

# **RECRUITMENT OF CONSULTING FIRM FOR CONSULTING SERVICES FOR SETTING-UP AN INTEGRATED BAMBOO PARK IN ASSAM AND TO CONDUCT BAMBOO RESOURCE MAPPING AND VALUE CHAIN STUDY UNDER BAMBOO VALUE CHAIN PROJECT IN NORTH EASTERN REGION**

## **A. Project Background**

1. On the request of the Government of India the Asian Development Bank (ADB) has conducted the North East Economic Corridor (NEEC) Study.<sup>1</sup> The study has highlighted that North Eastern Region (NER) of India retains economic potential in several traditional industries, including Bamboo. In the NER, Bamboo is used in crafting furniture, building construction, food (shoots), handicrafts, and fuel alternatives and is found in abundance in the region. The study has found that bamboo is one of the most crucial natural resources of NER, and it constitutes an integral part of the sociocultural and economic life in NER. However, the existing end use of bamboo are concentrated in the low value-adding segments like, housing and other domestic usage, and the bamboo value chain is fragmented, leading to very high wastage. In this context, development of industrial infrastructure along with adequate market linkages is an important priority for the development of the NER.

2. Setting-up of Integrated Bamboo Park (IBP) along with a network of aggregation-cum-primary processing centres shall optimize the sustainable use of bamboo resource and achieve zero wastage. It would be supported by improvement of backward and forward linkages for benefit of farmer producer entities, entrepreneurs, and industry, infuse national and international good practices to improving outcome, and develop skills for potential markets. The findings and recommendations of the NEEC study have been discussed with the relevant agencies, including the state governments in the NER. Based on the recommendation of the NEEC report, National Bamboo Mission (now merged into the Mission for Development of Horticulture or MIDH), Ministry of Agriculture and Farmers' Welfare, Government of India moved a proposal to seek ADB support for the development of Bamboo value chain in the NER. Based on discussions with the states in the NER, it was decided that an IBP would be developed at Golaghat, Assam, with the support from ADB. The MIDH, Government of India is the executing agency, and the State Bamboo Development Agency (SBDA) , Assam will be the implementing agency of the project.

## **B. Objective of the Assignment**

3. ADB is providing support to the SBDA, Assam through procurement of a consulting services package (a national consulting firm is to be recruited and administered by ADB adopting simplified consultant consultants' qualifications selection–SCQS method and acting as Client for the assignment) to develop the backward and forward linkages for the proposed integrated bamboo park. Services of a consulting firm is sought to map the available bamboo resource in NER , study backward and forward linkages, study existing supply chain for bamboo resource, undertake value chain analysis and financial modelling of different components of the value chain at macro-level in context to existing and upcoming value chain, planning for skills development and employment generation impact and potential of the IBP along with a network of aggregation-cum-primary processing centres. The firm will also develop the project concept paper for ADB internal use for management approval purpose.

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<sup>1</sup> The final report of the NEEC study was submitted to the Government of India in March 2022.

## C. Scope of Work

4. The outline of consultant's terms of reference (TOR) will include the tasks specified below. Detailed TOR for each expert is provided in Section E. While during the assignment, the consulting firm and its expert team members would interact with the ADB project team and MIDH in New Delhi, they would interact with SBDA, Assam at their project management unit (PMU) and at respective field locations/ sites with other stakeholders as identified in coordination with SBDA.

### Phase-I: Up to 5 Months

#### a) Resource mapping, and assessment of business potential for Bamboo sector in Assam

- Backward Linkages:
  - Collect all data available in relation to bamboo resource availability district-wise in a sustainable manner (not to exploit the resources and pose environmental risks) in the state of Assam, and assess available bamboo resource in Assam through analysis of primary and secondary sources including stakeholder consultations.
  - Assessment and identification of potential availability of bamboo clusters through satellite imagery interpretation and classification of the same to forest and non-forest clusters.
  - Collection of available satellite data related to land use, land cover, forest cover from relevant agencies including, Assam State Space Application Centre (ASSAC), North Eastern Space Applications Centre (NESAC) located in Meghalaya, Environment & Forest department of Assam, etc.
  - Develop cluster maps for SBDA, Assam in GIS platform for future use and ground verification on species-wise availability, especially for non-forest bamboo clusters.
  - Physical verification to minimum five clusters (non-forest) identified through satellite imagery interpretation in five districts to identify species, actual availability for commercial use, potential for cultivation etc. Carry out consultation with bamboo owners during cluster visit. The selection of clusters for physical verification to be done in consultation with SBDA, Assam.
  - Identify potential areas/clusters in consultation with stakeholders for bamboo cultivation in Assam in GIS platform.
  - Assessment of farmer producer organizations (FPOs)/ farmer producer companies (FPCs) and other agencies dealing with bamboo cultivation in the state.
  - Assessment and mapping of financial institutions, middle traders, processors, off takers, etc. involved in the bamboo value chain.
  - GIS Mapping of existing bamboo cultivation areas developed by SBDA, Assam and any other agencies including FPOs/ FPCs.
  - Study existing backward linkages established by Assam Biorefinery Pvt. Ltd (ABPRL) for their inputs including source sustainability of the backward linkages.
  - Carry out detailed consultation with ABPRL to understand their requirement of bamboo resources, existing supply chain, etc.
  - Assessment of requirement of Bamboo resource for the IBP and availability of the same through existing backward linkages.

- Assessing species-wise availability of bamboo in the identified catchment area of the proposed IBP at Golaghat in consultation with relevant stakeholders.
- Explore the common utilization of resources by the proposed IBP and the ABPRL.
- Assessment of business potential and market linkages:
  - Based on the volume and species of the available bamboo, assess the suitable applications and identify the products to be made for proper utilization of the Bamboo resources.
  - Assessment of available bamboo-based products in the state and market linkages.
  - Identify potential for new products/ industry based on available bamboo species in the state.
  - Identify suitable (high yield low wastage) bamboo species for the state for cultivation based on soil and climatic conditions of the state.
  - Undertake supply-demand analysis for bamboo and identified products in the region.
  - Assess the market availability of selected products in India and other countries.
  - Combining the feedstock availability and market availability, estimate the production capacity of units for each product.
  - Review of policy and regulations applicable to bamboo and bamboo products, particularly in connection with the proposed IBP.
  - Discussion with farmers and stakeholders to understand the challenges to be addressed.
  - Support the state to tie-up with farmers' cooperatives, FPOs, FPCs, etc., for sustainable supply of bamboo to the IBP.

#### **b) Techno-economic analyses and financial feasibility**

- Techno-economic analyses:
  - In consultation with SBDA, Assam the team will carry out detailed study of the proposed intervention in the IBP in relation to primary and secondary processing, product development, etc.
  - Detailed analysis on bamboo value chain and applications including socio-economic impact, and recommendation on subsequent details for the IBP.
  - Identification and assessment of appropriate technology for development of various products.
  - Identify the supply chain for raw materials and finished product.
  - Broad review, assessment, and confirmation of the concept master plan (being separately prepared through ADB Support) for the IBP in relation to facilities for primary and secondary processing, product development, market potential and forward linkages.
- Financial/economic analysis and financial/economic feasibility for Bamboo sector and IBP at macro-level, including exploring possibility of developing infrastructure on public-private partnership (PPP) basis and potential for use of value capture

financing (VCF) incorporation guidance in project design for value capture of the IBP:<sup>2</sup>

- Assess the financial and economic feasibility of the proposed bamboo park. Prepare a spreadsheet based financial/economic models to project aspects such as, economic benefits, revenue streams, costs, profitability, net cash flows and payback period, return on Investment (RoI), Economic and Financial Internal Rate of Return (EIRR and FIRR), Economic and Financial Net Present Value, (ENPV and FNPV), etc.
- Assess the risk based on the sensitivity of returns with various input parameters.
- Develop an outline of the project financing scheme, and prepare draft business plan for the IBP that covers implementation/ action plan with responsibilities, along with expected timelines.
- Develop the project concept paper for ADB internal use for management approval purpose.

### c) Implementation roadmap

- Detailed review of policy and regulations applicable to bamboo and bamboo projects.
- Identify the possible policy and support requirement from central and state governments to successfully implement the project.
- Current market linkages, and support required, especially for beneficiaries—small and medium enterprises (SMEs), farmers, vulnerable and excluded groups.
- Evaluate, assess and recommend synergy between ABPRL and the integrated bamboo park.
- Finalize business plan for the IBP that covers implementation/ action plan with responsibilities, through discussion with central and state governments and key stakeholders to identify major parties, milestones, work streams and interdependencies, along with any expected timelines.
- Any other task as assigned by the Client/ SBDA-PMU from time to time.

## Phase-II: 5 to 8 Months

### Resource mapping for Bamboo sector in North Eastern Region, excluding Assam

- Collect all data available in relation to bamboo resource availability in the states. assess available Bamboo resource (including commercial availability) in NER from in consultation with various stakeholders.<sup>3</sup>
- Assessment and identification of potential availability of bamboo clusters through satellite imagery interpretation and classification of the same to forest and non-forest clusters in the other NER states.
- Collection of available satellite data related to land use, land cover, forest cover from relevant agencies including, State Space Application Centres, North Eastern Space Applications Centre (NESAC) located in Meghalaya, Environment & Forest departments of the states, State Bamboo Missions, etc.

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<sup>2</sup> ADB. 2019. *Financial Analysis and Evaluation: Technical Guidance Note*. Manila; ADB. 2017. *Guidelines for the Economic Analysis of Projects*. Manila; etc. | Government of India, Ministry of Urban Development. *Value Capture Finance Policy Framework*. New Delhi.

<sup>3</sup> Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, and Tripura for the Phase-II study purpose.

- Develop bamboo cluster maps in GIS platform for states for future use and ground verification on species-wise availability.
  - Physical verification to minimum three clusters (non-forest) identified through satellite imagery interpretation per state to identify species, actual availability for commercial use, potential for cultivation etc. Carry out consultation with bamboo owners during cluster visit. The selection of clusters for physical verification to be done in consultation with state bamboo missions/ relevant stakeholders.
  - Identify potential areas/ clusters in consultation with stakeholders for bamboo cultivation in states in GIS platform.
- Any other task as assigned by the Client/ MIDH from time to time.

5. The phasing of activities is only tentative in nature particularly in relation to bamboo resource mapping in Assam, and in the other NER states (footnote 3). The expertise input required for the bamboo resource mapping can be utilized simultaneously after completion of the same for Assam and not necessary after completion of timeline for the entire phase-I activities.

#### D. Team Composition

6. The following team of consultants are recommended to be deployed for the assignment:

##### (a) National Key Experts

- (i) Bamboo Sector Expert (Team Leader)
- (ii) Geographic Information System (GIS) Expert
- (iii) Market and Value Chain Expert
- (iv) Finance and Economic Expert
- (v) Skills and Employment Specialist

##### (b) Non-Key Experts (National Support Staff)

- (i) GIS Analyst

7. The qualifications requirements for each expert position are described below:

Positions	Qualifications Requirements
<b>National Key Experts</b>	
<b>Bamboo Sector Expert (Team Leader)</b>	<ul style="list-style-type: none"> <li>• Post-Graduation from a recognized university in Management/ Business Administration or equivalent with a professional degree in natural resources/ engineering/ planning or related fields</li> <li>• Minimum of 12 years of general experience amongst which 10 years of relevant experience is required</li> <li>• Experience of working with ADB or other multilateral development banks (MDBs) or bilateral development agencies on similar projects is desirable</li> </ul>
<b>Geographic Information System (GIS) Expert</b>	<ul style="list-style-type: none"> <li>• Post-Graduation from a recognized university in GIS &amp; RS/ Geography/ Geology/ Geophysics/ Geo-informatics or equivalent; with a basic degree of BA/ BSc, BE, or BTech. In Civil Engineering/ Architectural Engineering/ Computer Engineering/ Geography/ GIS &amp; RS/ Geology/ Geophysics or equivalent</li> <li>• Minimum of 10 years of general experience, and minimum 8 years of relevant experience in mapping work of GIS-based base maps/ analysis and interpretation of satellite imagery/ development of thematic maps, resource</li> </ul>

Positions	Qualifications Requirements
	<p>mapping/ land use suitability potential analyses/ GIS-database and land with resource or built-up area attributes preparation etc., is required</p> <ul style="list-style-type: none"> <li>• Experience of working with ADB or other MDBs or bilateral development agencies on similar projects is desirable</li> </ul>
<b>Market and Value Chain Expert</b>	<ul style="list-style-type: none"> <li>• Post-Graduation from a recognized university in Management/ Business Administration or equivalent with a professional degree in natural resources/ engineering/ planning/ management or related fields</li> <li>• Minimum of 10 years of relevant experience in conducting market assessment studies is required</li> <li>• Minimum 8 years of experience of working in relevant sector in India needs to be demonstrated</li> <li>• The experience of working in bamboo sector of NER will be preferred</li> <li>• Experience of working with ADB or other MDBs or bilateral development agencies on similar projects is desirable.</li> </ul>
<b>Finance and Economic Expert</b>	<ul style="list-style-type: none"> <li>• Post-Graduation from a recognized university in Finance/ Business Administration or equivalent with professional degree in engineering/ planning/ management/ economics or related fields</li> <li>• Minimum 10 years of relevant professional experience, including minimum 8 years' experience in financial and economic analysis/ feasibility, financial structuring, financial appraisal of infrastructure investments, value capture financing (VCF), public-private partnership (PPP), etc., is required</li> <li>• Experience of working with ADB or other MDBs or bilateral development agencies on similar projects is desirable</li> </ul>
<b>Skills and Employment Specialist</b>	<ul style="list-style-type: none"> <li>• Post-Graduation from a recognized university in social sciences, development studies, industrial and public policy, industrial economics, business management/ human resources development, urban economics, urban planning or related disciplines; over a Bachelor's degree in social sciences/ economics/ engineering/ physical planning or equivalent.</li> <li>• Minimum 10 years of general experience, and minimum 8 years of specific experience as an expert in skills and capacity development/ study of existing and potential employment generation impacts in integrated industrial/ urban/ tourism/ transport or similar major infrastructure sectors, with demonstrated experience in skill and wage mapping, training needs assessment, preparation and implementation of comprehensive skills/ capacity development plans, and employment generation study reports/ analyses/ recommendations, with sex-dis-aggregated data (baselining/ monitoring) is required. Strong analytical and strategic thinking skills is required. Excellent oral and written communication skills in English are required.</li> <li>• Experience of working with ADB or other MDBs or bilateral development agencies on similar projects is desirable</li> </ul>
<b>Non-Key Experts (National Support Staff)</b>	
<b>GIS Analyst</b>	<ul style="list-style-type: none"> <li>• Post-Graduation from a recognized university in GIS &amp; RS/ Geography/ Geology/ Geophysics/ Geo-informatics or equivalent; with a basic degree of BA/ BSc, BE, or BTech. In Civil Engineering/ Architectural Engineering/ Computer Engineering/ Geography/ GIS &amp; RS/ Geology/ Geophysics or equivalent</li> <li>• Minimum 5 years of relevant experience in mapping work of GIS-based base maps/ analysis and interpretation of satellite imagery/ development of thematic maps, resource mapping/ land use suitability potential analyses/ GIS-</li> </ul>

Positions	Qualifications Requirements
	database and land with resource or built-up area attributes preparation etc., is required

8. The team of consultants shall not change during the execution of the contract without approval of the ADB. The consultants should have a track record of success in technical and commercial feasibility assessment and implementation of bamboo, biofuels and associated projects.

**E. Terms of Reference for each Expert**

9. The consultant’s outline terms of reference with deployment of team on intermittent inputs basis spread over the assignment duration will include the tasks as specified below, but not limited to:

**(i) Bamboo Sector Expert (Team Leader)**

**Detailed Tasks and/or Expected Output:**

**Phase-I for Assam**

- Act as the Team Leader and responsible for overall project coordination, stakeholder consultations, and provide guidance to the consulting team
- Collect all data available in relation to bamboo resource availability district-wise in the state of Assam, and assess available bamboo resource in Assam through analysis of primary and secondary sources including stakeholder consultations.
- Physical verification to minimum five clusters (non-forest) identified through satellite imagery interpretation in five districts to identify species, actual availability for commercial use, potential for cultivation etc. Carry out consultation with bamboo owners during cluster visit. The selection of clusters for physical verification to be done in consultation with SBDA, Assam
- Identify potential areas/ clusters in consultation with stakeholders for bamboo cultivation in Assam in GIS platform with support from GIS Expert/ GIS Analyst
- Identify suitable (high yield low wastage) bamboo species for the state for cultivation based on soil and climatic conditions of the state
- Assessment of farmer producer organizations (FPOs)/ farmer producer companies (FPCs) and other agencies dealing with bamboo cultivation in the state
- Study existing backward linkages established by Assam Biorefinery Pvt. Ltd (ABPRL) for their inputs including source sustainability of the backward linkages
- Carry out detailed consultation with ABPRL to understand their requirement of bamboo resources, existing supply chain, etc.
- Assessment of requirement of Bamboo resource for the IBP and availability of the same through existing backward linkages

- Assessing species-wise availability of bamboo in the identified catchment area of the proposed IBP at Golaghat in consultation with relevant stakeholders
- Explore the common utilization of resources by the proposed IBP and the ABPRL
- Provide review inputs to the concept master plan (being separately prepared through ADB support) for its confirmation for the IBP in relation to facilities for primary and secondary processing, product development, market potential and forward linkages
- Detailed review of policy and regulations applicable to bamboo and bamboo projects
- Identify the possible policy and support requirement from state government to successfully implement the project
- Discussion with farmers and stakeholders to understand the challenges to be addressed
- Evaluate, assess and recommend synergy between ABPRL and the integrated bamboo park
- Work with other consultants to obtain guiding inputs on the review and confirmation of concept master plan for the IBP in relation to facilities for primary and secondary processing, product development, market potential and forward linkages
- Support GIS Expert in identification of bamboo clusters, species, etc.
- Support Market and Value Chain Expert in supply-demand analysis for bamboo species and bamboo products
- Support the state to tie-up with farmers' cooperatives, farmer producer organizations or FPOs, farmer producer companies or FPCs, etc., for sustainable supply of bamboo to the IBP
- Work with other consultants in preparation of draft business plan and finalization of business plan for the IBP that covers implementation/ action plan with responsibilities, through discussion with central and state governments and key stakeholders to identify major parties, milestones, work streams and interdependencies, along with any expected timelines
- Any other task as assigned by the Client/ SBDA-PMU from time to time

### **Phase-II for NER States, excluding Assam**

- Collect all data available in the state level in relation to bamboo resource availability in the states, and assess available Bamboo resource (including commercial availability) in NER from in consultation with various stakeholders<sup>4</sup>
- Physical verification to minimum three clusters (non-forest) per state to identify species, actual availability for commercial use, potential for cultivation etc. Carry out consultation with bamboo owners during cluster visit. The selection of clusters for physical verification to be done in consultation with state bamboo missions/relevant stakeholders.
- Identify potential areas/ clusters in consultation with stakeholders for bamboo cultivation in states with support from GIS Expert/ GIS Analyst

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<sup>4</sup> Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, and Tripura for the Phase-II study purpose.



- Any other task as assigned by the Client/ MIDH from time to time

**(ii) Geographic Information System (GIS) Expert**

**Detailed Tasks and/or Expected Output:**

**Phase-I for Assam**

- Collection of all secondary data available in the state in relation to bamboo resource availability (including commercial availability) district-wise, and assessment and identification of potential availability of bamboo clusters through satellite imagery interpretation and classification of the same to forest and non-forest clusters, with support from GIS Analyst
- Collection of available satellite data related to land use, land cover, forest cover from relevant agencies including, Assam State Space Application Centre (ASSAC), North Eastern Space Applications Centre (NESAC) located in Meghalaya, Environment & Forest department of Assam, etc.
- Develop cluster maps for SBDA, Assam in GIS platform for future use and ground verification on species-wise availability especially for non-forest bamboo clusters
- Physical verification to minimum five clusters (non-forest) identified through satellite imagery interpretation in five districts to identify species, actual availability for commercial use, potential for cultivation etc. Carry out consultation with bamboo owners during cluster visit. The selection of clusters for physical verification to be done in consultation with SBDA, Assam
- Identify potential areas/ clusters in consultation with stakeholders for bamboo cultivation in Assam in GIS platform with support from Bamboo Sector Expert
- Assessment of farmer producer organizations (FPOs)/ farmer producer companies (FPCs) and other agencies dealing with bamboo cultivation in the state
- GIS Mapping of existing bamboo cultivation areas developed by SBDA, Assam and any other agencies including FPOs/ FPCs
- Produce all thematic maps in GIS platform and analysis reports in relation to bamboo resource mapping
- Any other task as assigned by the Client/ SBDA-PMU from time to time

**Phase-II for NER States, excluding Assam**

- Collection of all data available in the state level in relation to bamboo resource availability (including commercial availability) in the states, and assessment and identification of potential availability of bamboo clusters through satellite imagery interpretation and classification of the same to forest and non-forest clusters in the other NER states, with support from GIS Analyst<sup>5</sup>
- Collection of available satellite data related to land use, land cover, forest cover from relevant agencies including, State Space Application Centres, North Eastern Space Applications Centre (NESAC) located in Meghalaya,

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<sup>5</sup> Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, and Tripura for the phase-II study purpose.

Environment & Forest departments of the states, State Bamboo Missions, etc.

- Develop bamboo cluster maps for states in GIS platform for future use and ground verification on species-wise availability
- Physical verification to minimum three clusters (non-forest) identified through satellite imagery interpretation per state to identify species, actual availability for commercial use, potential for cultivation etc. Carry out consultation with bamboo owners during cluster visit. The selection of clusters for physical verification to be done in consultation with state bamboo missions/relevant stakeholders
- Identify potential areas/ clusters in consultation with stakeholders for bamboo cultivation in states in GIS platform with Support from Bamboo Sector Expert
- Consolidated bamboo resource mapping report for NER states consolidating bamboo resource mapping study carried out in phase-I for Assam and phase-II for other NER states
- Any other task as assigned by the Client/ MIDH from time to time

**(iii) Market and Value Chain Expert**

**Detailed Tasks and/or Expected Output:**

- In consultation with SBDA, Assam and based on the concept master plan for the IBP, develop strategy for suitable products and interventions for the IBP based on the volume and species of the available bamboo
- Undertake supply-demand analysis for bamboo species and identified products in the region
- Assess the market availability of selected products in India and other countries
- Combining the feedstock availability and market availability, estimate the production capacity of units for each product
- Detailed analysis on bamboo value chain and applications including socio-economic impact, and recommendation on subsequent details for the IBP
- Identification and assessment of appropriate technology for development of various products
- Identify the supply chain for raw materials and finished product
- Current market linkages, and support required, especially for beneficiaries—small and medium enterprises or SMEs, farmers, vulnerable and excluded groups
- Work with the Team Leader and other consultants, and provide inputs for detailed review of policy and regulations applicable to bamboo and bamboo projects, employment generation-related impact and potential of IBP, including review and confirmation of concept master plan for the IBP in relation to facilities for primary and secondary processing, product development, market potential and forward linkages
- Provide inputs to support the state to tie-up with farmers' cooperatives, FPOs, FPCs, etc., for sustainable supply of bamboo to the IBP
- Any other task as assigned by the Client/ SBDA-PMU from time to time

**(iv) Finance and Economic Expert**

### **Detailed Tasks and/or Expected Output:**

- Financial analysis and financial feasibility for Bamboo sector and IBP at macro-level:
  - Assess the financial feasibility of the proposed bamboo park. Prepare a spreadsheet based financial model to project aspects such as revenue streams, costs, profitability, net cash flows and payback period, return on Investment (RoI), Internal Rate of Return (IRR), Net Present Value (NPV), etc.
  - Assess the risk based on the sensitivity of returns with various input parameters
- Develop an outline of the project financing scheme, along with exploring possibility of developing infrastructure on public-private partnership (PPP) basis for IBP along with a network of aggregation-cum-primary processing centres, and potential for use of value capture financing (VCF) incorporation guidance in project design for value capture of the IBP
- Assist to prepare draft business plan and finalize business plan for the IBP that covers implementation/ action plan with responsibilities, through discussion with central and state governments and key stakeholders to identify major parties, milestones, work streams and interdependencies, along with expected timelines
- Work with the Team Leader and other consultants, and provide inputs for financing requirements for skills development and employment generation-related impact and potential of IBP, including review and confirmation of concept master plan for the IBP in relation to facilities for primary and secondary processing, product development, market potential and forward linkages, and budgetary estimation considered
- Any other task as assigned by the Client/ SBDA-PMU from time to time

### **(iv) Skills and Employment Specialist**

#### **Detailed Tasks and/or Expected Output:**

- Collect/ review available information on IBP along with a network of aggregation-cum-primary processing centres, and assess for the Bamboo sector (from farming and processing products to transportation and logistics/ mobility needs perspective):
  - Skill classification and job roles across the institutions and value chain for Bamboo sector (farming and processing products to transportation and logistics/ mobility needs); and map and analyse the skills gaps based on demand assessment with respect to business induced scenario of establishing the IBP along with a network of aggregation-cum-primary processing centres;
  - Based on backward and forward linkages, the existing employment (current availability of skilled staff/ labour engaged across the institutions/ product value chain with sex-disaggregated baseline data as available, including of existing wages mapped) and potential of employment generation
  - Enhancement from existing employment impact to potential employment generation impact in economic growth terms and

potential wage improvements (based on proposed interventions of skills and capacity development)

- Project the employment generation potential over a horizon period
- Prepare an action plan to meet skills gap/ training needs assessment, and quantify the requirements for skilled persons for—institutional staff, labourers/ workers, entrepreneurs, especially women (quantify gaps for different job roles to the extent possible, based on data availability)
- Arrive at a comprehensive skill development plan
- Review skill development ecosystem, which shall include the availability of training institutes, trainers, courses aligned with NSQF/ NCVT/ SCVT etc. standards; and infrastructure gap analysis should cover the status of current skill training programs at the district level, national or international good practices, recommendations and roadmap for implementation
- Undertake stakeholder consultations and collate feedback on key issues affecting skilling ecosystem
- Work with the Team Leader and other consultants in preparation of draft business plan and finalization of business plan that covers implementation/ action plan with responsibilities, through discussion with central and state governments and key stakeholders to identify major parties, milestones, work streams and interdependencies, along with expected timelines
- Explore good practices and their applicability for Bamboo sector related industrial policy design and management of industrial development, and on modern methodologies to collect industrial data and statistics, monitor, evaluate, appraise and manage large industrial parks; and enhance participants knowledge on industrial psychology, policy generation and review as well, reforms applicability for improved capacity benefits in the context of fuelling industrial growth and managing transformation through development of Bamboo Value Chain Project in Assam
- Prepare draft of training modules/ training materials; and for any priority capacity development needs, initiate and support in knowledge dissemination/ organizing and conducting training program sessions, as felt required; and document and disseminate training feedback received, analyse, and improvements suggested/ made
- Any other task as assigned by the Client/ SBDA-PMU from time to time

## F. Reporting Obligations

10. The following reports will have to be submitted by the team of consultants and approved by the Client.

- (i) **Inception Report** including detailed methodology and work plan
- (ii) **Interim Report** including details of as-is analysis, resource mapping for the bamboo project, broad review, assessment and confirmation of concept master plan, etc.
- (iii) **Draft Report** including the details of macro-level techno-economic analyses, financial feasibility for the project, draft business plan for the Integrated Bamboo Park, etc.
- (iv) **Project Concept Paper** for ADB internal use for management approval purpose for Bamboo Value Chain Project in Assam
- (v) **Final Report** including details of finalized business plan with implementation roadmap impact of bamboo projects under the Integrated Bamboo Park, etc.

- (vi) **Consolidated Bamboo Resource Mapping Report** for NER states, including Assam

11. All deliverables shall be submitted to the Client for review and approval. Deliverables must be submitted in electronic copy and are expected to comply with the deadlines established. All reports shall be prepared in ADB accepted formats and shall comply with the ADB approval requirements.

### G. Duration of Assignment

12. The assignment duration will be eight (8) months (tentatively envisaged and divided in two phases, i.e., phase-I up to five months, and phase-II of three months) with deployment of consulting team's experts on intermittent inputs basis. The team of consultants is requested to present a work plan and any assumptions made regarding the level of effort indicated in this TOR prior the start of the assignment.

<b>Deliverables</b>	<b>Broad Content of Deliverables</b>	<b>Expected Timelines</b>
Inception Report	<ul style="list-style-type: none"> <li>• Background</li> <li>• Approach and Methodology details</li> <li>• Work Plan with month-wise delivery</li> <li>• Personnel Schedule with deliverable-wise inputs, and expected month-wise deployment</li> </ul>	2 weeks from consulting firm mobilization
Interim Report	<ul style="list-style-type: none"> <li>• As-is analysis</li> <li>• Bamboo resource mapping preliminary analysis. including GIS analysis for Assam</li> <li>• Consultation outputs</li> <li>• Existing Value Chain</li> <li>• National and International Good Practices</li> <li>• Backward linkages of ABPRL</li> <li>• Broad review, assessment and confirmation of concept master plan of IBP</li> <li>• Skill Gap related to Bamboo Sector and assessment of current employment in the bamboo sector</li> </ul>	12 weeks from consulting firm mobilization
Project Concept Paper	<ul style="list-style-type: none"> <li>• As per ADB approval requirements for Bamboo Value Chain Project in Assam</li> </ul>	12 weeks from consulting firm mobilization
Draft Final Report	<ul style="list-style-type: none"> <li>• Bamboo resource mapping analysis and report for Assam</li> <li>• Value chain, Technology, Products, Market linkages</li> <li>• Consultation outputs, with list of stakeholders and minutes annexed</li> </ul>	18 weeks from consulting firm mobilization

<b>Deliverables</b>	<b>Broad Content of Deliverables</b>	<b>Expected Timelines</b>
	<ul style="list-style-type: none"> <li>Financial Analysis and Financial Feasibility</li> <li>Draft Business Plan for the IBP that covers implementation/ action plan with expected timelines</li> <li>Skills and employment generation outputs</li> </ul>	
Final Report	<ul style="list-style-type: none"> <li>Incorporation of observations</li> <li>Finalization of business plan with implementation roadmap</li> <li>Finalization of skill and employment sector outputs</li> </ul>	20 weeks from consulting firm mobilization
Consolidated Bamboo Resource Mapping Report – Draft Report	<ul style="list-style-type: none"> <li>Bamboo resource mapping report for NER states consolidating bamboo resource mapping study carried out in Phase-I for Assam and Phase-II for other NER states (footnote 3)</li> </ul>	32 weeks from consulting firm mobilization
Consolidated Bamboo Resource Mapping Report – Final Report	<ul style="list-style-type: none"> <li>Incorporation of observations on the Draft Report</li> </ul>	34 Weeks from consulting firm mobilization

13. The experts' services would be required intermittently during the course of assignment. The maximum person-days for each expert positions is mentioned below:

<b>Positions</b>	<b>Person-days</b>
<b>National Key Experts</b>	
Bamboo Sector Expert (Team Leader)	129
Geographic Information System (GIS) Expert	96
Market and Value Chain Expert	44
Finance and Economic Expert	22
Skills and Employment Specialist	36
<b>Non-Key Experts (National Support Staff)</b>	
GIS Analyst	106
<b>Total</b>	<b>433</b>

#### **H. Other relevant information**

14. The SBDA-PMU/ MIDH will make best efforts to facilitate the Client during the assignment in providing all relevant and available reports for the Bamboo sector, any applicable master plan/ city development plan/ sector plans that is concerned with the envisaged IBP location, maps, documents, etc., including to facilitate the consulting firm for making a proposal and undertaking execution of the assignment.

15. In addition, the consulting firm should note the following:
- (i) Due to the outbreak of coronavirus disease (COVID-19), the commencement and completion dates and other implementation arrangements for this assignment are to be considered as indicative only. The final dates and implementation arrangements will be agreed with the first-ranked firm at contract negotiations taking into consideration the prevailing situation with COVID-19 at that time.
  - (ii) The consultant should follow Health and Safety Measures as below (equally applicable for non-consulting services):
    - For their own health and safety, the consultant(s) should follow the regulations and guidance on COVID-19 health and safety prevention and controls issued by the Client/ government, or international good practices in the absence of national provisions.
    - The Client/ firm must, where possible, replace field inputs requiring travel and attendance of meetings with video and teleconferencing. Consultants who are required to visit the project site should be briefed on the approved site-specific health and safety management plan (which should be updated to include COVID-19 specific elements) prior to entering the site and comply with the provisions of it.
    - The consultant is responsible for their own health and safety in relation to the consulting services assignment and shall comply with the country specific requirements and regulations in relation to COVID-19.