilize private capital toward development priorities. Using a lean approach tailored to high potential opportunities, relevant parts of the network will come together to research, develop, and build specific solutions that align private capital with development needs.

Background

Infrastructure Transaction and Assistance Network and the Transaction Advisory Fund

The Infrastructure Transaction and Assistance Network (ITAN) is a whole-of-U.S. Government initiative to advance sustainable, transparent, high-quality infrastructure across the Indo-Pacific region. Launched in July 2018, ITAN furthers the U.S. vision for a free and open Indo-Pacific to ensure peace, stability, and growing prosperity in the region. Under ITAN, USAID plays a leading role helping its Indo-Pacific partners to catalyze private sector investment—including from the United States—by strengthening their ability to implement and manage sustainable, transparent, and high-quality infrastructure projects.

In October 2019, the USAID Bureau for Asia (USAID/Asia Bureau), with implementation support from INVEST, launched the Transaction Advisory Fund (TAF), a function of the Infrastructure Transaction and Assistance Network[1]. Under TAF, INVEST responds to host country governments' requests for assistance on infrastructure projects with high quality, best-in-class discrete transaction advisory services—primarily legal and other services for contract negotiation and bid/proposal evaluation—on a rapid response basis.

Bangladesh Inland Waterways Infrastructure Activity - Mongla-Ghasiakhali Canal

In the 1970s, the Mongla-Ghasiakhali Canal (MG Canal) was excavated by the Bangladesh Inland Water Transport Authority (BIWTA) to shorten the navigation distance between Dhaka and Mongla. The canal was also a major artery for the India-Bangladesh Protocol route. The navigability was maintained by the BIWTA until 2010, but the Mongla to Ghasiakhali segment experienced water reduction to the point of Least Available Depth (LAD), and the route was suspended in 2011. In 2013, following a comprehensive study, the BIWTA took the initiative to restore the navigability and since 2018 it has been operational again.

However, significant siltation build-up at the canal entrances, especially on the Mongla side, results in annual maintenance dredging cost of approximately US$3 million. According to a BIWTA study, a long-term solution to address this issue is the construction of a ship-lock. Currently though, Bangladesh does not have any ship locks and consequently no experience or practices in designing, constructing, operating, and managing a ship lock. Thus, international involvement and support is required and requested. International

[1] USAID: ITAN Fact Sheet

expertise will also provide critical guidance to ensure the ship-lock helps improve resilience to climate change impacts such as flooding and drought in the areas and communities along the canal.

USAID supported a preliminary assessment of the MG Canal in November 2022. From the preliminary assessment, the team concluded that a second lock facility at the eastern entrance of the Canal could further contribute to a more sustainable solution in the long-term. In this second alternative, the canal between the two locks would become a closed waterway, and the situation could result in a number of benefits.

The BIWTA is now seeking a project development partner(s) to conduct pre-feasibility level studies (conceptual studies) for the improvement of the MG Canal.

Implementation Objective and Activity Structure

The overarching development objective of this activity is to prepare the MG Canal upgrading project for implementation. While the main technical effort of this activity will be on the preparation of one or two lock structures (to be determined at the conclusion of the conceptual study), other tasks focused on complementary civil works will explore the improvement of the navigability of the canal as necessary, possible implementation of a tidal basin for water level control and decreased flood risk, embankment enhancements, irrigation channel and tributary works, improved land connectivity by means of dam/ship-lock allowing to accommodate causeways, exploration of the prospective introduction of hydro-electric power generation, as well as potentially mitigation measures to reverse any adverse environmental or social impacts on the communities living along the canal as determined through upstream studies included in this activity. The expectation is that by the completion of the conceptual study and subsequent pre-feasibility level studies (i.e., engineering study), the BIWTA will have an implementation-ready project on a preliminary design level that can be used as the basis for appraisal by national agencies as well as bilateral and multilateral development partners for the purposes of determining the economic impact and financing needs to implement the envisioned civil works.

The conceptual study will determine the preferred solution (i.e., ship lock at west entrance where the majority of siltation build-up occurs or two ship locks at both entrances) compared with the present scenario. The conceptual study shall include a socio-economic cost benefit analysis considering aspects such as engineering and construction cost, maintenance cost, potential revenue generated via increased traffic, decreased dredging/dumping cost, as well as environmental and social benefits to the communities along the canal and in the Khulna Division more broadly.

Upon conclusion of the conceptual study, the BIWTA and their technical advisors will consider the outcomes of the study and determine next steps, which may include a detailed engineering study on one or two ship locks (outside the scope of this activity).

Detailed activities and tasks along with expected outputs can be found in the Terms of Reference. A summary of the key tasks is provided below:

- Task 1: Project Initiation and Coordination
- Task 2: Beneficiary and Stakeholder Consultations
- Task 3: Data Collection, Review, and Analysis
- Task 4: Land and Topographic Surveys and Assessment of Existing Conditions
- Task 5: Soil Investigation
- Task 6: Geotechnical Analysis
- Task 7: Development of Alternatives to be Studied
- Task 8: Concept Level Designs and Two Lock Structure Scenarios

- Task 9: Costing Of Concept Level Designs for One and Two Lock Structure Scenarios
- Task 10: Traffic Data and Toll Revenue Data Analysis
- Task 11: Preliminary Environmental Impact Assessment
- Task 12: Preliminary Social Impact Assessment and Analysis
- Task 13: Socioeconomic Cost-Benefit Analysis (SECBA)
- Task 14: Conceptual Study Final Report

Deliverables

The selected offer(s) will propose interim deliverables, based on their technical approach, which will result in the successful execution of the above-described services. All deliverables must be submitted in English. The following milestone deliverables should be included in the technical approach to meet the requirements of the final Conceptual Study:

Deliverable	Metrics
Inception Report and Workplan	A detailed approach and workplan outlining planned activities, identifying the main milestones and a detailed plan for each milestone with their associated timelines. This should include a Gantt chart that details the entire timeline, highlighting phases of work and deliverables.
Initial Assessment Report	Prepare an assessment report describing the alternatives, including one ship lock, a two-lock system, or no locks and continuation of current practice.
Draft Conceptual Study Report	Report detailing the conceptual level designs of one and two lock systems, as well as conceptual level constructions, operations, and maintenance costs.
Preliminary Environmental and Social Impacts Assessment	Prepare a preliminary environmental and social impacts assessment for each system/alternative, including a preliminary comparison of environmental and social impacts for the alternatives.
Multi-criteria Socio-economic Cost Benefit Analysis	Prepare a cost benefit analysis considering aspects such as engineering and construction cost, maintenance cost, and potential revenue streams, as well as other factors including decreased flood risk, increased safety levels, improved irrigation, embankment and land development potential, improved land connectivity, the possibility of hydropower generation, as well as environmental and social benefits to the communities along the canal and in the Khulna Division more broadly.
Final Report	Prepare a report detailing the overall recommendation on alternatives informed by the outcomes of the conceptual study for review by the BIWTA and INVEST's Engineering Advisory team. Final report deliverable should include the BIWTA and INVEST teams with two hard copy public versions of the Conceptual Study Report, one confidential hard copy, and two write-protected flash drives containing the public version of the report.

Period and Place of Performance

The activity is anticipated to commence in January 2024 and take place over a period of 22 weeks. However, offerors should propose a timeline that is representative of their proposed technical approach and management plan that delivers the scope of work as described.

Travel for in-country sites visits is expected. Otherwise, work can take place remotely, however offeror(s) should consider time zones for virtual meetings with both in-country stakeholders and the INVEST team located in Washington, DC.

Role of INVEST

INVEST will work closely with the selected offeror(s) during all stages of this work. DAI will subcontract the selected offeror(s) directly and provide review and oversight throughout the life of the activity. The INVEST team will administer periodic check-ins, reporting, deliverable review prior to client presentation and approval, and manage an ongoing monitoring, evaluation and learning framework.

- Subcontractor Onboarding: INVEST will provide the successful offeror(s) with all necessary context, and work with the successful offeror(s) to develop the work plan.
- Project Implementation: The successful offeror(s) will implement the work as prescribed by the work plan(s). INVEST will provide management support and ensure periodic check-ins/reporting.
- Ongoing Monitoring, Evaluation, and Learning Support: INVEST will also work with the successful offeror(s) to establish a plan for monitoring performance, including setting targets, to track progress during implementation of each Task Order. USAID encourages developing a Monitoring, Evaluation, and Learning (MEL) system that demonstrates how you will implement and monitor performance of your proposed activities. INVEST asks respondents to include in the proposal how the organization intends to set targets and report progress toward those targets, including verification documentation. Additionally, describe the offeror should describe capabilities to provide qualitative and quantitative data associated with the USAID development objectives described in this SOW. Firms are encouraged to propose indicators as appropriate for your proposed technical approach.
- INVEST will work with the subcontractor to define indicators during the subcontracting process, collect and review MEL data from subcontractors for requisite reporting to USAID and will conduct data quality assessments as necessary.
- INVEST will facilitate BIWTA's provision of data on the current waterway conditions, traffic, dredging activities, and other available datasets upon project kick-off.

Terms of Reference for RFP INVEST-131:
MONGLA-GHASIAKHALI CANAL UPGRADING PROJECT
Terms of Reference – Conceptual Study

INTRODUCTION

Inland waterway transport (IWT), namely the operability of navigation channels and local communities living along waterways, are severely impacted by climate change. Droughts can severely disrupt inland navigation services by reducing water levels either to the point that they become completely non-navigable or to levels that force operators to reduce vessel load. Likewise, climate change induced flooding can have dire consequences on local community livelihoods, as many rely on the waterways for fishing and, in the case of freshwater tributaries, irrigation for crops.

Experience from other countries shows that carrying bulk cargo by water is cheaper and less polluting than transporting it by road and rail. According to a recent World Bank study on the expansion of IWT in South Asia, one litre of fuel can move 105 tonnes on water compared to 85 tonnes on rail and 24 tonnes by road, making water transport the cleanest and cheapest option.

Therefore, a shift towards IWT must take into consideration climate change impacts by designing and constructing the various components of the system that are both adaptable and resilient to climate change by addressing the effects of potential flooding and draughts. Ultimately, climate adapted, resilient systems will have a positive impact on both the logistics supply chain and local communities living on or near the waterways.

Many hinterland communities, particularly those in low-lying delta countries like Bangladesh, rely on waterways as their sole source of access to the local and regional economy. Disruptions in service due to floods or droughts can therefore have major consequences on their living standards. However, on a global scale, a shift towards IWT on the supply chain can have a positive effect on addressing climate change within the transport sector.

BACKGROUND INFORMATION

Bangladesh is a country of rivers. There are more than 700 rivers, of which 491 are included in the Draft Dredging Plan of Bangladesh Inland Water Transport Authority (BIWTA), flowing across the country. The total length of waterways in Bangladesh is more than 24,000 km.

Among these waterways, approximately 7,600 km remains navigable in the rainy season and 5,000 km remains navigable in dry season. The average waterway depth is between 1.5 m and 3.9 m. Regarding inland waterways, this system can be classified as:

Table 1: Classification of Inland Waterways

Class	Minimum Depth (m)	Maximum Depth (m)	Length (km)	Percent of Total Waterways (%)
Class-I	3.66	3.96	683	11
Class-II	2.13	2.44	1,000	17
Class-III	1.52	1.83	1,885	32

Class	Minimum Depth (m)	Maximum Depth (m)	Length (km)	Percent of Total Waterways (%)
Class-IV	~	<1.52 m	2,400	40

Source: BIWTA

In Bangladesh, the waterway transport waterways are of significant importance for connectivity and economic development. National rivers, such as the Padma, Yamuna, and Meghna, flow through the country, forming a delta and a dense network of natural waterways. Transport by water is the lifeline to many communities and rural areas in the country, with water sometimes the only mode of transport available.

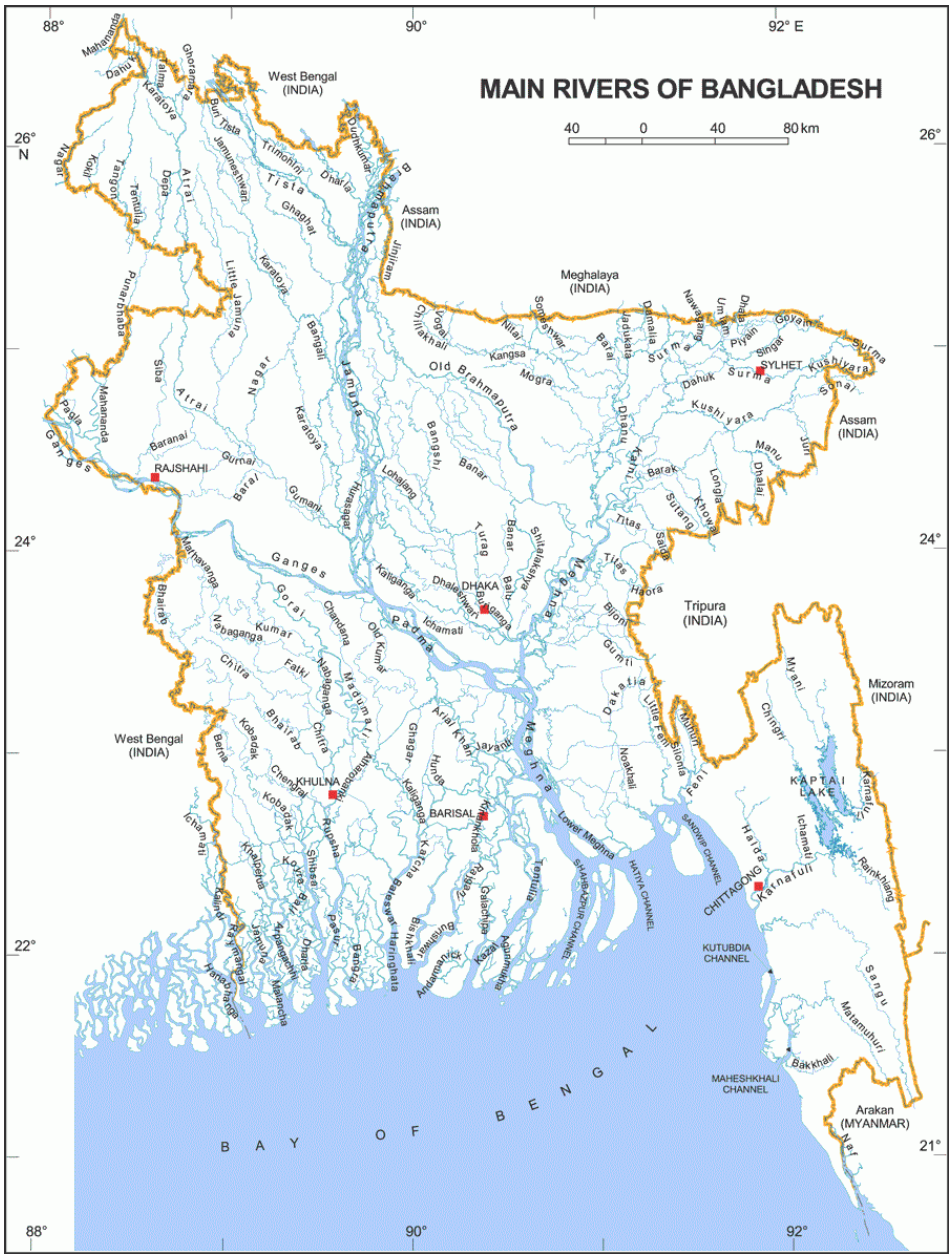

Figure 1: Main Rivers of Bangladesh

The IWT sector consists of more than 2,000 freight shipping companies and the registered inland fleet including some 15,000 vessels. In addition, there are several thousand coastal vessels and fishing boats using the rivers as well as more than one hundred thousand

unregistered so-called country boats. The Bangladesh rivers serve as trade routes for the Indo-Bangladesh Protocol Routes, as well as trade routes to Bhutan Nepal, and Southeast Asia.

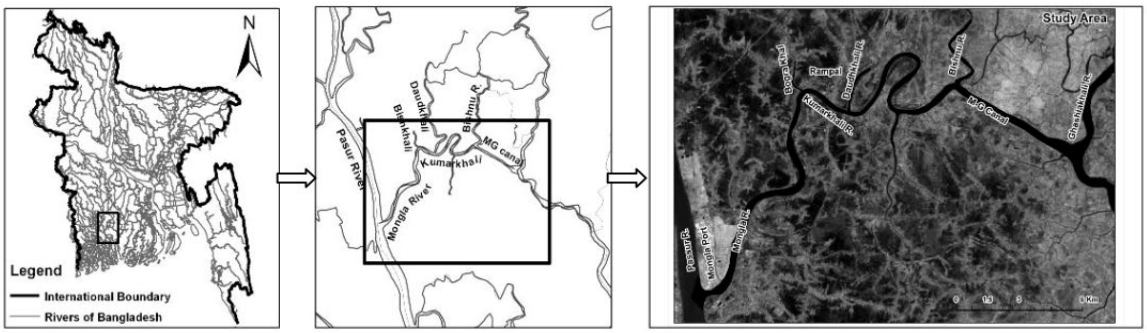

Figure 2: Waterways of Bangladesh and State of the Mongla-Ghasiakhali Canal Prior to the First Phase of the Improvement Works in 2015

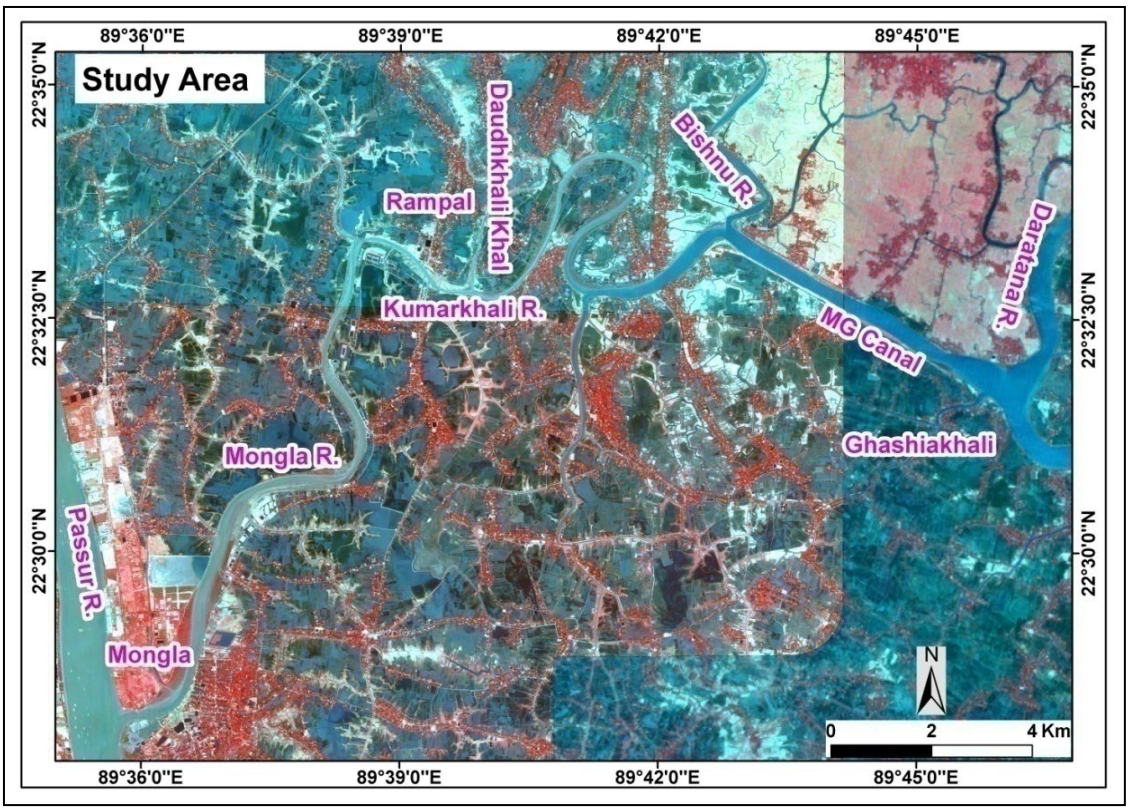

Figure 3: Satellite Image of the Mongla-Ghasiakhali Canal in 2014

In the 1970s, the Mongla-Ghasiakhali Canal (MG Canal) was excavated by the BIWTA to shorten the navigation distance between Dhaka and Mongla. The canal was also a major artery for the India-Bangladesh Protocol Route.

The navigability was maintained by BIWTA until 2010, but the Mongla to Ghasiakhali segment experienced continuous water reduction to the point Least Available Depth (LAD) and in 2011 the route was suspended. Traffic then had to follow much longer routes via the Bay of Bengal and/or via the nature area of Sundarbans.

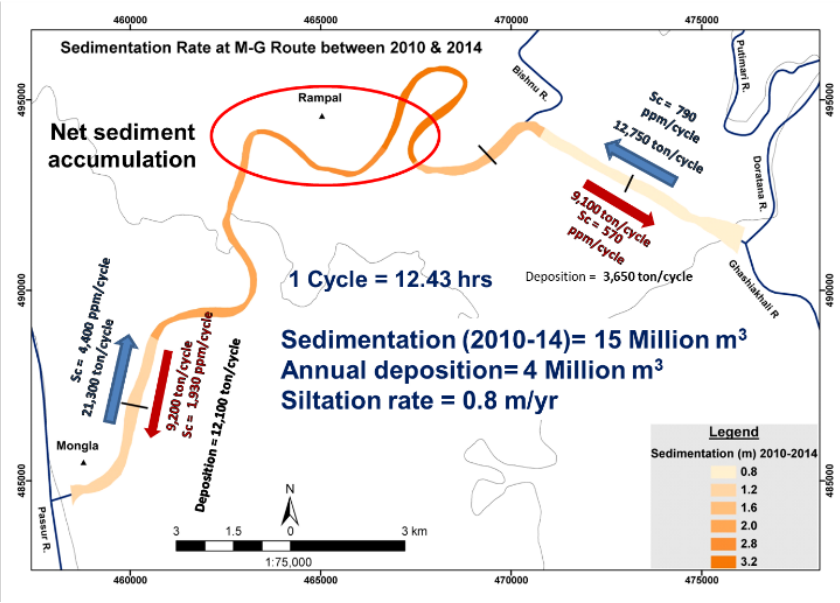

Figure 4: Sedimentation Rate on the Mongla-Ghasiakhali Canal

Rapid sedimentation occurred, due to, amongst other factors, the reduction of sweet water from the Ganges contributing to the development of the tidal pumping process and impoldering of shrimp gher (modified rice field).

A comprehensive study to restore the navigability in this important route was commissioned by the BIWTA. Results indicated several short-, medium-, and long-term measures for restoring the connection. Short- and medium-term measures included capital and maintenance dredging, tidal river management (TRM), as well as re-excavation of linkage khals (drainage canals) to shorten the overall length of the canal from 31 kilometers to 26 kilometers.

In 2013, the BIWTA sought to restore the navigability and a project was formulated in 2014. The following year dredging works commenced and since 2018 the navigability was restored. From its reopening, the route quickly gained popularity and currently more than 200 vessels use the canal daily. However, it soon became clear that significant siltation build-up at the canal entrances, particularly at the Mongla (western) side, would result in maintenance dredging cost of roughly US$3 million annually.

According to previous studies, a long-term solution to address this issue is the construction of a ship lock. However, Bangladesh currently does not have any ship locks and consequently no experience or practices in designing, constructing, operating, or managing one within the central government. Thus, in early 2023, BIWTA sought support from USAID to examine the viability of introducing one or two ship locks on the canal and to support the upstream preparation of relevant studies in anticipation of possible project implementation.

CURRENT STATE OF THE MONGLA-GHASIAKHALI CANAL

The MG Canal is an important connection between two main north-south waterways, specifically the western arm connects to Padma (and Northwest India) and the eastern arm

connects to Dhaka, the Yamuna River (and India National Waterway 2) and Meghna River (and India National Waterway 6).

Currently, maintenance dredging is needed at both entrances of the canal, and parts of the canal itself. There is a large number of growing dumping sites for dredged materials on the embankments (55 in total), which prohibits use of this land for agriculture or other purposes and needs to be continuously transported out of the area. There is heavy traffic on the canal (100 to 200 vessels daily) with potential for continued growth. These vessels pay a toll for using the canal, which is collected at the east side (Ghasiakhali). There are several villages located alongside the canal with many inlets used for irrigation and possibly an extensive network of tributaries.

DESCRIPTION OF PROJECT AREA

The connection between Mongla and Ghasiakhali falls in the upazilas (sub-districts) of Rampal and Mongla and is about 31 km long. This route was opened in November 1973 to maintain a direct hinterland connection with Mongla Sea Port. The project area concerns the entire navigation route of the Mongla-Ghasiakhali Canal, including the approach channels and the embankments. The overview of information available included in the annex contains more details of these two upazilas through which the canal flows.

The wider project area could involve other areas that are affected by the project interventions in a positive or negative way. It is up to the Consultant to define this wider project area, based on its analysis of expected additional benefits for this larger region and possibly also cost. An example is improved land connectivity, which could for example be beneficial for communities in Morrelganj Upazila.

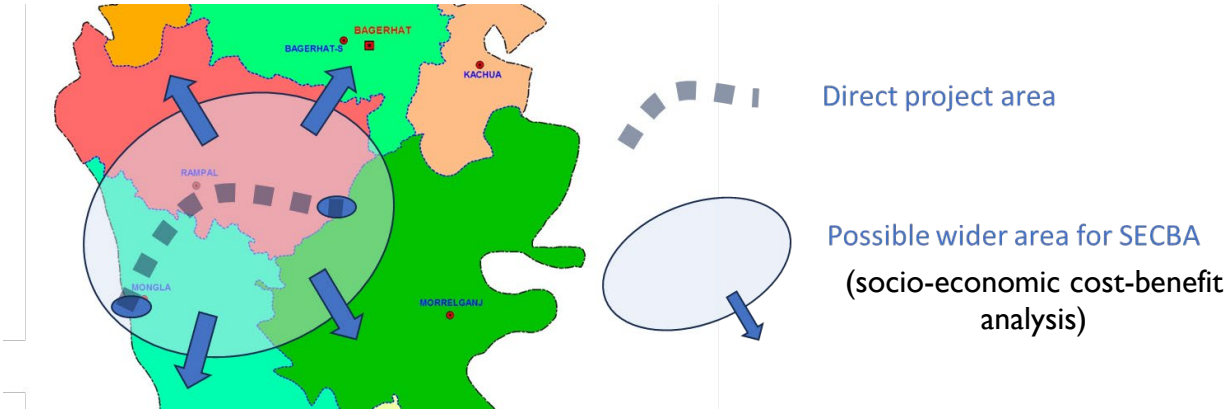

Figure 5: Direct and Wider Project Area

In the project area, tides play the dominant role in hydro-morphological development. Several tidal river systems like the Malancha, the Arphangasia, the Sibsa, the Pussur and the Baleswar are located in this region along with a number of tidal creeks to make an integrated tidal river network (see figure below). These rivers stretch from the north to the south and the creeks mainly stretch east westerly.

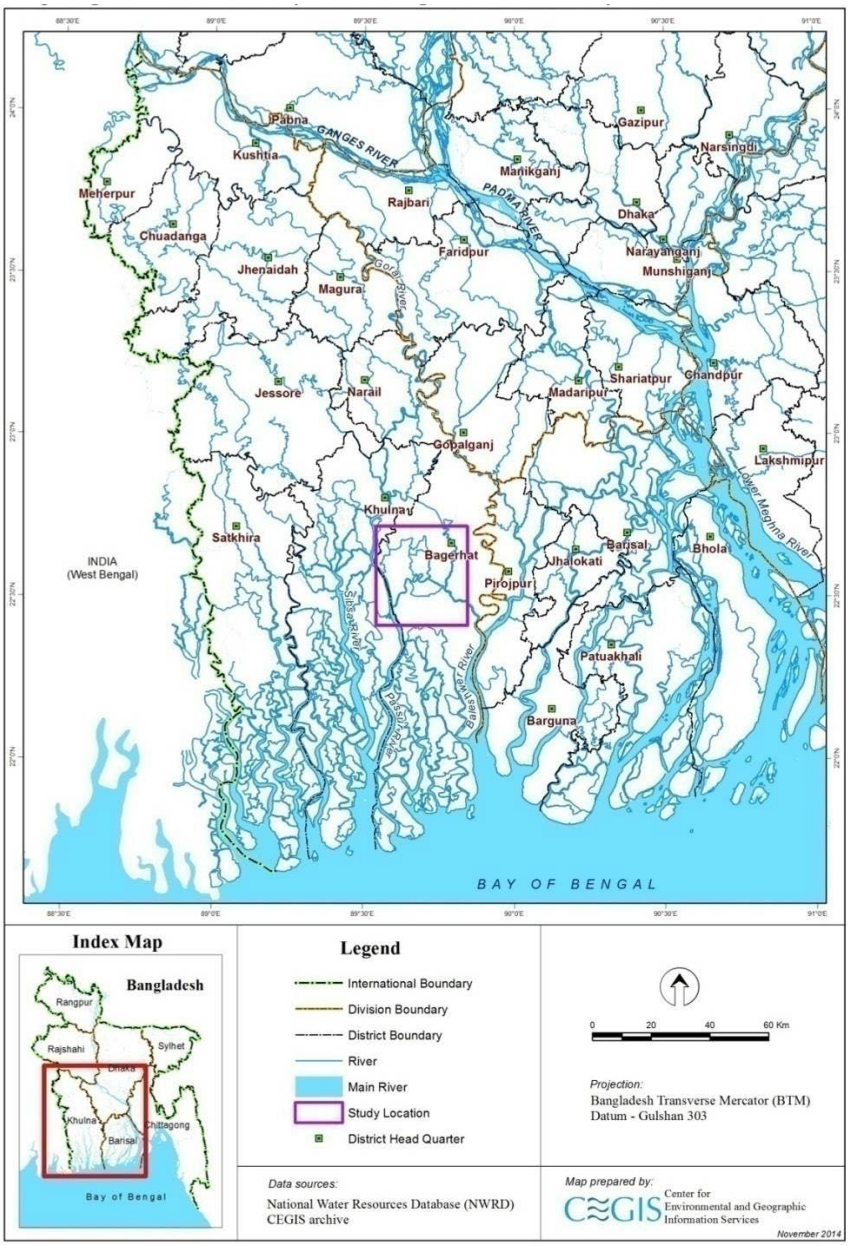

Figure 6: Integrated Tidal River Network within Project Area

As there is almost no fluvial source in the upstream, many tidal rivers and creeks with sufficient navigation depth, facilitate a good navigation opportunity in this region. Freshwater and sediment inflow from upstream to this part of the coastal area during monsoon has drastically reduced since last century. During dry season, there is almost no fluvial connectivity with the upstream. Even in monsoon, the freshwater flow is less in the western system than in the eastern system as the flow of the Gorai and a part of the Arial Khan pass through the Passur and Baleswar systems. These river systems are under the influence of semi-diurnal tide with a typical daily fluctuation ranging from 2 to 3 meters. The riverbed of the main river systems consists of fine sand to silt and clay. The flow of the rivers has high sediment concentration especially during the dry season, which often exceeds several thousand where a sedimentation environment prevails. Sediment transported by the Ganges–Brahmaputra and Meghna River system of the Bengal basin is mainly stored in the zone of tidal maxima in the Meghna Estuary during monsoon, when the fluvial energy is strong enough to nullify the tidal energy. But in the dry season, when the tidal energy becomes strong, tides redistribute the sediment to

other western estuaries. This sediment is mainly brought upstream from the bay through the tidal pumping process.

VESSEL TRAFFIC AND DESIGN VESSELS(S)

The Bangladesh fleet consists approximately of 15,000 river/sea (or coastal) vessels, 15,000 inland vessels and more than one hundred thousand so-called country boats. The IWT sector in Bangladesh consists of more than 2,000 freight shipping companies.

The Bangladesh rivers serve as trade routes for the Indo-Bangladesh Protocol Routes, as well as trade routes to Bhutan Nepal, and Southeast Asia. The table below provides an overview of the various inland vessel types and their quantity.

Types of Vessels	Total Number of Vessels		
	December 2019	December 2020	December 2021
Passenger Vessels	839	839	847
Passenger Boat	417	417	422
Cargo vessels	4088	4088	3591
Ferry	40	40	44
Oil Tanker	333	333	362
Tugboat	147	147	163
Dumb Barge	453	453	503
Speed Boat	303	303	778
Inspection Boat	26	26	26
Sand Carrier	4910	4910	5336
Dredger	1269	1269	1528
Goods Carrier	-	-	1016
Work Boat	-	-	93
other	134	134	96
Total	**12,959**	**12,959**	**14,805**

Source: Department of Shipping

After the restoration of the MG navigation route, it has been observed that the annual vessel movement in MG canal is around 30 thousand ships annually. While vessel movement dipped after the Covid-19 pandemic, it is expected to rebound and once again grow as the route becomes more popular, particularly if navigability is improved and acceptable service conditions can be guaranteed year-round. Moreover, the collected toll revenue is increasing and, in fact, due to an increase in standard tariffs, is growing at a greater pace compared to the number of vessels in recent years.

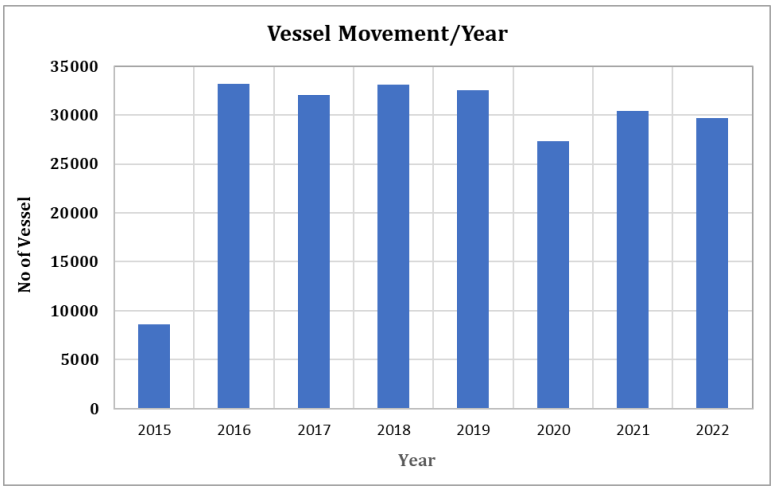

Figure 7: Cumulative Vessel Movements on the Mongla-Ghasiakhali Canal from 2015-2022 (Source: Department of Shipping)

The box plot below provides some insight in the dimensions of registered inland vessels that operate on Bangladeshi rivers (data up to 31 October 2018). With reference to the classification of the inland waterway system, in consultation with BIWTA, the Consultant is required to determine the governing vessel dimensions for the proposed technical solutions (see below: "alternatives to be studied").

Dimensions should not be based solely on existing vessels in operation in the project area, but future developments of climate change impacting the hydrodynamical and morphological conditions of the project area, should be taken into consideration. Depending on the alternative studied, the maximum vessel dimension for the project area may differ, therefore upstream limitations on the navigational route may be governing (see "traffic projections") and, more importantly, what dimensions can be maintained throughout the year by BIWTA.

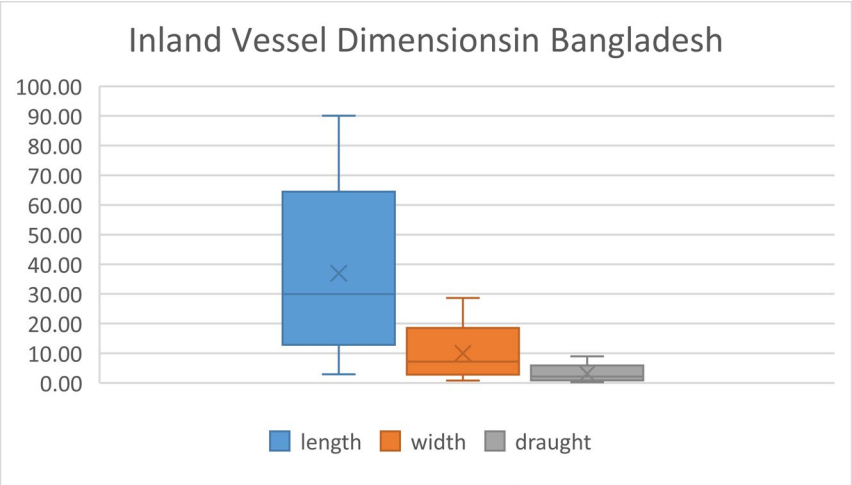

Figure 7: Inland Vessel Dimensions in Bangladesh in Meters (Source: Department of Shipping)

OVERVIEW OF ONGOING DREDGING OPERATIONS

An overview of dredged volumes provided below consisting of capital dredging volumes and costs in 2014-2015 and annual maintenance to date.

A. Development Dredging		
Year	Volume(million)	Cost(million)
2014-2015	11.97cum	
Sub Total	**11.97** cum	**Tk.2400.00**

B. Maintenance Dredging		
Year	Volume(million)	Cost(million)
2015-2016	6.00 cum	
2016-2017	5.50 cum	
2017-2018	2.97 cum	
2018-2019	2.41 cum	
2019-2020	2.07 cum	
2020-2021	2.30 cum	
2021-2022	2.44 cum	
2022-2023	1.78 cum	
Sub Total	**25.47** cum	**Tk.5850.00**

Total Volume(million) (A+B)	**11.97 + 25.47 = 37.44 Cum**
Total Cost(million) (A+B)	**Tk.(2400.00+5850.00) = Tk.8250.00**

SIDE CHANNELS ALONG THE MONGLA-GHASIAKHALI CANAL

Should the Project proceed with the implementation of one or two lock structures along the MG Canal, thus resulting in a closed or semi-closed system, water management, at canal entrances and along tributaries, will become increasingly important. Currently, there are at least 32 points along the canal, including side channels, irrigation canals, and creeks. These points are identified in the following figure:

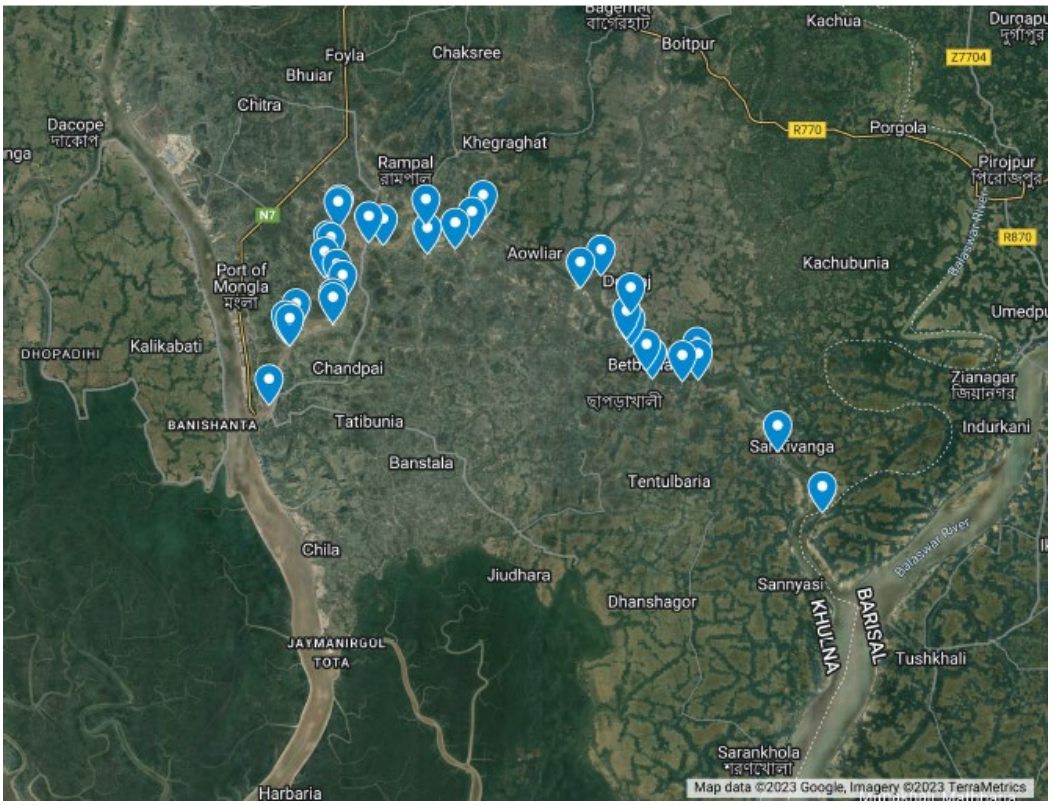

Figure 8: Points of Entrance Along the Mongla-Ghasiakhali Canal, Including Side Channels, Irrigation Canals, and Creeks

OBJECTIVES

The activity development objective is to prepare the Conceptual Study for the Mongla-Ghasiakhali Canal Upgrading Project. This includes delivery of relevant upstream studies included within the broader Conceptual Study as interim deliverables. Should the results of the multi-criteria analysis yield a project (either one or two ship locks) that appears to be socioeconomically viable, these studies will form the basis of preliminary designs as well as determining the detailed economic impact and financing needs to implement the Project.

The Conceptual Study will recommend a preferred solution (i.e., ship lock at west entrance where the majority of siltation build-up occurs or two ship locks at both entrances to the canal) compared with the present scenario. The Conceptual Study shall include a socio-economic cost-benefit analysis considering aspects such as engineering and construction cost, maintenance cost, potential revenue generated via increased traffic, decreased dredging/dumping cost, as well as environmental and social benefits to the communities along the canal and in the area more broadly.

Upon conclusion of the Conceptual Study, the outcomes will be considered, and next steps determined.

CONCEPTUAL STUDY

The Conceptual Study will commence with an investigation and development of description of the alternatives for the management of the canal, which will include one ship lock, a two-lock system, or no locks and continuation of current practice. The Subcontractor(s) will also

prepare a description of complementary civil works that could be implemented during the upgrading of the broader canal area such as embankment stabilization, introduction of a tidal flood basin, improvement of tributary water management and irrigation systems, introduction of hydro-electric energy generation, etc.

A critical step during this study will be the analysis of vessel traffic flows, volumes (current and projected future), revenues (current and projected future), and estimation of revenue growth potential based on anticipated volume and cost trajectory.

Following the preliminary identification of alternatives, the Subcontractor(s) shall prepare conceptual level designs (up to 10 percent) of the lock system alternatives as well as abstract level designs of complementary civil works[1] and a wider water management plan. This effort will also include a costing of the lock system alternatives and complementary civil works.

In parallel with these efforts, the Subcontractor(s)will also prepare preliminary assessments of the environmental and social impacts for the alternatives.

Lastly, the Subcontractor(s) shall prepare an evaluation criteria framework for a socio-economic cost benefit analysis. The multi-criteria analysis, which will consider aspects including engineering and construction costs, operations and maintenance costs, toll revenue flow, decreased flood risk, increased safety levels, improved irrigation, potential for embankment and land development, improved land connectivity (using one or two locks), and possibly hydropower generation (which may be possible, despite the low gradient, based on comparable international experience) resulting in a basic socio-economic cost-benefit analysis.

Upon conclusion of the Conceptual Study, the BIWTA and their technical advisory teams shall evaluate the outcomes and assess the go/no-go potential for next steps. The possible outcomes of the Conceptual Study are:

- **No-go decision:** The cost of the implementation, operations, and maintenance of one or two ship lock structures outweighs with canal management, social, and environmental benefits at the current toll revenue trajectory (in this case, the advice would be to continue the current dredging program at an annual cost of US$3 million). However, the introduction of a sub-regional water management plan and/or introduction of one or more of the complementary civil works identified during the Conceptual Study may still be explored in a subsequent phase.
- **One ship lock:** The cost of the implementation of one ship lock (on the Mongla side of the canal) results in canal management, social, and environmental benefits in line with the current toll revenue trajectory that outweighs the roughly US$2.1 million annually required to dredge the western section of the canal, but the cost of an eastern lock (Ghasiakhali side of the canal) cannot be justified.
- **Two ship locks:** The cost of the implementation of two ship locks (on both the Mongla side and the Ghasiakhali side of the canal) results in canal management, social, and environmental benefits in line with the current toll revenue trajectory that

[1] Complementary civil works could include, but are not limited to, embankment stabilization, reconstruction of the tolling station, introduction of navigational aids, construction of a tidal basin, improvements to side channels and irrigation canals, and implementation of hydropower generation equipment.

outweighs the roughly US$3 million annually required to dredge the entirety of the canal.

TASKS

The Subcontractor(s) must complete the following tasks:

TASK 1: PROJECT INITIATION AND COORDINATION

Prior to commencing the Conceptual Study (also referred to as "the Study") in Bangladesh, the Subcontractor(s) shall review all material and data provided by INVEST along with this ToR. The Subcontractor(s) should propose an approach to project initiation and management coordination and control to ensure successful and timely completion of this Study. This task should include:

- Development of a detailed work plan with schedule and cost breakdown for each task described in this ToR
- Identification of a method for tracking budget and schedule for the duration of the project
- Establishment of key project contacts within the Subcontractor(s)' team and other stakeholders
- Identification of a Quality Control Process to be used on the project

The Subcontractor(s) and the BIWTA shall coordinate to introduce the Subcontractor(s) to all relevant national and subnational level stakeholders. The Subcontractor(s) and the BIWTA should confirm the initial on-site inspection to familiarize the Subcontractor(s) with the characteristics and conditions of the Mongla-Ghasiakhali Canal included in the Study. The Subcontractor(s) should propose coordination with BIWTA personnel and other key local stakeholders for site visits of the canal and surrounding areas likely impacted by the project. In addition, the site visits shall include potential locations of temporary roads and quarry pits to be used during the civil works phase. The BIWTA and USAID/Bangladesh will require a site visit report with initial observations, photos/videos and data collected, as well as contacts of local stakeholders met.

Through this task, the Subcontractor(s) shall also develop a communication management plan. At a minimum, it is expected that the Subcontractor(s), the BIWTA, and the technical advisory team shall meet monthly to review the cost, schedule status and progress of the work, as well as address challenges and potential solutions.

Task 1 Outputs:

- Project initiation and coordination with the BIWTA and key stakeholders, as well as the scheduling of site visits. The Consultant shall deliver a milestone report[2] to the BIWTA and INVEST teams that contains all work performed under Task 1, including, but not limited to: (i) the Inception Report with PMP; (ii) minutes of the kick-off

[2] Milestone 1 report due within four weeks of contract signing

meeting; (iii) Site Visit Report with observation notes, photos and video collected, data obtained, and contact information of local stakeholders; as well as (iv) communication management plan.

TASK 2: BENEFICIARY AND STAKEHOLDER CONSULTATIONS

Understanding ideas, perspectives, and needs of the key stakeholders and beneficiaries within the Project influence area is critical for broadly supported decisions. In coordination with and approved by the BIWTA and INVEST teams, interviews shall be conducted with key stakeholders and beneficiaries identified to understand their respective interests, goals, concerns, issues, and desired outcomes for the upgrading of the Mongla-Ghasiakhali Canal. In addition to beneficiaries and stakeholders recommended by the BIWTA and INVEST teams, the Subcontractor shall propose other stakeholders deemed to be critical to the successful delivery of the Project or impacted by the Project, including, but not limited women, children, disabled people, elderly, any local indigenous people, and specific interest groups or organizations related to agricultural and fisheries activities. At a minimum, the Subcontractor(s) should propose/consider the following key stakeholder workshops:

1. A national-level stakeholder consultation workshop in Dhaka (including all national government stakeholders)
2. A local-level stakeholder consultation workshop in Khulna (including sub-national level stakeholders, community leaderships and interest groups within the Project impacted area, and as necessary, national level stakeholders)

Task 2 Outputs:

- Completed consultations with the BIWTA and stakeholders. The Consultant shall deliver a report to the BIWTA and INVEST teams that contains all work performed under Task 2, including, but not limited to: notes, photos, video, and contact information of beneficiaries and stakeholder engaged during the consultation meetings.

TASK 3: DATA COLLECTION, REVIEW, AND ANALYSIS

During preparation for the Conceptual Study ToR, a data and information request was submitted to the BIWTA. Through this task, the Subcontractor(s) shall review and analyze existing data. In addition, the Subcontractor(s) shall provide recommendations for additional data that may need to be collected. These datasets and information primarily include existing cumulative vessel traffic counts, morphology mapping, dredging monitoring results, and toll revenue collected. Specifically, data available to the Subcontractor(s), includes:

- Design Vessels- cumulative annual vessels traffic (2015-2022)
- River morphology- general description and mappings for 1943, 1967, 1984, 1997, 2010, 2013, 2018, and 2023
- Hydrographic data (collected on 25-35m intervals using a hypack since 2015)
  - Bathymetry data in relation to stage or stage water depth
  - Stage duration, stage velocities, and stage discharge curves
  - Low-water and flood-stage levels with their slopes
  - Seasonal (e.g., differences between dry months and monsoon)
  - Length of time each stage is prevalent

    - Regulatory of stream flow cycle
    - Magnitude of sudden rises
- General characteristics of the canal
- Scouring, sedimentation, and dredging
    - Sedimentation graphs for seven monitoring sections for 2015-2017 during capital dredging
    - Report "Monitoring Report on Dredging Activities and its Effects"
    - Raw data of sedimentation volumes from 2014-2022
    - Digital mapping of dykes with shape files
    - Dredging cost data
    - Maximum variation in water levels raw data for all stations recorded between 2014 and 2022
    - Seismic zone activity
- Description of seismic zones according to the Bangladesh National Building Code provided
- Seismic zone map provided
- Information on water ecology, environmental, and social aspects of the canal and surrounding communities from a preliminary Environmental Impact Assessment Report (2014)
- Toll data- vessel toll revenue collected from 2017-2022 (Excel file)

Task 3 Outputs:

- A data analysis in regards to completing a socioeconomic cost-benefit analysis or recommendations on what data may be recollected. If in the processing of reviewing and analyzing the existing data, it is found that there are concerns regarding completeness or quality of dataset vis-à-vis collection methodology or years provided, the Consultant will also provide recommendations on what data may be recollected.

TASK 4: LAND AND TOPOGRAPHIC SURVEYS AND ASSESSMENT OF EXISTING CONDITIONS

Through this task, the Subcontractor(s) shall evaluate the existing canal conditions and areas within the Project right-of-way (RoW). All available digital base maps and reports shall be provided to the Subcontractor(s) by the BIWTA. The Subcontractor(s) shall also obtain available aerial photography and digital topographic mapping for the study area from available sources to the extent possible. In addition, the Subcontractor(s) will also be responsible for delivering a topographic survey of cross-sections around the sites of the proposed lock locations and, at a minimum, the 32 identified entrance locations along the canal (i.e., side channels, irrigation canals, and creeks). Surveys shall include the effects of relief on the vertical alignment of the canal at reasonable intervals corresponding to each of the locations (two proposed lock sites and minimum 32 canal entrance locations) to be outlined in and approved through the Inception Report. The Subcontractor(s) shall compile this information along with land surveys that will be needed to deliver the Conceptual Study and preliminary designs of one or two ship lock structures.

The BIWTA and local governments shall also provide the Subcontractor(s) with available documents confirming property lines and ownership details. Where necessary, the Subcontractor(s) shall obtain the required property boundary and existing RoW lines, and

relevant records from local Land Registries within the study area. The Subcontractor(s) shall reference property boundary lines into the existing aerial photography and the plan sheets.

Finally, the Subcontractor(s) shall deliver an existing site condition report on canal characteristics and their effect on vessel operations within the study areas. Description shall include any substandard features, embankment conditions, dredge material dump dikes, assessment of connecting tributaries and irrigation canals, sight issues, state of the tolling and vessel traffic management infrastructure, etc.

Task 4 Outputs:

- Compiled and prepared base maps, digital topographic maps, and aerial photography; (ii) maps and aerial photographs with existing project RoW lines and property boundaries; (iii) all compiled and collected traffic data and surveys; as well as (iv) an evaluation of the existing canal conditions, including all infrastructure within the Project right-of-way and embankments.

TASK 5: SOIL INVESTIGATION

The Subcontractor(s) shall be responsible for conducting a comprehensive soil investigation around the areas of the proposed lock sites and at a sampling of a reasonable number of the 55 dredge material dump locations to characterize the materials and conditions that will be encountered during any future construction and operation of the Mongla-Ghasiakhali Canal. This will include establishing the nature of the soil, variability, extent, and any special requirements to be observed for both embankments and subgrade layers as well as to determine if the dredged material is contaminated or if the soil around these sites can used (e.g., reusing sediments or building with the dredge material).

The Subcontractor(s) shall advise on the number of material samples to be tested, the location of all excavations and boreholes, and the types of testing to be conducted. The number and location of samples, excavation and boring, as well as testing regime and schedule shall be confirmed with the BIWTA and INVEST teams.

Soil Investigation Results Report shall include, at a minimum:

- Brief description of the project for which the Soil Analysis Results Report is being compiled giving information about the location from where the sample was extracted
- Dates between which field and laboratory work were performed
- Detailed description of methods used for the field and the laboratory work with reference to accepted standards followed, and with discussion on rationale used to determine type, spacing, frequency and locations of all tests
- Types of field equipment used
- Description of field observations that were made during the execution of the sub-surface explorations
- The principal geological and topographical features of the area, with an appraisal of the terrain and hydrogeological conditions
- A description of the investigation methodology, standards, and scope of testing, including an account of any site constraints encountered

- The classification of soil types including their extent and variability, all test results including alignment soils properties and subgrade CBR values,
- A summary of each proposed cutting showing a minimum of:
  - The presence and extent of any core stones, weathered rock, and "rock excavation materials", as well as location and extent of any soft/wet areas along the existing and proposed alignments
  - The factual excavation characteristics of the various materials, including where significant rock exists, but is not "rock excavation materials"
  - Suitability of any cut materials for embankment, foundation, or pavement construction, and if appropriate the treatments required to meet the specification for basecourse and sub-base layers
- Data on fluctuations of ground water table with time in the boreholes during the performance of the fieldwork and in piezometers after completion of the fieldwork
- Compilation of individual boring logs, penetrometer results, etc. for each of the test locations with descriptions of sub-surface formations based on field descriptions and on the results of laboratory testing
- The location and level of each of the test locations should be accurately defined
- Color photographs of rock cores
- Grouping and presentation of field and laboratory test results in appendices and as summary tables
- The location of hardstone quarries and estimated quantities of crushed rock for concrete structures with their distances from the Project site

The Subcontractor(s) shall also identify any construction material related risks or hazards that may lead to complexities in delivery of the Project. Should any risks or hazards be identified, the Subcontractor(s) shall provide recommendations on mitigation measures and alternative sources of materials. The Subcontractor(s) shall also provide recommendations on a soil sampling and testing regime throughout the implementation of the Project.

Task 5 Outputs:

- Factual Materials Report containing all work performed, including, but not limited to: (i) a pre-approved construction material sampling, testing regime (including test types, standards to be followed, and number of tests to be performed), and schedule; (ii) a compilation of Soil Investigation Test Reports that comply with the minimum requirements set forth in this task; (iii) recommendations on usability of the dredge material and surrounding sub-soil material; and (iv) observations of construction material related risks or hazards and mitigation measures to be enacted throughout the course of implementation of potential future civil works.

TASK 6: GEOTECHNICAL ANALYSIS

The Subcontractor(s) shall be responsible for preparing a geotechnical analysis of the project area in anticipation of potential preliminary and detailed design of structures and embankment stabilization works. Specifically, this shall cover sub-base layers, embankments stability, and potential location of foundations for the lock structures.

The review shall include confirmation of satisfactory performance levels for bearing capacity and settlement. If the Subcontractor(s) identifies risks associated within the probable areas of the foundations, mitigation measures shall be recommended.

Where embankments, sub-base layers, or foundations are found to have potential for significant settlement, due to the presence of compressible foundations, the Subcontractor(s) shall perform a settlement analysis. Significant settlement shall be defined as a settlement likely to adversely impact the performance of the lock structure or any support structures during the construction or service phase. For areas where potential approach roads to the lock structures could be constructed, the analysis shall include an assessment of the impact of sub-base layer settlement on the pavement.

Where deemed to be necessary for mitigation measures or more cost efficient, the Subcontractor(s) shall provide recommendations on sub-base and foundation improvement options such as preloading, surcharging, dynamic compaction, and vibrofloatation, etc.

Task 6 Outputs:

- The Consultant shall deliver an interim report to the BIWTA and INVEST teams that contains all work performed under the task, including, but not limited to, a geotechnical analysis report with recommendations for improvements. In addition, at the conclusion of Tasks 2-6, the Consultant shall deliver a milestone report[3] on baseline conditions that includes stakeholder and beneficiary consultations, baseline assessments, analysis of existing data and recommendations for additional data collection, mapping, and the geotechnical investigation.

TASK 7: DEVELOPMENT OF ALTERNATIVES TO BE STUDIED

Pending completion of the Study, there are three main potential outcomes of the Conceptual Study, including (i) continuation of the existing situation (i.e., business as usual), (ii) construction of one ship lock at the Mongla side of the waterway connection, and (iii) construction of two ship locks, at both ends of the waterway connection (Mongla and Ghasiakhali sides). Prior to conducting a comparison between the three alternatives by means of a socio-economic cost-benefit analysis (SECBA), the Subcontractor(s) shall provide a general description of each.

In the business as usual (BAU) scenario, it is expected that the Subcontractor(s) will prepare a long-term vision on the annual maintenance cost to guarantee navigability for the design vessels as well as the requirements for developing and implementing a sub-regional water management plan (i.e., data to be collected, modelling necessary, strategic development, and other civil works besides the locks). The Subcontractor(s) shall also investigate options to improve sustainability, including, but not limited to for the dumped materials and the dumping sites, for improvement use of the embankments, and additional measures that are deemed necessary to decrease flood risk such as the introduction of a tidal basin. These costs and potential benefits shall be included in the SECBA.

[3] Milestone 2 report due within 14 weeks of contract signing

In the one lock scenario, the Subcontractor(s) will estimate the construction, maintenance, and operating cost for a single lock structure at the Mongla side of the canal. The Subcontractor(s) shall also estimate the cost of dredging related activities required to operate the lock structure and at the continuation of dredging on the Ghasiakhali side. Further, the Subcontractor(s) shall consider additional benefits, including, but not limited to the option of constructing a road connection at the lock site to improve land connectivity, potential for hydroelectric power generation, and other potential benefits deemed to be relevant to justifying the implementation of a lock structure on the Mongla side of the canal. The SECBA will compare the BAU with the one ship lock option.

In the third alternative, the canal between the two locks would become a closed waterway, and the situation could result in a number of benefits. The Subcontractor(s) will identify these benefits, including, but not limited to decreased dredging, less dumping and dumping sites, lower flood risk, improved irrigation control, and additional road connectivity (at the eastern lock in addition to the potential for road connectivity at the western side considered in the previous scenario). The Subcontractor(s) shall compare these benefits to the additional construction, maintenance, and operating cost for a second lock.

Task 7 Outputs:

- The Consultant shall deliver an interim report to the BIWTA and INVEST teams that contains all work performed under the task, including, but not limited to a description and comparison of the three alternative scenarios detailing the benefits and costs to be considered in the SECBA.

TASK 8: CONCEPT LEVEL DESIGNS FOR ONE AND TWO LOCK STRUCTURE SCENARIOS

Through Task 8, the Subcontractor(s) shall consider the following aspects when preparing the concept level designs:

- The designs of the locks must be done from a Systems Engineering perspective, where all relevant functions in the area are account for in the design
- The proposed measures will have to be judged on environmental aspects and social aspects, as well as on embedding within the desired long-term development of the canal
- The design of the lock complex(es) must be state-of-the-art with innovation in design and the use of sustainable building materials
- The Subcontractor(s) will base the design on international good practice and use internationally accepted guidelines and standards (e.g., manuals from US Army Corps of Engineers, Netherlands Rijkswaterstaat, and PIANC), as well as adhered to guidance from the Bangladesh National Building Code that align with prevailing international good practice.

For the different alternative conceptual designs (for BAU, one lock, and two locks), the Subcontractor(s) will prepare concept level designs for both channels and locks, including channel dimensions, lock chamber dimensions (based on vessel dimensions and expected traffic), lock heads, lock gates, lock approach structures, embankments, bends, and others.

In addition, the Subcontractor(s) shall develop concept level designs for any other civil works that would improve the overall operation and sustainability of the MG Canal identified during Task 6, including, but not limited to embankment stabilization, introduction of a flood tidal basin, provision of vessel traffic management devices, approach roads and bridges, enhancements to tributaries and irrigation supply, as well as the tolling structure.

Suggested designs and solutions should follow Systems Engineering principles, with reference to PIANC guidelines on nature-based solutions ("Building with Nature") and mitigating or minimizing adverse effects of physical infrastructure. The principal function of the alternatives with locks is two-fold: (i) minimize sediment flow in the canal, and (ii) allow continuous passage of vessels. With reference to the vessel traffic scenarios, the lock capacity of the life-cycle period should be sufficient to keep the waiting time for lockage at a maximum of 30 minutes.

Some examples of type of lock foundations are provided below, depending on the soil strength, highlighting the importance of geotechnical data, namely subsoil structure and groundwater levels, to be collected and analyzed through the delivery of Task 5.

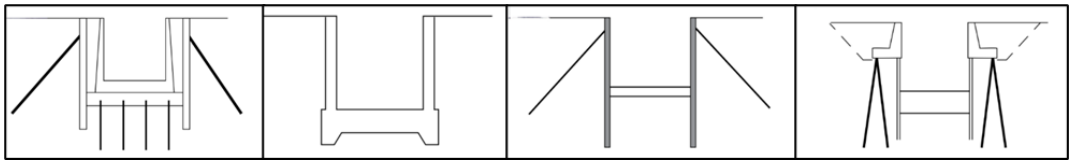

Figure 8: Typical Lock Foundations

Task 8 Outputs:

- The Consultant shall deliver an interim report to the BIWTA and INVEST teams that contains all work performed under the task, including, but not limited to the preparation of concept level designs for (i) lock structures at the eastern (Ghasiakhali) side and western (Mongla) side of the MG Canal, (ii) channel improvement, and any other complementary civil works identified during Task 7.

TASK 9: COSTING OF CONCEPT LEVEL DESIGNS FOR ONE AND TWO LOCK STRUCTURE SCENARIOS

Upon completion of the concept level designs for the one and two lock structure scenarios, the Subcontractor(s) will prepare basic cost estimates for the capital civil works as well as the operations and maintenance for the lock structures and other complementary works outlined in Task 6 that are deemed to potentially be beneficial to the overall development of the Mongla-Ghasiakhali Canal. The cost estimate shall be sub-divided as follows:

- *Construction and maintenance costs*- For each alternative the Subcontractor(s) shall estimate the initial investment costs and annual maintenance costs shall be determined on a life-cycle basis, with the objective to achieve an optimum quality and minimum Whole Life Cost (WLC). With reference to the SECBA, the WLC relates not only to the direct cost of construction, maintenance, etc. of the structure itself, but also to indirect costs and probable benefits related to its use and the environment in which it is located. The life cycle period to be considered is 50 years, which is different from the economic business case (see SECBA). The Subcontractor(s) may propose technical solutions that lead to higher capital investment initially, but consequently is more

maintenance-friendly and leads to lower annual costs. The estimated costs will be inputs for the SECBA.

- *Annual operational cost*- Similarly, the Subcontractor(S) will estimate the annual operational costs for each alternative as an input for the SECBA. The estimation of operational costs is especially important for the one and two lock alternatives.
- *Estimate of dredging volumes and related cost (including removal/dumping)*- For all three scenarios, the Subcontractor(s) shall estimate the dredging volumes and costs, including operations and removal.

Task 9 Outputs:

- The Consultant shall deliver an interim report to the BIWTA and INVEST teams that contains all work performed under the task, including, but not limited to cost estimates for the capital investment in one and two lock structures (two separate scenarios), any capital costs for any additional complementary civil works deemed to be beneficial to the overall development of the MG Canal, annual operational costs for the lock structure(s) and any complementary infrastructure recommended, as well as estimated dredging and removal costs.

TASK 10: TRAFFIC DATA AND TOLL REVENUE DATA ANALYSIS

For the concept level design of alternatives, the Subcontractor(s) will establish at a minimum three traffic scenarios, including (i) continuation of BAU, (ii) moderate economic and freight/traffic volume growth, and (iii) high economic and freight/traffic volume growth. In line with Task 3, the Subcontractor(s) shall analyze and estimate the following data in consultation with BIWTA:

- Seasonal, monthly, weekly or even daily variation of the traffic intensity
- Types of ship and size (ocean going vessel, inland cargo vessels, recreational/passenger vessels)
- Frequency of special transport and vessels with dangerous cargoes
- (In)balance between upstream or downstream traffic, or even the (in)balance in loaded or unloaded vessels

The Subcontractor(s) shall include the approach to data analysis, establishment of assumptions, and any additional data collect with the understanding that the BIWTA currently only has cumulative traffic volumes.

In addition, the Subcontractor(S) will analyze toll revenue data for the same three scenarios and estimate revenue forecasts for, at a minimum, the next 30 years. The Subcontractor(s) shall use a stepped approach with varying reliability factors for a baseline year of service plus 5, 10, 20, and 30 years after.

Task 10 Outputs:

- The Consultant shall deliver an interim report to the BIWTA and INVEST teams that contains all work performed under the task, including, but not limited to (i) traffic growth analysis for a minimum three scenarios (BAU, moderate growth, and high growth) and (ii) toll revenue forecasts for the same three scenarios.

TASK 11: PRELIMINARY ENVIRONMENTAL IMPACT ASSESSMENT

The Subcontractor(s) shall commence the task by creating an Environmental Feature Inventory that will include an assessment of the climate, topography, geology, and vegetation within the RoW of the canal and surrounding land impacted by the potential implementation of the Project (one or two lock structures and additional complementary civil works). The assessment shall entail a detailed historical inventory of climatic conditions, including, at a minimum: (i) rainfall (monthly distribution and intensity, including rain days per month), (ii) temperature (minimum, median, and monthly ranges throughout the year), and (iii) other climatic features of importance to infrastructure.

The Subcontractor(S) shall prepare a preliminary environmental impact statement (PEIS) that identifies potential impacts of the Project, both during implementation of civil works and after the commencement of services on:

- Land use and zoning
- Forests and sensitive biodiversity
- RoW and Utilities
- Air quality and traffic noise
- Community or public wells and other potable water resources
- Floodways and 100-year floodplain boundaries
- Wetlands and other waters
- Parks, open spaces, trails, and recreational resources
- Historic and archeologic resources
- Paleontological resources
- Hazardous substances spills (including oil/gas wells)
- Mines and natural materials extraction
- Wildlife and threatened and endangered species
- Prime agricultural land
- Cumulative impacts

In the PEIS, the Subcontractor(s) shall identify Project components or specific implementation activities that have significant impacts on the surrounding environment during construction and/or operations, then develop a preliminary mitigation and monitoring plan. As part of the PEIS, the Consultant shall also develop the terms of reference for the detailed environmental impact assessment (EIA) to be undertaken at the implementation phase. The use of Geographic Information System (GIS) techniques to demonstrate temporal changes in various aspects of the environment is highly encouraged.

Task 11 Outputs:

- The Consultant shall deliver an interim report to the BIWTA and INVEST teams that contains all work performed under the task, including, but not limited to: (i) a PEIS that addresses, at a minimum, how the proposed Project will affect the topics identified in this task; (ii) a preliminary mitigation and monitoring plan; and (iii) the requirements for completing a detailed EIA upon finalization of the project design.

TASK 12: PRELIMINARY SOCIAL IMPACT ASSESSMENT AND ANALYSIS

The Subcontractor shall assess all sociological aspects of the people within the Project impacted area, including communal norms and customs, trends in travel and mobility preferences, as well as cultural heritage, religious, and historical sites. Further, the assessment shall consider all demographic characteristics of the population, including those related gender, age, life expectancy, indigenous peoples, the elderly, and members of the community with disabilities.

The social assessment shall provide a breakdown of demographic indicators related to the population's standard of living, including factors such as income range of the population, level and type of employment (with particular emphasis on agricultural and fishery), value of household assets, estimation on level of common communicable diseases, as well as potential impact on community education efforts related to skills training and daily life. The Subcontractor(s) shall also evaluate interaction between neighboring communities and identify any points of conflict.

In addition, the Subcontractor(s) shall assess the project's need for labor resources, the availability of qualified local personnel, and the potential for labor influx related to the civil works. Based on the outcome of this aspect of the evaluation, the Consultant shall develop recommendations for training program for workers and specialists that could potentially contribute to various aspects of Project implementation. Recommendations shall be organized by task, skills needed, likely labor demand, labor availability, as well as potential training programs for skills uptake.

The Subcontractor(s) shall also estimate the number of people potentially impacted by resettlement resulting from land acquisition needed for the implementation of two locks at the eastern and western sides of the canal as well as any approach roads and embankment stabilization related civil works. Further, the Subcontractor(s) will establish recommendations for fair compensation packages for resettled people based on international good practice.

The Subcontractor(s) shall conduct stakeholder surveys and community engagement to assess the potential social impacts that may result from labor influx during the civil works phase, particularly gender-based violence (GBV), exploitation of women and girls, any effects on local indigenous peoples, and spread of communicable diseases, as well as unintentional effects on cultural and historical sites. During the same consultations, the Subcontractor(s) shall also evaluate the potential social impacts that may result from the implementation of bridges and extension of roads on increases in mobility and trade during the service phase. Specifically, the Subcontractor(s) shall assess how implementation of these facilities, potential increases in traffic, and greater mobility between villages, towns, and markets may impact GBV, abuse of women and girls, effects on local indigenous peoples, spread of communicable diseases, and traffic safety risks related to vulnerable road users, as well as exploitation of local cultural heritage, religious, and historical sites.

Lastly, the Subcontractor(s) shall provide recommendations on social mitigation measures during the Project implementation and service phases aimed at protecting vulnerable groups including women, children, the elderly, disabled people, and indigenous people from labor influx and increased movement of goods and people. Likewise, the Subcontractor(s) shall provide recommendations on social mitigation measures related to protecting cultural heritage, religious, and historical sites during the implementation and service phases.

Task 12 Outputs:

- The Consultant shall deliver a report to the BIWTA and INVEST teams that contains all work performed under the task, including, but not limited to: (i) a sociological assessment of Project impacted people, specifically addressing the communities at-large and disaggregated for women, children, elderly, disabled, and indigenous peoples; (ii) an assessment of local cultural, heritage, and historical sites; (iii) an evaluation of the Project's need for labor resources, specifically outlining skill supply and demand; (iv) estimate of resettlement needs and establishment of recommended compensation packages for resettled people; (v) summary of qualitative and quantitative results of stakeholder engagement and surveys on the effects of labor influx and increased mobility on GBV, indigenous peoples, spread of communicable disease, traffic safety risks of vulnerable road users, and exploitation of cultural, heritage, and historical sites; as well as (vi) mitigation measure recommendations to reduce the impacts due to labor influx and increased mobility. At the conclusion of Tasks 6-12, the Consultant shall deliver a milestone report[4] detailing the three alternative scenarios, concept level designs, concept level cost estimates, as well as preliminary environmental and social impact assessments.

TASK 13: SOCIOECONOMIC COST-BENEFIT ANALYSIS (SECBA)

The final task is the preparation of a SECBA. The SECBA will result in a clear comparison between the three alternatives and be the main decision criteria for any next steps in preparation of the Project. The outcome of the SECBA is summarized in three complementary figures: the economic rate of return (ERR), the economic net present value (ENPV) and the Benefit to Cost Ration (BCR).

The Subcontractor(s) shall prepare the SECBA using the following criteria:

- Cost and benefits are to be calculated over a 30-year period.
- For the SECBA two variants are distinguished:
  1. SECBA for the 'basic' designs, containing all cost and benefits for the direct cost related to the waterway infrastructures, and the 'immediate' benefits, including:
     - Construction, maintenance, and operation costs (for the 30-year period) for all waterway related cost, and complementary or connecting infrastructure
     - All additional cost related to waterway and navigation improvements
     - All direct benefits anticipated from the government/owner/operator side (e.g., tolling revenues) and from the user side (e.g., improved navigability, increased capacity, secured operations all year round). Generated traffic shall be addressed as expected in line with the three scenarios outlined in Task 8.
     - All societal benefits/cost (e.g., lower flood risk, improved irrigation and increased production, embankment development, resettlement).
  2. SECBA shall also include additional features that may be implemented with the overall canal upgrading efforts (e.g., road bridges at one or both sides, small hydroelectric power facilities in the dams, etc.). In addition, the Consultant may identify other additional features that will add benefit to the designs.

[4] Milestone 3 report due within 20 weeks of contract signing

- The Subcontractor(s) will present the results of the SECBA stepwise, so that the effect of additional features can be considered separately.
- The Subcontractor(s) shall add a basic multi-criteria analysis in addition to the SECBA for an easy comparison between the three alternatives. This can also be used for components where quantification of all cost and benefits is not possible with existing information and no substantiated or reliable estimates can be made.
- The Subcontractor(s) shall propose how to present the results of the SECBA and conclusions with recommendations for the preferred alternative and additional features to be included.
- Regarding any instances of any missing or incomplete datasets, the Subcontractor(s) will discuss alternatives that can be used with the BIWTA and the INVEST team on whether to not include the dataset, a methodology to collect additional data in cases where no data are available, and the establishment of assumptions in lieu of data.

For the SECBA, methodologies proposed must be in line with accepted guidelines and parameters used by international financing institutes and donor agencies. Cost/benefit parameters may be adjusted to the local situation. Reference is made here to the "Guide to Cost-Benefit Analysis of Investment Projects", "Cost-Benefit Analysis in World Bank Projects", "Handbook on economic analysis of investment operations" and "Asian Development Bank: Cost-Benefit Analysis for Development; A Practical Guide".

Task 13 Outputs:

- The Consultant shall deliver a report to the BIWTA and INVEST teams that contains all work performed under the task, including, but not limited to: (i) a SECBA in line with the criteria outlined in this task considering costs and benefits for the three Project alternatives and (ii) a multi-criteria analysis for the three scenarios with the minimum three growth trajectories. Upon conclusion of Task 12, the Consultant shall submit the final interim report, which will be the complete and approved SECBA with multi-criteria analysis.

TASK 14: CONCEPTUAL STUDY FINAL REPORT

The Subcontractor(s) shall propose providing a comprehensive consolidated final report to the BIWTA, USAID, and INVEST teams that includes all work performed under Tasks 1-13 of this ToR. The report shall clearly provide a recommendation for next steps (i.e., scenarios with any recommendations for the development of a sub-regional water management plan and the advancement of any beneficial complementary civil works identified, one lock, or two locks scenario[5]).

The Conceptual Study Report should be organized in accordance with the tasks outlined in this ToR and shall include all deliverables and documents that were provided to the BIWTA

[5] In the case that one or two locks are recommended based on the outcome of the SECBA and multi-criteria analysis, the Consultant shall also provide recommendations on the preparation of a sub-regional water management plan and implementation of any complementary civil works also deemed to be beneficial to the development of the MG Canal similar to what would be included in the no-go/BAU scenario.

and INVEST teams. The report should be provided in both a public and confidential version, as needed.

Task 14 Outputs:

- The Consultant shall deliver a report to the BIWTA and INVEST teams that contains all work performed under the task, including, but not limited to consolidated final report ("Mongla-Ghasiakhali Canal Upgrading Project Final Conceptual Study Report") with clear recommendation for next steps. This is the final milestone report.[6]

MILESTONE DELIVERABLE SCHEDULE

The Consultant will be expected to deliver the following milestone deliverables within the timeframe noted below:

Table 1: Milestone Deliverable Schedule

Milestone Deliverables	Timeframe (Weeks from Contract Signature)
1. Inception Report	Week 4
2. Baseline Assessment	Week 14
3. Draft Report	Week 20
4. Final Report	Week 22

The Consultant shall propose a work schedule covering the Interim Deliverables to be included in the Inception Report.

STAKEHOLDERS AND BENEFICIARIES

The primary project stakeholders are the ministries and technical agencies within the central Government of Bangladesh (GoB) as well as sub-national governmental authorities within Khulna Division where the study area is located. The lead GoB stakeholder, and the primary counterpart of the delivery of the study, is the BIWTA. The BIWTA is a technical agency within the Ministry of Shipping responsible for managing the development and maintenance of the inland waterways of Bangladesh. Other central and sub-national government stakeholders that are envisioned to be included for either decision-making, review and feedback, data sharing, or informational purposes include:

- Ministry of Shipping

[6] Milestone 4 report due within 22 weeks of contract signing

- Ministry of Finance, Economic Relations Division
- Ministry of Fisheries and Livestock
- Ministry of Road Transport and Bridges
- Ministry of Environment and Forest
- Ministry of Local Government, Rural Development, and Co-Operatives
- Ministry of Water Resources
- Mongla Port Authority
- Bagerhat District Government (Mongla and Rampal Upazila)

The project beneficiaries envisioned include: (i) vessel operators, (ii) the BIWTA, and (iii) residents in the Upazilas of Mongla and Rampal, particularly the communities living along the canal.

STAFFING

Offerors will submit a staffing structure to enable successful delivery of the scope of work and ToR. The following personnel/roles should be part of the Subcontractor(s) management and staffing plan:

- **Team Leader/Senior Inland Waterways Transport Specialist:** The Team Leader will provide overall guidance and technical support to manage the delivery of the Conceptual Study. The Team Leader must have experience leading consulting teams on multiple large-scale civil works projects, including the planning and/or design of inland waterways. The Team Leader will possess at least 20 years of experience in inland waterways planning, engineering, or management. Experience with inland waterways planning and design projects in the South Asia Region is preferred.

- **Deputy Team Leader/Lock Engineer:** The Deputy Team Leader will support the Team Leader and will be responsible for tasks related to conceptualization of lock structure solutions, planning, and engineering design efforts related to the preferred solutions for the locks and any other complementary civil works envisioned. In addition, the Deputy Team Leader will be responsible for all costing exercises for the locks and other proposed civil works as well as for managing the delivery of the traffic analysis. The Deputy Team Leader must have wide ranging design experience on inland waterways projects as well as a general understanding of operations and maintenance demands. The Deputy Team Leader will possess at least 10 years of experience in inland waterways with a firm understanding of the entire planning and design process. Experience with inland waterways projects in the South Asia Region is preferred.

- **Senior Economist:** The Senior Economist will be responsible for tasks related to the overall economic viability of the Project, including modeling, analysis, and determination of likely development impacts leading to the preparation of the SECBA and multi-criteria analysis. The Senior Economist will possess at least 10 years of experience in economic modeling and development impacts analysis of civil infrastructure projects. Experience with economic modeling and analysis in the South Asia Region is preferred.

- **Environmental Specialist:** The Environmental Specialist will be responsible for tasks related to measuring and analyzing the environmental related impacts of the

Project, including those that may occur both during and after implementation. The Environmental Specialist will possess at least 5 years of experience in the development of environmental impact statements covering a wide range of effects on air, land, and water as well as cultural heritage, religious, and historical sites. Experience with environmental impact assessment, analysis, and development of mitigation mechanisms in the South Asia Region is preferred.

- **Social Specialist:** The Social Specialist will be responsible for tasks related to measuring and analyzing the social related impacts of the Project, including those that may occur during both during and after implementation. The Social Specialist will possess at least 5 years of experience in community engagement and conducting social surveys, as well as identification and mitigation of risks related to labor influx, gender-based violence, indigenous peoples, and sites of cultural heritage, religious, and historical significance. In addition, the specialist will have experience with identifying likely potential for communicable diseases transmission and resettlement needs resulting from the implementation of the Project. Experience with social impact assessment, analysis, and development of mitigation mechanisms in the South Asia Region is preferred.

The Subcontractor(s) is encouraged to propose additional technical specialists and support staff as needed.

RFP INVEST-131: Conceptual Study for the Mongla-Ghasiakhali Canal Upgrading Project
Question and Answers (Q&A)

Technical Questions

1. **The ToR mentions "*Consultant*" and "*Subcontractor(s)";* it is assumed that these are the same. Is this assumption correct?**

   Correct. In the TOR document "consultant" and "subcontractor(s)" are used interchangeably.

2. **The ToR mentions "*Following the preliminary identification of alternatives, the Subcontractor(s) shall prepare conceptual level designs (up to 10 percent)".* Is the 10 percent mentioned here related to the accuracy required?**

   Yes.

3. **Will the conceptual level designs need to be approved by an Authority or entity and if so, who will give the approval? Is that BIWTA or another Authority or entity?**

   Yes, DAI/INVEST will provide approval in collaboration with BIWTA.

4. **Will BIWTA make site offices available which can be used for free by Consultants?**

   This can be discussed upon award with the apparent successful offeror.

5. **The ToR mentions "*All available digital base maps and reports shall be provided to the Subcontractor(s) by the BIWTA*". What is the content and extent of these maps and reports?**

   Datasets and maps that are available will be provided by BIWTA upon award. It is the responsibility of the selected bidder to review and determine the completeness and quality of the provided documentation. Any gaps, which need to be addressed to enable the completion of the Conceptual Study, will be addressed under Task 3 of the Terms of Reference. A summary of the data currently available is attached to this Q&A document in the file "Supplemental Data for RFP INVEST-131."

6. **Will BIWTA provide all available bathymetric and hydrometric data of the project site and adjacent area to the Consultant free of cost?**

   All available data will be provided free of cost. It will be the responsibility of the selected bidder to address any gaps in this data to enable the completion of the Conceptual Study. A summary of the data currently available is attached to this Q&A document in the file "Supplemental Data for RFP INVEST-131."

7. **What are the survey requirements and specifications which should be conducted under the Study?**

It will be the responsibility of the selected bidder to collect topographic and land use survey data around the proposed sites of the lock/s at a minimum. The selected bidder is free to use a survey collection method of their choosing as long as it conforms with reasonable good practice.

8. **Which design standards from Bangladesh are to be used for the conceptual designs other than the locks?**

   Design standards should conform with international best practice. In addition, the Conceptual Study should adhere to applicable Bangladeshi environmental and social standards and regulations.

9. **Is the Study period of 22 weeks fixed considering that surveys and geotechnical investigations will have to be conducted and that execution of these are also season dependent?**

   Yes, the period of performance for the resulting subcontract is fixed at 22 weeks.

10. **In the section outlining the objectives of the assignment, it is stated: "*This includes delivery of relevant upstream studies included within the broader Conceptual Study as interim deliverables.*" Do the upstream studies refer to the various analyses (surveys and investigations, geotechnical analysis, social and economic assessments, etc.) as presented in the tasks of this assignment? Or do they refer to a list of upstream studies that will need to be conducted in the next phases?**

    The upstream studies refer to the various analyses (surveys and investigations, geotechnical analysis, social and economic assessments, etc.) as presented in the tasks of the Terms of Reference.

11. **It is also mentioned, "*Should the results of the multi-criteria analysis yield a project (either one or two ship locks) that appears to be socioeconomically viable, these studies will form the basis of preliminary designs as well as determining the detailed economic impact and financing needs to implement the Project.*" Similar to the previous question, could you clarify if this part refers to the subsequent steps of the assignment? As preliminary designs may not interpreted the same as concept level designs and consequently, for concept level design, a detailed economic impact may not be produced.**

    The selected bidder will be responsible for producing the conceptual level designs for either one or two ship locks based on the outcome of the multi-criteria analysis. Any subsequent detailed studies are not a part of this scope and would fall under a future engagement that would include the preliminary designs, detailed economic impact, and financing needs to implement the project.

12. **Could you please kindly clarify what is the level of detail of the design of complementary civil works? As in is mentioned "*abstract level designs of complementary civil works*", therefore of less detail than the concept level designs of the locks?**

Offerors should present designs at the conceptual level. Approximate estimates of design needs and costs, as well as proposed locations, are acceptable at this stage. Offerors should provide justification and rationale for inclusion of these complementary civil works.

Procurement Process Questions

1. **Is the opportunity open to any qualified company to submit a proposal?**

   Any qualified company is eligible to submit a proposal in response to this RFP. As noted in the RFP, firms must have a SAM.gov Unique Entity ID either issued or requested/in progress in order to submit a proposal.

   Please note that in accordance with U.S. Government procurement regulations any firms that were involved in the development or review of the procurement documents – including the Request for Proposals, Scope of Work, and/or Terms of Reference – are not eligible to bid in any capacity for this procurement. Those firms may not submit a response to this procurement as a lead firm or a partner firm, and they are not eligible to inform the bids of other offerors.

2. **Are non-U.S. consultancies allowed to bid on this USAID proposal?**

   Please see the response to Question 1 above. Non-U.S. firms are eligible to submit a proposal in response to this procurement.

3. **Can we explore the option of forming Joint Ventures for this opportunity?**

   Offerors are able to form Joint Ventures for this opportunity if it would best position the firms to address the Scope of Work and accompanying Terms of Reference for this activity. Offerors should clearly present the proposed team format and structure as part of the Management Plan included in the Technical Proposal (see RFP for further instructions).

4. **Can a Joint Venture be established between a [Redacted] company and a Bangladesh entity?**

   Offerors are able to form Joint Ventures for this opportunity if it would best position the firms to address the Scope of Work and accompanying Terms of Reference for this activity. Offerors should clearly present the proposed team format and structure as part of the Management Plan included in the Technical Proposal (see RFP for further instructions).

5. **Will in case of a Joint Venture experiences of all Joint Venture account for proven experiences?**

   Yes, offerors are able to submit the institutional capacity of all Joint Venture members as part of the submitted proposal in the Institutional Capacity section and accompanying case studies. (Please refer to the RFP for further instructions).

6. **If the consortium submitting a proposal consists of a main bidder and sub-consultant, do the experiences of the sub-consultant account for proven experience?**

Yes, offerors are able to submit the institutional capacity of all consortium members as part of the submitted proposal in the Institutional Capacity section and accompanying case studies. (Please refer to the RFP for further instructions).

7. **The Request for Proposal states "If the UEID has not yet been issued, offerors should note that in the submission and update INVEST". Should this statement be clarified by documents that the process of obtaining an UEID has been initiated?**

   If the SAM UEID has been requested but not yet issued, Offerors can simply note as such in the submission email to INVEST. Offerors should follow up with INVEST via email to INVEST_Procurement@dai.com once the SAM UEID has been issued.

8. **Can the cost proposal request for payment be in other currencies than USD?**

   Cost proposals must be submitted in USD. The resulting subcontract will be issued in USD and all payments from DAI to the subcontracted firm will be made in USD.

9. **Should the offer price be quoted in USD only, or are quotation in other currencies also possible?**

   Cost proposals must be submitted in USD. The resulting subcontract will be issued in USD and all payments from DAI to the subcontracted firm will be made in USD.

10. **The scope and budget of the study do not appear aligned. Would USAID/BIWTA be open to discuss de-scoping and/or increasing the budget?**

    The procurement documents, including Scope of Work and associated budget, were developed in partnership with technical experts and are not subject to change. Bidders may propose alternative approaches or methodologies under each task if the outcome and deliverables meet the minimum requirements laid out in the Terms of Reference.

11. **The Request for Proposal mentions a number of positions; can both International and Bangladesh experts be proposed?**

    Offerors should submit the candidates that best meet the requirements of each position. It is acceptable for both international and Bangladesh experts to be proposed.

12. **Is there a weight factor between the Technical Proposal and the Cost Proposal in terms of evaluation?**

    Only the technical proposal will be scored against the 100 total points set forth in Section III, Evaluation of Proposal in the RFP. As noted in the RFP, the total price and associated cost build-up will be evaluated separately from the technical approach. The technical proposal far outweighs the cost proposal in terms of evaluation. However, offerors should submit cost proposals with a total price that falls within the budget ceiling stated in the RFP.

13. **Would a cost proposal of less than 500,000 USD be considered as favourable or will extra points be scored in the evaluation?**

    Offerors should submit a proposal that is priced competitively for the stated work, within the stated budget ceiling in the RFP. The budget ceiling was developed based on the Scope of Work and accompanying Terms of Reference and is considered reasonable for the requirements of the work. Offerors that propose a lower price will not receive extra points as part of the evaluation; however, the evaluation will take into consideration proposed cost as part of the overall price reasonableness for the activity and as the evaluation considers best value to the U.S. Government.

14. **The Request for Proposal states "*Offeror's Agreement with Terms and Conditions: Please visit the INVEST Procurement Hub website (scroll down to "Terms and Conditions") for RFP Terms and Conditions."*. Is offeror allowed to propose changes to these Terms and Conditions?**

    DAI/INVEST will negotiate Terms and Conditions of the subcontract as needed with the successful Offeror during the subcontracting process. Offerors should review the Terms and Conditions as part of the procurement stage and are free to note any issues or proposed changes, but these will not be considered and negotiated until the award decision has been made and the subcontracting process begins.

15. **Which tax regimes (e.g. VAT and IT) would apply for the Cost Proposal?**

    Offerors are responsible for ensuring that all tax requirements are included as part of the proposed price. This procurement will result in the award of a firm fixed price subcontract with payments made based on the completion of deliverables; tax will not be included or paid as a separate cost and must be included in the deliverable prices.

16. **Are "DAI's INVEST" and "INVEST" the same entity and in which country is it officially registered?**

    INVEST is a contract awarded to DAI Global LLC (DAI) by USAID; DAI serves as the USAID implementing partner that manages the INVEST project. This procurement is being issued by DAI through the INVEST contract and will result in a subcontract issued under the INVEST contract by DAI Global LLC. DAI is a U.S. business and INVEST has the ability to work in all countries where USAID operates.

17. **Can Offeror conduct a site visit as part of the proposal preparation to get acquainted with the areas and contact Bangladesh Officials (like e.g. from BIWTA) for the purpose of this visit only?**

    Offerors are able to prepare for the proposal how they see fit, including conducting site visits. However, Offerors are not able to engage BIWTA or any other local stakeholders directly as it is critical that all offerors have the same information when preparing their proposals.

18. Who would be the client, USAID or BIWTA?

USAID is funding this activity and is the ultimate client for the INVEST project and this activity. BIWTA is the local stakeholder that will benefit from this work and will be engaged throughout the process.

Bangladesh Inland Waterways Infrastructure Activity – Mongla-Ghasiakhali Canal

SUPPLEMENTAL DATA FOR RFP INVEST-131

LIST OF INFORMATION REQUESTED & STATUS

A summary of data and information requested/received for 14 key topics is provided below. To the extent possible, the technical team that prepared the terms of reference reviewed the data that was made immediately available. The following list summarizes what was requested and the status of the request. If no data or information were received, it was assumed that there is nothing available and collection/analysis was incorporated into the terms of reference.

1. **Design Vessels**
    - Cumulative annual vessels (2015-2022) received
    - Breakdown by vessel type not immediately available
2. **Topography of the project area**
    - Administrative jurisdictions and description of topography received
    - Land survey mapping
    - Land use mapping
    - Topographic mapping
    - Digital maps are available, but the quality and precision are unknown
3. **River morphology**
    - Morphology description received
    - Morphology mappings for 1943, 1967, 1984, 1997, 2010, 2013, 2018, and 2023 received
    - Digital morphology mappings for at least the eight aforementioned years is available
4. **Hydrographic data**
    - Data to be provided by the BIWTA Hydrology Division
    - Provide the following:
        - Bathymetry data in relation to stage or stage water depth
        - Stage duration, stage velocities, and stage discharge curves
        - Low-water and flood-stage levels with their slopes
        - Seasonal (e.g., differences between dry months and monsoon)
        - Length of time each stage is prevalent
        - Regulatory of streamflow cycle
        - Magnitude of sudden rises
        - For all datasets, provide:
            - Raw data

    - Time stamps for data collection
    - Description of data collection methodology
- No data or information received to date, but data is said to be available

5. **Characteristics of the canal**
    - Overview provided
6. **Slope of the canal**
    - Slope may be calculated using available water level data
7. **Normal channel dimensions**
    - Description provided
    - Digital shape files are available
8. **Scouring, sedimentation, and dredging**
    - Sedimentation graphs for seven monitoring sections for 2015-2017 during capital dredging provided
    - "Monitoring Report on Dredging Activities and its Effects" provided
    - Hardcopy mapping of dyke locations provided
    - Raw data of sedimentation volumes from 2014-2022 to be provided
    - Digital map of dykes with shape files to be provided
    - Dredging cost data available
9. **Maximum variation in water levels**
    - Water level for a three-month period in 2014 at Mongla Station provided
    - Raw water level data for all stations recorded between 2014 and 2022 available and to be provided
10. **Subsoil conditions**
    - No geotechnical data provided
    - Geotechnical investigation to focus on approximate areas of proposed lock locations and at a sampling of the dredge material dump sites
11. **Seismic zone activity**
    - Description of seismic zones according to the Bangladesh National Building Code provided
    - Seismic zone map provided
12. **Environmental and aesthetic aspects (sediment and non-sediment related)**
    - Water ecology, environmental, and social aspects of the canal and surrounding communities that is available

- Clarification on commonly used approaches in Bangladesh for any physical interventions in the natural and social environment involving designing infrastructure in such way that adverse effects are mitigated, minimized, or compensated to be provided

13. **Canal traffic and toll data**
    - Graph of annual number of cumulative vessels from 2015-2022 received
    - Graph of annual cumulative toll revenue from 2017-2022 received
    - Excel file with vessel breakdown from 2015-2022 to be provided
    - Excel file with vessel toll revenue collected from 2017-2022
        - By type not available
        - By month available
14. **Requirements and templates for environmental and social impact assessments**
    - Final EIA report provided in .wbk file
    - Previously completed EIA report in Word or pdf format to be provided
    - Electronic version of most up-to-date Government of Bangladesh guidelines/protocols on conducting an Environmental Impact Assessment and Social Impact Assessment to be provided