

TERMS OF REFERENCE

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Feasibility study of the Jinsha lake project, Hubei Province - CHINA

EGI-2026-0156

Consulting services to perform a feasibility study of the project for the protection and a green development of the Jinsha lake wetland national park.

April 2026

1. Background and rationale

1.1 Introduction

The Hong' An county, in Hubei Province, center of China, required a 70 million Euro loan from AFD in order to develop the Jinsha lake project. The whole investment envisaged is about 85 million Euro and will be partially financed through equity from the project owner. This project is included in the list of projects to be financed by international lenders.

This Terms of Reference outlines the objectives, scope, methodology, deliverables, and requirements for engaging a consulting firm to undertake this assignment.

1.2 AFD in China

Present in the country since 2004 in 18 Provinces, the AFD is providing support to numerous projects in the fields of environment, climate change mitigation, sustainable urban development and biodiversity. AFD is therefore contributing largely to global challenges resolution together with the Chinese authorities, through their bilateral cooperation.

AFD is a reference lender in China on the biodiversity sector, with projects on the sustainable land use planning and ecological transition, especially on wetlands and protected areas, leading to protection and valorization of ecosystems and natural resources, which belong to world public goods. AFD is promoting actions with demonstration effect, innovation and replicability and with high added value.

1.3 AFD's proposal

AFD envisages to provide financial support to the project, and needs to appraise the feasibility of the operation with regards to technical and financial aspects, taking into consideration various constraints such as timeframe, human resources, biodiversity, environmental and social risks.

In addition to financing the project, AFD intends to provide additional resources for enhancing the capacities of the project owner and give additional value to the project through partnerships, scientific production, visibility, etc.

The consulting team will be financed through the China Biodiversity Facility (CBF), a European Union grant delegated to AFD which is in charge of its management and implementation. It implies that AFD will be directly managing the study carried out by the consultant, in coordination with the project owner.

2. Objectives of the assignment

Overall Objective:

To bring the necessary elements for decision making and for improving the project's feasibility, by analyzing the Preliminary Feasibility Study Report content, providing state-of-the-art inputs, assessing the risks and providing mitigation measures.

Specific Objectives:

- Provide technical elements to help characterize the project's contribution to the achievement of the sustainable development goals.
- Support the further design stage and the definition of appropriate accompanying measures to be set up during the implementation phase, in terms of capacity building and visibility.
- Assess the environmental and social risks of the project.

3. Scope of the assignment**3.1 Geographical Context****Hubei Province**

Hubei is located in the center of China and presents a diverse landscape with mountains, lakes and plains. It is crossed by the Yang-Tsé River, with its numerous hydropower dams.

The province provides important quantities of agriculture products including cotton, rice, wheat and tea. The main industries are metallurgy, car construction, machines production, textile, agrifood, etc.

Capital: Wuhan

Population: 57 752 557 hab.

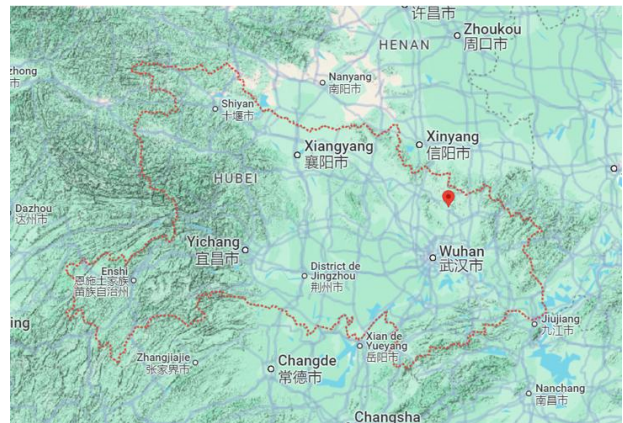
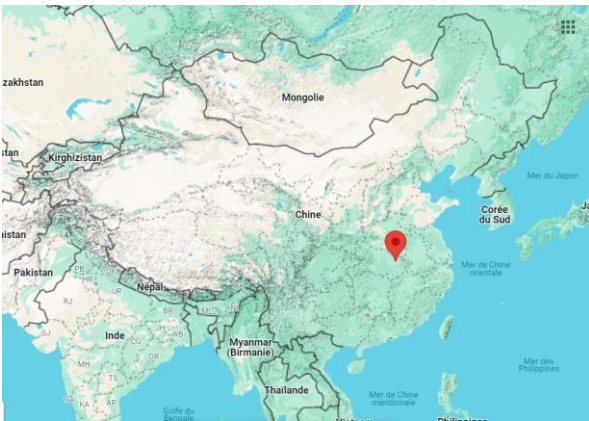
Surface: 185 900 km²

Ethnic Groups: Hans (95,6 %); Tujia (3,7 %); Hmong (0,4 %)

**Hong'An District**

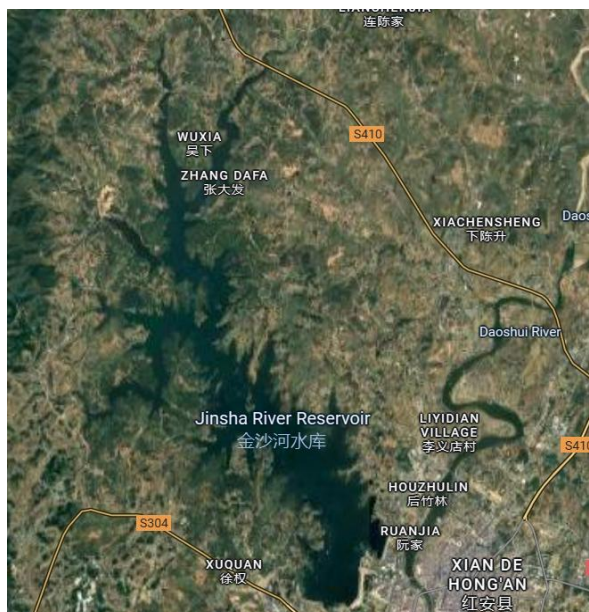
The Jinsha lake project is located in Hong'An (city of Huang Gang) in the North East of Hubei province. It has a surface of 1 793km² and its population includes 510 000 habitants. Hong'An has a dynamic economy and is known as one of the revolutionary bases of China, with dedicated tourism activities.

Hong'An counts more than 100 rivers. Daoshui river is a major tributary of Yangtze, and crosses Hong'An district.



Jinsha lake

Located North-East of Hong'An, Jinsha lake is a reservoir of 108km² on Jinshui river (a tributary of Daoshui river), built originally for irrigation and flood control, around 1959. It became a potable water reservoir in 2002 in addition to its original functions. The whole lake area is in Hong'An district and forms a complex ecosystem of water courses, wetlands, marshes, forests. The lake became a national wetland park in 2016, with a 10-years ban on fisheries since 2022.



The South-East part of the lake is densely urbanized, but poorly industrialized. Some artisanal aquaculture remains around the lake.

Former forest plantations subsist close to the lake, and the Northern part is made of natural areas of grasslands mainly, with riparian forests.

Small villages are spread over the area around the lake, and agriculture is the main activity.

3.2 Project description

The project aims at improving the ecosystems and preserving biodiversity of Jinsha lake and wetlands, reinforcing knowledge and biological monitoring, improving villages quality of life and developing environmental education and ecotourism. The project content includes 4 components:

Component 1 : Ecological protection of wetlands and lake

- Ecological restoration
- Species protection installations
- Improvement of buffer zones around the lake
- Water and sanitation
- Agriculture pollution management

Component 2 : Ecotourism infrastructures

- Villages revitalization
- Greenways network around the lake

Component 3 : Environmental education zone development (Jinsha Green Heart)

- Construction of an environmental education center
- Improvement of the wetland service center

Component 4 : Ecological management improvement

Social link, inequalities reduction and inclusion	The project will improve local population living conditions through the improvement of the ecological environment in rural areas. It will also create income generating activities.
Sustainable and resilient economy	The project will, through the ecosystem's improvement, enhance the landscape attractiveness, with ecotourism potential.
Sustainability of the project impacts and governance framework	Technical assistance from international expertise alongside the local team will contribute to better project ownership, capacity building, and ensure the sustainability of the project's effects.

The project will have a 6 years period of construction at most.

3.3 Organizational scope

The project owner is Hubei Hongwen Tourism Investment Group, a state company created by the Hong'An district in 2012. They will be in charge of managing the project during the whole implementation period and also in the long term, and will also ensure the loan reimbursement.

A Project Management Office (PMO) will be created specifically for managing the loan during the project implementation, including procurement, site supervision, E&S management, financial management, monitoring, reporting, etc.

4. Method

The mission will be divided in two tranches: a firm tranche and an optional tranche, conditioned to the AFD Board decision regarding the project validation. The tasks will be organized as follows, between both tranches:

- 1) Firm tranche:
 - Rapid environmental, climate and socio-economic baseline assessments
 - Technical and economic analysis of the project
 - Risk assessment of the project (environmental, climate, socio-economic, financial, technical)
 - Recommendations on the project content, implementation modalities, financial aspects
 - Assistance to AFD during the appraisal process (September-December 2026) for any clarification, complements, changes, etc. to the documentation produced (see deliverables list).
- 2) Optionnal tranche :
 - Detailed environmental, climate and socio-economic baseline assessments
 - Partnership opportunities identification
 - Capacity analysis and recommendations for capacity building
 - Implementation of the partnerships defined previously
 - Implementation of the capacity building plan defined previously

4.1 Project optimisation

A feasibility study at Chinese standard was carried out by the design institute in 2025. The consultant will provide recommendations on the project content, on the basis of the feasibility analysis and in view of increasing the whole coherence between the activities foreseen and with the objectives defined. He will work closely with the design institute in order to acquire a deep understanding of the project and be able to propose improvements on technical and financial aspects, especially regarding the ecological dimension of the project and the activities, and the inclusion of Nature Based Solutions in the project design. Based on project review, the consultant will, together with the project owner, define the theory of change of the project.

A financial analysis of the project will be realized, including the costs and benefits. The consultant will review the detailed budget based on the investment plan, and will provide an economic analysis based on the income generated through the eco-touristic activities mainly.

A risk analysis will be carried out on the project based on the consultant's experience on similar projects, including financial, technical, governance and sustainability dimensions.

Based on project objectives, indicators will be defined for monitoring the project implementation and the achievement of the objectives and activities. These indicators will be integrated into a logframe, which will be used all along the project duration for monitoring the project performance.

The consultant will work closely with the project owner for designing a preliminary project procurement plan for the whole project duration (6 years).

An ecotourism development plan will be designed by the consultant in close collaboration with the project owner in order to establish guidelines and principles in terms of tourism strategy. This plan will take into account the absorption capacity of the environment and the society in view of the tourism development in the region (which is already a renowned area for tourism).

4.2 Environmental and socio-economic baseline

The consultant will carry out an environmental (see the appendix for the technical specifications) and socio-economic baseline of the project area of influence, in two phases (a rapid assessment and a detailed assessment) including:

- Physical environment: soil, climate, geology, hydrology, hydrogeology, and related issues (as top soil degradation, erosion, landslides, floodings, droughts, siltation, ...). The Consultant will provide adequate maps to illustrate all the topics and particularly the watercourse and extent of wetlands (including temporary ones), and the translation of their names, with the delineation of the sub-basins. The consultant will take some physico-chemical parameters measurements (a first minimum list of water and soil quality parameters with indicators and methodology are to be proposed by the consultant, considering best environmental practices, as recommended by IFC and WHO technical guidelines) to complete potentially existing ones, to ensure a coverage in places related to the project works and activities, and also in the areas investigated for natural habitats characterization, to ensure provision of a biotope description related to biocoenosis conditions.

- Biological environment¹ : detailed assessment of existing local biodiversity (terrestrial and aquatic fauna and flora), based on bibliography reviews, international and national databases investigation, consultations with recognized national experts and specialized institutions (to be identified by the consultant). Data will also be gathered through local populations consultation and focus groups (participatory mapping), as well as necessary field investigations for ground truth confirmation and mapping of main natural habitats, species inventories on main types of natural habitats, and preliminary detection of endangered species in the area of influence of the project. The Consultant biodiversity experts will work according to the IFC PS6/ WB ESS 6 requirements of data collection, surveys and analysis of biodiversity data, including definition and delineation of critical habitats if any, considering species and natural habitats status (threatened², endemic, protected³, invasive, of traditional/cultural use and of economic interest) with their populations/areas assessments, and their gregarious /migratory behavior (applying IFC PS6 methodology and thresholds⁴), detailed description of ecosystems components with provision of regional/national/local phytogeographic standard classification of natural habitats, description and mapping of natural and modified habitats according to this classification, included in Land Use Land Cover maps to be realized adequately and analysis of their functional linkages (ecological corridors, watershed, vegetation dynamics...), description of ecosystem services provided according to standards methods as Ramsar's convention RAWES (Rapid Assessment of Wetlands Ecosystem Services) tool. The experts will provide a methodology and a reference analysis, in terms of biodiversity field investigation of each concerned taxocene to be investigated and that will be justified, and will recommend additional surveys necessary to cover the results of different seasons and specific detailed surveys on particular species and vegetation communities, assessment and mapping of the situation and state of key natural habitats and populations of key species and those in danger;
- Human activities: geographical characteristics including administrative local limits (till districts), sociological organization, governance and natural resource management, local infrastructures network, housing, health and education facilities, economic activities and main source of income of local communities with focus on the ones linked to natural habitats covering in a differentiated way agriculture sector, aquaculture, forestry and wood sector (with delineation of concessions (providing corresponding land management maps), NFWFP collection, and hunting if any, etc. Local consultations of populations, focus group and key stakeholders interview, and preliminary socioeconomic surveys are expected, with disaggregated gender data.
- An analysis related to cumulated drivers including human activities or other factors (climate change, etc.) of degradation of biodiversity and ecosystem services. The Consultant experts should provide a summary of local biodiversity issues and their drivers (natural and anthropic) based on a SWOT approach. They will particularly focus on the state of potential critical habitats detected in the area. The consultant will provide all necessary maps regarding each of these E&S topics, included in a specifically developed GIS (under QGIS free license with also production of ad-hoc kml/kmz files).
- A stakeholder mapping will be conducted in order to identify all stakeholders potentially concerned by the project in the administration, civil society, private sector. It will be the basis to prepare the

¹ These assessments should be aligned with WB ESS 6 requirements. They should include Critical Habitats investigations, including specific field assessments to be considered.

² According to the definition of the IUCN Redlist, with the classification provided at international level, completed by the one at regional/national level, provided by national redlist groups of experts

³ According to national regulation and provincial specifications

⁴ <https://www.ifc.org/content/dam/ifc/doc/2010/20190627-ifc-ps-guidance-note-6-en.pdf>

Stakeholders Engagement Plan (SEP) required for the project, with the corresponding Grievance Redress Mechanism (GRM).

4.3 Environmental, climate and socio-economic risks

The consultant will prepare an environmental and socio-economic assessment of the different activities of the program, considering their construction and their operational phases consequences, in order to identify the main environmental and socio-economic issues, impacts and risks linked to the project, and propose a way to manage them during project development and implementation.

A climate assessment will be undertaken based on existing data, in order to calculate the carbon emissions and potential carbon reduction thanks to project activities, both during development phase and during operation phase.

Aligned with AFD's exclusion list and the World Bank Group ESS framework requirements (ESS1 in particular), the consultant environmental and social experts will rely on the collected data to develop an Environmental and Social Management Framework (ESMF). A Critical Habitats Assessment (CHA) will be conducted as required by ESS6, with a control of the AFD's exclusion list article 17 and 19 criteria, with analysis of residual impacts levels on the possibly occurring CH.

If necessary, a detailed Resettlement Policy Framework (RPF) considering also Livelihoods Restoration Plans (LRP) requirements will be developed. The consultant will provide a preliminary identification and principles for detailed description of official and informal types of affected properties and economic activities, a preliminary estimate of number of Affected households and of cases per type, a preliminary number of RAPs/LRPS needs and a preliminary institutional arrangement for their elaboration, their implementation, their supervision, their monitoring and their assessment, with a provisional budget.

The consultant will provide a specific screening and scoping chapter detailing the principles and the operational process of E&S risks levels classification per subproject and scoping of adapted due-diligences to be elaborated adequately for each one of them, during the implementation phase.

The consultant will provide as much as possible a mapping of the estimated footprint of potential works and operations extensions (as much as known), and mapping of their direct and indirect area of influence with impacts on natural habitats and on human land use, with preliminary quantitative and/or qualitative estimate of them. The consultant will propose a primary set of adapted measures and operational plans.

Terms of Reference will be elaborated, with preliminary provisional budget and planning, including potentially the basis and ToRs of the production of a Biodiversity Management and Monitoring Plan (BOMP), integrating potentially a Pests and Pesticides Management Plan, with local invasive species treatment, and a plan enabling ad-hoc contaminated soil, sediments, leachate and waste management, if and where needed.

The Consultant's experts will also provide the basis and ToRs for a Biodiversity Action Plan (BAP) if CH are confirmed and Biodiversity Offsetting Management and Monitoring Plan (BOMMP) for the others natural and modified habitats if needed. These are to be elaborated in the implementation phase as needed.

The consultant will also provide a specific part on E&S institutional and operational arrangements for implementation and supervision aspects, covering local stakeholders roles and TA needs, with AFD's

involvement in the development of the project. The Consultant provide a global ESMP where he will enlist the main expected measures, a first set of KPI to be considered, and based on a first assessment realized with the screening and scoping procedure, a list of international/national level detailed ESIAs/ESMPs expected, as also RAPs/and LRPs. He will then enlist how many E&S detailed specific plans are expected and their consistency, with the required budget for their elaboration, their implementation and their supervision and assessment, with the required monitoring.

The consultant will organize a specific workshop on biodiversity results and impacts restitution, with a focus on potential CH detection and delineation, their impacts assessment, with conclusions on the potential residual impact's levels and measures/plans to be considered.

The consultant will also realize a restitution workshop dedicated to potential involuntary properties and income preliminary losses assessment and physical and economic involuntary resettlement needs or opportunities, with the stakeholders involved in their management to inform them on their possible involvement and confirm their ability to intervein and their capacity and planning.

These two workshops will be required to inform and involve the concerned stakeholders in the preparation of the implementation of the project, with planification of budget needs, timeline and human resource needs.

A Stakeholder Engagement Plan including a grievance mechanism will be developed (including the objectives, the types of stakeholders, the methodologies for consultation and communication, the types of information to be disseminated, etc.) in order to describe the types of relations to be developed with each stakeholder category and the way to structure local communities and their engagement in the program.

The Grievance Mechanism will include a description of the existing mechanisms, and the adjustments to do for aligning on international standards, with principles, modalities, and steps for complaints resolution.

4.4 Capacity assessment and improvement

The consultant will lead an evaluation of the capacities of the project owner in managing the project, especially regarding the technical, financial and E&S aspects. He will as well identify the lacks and needs for the national park management team in the long term, for improving their performance in delivering their mission.

The consultant will work together with the project owner to define the most appropriate PMO (Project Management Office) for the project, including the human and financial resources, the needs for technical assistance and capacity building, the management processes, etc.

This technical assistance will be mobilized after the project signature, based on the terms of reference prepared by the consultant. However, the consultant will provide support and capacity building to the PMO after AFD project approval and before the technical assistant is mobilized. He will assist the PMO for developing the documentation necessary to sign the loan agreement (Manual of procedures, Procurement plan)

4.5 Partnership opportunities

The consultant will explore the opportunities for building partnerships between the project owner, the Eco museum, the research institutions, the protected area, etc and European counterparts, in order to establish long term relations and exchange experiences regarding landscape management, lake ecosystem protection, wetland area restoration, sustainable use of natural resources, sustainable agriculture, etc. He will then initiate the partnership implementation together with the Chinese parties. He might also propose the organization of events related to these topics, for gathering international community and Chinese partners.

4.6 Diligence documents preparation

Based on the documentation review, the site investigations, the comprehensive analysis of the data collected, as well as thorough consultations with the project owner and other stakeholders, the consultant will develop a full documentation (see the deliverables section) including the following aspects:

- Detailed methodological approach reports
- Project description and optimization
- Risks assessment
- Detailed budget
- E&S risks assessment and management frameworks (ESMF, CHA, RPF, SEP/GRM)
- Sustainability assessment (environment, social, economic, governance, gender)
- Economic and financial analysis
- Climate analysis
- Preliminary procurement plan
- Logframe of the project
- Reporting and evaluation system, including detailed indicators
- Capacity analysis and capacity building
- Terms of Reference for the Technical Assistance for the project owner
- Proposed partnerships with French wetland parks

5. Timeline

AFD is considering presenting the project to its Board by the end of year 2026 and needs preliminary study results by August 2026 for the Evaluation mission. A conditional stage will be linked to the Board's approval of the project, and will include additional environmental investigations as well as the launching of a partnership and initial phase of technical assistance. The indicative AFD's project approval timeline is as follows:

Selection of the consultant	May 2026
Launch of the service	June 2026
Finalization of the feasibility study	September 2026
Evaluation mission	September 2026
AFD credit committee	October 2026

AFD board approval	December 2026
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The study will be developed in a period of maximum 14 months, from June 2026, with an important mobilization between June and October 2026.

The schedule will be divided in two tranches:

- a firm tranche ending on 31st of December 2026
- an optional tranche, which is conditioned to the AFD Board decision regarding the project validation, to be taken in December 2026. The conditional phase will start beginning of January 2027. The tasks will be organized as follows, between both stages:

6. Deliverables

The consultant will include the following list of deliverables into his offer:

Deliverable number	Deliverable name	Delivery deadline (from the date of contract signing)
Main phase		
L1	Inception report (stakeholders identification, workplan design, mobilization plan, detailed methodologies, initial visit report, quick findings -environmental, technical, economic)	1 month
L2a	Rapid environmental & climate baseline	3 months
L3a	Rapid socio-economic baseline	3 months
L4	Project technico-economic analysis report (feasibility analysis, cost analysis, risk analysis, implementation schedule, detailed budget design analysis, technical recommendations, preliminary procurement plan design, theory of change, project logframe design, monitoring indicators and modalities definition)	4 months
L5	Environmental risk assessment (including the critical habitat assessment)	4 months
L6	Socio-economic risk assessment (including a stakeholder engagement plan and its GRM)	4 months
L7a	Environmental and Social Management Framework (ESMF)	4 months
L7b (if necessary)	Resettlement Policy Framework (RPF)	4 months

L7c (if necessary)	Livelihoods Restoration Plans (LRP)	4 months
Conditional phase (confirmed after 7 months)		
L8	Capacity analysis & capacity building plan	9 months
L9	Partnership building plan	9 months
L10	Ecotourism development plan	10 months
L2b	BES baseline	12 months
L3b	Socio-economic baseline	12 months
L11	Terms of Reference for Technical Assistance	12 months

7. Qualifications, skills and experience required:

For performing this study, AFD and the project owner are seeking to recruit a qualified team combining various fields of expertise, international experience and standards knowledge, as well as a proof experience in China.

The selected consultant will have proven experience in:

- Feasibility studies in the field of environmental engineering, ecological restoration
- Environmental and social characterization with proven field surveys experience (biodiversity inventories and assessment, Socioeconomic surveys and DMS, with mapping of losses, ...)
- Capacity building
- Implementation of AFD or World Bank standards with E&S WB due-diligences production
- Chinese context

Consultants must include the following profiles:

- International consultant in biodiversity conservation and ecosystem services with proven experience in ecosystems characterization, and Critical Habitats risk assessment, management and monitoring and excellent command of the application of international standards ESS6 and PS6
- National or international GIS expert who will conduct all mapping work (maps, loss-gain calculations, modeling, etc.).
- National/international biodiversity experts including flora and fauna specialists (birds specialist, terrestrial fauna specialist, aquatic fauna specialist, terrestrial botanist and aquatic/wetland flora

specialist) who will carry out inventories and field studies and who will support the principal consultant during the stages of analysis of the stakes, evaluation of the impacts, design of the measures as well as for the various management and monitoring plans

- National Expert in hydrology and water treatment/sanitation
- International and national Socio-economic and resettlement experts with experience on RPFs, ESIA, SEP and community consultation, GRM, RAP and livelihood restoration
- International and national experts in Environment, with proven experience in ESIA and ESMFs, aligned on World Bank standards.
- Ecotourism development expert
- Rural development/agriculture expert
- Economic analysis expert

Key experts are: the project manager, the biodiversity expert, the socio-economic expert, the ESIA expert.

Estimated workload: a total of approximately 250 man-days will be necessary for carrying out this mission.

The international project manager will have a minimum of 15 years of international experience and a background in environmental or ecological sciences. He will demonstrate a good knowledge of AFD standards.

External experts (national or international), specialists in species or habitats likely to be qualified as critical habitat, will be mobilized according to the project needs.

The proposed team must show experience in training and capacity building, in order to support the project owner team in the future project management.

Climate and climate change competencies must be present within the project team.

8. Presentation of the bids

Proposals must be submitted in English and will contain the following parts:

- Understanding of the ToR (Terms of Reference) and proposal of modification
- Technical approach and organization of the consultant work, meetings proposed and missions planned
- Methodology proposed for each task
- Profiles proposed and CV's: CVs (Resumes) and Experience in similar services of the experts of the Consultant's Key Expert Team (KET) (CVEX), highlighting for each one qualification, experience and skills, more specifically in relation to the tasks and responsibilities that will be requested from him/her in the framework of the Service.
- Tasks for each team member and number of man/days (field and office work must be separate)
- Deliverables list and content
- Detailed timetable of the activities, deliverables, meetings, milestones
- The detailed budget, based on the Price and Quantities Breakdown (PQB) Excel Table as attached to this document to be filled in by the applicants. The Consultant is responsible for including in its financial proposal all costs related to the mobilization of its staff:

international, national and local travel, insurance, accommodation, food, communications and similar. The same applies for all materials required, including: training materials, technologies, data collection equipment, etc. The budget shall be detailed.

Potential subcontracted costs will be specified

Appendix 1 - Technical specifications for the environmental, Biodiversity and Ecosystem Services baseline, and appropriate biodiversity plans

I - BES BASELINE ASSESSMENT

Detailing previous statements in the ToRs, the Biodiversity and Ecosystem Services baseline assessment will follow several steps, aligned on WB ESS6/ IFC PS6 requirements and guidance notes, as described below:

a) Literature review

The Consultant must characterise the state of the terrestrial and aquatic landscape where the project is inserted, using the existing knowledge of the local context, and identify any possible interaction between the project activities and potential critical habitats. A substantive initial literature review and consultation with relevant stakeholders including established conservation organizations, governmental or other relevant authorities, academic or other scientific institutions, and recognized experts, including species specialists, is expected. The consultant will collect and compile actual national/provincial/local baselines, threats and impacts analyses and existing plans or strategies for biodiversity conservation. Networks of conservation organizations, global conservation groups, academic institutions, and/or local and national authorities will be consulted in this aim. The consultant's biodiversity experts will also review all relevant existing technical documentation (as ESIA's, local reports) and screen international and national databases (IBAT⁵, KBA, AZE, WDPA, IUCN redlist, iNATURALIST, GBIF, AMPHIBIAWEB, FISHBASE, DATAZONE.BIRDLIFE INTERNATIONAL, Local macroinvertebrate database (particularly for wetlands), EDGE SPECIES, IUCN GISD ...). This will enable the Consultant team to provide with the following preliminary data and analysis:

- Initial scoping of biodiversity issues, description of the landscape and ecosystems impacted by the project (indirectly or directly, positively or negatively), description of main threats and processes necessary to maintain them,
- Initial mapping of the land-use/land-cover of the landscape, with identification and delineation of the main habitat types and ecosystems in the area of influence of the project

⁵ AFD will provide one temporary access to iBAT for the designated Biodiversity/GIS expert that will work on the localisation and delineation of the project and extraction of data. Consultant must comply with the rule of non-sharing these data with commercial IAs.

- Mapping of natural and modified habitats, and of interactions between ecosystems and human activities
- Preliminary list of potentially occurring species and their status, with identification of potential high biodiversity values.

Following this analysis, the Consultants will produce a complete list of all the biodiversity components (habitats or species), in a table format, highlighting high biodiversity values. This table will list each of the components (table rows) with a minimum of detail (table columns), including:

- Key information sources (e.g., IUCN Red List - with regional or even national status updates, national protected/endangered flora and fauna and natural habitats lists, national or international recognized experts and scientific institution updates, scientific publication)
- Justification for inclusion or exclusion from further assessment
- Specific justification for potential qualification as critical habitat, or where justification exists for further assessment to confirm critical habitats
- Additional information needs for biodiversity issues, in particular for qualifying as critical habitat
- Information needs should focus on data needed to confirm critical habitat status if this is not possible with existing data

b) Detailed description of the study area

The Consultants are expected to provide a rationale for the selection of areas to be studied, as well as detailed methodology to provide updated land use and land cover mapping of each area with consideration of known aquatic and terrestrial natural Habitats, based on aerial/satellite imagery and field truth transects and parcels. The Consultants will take a precautionary approach and will at least consider:

- The geographic area (as sub-basin or landscape) including the extent of anticipated project activities
- The direct and indirect area of influence of the project
- The full extent of terrestrial and/or aquatic ecosystems that may be concerned in any way, as well as any additional areas that have a functional role in supporting these ecosystems, their biodiversity and associated Ecosystem Services. The Consultants will specifically define the critical habitats assessment study area providing adequately delineated E3A for each target species in the landscape area to be delineated according to IFC PS6 guidance note requirements (GN 60⁶).

c) Data collection

Data collection will include all field activities (complementary or initial flora and fauna inventories, stakeholder surveys, interviews with experts, etc.), targeted to meet the information needs

⁶ <https://www.ifc.org/content/dam/ifc/doc/2010/20190627-ifc-ps-guidance-note-6-en.pdf>

identified in the analysis of existing documentation, based on a detailed methodological rationale, exposing and justifying protocols, material and human resources, with time budget for each terrestrial and aquatic mission.

Concerning the aquatic and terrestrial field inventories, the Consultants will focus on:

- the proposed fauna/flora taxocenes selected and their detailed field inventory protocols with regard to international guidelines and best practices to be considered, the size of the study area and potentially preliminary identified hotspots or habitats extension, the level of existing knowledge, the life cycle of the species, the homogeneity or heterogeneity of the habitats in the study area (based on a pre-mapping), the level of detectability of the species, the justified chosen sampling plan, and the chosen inventory methods (qualitative, semi-quantitative and quantitative commonly used) according to the taxonomic groups at stake, etc. The Consultants are expected to detail and justify geographic scales and seasonality relevant for the ecological diagnosis, according to the climatic and ecological context.
- Demonstrate that the effort, the extent and quality of the inventories are sufficient to carry out the subsequent phases of the study, in particular by making the level of completeness of the inventories explicit.
- Consistency of the inventory protocols with the ecological monitoring protocols that will take place in the subsequent phases of the project.

Consultant's biodiversity experts will assess the possibility and interest of using eDNA for species inventories.

The inventories should include the following:

- description and mapping of terrestrial and aquatic natural habitats according to the regional/national/local phytogeographic standard classification, with their assessment (protected, sensitive, threatened and/or fragmented, modified/artificialized) and their functional linkages (ecological corridors, watershed, vegetation dynamics, etc.)
- dedicated species inventories, community composition, density surveys when possible and status identification of the vertebrate megafauna and macroinvertebrate species present on terrestrial and aquatic investigated sites (protected, rare and/or threatened, migratory or gregarious, endemic, invasive, emblematic or new, of traditional/cultural use and of economic interest, pollution indicator taxa) and their geographic distribution
- floristic survey of the aquatic and terrestrial biocoenosis in place (vegetation type, local species, group structure, based on standard phytosociological methodology)
- measurement of the main physical and chemical parameters (t° , soil and water pH, conductivity, salinity, turbidity, TDS, Soil and sediments nature/texture, color and odor, DO, ...) associated to the sampling sites and observation of any pollution/destruction signs and potential source

Based on the additional data collected, the Consultants will refine the list of biodiversity issues identified above. Where information needs have not been met, the Consultants will provide a clear rationale and propose alternative methods or assumptions to inform the critical habitat determination, with request of complementary investigations if needed (as different seasons coverage or extension to other sites).

The Consultants are expected to produce a methodological report including a presentation of the raw results of the inventories carried out and a detailed map of their location. The biodiversity experts will produce a biodiversity analysis of the data collected according to standard biodiversity index for the considered taxocenes (species richness, taxonomic group abundance, Shannon-Weiner index, Pielou evenness) to establish the sites baseline at the beginning of the project, indicating protocols to be followed and mapped reference parcels and transects to be considered for monitoring during the project implementation and evaluation.

The Consultants will also detail the threats and possible disturbance factors for flora and fauna. The diagnosis will include a thorough vulnerability analysis of the environments concerned, pressure factors (biotic or abiotic) on biodiversity and possible reduction levers within the project, through a SWOT analysis approach.

d) Determination and mapping of Critical Habitat

Based on the previously established issues, the critical habitat assessment will characterize any areas that are suspected to contain biodiversity of high importance or value answering to critical habitats status requirements, as defined in the WB ESS6 and IFC PS6 standards. According to AFD's Exclusion list, critical habitats are to be avoided as much as possible. If not avoidable, impacts must be mitigated. Significant irreversible residuals impacts are not accepted and cannot be compensated.

The Consultants will compare each of the biodiversity issues identified in the previous activities to PS6/ESS6 criteria and thresholds (see guidance note 6) to assess critical habitat status in the identified analysis area. The Consultants will provide a final list of proven biodiversity issues, in table format, that qualify as critical habitat, including as a minimum:

- Key information sources
- Criteria and/or thresholds under which the biodiversity issues are considered critical
- The rationale for qualifying the critical habitat criteria
- Any additional information needed to confirm critical habitat status if this is not possible using existing data

For each of the biodiversity issues that may qualify as critical habitat, the Consultants will describe and justify a relevant ecologically appropriate area of analysis (E3A) to be considered in assessing critical habitat, in comparison with known Extent of Occurrence (EoO) or Area of Occupancy (AoO) when available, to calculate CH criteria triggering, according to PS6 GN thresholds. The Consultants will provide a rationale justifying the relevant criteria of triggering and map each of these E3A, including project boundaries, key landscape and hydrological features, as physical limits.

For this phase of the study and the next one, in case of doubt, the Consultant will exchange as much as necessary with IUCN experts regarding species likely to trigger a critical habitat in order to clarify the state of their population, the evolutionary trend of the species, its sensitivity to the effects of the project.

e) Ecosystem services

In parallel with the collection of raw data on biodiversity, the Consultants will analyze the interest of local populations in the species and habitats of the area.

The Consultant will conduct a participatory mapping of related ecosystem uses and services, considering the interest and uses mentioned by resource persons of local populations, interacting daily with the natural habitats concerned.

The uses and benefits derived from the ecosystem services provided by biodiversity in the project area of influence will be specified, described and evaluated (quantitatively and qualitatively). The consultant will proceed to a description of the identified ecosystem services provided according to standards methods as Ramsar's convention RAWES (Rapid Assessment of Wetlands Ecosystem Services) tool (RAMSAR, 2020). These will also be analysed in terms of adaptation to climate change. The consultants will analyse the contribution of the planned project's activities to ecosystem services, and will include in their proposals specific activities maximizing ecosystem services. In particular, Nature Based Solutions will be envisaged, when possible.

f) Monitoring and evaluation system

Finally, the Consultants will propose a set of relevant indicators for measuring the initial state of biodiversity, expected results and impacts of the project in terms of biodiversity preservation/restoration and ecosystem services, as well as the systems and methods for measuring them (monitoring and evaluation system).

g) Expected Outputs

The consultants are expected to produce: (i) a methodological report to be validated by AFD before starting field activities (part of the deliverable L1 – Inception report), (ii) a report of the field visits including a presentation of the raw data of the inventories and their detailed mappings with GIS files and georeferenced pictures of habitats and sampling, as well as the main field observations, (iii) an analysis and mapping report on biodiversity and ecosystem services of the project influence area and its insertion landscape. These reports will be part of the deliverable L2a (environmental & climate baseline).

Specifically for the Critical Habitat Assessment, there will be a separate report (which will be part of the deliverable L5 – Environmental risk assessment) that should include, at least:

- A summary of key findings, including a clear determination of critical habitat status or not (should not exceed 2 pages)
- Maps showing the study area and ecologically appropriate area of analysis for each biodiversity value
- Tables listing potential and proven biodiversity issues that qualify as critical habitat. The accompanying text should provide any necessary justifications for the information summarized in the table
- A methodology section describing the analyses, consultations, and field inventories conducted as part of this assessment. Assumptions and areas of uncertainty should be clearly specified

- Documentation of all sources and data sets

Documentation of all names, affiliations and qualifications of report' contributors, relevant to this critical habitat assessment.

The consultant will draft a preliminary Biodiversity Management Plan, including technical aspects, indications of implementation and monitoring responsibilities, key indicators, planning and provisional costs, covering to the extent possible each sub-project.

In accordance with WB ESS6/IFC PS6 requirements, the development of a specific Biodiversity Action Plan (BAP) will also be required once one of the subprojects or components is located in a habitat assessed as "critical". The consultant will propose the term of references of this BAP. The Consultant will also identify the limitations of the study and any additional activities to be carried out to answer unresolved questions, particularly due to time constraints.

Appendix 2 - Technical specifications for the Environmental and Social Management Framework (ESMF)

The objective of the ESMF is to have a preliminary E&S assessment of the program, without having a detailed description of the different components of the program. The ESMF provides guidance for the future detailed E&S management measures to be taken for each component, including different types of E&S evaluations and management plans.

- Project description

The ESMF must include a description of the project components (types of investments, mapping), the existing E&S diligences, the land status and acquisition for project implementation (including potential need for resettlement), the potential impact on protected areas, the project workplan including E&S aspects, etc. If any, the various options for project components and the justification for design choices, will be explained as well as a comparative analysis of E&S impacts.

- Legal and institutional framework

The applicable framework will be described, regarding E&S issues, including health and safety, as well as gender: national regulations, internal procedures of the project owner, international agreements signed by the country, AFD E&S standards (including exclusion list, E&S Policy, gender framework, World Bank ESS, ILO conventions). A gap analysis between national legal framework and AFD standards will be realised and recommendations provided for complying with both frameworks.

The local mechanisms of implementation of the E&S legislation and framework will be detailed, including the authorisations and permits to be requested before the works.

- E&S baseline

The main characteristics of the natural and socio-economic environment in the area of influence of the project will be presented, as well as the broader landscape in which the project is going to be developed. A focus will be done on the land occupation and land use, the environmental pressures,

the natural and protected habitats, villages and urban areas, the vulnerable communities, the cultural sites, etc.

The area of influence of the project will be clearly defined and presented on a GIS, integrating the geographical, administrative, environmental, socio-economic data layers.

The social context, access to basic services, income generating activities, etc will be described.

- E&S impacts assessment

For developing the ESMF, the consultant will rely on a matrix(s) of interrelation between the project activities or components (sources of impacts) and the environmental and social issues identified, with a specific attention to biodiversity and resettlement, in order to have a preliminary understanding of the potential impacts.

For this purpose, the Consultant will establish a typology of the different situations encountered on the different components, by crossing «geographical/ physical location of the proposed works», «types of works» and «natural and artificial environment as well as socio-economic environment». Each type of work will be the subject of a summary reminder sheet accompanied by a schematic profile/transect before and after the project, describing the types of work or exploitation planned and actors involved, as well as the components of the landscape concerned, to make it possible to draw up the corresponding matrix crossing source activities with each identified issue in the environment concerned.

The consultant will prepare a preliminary assessment of potential impacts resulting from each component and propose preliminary mitigation measures. The following criteria will be used to characterize the impacts, to the extent possible:

- The location and extent of project activities, including indirect impacts resulting from associated facilities, access roads, settlements and increased activities in the wider region. The “upstream” and “downstream” impacts should be considered in relation to existing water flows;
- The intensity, extent or magnitude of the changes and their ecological/socio-economic implications or consequences;
- The natural resources used and their source;
- Timing and frequency of impacts relative to ecological considerations (breeding season, migration season, etc.) and socio-economic aspects (seasonal activities, cultural and political events, etc);
- Duration of impacts;
- The probability of occurrence of a specific impact (such as an accident, explosion, leak, etc.);
- Knowledge gaps (can all impacts be identified, assessed and quantified? Otherwise, the precautionary principle and adaptive management must be applied).

To analyze the potential impacts of the project, the consultant will use the relevant study area(s) for biodiversity and ecosystem services, and for human activities. This can be more extensive than the project right-of-way to allow an assessment of potential impacts at the “landscape” scale. The consultant will therefore be particularly vigilant in proposing the right scale to characterize and evaluate the direct and indirect impacts of the project, as well as the cumulative impacts.

The consultant will draw up a synoptic table of the preliminary impacts identified and their absolute and relative importance, supported by an analysis highlighting those most important in terms of treatment priorities.

The consultant will propose an impact assessment methodology for further project steps, integrating an approach to the extent possible:

- Quantitative (especially for linear or surface areas of natural habitats and species habitats) and semi-quantitative, by proposing relevant BES metrics based, if possible, on cartographic analyses;
- Qualitative as a last resort, using the parameters of the state of conservation of the species and natural habitats concerned and the functionality of ecological continuities (diversity of continuities, fragmentation, density of elements, etc.), and the ecological functions of ecosystems.

The future assessment of project impacts will present each impact according to several criteria (type, duration, intensity, direct, indirect, cumulative, induced) depending on the project phase (construction, operation, and if necessary, dismantling). Mapping should also make it possible to locate the various potential impacts. The absolute and relative importance of each impact will be based on the use of combinatorial methods of the evaluation parameters.

The methodology will consider evaluating impacts of the project on each of the sensitive species of fauna and flora, on the dynamics of natural habitats and ecosystem services and on the socio-economic factors of the area. With a particular attention to biodiversity, it will include (non-exhaustive list) the analysis of possible negative impacts related to (i) habitat alteration during construction, (ii) habitat modification following the completion of the works, (iii) the alteration of habitats during construction, under the influence of climate change. Other types of impacts will include working conditions on the project, temporary or permanent loss of land and income, nuisances (noise, dust, etc), pollution, conflicts, waste, etc. It will consider the cumulative aspect of the impacts and will also take into account the interest of the sites and the possible critical habitat issues, as well as their potential role in relation to the preserved habitats located nearby, in order to screen the risks related to the AFD exclusion list for critical habitats.

The consultant will propose impacts mitigation measures, according to the avoidance (A), reduction (R), restoration/compensation (C) hierarchy, with a specific attention to the AFD exclusion list regarding critical habitats and population resettlement. The ESMF will clearly present the methods for evaluating the mitigation measures and their cost, and information on responsibilities in the measures implementation.

For residual impacts which will be anticipated and developed in the future ESIAs (if deemed necessary following the preliminary E&S evaluation), the consultant will define a strategy for compensation and for offsetting the BES component, which should include, at a minimum, a description of potential offset measures and potential sites related to residual impacts associated with the project, including:

- A summary of the logic/strategy of the compensatory measure: BES components concerned, type of impact treated, objectives of the measure;
- A description of the activities planned under the clearing;
- The location of the identified compensation sites and a mapping of the land use of these sites;
- The implementation elements of the compensation: duration, schedule, costs, roles and responsibilities, technical support, etc.
- Monitoring and evaluation of clearing activities: key performance indicators, monitoring frequency, monitoring responsibility;
- Key elements of compensation feasibility: associated risks/constraints and responses.

The Consultant will provide a rationale on the choice of compensation measures, in light of the ecological equivalence requirements (the choice of the method to be applied is left to the discretion of the consultant) and any other criteria for the selection of compensation sites (biophysical, ecological and socio-economic).

The consultant will incorporate a stakeholder consultation approach on the content of these measures, for their consultation, grievances and opinions, based on the principles set out in the Project Stakeholder Engagement Plan.

The Consultant will also identify and describe possible positive co-benefits on biodiversity of the actions planned by the project, including: sustainable water management practices, sustainable farming practices (agroecology), pollution abatement erosion control and reduction (soil preservation techniques, overall sand extraction plan) and, where appropriate, nature-based solutions.

- Procedure for E&S risks management

This section will present the level of risk identified for each project component or sub-project, based on a list of criteria to be established according to the sensitivity of the environment. It will also include the type of evaluation and analysis to be carried out for each sub-project, once they are clearly identified and designed.

The monitoring and evaluation process to be applied will be described in order to be able to verify the implementation of the E&S commitments, to give information on the E&S issues on the project, and verify the efficiency of the mitigation measures implemented. Appropriate indicators will be proposed here, in agreement with the project owner and AFD. The reporting format and periodicity will be defined for allowing regular follow up of project E&S issues. The consultant will draft E&S M&E reports template.