TERMS OF REFERENCE

INDEPENDENT PANEL OF EXPERTS (IPoE) FOR THE IMPLEMENTATION OF KAKONO HYDROPOWER PLANT AND TRANSMISSION LINE PROJECT

1.0 Introduction

Kakono hydropower potential site is located on the Kagera River, North West Tanzania near the border with Uganda, approximately 90 km west of Bukoba Municipality. As a key site for Tanzania's energy strategy, Kakono offers a strategic opportunity for expanding renewable energy, enhancing grid stability, and reducing dependency on fossil fuels. This run-of-river site, downstream among the potential locations on Kagera River, aligns with national development goals.

The Kakono HPP was studied to Full feasibility level by Norplan A.S. of Norway from 2013 and completed in November, 2014. The study includes ESIA for both HPP and the transmission line. After consideration of the prevailing topographic, geological, hydrological, infrastructural, environmental and socio-economic boundary conditions, the project is technically observed to be a feasible one, which offers safe, rational and reliable setup that reduces technical risks related to its implementation to the minimum extent.

In 2018 the Government of Tanzania through TANESCO engaged another Consultant M/s Studio Pietrangeli from Italy to undertake additional geotechnical investigations as recommended in the 2014 Feasibility Study. Together with these additional geotechnical investigations, the consultant (i.e., Studio Pietrangeli) performed topographical survey, hydrological studies and revisited the 2014 feasibility study and accordingly prepared draft bidding documents for procurement of EPC Contractor. Additionally, the Supervision Consultant shall review both the 2014 and 2018 documentation and prepare the final draft bidding documents that will be used for the procurement of the EPC contractor(s).

1.1 Brief description of the Project

According to the feasibility studies, the proposed Kakono HPP will be a run-of-river hydropower plant that entails construction of the concrete gravity dam with embankment and cut-off wall on the left bank at FSL 1189 masl, the power station is located within the concrete gravity dam close to the current right bank and the spillway comprises of ogee spillway gates with bottom outlet gates extending to the left bank of the river.

This consists of the following features

- **Concrete Rock-fill Dam**: A concrete gravity dam with a height of 42 meters and a gross head of 33meters. The total length, including the power station, is approximately 1,380 meters.
- **Gravity RCC Dam**: A roller-compacted concrete dam with a height of 61 meters and a length of 284 meters.
- **Spillway**: A gated spillway equipped with a dissipation pond and a crest elevation of 1,185.6 meters above sea level (masl).
- **Diversion Structures**: This includes two cofferdams, each with a height ranging from 10 to 12 meters, and a diversion canal measuring approximately 460 meters in length, 20 meters in width, and 7 meters in depth. The canal features concrete lining and/or shotcrete.
- **Intake Gates**: Four fixed roller-type intake gates for each turbine, measuring 5 meters by 13 meters.
- **Power Station**: The power station houses two vertically shafted, double-regulated Kaplan turbines, each with a capacity of 43.9MW. The maximum combined discharge for the turbines is 3,16cubic meters per second.
- **Generators**: Two generators with a capacity of approximately 50.6 MVA each, operating within a voltage range of 10 kV to 12 kV.
- **Draft Tube**: A draft tube located at an elevation of 1,138 masl, 4 meters below the general level of the rock foundation.
- **Switchyard**: A 220 kV switchyard located at Kakono.
- **Reservoir**: The reservoir, at a full supply level elevation of 1,189 meters. It covers a surface area of 15 square kilometers and provides a live storage capacity of 90 Mm^3, with a total storage capacity of 150 Mm^3.

The proposed Kakono hydropower is expected to generate 87.8MW which will be evacuated via 220kV to the nearest existing Kyaka substation 132kV/33kV approximately 38.8km from Kakono site.

1.2 Procurement

The Government of Tanzania through Tanzania Electric Supply Company Limited intends to establish an Independent Panel of Experts (IPoE) to support the development of Kakono Hydropower Project.

The Independent Panel of Experts will be mandated to provide an independent assessment and review of technical (including dam safety), environmental and social issues associated with the project. The IPoE will provide relevant opinions/recommendation in accordance to the client and the Development Partners providing finance for the project that are AfDB, AFD and EU.

All members of the Independent Panel of Expert will be procured in accordance to Procurement Guidelines for AFD-Financed Contracts in Foreign Countries of October 2019.

2.0 Objective

Key performance indicators (KPIs) for IPoE deliverables will include timeliness of recommendations, adherence to technical and E&S guidelines, and measurable impact on project risk mitigation.

2.1 Purpose

The purpose of this assignment is to provide an independent and high-level engineering evaluation of Projects in the following areas:

- Geotechnical and seismicity
- Electromechanical/hydro mechanical
- Hydrology and Dam safety
- Environmental aspect of the project
- Social aspect of the project

To advise the Client on all aspects of the Project as mentioned above.

2.2 Main Objective of the services

The IPoE is required to provide advisory services, perform detail evaluation of the existing technical and E&S documentation and provide recommendations during studies and implementation. The overall purpose is to assess the technical compliance of the proposed design, construction, operation and maintenance in all aspects identified by all stakeholders, Client, Consultants, PAP's and the Development partners which provide financing of the project.

The opinion of the IPoE will be provided to the Client (TANESCO) and the Supervision Consultant. The Client will play an oversight role for the proposed development of Kakono HPP in coordination with the Development Partners.

The IPoE opinion will be considered and reflected in the final discussions as well as design and supervising consultancies' reports in future.
The overall objective of the IPoE is to provide independent review and recommendations to TANESCO for ensuring that E&S issues of the Kakono Dam are adequately addressed in terms of design, construction, operation and maintenance as required by AFD and African Development Bank E&S standards.

The project safety function of the IPoE will be guided by the relevant safeguard policies of the Development Partners.

The IPoE will be established at the detailed design phase for remedial measures and will be maintained throughout the project implementation phase and during the initial period of the operations phase.

2.3 Scope of the Services

The scope of IPoE is to review all available reports related to the project and provide comprehensive opinions/recommendations as per engineering studies performed and design, including basic data, design calculations, field investigations, models (hydrologic, hydraulic and structural), technical and economic selection of project and optimization of the components, and construction method and procedures, as well as all environmental and social studies for the proposed Kakono HPP.

The IPoE will conduct field visits and provide technical guidance as appropriate during design, construction and operation. The IPoE assignment is expected to carry over 2025-2030*,* with expectation that before the beginning of the works the E&S Specialist will be mobilized every 4 months for field missions, and every 6 months once the works has started.

The IPoE shall review Consultants' work covering all engineering, economic, environmental, and social aspects with their pros and cons for options selection (dam type, height, power generation facility and capacity, etc.). The Panel shall assist the Client in providing to the Development Partners clarifications regarding the tradeoffs related to the selected options and subsequent decisions.

The scope of the services may be modified as required by each expert member of the IPoE as per client approval. The IPoE shall review, comment, provide suggestions or recommendations as per expertise where necessary, or as requested by the client or its Consultant or Development partners on any subject related to the project.

2.4 Detailed Scope of the Services

The scope of the services covers both 2014 and 2018 Feasibility Studies, updated ESIA study of 2022 as well as updated RAP of 2022and all available reports from 2014 to date. The Previous (Pre-Feasibility, Feasibility study, ESIA studies and RAP studies) are available upon request of IPoE for further analysis as the case may be.

The following is the detailed scope per each category/expertise:

2.4.1 Engineering Geology and Geotechnical Engineering

Review the quality and sufficiency / adequacy of the following:

- Engineering geology study reports, program for field investigations, testing (number, location and direction of audits, borings, and trenches) and laboratory tests reports and interpretation presented.

- Design parameters, permeability, optimum water content, slope stability, and any other parameters demanded by the design.

- Embankment structure's core materials, filter materials, rock fill and their necessary placement.

- Proposed methods for acceptance of the materials and conditions for their placement, provisions for drainage and other details of embankment construction will be also reviewed.

- For concrete structures, quality and sufficiency of concrete aggregates, pozzolans, etc.

- Studies and investigations related to the hydrogeology of the Project area, reservoir area, and sites for the Project structures (intake, dam, power house) to assure water tightness or measures needed to obtain it or necessary limitations on the maximum reservoir level.

- Seismic hazard assessment (probabilistic and deterministic seismic hazard approach) - Review the identification of sources/location of seismic activity, active faults/lineaments, the assignment of earthquake magnitude to each source, the criteria and methodology for derivation of parameters for maximum and credible design earthquakes, the seismic design criteria, safety allowances and methods used to withstand them.

2.4.2 Hydrology, Hydraulics and Sediments

The IPoE will review and assess the extent and sufficiency of the following: -

- Basic hydrology data available and the method used to develop adequate stream flow records that take into account water usages.

- Criteria and methods used to analyze flow regime and estimate flows available for the project, design flow and flows to be diverted during project construction.

- The proposed elevations of the cofferdams, and the need to use other methods to improve accuracy of results, evaluate the risk factors associated with diversion during construction.

- The criteria and method of routing the maximum inflow through the reservoir to obtain the required spillway capacity.

- Formulation of the power plant characteristics and operation rules used in the simulation studies for estimating and comparing power and energy of the project, including the integration of environmental and social limitations.

- The methods and criteria adopted to identify the best scenario for the optimal development of available hydropower potential, and for the techno-economic optimization of each component of the hydropower scheme and plant characteristics.

- The hydraulic design of the spillways and energy dissipation facilities, diversion works during construction and their closure upon completion of project construction, water conveyance systems (approach channel, intake gates, and draft tube gate etc.), and hydraulic equipment (gates, valves, etc.).

- Conditions of proposed initial reservoir filling and of hydraulic downstream conditions that could impact safety of populations and/or assets including related mitigation structural and non-structural measures proposed.

- Risk assessment of the impact of upstream development on the sustainability and stability of the project performance and recommend mitigation measures.

- The criteria and methodology used for estimating the sediment load that will enter the reservoir, analysis of sedimentation in the reservoir, and measures to minimize the impact of sedimentation on the reservoir.

- The adequacy, with respect to sustainable development, of the overall river development and each project arrangement/layout including dam heights and reservoir capacities. This review shall consider:
    - the effect of the proposed layout on future developments
    - the most suitable methods and sequences of project construction and operation and maintenance of the projects
    - potential risks that could affect the scheme or part of the scheme
    - the acceptability of the layout and conceptual design including the access roads, and the location of the major project components with regard to the intake, dam, bottom outlets, spillway and energy dissipating facilities, diversion works, water conveyance systems, powerhouse, draft tube, etc.

2.4.3 Type of Dam and Project Layout

- Review the selections of the type; conventional concrete gravity dam, axis, and characteristics of the dam and other infrastructure such as embankment dam, spillways, etc., and whether these selections are justified compared to alternative options.

- Review stability analysis and results, factors of safety for normal, extreme and unusual loadings including seismic loading criteria for the dam (concrete gravity, embankment, etc.), spillway structures and outlet works.

- Review the selection and design of water conveyance structures such as intake type, as affected by the geology and overall geotechnical parameters, and the impact of the proposed design on the most suitable methods and sequences of project construction including inspection during construction, and operation and maintenance of the project.

- Review powerhouse arrangement, spillway types and suitability of the energy dissipation structure, the selection of type and number of gates and valves and hoisting equipment, the technical/economical size of water conveyance structures, the need, extent and type and adequacy of tunnel linings, and the effect of the proposed layout/design on the most suitable methods and sequences of project construction including inspection during construction, and operation and maintenance of the Project.

- Asses the possibility for the dam design to operate for peaking load and recommend the optimal operational mode.

2.4.4 Electromechanical Equipment

- Review the technical and economic design and characteristics of major hydro-mechanical and electromechanical equipment (gates, hoists, cranes, turbines, generators, transformers, switchyard, SCADA etc.) and the design criteria comparing to state-of-the-art practices.

- Review cavitation risks at various hydraulic structures.

- Review the structural and electro-mechanical design of the control gates at the diversion weirs and other inlet/outlet structures, lifting mechanism, control system, and operational procedures/arrangements including long term maintenance and safety inspections and make recommendations for modification if required.

- Review the design and optimized selection of the size and efficiency of electromechanical components (turbines and generators) based on the river flow regime characteristics (rating curve)

- Overall review the Emergency Preparedness Plan (EPP) and provide recommendations for any additional required analytical studies and system development to be undertaken during and after project implementation.

2.4.5 Overall technical activities

- Review the identified aggregate source, quarry location, cement type, and material characteristic for concrete structures, including results of durability, gradation, and reactivity tests, trial mix designs, strength design parameters, and construction requirements;

- Review the final plans and specifications for design adequacy, construction, scheduling, and the owner's quality control procedures and construction supervision plan;

- Make at least one field inspection of the nearly completed foundation excavations before placement of concrete, which is mandatory for IPoE members, covering dam engineering, geology, and foundation engineering;

- Make at least one field inspection during the early phases of placement of the main dam section to evaluate quality control procedures being used during construction and to evaluate whether materials being used and construction methods being employed are meeting design parameters and contract specifications;

- Review any major field design changes that occur because of changed field conditions or other reasons;
- Review the Operation and Maintenance Plan (O&MP) and Emergency Preparedness Plan (EPP), including dam breach analysis, flooding simulation, initial reservoir filling, diversion closure method, maximum allowable filling rate, surveillance and instruments monitoring, emergency release plan, and designation of responsible operating personnel.

- Review the Organization, procedures, program, and capacity to carry out long term monitoring of the dam safety status, including the inspection frequency, instrumentation data management system, project data files, evaluation criteria, and means to provide remedial actions;

- Review the adequacy of the O&MP and Operation and Maintenance Manual and the establishment of project operations procedures;

- Review the adequacy of the EPP, including downstream flooding effects, emergency reservoir drawdown, notification of impending dangers to downstream municipal authorities major flood early warning systems, major flood spilling operations plans, and site access during emergencies;

- Review the procedures for handling project records, including as-built drawings, operation records, inspection records, instrumentation data and other information associated with the long term safety of the dam.

2.4.6 ESIA studies

Review and evaluate the Environmental and Social Impact Assessment (ESIA) in compliance with the country ESIA requirements and the safeguard policies of the Development partners. This includes a stakeholder assessment, SEP, inventory of impacts, review of land-related issues, and social impacts.
The IPoE shall provide any recommendations to improve the implementation of the actions plans.

a. Environmental Impacts

The review of the Environmental Impacts should consider at least the following elements:

- (cumulative) environmental impacts upstream of the dam, in the reservoir area and downstream of the dam;
- Effect on the hydrology and on the water quality of the river/reservoir;
- Ecological effects of the flooding and construction activities, including risks to natural and critical natural habitats and topographical impacts that would induce landslides or flooding;
- Impacts of the changed river flow regime, including impact due to river impounding upstream of the dam, and river with reduced flows downstream of the dam;
- Determination of the ecological flow between the dam and the discharge;
- Effect and impact on river and reservoir aquatic fauna and flora and potential for maintaining them, as well as the impacts on terrestrial fauna and flora (protected areas);
- Likelihood of reservoir stratification and management of the stratification;
- Biomass removal in area to be flooded and removal requirements before flooding;
- Impact on local drinking water supply systems if available;
- Sedimentation of the reservoir;
- Land use and soil types, including the potential for reservoir landslides and soil erosion;
- Impacts of remaining biomass on water quality;

- Possible loss of cultural property (including archaeological and historical sites), including a site survey and provision for chance finds;

- Potential impact from short-term or long-term migration to the project area;

- Potential for increased incidence of water borne and water related diseases;

- Impact on fisheries and other sources of local income;

- Analysis of relevance and potential need for fish ladders;

- Risks of invasion of aquatic species, such as water hyacinth and others;

- Determination of the need for a Catchment Management Plan in order to manage sedimentation;

- Impacts assessment of new borrow and quarry sites.

b. Social Impacts

The review of the social impact should consider at least the following elements:

- The proposed Resettlement Action Plan (RAP) in compliance with the country land acquisition requirements and the development partner requirement;

- Land acquisition requirements and the scale of displacement; Social impacts downstream of the dam and need to mitigate these social, as well as environmental impacts;

- Determination of the correct height of the dam and the size of the reservoir in relation to expected resettlement;

- Social impacts upstream of the reservoir area and downstream of the dam;

- Review of a minimum two public consultation meetings: (i) the first one on the ESIA TOR to verify that all concerns of affected people are included TOR and (ii) the second one concerning the Final ESIA Report;

- Adequacy of the Stakeholder Engagement Plan (SEP);

- Project-Affected People (PAP) and key stakeholders in upstream, reservoir area and downstream the dam;

- Existing communication channels between government and local population and the communication strategy and mechanisms;

- Mapping and profiling of the general population in the immediate basin area;

- Census and socioeconomic survey;

- Impact of river flow regimes on communities, including environmental flows and artificial/regulated floods;

- Impact of population influx during and after construction;

- Worker's Camp Management Plan;

- Code of Conduct to be signed by workers prior to start work, including the prohibition of child labor, forced labor, sexual harassment and sex with minors (<18 years);

- Capacity of governmental and non-governmental services that are locally available with particular reference to disease control;

- Jobs' losses and jobs' creation, including indirect economic activities;

- Availability and cost of alternative land to be provided to PAP;

- Vulnerable population;

- Impact of any resettlement on neighboring and host villages;

- Integration of the infrastructural development of the area into the construction requirements for the Project;

- Minimization of short-term impact during construction to be addressed in future construction contracts;

- Functioning of the Grievance Redress Mechanism (GRM) for workers and communities;

- Other social and cultural impacts, including issues related to cultural property;

For both Environmental and Social impacts :

- Review of the ESIA including the identification of the base-line situation, expected impacts of the project, and the mitigation and monitoring plans

developed for the Environmental and Social Management Plan (ESMP) Adequacy of the ESMP's institutional arrangements and budget.

- Project management unit organization and potential needs for capacity building.

- Adequacy of the ESMP budget.

- Support the Client in the redaction of the TOR for recruitment of the Environmental and Social Consultant.

c. Resettlement Action Plan (RAP)

- Review the Resettlement Action Plan (RAP) that describes policies and procedures that will be applied during the entire life for the investment projects on matters of the acquisition of private land, economic or physical displacement of households, and impact on household incomes and overall livelihood.

- The Panel will also review the minutes of consultation meetings to ensure sufficient information dissemination to the project affected people. The composition of the meetings (women, youth, and vulnerable groups) will also be reviewed to ensure inclusive consultations have taken place.

- Review the Grievance Redress Mechanism (GRM) for PAPs.

d. Health and Safety Issues

- Review all aspects of the project related to health and safety of workers and populations, on construction site, around the dam, and in the affected communities, as well as the safety related to water released from the dam during operation (Alert System including potential regulated warning water releases).

- To do so, the Panel will need to take ownership of all health and safety issues of the ESIA and confirm the relevance of the proposed measures, and their compliance within the applicable regulatory framework.

- Similarly, the Panel will analyze the relevance and compliance of the ESMP for the health and safety aspects, including the environmental monitoring and surveillance plans.

- The Health and Safety Plan to be prepared and implemented by the contractors need to be in compliance with OHSAS 18001:2007or similar standards.

- Organization and capacity of the contractors to ensure implementation of the E&S clauses of the contract. Quality of the operational documentation provided by contractors to implement ESHS clauses of the contract. Effective implementation of ESHS clauses on the worksite (follow-up of E&S non-conformities management).

3.0 IPOE TEAM COMPOSITION AND QUALIFICATIONS

The IPoE will be composed of at least 6 experts, namely (i) Dam Specialist, (ii) Hydrology and Hydraulic Structure Specialist, (iii) Engineer Geologist with geotechnical expertise, (iv) Electromechanical Specialist, (v) Environmental Specialist, (vi) Social Specialist. Each individual consultant will be selected independently. The IPoE may recommend to the client hiring additional experts to perform special evaluations in some technical areas as may be needed.

The Chairperson (Dam Specialist) will be responsible for coordinating activities of the Panel, presiding at meetings, to ensure the membership's objectivity, and to provide balance to its reviews and recommendations.

The required qualifications and roles for each expert are described below.

3.1 Shared/ Common requirements

- All Experts will be requested to have at least an Engineering Degree/Master Level (MSc.) or PhD in the intended expertise in the categories required. Each must be fluent in English and have advanced written and reading skills.
- Each Expert will have to demonstrate international experience in at least 5 hydropower projects as key technical staff and/or expert in the fields relevant to the Position requested.
- Experts must demonstrate capability to work effectively in a multi-disciplinary team and have strong oral and written communication skills.

3.2 Dam specialist

- The Expert required is expected to have at least 20 years of professional experience in the development and implementation of hydropower dam projects and cascade developments, has worked with experts from different disciplines in hydrological, geotechnical, mechanical and other fields with ideally previous field work experience in Sub-Saharan Africa, and proven track record of project optimization with due consideration to environmental and social issues.

- Expertise shall cover all aspects of civil engineering, including field investigations, design of dam and water conveyance structures, modeling, and construction planning, knowledge of international standards and best practices by ICOLD, etc.
- The Expert shall have recognized competences in dam safety and be familiar with Development Partner's guidelines especially on dam safety. Working knowledge in Electricity Sector and dam safety regulations in Sub-Saharan Africa would also be a significant advantage;
- The Specialist will also lead in ensuring the overall safety of the dam's design and construction plan, including potential failure mode analysis and resilience enhancement measures covering structural and nonstructural elements, in coordination with other experts.

3.2.1 Hydrologist and Hydraulic Structure Specialist

- The Hydrologist and hydraulic specialist must be a licensed qualified engineer/hydrologist and should have demonstrated expertise and at least 20 years of experience in hydrological monitoring, assessment and simulation.
- Expertise shall cover data collection (including field measurements), modeling, establishment of flow records and water levels, flood studies, sedimentation, and reservoir impoundment and should also have expertise and experience in the design of inlet/outlet works as well as hydraulic analysis and structural designs.
- The Expert shall have worked knowledge of dam safety policies/regulations within multilateral organizations and, ideally, of local regulations in Sub-Saharan Africa.
- Experience in reservoir operation, generation estimates and cascade development will be a significant advantage.
- Competences in generation planning, valuation of power, load-supply balance and reliability analysis will be also considered as an asset.

3.2.2 Engineer Geologist with geotechnical expertise

- The personnel should be a professionally registered and have demonstrated expertise and at least 20 years of experience in geotechnical investigations, laboratory tests, and analysis for large dams with ideally working knowledge of conditions prevailing in Sub-Saharan Region.
- Expertise shall cover all aspects of geology and geotechnical engineering, from feasibility studies to additional geotechnical investigations, including field investigations, laboratory testing, design of dams, foundations and underground structures, construction planning, and dam monitoring.

- S/he should also have a top notch expertise and experience of the design of treatment works for foundation, abutment and reservoir rims.

3.2.3 Electromechanical Specialist

- The Expert required is expected to have at least 20 years of professional experience in the design of hydro-mechanical and electro-mechanical equipment for hydropower dam projects and interconnection to the grid.
- Expertise shall cover key design aspects of turbine, generators, transformers, control and protection, instrumentation, switchyard, gates, hoists, cranes, and their integration in the hydropower scheme and the grid.
- The Expert shall have working knowledge of power grids, operation structures and, ideally, regulations in Sub Sahara region.
- Hands on experience in SCADA, balance of plants, operation & maintenance of hydropower plants and dam monitoring would be evaluated favorably.
- Knowledge of multilateral dam safety policies /regulations would also be a significant advantage.
- Competences in generation planning, valuation of power, load-supply balance and reliability analysis will be considered an asset.

3.2.4 Environmental Specialist

- The personnel must be a licensed lead Environmental Expert, expected to have at least 20 years of international experience in the assessment of environmental impacts and preparation and implementation of environmental management plans for hydroelectric dam projects
- Experience in East-Africa on 2-3 similar projects
- Hands on experience in environmental management of hydro dams
- Working knowledge of Donors (AFDB, AFD, etc.) safeguard policies, rules and guidelines as well as local and international regulatory standards on environmental issues and relocation of PAP’s.

3.2.5 Social Specialist

- The Expert is expected to have at least 20 years of international experience in assessment, preparation and implementation of Resettlement Action Plans and monitoring of hydropower projects with similar nature, socioeconomic and cultural issues.
- Experience in East-Africa on 2-3 similar projects

- Hands on experience in compensation and relocation of population affected by similar projects.
- Working knowledge of Donors (AFDB, AFD, etc.) safeguard policies, rules and guidelines as well as local and international regulatory standards on environmental issues and relocation of PAP's

4.0 IPOE SCHEDULE AND ARRANGEMENTS

4.1 IPOE Meetings

The IPoE will meet as frequently as necessary, depending on the status of the dam involved but no less than two times a year during the design and initial construction phases and once a year throughout construction to the end of the first reservoir filling or commissioning. For the period of design finalization, meetings should be held at such intervals to assure the adequacy of design data collection, foundation exploration, design parameters, foundation analysis, stability design of dam structure, flood routing and hydraulic design of spillway, and so on. During the construction phase, at least one meeting will be scheduled just as the foundation is exposed and critical conditions relating to foundation treatment or need for additional excavations can be observed. Meetings may also be convened at the request of the client. The IPoE meetings will normally be at the project site and should be attended by all members. Inspection of the site, designs, or the dam under construction individually should occur only under special circumstances, and in such cases, the member will send the report of findings to other panel members for joint issuance after concurrence by all panel members.

An advance schedule of meetings will be drawn up by the IPoE and sent to the client and Partners to allow it to send representative to IPoE meetings, if desired.

4.2 Reporting

The minutes of the IPoE meeting should be prepared by and signed by all members and then presented to the client before departure of the members. The minutes should outline areas of concern, request for additional analysis, and present recommendations for action, if any. Within three weeks, the minutes may be supplemented by additional analysis, discussion, or reference materials provided by the IPoE members.

A copy of each meeting minutes and supplementary reports will be transmitted by the client to the Partners. The client may append a statement of actions taken on recommendations of the previous panel meeting.

4.3 Payment

The services are expected to be conducted over the period 2025-2030, and might be extended if necessary. At the beginning of this consultancy, the Client and each of the consultants shall agree on the schedule of activities for the entire period and a time-based contract signed with each Consultant. The remuneration will be based on (i) agreed upon unit rates multiplied by the actual time spent by the staff in executing the assignment, and (ii) reimbursable expenses using actual expenses and/or agreed unit prices including deliverables expected from the assignment.

Invoices shall be paid within 30 days upon submission to the client.

4.4 Supporting Services from the Client

The Client shall make available its authorized personnel and that of the Consultants of the Project for discussions with the Panel of Experts as per request of the Chairperson of each Panel.

The Client shall provide the necessary documentation such as background information, relevant data, engineering design reports (criteria and calculations), laboratory tests, and minutes of consultation meetings, related to the Project.

The client shall take necessary actions to assist on travel clearances of the members of the Panels or specialists requested by the Panels and shall provide full safe physical access to the Project area and sites.

Members of the Panels will be requested to have their own computers and will be responsible to store all communication and documents on their own device, while ensuring confidentiality and security of these data. Request for receiving again past reports or information should remain exceptional.

The client will ensure that its consultants be present during selected IPoE meetings on request. The IPoE will be provided with the necessary background information and any relevant data, notes, pictures, or explanations regarding the designs, computations, or methods used. The client project manager will coordinate assembling such information. The IPoE may ask the Client to conduct additional studies to assist in evaluation of the matters relating to the dam safety status.

The client will assist in securing prompt travel clearance(s) of Panel members or specialists requested by the Panel and in providing full physical access to the project sites.