Terms of Reference (TORs) for establishing a detailed ecological baseline and vulnerability assessment at the project sites of the Indus Delta.

Background:
The World Wide Fund for Nature-Pakistan (WWF-Pakistan), the global conservation organization, has a mission to stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature by:
- Conserving the world's biological diversity;
- Ensuring that the use of renewable natural resources is sustainable; and
- Reducing pollution and wasteful consumption.

Under its global mission, WWF-Pakistan works with central and local government agencies, the private sector, civil society organizations (CSOs), and the local communities to implement its various conservation programmes in the six thematic areas, including energy and climate, forest, freshwater, wildlife, food and market, and ocean. WWF Pakistan has substantial experience in working with international donors.

WWF Pakistan, founded in 1970, is the most significant independent nature conservation NGO in Pakistan, with over 20 offices nationwide and an average annual budget of 5.06 million euros, mainly financed by private and public funding. WWF Pakistan has a mission to preserve the country's incredible biodiversity and natural resources through the aforementioned practices. Since its inception, WWF Pakistan has implemented more than 200 projects and programmes. WWF Pakistan works closely with local and national partners, government, private partners, research, and communities.

A 50-year vision (2006-2056) for the Indus Delta was developed, a central part of WWF-Pakistan’s Conservation Strategy for the coastal areas. Through participatory co-management, it has been endeavoring to protect mangrove forests and their associated biodiversity while promoting sustainable fisheries for local communities' livelihood and food security. So far, more than 14,000 hectares of mangrove forest have been reforested in the Indus Delta region through cooperation between WWF Pakistan, the Sindh Forest Department, local communities, and businesses. WWF-Pakistan, jointly with SFD and its regional partners, has planned to continue its work on conserving and co-management mangroves in Keti Bundar, Kharo Chan, and Shah Bunder under the framework of BMZ. Funded “Sustainable mangrove management and community development in the Indus Delta II.” Project till December 2024.

Brief Project Description:
The Project is the continuity of phase I. The project is being implemented in 36 villages of the lower Indus delta, comprising the sites of Keti Bunder, Kharo Chan, and Shah Bunder. The inhabitants of the project area are extremely poor and vulnerable to climate change. Most of them earn their livelihood exclusively from fishing and the natural resources of the mangrove ecosystem. The mangroves are used for firewood, construction timber, animal grazing and feed, the harvest of crabs and mollusks, etc. Decades of continuous overexploitation resulted in severe loss and degradation of the Indus Delta mangroves. Lack of resources and coordination between relevant authorities further hinder the adequate protection of mangroves, despite their legal guardian. Frequent climate-induced natural disasters like cyclones and, lately, the impact of the Covid-19 pandemic have exacerbated the local population’s poor living conditions.

In Phase 1, community-based natural resource management was introduced in 6 mangrove areas of 14.000 ha. The communities organized themselves to protect their mangroves, afforested 3,000
ha, and improved 4,000 ha of degraded mangroves. They introduced a rotating livestock grazing system to protect the mangroves from overexploitation and young mangrove sprouts from destruction for the first time. Alternative livelihood opportunities, improved value chains, and village development measures reduced poverty and increased the resilience of the local population. Nevertheless, success is still fragile. The second phase of the project aims at consolidating the achievements and out-scaling the sustainable management of the mangroves to an additional 19 villages in two other mangrove areas.

**Objectives of the Assignment:**

The objective of this assignment is to collect ecological baseline and vulnerability information from the project villages and surroundings to set the baseline against the indicators of the project.

The ecological baseline and vulnerability assessment is key to establishing comprehensive baseline information for the project area to track, monitor, and evaluate the envisaged project processes and outcomes at the desired level.

This consultancy, therefore, requests technical and financial proposals from the most suitable individuals and firms to undertake the ecological baseline and vulnerability assessment to establish reliable baseline information for mangroves and their associated biodiversity, fisheries, agriculture, environmental, and human communities in the 36 villages of Keti Bundar, Kharo Chan and Shah Bunder UCs of Sindh, Pakistan.

**Terms of reference**

Specific terms of reference for the study are as follows:

**Mangroves and associated vegetation**

- Review literature concerning coastal vegetation with a focus on mangroves and their history in Pakistan;
- Assess vulnerability and risks to mangroves and their associated plant species, identify drivers and propose practicable management measures;
- Assess the mangrove plantation and its sustainability in terms of reduction of freshwater flow from the Indus delta, sea-level rise, sea intrusion, frequent cyclones, and erosion;
- Evaluate the dependence of local communities on plants, including mangroves forests, in terms of their usage, such as fuelwood, timber, forage, herbal medicines, wild fruits and vegetables, aesthetics, etc.;
- Train the project Staff in survey techniques and identification of various mangroves species in different ecological zones;
- Analyse the habitat competition between soan grass (*Oryza coarctata*) and mangroves species;
- Estimation of grazing incidents to be assessed in the project area with the livestock type and regions with higher concentrations of grazing incidents;
- Identify potential camel grazing sites and a short plan for sustainable rotational grazing;

**Fisheries and Biodiversity:**

**Wildlife**

- Develop a comprehensive list of all aquatic and terrestrial wildlife species (Flora and Fauna) linked to mangroves and associated ecosystems
- Conduct a vulnerability risk assessment of wildlife associated to mangroves and associated ecosystems ascertaining the impacts of climate change for vulnerability risk listing;
- Assess the impact of the large-scale mangrove plantation done by various agencies in the past 30 years on the population of avian fauna and other concerned species, including but not limited to marine fisher, crab, shrimps, cetaceans, etc.;
- Establish a baseline of the current biodiversity in and around the newly Project sites under mangroves plantation for comparative analysis.
Fisheries
- The study will identify the type of harmful nets; their number, and their impacts on the marine biodiversity at the village level and will recommend the use of alternative fishing gear that is less harmful but could not affect the livelihood of fishers, the willingness of adopting alternative gears;
- Identify and listing of marine species that are caught in the harmful nets such as Estuarine Set-bag nets;
- Evaluate the fish landing sites in the project area and identify the trend of the landing of the commercially important fisheries species;
- Identify market access to the local fishers and suggest improvements in the current methods;
- Identify potential fisheries for improvement, value addition, and community willingness for adoption;
- Identify alternative means of income to reduce pressure on the existing natural resources and the willingness of the community to adopt them.

GIS-based study:
- Provide land use map for grazing in terms of medium, sparse, dense grazing zones, settlements, ponds (water and aquaculture, etc.);
- Develop GIS maps for the separate cover of all four species of mangroves existing in the Indus Delta.
- Identified mangroves degraded areas with the consensus of the community and Sindh Forest Department, zonation maps have to develop for re plantation.

Water Quality:
- Review and compile baseline surface hydrological conditions, baseline groundwater conditions, the baseline of water quality levels in the project priority areas;
- Analyze data to identify water quality (for drinking water sources), contaminants of concern, levels, and extent of contamination to determine ambient conditions, trending, and cause/effect relationships for each area.

Environmental Impacts:
- Provide details and identify areas with high impact of erosion, calculate erosion intensity within the project area;
- Identify climate change impact and vulnerabilities to the mangroves and fisheries resources;
- Impact of reduction of freshwater flow from the Indus River on mangroves forest and communities;
- Impact of climate change vulnerability on the livelihood and health of the local community and suggest its mitigation measures and adoption;
- Develop a comprehensive report for each site, including survey findings, pressures & threats, community intervention, habitat trends, and recommendations.

Deliverables:
- Study plan, data collection formats, timelines, and table of contents of the final report to be submitted after the field visit and executing data collection, etc., which WWF-Pakistan will endorse;
- Datasets with data captured from fieldwork (Original field data)
- Submit at least three perfectly bound hard copies and soft (Word and PDF versions) of the comprehensive reports against each field with clear and achievable recommendations

Required Skills and Qualification:
- Consultancy firm having expertise in the fields above.
The consultants’ team ‘should have a Master’s or higher degree in a discipline relevant to Forestry/Mangroves expertise, Fisheries and Wildlife, Hydrology, Geography/GIS specialist, and Environmental Science.

At least 7–10 years experience in delivering consultancy services.

Fluency in oral and exceptionally written English, Urdu and Sindhi languages.

Cultural awareness and sensitivity to gender issues.

Experience in providing quality technical reports.

Knowledge of WWF’s work globally and regionally is an asset;

**Timeline for the study:** 60 days
The baseline ecological assessment is expected to take place starting in the send week of May 2022. The draft report is expected in the 4th week of June 2022, after which comments will be provided, and the final report is expected in the 2nd week of July 2022. The consultancy firm will be responsible for the overall management of the assignment and the production of the final report.

**Reporting:**
The Consultancy firm will report to the project manager, manager of the marine programme, and regional head of Sindh & Balochistan. Brief updates on progress must be emailed to the personnel above every two weeks.

**Submission Procedure**
The consultancy firm that wishes to express interest in undertaking the prescribed assignment is requested to submit their respective proposals online through the WWF-Pakistan website:

- A technical proposal not exceeding ten pages
- An understanding and interpretation of the TOR
- Methodology to be used in undertaking the assignment
- Time and activity schedule
- Evidence of relevant experience and samples of products related to the assignment
- Curriculum vitae of the lead consultants to undertake the assignment
- A financial proposal

**Conditions:**
- WWF-Pakistan reserves the right to accept any proposal or reject all proposals
- Only shortlisted consultants will be contacted for further consideration.

**Copyrights:**
WWF-Pakistan will have the copyright for the entire study data; the consultant(s) will have no right to use the data in any form or publication.
Criteria of Evaluation
Applicant's proposal shall be evaluated based on Quality and Cost Based Selection (QCBS) method. Under QCBS both technical and financial proposals shall be evaluated as per following criteria against a maximum score of 100 points.

- Technical Proposal 70%
- Financial Proposal 30%

The following criteria shall be used as a basis for evaluation of technical proposals:

- Qualifications (maximum 30 points)
- Experience relevant to the assignment (maximum 30 points)
- Adequacy of the proposed methodology and work plan (maximum 20 points)
- Skills & Competencies for the assignment (maximum 10 points)
- Prior experience with WWF-Pakistan (maximum 10 points)

Budget
The tentative budget threshold for this specific assignment is PKR 1.6 million inclusive of all applicable taxes and out of pocket expenses. Evaluation process will be competitive; therefore, all the required documents should be submitted.

Note: Late/ incomplete submissions will not be accepted. Only three (03) top ranked firms will be included in the comparative process.