



Titas Gas Transmission and Distribution Co. Ltd.
Titas Gas Bhaban, 105, Kazi Nazrul Islam Avenue,
Kawran Bazar C/A, Dhaka-1215

Request for Expression of Interest (REoI)

1	Ministry/Division	:	Ministry of Power, Energy & Mineral Resources (MPEMR)/Energy & Mineral Resources Division (EMRD)
2	Agency	:	Bangladesh Oil, Gas & Mineral Corporation (Petrobangla)
3	Procuring Entity Name	:	Titas Gas Transmission & Distribution Company Limited (TGTDCCL)
4	Procuring Entity District	:	Dhaka
5	Expression of Interest for selection of	:	Consultant for the Position of Individual Consultants (National): 1) Web System Specialist, 2) IoT Specialist, 3) Software Specialist and 4) Financial Management Specialist
6	EoI Ref. No.	:	1. TGTDCCL/SMEEIP-ADB/SD-2 (IC-1)/2024 2. TGTDCCL/SMEEIP-ADB/SD-3 (IC-2)/2024 3. TGTDCCL/SMEEIP-ADB/SD-4 (IC-3)/2024 & 4. TGTDCCL/SMEEIP-ADB/SD-5 (IC-4)/2024
7	Date	:	28/01/2024
KEY INFORMATION			
8	Procurement Method	:	Individual Consultant Selection (ICS)
FUNDING INFORMATION			
9	Source of Fund	:	Asian Development Bank (ADB) [Loan No. 4386-BAN]
PARTICULAR INFORMATION			
10	Project Name	:	Smart Metering Energy Efficiency Improvement Project [Installation of Prepaid Gas Meter for TGTDCCL]
11	EoI Closing Date & Time	:	11/02/2024 & 12:00 PM [BST]
INFORMATION FOR APPLICANT			
12	Brief Description of Assignment	:	The Government of Bangladesh has received financing from the ADB to promote efficient and safe use of gas through the installation of 6.5 lac Smart Prepaid Gas Meters (SPGMs) for domestic customers in the Metro Dhaka Marketing (South) and Regional Marketing (Narayanganj) of Titas Franchise Area (TFA). The project will engage 1 (One) Individual Consultant (National) for the above mentioned positions as per requirement of the Terms of Reference (ToR). The detailed description of these Assignments are mentioned in the ToR. The ToR and the EoI Forms will be available in the website of TGTDCCL at www.titasgas.gov.bd .
13	Experience, Resources and Delivery Capacity Required	:	The Experience, Resources and Delivery Capacity Required for the Assignments are mentioned in the ToR.
14	Documents comprising the EoI	:	The interested consultant who submits the EoI accordingly along with detailed Curriculum Vitae (CV) shall be evaluated using, but not limited to the following minimum criteria which the consultant must provide documentary proof of compliance: a) Qualification Requirements mentioned in the ToR. b) Interested consultants will be required to submit 3 (three) signed copies of EoI – 1 (one) Original and 2 (two) copies in closed envelope marked with “ EXPRESSION OF INTEREST (EoI) FOR SELECTION OF NATIONAL INDIVIDUAL CONSULTANT FOR THE POSITION OF WEB SYSTEM SPECIALIST/ IoT SPECIALIST/ SOFTWARE SPECIALIST/ FINANCIAL MANAGEMENT SPECIALIST ” along with soft copy in CD-ROM on all working days (Sunday to Thursday) within office time at the place of receiving EoI before the EoI closing date & time. Any application submitted later than the specific date and time or submitted through e-mail/fax will not be considered. In addition, EoI can also be submitted through ADB’s Consultant Management System (CMS) at www.cms.adb.org along with detailed CV. A shortlist of consultants will be prepared upon evaluation of EoIs based on the criteria of (a) General Qualification (b) Project Related Experience, and (c) Experience with International Organizations, following the provisions of the Procurement Regulations for ADB Borrowers and PPR-2008. The selected Individual Consultant will be notified duly.
15	Place of receiving the EoI	:	Office of the Project Director, Smart Metering Energy Efficiency Improvement Project [Installation of Prepaid Gas Meter for TGTDCCL], Planning Department, Titas Gas Bhaban (10 th Floor), 105, Kazi Nazrul Islam Avenue, Kawran Bazar C/A, Dhaka-1215
PROCURING ENTITY DETAILS			
16	Name of Official Inviting EoI	:	Engr. Muhammad Abul Kawser
17	Designation of Official Inviting EoI	:	Project Director, Smart Metering Energy Efficiency Improvement Project [Installation of Prepaid Gas Meter for TGTDCCL]
18	Address of Official Inviting EoI	:	Planning Department Titas Gas Bhaban (10 th Floor), 105, Kazi Nazrul Islam Avenue, Kawran Bazar C/A, Dhaka-1215
19	Contact Details of Official Inviting EoI	:	Tel No: +8801712816739, E-mail : pd.ipgm.adb@gmail.com
20	The procuring entity reserves the right to accept or reject EoI as well as whole procedure.		

G.A. Rahman
28.01.2024
(Engr. Muhammad Abul Kawser)
Project Director

“Smart Metering Energy Efficiency Improvement Project
[Installation of Prepaid Gas Meter for TGTDCCL]”

TERMS OF REFERENCE (TOR)

for

**SELECTION OF NATIONAL CONSULTANT FOR
THE POSITION OF WEB SYSTEM SPECIALIST**

**SMART METERING ENERGY EFFICIENCY IMPROVEMENT PROJECT
[INSTALLATION OF PREPAID GAS METER FOR TGTDC]**

**SUPPORTED BY:
ASIAN DEVELOPMENT BANK
(LOAN NO. 4386-BAN)**

**IMPLEMENTED BY:
TITAS GAS TRANSMISSION & DISTRIBUTION COMPANY LIMITED (TGTDC)**

December 2023

A. Introduction and Background

1. Natural gas has been playing a vital role in the rapid economic development of Bangladesh and is a major primary energy source accounting for over 60% of the total primary energy supply in the country. While the high growth trajectory in demand for energy will continue as the economy grows, indigenous gas production peaked in 2017 and is decreasing. To fill the supply gap, Bangladesh began importing liquified natural gas (LNG) in 2018, and its share in the total gas supply increased from 11% in 2019 to 19% in 2020, which makes the country increasingly vulnerable to the volatility of international gas prices. The increased share of costly imported LNG is also worsening the financial performance of gas sector entities and increasing the energy costs for energy-intensive industrial customers.
2. Wasteful use of natural gas is prevalent among residential customers in Bangladesh who consume about 13 percent of the natural gas demand. While all other customer categories are connected to gas meters, most residential customers use non-metered gas. Non-metered residential customers pay a fixed amount per month regardless of the gas quantity they use. Since they do not pay for every unit of gas, they tend to use gas inappropriately without limit, nor do they consider using gas more efficiently. Following the Government of Bangladesh's target to connect all residential customers with prepaid gas meters by 2026, each of the six gas distribution companies in Bangladesh embarked on programs to connect the remaining residential customers to smart prepaid gas meters (SPGMs) in accordance with the government's standard technical specifications. Of nearly 4.3 million residential gas customers nationwide, less than 500,000 are connected to prepaid meters as of June 2022.
3. Titas Gas Transmission and Distribution Company Limited (TGTDC) is the largest gas distribution company in Bangladesh and undertook the installation of prepaid gas metering (web-based) system project funded by the Japan International Cooperation Agency (JICA). TGTDC has taken up this project to counteract gas wastage by reducing system loss and helping in the efficient use of gas. The total non-metered domestic connections in the Titas Franchise Area (TFA) is around 2.6 million. At present, there are around 4 lac prepaid gas meters in use in the TFA. TGTDC intends to install 6.5 lac SPGMs ('pay-as-you-go' meters) in prepayment mode wherein, customers can top up their meters online, via cellphone or text message, point of sales (POS), or even with a smartphone app. The prepayment metering system will have a secure smart data network to collect gas meter data and provide it to TGTDC's System Master Station/Data Center.
4. TGTDC has applied for a loan from the Asian Development Bank (ADB) for the Smart Metering Energy Efficiency Improvement Project (the Project). Building on the previous project funded by JICA, the Project will help promote efficient and safe use of gas in TFA.

The scope of the Project includes the following components:

- (i) Supply, installation, and commissioning of Unified Web System (UWS) for SPGM system;
- (ii) Supply, installation, and commissioning of at least 650,000 SPGMs;

- (iii) Supply, installation, and commissioning of Automated Grievance Redress Center (AGRC) for SPGM system comprising (a) one automated central call center at Head Office, and (b) customer support service centers at 30 Zonal Offices in TFA;
 - (iv) Supply, installation, and commissioning of Meter Testing and Calibration Bench (MTCB); and
 - (v) Training for operation and maintenance staff and capacity building of TGTDCCL staff.
5. The SPGMs shall be EN ISO and/or IEC conformance or equivalent with accuracies traceable to international standards. The existing NFC card-based web system and/or Data Center at Head Office building at Kawran Bazar and the Disaster Recovery Center at Joydebpur Regional Sales office building of TGTDCCL shall be upgraded, integrated and/or merged with a new smart online-based and NFC card-based Web System for installation of prepayment system. The new smart online-based and NFC card-based system should utilize the space available in the existing Data Center at Head Office building at Kawran Bazar and the Disaster Recovery Center for the installation of prepayment hardware and software system. The Project will be guided by the Laws of Bangladesh. This project will be implemented in the Metro Dhaka Marketing (South) and Regional Marketing (Narayanganj) of TFA. Location of the project area is given in Annexure-1.

B. Objectives of the Assignment

6. In addition to recruiting a consulting firm to assist the Project Management Unit (PMU) in implementation of the Project, TGTDCCL intends to engage an Individual National Consultant to enhance the capacity of TGTDCCL in planning, design, and development of UWS and provide management inputs under the Smart Metering Energy Efficiency Improvement Project.

C. Duration of the Assignment

7. The consulting service will be implemented for 12 (Twelve) person-months on a maximum of 12 (Twelve) days per month during the project period (January 2024 – December 2027).

D. Scope of Work

8. The Services to be provided by the Consultant will include, but not be limited to, (i) assistance in bidding including preparation of bid documents and bid evaluation, (ii) design, integration testing, security testing, monitoring performance of server after deployment for Total IoT based web application and Automated Grievance Redress Center (AGRC) and (iii) project management for the detailed engineering, procurement, field construction, commissioning, all as necessary and appropriate for successful implementation and completion of the Project.

E. Detailed Tasks, Responsibilities, and Qualifications

9. The detailed tasks, responsibilities, and qualifications are given in the following table:

Table 1: Position, Tasks, Responsibilities, and Qualification

Tasks/Responsibilities	Qualification
<p>Working closely and in collaboration with, and reporting to the Project Management Unit (PMU), the expert will:</p> <ul style="list-style-type: none"> • Assist PMU in planning, preparation, bidding, and implementation of project works; • Design, performance & load testing, unit testing, integration testing, security testing, monitoring performance of server after deployment for total IoT based web application; • Design, performance & load testing, unit testing, integration testing, security testing, monitoring performance of server after deployment for Automated Grievance Redress Center (AGRC). • Acceptance testing of Unified Web System (UWS) during implementation and after deployment; • Support PMU to ensure that all requirements related to the implementation are effectively met; • Support PMU in project reporting to the Project Director (PD), and be directly responsible for reporting on the progress of the consulting services regarding project activities; • Support PMU in achieving the project objectives, including problem-solving and responding to unexpected events or developments that may impact project implementation; • Provide support to the other technical teams in the preparation, monitoring and reporting of the IoT based Web system and AGRC establishment; • With the PMU finalizing the methodology of the Web system and AGRC, define the customer requirements for planning; • Advise and assist the PMU to collect system errors, test and evaluate all system procedure in each project site; • Advise PMU on actions to address problems arising in the Web system 	<ul style="list-style-type: none"> • A bachelor’s degree in computer science, electrical engineering, electronics engineering, or other relevant field. A postgraduate degree in the relevant field is advantageous. • A minimum of ten (10) years of working experience, of which two (2) years are in planning, design, development of an IoT based web system as a team leader or a principal software engineer or a project manager or equivalent. • A minimum of five (5) years of full stack software development experience and expected to be comfortable with IoT data accumulation standards (e.g., DLMS), Data Transport layer protocols, cloud computation (irrespective of a choice of cloud service), Bidirectional communication and Data binding techniques: API development, scripting languages like Java script, frameworks like React, React Native, Ionic, Electron, Flutter, and Angular etc. • Must possess experience working on microcontroller programming in measuring equipment like gas, electric, and water meters, etc., where microcontroller-based devices were required to fetch data and/or instructions to and/or from server applications securely using technologies like GPRS, GSM, NB-IoT, LoRa, etc. • Knowledge on design, installation, operation and maintenance of Data Center (DC) and Data Recovery Center (DRC). • Knowledge of design, installation, operation and maintenance of Customer Service Management systems. • Expert in troubleshooting, and maintaining a network, hardware, and software including firewall, router, switches, LAN and/or WAN, and network security for overall networks and wireless communication & protocol.

<p>and AGRC, implementing an O&M plan for the IoT based Web system;</p> <ul style="list-style-type: none"> • Assist TGTDCCL in fulfilling their responsibilities for design, development, training, monitoring for the IoT based Web system installation and O&M work, evaluating quality, commissioning; • Assist PMU in implementing an O&M plan, resolving the issues (if any) between the EPC contractor and PMU for Prepaid Gas Meter system; and • Any other tasks related to the Project assigned by Project Director. 	<ul style="list-style-type: none"> • Fluency in oral and written English is essential.
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CCNA = Cisco Certified Network Associate, DC = data center, DRC = Disaster recovery center, HTML = Hypertext Markup Language, O&M = operation and maintenance, PD = project director, UWS = unified web system, PMU = project management unit, SPGM = smart prepaid gas meter, TGTDCCL = Titas Gas Transmission and Distribution Company Limited

F. Key Deliverables

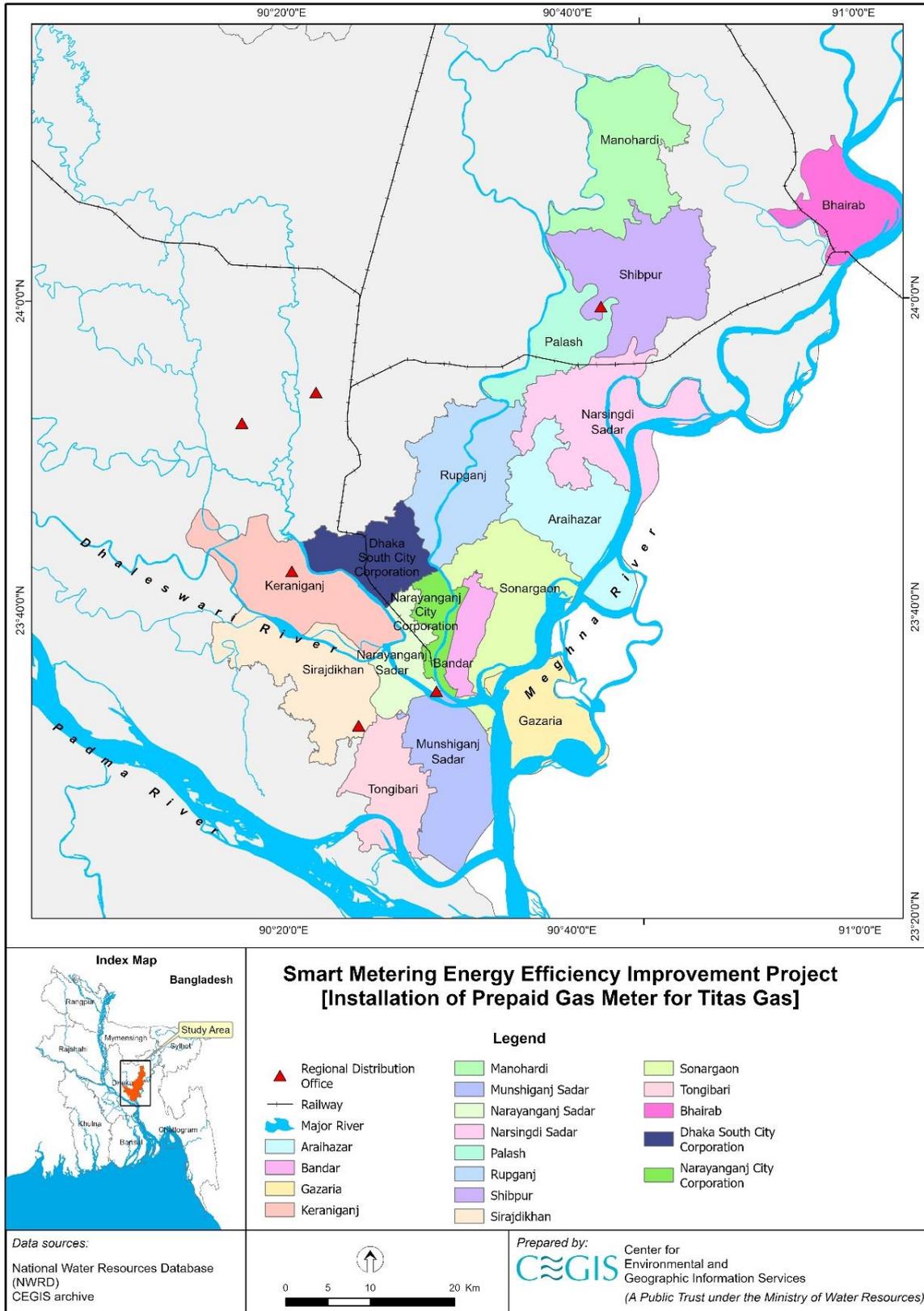
10. The reports and deliverables to be prepared and submitted to TGTDCCL by the Consultant include, but not be limited to, the following:
 - (i) Inception Report (including schedule);
 - (ii) Quarterly Progress Report;
 - (iii) Interim Report;
 - (iv) Draft Final; and
 - (v) Final Report.

11. All reports and deliverables shall be submitted to the Project Director. The timing of submission will be decided and notified to the Consultant by TGTDCCL.

G. Support to be Provided by TGTDCCL

12. TGTDCCL will be responsible for the provision of the following support services:
 - (i) Provision of latest customer data required for the installation of SPGM;
 - (ii) Provision of company rules and/or standards to be reviewed for the installation of SPGM;
 - (iii) Cooperation to the establishment of new customer data required for the UWS; and
 - (iv) Office Space with facilities for printing and photocopying.

Annexure-1: Location of the project area



TERMS OF REFERENCE (TOR)

for

**SELECTION OF NATIONAL CONSULTANT FOR
THE POSITION OF IoT SPECIALIST**

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	<p>channel using TLS and/or SSL: TCP and/or IP and UDP sockets, IPV4 and IPV6 understanding;</p> <ul style="list-style-type: none"> • Experience in troubleshooting, maintaining network/hardware/ software including firewall, router and switches, LAN, WAN and network security for overall networks and wireless communication & protocol. • Fluency in oral and written English is essential.
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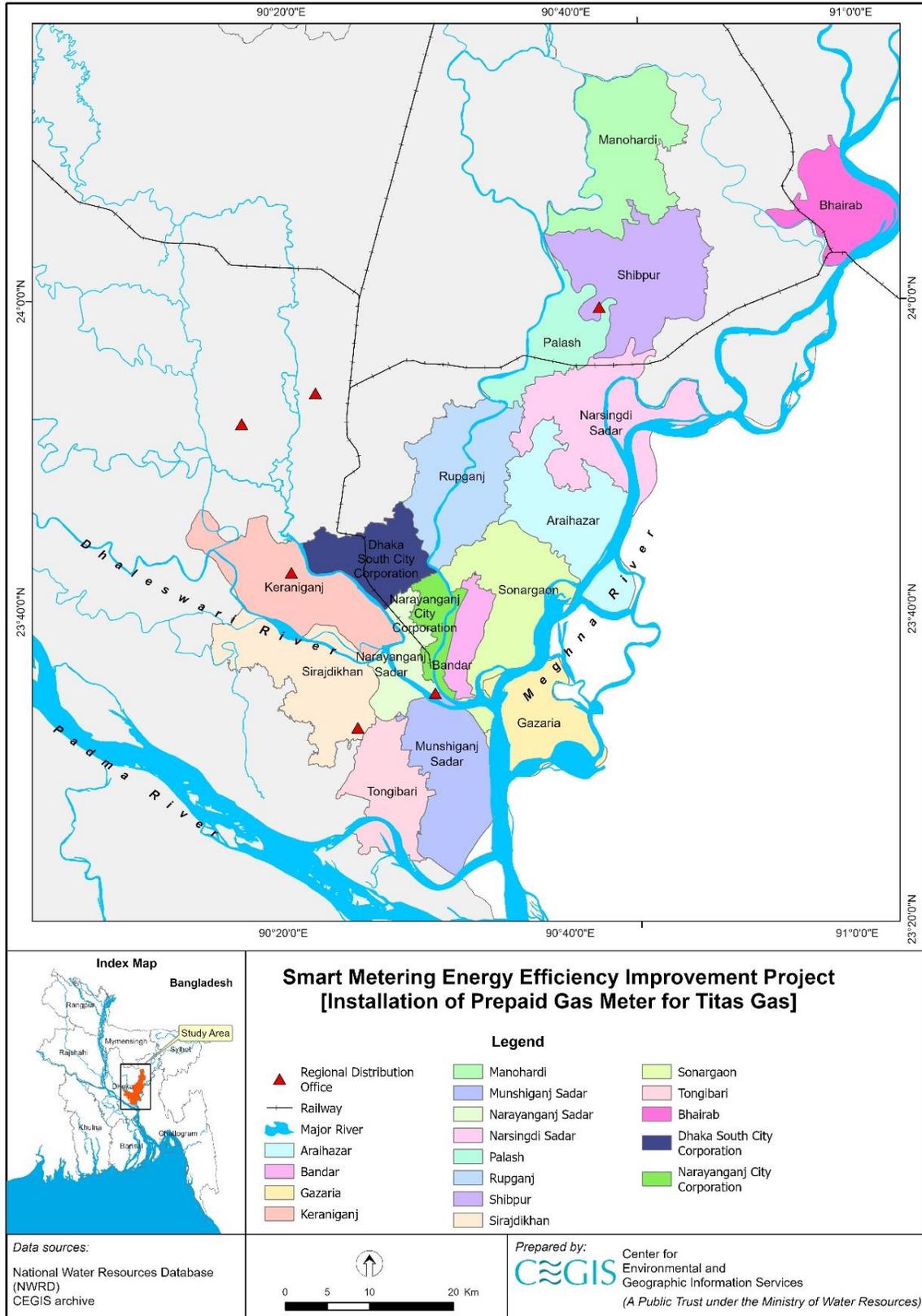


Figure 1: Location of the project area

TERMS OF REFERENCE (TOR)

for

**SELECTION OF NATIONAL CONSULTANT FOR
THE POSITION OF FINANCIAL MANAGEMENT SPECIALIST**

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C. Duration of the Assignment

7. The consulting service will be implemented for 6 (Six) person-months on a maximum of 12 (Twelve) days per month during the project period (January 2024 – December 2027).

D. Scope of Work

8. Under the direct supervision of TGTDCCL's Project Director, the Consultant will be responsible for supporting TGTDCCL in the preparation of timely and accurate financial reports including audited project financial statements (APFSs) for the Project. During the assignment, special attention should be paid to the following:
- (i) All Project funds have been used in accordance with the conditions of the relevant financing agreement, with due attention to economy and efficiency, and only for the purposes for which the financing was provided;
 - (ii) Counterpart funds have been provided and used in accordance with the relevant financing agreement, with due attention to economy and efficiency, and only for the purposes for which they were provided;
 - (iii) All necessary supporting documents as required by ADB's loan disbursement handbook, records, and accounts have been kept in respect of all project ventures,

including expenditures reported via SOEs, if applicable. Clear linkages should exist between the books of account and reports presented to the Asian Development Bank (ADB); and

- (iv) The project accounts have been prepared in accordance with consistently applied standards, as applicable in Bangladesh and acceptable to ADB, and give a true and fair view of the financial situation of the project and of resources and expenditures for the year ended on that date.

E. Detailed Tasks, Responsibilities, and Qualifications

9. The detailed tasks, responsibilities, and qualifications are given in the following table:

Table 1: Position, Tasks, Responsibilities, and Qualification

Tasks/Responsibilities	Qualification
<p>The Financial Management Specialist will carry out the below tasks to assist TGTDCI in financial management:</p> <ul style="list-style-type: none"> • Provide support to the project's financial staff to ensure they are aware of their duties and the relevant sections of project documents including the i) Loan and project agreements, ii) Project Administration manual, iii) ADB's loan disbursement handbook, and iv) national and ADB's anti-corruption policy and whistleblowing mechanisms; • Support the TGTDCI to ensure an effective internal control system on (a) all payments are duly prepared, reviewed, authorized, and recorded in the accounting system correctly and in a timely manner, and (b) all expenditure items meet the eligibility criteria as defined in the ADB financing agreement, and are supported by adequate documentation (invoice, contracts, evidence of payments etc.) as outlined in the ADB Loan Disbursement Handbook as well as applicable government of Bangladesh rules and regulations; • Support the TGTDCI in maintaining a well-organized and up-to-date filing system for all accounting and financial records; 	<ul style="list-style-type: none"> • Qualified Chartered Account as recognized in Bangladesh. • More than 5 years of practical experience in the field of energy and financing system and accounting/auditing in Bangladesh • Knowledge of computer-based budgeting and accounting packages and direct working experience with energy/gas sector implementation projects is an advantage. • Must be familiar with the financial rules and regulations of the government of Bangladesh. • Experience with international organizations preferred. • Fluency in English is required.

<ul style="list-style-type: none"> • Support the TGTDCCL in maintaining an up-to-date fixed asset register and that an annual inventory of equipment, supplies and materials procured under the project is conducted and documented in a timely fashion; • Conduct a periodic verification of the completeness of transactions recorded in the accounts; • Conduct quarterly bank reconciliations for all accounts including advance account, counterpart account, project accounts, petty cash. List and analyze all the reconciliation items, if any; • Conduct a quarterly analysis of account balances in the general ledger and verification of trial balance and advise the TGTDCCLs on necessary corrections and adjusting entries (omissions, coding errors, double counting, etc.) as required; • Conduct periodic analysis on outstanding advances; • Conduct an analysis of the financial execution of the approved budget (budget-to-actual by activity) and explain any significant variations in financial report or the notes of the financial statements; • Conduct quarterly reconciliation of the project disbursement records and ADB's disbursement data available in the LFIS to ensure the correctness and completeness of the project records. Follow-up on any discrepancies to ensure these are resolved in a prompt manner; • Follow-up on the implementation of audit recommendations as well as ADB's recommended actions to improve the quality of the audited financial statements to ensure these are implemented in a timely fashion. Develop time-bound action plans as necessary; • Assist the project in reporting on any capitalization of interest during construction, if applicable – that is financing of interest, commitment 	
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<p>charge or other charges that may be charged by ADB from the loan during project implementation. In this regard, liaise with the relevant national authority/Ministry of Finance for the relevant financial information;</p> <ul style="list-style-type: none"> • Support TGTDCCL in preparing quarterly and annual financial statements/reports in the format in accordance with ADB requirement in a timely manner. Ensure timely submission of the reports including audited project financial statements to the relevant stakeholders including ADB as required; • Assist in the annual audit process and facilitate that the project auditors have access to all necessary files and assist to produce financial statements to external auditor, including (a) Receipt and Payment Statements, (b) Reconciliation Statements, (c) Budget versus Actual expenditures analysis Statements, and (d) Notes to the Financial Statements; • Assist the TGTDCCL in preparing Withdrawal applications and in collection and filing of all supporting documentation in accordance with ADB loan disbursement handbook; • Support the project in the follow-up of internal and external audit recommendations to further improve the internal controls of the project; • Assist the project in implementing financial recommendations as agreed between the project and ADB during review mission; and • Providing trainings to finance and accounts staff of TGTDCCL. 	
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PD = project director, PMU = project management unit, SPGM = smart prepaid gas meter, TGTDCCL = Titas Gas Transmission and Distribution Company Limited

F. Key Deliverables

10. The reports and deliverables to be prepared and submitted to TGTDCCL by the Consultant include, but not be limited to, the following:
 - (i) Inception Report (including schedule);
 - (ii) Quarterly Progress Report;

- (iii) Interim Report;
- (iv) Draft Final; and
- (v) Final Report.

11. All reports and deliverables shall be submitted to the Project Director. The timing of submission will be decided and notified to the Consultant by TGTDCCL.

G. Support to be Provided by TGTDCCL

12. TGTDCCL will be responsible for the provision of the following support services:

- (i) Provision of latest customer data required for the installation of SPGM;
- (ii) Provision of company rules and/or standards to be reviewed for the installation of SPGM;
- (iii) Cooperation to the establishment of new customer data required for the UWS; and
- (iv) Office Space with facilities for printing and photocopying.

Annexure-1: Location of the project area

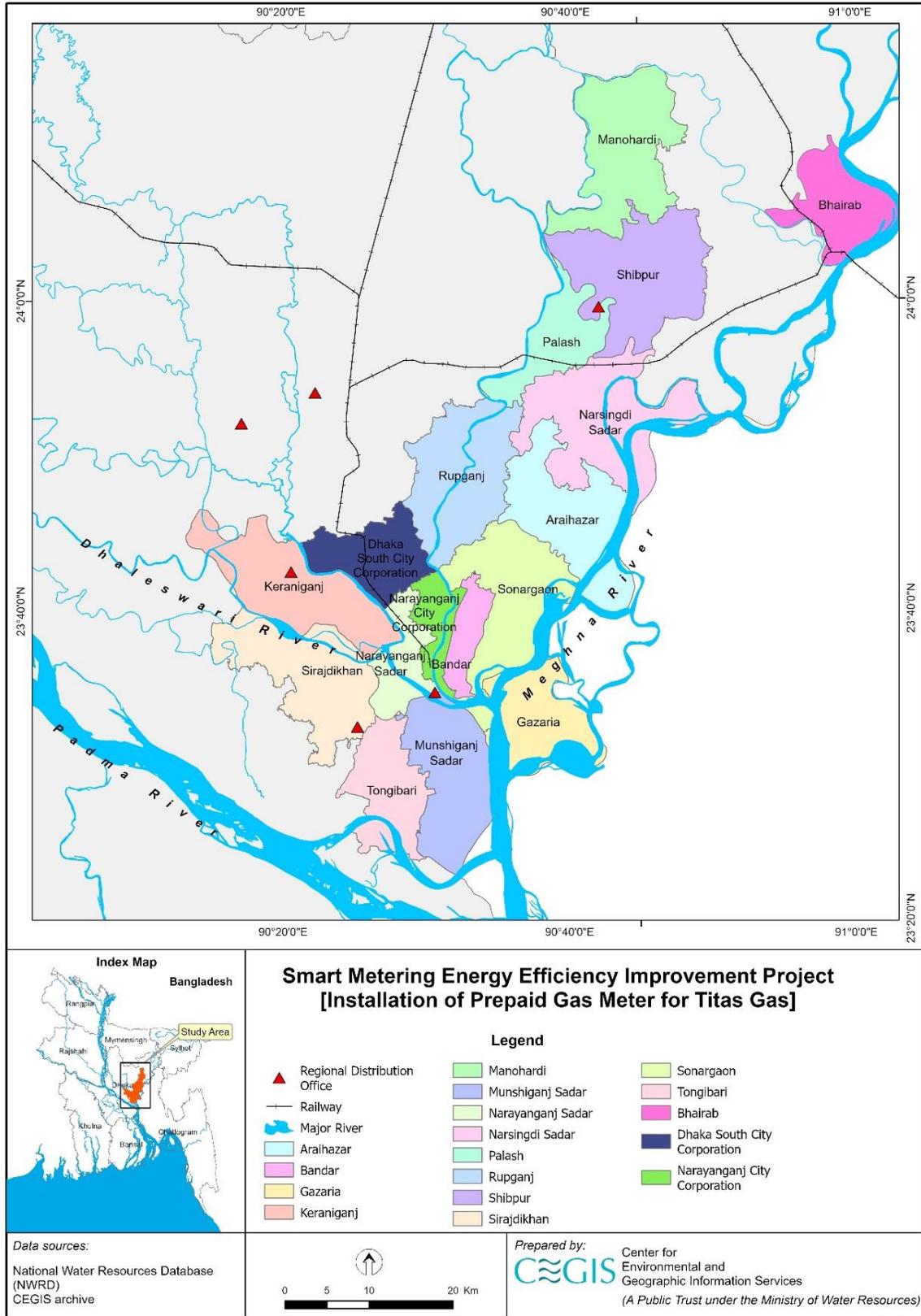


Figure 1: Location of the project area

TERMS OF REFERENCE (TOR)

for

**SELECTION OF NATIONAL CONSULTANT FOR
THE POSITION OF SOFTWARE SPECIALIST**

**SMART METERING ENERGY EFFICIENCY IMPROVEMENT PROJECT
[INSTALLATION OF PREPAID GAS METER FOR TGTDC]**

**SUPPORTED BY:
ASIAN DEVELOPMENT BANK
(LOAN NO. 4386-BAN)**

**IMPLEMENTED BY:
TITAS GAS TRANSMISSION & DISTRIBUTION COMPANY LIMITED (TGTDC)**

December 2023

A. Introduction and Background

1. Natural gas has been playing a vital role in the rapid economic development of Bangladesh and is a major primary energy source accounting for over 60% of the total primary energy supply in the country. While the high growth trajectory in demand for energy will continue as the economy grows, indigenous gas production peaked in 2017 and is decreasing. To fill the supply gap, Bangladesh began importing liquified natural gas (LNG) in 2018, and its share in the total gas supply increased from 11% in 2019 to 19% in 2020, which makes the country increasingly vulnerable to the volatility of international gas prices. The increased share of costly imported LNG is also worsening the financial performance of gas sector entities and increasing the energy costs for energy-intensive industrial customers.
2. Wasteful use of natural gas is prevalent among residential customers in Bangladesh who consume about 13 percent of the natural gas demand. While all other customer categories are connected to gas meters, most residential customers use non-metered gas. Non-metered residential customers pay a fixed amount per month regardless of the gas quantity they use. Since they do not pay for every unit of gas, they tend to use gas inappropriately without limit, nor do they consider using gas more efficiently. Following the Government of Bangladesh's target to connect all residential customers with prepaid gas meters by 2026, each of the six gas distribution companies in Bangladesh embarked on programs to connect the remaining residential customers to smart prepaid gas meters (SPGMs) in accordance with the government's standard technical specifications. Of nearly 4.3 million residential gas customers nationwide, less than 500,000 are connected to prepaid meters as of June 2022.
3. Titas Gas Transmission and Distribution Company Limited (TGTDCCL) is the largest gas distribution company in Bangladesh and undertook the installation of prepaid gas metering (web-based) system project funded by the Japan International Cooperation Agency (JICA). TGTDCCL has taken up this project to counteract gas wastage by reducing system loss and helping in the efficient use of gas. The total non-metered domestic connections in the Titas Franchise Area (TFA) is around 2.6 million. At present, there are around 4 lac prepaid gas meters in use in the TFA. TGTDCCL intends to install 6.5 lac SPGMs ('pay-as-you-go' meters) in prepayment mode wherein, customers can top up their meters online, via cellphone or text message, point of sales (POS), or even with a smartphone app. The prepayment metering system will have a secure smart data network to collect gas meter data and provide it to TGTDCCL's System Master Station/Data Center.
4. TGTDCCL has applied for a loan from the Asian Development Bank (ADB) for the Smart Metering Energy Efficiency Improvement Project (the Project). Building on the previous project funded by JICA, the Project will help promote efficient and safe use of gas in TFA.

The scope of the Project includes the following components:

- (i) Supply, installation, and commissioning of Unified Web System (UWS) for SPGM system;
- (ii) Supply, installation, and commissioning of at least 650,000 SPGMs;

- (iii) Supply, installation, and commissioning of Automated Grievance Redress Center (AGRC) for SPGM system comprising (a) one automated central call center at Head Office, and (b) customer support service centers at 30 Zonal Offices in TFA;
 - (iv) Supply, installation, and commissioning of Meter Testing and Calibration Bench (MTCB); and
 - (v) Training for operation and maintenance staff and capacity building of TGTDCCL staff.
5. The SPGMs shall be EN ISO and/or IEC conformance or equivalent with accuracies traceable to international standards. The existing NFC card-based web system and/or Data Center at Head Office building at Kawran Bazar and the Disaster Recovery Center at Joydebpur Regional Sales office building of TGTDCCL shall be upgraded, integrated and/or merged with a new smart online-based and NFC card-based Web System for installation of prepayment system. The new smart online-based and NFC card-based system should utilize the space available in the existing Data Center at Head Office building at Kawran Bazar and the Disaster Recovery Center for the installation of prepayment hardware and software system. The Project will be guided by the Laws of Bangladesh. This project will be implemented in the Metro Dhaka Marketing (South) and Regional Marketing (Narayanganj) of TFA. Location of the project area is given in Annexure-1.

B. Objectives of the Assignment

6. In addition to recruiting a consulting firm to assist the Project Management Unit (PMU) in implementation of the Project, TGTDCCL intends to engage an Individual National Consultant to enhance the capacity of TGTDCCL in planning, design, and development of UWS and provide management inputs under the Smart Metering Energy Efficiency Improvement Project.

C. Duration of the Assignment

7. The consulting service will be implemented for 12 (Twelve) person-months on a maximum of 12 (Twelve) days per month during the project period (January 2024 – December 2027).

D. Scope of Work

8. The Services to be provided by the Consultant will include, but not be limited to, (i) assistance in bidding including preparation of bid documents and bid evaluation, (ii) design, integration testing, security testing, monitoring performance of server after deployment for Total IoT based web application and Automated Grievance Redress Center (AGRC) and (iii) assistance PMU in fulfilling their responsibilities for design, development, training, monitoring for IoT based WEB system installation and O&M work, evaluating quality, commissioning.

E. Detailed Tasks, Responsibilities, and Qualifications

9. The detailed tasks, responsibilities, and qualifications are given in the following table:

Table 1: Position, Tasks, Responsibilities, and Qualification

Tasks/Responsibilities	Qualification
<p>Working closely and in collaboration with, and reporting to the PMU, the expert will:</p> <ul style="list-style-type: none"> • Assist PMU in planning, preparation, bidding and implementation of project works; • Design, performance & load testing, unit testing, integration testing, security testing, monitoring performance of server after deployment for Total IoT based web application • Design, performance & load testing, unit testing, integration testing, security testing, monitoring performance of server after deployment for Automated Grievance Redress Center (AGRC). • Acceptance testing of UWS during implementation and after deployment; • Support PMU to ensure that all requirements related to the implementation are effectively met; • Support PMU in project reporting to PD, and be directly responsible for reporting on the progress of the consulting services regarding project activities; • Support PMU in achieving the project objectives, including problem-solving and responding to unexpected events or developments that may impact on project implementation; • Provide support to the other technical teams in the preparation, monitoring and reporting of the IoT based Web system and AGRC establishment. • With the PMU finalizing the methodology of Web system and AGRC, define the customer requirements for planning. • Advise and assist the PMU to collect system error, test and evaluate, the all system procedure in each project site. • Advise PMU on actions to address problems arising in the Web system and AGRC, implementing and O&M plan for the IoT based WEB system. 	<ul style="list-style-type: none"> • A bachelor's degree in computer science, electrical engineering, electronics engineering, or other relevant field. A postgraduate degree in the relevant field, is advantageous. • A minimum of (5) years of working experience, of which two (2) years of experience serving or as Software Developer or equivalent . • Expert in server stack architecture (full stack) such as: MEAN stack (MongoDB or anything in NoSQL, Express JS or any compatible JS framework, AngularJS and Node.JS) or alternatively, MEAN stack compatibility on SQL (relational database) instead of NoSQL • Experience in cloud computation (irrespective of choice of cloud service): Scalability, Elasticity, Security, Regional capacity, Host mirroring and Hot replacement, Data Backup strategy and Archive, Proxy and firewall management • Experience in application development, frontend requisites: web programming using HTML and/or CSS either on PHP based frameworks or preferable Angular frameworks and Mobile Programming over cross platform frameworks like Ionic/Electron/Flutter, etc • Knowledge of design, installation, operation and maintenance of customer service management systems. • Expert on troubleshooting, maintaining network/hardware/software including firewall, router/switches, LAN/WAN and network security for overall networks and wireless communication & protocol. • Fluency in oral and written English is essential.

<ul style="list-style-type: none"> • Assist TGTDCCL in fulfilling their responsibilities for design, development, training, monitoring for IoT based WEB system installation and O&M work, evaluating quality, commissioning. • Any other jobs related to the Project assigned by PMU. 	
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CCNA = Cisco Certified Network Associate, DC = data center, DRC = Disaster recovery center, HTML = Hypertext Markup Language, O&M = operation and maintenance, PD = project director, UWS = unified web system, PMU = project management unit, SPGM = smart prepaid gas meter, TGTDCCL = Titas Gas Transmission and Distribution Company Limited

F. Key Deliverables

- 10. The reports and deliverables to be prepared and submitted to TGTDCCL by the Consultant include, but not be limited to, the following:
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Annexure-1: Location of the project area

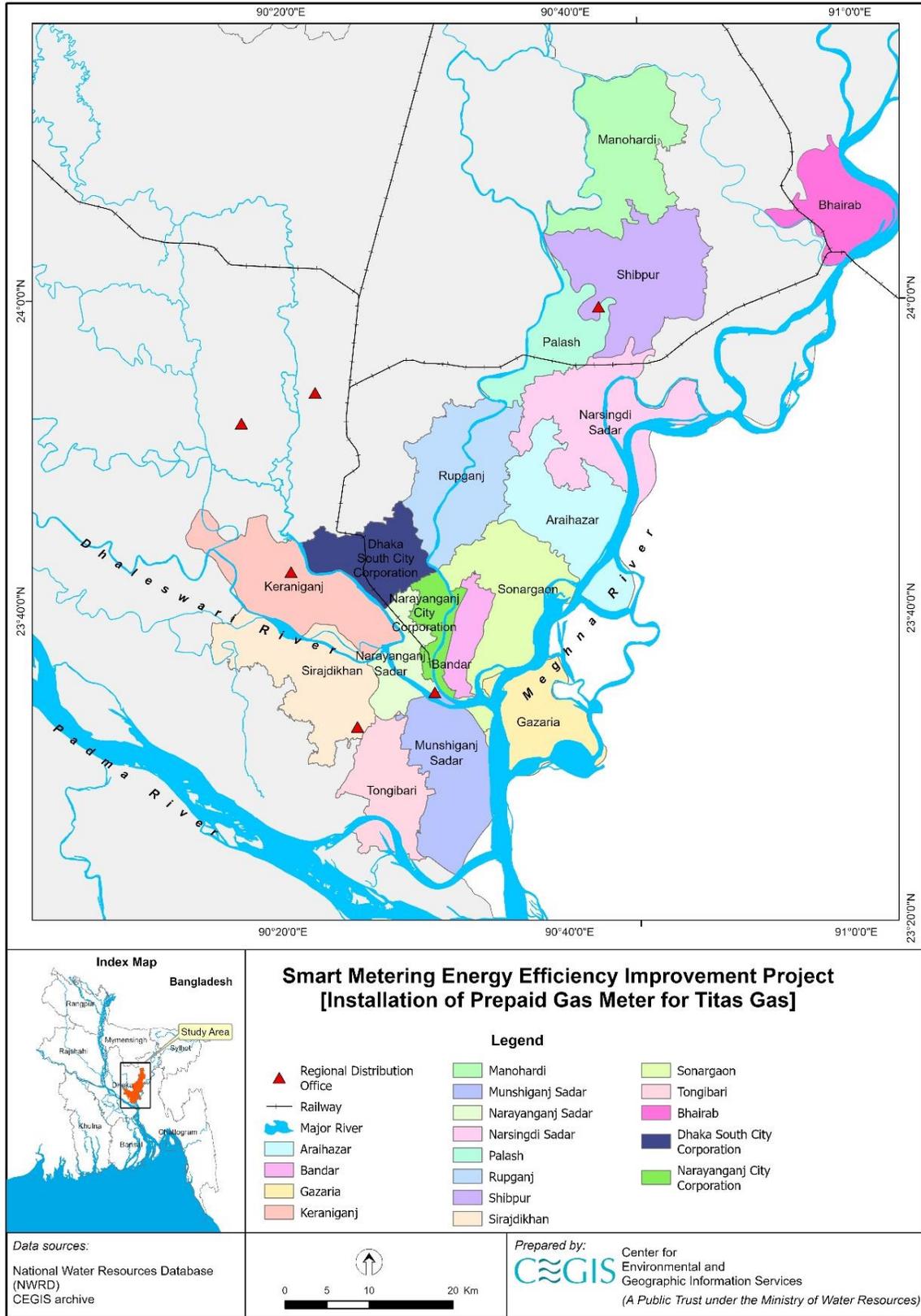


Figure 1: Location of the project area

CURRICULUM VITAE (CV) FOR INTERNATIONAL OR NATIONAL EXPERTS

1. **Proposed Position:** [TOR Expertise]
2. **Name of Firm** [*Insert name of firm proposing the expert, if applicable*]: _____

3. **Name of Expert:** [*Consultant Name*]
4. **Current Residential Address:** _____
Telephone No.: _____
Fax No.: _____
E-Mail Address: _____
5. **Date of Birth:** _____ **Citizenship:** _____
6. **Education** [*Indicate college/university and other specialized education of expert, giving names of institutions, degrees obtained, and dates of obtainment*]: _____

7. **Membership in Professional Associations:** _____

8. **Other Trainings** [*Indicate significant training since degrees under 6 - Education were obtained*]: _____

9. **Countries of Work Experience:** [*List countries where expert has worked in the last ten years*]: _____

10. **Languages** [*For each language indicate proficiency: good, fair, or poor in speaking, reading, and writing*]: _____

11. **Employment Record** [*Starting with present position, list in reverse order every employment held by expert since graduation, giving for each employment (see format here below): dates of employment, name of employing organization, positions held.*]:
From [Month/Year]: _____ To [Month/Year]: _____
Employer: _____
Positions held: _____

NOTE: Maximum of 5 pages.

<p>12. Detailed Tasks Assigned <i>[List all tasks to be performed under this assignment]</i></p>	<p>13. Work Undertaken that Best Illustrates Capability to Handle the Tasks Assigned <i>[Among the assignments in which the expert has been involved, indicate the following information for those assignments that best illustrate the expert's capability to handle the tasks listed in line 12.]</i></p> <p>Name of assignment or project: _____</p> <p>Month/Year: _____</p> <p>Location: _____</p> <p>Client: _____</p> <p>Main project features: _____</p> <p>Positions held: _____</p> <p>Activities performed: _____</p>
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14. Certification:

- | | Yes | No |
|--|--------------------------|--------------------------|
| I, the undersigned, certify to the best of my knowledge and belief- | | |
| (i) this CV correctly describes my qualifications and my experience | <input type="checkbox"/> | <input type="checkbox"/> |
| (ii) I am employed by the Executing or the Implementing Agency*
<i>(*Executing/Implementing Agency is the entity responsible to execute/ implement the ADB-funded project as identified in official project documentation.)</i> | <input type="checkbox"/> | <input type="checkbox"/> |
| (iii) I am a close relative of a current ADB staff member | <input type="checkbox"/> | <input type="checkbox"/> |
| (iv) I am the spouse of a current ADB staff member | <input type="checkbox"/> | <input type="checkbox"/> |
| (v) I am former ADB staff member. | <input type="checkbox"/> | <input type="checkbox"/> |
| • If yes, I retired from ADB over 12 months ago | <input type="checkbox"/> | <input type="checkbox"/> |
| (vi) I am part of the team who wrote the terms of reference for this consulting services assignment <i>(Consultants hired to prepare TOR for an assignment shall not be hired for the same assignment.)</i> | <input type="checkbox"/> | <input type="checkbox"/> |
| (vii) I am sanctioned (not eligible for engagement) by ADB. | <input type="checkbox"/> | <input type="checkbox"/> |

I understand that any willful misstatement described herein may lead to my disqualification or dismissal, if engaged.

 Signature of expert Date: _____
(Day/Month/Year)

CURRICULUM VITAE (CV) FOR INTERNATIONAL OR NATIONAL EXPERTS

1. **Proposed Position:** [TOR Expertise]
2. **Name of Firm** [*Insert name of firm proposing the expert, if applicable*]: _____

3. **Name of Expert:** [*Consultant Name*]
4. **Current Residential Address:** _____
Telephone No.: _____
Fax No.: _____
E-Mail Address: _____
Git/ Version Control Profile:
StackOver Flow/ Relevant Profile:
5. **Date of Birth:** _____ **Citizenship:** _____
6. **Education** [*Indicate college/university and other specialized education of expert, giving names of institutions, degrees obtained, and dates of obtainment*]: _____

7. **Membership in Professional Associations:** _____

8. **Other Trainings** [*Indicate significant training since degrees under 6 - Education were obtained*]: _____

9. **Countries of Work Experience:** [*List countries where expert has worked in the last ten years*]: _____

10. **Languages** [*For each language indicate proficiency: good, fair, or poor in speaking, reading, and writing*]: _____

11. **Employment Record** [*Starting with present position, list in reverse order every employment held by expert since graduation, giving for each employment (see format here below): dates of employment, name of employing organization, positions held.*]:

From [Month/Year]: _____ To [Month/Year]: _____
Employer: _____
Positions held: _____

NOTE: Maximum of 5 pages.

<p>12. Detailed Tasks Assigned <i>[List all tasks to be performed under this assignment]</i></p>	<p>13. Work Undertaken that Best Illustrates Capability to Handle the Tasks Assigned <i>[Among the assignments in which the expert has been involved, indicate the following information for those assignments that best illustrate the expert's capability to handle the tasks listed in line 12.]</i></p> <p>Name of assignment or project: _____</p> <p>Month/Year: _____</p> <p>Location: _____</p> <p>Client: _____</p> <p>Main project features: _____</p> <p>Positions held: _____</p> <p>Activities performed: _____</p>
--	--

14. Certification:

- | | Yes | No |
|--|--------------------------|--------------------------|
| I, the undersigned, certify to the best of my knowledge and belief- | | |
| (i) this CV correctly describes my qualifications and my experience | <input type="checkbox"/> | <input type="checkbox"/> |
| (ii) I am employed by the Executing or the Implementing Agency*
<i>(*Executing/Implementing Agency is the entity responsible to execute/ implement the ADB-funded project as identified in official project documentation.)</i> | <input type="checkbox"/> | <input type="checkbox"/> |
| (iii) I am a close relative of a current ADB staff member | <input type="checkbox"/> | <input type="checkbox"/> |
| (iv) I am the spouse of a current ADB staff member | <input type="checkbox"/> | <input type="checkbox"/> |
| (v) I am former ADB staff member. | <input type="checkbox"/> | <input type="checkbox"/> |
| • If yes, I retired from ADB over 12 months ago | <input type="checkbox"/> | <input type="checkbox"/> |
| (vi) I am part of the team who wrote the terms of reference for this consulting services assignment <i>(Consultants hired to prepare TOR for an assignment shall not be hired for the same assignment.)</i> | <input type="checkbox"/> | <input type="checkbox"/> |
| (vii) I am sanctioned (not eligible for engagement) by ADB. | <input type="checkbox"/> | <input type="checkbox"/> |

I understand that any willful misstatement described herein may lead to my disqualification or dismissal, if engaged.

 Signature of expert Date: _____
(Day/Month/Year)