

Government of the People's Republic of Bangladesh
Protection of Sundarbans Mangrove Forests Project
Bangladesh Forest Department

TERMS OF REFERENCE (TOR)

For

Selection of Consulting Firm for Ecological Monitoring of the Sundarbans

1. Introduction

The Sundarbans is the largest contiguous patch of mangrove forest in the world and is located in the estuary of the river Ganges in the south-western corner of Bangladesh. The area of the forest is 6017 km² of which about 30% area comprises complex network of streams and rivers varying considerably in width and depth. The Sundarbans mangrove forest provides a unique habitat for varieties of mammals, reptiles, amphibians, fishes and birds. Species composition and richness of the Sundarbans represent varieties of economic, social and environmental values compared to many other mangroves of the world. The forest is very important on a national and worldwide level since it offers so many ecological functions and natural resources. It was designated a Ramsar Site in 1992 and a UNESCO World Heritage Site in 1997. For sustainable long term management Ecological Monitoring is very much important for evaluating the many different impacts on the Sundarbans and predicting the future of this unique ecosystem on the basis of reliable data. This Terms of Reference (ToR) describes major activities to be performed by consulting firm for Ecological Monitoring and their deliverables.

2. Protection of Sundarbans Mangrove Forests Project

Bangladesh Forest Department (BFD) under the Ministry of Environment, Forest and Climate Change is implementing GoB funded "Protection of Sundarban Mangrove Forests Project" for the period of 5 years (01 January 2021 to 31 December 2025). Total project cost is 167,93.29 Lakh in BDT. The overall objectives of the project are to improve efficiency of Forest Department officials who are engaged in Sundarbans Forest management, improvement of infrastructure and communication facilities, use of information technologies, creation of proper work environment, strengthening forest management through strong patrolling, survey on wildlife and their habitat, status of protected areas and ecological condition, measurement of aquatic resources, survey on climate change impact through analyzing soil, salinity and other parameters, develop monitoring system and scientific Forest management. Sustainable use of fishery resources, forest resources and other services have to be ensured for the livelihood local communities and future generations through scientific Forest Management and at the same time condition of wildlife habitats and biodiversity of Sundarbans will be observed through an improved monitoring system. Impacts Climate change will be mitigated creating a green belt in coastal areas which will also meet the fuel wood demand of local people. Project will implement a number of activities which are grouped under following four components:

Component-1: Strengthening Management Capacity.

Component-2: Scientific Forest Management and Monitoring.

Component-3: Mitigation of climate change impact.

3. Objective of the assignment

The overall objective of this consultancy is to monitor ecosystem health of the Sundarbans specially to collect and analyze data of selected physical, chemical and biological parameters for long time ecological monitoring of the Sundarbans mangrove forest for sustainable management.

More specifically, the key objectives of this consultancy would be-

- to evaluate the current condition of the Sundarbans mangrove ecosystem.
- to assess the present status of different biotic and abiotic factors of the ecosystem.
- to collect and analyze data of selected indicators for monitoring ecological condition of the Sundarbans.
- to record changes in critical properties of biological communities.
- to assess anthropogenic and climatic impacts on the Sundarbans mangrove ecosystem and identify its sources.
- to detect changes of the ecosystem and determine its trends.
- to provide recommendations for sustainable forest management of the Sundarbans considering existing rules-regulations, biodiversity conservation conventions and treaties, management interventions, dependency of local people, sustainable livelihoods etc.
- To collect data and information on present ecosystem and develop a database for future change analysis as well as to set management strategies.

4. Scope of the service

- Development of methodology, specification of parameters and determination of sample plots/areas.
- Determination of different biotic and abiotic indicators for long term ecological monitoring of the Sundarbans.
- Establish methods of data collection of various indicators at various locations in the Sundarbans.
- Collection and analysis of primary data of selected indicators related within Sundarbans and its surroundings.
- Literature review and consultation with Forest Department and other relevant stockholders.
- GIS Image Collection and Analysis
- Data Verification and Finalization
- Investigate the present status of ecological condition of the Sundarbans based on analysis of indicators.
- Ecosystem based biodiversity conservation management implies sustainable management of the natural resources of Sundarbans.
- Impact of anthropogenic activities in the Ecological Critical Area of Sundarbans on its flora and fauna.
- Drafting and finalization of reports (a comprehensive baseline report of ecological monitoring, ecological monitoring report of certain parameters etc.).
- Capacity development of BFD Staffs on Ecological Monitoring. Conduct training program consisting of 60 participants.
- Conduct 10 nos. programs-based Focus Group Discussion.
- Conduct two regional levels and one national level workshop to share the findings of the assignment.

- There might be other relevant issues, which are not included, which could arise from the assessment and survey, should be considered and included in the final report by the consultants.
- Understand the multi-dimensional factors affecting the Sundarbans and contribute to rigorous ecological monitoring that will improve environmental health the forest.
- Integrated Resource Management planning that aligns with global goals like the SDGs and UNESCO World Heritage Sites, all while contributing to conservation, environmental protection, and resource preservation.
- Any other duties assigned by PD/PE related to Ecological monitoring.

5. Activities and tasks to be performed by the firm:

The majority of the surveys for the selected biotic and abiotic indicators are to be conducted in sample units covering representation throughout the Sundarbans. The firm will have to perform the following activities including methodology, survey techniques, indicators determination, data collection, analysis and monitoring framework etc. of international standard:

- Selection of indicators, develop methodology and sampling techniques.
- Primary and secondary data collection of the ecological parameters.
- Analysis of the selected indicator species to find out present status, structure, distribution and its trend.
- Review literature on the Sundarbans mangrove ecosystem.
- Identify the ecological issues of the Sundarbans and its possible solutions.
- Assess the impact of climate change on the natural resources of the Sundarbans.
- Assess anthropogenic impacts on the Sundarbans mangrove ecosystem and identify its sources.
- Detect the changes of Sundarbans mangrove ecosystem and determine its trends.
- Consultation and discussion with resource users and related stakeholders.
- Validation and finalization of ecological monitoring report.
- Quality color printing of detailed ecological monitoring reports- 100 copies and short version (in Bangla) -500 copies. Soft copy of the report also has to be submitted to PD/ concern DFO.

6. Qualification and experiences of the firm

- Minimum 10(ten) years of proven work experience in the field of natural resources survey/research activities in the Sundarbans or mangrove forest areas of Bangladesh.
- The firm should have Legal Documents: (i) Registration of Firm, (ii) Updated Valid Trade License, (iii) VAT Registration Certificate, (iv) TIN Certificate with update Income Tax Return Certificate, (v) Bank Solvency Certificate, (vi) , Last Year's Audit Report, (vii) Annual Turnover of last 3 years, (viii) JV agreement/letter of intent (if applicable).
- The Firm should have valid Government registration/ approval with experienced office staffs.
- The Firm should have experience to implement at least 3(three) research/study works related to the Sundarbans ecosystem.
- The Firm should have experience with dealing the professional consultants.

7. Team composition of the consulting firm

Interested consultant Firm feature at least the following key professionals along with Financial and Admin officer and support staffs needed to accomplish the assignment. The qualification and experience of key professionals are outlines in the following table:

SI	Description	Qualification	Experience
1	Team Leader	Masters in Forestry/ Environmental Science/ Ecology/ Natural Resource Management or relevant subject. PhD degree will be given preference.	10 years' research/ work experience in mangrove forests.
2	Mangrove Ecologist	Masters in Ecology/ Natural Resource Management/ Forestry/ relevant subject. PhD degree will be given preference.	8 years' research/ work experience in mangrove ecosystem.
3	Terrestrial & Aquatic mammals Specialist	Masters in Zoology/ Wildlife Biology/ relevant subject. PhD degree will be given preference.	8 years' research or work experience in related field.
4	Reptiles & Amphibians Specialist	Masters in Zoology / relevant subject. PhD degree will be given preference.	8 years' research or work experience in related field.
5	Avifauna Specialist	Masters in Zoology/ relevant subject. PhD degree will be given preference.	8 years' research or work experience in related field.
6	Butterfly & Bee Specialist	Masters in Zoology/ relevant subject. PhD degree will be given preference.	8 years' research or work experience in related field.
7	Fishery Resource Specialist	Masters in Fisheries/ Marine Science/ relevant subject. PhD degree will be given preference.	8 years' research or work experience in related field.
8	Soil & water quality specialist	Masters in Soil science/ Environmental Science/ relevant subject. PhD degree will be given preference.	5 years' research or work experience in related field.
9	Climate Change Specialist	Masters in Climate Change/ Environment Science/ relevant subject.	5 years' research or work experience in climate change, adaptation and mitigation in coastal region.
10	GIS & Data Analyst	Bachelor in Geo-informatics/ Geography/ Computer science/Statistics.	5 years' experience in big data analysis.

9. Reporting obligation

- (a) Inception Report: The consultant will submit an inception report stating methodologies for data collection, survey, assessment and detailed work plan with key milestones within 2 months of signing the contract. The planning and organization of project team should be defined during the inception phase and approved by the Project Director.
- (b) Interim Progress Report:
 - (i) First Status Report: First status report will cover secondary data collection and analysis, baseline survey, social survey, primary data collection and analysis, FGD etc. within from the date of contact signing and accepted by the client.
 - (ii) Second Status Report: Second status report will cover Detail primary data collection and analysis, detail survey, Stakeholder Consultation, Key information Interview, GIS Mapping, Strategic Program Development etc. Within 16 months from the date of contact signing and accepted by the client.
- (c) Draft Report: The draft report must be submitted within 16 months from the date of contact signing and accepted by the client.
- (d) Final Report: The Final Report conducting a National Workshop, quality printing of 100 copies of detailed report and 500 copies of hand version in Bangla within 24 months and accepted by the client.

All reports shall be submitted in hard copies (10 copies) and in editable soft copy. The language of the assignment shall be in English. There shall be no security restrictions on printing or editing in the deliverables.

10. General Terms & Conditions:

The reports produced in connection with this assignment, shall be strictly confidential. All documents shall become the property of Bangladesh Forest Department. However, in case of any emerging need to use it or any part of it by any academics or other users, prior informing and written endorsement from Bangladesh Forest Department is mandatory. The copyright of the final product will be endowed with Bangladesh Forest Department. In the event of any emerging priorities and needs Bangladesh Forest Department shall enjoy all authority to reschedule operational framework of this assignment. The consulting firm shall submit all collected data to Bangladesh Forest Department along with the final report. Final payment will be made only on the final deliverables, and these final deliverables should be to the satisfaction of the Project Director or concerned authority.

11. Selection method

The Consultancy firm will be selected following the Quality & Cost Based selection (QCBS) method described in the PPA,2006 and PPR, 2008.

12. Duration of the assignment

The duration of the assignment is 24 months from the date of contact signing, but it could be extended or limited by mutual understanding of both the parties (i.e. Project Authority & Consulting Firm). The intended start date of the contract is March 2024.

13. Institutional arrangement

The Consultancy Firm will work under direct control of the Project Director or assigned DFO. Reporting will be directly to the Project Director/ DFO with close collaboration with other officials of the Project. The firm will be accountable to the Project Director/PE for its day-to-day activities. Only office accommodation will be provided at Khulna by the project.