Scope Study on the Potential of the Municipality in Promoting Renewable Energy at the Local Level

Contents of the Terms of Reference (ToR)

Participatory Research Action Network- PRAAN

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Terms of Reference (ToR)

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1 Background:

Bangladesh, a densely populated country in South Asia, must meet its growing energy demands. The government heavily relies on fossil fuels for electricity generation, primarily natural gas and coal. However, Bangladesh has been actively exploring alternative energy sources, particularly renewable energy (RE), to address the increasing energy needs, reduce greenhouse gas emissions, and ensure sustainable development.

Thermal power plants primarily dominate Bangladesh's power generation capacity. According to the Ministry of Power, Energy, and Mineral Resources Power Division, as of 2021, Bangladesh's total installed power generation capacity was around 24,000 MW. About 90% is derived from thermal sources, including gas-based combined cycle and coal-fired power plants. Renewable energy sources contribute only a small fraction of the total installed capacity, with hydropower and solar energy accounting for the majority. According to the Power System Master Plan (PSMP) 2016, the Government of Bangladesh has targeted to produce 57.5 GW of electricity domestically while mentioning that it is possible to generate 46 GW of electricity using green fuel or renewable energy. It highlighted that 16 GW of solar power could be developed in 12 places using non-agricultural land, while 20 GW is through wind energy.

There are several barriers to generating Renewable Energy in a developing country like Bangladesh, including cost-effectiveness, technical problems, policy issues, land for renewable energy development, grid network, financial cost, institutional capacity, etc. Some issues are specific to a technology, while others may relate to a particular region. A proper comparison must be made based on total lifecycle costs, thus measuring RE's cost-effectiveness. Without a power supply-related specific legal framework in Bangladesh, independent power producers may be unable to invest in renewable energy facilities and distribute and sell power to the utility or third parties. The Renewable Energy Policy 2008 refers to 'harnessing the potential of renewable energy resources and disseminating renewable energy technologies in rural, peri-urban and urban areas.' However, the whole plan has been built up centrally, with the central government steering the entire energy sector, giving no stakes in local government institutions.

At the same time, no large-scale RE power plant has been built so far. Currently, 23 RE projects are under construction with a capacity of 1.5 GW of electricity, which is relatively insignificant compared to the target set in the Plan. A new Master Plan titled “Integrated Energy and Power Master Plan- IEPMP” is being prepared and a new RE target will be set.

The country has set ambitious targets to increase its power mix's share of renewable energy. The government has implemented various initiatives and policies to promote the development of renewable energy projects. The Renewable Energy Policy of Bangladesh aims to achieve a renewable energy contribution of 10% by 2021. But in 2023, only 3% of renewable energy is now being added to the national grid. During COP-26, the Prime Minister of Bangladesh made a strong pledge to ensure 40% of the energy from renewable sources by 2041 and 30% by 2030. She also unveiled the Mujib Climate Prosperity Plan (MCPP), where all these ambitious targets are proposed. The Plan also estimated investment size up to 2030 and proposed USD 15.4 billion of investment for maximizing renewable energy and energy storage infrastructure and modernization of the grid and market to support high shares of distributed renewable energy. To build renewable energy infrastructure, foreign aid and investment in this sector will have to be increased to reach the green transformation target by 2040 following MCPP.

There are 330 municipalities, and urban local government institutions, in Bangladesh. According to Section 50.1 of the Local Government of Bangladesh (Municipal Act) 2009, it is the responsibility of the municipality to ensure drinking water and sewerage system, electrification, operation of traffic signals, electrical work of city buildings, and other institutions in the municipal area. So, the municipalities are one of the major consumers of electricity. They purchase grid-based electricity from different electricity sources produced officially to fulfill their needs. Bangladesh is a fast-growing country; urbanization is expanding rapidly, and the energy consumption rate of municipalities will increase daily.

Municipalities have separate electric/mechanical departments under their administration having expertise in managing power utilization. So, municipalities are already having the manpower with operational capacity and can be able to create a significant source of renewable electricity generation locally. This will result in the production and use of renewable energy instead of the amount that fossil fuel-based power consumption by the 330 municipalities. However, municipalities have ample opportunities to generate and consume RE if these institutions are empowered through law and policies. But it requires some review of the existing laws to see these institutions’ capacities in terms of decision-making and financial resources.

In this context, PRAAN is calling for a consultant to meet the below mentioned objectives.

2 Objectives

2.1 Assess the renewable energy potential of at least 15 or more municipalities in Bangladesh, considering the local resources, infrastructure, and energy demand:

a) Identify and evaluate each municipality's available renewable energy resources, such as solar, wind, and hydro.
b) Quantify each renewable energy source's potential capacity and generation capabilities based on resource assessments and technical feasibility studies.
c) Assess the existing infrastructure and grid connectivity to determine the feasibility of integrating renewable energy sources.
d) Analyze each municipality's energy demand and consumption patterns to identify potential areas for renewable energy integration.
e) Identify the geographic distribution and concentration of renewable energy resources to determine optimal locations for project implementation.

2.2 Evaluate the policy framework and regulatory environment related to renewable energy at the local level:

a) Review the policies, laws, and regulations governing renewable energy adoption at the local level.
b) Assess the alignment between the Mujib Climate Prosperity Plan and other relevant policies with the promotion of renewable energy at the municipality level.
c) Examine the existing initiatives, programs, and policies undertaken by the local government of Bangladesh to promote renewable energy at the municipal level.
d) Assess the effectiveness and impact of these initiatives regarding renewable energy project implementation, capacity building, and community engagement.
e) Identify successful case studies and lessons learned from the municipality's current efforts to promote renewable energy.

2.3 Identify Legal Challenges and Barriers:

a) Identify any barriers or gaps in the policy framework that may hinder the development and implementation of renewable energy projects at the municipality level.
b) Identify and analyze the legal and regulatory frameworks governing renewable energy development locally in Bangladesh.
c) Identify legal challenges, barriers, and gaps that hinder the implementation of renewable energy projects.
d) Recommend policy reforms, legal amendments, and institutional frameworks to address these challenges and promote renewable energy.

2.4 Examine Financial Constraints and Potential Financing Mechanisms:

a) Assess the municipality and local stakeholders' financial constraints in initiating renewable energy projects.
b) Identify available financing mechanisms, including grants, loans, public-private partnerships, and international funding opportunities, for renewable energy projects at the local level.
c) Evaluate the effectiveness and accessibility of existing financial instruments in supporting renewable energy initiatives.
d) Explore innovative financing models and mechanisms to overcome financial barriers and attract private sector investment in renewable energy development.

2.5 Analyze Technical Challenges and Solutions:

a) Identify technical challenges related to grid integration, intermittency management, energy storage, and other technical aspects of renewable energy projects.
b) Evaluate the capacity and readiness of the local energy infrastructure to accommodate the integration of renewable energy.
c) Analyze technological advancements and emerging solutions to overcome technical barriers and optimize renewable energy deployment.
d) Provide recommendations for technical improvements, grid modernization, and capacity-building initiatives to support the successful integration of renewable energy at the local level.

2.6 Identify the technical, financial, and operational feasibility of establishing a municipality-based power company to manage the renewable energy grid system:

a) Assess the technical requirements for establishing a municipality-based power company, including grid connectivity, power generation technologies, storage options, and distribution networks.
b) Conduct a financial analysis to evaluate the cost-effectiveness of establishing a municipality-based power company and its potential revenue generation opportunities.
c) Examine the operational aspects, including the necessary expertise, manpower, and governance structure required for managing a renewable energy grid system at the municipality level.

2.7 Analyze the potential socio-economic and environmental benefits of adopting renewable energy at the municipality level:

a) Assess the socio-economic impacts of renewable energy adoption, such as job creation, local economic development, and improved energy access for communities within the municipality.

b) Evaluate the environmental benefits, including the reduction in greenhouse gas emissions and the potential for mitigating climate change at the local level.
c) Analyze the potential co-benefits, such as enhanced community resilience, reduced reliance on fossil fuels, and improved air quality.

2.8 Provide recommendations to the local government on how to advocate for and promote renewable energy for their municipality:

a) Develop actionable recommendations for the local government to promote renewable energy adoption within their municipality.
b) Guide policy reforms, financial incentives, capacity-building initiatives, and public awareness campaigns that can encourage the transition to renewable energy sources.
c) Suggest strategies for engaging stakeholders, including community leaders, utility companies, investors, and civil society organizations, in promoting renewable energy initiatives at the municipality level.

2.9 Align with the Mujib Climate Prosperity Plan:

a) The study will specifically highlight the alignment of its objectives and recommendations with the Mujib Climate Prosperity Plan.
b) It will explore how promoting renewable energy can contribute to the broader goals of sustainable development, climate change mitigation, and economic prosperity outlined in the plan.
c) The study will identify synergies and opportunities for collaboration to ensure that the findings and recommendations align with the national agenda for climate action and green growth.

3 Scope of Work:

3.1 Assessing Renewable Energy Potential:

a) Conduct an analysis of solar energy potential within the municipality, including solar radiation data, availability of suitable sites for solar installations, and estimation of potential solar energy generation.
b) Evaluate wind energy potential by analyzing wind speed data, identifying suitable locations for wind turbines, and estimating potential wind energy generation.
c) Evaluate the hydroelectric potential by analyzing hydrological data, identifying suitable sites for small-scale hydroelectric projects, and estimating potential hydroelectric energy generation.
d) If applicable, Explore the potential for other renewable energy sources, such as geothermal and tidal energy.

3.2 Feasibility Analysis of Renewable Energy Projects:

a) Evaluate the technical feasibility of implementing renewable energy projects at the local government level, considering grid connectivity, infrastructure requirements, and integration challenges.
b) Assess the financial viability of renewable energy projects by conducting a cost-benefit analysis, considering initial investment costs, operational and maintenance expenses, and potential revenue streams.
c) Identify potential funding sources, including grants, subsidies, and financial institutions that can support the implementation of renewable energy projects.
d) Analyze the legal and regulatory framework governing renewable energy projects at the local government level to identify any legal barriers, permits, or licensing requirements that must be addressed.

3.3 Legal and Policy Analysis:

a) Conduct an in-depth analysis of existing laws, policies, regulations, and incentives related to renewable energy at the local government level in Bangladesh.
b) Identify gaps and challenges in the legal and policy framework that hinder the municipality's promotion of renewable energy initiatives.
c) Evaluate the effectiveness of existing policies and recommend potential policy measures to overcome barriers and facilitate the implementation of renewable energy projects.
d) Guide policy reforms, incentives, and regulations that can promote the integration of renewable energy into the municipality's energy system.

3.4 Financial Analysis and Funding Options:

a) Conduct a financial analysis of renewable energy projects, including estimating the return on investment, payback period, and potential cost savings associated with renewable energy adoption.
b) Identify potential funding options, grants, and financial mechanisms available to the municipality for implementing renewable energy projects.
c) Assess the feasibility of public-private partnerships or collaboration with external stakeholders for funding and implementing renewable energy initiatives.
d) Recommend financial mechanisms and strategies to attract private investments and mobilize financial resources for renewable energy projects.

3.5 Technical Integration and Infrastructure Assessment:

a) Evaluate the technical requirements for integrating renewable energy systems into the municipality's existing energy infrastructure.

b) Assess the capacity and reliability of the local grid to accommodate renewable energy generation, including grid stability and potential grid upgrades or reinforcements.
c) Identify potential challenges and solutions related to energy storage, smart grid technologies, and energy management systems for efficient integration of renewable energy.
d) Provide recommendations on the technical aspects of renewable energy integration, including system design, grid connection, and energy management.

3.6 Stakeholder Engagement and Capacity Building:

a) Conduct stakeholder consultations with municipal authorities, renewable energy experts, government officials, financial institutions, and community representatives to gather insights, feedback, and recommendations.
b) Organize workshops or meetings to engage stakeholders, share preliminary findings, validate conclusions, and gather input on the proposed recommendations.
c) Provide capacity-building support to municipal authorities and relevant stakeholders by conducting training sessions or workshops on renewable energy technologies, project development, and financing.

3.7 Reporting and Recommendations:

a) Prepare an inception report outlining the proposed methodology, work plan, and data collection instruments.
b) Deliver a comprehensive final report summarizing the study's findings, conclusions, and recommendations based on the assessments and analyses conducted.
c) Present the key findings, conclusions, and recommendations to the municipality and other relevant stakeholders through a presentation or workshop.
d) Provide specific and actionable recommendations for the municipality to promote renewable energy locally, considering the identified potential, legal and regulatory framework, financial implications, technical considerations, and stakeholder input.
e) Include appendices in the final report containing supporting data, charts, graphs, and references used throughout the study.
f) Ensure that the report is comprehensive, well-structured, and accessible to various stakeholders, including policymakers, municipal authorities, development partners, and community members.

4 Reports & Deliverables:

Participatory Research and Action Network (PRAAN) will supervise and manage the scoping study. Progress updates will be provided weekly to ensure transparency and effective communication throughout the study.

4.1 Inception Report:

The organization/consultant(s) shall prepare an Inception Report within two weeks of project commencement. This report will outline the proposed methodology, work plan, and data collection tools employed throughout the scope study. The Inception Report will provide a clear roadmap for the study, ensuring alignment with the objectives and expectations of the project.

4.2 Interim Report:

The organization/consultant shall submit an Interim Report within eight weeks of project commencement. This report will summarize the findings and progress of the study up to that point. It will include an analysis of the renewable energy potential in the selected municipalities, an evaluation of the policy framework and regulatory environment, and initial assessments of the technical, financial, and operational feasibility of establishing a municipality-based power company. The Interim Report will serve as a progress update, allowing for feedback and adjustments if necessary.

4.3 Final Report:

The organization/consultant shall deliver a comprehensive Final Report within twelve weeks of project commencement. This report will present the complete study findings, including detailed assessments of the renewable energy potential in the selected municipalities, a comprehensive evaluation of the policy framework and regulatory environment, and a thorough analysis of the technical, financial, and operational feasibility of establishing a municipality-based power company. The Final Report will also include an in-depth analysis of the potential socio-economic and environmental benefits of adopting renewable energy at the municipality level. Also, the report will provide clear and actionable recommendations for the local government to advocate for and promote renewable energy within their municipalities. The Final Report will serve as a valuable resource for decision-makers, enabling them to make informed choices and take necessary actions toward a cleaner and more sustainable energy future.

4.4 Presentation:

The organization/consultant shall conduct a final presentation to stakeholders, including the local government, relevant ministries, and other key partners, to share the study findings and recommendations. This presentation will provide an opportunity to engage with stakeholders, gather feedback, and facilitate discussions on the study outcomes. The presentation will highlight the key findings, recommendations, and roadmap for establishing a municipality-based power

company. It will serve as a platform to promote awareness and garner support for renewable energy initiatives at the municipality level.

4.5 Action Plan:

The study will develop a detailed action plan that outlines the recommended steps, timelines, and responsible entities for implementing the recommendations. The action plan will provide a roadmap for the municipality to promote renewable energy effectively. It will include specific milestones, targets, and monitoring mechanisms to track progress and ensure the successful implementation of the proposed initiatives.

4.6 Knowledge Transfer:

The organization/consultant will facilitate knowledge transfer by sharing relevant resources, reports, and best practices related to renewable energy promotion at the local level. This may include sharing case studies, technical guidelines, and capacity-building materials to support the municipality's renewable energy endeavors. The aim is to empower the local government and

stakeholders with the necessary knowledge and tools to drive the adoption of renewable energy technologies.

4.7 Follow-up Engagement:

After the completion of the scoping study, follow-up engagements may be conducted with stakeholders to address any additional questions, provide clarification, and support the implementation of the study's recommendations. This engagement will foster collaboration and ensure the study's outcomes translate into tangible actions and positive impact.

4.8 Dissemination:

The scoping study report and presentation will be shared with the relevant stakeholders, including municipal authorities, energy agencies, renewable energy developers, community representatives, and other interested parties. The aim is to ensure the study's findings are widely accessible, encouraging knowledge dissemination and facilitating the implementation of effective renewable energy initiatives at the local level.

4.9 Collaboration Opportunities:

The study will identify potential collaboration opportunities with relevant organizations, agencies, or funding institutions to support the municipality's renewable energy initiatives. It may involve linking the municipality with national or international programs, financial mechanisms, or technical assistance providers that can provide further support for implementing renewable energy projects.

5 Timeline:

The estimated timeline for completing this scope study is Three months (12 Weeks) from the contract commencement date. The timeline can be revised according to new information, changing circumstances, or the need to accommodate unexpected events or developments.

5.1 Inception Phase (1 week):

a) Review and finalize the Terms of Reference (ToR) in consultation with the municipalities.
b) Mobilize the project team and allocate roles and responsibilities.
c) Develop a detailed work plan and the timeline for the scope study.
d) Conduct initial desk research and prepare an inception report outlining the methodology and data collection plan.

5.2 Data Collection Phase (2 weeks):

a) Conduct surveys and interviews with municipal officials and stakeholders to gather data on energy consumption patterns, existing initiatives, and challenges.
b) Collaborate with relevant experts or institutions to collect data on renewable energy resources within the municipality.
c) Gather information on policies, regulations, and institutional frameworks related to renewable energy promotion.
d) Conduct site visits and collect relevant data on solar radiation, wind speeds, and potential hydropower sites.

5.3 Data Analysis and Stakeholder Consultations (3 weeks):

a) Analyze the collected data to assess the municipality's current energy consumption patterns, sources, and potential for renewable energy generation.
b) Evaluate the technical and economic feasibility of various renewable energy technologies.
c) Assess renewable energy options' environmental benefits, carbon reduction potential, and financial implications.
d) Conduct stakeholder consultations through workshops, meetings, or online platforms to gather insights, feedback, and suggestions.
e) Facilitate discussions to identify stakeholder priorities, concerns, and aspirations for renewable energy promotion.

5.4 Feasibility Assessment and Roadmap Development (3 weeks):

a) Combine the findings from data analysis, stakeholder consultations, and literature review to assess the feasibility of promoting renewable energy at the local level.
b) Identify barriers, challenges, and opportunities specific to the municipality.

c) Evaluate the compatibility of renewable energy technologies with existing infrastructure, land use plans, and environmental considerations.
d) Develop a roadmap and action plan for the municipality, including specific recommendations and steps to promote renewable energy.
e) Propose policy interventions, regulatory changes, capacity-building programs, and financing mechanisms.

5.5 Reporting and Presentation (2 weeks):

a) Prepare a comprehensive draft report documenting the scope study's methodology, findings, analysis, and recommendations.

b) Share the draft report with the municipality for feedback and revisions.
c) Finalize the report incorporating the feedback received.
d) Develop a visually appealing presentation summarizing the key findings and recommendations.
e) Present the study's findings and recommendations to stakeholders, including municipal officials and key actors.

5.6 Phase 6: Knowledge Transfer and Collaboration (1 week)

a) Knowledge Transfer: Share relevant resources, reports, and best practices with the municipality to support renewable energy initiatives.
b) Collaboration Opportunities: Identify opportunities with organizations, agencies, or funding institutions to support renewable energy endeavors.

6 Budget:

Please note that the total Budget for this scoping study is 10,00,000 BDT (Ten Lakh taka) and competitive of the submitted budget proposals. The budget for the scope study will depend on various factors such as the complexity of the study, the scope of work, the availability of data, the number of stakeholders involved, and the specific requirements of the municipality. Ensuring that the proposed budget adequately covers all the necessary activities and deliverables is essential. The following budget items should be considered:

6.1 Personnel Costs:

a) Consultant/Project Manager/Lead Researcher
b) Research Assistants
c) Data Analysts
d) Renewable Energy Experts/Consultants (if required)

e) Reporting and Documentation Specialist

6.2 Travel and Field Work Expenses:

a) Site visits within the municipality to collect data on renewable energy resources
b) Travel expenses for stakeholder consultations, workshops, and meetings
c) Accommodation and meals during fieldwork activities

6.3 Data Collection and Analysis:

a) Survey and interview tools development and administration
b) Data collection and analysis software or tools

c) Purchase or access to relevant reports, publications, and databases
d) Data processing and analysis expenses

6.4 Stakeholder Engagement:

a) Organizing meetings and focus group discussions
b) Venue rental and logistics
c) Printing of materials and handouts for stakeholder engagement activities

6.5 Reporting and Documentation:

a) Report writing, editing, and formatting
b) Graphics and visual design for the final report
c) Printing and binding of the final report (if required)
d) Presentation materials preparation

6.6 Miscellaneous Expenses:

a) Communication and internet expenses
b) Contingency funds for unforeseen expenses

7 Proposal Submission

Interested consultants or research firms should submit a proposal to pranbd@gmail.com that includes the following:

a) Company/Individual profile, highlighting relevant experience and expertise.
b) The Proposed methodology includes data collection methods, analytical approaches, and stakeholder engagement strategies.

c) Work plan outlining the tasks, activities, and timeline for completing the scope study.
d) Team composition, including the qualifications and roles of key personnel involved in the study.

e) Budget breakdown, including detailed cost estimates for each activity and deliverable.
f) Relevant samples of previous work, demonstrating the ability to deliver high-quality reports and presentations.

8 Evaluation Criteria

The proposals received will be evaluated based on the following criteria:

a) Relevance of experience and expertise to the scope study objectives.
b) Methodology, including data collection, analysis, and stakeholder engagement approaches.
c) Demonstrated understanding of Bangladesh's Mujib Climate Prosperity Plan and energy policies.
d) Qualifications and expertise of the proposed team members.
e) Cost-effectiveness of the proposed budget.

9 Selection Process

The consultant or research firm selection will be based on a competitive process, evaluating the proposals received against the evaluation criteria mentioned above. Shortlisted candidates may be invited for an interview or presentation to further assess their suitability for the scope study.

10 Confidentiality and Ethical Considerations

Throughout the scoping study, strict confidentiality and ethical considerations will be upheld. All data collected, interviews conducted, and information shared will be treated with the utmost confidentiality and used solely for the purposes of the study. Ethical guidelines and protocols will be followed to ensure the protection of human subjects and compliance with relevant data protection regulations. The consultant or research firm shall not disclose sensitive or proprietary information without prior consent.

11 Intellectual Property

The intellectual property rights of all reports, data, and other deliverables produced as part of this scope study shall be transferred to Participator Research and Action Network (PRAAN) upon final acceptance and payment.

12 Contractual Arrangements

Upon selection, a formal contract or agreement will be signed between the municipality and the consultant or research firm, detailing both parties' rights, responsibilities, and obligations.

13 Conclusion

The scope study on the potential of municipalities in promoting renewable energy at the local level in Bangladesh is crucial for realizing the objectives of the Mujib Climate Prosperity Plan. This study will involve assessing the renewable energy potential of 15 or more municipalities by considering local resources, infrastructure, and energy demand. The aim is to determine the most suitable renewable energy sources for each municipality and assess the feasibility of integration.

Evaluating the policy framework and regulatory environment pertaining to renewable energy at the local level is essential. It will help to identify any barriers or gaps that need to be addressed to facilitate the transition to renewable energy. The study will provide recommendations to the local government on promoting renewable energy within their municipalities. These recommendations may encompass policy reforms, financial incentives, capacity-building initiatives, and public awareness campaigns to encourage the adoption of renewable energy sources.

Engaging various stakeholders, including community leaders, utility companies, investors, and civil society organizations, is crucial for the successful implementation of renewable energy initiatives. The primary goal of this scope study is to support the local government in advocating for renewable energy and promoting sustainable development at the municipality level.

The findings and recommendations presented in the final report will serve as a valuable resource for decision-makers. It will enable them to make informed choices and take necessary actions toward a cleaner, more sustainable energy future for their communities. By embracing renewable energy, municipalities in Bangladesh can contribute to national climate goals, enhance energy security, and create a greener and more prosperous future for all.

Note: The Terms of Reference can be customized and expanded per the specific requirements of PRAAN and the study's context.

Submit your proposal by 15 August, 2023 here pranbd@gmail.com and please note that only shortlisted candidates will be contacted for next step.