Terms of Reference
for hiring a Consulting Firm on
Master Plan Preparation Support for Government Shrimp Estate at Chokoria, Cox's Bazar
Package No. SD56

1.0 Project Background

Bangladesh lies within the Ganges-Brahmaputra-Meghna Delta—the world's largest, most densely populated delta and one of the richest in aquatic resources. In March 2018, Bangladesh met the requirements for graduating from the LDC upon meeting eligibility criteria in Gross National Income (GNI) of US$ 1230, and according to BBS[1] (2019), the current GNI reaches over US$ 2000. This initiated the graduating process for Bangladesh to receive official developing country status by 2024. Bangladesh's remarkable development achievements notwithstanding, high levels of poverty and population density remain, pressing development challenges, particularly in coastal areas and in the context of climate change.

Given the increasing population pressure, the Government of Bangladesh (GoB) has recognized that the expansion of coastal and marine fisheries, both capture and culture, could offer an important pathway to sustainable economic development and poverty reduction. Fisheries account for nearly a quarter of the agricultural GDP thus emerging as a major growth driver in the last two decades, as compared to the livestock or the still-dominant crops sectors. In 2017-18[2], the fisheries sector reached 3.76 percent of total GDP and leads as a foreign exchange earner, contributing more than USD 546.28 million in export earnings, with shrimps and prawns as the main species exported[3]. In addition, two recent UN tribunal awards, including a Blue Economy Cooperation Agreement with Myanmar and India, extended Bangladesh's Exclusive Economic Zone (EEZ) to 118,813 km^2 into the Bay of Bengal and the Indian Ocean. As a result, Bangladesh's maritime area corresponds nearly to its land area, offering a new frontier to expand the country's national aspiration toward exploring greater economic wealth from its maritime waters and in doing so, transitioning to a blue economy.

Bangladesh's fisheries sector includes three main sub-sectors: aquaculture (55.93% of total production), inland capture fisheries (27.79%), and marine and coastal capture fisheries (16.28%), with the total sector value estimated at US$ 3.6 billion in 2014-15. In 2014 and 2015, the country's aquaculture sectors ranked 5th and in 2016 country's inland capture fisheries ranked 3rd in the world. With inland aquaculture accounting for nearly 80 percent of total aquaculture production, Bangladesh is well established as one of the world's leading inland fisheries producers overall, delivering over 4 million tons of fish in 2017-18 (two-thirds from inland aquaculture), an increase of 1 million tons (67 percent) over the past decade alone. Meanwhile, the country's total marine fish production for the same period was around 0.6 million tons (US$515 million, first sale value), taken mainly from near-shore areas (<40m depth) but far less than the 6 million tons harvested by Bangladesh's neighbors in the Bay of Bengal. Hilsa accounts for nearly 42 percent of their catch and shrimp 8 percent of the overall catch, with other important commercial species including Bombay duck, Jewfish, and sardines. Both small- and large-scale fishing operations are linked to Bangladesh's national and international trade in seafood (US$599.4 million in 2014-15), operated through a complex system of merchants and middlemen that often comes at a cost to the producer.

---

1 Bangladesh Bureau of Statistics (BBS). 2019

2 DoF.2015. National Fish Week 2015 Compendium *(in Bengali)*. Department of Fisheries, Ministry of Fisheries and Livestock. pp 100.

3 World Fish.2016. Review on Current Situations and Future Prospects of the Fisheries Sector in Bangladesh.

The fisheries sector plays an important role in the food supply, food security, and livelihood security of the country's millions of fishers and other stakeholders. Fish provides 60 percent of all animal protein consumed in Bangladesh[4]. The GoB recognizes the potential for the country to increase the value of its coastal and marine fisheries through more sustainable management and, in doing so, improve the lives of poor, coastal inhabitants. Several key sector-wide challenges necessitate government intervention and investments to enable responsible private-sector-driven growth. These include (i) the absence of an effective regulatory framework for managing coastal and marine fisheries; (ii) limitations in the basic public infrastructure necessary to enable private sector investment; and (iii) limitations in both public and private sector capacity for improved fisheries management and optimal productivity.

The Sustainable Coastal and Marine Fisheries Project (SCMFP) is a part of two-phased investment program implementable by GoB and IDA of World Bank. The program goal is to increase coastal and marine fisheries' contribution to the national economy, poverty reduction, and environmental stability. After board approval of SCMFP by World Bank on October 5, 2018, the project become effective from January 08, 2019, with financing support by International Development Association with a credit amount of BDT 21,863.501 million (USD 240 Million) and GoB finance amount to BDT 2,711.889 million.

2.0 Project Development Objective(s)

The Project Development Objective (PDO) of SCMFP Phase I is to improve the management of targeted coastal belt capture and culture fisheries. Prime aims of the project are to ensure that fishers' communities are lifted out of poverty; to manage sustainability of the newly expanded EEZ and create investment opportunities. The SCMFP Phase I includes 4 (four) components focusing on:

Project Components	Sub-components
1. Enabling Activities for Sustainable Fisheries Sector Investment and Growth	1.1. Stock Assessment and Development of National Fisheries Management Plan 1.2. Creating enabling conditions for investments in sustainable fisheries 1.3. MCS development for IUU Reduction
2. Improving Infrastructure and Production Practices for Coastal Belt Fisheries (Capture and Culture)	1.4. Infrastructure Improvements for Capture and Culture Fisheries 1.5. Fishery sector value chain and food safety development 1.6. Boosting Aquaculture Survival and Growth Rates
3. Community Empowerment and Livelihood Transformation	1.7. Fishing community institutions and alternative livelihood development Business development and market linkages for alternative livelihoods
4. Project Management	

Key development results of SCMFP Phase 1 will be measured by means of the envisioned Project Level Indicators (PDO indicators):

(a) Issuance of industrial fishing licenses in line with precautionary principle.

(b) Share of industrial and motorized artisanal vessels with installed and functioning vessel monitoring and distress communication equipment).

4 DOF. 2014. National FishWeek 2015 Compendium*(in Bengali)* Department of Fisheries, Ministry of Fisheries and Livestock. pp 100

(c) Share of landed catch and aquaculture production in targeted coastal belt fisheries in safe handling according to defined criteria.
(d) Targeted households with access to project-promoted livelihood activities outside of capture fisheries (disaggregated by sex).

3.0 Context for Formulation of a Master Plan for Smart Shrimp Economic Zone in Chokoria

3.1 Fisheries and Aquaculture has become one of the thrust sectors with fastest growing economic sub-sectors of the Bangladesh economy, providing sources of animal protein, creating employment opportunities, expanding domestic and international trade and increased export earnings. International market demand for shrimp grew during the Blue Revolution, as a result shrimp aquaculture became prominent in the South-East and South-West region of Bangladesh. From shrimp aquaculture, total production of shrimp and prawn increased from 2.39 Lac MT in 2010-11 to 2.52 Lac MT during 2020-2021 with minimum annual average growth rate (FRSS 2020-21)[5]. The land area under shrimp farming has increased from 70,331 ha in 1986 to 263,026 ha by 2021 and the contribution of the farmed shrimp to total shrimp production and export has been increasing over the last 15 years at a rate of about 20 percent per year[6]. The country earned foreign currency equating to USD 322 million in 2020-21, through the export of 30,615 MT of frozen shrimp (FRSS 2020-21).

3.2 Increased productivity and production of quality and safe shrimp would be the growing demand for export as well as domestic consumption. Moreover, the current practice of shrimp farming is not economically remunerable for low return due to lack of infrastructural facilities to exchange of saline water, discharge of wastewater system, improved communication, dearth of pathogen free seed i.e., Specific Pathogen Free (SPF) Post Larvae, supply of quality feed, technical knowledge gap, etc. The SCMFP provides investment support for boosting aquaculture productivity through introduction of cluster shrimp farming approach in the South-West Districts of Khulna, Satkhira and Bagerhat.

3.3 Likewise, the South-East region especially Chokoria Upazila of Cox's Bazar District has also a suitable zone for expanding improved shrimp farming (semi-intensive) of Black Tiger Shrimp (BTS) through cluster approach. Considering the prospect and potential of shrimp production, the then the government of Bangladesh transferred 5,000 acres and 2,022 acres of public (Khas) lands to the Department of Fisheries (DoF) during 1978 and 1982 respectively to intervene and expand improved shrimp aquaculture practice. After obtaining these lands, the DoF through ADB financed Aquaculture Development Project and IDA financed "Shrimp Culture Project, implemented development of 2,000 acres and 5,000 acres of land, divided into a total of 119 plots and 468 plots respectively, each with a size of 11 acres and 10 acres. A total of 587 plots (all plots) are leased out to potential producers and organizations for a period of 20 years and later renewed and extended lease tenure up to 2032. Since then, the management regime of this shrimp estate (7,000 acre) lies with jurisdiction and control under DoF.

3.4 SCMFP, also an IDA financed project includes activities for improved shrimp culture under its component 2 through supporting in conversion to SPF hatchery, nursery and establishing BTS BMC to ensure SFP PL. The entire value chain of shrimp productivity is being backed up with BTS SPF hatchery enhancement programme to ensure steady supply of SPF PL to grow-out systems within a short period of time.

---

5 DoF. 2020. Yearbook of Fisheries Statistics of Bangladesh, 2019-20. Fisheries Resources Survey System (FRSS), DoF, MoFL. Vol. 37:pp 141

6 Hossain, M.A.R. & Hasan, M.R. 2017. An assessment of impacts from shrimp aquaculture in Bangladesh and prospects for improvement. FAO Fisheries and Aquaculture Technical Paper No. 618. Rome, FAO. 96 pp.

3.5 During Mid Term Review Mission held from August 04-17, 2021, the World Bank team proposed, and later confirmed by the 6th Project Steering Committee (PSC) meeting held on December 29, 2021, for inclusion of specific proposals in the RDPP for the development of Chokoria government shrimp plots' rehabilitation and, de-silting. This involves de-silting of approximately 62 km water supply canals, reconstruction of about 71 Km of embankment/peripheral dyke, rebuilding of peripheral dykes to facilitate spontaneous and uninterrupted water exchange to 448 shrimp plots with total area of 4,480 acres of land area, rehabilitation, repair and reconstruction of 12 water regulatory structures (sluice gates) to facilitate inflow and outflow of water in shrimp plots and other ancillary physical facilities, including supply of electricity with transformer, secure potable water supply, construction of a multipurpose cyclone center with office facilities and internal road development vis-à-vis necessary afforestation with mangrove and non-mangrove species, which will be planted on the outer slope of the entire peripheral dyke. In order to intervene in improved farming of shrimp, all the leaseholders were issued necessary instructions by DoF for the development of their own plots (increase water holding capacity) for boosting shrimp production according to defined technology, prescribed by DoF competent officials.

3.6 To make the Shrimp estate efficient in producing safe shrimp, intensive or semi-intensive cultivation needs to induce in this area. For these, the firm/plot size needs to rearrange to make it efficient for cultivation and access to seawater. At the same time, the water regulators need to rearrange for equal access to all.

3.7 The shrimp estate in its current situation is a treeless land-water area. The plot borders are ideal for afforestation. This can be a means of revitalizing the area to its original mangrove. This is also the fact that only mangroves can be sustained in this severe saline area. A well-designed land-water interface can turn the area more green, sustainable, and economically efficient estate.

3.8 Cox's Bazar lacks diversified tourist activities for its tourists except for the long natural beach. The Shrimp-Estate can be a tourist attraction for Cox's Bazar by providing an 'off the city' tour to the shrimp estate through the Moheshkhali channel. The shrimp estate can be designed in such a way that tourists can spend a few hours visiting shrimp farms, experiencing the steps of farming, knowing about shrimp and tasting them.

3.9 In recent times, a wide range of activities have been concentrated on the south-eastern coast of Bangladesh. The Bangabandhu Sheikh Mujib Shilpa Nagar (Mirsharai Economic Zone), Matarbari Coal Power Plant, Matarbari Deep Sea Port, Dohazari-Cox's Bazar Rail line, Sonadia Eco-Tourism etc. have made the area lucrative for more infrastructure improvement. These developments would pave the way for providing access to market and eco-tourism opportunities for the shrimp estate at Chokoria. In this context, the shrimp estate has a great potential to become a growth engine not only for the region, but also for the country.

4.0 Objectives of the assignment

The objective of the consultancy is to prepare a Master Plan for Chokoria Government owned shrimp estate to propose all facilities in and around the estate to develop and demonstrate a smart shrimp aquaculture development hub which may be entitled "Smart Shrimp Economic Zone" to explore the emerging potential of the blue economy. The consultant will ensure that the master plan will align the SCMFP's envisioned activities in a systematic manner toward achieving its targeted results.

This may include intensification of shrimp aquaculture through improved water management, renovation and resizing of plots, necessary infrastructures to build, strengthening an effective value chain, establishing transportation and communication networks, electrification with alternative energy

sources such as a solar panel or tidal power generation, afforestation, etc. This will facilitate long-term sustainable management of shrimp estate through the allocation of facilities in a rational and agreed manner, allowing effective mediation among sectors and or user interests, and producing an impartial framework that allows for long-term strategic planning and investment that encompass ongoing infrastructure developments in surrounding areas

5.0 Scope of services

The consultancy will be executed in two phases. Firstly, stock-taking of all physical resources in and around the shrimp estate, which have development potential and might affect the targeted output. With this inventory a baseline will be established and based on that an implementation planning study will be carried out within seven months from the date of contract signing. The implementation planning study will contain but will not be limited to the enhancement plan, mitigation plan, risk management, social and environmental measures, economic analysis, etc.Aligning and or integrating the *Sector Development Plan of the Local Government Division (LGD) for Moheshkhali-MatarbariIntegrated Infrastructure Development Initiative (MIDI) Area of Cox's Bazar District,(*https://drive.google.com/drive/folders/1v9HOp3lTTU1qz3A6XgLaejCmWKHx0TQy?usp=share_link*)* and *Land Use and Development Planning Survey of Moheshkhali and Matarbari Area (*https://drive.google.com/drive/folders/1crwG1k-3O3dWBuxbZzb3SUvCf1pj24r1?usp=share_link) this assignment will lead to the development of the Chokoria Smart Shrimp City.

Secondly, the consultant will prepare at least three scenarios/alternatives to sustainably manage the Chokoria Shrimp Estate andother natural resources. The consultant will examine scenarios/alternatives in respect of economic viability, social acceptability, environmental compliance, and climate resilience. In order to develop scenarios/alternatives the consultant will consult key stakeholders, viz. associations of leaseholders, hatcheries, value chain actors, processing industries, feed producers, civil societies, and allied government agencies (DoF, water management, land, infrastructures, climate change, environment, forestry, law and order, energy supply, tax). The assignment will include but will not be limited to the following tasks:

(i) Conduct reconnaissance surveys of the entire government shrimp estate at Chokoria, Cox's Bazar, together with the areas around the estate to identify the resources that could have the potential to support the intensification of shrimp aquaculture with respect to all relevant facilities for its production, post-harvest handling and marketing to make the shrimp estate a viable business hub. The surveys will lead to establishing a baseline and based on that an implementation planning study will be carried out. The implementation planning study will contain but will be not limited to the enhancement plan, mitigation plan, risk management, social and environmental measures, economic analysis, and economic impact study caused by ongoing infrastructure development in surrounding areas.

(ii) The consultant will prepare a plan to demonstrate three different modalities of shrimp culture method based on a different level of intensification (including pond resizing, re-excavation plan, etc.), i.e. a) Improved extensive shrimp farming, b) Semi-intensive shrimp farming and c) Intensive shrimp farming in the government-owned 48-acre farm to be demonstrated by the DoF. The consultant will also have a plan for internal canal management.

(iii) The consultant will aim at developing three different scenarios (Improved-extensive, semi-intensive, and intensive(respectively) for the development of the government-ownedshrimp estate (leased) and surrounding areas at different levels of intensity of culture. The scenarios will be compared for their economic prospects and will then allow for further development of the estate.

- Scenario - 1:Prepare plan (including GIS mapping, design, cost estimate, etc.) for -

- Re-excavation and resizing of all leased plots
- Introduction of improved extensive culture with limited scale semi-intensive culture
- Enabling value chain (landing center, ice factory, refrigerated van, processor)
- Construction of bridge on Matamuhuri river at Badarkhali /Chaufaldi point
- Construction of roads and jetty to connect the shrimp estate to urban areas
- Access to electrification through the grid and alternative power sources.
- Establishment of Police station, etc.

❖ Scenario - 2: Prepare plan (including GIS mapping, design, cost estimate, etc.) for -
- Scenario 1 will be expanded with the following:
  - transition from improved extensive to semi-intensive shrimp aquaculture in the majority of plots
  - introduction of intensive shrimp aquaculture on a limited scale
  - Extension of improved-extensive/semi-intensive technology in surrounding shrimp farming areas
  - Introduction of alternative energy sources
  - Establishment of connecting roads among the sub-polders

❖ Scenario - 3: Prepare plan (including GIS mapping, design, cost estimate, etc.) for -
- Scenario 2 will be expanded with the following:
- Transition from semi-intensive to intensive shrimp farming in the majority of plots
- Extension of semi-intensive/intensive technology in surrounding shrimp farming areas
- Introduction of Eco-tourism

The above scenarios must be complemented with the essential features to set up a multi-functioning Smart Shrimp Economic Zone including major city features, such as housing, commercial and R&D activities ideal for the application of cutting-edge technologies which will support boosting shrimp aquaculture and sustainable shrimp business.

(iv) Analyze, collect, and describe up-to-date technical, socio-economic, and biophysical information available to justify the rationale of the Master Plan with geographic coverage, project beneficiaries, project's PDOs, and vision of DoF. Prior to initiating the development of the envisioned Master Plan, undertake detailed Strengths, weaknesses, opportunities and threats (SWOT) analysis with a wide range of stakeholder engagement.

(v) Prepare the Master Plan with an intention to be implemented in an environment-friendly and ecosystem-based approach by the stakeholders, for the stakeholders and of the stakeholders by analyzing historical shrimp aquaculture practice, information, relevant reports and statistics, local and indigenous knowledge on shrimp aquaculture.

(vi) In order to develop scenarios/alternatives for the proposed master plan the consultant will organize regional, and local level workshop/consultation meetings with representatives of following groups: associations of lease holders, hatchery owners, other value chain actors, processing industries, feed producers, academia, civil societies, and relevant government agencies (DoF, BFRI, BFDC, Planning, Finance, water management, land, infrastructures, climate change, environment, forestry, law and order, energy supply, tax, etc.) to establish animproved value chain (backward-forward linkages) for sustainability of business.

(vii) The consultant will develop a work plan with details of activities, allocating responsibility, time frame, costs and logistics, and how various activities of the Master Plan related to each other. The work-plan schedule will be best portrayed in the form of a Gantt chart and presented in inception workshop.

(viii)Prepare the MP monitoring program design, clearly reflecting project objectives; Provide a basis for long-term measurement and evaluation. Provision should be made to ensure that monitoring information reported to interested parties in a form that is useful to them.

(ix) The consultant will design a system with drawings, specifications, BoQ, inclusive of GIS/GPS location based mapping of the entire shrimp estate to be developed showing all other activities carried out by other stakeholders surrounding the shrimp estate-viz. location of shrimp hatchery estate, processing industries, transport modalities, Ecologically Critical Areas (ECAs), spawning spots of different valuable and iconic species, marine refuges, sea grass, mangrove vegetation and seaweed beds, canals with length and width, sluice gates, dykes embankments, all shrimp ghers (ponds), postharvest landing sites and zones of mariculture activities, and infrastructure under development in surrounding areas would be shown in the map. Required geo-referenced information like particular areas for likelihoods of tidal surge, floods or pollution with highly toxic chemicals will be indicated in mapping through GIS.

(x) Design and prepare communication and awareness materials for sensitization and wider awareness among different groups of stakeholders and consultation during the process of developing Master Plan in consultation and assistance of PMU and DoF.

(xi) In line with the project's Environment and Social Management Framework (ESMF), prepare a Strategic Environmental and Social Impact Assessment (SESIA) based on proposed scenarios and other anticipated development interventions indicating possible risks and threats with adaptation and mitigation measures.

(xii) Any relevant assignment associated with the consultancy would be necessary as and when required by the PD, PMU.

6.0 Selection Process of Consultant

Consulting Firm will be selected following Fixed Budget Based (FBS) Selection (National) methodin accordance with the Bank's "Procurement Regulations for IPF Borrowers"July 2016 revised November 2017 ("Procurement Regulations"), which can be found at the website of the World Bank (www.worldbank.org).

7.0 Duration of the assignment

The total duration of this assignment will be for 12 months from the date of signing the contract. However, the duration may be increased or decreased based on the performance of the consulting firm, project needs, and extension of project duration and availability of finances.

8.0 Deliverables and Milestones

Sl. No.	Deliverables	Submit Reports	Submission of Report (Milestone)
(1)	**Inception Report (IR)** - The Consultant will submit an Inception Report (IR) detailing the methodology and approach for the entire assignment covering all items under"Scope of Services" and tasks as outlined in this Terms of Reference. The report will *inter alia* describe the method of data collection including chronological work plan, reconnaissance survey, field visits, project	PD, SCMFP	Within 2 (two) months of contract signing

Sl. No.	Deliverables	Submit Reports	Submission of Report (Milestone)
	stakeholder engagement and consultations, and data analysis. The IR will contain an outline of the team tasks and team members' inputs and deliverables. Prepare a detailed work plan with Gantt Chart. The IR will provide a list of the available/collected information and timelines to fill in the gaps. The report will be subject to review and comment by the DoF and PMU of the SCMFP and the WB. Comments will be provided within 15 days, if not, the report will be considered approved. - The final inception report will be submitted to the Client after incorporation of comments.		
(2)	**Technical Report**		Within 4 months of contract signing
	- Collect and analyze up-to-date technical, socio-economic, bio-physical information including policy, legal, statutory requirements, SWOT analysis process, develop GIS maps, and write a technical report prior to developing three completedifferent scenarios incorporating shrimp aquaculture-related activities and other multifunctional commercial activities required to develop a Smart Shrimp Economic Zone.	-Do-	
(3)	**Information, Communication and Education (IEC) materials** - For sensitization and wider awareness among different groups for stakeholder's engagement and consultation during the process of developing the Master Plan.	-Do-	Within 5 months of contract signing
(4)	**Implementation Planning Study Report** - Presentation of Scenarios analysis to PMU. Scenarios will have draft/sketch of the proposed interventions.	-Do-	Within 7 months of contract signing
(5)	**Report of the Citizen Engagement process** - Organize and facilitate national, regional and community stakeholders' engagement and consultation process as critical for development of Master Plan representing different shrimp aquaculture domain/personnel, academia, researchers, universities, citizen scientists, shrimp traders, shrimp farmers' associations, and other relevant users in coordination with PMU.	-Do-	From 1st to 8th month of contract signing
(6)	**Strategic Environment and Social Impact Assessment (SESIA)** - Prepare a Strategic Environmental and Social Impact Assessment based on proposed scenarios and other anticipated development interventions indicating possible risks and threats with adaptation and mitigation measures delineated in the Master Plan through validation by PMU/DoF/WB.	-Do-	Within 8 (eight) months of contract signing
(7)	**Monthly progress report**	-Do-	Every month
(8)	**Draft Final Master Plan** - Elaboration of the proposed elements/components/activities along with the incorporation of the recommendations of the workshop, submit a Draft Final Master Plan comprising an up-to-date account of the proposed activities (including GIS map, architectural and structural design, cost estimates, etc.).	-Do-	Within 9 (nine) months of contract signing
(9)	**Final workshop**	-Do-	Within 10 (ten) months

Sl. No.	Deliverables	Submit Reports	Submission of Report (Milestone)
			of contract signing
(10)	**Master Plan** - Incorporating the recommendations of the final workshop, submit the finalized **Master Plan** comprising an up-to-date account of the agreed activities (including final GIS map, architectural and structural designs, cost estimates, etc.) with all documents, reports, and maps in both soft and hard copies prepared along the process of development of the Master Plan. - After submission of the finalized **Master Plan**, PMU may take two weeks to review it. After incorporating the review comments (if any) the consultant will supply 12 hard copies of the Master Plan and soft copies prior to the completion of the consultancy.	-Do-	Within 11 (eleven) months of contract signing

9.0 Stakeholder Consultations/Workshops

In line with the scope of the services and deliverablesand milestones,the consultant will be required to conduct Consultations and Workshops of specified durations (one day) for different stakeholder groups as well as procure and prepare relevant communication materialsin consultation with PMU along with as per guidelines below. All costs shall be included in the consultants'financial offer unless mentioned otherwise.

Guideline for arranging trainings/workshops/meetings:

The participants shall be provided/served the following:

(a) Consultation/Workshop materials with average cost of about BDT 200 per participant

(b) Snacks @ of BDT 50-100 per person.

(c) Lunch @ of BDT 300-450 per person.

The cost for hiring venues and participants' travel will be proposed by the consultant.

Indication of consultations and workshop (**consultant should propose as deemed necessary**):

Category of Workshop	Targeted Participants	Indicative Nos. of Participants
Inception Workshop	PMU, BFRI, Representative of the Lessees of 10 Acre and 11 Acre Plots, Fish Traders, Fish Processors, LGED, BWDB, Forest, Environment, Coast Guard, Police, etc.	50
Stakeholder Consultation Workshop during Master PlanPreparation		
i. Community level (4 Nos.)	Representative of the Lessees of 10 Acre and 11 Acre Plots, Salt Producers and Traders linked with Chokoria Estate, local UP Chairman and Members, Govt. Officials (DoF, Local Administration, AC-Land, OC, etc.).	60
ii. Upazila Level (2no.)	Local Public Representatives, Local Elites, Representatives of the Leese's of 10 Acre and 11 Acre Plots, UNO, AC-Land, OC and other Upazila level Officers, Shrimp Farmers & Traders, local Salt Producer and Traders, BWDB, Dept. of Forestry etc.	70
iii. Regional level at Cox's Bazar (1no.)	Public Representatives (Honorable MPs, Upazila Chairman), District Administration, Representative of Department of Police, Bangladesh Oceanographic Research Institute (BORI), Department of Fisheries (District, Upazila level and other related Officers), LGED, Dept. of Forestry, Dept. of Environment,	100

Category of Workshop	Targeted Participants	Indicative Nos. of Participants
	District level relevant Officer, UNOs, AC-Land, Local elites, Representative of Leese's of 10 Acre and 11 Acre Plots, (4 people), SHAB, BFFEA, BFRI, Fish Farmers, BWDB, Local Coast Guard, BIWTA, NGOs-5 (Local NGOs related to Coastal Aquaculture/ Fisheries) etc.	
iv. National Level (1no.)	MoFL, MoL, MoF&E, Planning Commission, IMED, Coast Guard, Dept. Police, DoF, BFRI, Universities, BWDB, BIWTA, Blue Economy Wings, Repr. of Leese's of 10 Acre and 11 Acre Plots, (2 people), SHAB, BFFEA, BSFF, INGOs-5 (WorldFish, Coast, CoDEC, Solidaridad) etc.	60
Master Plan Validation Workshop		
i. Upazila Level (1 no.)	Local Public Representatives, Local Elites, Repr. the Leese's of 10 Acre and 11 Acre Plots, UNO, AC-Land, OC and other Upazila level Officers, Shrimp Farmers & Traders, local Salt Producer and Traders, BWDB, Dept. of Forestry etc.	60
ii. Regional Level (1 no.)	Public Representatives (Honorable MPs, Upazila Chairman), District Administration, Representative of Department of Police, BORI, Department of Fisheries (District, Upazila level and other related Officers), Dept. of Forestry, Dept. Environment, District level relevant Officer, UNOs, AC-Land, Local elites, Representative of Leese's of 10 Acre and 11 Acre Plots, (4 person), SHAB, BFFEA, BFRI, Fish Farmers, BWDB, Local Coast Guard, BIWTA, NGOs-5 (Local NGOs related to Coastal Aquaculture/ Fisheries) etc.	50
iii. National Level (2 no.)	Public Representatives (Honorable MPs, Upazila Chairman), District Administration, Representative of Department of Police, BORI, Department of Fisheries (District, Upazila level and other related Officers), Dept. of Forestry, Dept. Environment, District level relevant Officer, UNOs, AC-Land, Local elites, Representative of Leese's of 10 Acre and 11 Acre Plots, (4 person), SHAB, BFFEA, BFRI, Fish Farmers, BWDB, Local Coast Guard, BIWTA, NGOs-5 (Local NGOs related to Coastal Aquaculture/ Fisheries) etc.	50

10.0 Project Area

The Project covers a geographic area located in the South-East Region of Bangladesh with a particular focus on the government shrimp estate at Chokoria Upazila within the administrative jurisdiction of Cox's Bazar District.

11.0 Master Plan Formulation Team Composition

In order to complete the assignment, the Consultant will assemble a multi-disciplinary team of technical experts with substantial experienceand adequate educational backgroundsto ensure the services are carried out in a professional and timely manner.

Positions and person month	Description of Input (list only core responsibilities)
Key positions	

Positions and person month	Description of Input (list only core responsibilities)
1. **Team Leader**-1,12 person month	**Qualifications:** - Master's degree in Fisheries/ Natural Resources Management/Statistics/Urban and Regional Planning/ Development Studies or any other related discipline. **Experiences:** - 10 years of extensive relevant experience in project/program planning and management, managing humans, and coordinating activities. - Track record in conducting similar assignments in developing countries. - Strong analytical skills with the ability to evaluate qualitative and quantitative information in establishing Master Plan on natural resources. - Good interpersonal and communication skills with proven leadership to enable work independently are required. - Experience in developing a Master Plan on fisheries/aquaculture will be preferred.
	Responsibilities: - Team leader will be responsible to provide full support to formulate Master Plan in consultation with DoF, PMU officials & consultants, core stakeholders and beneficiaries for sustainable utilization of coastal aquaculture resources by a team of key experts under his/her guidance and advice. - Integrate for intensification of shrimp aquaculture mentioned in the relevant policies, regulations, and strategies into the Master Plan developing process with all important features. - Build effective coordination and collaboration with concerned govt and private agencies and stakeholders and lead consultation processes to develop a framework and conceptual structure of the Master Plan. - Assist in planning and conducting of the required consultation process and produce reports for formulating Master Plan. - Conduct a review of best practices developed through the Ecosystem Approach to strengthen the resiliency of fisheries and aquaculture sector in developing Master Plans in other countries. - Assist in carrying out a SWOT analysis for the proposition of the MP. - Coordinate and supervise key experts and non-key positions to ensure timely delivery of outputs and reporting to PD, PMU.
2. Environmental Economist-1, 6 person month	**Qualifications:** - Master's degree in Economics/Agricultural Economics/ Development Economics/Policy and Planning/Statistics/Environmental Sciences or relevant discipline. **Experiences:** - 10 years of working experience carrying out environmental impact assessments related to water resources or coastal/riverine projects as well as preparation and implementation of environmental management and monitoring plans. Experience in M&E of environmental aspects of the World Bank or any other donor-funded project will be an added advantage. S/he will be familiar with the relevant environmental and social safeguards requirements for this assignment. - Track record in conducting an economic analysis of development interventions in relevant assignments. - Experience to analyze and evaluate quantitative and qualitative information in natural resources management projects.

Positions and person month	Description of Input (list only core responsibilities)
	- Experience in the preparation of analytical reports/documents on natural or fisheries resources management. - Statistical Knowledge of sampling design, and procedure, information/ data collection methodologies, analysis and monitoring will be preferred. - Computer literacy having the competence of doing economic analysis. **Responsibilities:** - In close collaboration with Aquaculture Expert design and prepare statistical sampling methodology for gathering relevant data, and analysis for developing different scenarios to prepare a functional Master Plan. - Develop systems for collecting, analyzing, and interpreting environmental and economic data to apply economic models, and forecasts or use scenarios to predict future economic outputs for boosting Blue Economy from Master Plan implementation. - Provide and develop policy framework and recommendations to achieve environmental goals to establish MP through dialogue/ consultations.
3. Development Planner-1, 9 person month	**Qualifications:** - Master's degree in Urban and Regional Planning/Development Studies/Policy and Planning/Fisheries/Aquaculture/Public Administration/Environmental Sciences or relevant discipline. **Experiences** - 10 years of working Experience on agricultural/urban/rural development plan. - Knowledge of social compliance issues in aquaculture. - Strong analytical and strategic thinking skills and demonstrated research skills. **Responsibilities.** - Devise programs and plans regarding land use and area development plan for the shrimp aquaculture business hub. - Integrate policies affecting land use, zoning, and public utilities into the Master Plan for intensification of shrimp aquaculture. - Consult with government agencies, developers, design engineers, architects, community groups, and businesses to develop the intended Master Plan; - Gather and analyze economic and social information surrounding a region to use in developing the Master Plan. - Organize and include public engagement, plan development, technical report writing and document production, computer-generated maps and graphic elements generated for use in Master Plan. - Engage in a multi-disciplinary environment to assist business development activities for client communities to proactively plan and design for future.
4. **GIS Analyst**-1, 9person month	**Qualifications:** - Master's degree in Geography/Urban and Rural Planning/Computer Science& Engineering/Electrical Engineering and/or relevant discipline. **Experiences:** - 7 years of working experience in database development and management using GIS & GPS tools with data processing, developing updatable thematic geo-referenced mapping. - Demonstrated experience to lead and manage software systems, survey, statistical design and analysis, GIS mapping, and reporting on fisheries/aquaculture geographical and statistical data.

Positions and person month	Description of Input (list only core responsibilities)
	Responsibilities: - Develop an updatable thematic geo-referenced map for the Smart Shrimp Economic Zone integrating GIS software. - Design and develop GIS applications and preferred MIS software and online data collection system. - Provide support for requirements and specifications for GIS-based ICT infrastructure, development of software database required for implementation and monitoring of MP. - Prepare training modules and manuals to provide capacity enhancement training on GIS for DoF, PMU, and other core personnel to run systems and processes included in MP.
5. Aquaculture/ InfrastructuralEngineer-1, 9 person month	**Qualifications:** - B. Sc. in Civil / Structural/Water Resource Engineering **Experiences:** - 10 years of professional experience in the design of piled foundations, hydraulic RC, and Steel structures. - Experience in similar work in a coastal harbor/environment will be an advantage. - Good understanding of Hydrology/River Modelling work with professional experience of flood and erosion analysis and hydrological data analysis. **Responsibilities:** - Assist shrimp/fish farming operation functions and keep systems running to maximize efficiencies and profits. - Conduct detailed survey and undertake reconnaissance visits and Analyze the current status of existing auction centers, depots, collection points, peripheral dykes and embankments, sluice gates, culverts, canal and other structures within the government shrimp estate at Chokoria; - Prepare detailed design, drawing, specification and BoQ for each of the physical structures, desilting of canals, rehabilitate, refurbish and build new constructs to include in the Master plan. - Layout plan for the entire shrimp estate with each of the shrimp plots, all existing structures including canal de-silting, and proposed detailed activities with structures will be indicated in GIS mapping. - Work in close consultation and coordination under the direct guidance of the team leader and with support from Regional Planner. - Assist in preparing an inventory/database of all the existing value chain infrastructures in the shrimp estate with recommendation for their improvement.
6. Coastal Aquaculture Expert-1, 9 person month	**Qualifications:** - Master degree in Fisheries /Coastal Aquaculture/ Marine Science or any other relevant discipline. **Experiences:** - 10 years working experience in the coastal aquaculture operations especially in shrimp/finfish. - High level of proficiency in written & spoken English with skill in report writing. - Good team spirit and profound knowledge and experience in the field of project management, administration, communication and facilitation, team building and executing capacity, understand program planning and budget, M&E, reporting system.

Positions and person month	Description of Input (list only core responsibilities)
	Computer literacy skills (MS Words, Excel, PowerPoint etc.) arerequired.**Responsibilities:** - Identify opportunities for diversification and intensification of shrimp aquaculture as business model. - Review and assess existing infrastructure (e.g., water supply and drainage), soil and water suitability, and services (e. g. hatcheries and feed mills) in the government owned shrimp estate integrating ancillary commercial activities to diversify coastal aquaculture. - Contribute to the preparation of a design and implementation plan for a central aquaculture information system. - Develop strategies for prevention and control of disease problems in aquaculture farming system; - Assist in identifying related environmental concerns and provide mitigation measures to avoid potential environmental impacts of aquaculture activities. - Assist in identifying availability of fund, credit requirements and access to finance for boosting coastal aquaculture and other value chain components. - Assist in formulating a suitable approach to improving social infrastructure for coastal aquaculture.
7. Shrimp/Fish Value Chain Expert-1, 6 person month	**Qualification** - Master Degree in Business Administration/Fisheries/Agricultural Science/Agricultural Economics or related field. **Experience** - 10 years of work experience in Value chain assessment and development approach especially in Coastal & Marine fisheries. - Experience in planning, organizing & managing market access, agricultural supply/value chain in any Government/ autonomous/ non-government organization/ donor funded project. - 7 years work experience in managing M&E system to ensure value chain of agricultural products. - High level of proficiency in written and spoken English and report writing ability. - Must have computer literacy (MS Word, Excel, PowerPoint etc.). **Responsibilities** - Identify, review and analyze the main fisheries production systems, supply/value chains of fish and fisheries products. - Identify Fisheries (Marine & Coastal) market dynamics and opportunities and assess and map the supply and demand of services in targeted areas. - Identify, review and analyze the main fisheries production systems, supply/value chains of fish and fishery products in selected areas - Assess the cost, profit, marketing, and supply and demand dynamics of the value chain. - Analyze fisheries markets and functioning: structure, organization, ricin, etc. - Identify strength and weakness of the aforesaid chains applying appropriate SWOT procedure. - Recommend measures to recover or improve the chains. - Organize and facilitate Stakeholders' workshop for review. - Review the activities undertaken based on recommendation and recommend activities for further improvement (if required Value Chain study of Coastal & Marine fisheries). - Select key value chains interventions with the highest potential for growth profitability and employment for the producers & other VC actors. Any other

Positions and person month	Description of Input (list only core responsibilities)
	task assigned by the Project Director/project management as and when required.
8. Landscape Architect-1, 6 person month	**Qualifications:** - Bachelor degree in Architecture/Landscape Architecture **Experiences** - At least 5 years of working Experience on landscape architecture. - Knowledge of coastal landscape in Bangladesh; - Strong analytical and presentation skill to visualize planned landscape. - Skill to create animation for better presentation of landscape ideas.
9. Forestry Expert-1, 6 person month	**Qualifications:** - Master degree in Forestry or other relevant discipline. **Experiences:** - 10 years of experience in forestry research and development. - Experience of working with mangrove. **Responsibilities:** - Identify the correct species for afforestation in and around the shrimp estate. - Contribute to landscape plan preparation
Non-Key positions	
1. GIS Analyst Assistant-1, 9 person months	**Qualifications:** - Master degree in Geography, GIS, Earth Sciences, Urban and Regional Planning, Marine Science, Water Resources Engineering, Environmental Science/ Engineering or other relevant discipline. **Responsibilities:** - Assist in survey and analyzes biological, technical, social, economic, environmental, GIS, institutional, data and statistics, to support in establishing MP. - Produces technical information, data tables, and statistics in consultation with other key experts as inputs for developing MP. - Assist in analyses relevant historical shrimp aquaculture data/ information. - Assist the GIS Specialist for researching, collecting, storing, retrieving, evaluating and analysis and simulation of data for designing and prepare MP. - Associated activities to be provided as and when asked by GIS Specialist and Team Leader. - Assist for entry of data collected, store and keep documentation using computers. - Provide required analysis support to key experts.
2. Data Entry/ Computer Operators-2, 12 person months each	**Qualification and experiences:** - Diploma in Fisheries, HSC with Science or Bachelor Degree as appropriate - At least 7 years of working experience in computer literacy on MS Word, Excel and good speed in composing reports. **Responsibilities:** - Assist for entry of relevant data, maintain store and keep documentation and related jobs using computers. - Provide required office assistance services to Key experts.

12.0 Estimated Input of Key Experts 72 person month.

13.0 Institutional Arrangements

DoF represents the Client for this assignment. The Consultant will work under the direct supervision of the Project Director, SCMFP, DoF, Dhaka. DoF will assist the study team as and when required with regard to coastal aquaculture and related fisheries data, available reports, and relevant study documents. The PD will support the Consultant so that the objectives of the assignment, as detailed in the ToR, are achieved within the agreed time schedule, and the contents of the MP are acceptable to the GoB and the World Bank. The PD, PMU will facilitate meetings and consultations between the consultants and DoF professional staff to discuss technical issues.