TERMS OF REFERENCE FOR CONSULTANTS

TECHNICAL ASSISTANCE FOR SUPPORTING SUSTAINABLE AND UNIVERSAL ELECTRICITY ACCESS IN INDONESIA

A. Justification

1. The Asian Development Bank (ADB) seeks to hire a multi-disciplinary team of experts comprising international and national consultants for the technical assistance (TA) subproject of Supporting Sustainable and Universal Electricity Access in Indonesia. This TA will support project preparation and implementation for a series of lending projects and programs, including but not limited to: (i) the Sustainable Energy Access in Eastern Indonesia (SEAEI) — Electricity Grid Development Program (EDGP I); (ii) SEAEI – Power Generation Sector Project (PGSP); (iii) SEAEI — Electricity Grid Development Program II (EGDP II; Kalimantan); (iv) SEAEI — Power Transmission Sector Project (PTSP); and (v) the Geothermal Power Development Project (GPDP).

B. Technical Assistance Project Background

2. The role of the energy sector as a key enabler of inclusive growth has become more important as the Government of Indonesia is faced with the challenge of diversifying and expanding its economy which has hovered around 5% annual growth. Improved access to affordable and sustainable forms of energy is critical to enhance competitiveness, not only in the country's manufacturing and commercial centers, but also in remote areas. Lack of access to energy constrains efforts to transform the eastern part of Indonesia into a new economic growth engine with a focus on high-value agriculture, fisheries, small and medium-sized enterprises, and tourism, all of which rely on a stable energy supply. Uneven development across provinces has contributed toward widening income disparities, with several provinces in Eastern Indonesia lagging significantly behind Java and Bali.[1]

3. To address this, the government has prioritized accelerating investment in infrastructure, which explicitly includes the "outer" and eastern regions as geographical priorities. One of its pillars is to significantly improve access to electricity services by adding generation capacity and expanding power grids to raise the national electrification ratio from 89% in 2016 to 100% by 2024. Eastern Indonesia, where power grids across the islands are isolated, of poor quality, and underdeveloped, presents the greatest challenge to the achievement of these targets. The electrification ratios in some eastern provinces are particularly low—61% in West Sulawesi, 67% in Southeast Sulawesi, 76% in West Nusa Tenggara, 52% in East Nusa Tenggara, and 50% in Papua.[2] Moreover, these areas are mainly serviced, if at all, by diesel-fired generators which are inefficient, polluting, and expensive. Power disruptions due to supply shortages are common and household consumption levels remain suppressed.

4. The series of loans supported by this TA aim to support the development of electricity transmission and distribution networks to connect businesses and households and enhance the quality of life in remote regions across Indonesia, scale up the use of natural gas which is cleaner and more efficient that diesel fuel commonly used in remote areas today, and accelerate the use of Indonesia's vast geothermal, solar, and wind resources to help the country reduce its carbon

[1] For example, Jakarta's 2016 nominal per capita gross regional domestic product ($15,670) was 13 times higher than that of East Nusa Tenggara ($1,197).
[2] PLN. 2016. *PLN Statistik*. Jakarta

emissions. One of the advantages of using gas-fired generators is that they can respond very rapidly to fluctuating power demand. This characteristic can be tapped to integrate intermittent renewable energy systems while reducing the need for large battery storage and thus help make use of solar and wind resources more affordable and reliable to the local communities. The loans will require technical, financial, economic, environment, social, governance and legal and regulatory due diligence.

5. A consulting firm will be selected and engaged to help prepare and support a series of loan projects and programs, supplemented by individual consultants.

C. Terms of Reference for Firm

6. The scope of services by the firm will be to support the following projects and programs.

(i) **Power Transmission Sector Project (PTSP).** PTSP aims to support the development of 150 kV and 70 kV high voltage power transmission systems across Eastern Indonesia. The total estimated project cost is $650 million ($500 million ADB loan and $150 million government financing). Outputs include rehabilitation, upgrading and expansion of 150 kV and 70 kV transmission lines; and 150/70 kV, 150/20 kV and 70/20 kV substations in the provinces: Kalimantan, Sulawesi, Nusa Tenggara, Maluku and Papua. PTSP is expected to use the sector lending modality allowing for the borrower to identify an initial set of "core" subprojects at the time of loan approval with further subprojects to be determined later. Consultancy services are expected in preparing loan due diligence documentation for the core subprojects as well as establishing the framework documentation for assessing and implementing future subprojects.

(ii) **Geothermal Power Development Project (GPDP).** GPDP aims to support expansion of two geothermal power plants in Java, which will contribute to Indonesia's efforts to increase renewable energy use and reduce greenhouse gas emissions. The outcome will be increased power generation from geothermal resources and lower carbon emissions. The outputs include the construction and commissioning of additional geothermal generating capacity at two existing geothermal power plants of 55 megawatts (MW) each. The total estimated project cost is $350 million. Consultancy services are expected in preparing loan due diligence documentation.

(iii) **Electricity Grid Development Program (EGDP I, Sulawesi-Nusa Tenggara).** EGDP I is a results-based lending (RBL) program under implementation from 2017 which supports power distribution network development in Sulawesi-Nusa Tenggara. The total program size is $1.8 billion with $600 million from ADB and $300 million from KfW. Consultancy services are required to support the borrower in advancing technology innovation through pilot smart grid projects and improving asset and waste management practices in power distribution operations.

(iv) **EGDP II, Kalimantan** is a RBL program similar to EGDP I and focused on power distribution network development in Kalimantan. The program is currently being prepared and expected to start in 2019. The program has strong emphasis on social impact such as poverty, health, and education, as well as promoting solar and clean energy use. Total program size is $1.5 billion with $600 million from ADB. Consultancy services are needed to update PLN's system assessments to use RBL (e.g.

procurement, financial management, monitoring and evaluation), and for technical input to the solar photovoltaic (PV) integration and energy efficiency components.

(v) **Power Generation Sector Project (PGSP).** PGSP aims to develop multiple small- to medium-sized natural gas-fired power plants across Eastern Indonesia. It will help move the country away from using highly polluting and expensive diesel fuel and transition to using natural gas, combined with variable renewable energy such as solar and wind. Total project size is $900 million with $600 million from ADB and $35 million from the ASEAN Infrastructure Fund. Consultant inputs are needed to help prepare the first non-core subprojects including safeguards and procurement documents before the project implementation consultants are mobilized under the loan.

7. In addition to the firm, a number of individual consultants will be engaged to deliver specific outputs, including: sector procurement assessment, climate risk vulnerability assessment, financial performance and financial management assessments, project financial and economic analyses, community consultation, and communication strategy and implementation.

D. Consulting firm inputs

8. Consulting firm inputs will be 33 person-months of international consultants and 21 person-months of national consultants. Quality- and cost-based selection method with a technical: financial weighting of 90:10 will be used. Estimated budget is $827,711. The type of contract will be time-based contract which will be firmed up during contract negotiations. The proposed composition of the consulting firm is shown in Table A3.1. The outline terms of reference of the TA consultant are given in paragraphs below.

Table A3.1: Summary of Consulting Services Requirement

International Experts	Person-months	National Experts	Person-months
Team Leader	7	Power system engineers	4
Power Systems Engineer	5	Environmental Safeguards	4
Power Systems Engineer – Transmission	2	specialist Mechanical / Thermal Engineer	2
Power Systems Engineer – Smart Grid Specialist	1	Procurement Specialist	3
Mechanical / Thermal Engineer	2	Social Safeguards Specialist	8
Energy Economist	1.5		
Financial Analyst	1.5		
Procurement Specialist	3		
Environmental Safeguards specialist	5		
Social Impact & Resettlement specialist	5		
Total person-months	**33**		**21**

Source: Asian Development Bank staff estimates.

E. Consulting firm services scope

9. Technical expertise will be provided to prioritize, plan, and prepare investment projects and programs detailed in para 6 for ADB financing. Key activities include: (i) feasibility studies; (ii) economic analysis; (iii) financial management assessments and financial analysis; (iv)

procurement assessments, procurement plans, and preparation of bidding documents; (v) gender analysis, collection of baseline data, and gender action plans; (vi) risk assessment and management plans; (vii) safeguards documents on environment, involuntary resettlement and indigenous peoples; (viii) provide ad-hoc technical input to help advance technology innovation components of loan projects and programs; and (ix) organize trainings, workshops and conferences.

10. **Technical due diligence.** Review PLN's power development plan RUPTL and assess long-term generation plans and transmission system development plans and validate the proposed projects and programs; review proposed technical parameters including advance technologies, voltage levels, and provide recommendations; review source of power generation, demand supply gaps in each region; conduct technical studies for each project/program, including proposal for locations for geothermal project and initial line route for a given transmission line using GIS mapping for transmission and distribution projects, preliminary engineering designs; conduct techno-economic studies of the proposed projects/programs considering various options and confirm technical viability; and recommend smart grid and advanced technology options for adoption in the projects/programs and provide recommendations; assess technology risks and provide recommendations.

11. **Environmental due diligence**. Due to the nature of habitats and biodiversity of the region, there is the likelihood of some projects/programs having environmental impacts classed as "A" which corresponds to the highest impact, preparation of a Draft Rapid Environmental Assessment (REA) Checklist and A Checklist for Preliminary Climate Risk Screening to confirm categorization for transmission component is required. Prepare environmental impact assessment/initial environmental evaluation (EIA/IEE) reports including (i) up to date quantified baseline data, (ii) appropriate quantification of project's impact, (iii) environmental management plan (EMP), (iv) explanation of a grievance redress mechanism for environment, and (v) assessment of the borrower's capacity and need for a capacity building program to ensure satisfactory implementation of the environment safeguards, following ADB Safeguard Policy Statement (2009). Conduct consultation with stakeholders including affected people and document consultation results in EIA/IEE. Prepare the terms of reference for the implementation individual consultants for environment monitoring.

12. **Social safeguard due diligence.** It is anticipated that the projects/programs will not pose severe impacts on community's land and assets based on PLN experience, hence resettlement impact category will be "B". Many indigenous people groups live in these islands. Indigenous category B and C projects will be selected for the project, and there will be no category A projects selected. Country safeguards systems (CSS) will be considered once the PLN use of CSS is approved, and if this project matches the criteria for the use of CSS a socio-economic study and social impact assessment is to be undertaken in the project impact area and include; meaningful consultation with affected people, project beneficiaries and other stakeholders, and document consultation results in draft resettlement plans and ethnic minorities development plans (RPs/EMDPs). In accordance with the ADB Safeguard Policy Statement (2009), prepare social safeguards frameworks, and social safeguards planning documents as necessary for each project component. The safeguards planning documents are documents of the Government and should be prepared in consultation with them prior to submission to ADB for review and concurrence. Prepare the terms of reference for the individual implementation consultants and independent monitoring agency (if required) and estimate their costs. Prepare a Grievance Redress Mechanism taking into consideration suggestions stemming from community consultations. Assist the Government in carrying out disclosure of key information in the safeguards planning documents. Assess capacity of the Government and field staff in social safeguards planning and

implementation, and recommend a capacity strengthening program as required. Conduct specific conflict- sensitive consultations in all relevant project areas, if any.

13. **Climate impacts and risk assessment.** Conduct accounting of greenhouse gases (GHGs) emissions associated with the project, which can arise from generation emissions due to increase demand and emissions saved owing to electricity replaces other fuels used. Calculate net GHGs emission associated with this project. Conduct climate risk assessment for the project and propose measures to ensure design specifications for transmission infrastructure withstand more extreme conditions (such as higher wind velocity) and to provide them with the ability to cope with higher air temperatures, wind, corrosion, and flooding. Propose adaptation measures including engineering and non-engineering adaptation measures for the project design.

14. **Procurement and bidding**. Propose appropriate procurement plan. Prepare complete set of bidding documents in accordance with procurement plan and ADB guidelines as required.

15. **Economic and financial assessments.** Based on initial technical design, estimate project costs and conduct financial analysis of the projects in accordance with ADB financial assessment guidelines; and conduct project economic analysis, by evaluating the benefits of the power import export and benefit attributable for the project in accordance with ADB guidelines.

16. **Reporting, communication and other support.** Ensure timely delivery of outputs and submission of reports; present the assessments and results to GMS member countries in regional meetings/workshops, obtaining comments and addressing them; administer workshops and training under the technical assistance.

F. Consultants minimum qualification requirements

17. Consultants minimum qualification requirements for the firm are as follows.

(i) **Team Leader** (7 PM international). The international expert should preferably have a master's degree in electrical, mechanical, or civil engineering with extensive experience working in or for a power utility. As a team leader, the expert will be responsible for all subproject outputs and liaison with ADB, PLN and other partners. The team leader will be supported by all team members. The team leader will seek and coordinate the inputs of all team members and ensure that the quality of technical engineering concept designs, technical assessments and reports, workshop and training organizations, and implementation arrangements-related documents meet ADB's requirements. The team leader will be supported by a deputy team leader chosen from among the team members, and will: (i) supervise the implementation of the different loan projects and programs to ensure that they adhere to the time table, (ii) coordinate the technical team in order to achieve readiness for each loan and timely data provision for the other team members, ADB, PLN and other partners, and (iii) coordinate with the safeguard specialists to ensure that all environmental and social permits and all documentation is in place. As the leading engineer, s/he will also review PLN's technical capacity in supervising and managing the subprojects and identify the need for capacity strengthening.

(ii) **Power System Engineers** (5 PM international & 4 PM national). The international expert should have extensive experience in power generation plants and transmission lines, with additional expertise in smart grid systems. The experts should also be familiar with renewable energy technologies. The experts will (i) validate the design and general layout of the power stations, generators and other electrical components and power plant

electrical systems, and protection systems; (ii) review the technical plan for the connection to the grid and report about any bottleneck that may become critical for the implementation of the time schedule; and (iii) review the status of the regional grid and interconnection plans to evaluate feasibility of connecting the proposed power plants to the grid. In addition, the expert must be familiar with the development of smart grids as well as the use of intermittent renewable energy source. He or she will work closely with PLN. National power system engineers will work closely with the international expert.

(iii) **Power Systems Engineer – Transmission Engineer** (2 PM international). The expert should have a university degree in electrical/power system engineering and have extensive experience in power transmission lines with minimum 15 years work experience on electricity grids, power sector related IT infrastructure, and engineering work. The expert must be familiar with the development of smart grids as well as the use of intermittent renewable energy sources. He/she will work closely with PLN. The expert will (i) review proposed 150 kV and 70 kV projects by PLN and technical viability of the projects based on RUPTL, (ii) assess power demand forecasts and provide recommendations, (iii) meet PLN, visit sites, and assess the status of existing networks (condition, issues in capacity, reliability, use of standards, operation and maintenance aspects, losses, generation facilities, condition of distribution networks connected to the transmission system), (iv) review cost estimates of PLN and provide recommendations, (v) conduct due diligence on identified subprojects consisting of 150 kV and 70 kV transmission lines and substations projects in consultation with PLN and ADB and conduct due diligence including technical viability, standards used, potential to use latest technologies and provide recommendations, (vi) prepare bill of quantities and cost estimates for the subprojects, (vii) review technical specifications for all network components of the proposed project and provide recommendations for updating, (viii) review bidding documents and profide recommendations for updating, (ix) assess the risks of project implementation with risk mitigating measures, (x) assess the implementation period of ongoing projects and provide achievable targets for implementation of the proposed projects, and (xi) asses the institutional arrangements in technical and operational planning of the PLN regional departments who supervise the project and are responsible in the operation and maintenance of the project assets.

(iv) **Power Systems Engineer – Smart-Grid Specialist** (1 PM international). The specialist should have a minimum of 8 years work experience on electricity grids, power sector related IT infrastructure, and engineering work. The specialist will support PLN in its efforts to establish a corporate roadmap and technical standards and guidelines for smart grid implementation in PLN and support the selection and implementation of smart grid pilots in four locations in Sulawesi and Nusa Tenggara in support of the Electricity Grid Development Program (EGDP). Key outputs will be (i) review and assessment of the smart grid guidelines, (ii) inputs and assessment of the site selection, (iii) suggestions on technology and standards setting, (iv) provision of best practice on smart grids.

(v) **Mechanical /Thermal Engineers** (2 PM international and 2 PM national). The experts should have extensive experience in designing power plants and ideally geothermal power systems. The experts will validate the design and general layout of the power stations and other mechanical components, and provide detailed project-implementation schedules per subproject, clearly indicating the tasks on the critical path. National mechanical engineers will work closely with the international expert.

(vi) **Financial Analyst** (1.5 PM international). The analyst should preferably have a master's degree in finance or business administration. The financial analyst will: (i) review and update in-depth financial analysis and evaluation of the project executing agency, (ii) undertake a financial management assessment of the executing agency, (iii) recommend and describe the fund flow and disbursement mechanisms of the ensuing project, and (iv) analyze this particular investment in terms of profitability taking into consideration the ongoing tariff reforms by the government supported by ADB's policy-based loan.

(vii) **Energy Economist** (1.5 PM international). The economist will (i) assess the economics of the investments and provide a description of macroeconomic context, a sector analysis, economic rationale and DMF, demand analysis, analysis of alternatives with least costs, risks and sensitivity analyses, sustainability, cost-benefit and distribution analysis including impacts on environment and climate in line with ADB methodology, (ii) identify risks of the projects, (iii) prepare detailed project cost tables and financing plans for the proposed investments in line with ADB requirements, and (iv) review/update project cost tables and financing plans in coordination with technical and procurement experts.

(viii) **Procurement Specialists** (3 PM international and 3 PM national). The experts will: (i) update a detailed procurement activities and mode of procurement and source of financing, (ii) provide guidance to the executing agency in preparing the Master Bidding Documents for procurement funded by ADB, with special attention to the advance procurement and retroactive financing requirements, and (iii) undertake a thorough review of the turnkey contracts prepared by PLN to ensure that they are in line with ADB's Procurement Guidelines. A national procurement specialist will work closely with the international expert.

(ix) **Environment Safeguards Specialists** (5 PM international and 4 PM national). The experts will prepare all environmental safeguards documents for loan project and programs under processing. The experts will also guide the implementation of environmental components of on-going loans and, among others, be responsible for quality assurance of the following: (i) waste management and disposal strategy from use of PLN equipment, (ii) asset management to accelerate disposal of hazardous waste safely, and (iii) improve procedures for review, approval and disposal of used PLN equipment to minimize environmental impacts of electrical and electronic equipment that reaches the end of its life. A national environment safeguards specialist will work closely with the international expert.

(x) **Social Impact & Resettlement Specialists** (5 PM international and 8 PM national). The experts will prepare (i) social impact assessment, including gender analysis; (ii) resettlement framework and indigenous peoples planning framework for the overall sector project; (iii) resettlement plan and indigenous peoples plans for the proposed projects (the core subprojects and selected non-core subprojects) as required; and (iv) provide management support, including collecting data inputs, fact-checking and documentation. The experts should pay special attention to ensure that vulnerable groups have sufficient opportunities to participate in consultations. The national social safeguards specialist will work closely with the international expert.

G. Major outputs and activities for the firm

18. The TA shall provide all aspects of the projects/programs and appraisal documents required for loan approval by ADB and the government, which includes: (i) the rationale of the

project; (ii) engineering design, cost estimates for subprojects, appropriate contract packaging, and procurement plans; (iii) financial and economic due diligence; (iv) social impact assessment, procurement capacity, and governance assessment; (v) environment and social safeguard due diligence and stakeholders consultation in accordance with ADB Safeguard Policy Statement (2009); and (vi) bidding documents for subprojects. The summary of major outputs and activities are summarized in Table A3.2.

Table A3.2: Summary of Major Activities, Outputs, and Schedule

Major Activities	Expected Commencement	Major Outputs	Expected Completion
1. Review of required all linked documents	Prior to inception	• List of linked documents	Inception
2. Project rationale	Inception	• Technical report	+4 months
3. Technical appraisal, cost estimates, and procurement plan	Inception	• Technical report	+4 months
4. Project financial and economic analyses	+3 months	• Project financial and economic evaluation report	+7 months
5. Financial analysis and financial management assessment	+3 months	• Financial Analysis report • Financial Management report	+7 months
6. Assessment of procurement capacity, and governance	+3 months	• Procurement assessment report • Governance report	+6 months
7. Poverty and social impact assessment	+3 months	• Poverty and social impact assessment	+6 months
8. Safeguards due diligence	+3 months	• Environmental and social safeguards reports • Assessment of climate risks	+9 months
9. Draft project administration manual	+7 months	• Project administration manual	+9 months
10. Preparation of bidding documents	+7 months	• Bidding documents	+10 months

Source: Asian Development Bank staff estimates.

H. Cost Estimate and Proposed Financing Arrangement

19. The TA is estimated to cost $1.53 million, of which $1.5 million will be financed from the Cluster TA 0013-Indonesia: Sustainable Infrastructure Assistance Program on a grant basis by the Government of Australia, and administered by ADB. The detailed cost estimate is presented in Appendix 1 of the TA Report.

I. Implementation Arrangements

20. ADB's Energy Division, Southeast Asia Department will select, supervise, and evaluate consultants' outputs for the respective loan projects. PLN will be the executing agency with PLN and Geo Dipa Energi (GDE) as the implementing agencies. TA proceeds will be disbursed in accordance with ADB's *Technical Assistance Disbursement Handbook* (2010, as amended from time to time).

J. Counterpart Support

21. PLN and GDE will assist the consultant in data gathering, including all available reports, studies, transmission and distribution plans, standards, rules and regulations, and other pertinent data. PLN and GDE will provide and make available to the consultants, free of charge, the following: counterpart staff/technical support; office space, sufficient office space for the consultant team, and has national and international telephone lines, electricity and air conditioning/heating and internet connections; office furniture, desks, office chairs, book shelves/cabinets adequate to accommodate the full complement of international and local consultants; and assistance in arrangement for workshops, meetings, and field visits and access to required data, maps and other relevant information. The consultant will be responsible for personal computer and other facilities for producing reports. The consultant, with support of the implementing agencies, will organize and administer the training, consultation workshops.

K. Possible continuation of services under Phase 2

22. ADB is currently preparing an ensuing second phase of this TA to support sustainable and universal electricity in Indonesia which is estimated to cost $2.5 million. The consulting firm and individual consultants competitively selected under this TA may be considered for direct appointment using single source selection method for the downstream assignments under the ensuing TA subject to: (i) confirmation that a subject assignment is a natural continuation of an awarded contract, (ii) satisfactory performance of the consultants, and (iii) the approval of an ensuing TA which permits direct appointments of competitively selected consultants under SIAP. The consulting firm budget under the ensuing TA is expected to be substantially larger than this assignment under SIAP.

L. Terms of reference for experts

23. The following are for supplemental or separate work from that of the firm.

Expertise	**Power System Engineer – Transmission Engineer [A]**
Projects	Power Transmission Sector Project (PTSP)
Source	4 person-month international

Background

Indonesia, as the world's largest archipelagic nation, is facing significant challenges in providing equitable access to energy services. In 2016, Indonesia's national average electrification ratio was 89%, where many areas are located in Eastern Indonesia with ratios were only 50-70%. Lack of access to energy constrains efforts to transform the eastern part of Indonesia into a new economic growth engine with a focus on high-value agriculture, fisheries, small and medium-sized enterprises, and tourism, all of which rely on a stable energy supply. Uneven development across provinces has contributed toward widening income disparities, with several provinces in Eastern Indonesia lagging significantly behind Java and Bali.

The sector loan for PTSP will support PLN in the development of 150 kV and 70 kV high voltage power transmission systems across Eastern Indonesia. The project includes rehabilitation, upgrading and expansion of 150 kV and 70 kV transmission lines; and 150/70 kV, 150/20 kV and 70/20 kV substations in Eastern Indonesia, including Kalimantan, Sulawesi, Nusa Tenggara, Maluku and Papua.

Scope of Work

ADB is seeking the services of power system/transmission engineers to (i) provide technical support to PLN in designing the RBL program in Kalimantan, and (ii) advise PLN on the power transmission lines in Eastern Indonesia.

Detailed Tasks

Detailed tasks include, but not limited to the following:

i. Review proposed 150 kV and 70 kV projects by PLN and technical viability of the projects based on RUPTL.
ii. Assess regional power demand forecasts and provide recommendations.
iii. Meet PLN, visit project sites and assess the status of existing networks (condition, issues in capacity, reliability, use of standards, operation and maintenance aspects, losses, generation facilities, condition of distribution networks connected to the transmission system).
iv. Review costs estimates by PLN and provide recommendations.
v. Select four 150 kV and 70 kV transmission lines and substations priority projects and conduct technical due diligence including technical viability, standards used, potential to use latest technologies and provide recommendations.
vi. Prepare bill of quantities and cost estimates for the 4 core subprojects.
vii. Review technical specifications for all network components of the proposed projects and provide recommendations for updating.
viii. Review bidding documents and provide recommendations for updating.
ix. Assess the risks to the project implementation with risk mitigation measures.
x. Assess the implementation period of ongoing projects and provide achievable targets for implementation of the proposed projects.
xi. Asses the institutional arrangements in technical and operational planning of the PLN regional departments who supervise the project and responsible in operation and maintenance of the project assets.

Qualifications

The international experts should have a university degree in electrical engineering/power system engineering and have extensive experience in power transmission lines with minimum 15 years work experience on electricity grids, power sector related IT infrastructure, and engineering work. The

experts must be familiar with the development of smart grids as well as the use of intermittent renewable energy source. He or she will work closely with PLN.

Time Schedule and Resources
The specialist will be mobilized from 1 September 2018 to 30 June 2019 for a period of 88 working days on intermittent basis.

[A] The rationale is to jump start the transmission project preparatory work while firm hiring is underway to conduct due diligence on core subprojects and thus deliver the project faster for possible 2019 approval, while transitioning to firm work. A similar TOR is included in for work by the firm to take over this short-term function.

Expertise	**Power System Engineer [A]**
Projects	Electricity Grid Development Program Phase II (EGDP II)
Source	1 person-month international

Background
Indonesia, as the world's largest archipelagic nation, is facing significant challenges in providing equitable access to energy services. In 2016, Indonesia's national average electrification ratio was 89%, where many areas are located in Eastern Indonesia with ratios were only 50-70%. Lack of access to energy constrains efforts to transform the eastern part of Indonesia into a new economic growth engine with a focus on high-value agriculture, fisheries, small and medium-sized enterprises, and tourism, all of which rely on a stable energy supply. Uneven development across provinces has contributed toward widening income disparities, with several provinces in Eastern Indonesia lagging significantly behind Java and Bali.

The result-based loan (RBL) for EGDP II supports the State Electricity Cooperation (PLN) in developing electricity distribution networks to connect businesses and households and to enhance the quality of life in Kalimantan (and possibly Maluku Papua), by providing sustainable use of electricity as a key driver of increased economic activity. About one-fifth of Kalimantan's 15 million population live in unelectrified areas or poorly electrified areas. This RBL program will expand the distribution system through the installation of distribution lines, improve clean energy and energy efficiency from solar PV plants, and improve waste treatment and enhance social and gender aspects.

Scope of Work
ADB is seeking the services of power system/transmission engineers to (i) conduct technical due diligence of PLN's power distribution network development plans in Kalimantan (and possibly Maluku Papua), and (ii) provide technical support to PLN in applying advance technologies such as remote monitoring of hybrid systems for isolated communities.

Detailed Tasks
Detailed tasks include, but not limited to the following:

i. validate the design and general layout of the power stations, generators and other electrical components and power plant electrical systems, and protection systems;
ii. review the technical plan for the connection to the grid and report about any bottleneck that may become critical for the implementation of the time schedule; and
iii. review the status of the regional grid and interconnection plans to evaluate feasibility of connecting the proposed power plants to the grid.

Qualifications
The international experts should have extensive experience in power generation plants and transmission lines with minimum 15 years work experience on electricity grids, power sector related

IT infrastructure, and engineering work. The experts must be familiar with the development of smart grids as well as the use of intermittent renewable energy source. He or she will work closely with PLN.

Time Schedule and Resources
The specialist will be mobilized from 1 September 2018 to 30 June 2019 for a period of 22 working days on intermittent basis.

[A] The rationale is for a short-term niche assignment focused on remote monitoring and hybrid systems for isolated communities requiring fast mobilization and work completion for a 2019 project.

Expertise	**Power System Engineers [A]**
Projects	Electricity Grid Development Program (EGDP); Electricity Grid Development Program Phase II (EGDP II); Power Generation Sector Project (PGSP)
Source	3 person-months national

Background
Indonesia, as the world's largest archipelagic nation, is facing significant challenges in providing equitable access to energy services. In 2016, Indonesia's national average electrification ratio was 89%, where many areas are located in Eastern Indonesia with ratios were only 50-70%. Lack of access to energy constrains efforts to transform the eastern part of Indonesia into a new economic growth engine with a focus on high-value agriculture, fisheries, small and medium-sized enterprises, and tourism, all of which rely on a stable energy supply. Uneven development across provinces has contributed toward widening income disparities, with several provinces in Eastern Indonesia lagging significantly behind Java and Bali.

1. The result-based loan (RBL) for EGDP supports PLN in developing electricity distribution networks to connect businesses and households and to enhance the quality of life in Eastern Indonesia, especially in Sulawesi and Nusa Tenggara, by providing sustainable use of electricity as a key driver of increased economic activity. The program will (i) expand and strengthen the distribution system to improve electrification rates, reduce overloading and address reliability issues for the local population and businesses and (ii) enhance innovation and institution capacity of PLN for environmental management and increase efficiency.

2. RBL for EGDP II supports the State Electricity Cooperation (PLN) in developing electricity distribution networks to connect businesses and households and to enhance the quality of life in Kalimantan, by providing sustainable use of electricity as a key driver of increased economic activity. About one-fifth of Kalimantan's 15 million population live in unelectrified areas or poorly electrified areas. This RBL program will expand distribution system through the installation of distribution lines, improve clean energy and energy efficiency from solar PV plants, and improve waste treatment and enhance social and gender aspects.

3. The sector loan for PGSP will support multiple small- to medium-sized natural gas-fired power plants across Eastern Indonesia. It will help move the country away from using highly polluting and expensive diesel fuel and transition to using natural gas, combined with variable renewable energy such as solar and wind. The outcome of the project will be expanded access to modern and cleaner energy services in Eastern Indonesia. The outputs are (i) gas-fired generation capacity in Eastern Indonesia installed; (ii) pilot gas-solar hybrid power generation units installed, and (iii) institutional capacity enhanced for the utilization of natural gas for small- to mid-scale power generation and operation of gas-solar hybrid systems.

Scope of Work

ADB is seeking the services of power system engineers to (i) provide technical support to PLN in designing the RBL programs in Kalimantan (and possibly Maluku Papua) and related to the ongoing RBL program in Sulawesi and Nusa Tenggara, and (ii) assist PLN on the power generation and solar-gas hybrid systems in Eastern Indonesia.

Detailed Tasks

Detailed tasks include, but not limited to the following:

i. validate the design and general layout of the power stations, generators and other electrical components and power plant electrical systems, and protection systems;
ii. review the technical plan for the connection to the grid and report about any bottleneck that may become critical for the implementation of the time schedule; and
iii. review the status of the regional grid and interconnection plans to evaluate feasibility of connecting the proposed power plants to the grid.

Qualifications

The international experts should have extensive experience in power generation plants and transmission lines with minimum 15 years work experience on electricity grids, power sector related IT infrastructure, and engineering work. The experts must be familiar with the development of smart grids as well as the use of intermittent renewable energy source. He or she will work closely with PLN.

Time Schedule and Resources

The specialist will be mobilized from 1 September 2018 to 30 June 2019 for a period of 66 working days on intermittent basis.

[A] The rationale is for national consultant support for the international niche assignments focused on helping PLN meet the disbursement-linked indicator (DLI 6) for the ongoing results-based loan related to achieving progress on the small, smart-grid component of the project which is behind schedule.

Expertise	**Geothermal (Mechanical/Process) Engineer [A]**
Project	Geothermal Power Development Project (GPDP)
Source	2 person-months international

Background

ADB's Country Operations Business Plan (COBP) for 2018-2020 aims to support the Government of Indonesia to achieve higher levels of pro-poor sustainable growth and to enhance social development. With an estimated 29,000 megawatt (MW) of potential in geothermal power generation, Indonesia has about 40% of the world's geothermal reserves, making it an important resource for the country to achieve its commitments to reduce carbon dioxide emissions by 29% by 2030.

The GPDP aims to support expansion of two geothermal power plants in Java, which will contribute to Indonesia's efforts to increase renewable energy use and reduce greenhouse gas emissions. The outcome will be increased power generation from geothermal resources and lower carbon emissions. The outputs include the construction and commissioning of additional geothermal generating capacity at two existing geothermal power plants of 55 megawatts (MW) each.
The objective of the assignment is to provide technical support to the state-owned entity charged with geothermal power plant development, Geo Dipa Energi (GDE), and provide key inputs for ADB due diligence for the proposed expansion of existing geothermal power plants Dieng and Patuha.

Scope of Work

The geothermal engineer will provide technical guidance to GDE related to expansion of existing geothermal power plants Dieng and Patuha and support ADB in technical evaluation and project due diligence for ADB financing. The Geothermal engineer will conduct the following tasks:

Detailed Tasks

i. Review all data and models related to existing operations
ii. Recommend additional geoscientific studies required to inform further design work
iii. Evaluate technology options for the power plant power plant, considering the development scenario, fluid characteristics, field condition, equipment mobilization condition, and the economic aspects
iv. Identify options for incorporating innovation/high-level technology and quantify incremental costs and benefits
v. Develop the initial drilling design and update to incorporate additional data as they become available
vi. Provide cost estimates based on the feasibility-level design and provide necessary breakdowns to ADB financial specialist for preparation of cost tables and financial models
vii. Prepare a framework of activities for the engineering and design follow-on work and the supervision consultants

Qualifications

The geothermal engineer should have a relevant degree and a minimum of 8 years of related experience. Experience and expertise in geothermal surface facility design and power plant procurement is essential. Experience on geothermal power plants in Indonesia is preferred.

Time Schedule and Resources

The consultants will be mobilized from 1 September 2018 to 30 June 2019 for a period of 44 working days on intermittent basis.

[A] The rationale is that this is highly specialized work unique to geothermal power and may or may not be readily available within a firm. There is also a degree of urgency in order to bring the project from 2020 to 2019 approval.

Expertise	**Geologists [A]**
Project	Proposed Sector Loan: Geothermal Power Development Project (GPDP)
Source	2 person-months international, 2 person-months national

Background

ADB's Country Operations Business Plan (COBP) for 2018-2020 aims to support the Government of Indonesia to achieve higher levels of pro-poor sustainable growth and to enhance social development. With an estimated 29,000 megawatt (MW) of potential in geothermal power generation, Indonesia has about 40% of the world's geothermal reserves, making it an important resource for the country to achieve its commitments to reduce carbon dioxide emissions by 29% by 2030.

The GPDP aims to support expansion of two geothermal power plants in Java, which will contribute to Indonesia's efforts to increase renewable energy use and reduce greenhouse gas emissions. The outcome will be increased power generation from geothermal resources and lower carbon emissions. The outputs include the construction and commissioning of additional geothermal generating capacity at two existing geothermal power plants of 55 megawatts (MW) each.
The objective of the assignment is to provide technical support to the state-owned entity charged with geothermal power plant development, Geo Dipa Energi (GDE), and provide key inputs for ADB due diligence for the proposed expansion of existing geothermal power plants Dieng and Patuha.

Scope of Work

An individual international and a national geologist consultant will be engaged for 2 persons-month each on intermittent basis. The consultants will work closely with other specialists.

Detailed Tasks

i. Reviewing existing geological analyses of the sites
ii. Identifying the need for any further site investigations to be carried out for next stage of project implementation
iii. Providing geological input to resource estimation
iv. Well pad location and well targeting

Qualifications:

The specialists should have at least 8 years of technical experience in geothermal sector in developing countries in Asia, including experience in exploration planning and drilling management. It is essential for the specialist to have knowledge of geothermal businesses in Indonesia, such as the policy framework and political economy of the sector. The specialists should also have engineering background with a proven track of project management. An excellent verbal and written communications skill in English is required. A strong interpersonal skills and ability to work effectively in a multi-cultural environment are needed.

Time Schedule and Resources

The consultants will be mobilized from 1 August 2018 to 30 June 2019 for a period of 44 working days each on intermittent basis.

[A] The rationale is that this is highly specialized work unique to geothermal power and may or may not be readily available within a firm. There is also a degree of urgency in order to bring the project from 2020 to 2019 approval.

Expertise	**Environmental Specialist [A]**
Project	Proposed Sector Loan: Geothermal Power Development Project (GPDP)
Source	2 person-months international; 1 person-month national

Background

ADB's Country Operations Business Plan (COBP) for 2018-2020 aims to support the Government of Indonesia to achieve higher levels of pro-poor sustainable growth and to enhance social development. With an estimated 29,000 megawatt (MW) of potential in geothermal power generation, Indonesia has about 40% of the world's geothermal reserves, making it an important resource for the country to achieve its commitments to reduce carbon dioxide emissions by 29% by 2030.

The GPDP aims to support expansion of two geothermal power plants in Java, which will contribute to Indonesia's efforts to increase renewable energy use and reduce greenhouse gas emissions. The outcome will be increased power generation from geothermal resources and lower carbon emissions. The outputs include the construction and commissioning of additional geothermal generating capacity at two existing geothermal power plants of 55 megawatts (MW) each.

The objective of the assignment is to provide technical support to the state-owned entity charged with geothermal power plant development, Geo Dipa Energi (GDE), and provide key inputs for ADB due diligence for the proposed expansion of existing geothermal power plants Dieng and Patuha.

Scope of Work

The environmental specialists will lead the safeguards evaluation of the proposed expansion of geothermal power plants in Indonesia and provide advice on environmental safeguard risks and mitigation measures to ensure compliance of the selected site with the applicable Indonesian National Legislation and ADB's safeguard requirements.

The consultants will support Geo Dipa Energy (GDE) to incorporate features for avoidance of adverse environmental impacts of the pipeline during construction and operation, and when avoidance is not

possible, minimize such impacts. Review for adequacy the Initial Environmental Examination (IEE) or Environmental Impact Assessment (EIA), and Environment Management and Monitoring Plan (EMP) in accordance with ADB Safeguards Policy Statement (2009) and prepare/update the documents as necessary.

Detailed Tasks

i. Review the proposed geothermal power development plans of GDE.
ii. Work closely with the technical design team of GDE to identify possible ways in which adverse environmental impact can be minimized.
iii. Assist with the screening and categorization of the project.
iv. Based on the project scope and design, prepare/update IEE and/or EIA document (if required) in accordance with Appendix 1 of the ADB's Safeguard Policy Statement (2009). Conduct additional surveys, if applicable.
v. Support GDE to develop the EMP. Recommend mitigating measures, and budgets, institutional arrangements and capacity building program (if required) to implement them.
vi. Organize and document public consultations in representative project sites and invite local stakeholders. In case of environment category A, carry out at least two public consultations in each representative project site (once during the early stages, and once when the draft EIA report is available and before loan appraisal).

Qualifications:

The consultants must have an overall experience of about 10 years in the environment sector, including experience in preparation of IEE, EIA and EMP for international funding agencies. They should have specific experience of assessment and implementation of energy projects in accordance with international good practice and be familiar with SPS and the IFC EHS guidelines. Familiarity with the environmental regulation in Indonesia is essential. Experience with geothermal preferred. The consultants should have a master's degree (for international consultant) and a bachelor degree (for national consultant) related to environment. Suitability to undertake the responsibilities mentioned above at the required level, including field trip to the project sites. Excellent in oral and written English.

Time Schedule and Resources

The consultants will be mobilized from mid-August 2018 to 30 June 2019 for a period of 44 working days each on intermittent basis.

[A] The rationale is to meet specific ADB needs quickly and ahead of firm selection to be in a position to move the project from 2020 to 2019 approval.

Expertise	**Procurement Specialist [A]**
Projects	Power Generation Sector Project (PGSP); Electricity Grid Development Program Phase II (EGDP II)
Source	2 person-months international

Background

Indonesia, as the world's largest archipelagic nation, is facing significant challenges in providing equitable access to energy services. In 2016, Indonesia's national average electrification ratio was 89%, where many areas are located in Eastern Indonesia with ratios were only 50-70%. Lack of access to energy constrains efforts to transform the eastern part of Indonesia into a new economic growth engine with a focus on high-value agriculture, fisheries, small and medium-sized enterprises, and tourism, all of which rely on a stable energy supply. Uneven development across provinces has contributed toward widening income disparities, with several provinces in Eastern Indonesia lagging significantly behind Java and Bali.

1. The sector loan for PGSP will support multiple small- to medium-sized natural gas-fired power plants across Eastern Indonesia. It will help move the country away from using highly polluting and expensive diesel fuel and transition to using natural gas, combined with variable renewable energy such as solar and wind. The outcome of the project will be expanded access to modern and cleaner energy services in Eastern Indonesia. The outputs are (i) gas-fired generation capacity in Eastern Indonesia installed; (ii) pilot gas-solar hybrid power generation units installed, and (iii) institutional capacity enhanced for the utilization of natural gas for small- to mid-scale power generation and operation of gas-solar hybrid systems.

2. The result-based loan (RBL) for EGDP II supports the State Electricity Cooperation (PLN) in developing electricity distribution networks to connect businesses and households and to enhance the quality of life in Kalimantan (and possibly Maluku Papua), by providing sustainable use of electricity as a key driver of increased economic activity. About one-fifth of Kalimantan's 15 million population live in unelectrified areas or poorly electrified areas. This RBL program will expand distribution system through the installation of distribution lines, improve clean energy and energy efficiency from solar PV plants, and improve waste treatment and enhance social and gender aspects.

Scope of Work

ADB is seeking the services of a senior international procurement specialist to (i) support the proposed sector loan for PGSP with the procurement plan for the overall sector projects and the core subprojects, and (ii) assist PLN with the procurement mechanism and evaluation criteria to further strengthen the procurement system and capacity to the proposed RBL program. The consultant will work closely with the other specialists.

Detailed Tasks

A. PGSP

i. Prepare a detailed procurement plan specifying schedule and mode of procurement and source of financing
ii. Provide guidance to the executing agency in preparing the Master Bidding Documents for procurement funded by ADB, with special attention to the advance procurement and retroactive financing requirements
iii. Undertake a thorough review of the turn key contracts prepared by PLN to ensure that they are in line with ADB's Procurement Guidelines

B. EGDP II

i. Conduct assessment on PLN's procurement regulations, rules and procedures
ii. Evaluate and monitor the procurement system performance
iii. Identify potential deficiencies and risks in PLN's procurement system, including procurement methods and procurement planning
iv. Help PLN to improve its procurement capacity to scale up procurement under the program

Qualifications

The specialist should have a bachelor's degree in electrical engineering with at least 15 years' experience in the power sector with extensive experience in high-voltage transmission systems and substations including gas-insulated switchgear substations. It is essential for the specialist to have at least 5 years of experience in preparing, and managing and supervising procurement of large turn-key/EPC procurement packages. The specialist should also have extensive knowledge of ADB's procurement systems and national procurements systems of large middle-income countries in Southeast Asia. Some knowledge of PLN's power system and procurement practices is preferred. The

specialist should have strong interpersonal skills and ability to work effectively in a multicultural environment.

Time Schedule and Resources
The specialist will be mobilized from 1 August 2018 to 30 June 2019 for a period of 44 working days on intermittent basis.

[A] The rationale is to meet specific ADB needs related to ADB's procurement guidelines and processes. The PGSP as a sector loan requires ongoing procurement support during implementation for non-core subprojects. EGDP II requires similar PLN-level procurement systems work as was done for previous RBLs.

Expertise	**Social Safeguards Specialists [A]**
Projects	Electricity Grid Development Program Phase II (EGDP II)
Source	2 person-months international and 2 person-months national

Background
Indonesia, as the world's largest archipelagic nation, is facing significant challenges in providing equitable access to energy services. In 2016, Indonesia's national average electrification ratio was 89%, where many areas are located in Eastern Indonesia with ratios were only 50-70%. Lack of access to energy constrains efforts to transform the eastern part of Indonesia into a new economic growth engine with a focus on high-value agriculture, fisheries, small and medium-sized enterprises, and tourism, all of which rely on a stable energy supply. Uneven development across provinces has contributed toward widening income disparities, with several provinces in Eastern Indonesia lagging significantly behind Java and Bali. At the same time, Indonesia is far behind its neighboring countries in Southeast Asia in terms of clean energy development, including geothermal, solar and wind.

The result-based loan (RBL) for EGDP II supports the State Electricity Cooperation (PLN) in developing electricity distribution networks to connect businesses and households and to enhance the quality of life in Kalimantan (and possibly Maluku Papua), by providing sustainable use of electricity as a key driver of increased economic activity. About one-fifth of Kalimantan's 15 million population live in unelectrified areas or poorly electrified areas. This RBL program will expand distribution system through the installation of distribution lines, improve clean energy and energy efficiency from solar PV plants, and improve waste treatment and enhance social and gender aspects.

Scope of Work
International and national social safeguards consultants will be engaged for 2 person-months each on intermittent basis. The consultants will work closely with other consultants.

Detailed Tasks
The consultants will carry out the following tasks:

i. develop social impact assessment, including gender analysis;
ii. design resettlement framework and indigenous peoples planning framework for the overall sector project;
iii. provide resettlement plan and indigenous peoples plans for the proposed projects (the core subprojects and selected non-core subprojects) as required;
iv. provide management support, including collecting data inputs, fact-checking and documentation; and
v. undertake data collection and relevant research as well as analysis.

Minimum Qualification Requirements
The social safeguards consultants will be individuals with the following minimum qualifications:
1. University degree in social sciences and related fields

2. Minimum of 5 years' specific experience in social safeguards implementation and/or monitoring, and
3. Preferably with experience in working on power/energy sector projects.

Time Schedule and Resources
The consultants will be mobilized from 1 September 2018 to 30 June 2019 for a period of 44 working days each on an intermittent basis.

[A] The rationale is to meet specific ADB needs quickly for a 2019 project. The need for gender analysis and ADB framework documents may not be readily known by consultants supplied by the firm.

Expertise	**Environmental Safeguards Specialist** (support to Independent Verification Agent) [A]
Project	Electricity Grid Development Program
Source	1 person-month international, 3 person-month national

Background
EGDP supports PLN in developing electricity distribution networks to connect businesses and households and to enhance the quality of life in Eastern Indonesia, especially in Sulawesi and Nusa Tenggara, by providing sustainable use of electricity as a key driver of increased economic activity. The program will (i) expand and strengthen the distribution system to improve electrification rates, reduce overloading and address reliability issues for the local population and businesses and (ii) enhance innovation and institution capacity of PLN for environmental management and increase efficiency.

The independent verification of results indicators and program action plan under RBL covering Sulawesi and Nusa Tenggara and Sumatera are currently being undertaken by an independent verification agent (IVA), Castlerock Consulting Pte. Ltd., under TA 9113-INO: Strengthening Verification in Results-Based Programs in Indonesia's Power Sector.

The objectives of the assignment are to assist the Independent Verification Agent PT Castle Rock to verify the achievements of the Disbursement Linked Indicators on assets and waste management verifying the safe disposal of several year's backlog of used equipment, including hazardous waste, within the agreed timeframe. It also aims to verify PLN's efforts in removing oil containment (*Polychlorinated Biphenyls* – PCBs) in warehouses that are located in Sulawesi and Nusa Tenggara. The consultant will also support the IVA in carrying out similar progress on environmental safeguards for the Sumatra RBL program.

Scope of Work
An individual international and a national environmental safeguards consultant will be engaged for 1-person month (international) and 3 person-months (national) on intermittent basis. The consultants will work closely with the IVA Team engaged under TA 9113-INO to independently verify PLN's progress in implementing the environmental safeguards actions under the RBL Program Action Plans.

Detailed Tasks
i. Verify the progress towards the agreed targets under DLI 8 on DLI 8: Asset and waste management improved with at least 90% of used PLN equipment from the 2016 disposal inventory safely disposed by 2021;
ii. Work closely with the IVA team in the verification of PLN's implementation of the Program Action Plan (PAP), particularly action on environmental safeguards; and
iii. Provide all information and documents required to verify the environmental safeguards actions in a timely manner.

Output/Reporting Requirements

i. Interim 2018 verification reports by 31 October 2018
ii. Annual 2018 verification reports by 30 April 2019; and
iii. Final IVA reports by 30 June 2019.

Qualifications

The specialists should have a postgraduate degree environmental engineering/science or natural resource management with at least 15 years' experience in environmental related work especially in developing countries in Asia. It is essential for the specialist to have knowledge of environmental policies and regulatory framework/ legislation as well as that of international finance institutions such as ADB or World Bank on environmental impact assessment and its cross-sectoral application. The specialist should also have extensive knowledge on the ADB's Safeguard Policy Statement (SPS) with its objectives, scope and triggers, policy principles and environmental safeguards requirements. Familiarity with Results-Based Lending and experience in environmental safeguards in Indonesia are an advantage. An excellent verbal and written communications skill in English is required. Current knowledge of Indonesian legal frameworks for environmental and strong interpersonal skills and ability to work effectively in a multi-cultural environment are needed.

Time Schedule and Resources

The consultants will be mobilized from 1 September 2018 to 30 June 2019 for a period of 22 working days on an intermittent basis with multiple site visits.

[A] The rationale is to meet specific ADB needs related to helping PLN meet disbursement-linked indicators (DLIs) on waste management related to an ongoing RBL, which is behind schedule, and will require working with independent verification agent consultants already mobilized via separate technical assistance. This is separate, specific work not associated with general project preparatory safeguards work, and timely progress will ensure meeting of DLIs and thus disbursements.

Expertise	**Social Safeguards Specialist** (To support IVA) [A]
Projects	Electricity Grid Development Program
Source	2 person-months national

Background

EGDP supports PLN in developing electricity distribution networks to connect businesses and households and to enhance the quality of life in Eastern Indonesia, especially in Sulawesi and Nusa Tenggara, by providing sustainable use of electricity as a key driver of increased economic activity. The program will (i) expand and strengthen the distribution system to improve electrification rates, reduce overloading and address reliability issues for the local population and businesses and (ii) enhance innovation and institution capacity of PLN for environmental management and increase efficiency.

The independent verification of results indicators and program action plan under RBL covering Sulawesi and Nusa Tenggara and Sumatera are currently being undertaken by an independent verification agent (IVA), Castlerock Consulting Pte. Ltd., under TA 9113-INO: Strengthening Verification in Results-Based Programs in Indonesia's Power Sector.

The objectives of the assignment are to assist the IVA to verify the accuracy of PLN's self-claimed progress with collection of evidence on Program Action Plans on social safeguards.

Scope of Work

An individual national social safeguards consultant will be engaged for 2 person-months on intermittent basis. The consultant will work closely with the IVA Team engaged under TA 9113-INO to independently verify PLN's progress in implementing the social safeguards actions under the Program

Action Plan.

Detailed Tasks

The national safeguards consultant will carry out the following tasks:

i. Work closely with the IVA team in the verification of PLN's self-claimed progress with collection of evidence on the Program Action Plan (PAP), in particular for actions on social safeguards;
ii. Provide all information and documents required to verify the social safeguards actions in a timely manner;
iii. Join site visit in selected areas and meet with the APs including land owners for installation of distribution transformers and IP communities; and
iv. Coordinate with KfW's team on social safeguards.

Outputs/Deliverables

The social safeguards consultant will provide inputs related to the verification of PLN's progress in implementing the social safeguards action plans for the following IVA reports:

i. Interim 2018 verification reports by 31 October 2018

Minimum Qualification Requirements

The social safeguards consultant will be an individual with the following minimum qualifications:

1. University degree in social sciences and related fields
2. Minimum of 5 years' specific experience in social safeguards implementation and/or monitoring, and
3. Preferably with experience in working on power/energy sector projects.

Time Schedule and Resources

The consultant will be mobilized from 1 September 2018 to 30 June 2019 for a period of 44 working days on intermittent basis with multiple site visits.

[A] The rationale is to meet specific ADB needs related to the ongoing RBL, and will require working with independent verification agent consultants already mobilized via separate technical assistance. This is separate, specific work not associated with general project preparatory safeguards work.

Expertise	**Research Associate [A]**
Projects	All (cross-cutting)
Source	6 person-months international

Background

Indonesia, as the world's largest archipelagic nation, is facing significant challenges in providing equitable access to energy services. In 2016, Indonesia's national average electrification ratio was 89%, where many areas are located in Eastern Indonesia with ratios were only 50-70%. Lack of access to energy constrains efforts to transform the eastern part of Indonesia into a new economic growth engine with a focus on high-value agriculture, fisheries, small and medium-sized enterprises, and tourism, all of which rely on a stable energy supply. Uneven development across provinces has contributed toward widening income disparities, with several provinces in Eastern Indonesia lagging significantly behind Java and Bali. At the same time, Indonesia is far behind its neighboring countries in Southeast Asia in terms of clean energy development, including geothermal, solar and wind.

1. The sector loan for PGSP will support multiple small- to medium-sized natural gas-fired power plants across Eastern Indonesia. It will help move the country away from using highly polluting and expensive diesel fuel and transition to using natural gas, combined with variable renewable energy such as solar and wind. The outcome of the project will be expanded access to modern and cleaner energy services in Eastern Indonesia. The outputs are (i) gas-fired generation capacity in Eastern

Indonesia installed; (ii) pilot gas-solar hybrid power generation units installed, and (iii) institutional capacity enhanced for the utilization of natural gas for small- to mid-scale power generation and operation of gas-solar hybrid systems.

2. The result-based loan (RBL) for EGDP II supports the State Electricity Cooperation (PLN) in developing electricity distribution networks to connect businesses and households and to enhance the quality of life in Kalimantan, by providing sustainable use of electricity as a key driver of increased economic activity. About one-fifth of Kalimantan's 15 million population live in unelectrified areas or poorly electrified areas. This RBL program will expand distribution system through the installation of distribution lines, improve clean energy and energy efficiency from solar PV plants, and improve waste treatment and enhance social and gender aspects.

3. The sector loan for PTSP will support PLN in the development of 150 kV and 70 kV high voltage power transmission systems across Eastern Indonesia. The project includes rehabilitation, upgrading and expansion of 150 kV and 70 kV transmission lines; and 150/70 kV, 150/20 kV and 70/20 kV substations in Eastern Indonesia, including Kalimantan, Sulawesi, Nusa Tenggara, Maluku and Papua.

4. The sector loan for GPDP intends to support expansion of two geothermal power plants in Java, which will contribute to Indonesia's efforts to increase renewable energy use and reduce greenhouse gas emissions. The outcome will be increased power generation from geothermal resources and lower carbon emissions. The outputs include the construction and commissioning of additional geothermal generating capacity at two existing geothermal power plants of 55 megawatts (MW) each.

5. The RBL for EGDP supports PLN in developing electricity distribution networks to connect businesses and households and to enhance the quality of life in Eastern Indonesia, especially in Sulawesi and Nusa Tenggara, by providing sustainable use of electricity as a key driver of increased economic activity. The program will (i) expand and strengthen the distribution system to improve electrification rates, reduce overloading and address reliability issues for the local population and businesses and (ii) enhance innovation and institution capacity of PLN for environmental management and increase efficiency.

Scope of Work

ADB is seeking the services of an international research associate to support the proposed three sector projects and and two RBL programs. The research associate shall work closely with the ADB project officers and other consultants. The consultant will also be expected to liaise with the government and stakeholders in Indonesia. He/she will be responsible for conducting background research work, analyses, and developing sections of technical reports, as well as creating a database of reference materials and project documents.

Detailed Tasks

Detailed tasks include, but not limited to the following:

i. provide technical and analytical support to ongoing and new projects and programs in the energy sector in Indonesia;
ii. support project processing and project administration, including procurement activities and implementation of select technical assistance activities;
iii. be part of technical teams and contribute to technical analyses, and participate in technical discussions with the governments; and
iv. support developing new technical assistance activities and ADB's ongoing sector plans with governments and other stakeholders.

Qualifications
The specialist should hold masters' degree in a relevant field (e.g. engineering, sciences, economics, finance, urban planning). The consultant should have consultancy experience with the government, ADB or with any other multilateral development organizations. She/he should also have minimum general experience at least 5 years and minimum specific at least 5 years. It is essential to have energy sector knowledge in Indonesia. It is preferable to have experience with ADB project processing and knowledgeable with ADB's implementation guidelines and procedure. The specialist should have strong interpersonal skills and ability to work effectively in a multicultural environment. Excellent English language proficiency is a must.

Time Schedule and Resources
The specialist will be mobilized from early-August 2018 to 30 June 2019 for a period of 132 working days on full-time basis.

[A] This is for immediate hire and not associated with engineering firm work.

Expertise	**Program Coordinator [A]**
Project	All (cross-cutting support))
Source	8 person-months national

Background
Indonesia, as the world's largest archipelagic nation, is facing significant challenges in providing equitable access to energy services. In 2016, Indonesia's national average electrification ratio was 89%, where many areas are located in Eastern Indonesia with ratios were only 50-70%. Lack of access to energy constrains efforts to transform the eastern part of Indonesia into a new economic growth engine with a focus on high-value agriculture, fisheries, small and medium-sized enterprises, and tourism, all of which rely on a stable energy supply. Uneven development across provinces has contributed toward widening income disparities, with several provinces in Eastern Indonesia lagging significantly behind Java and Bali. At the same time, Indonesia is far behind its neighboring countries in Southeast Asia in terms of clean energy development, including geothermal, solar and wind.

1. The sector loan for PGSP will support multiple small- to medium-sized natural gas-fired power plants across Eastern Indonesia. It will help move the country away from using highly polluting and expensive diesel fuel and transition to using natural gas, combined with variable renewable energy such as solar and wind. The outcome of the project will be expanded access to modern and cleaner energy services in Eastern Indonesia. The outputs are (i) gas-fired generation capacity in Eastern Indonesia installed; (ii) pilot gas-solar hybrid power generation units installed, and (iii) institutional capacity enhanced for the utilization of natural gas for small- to mid-scale power generation and operation of gas-solar hybrid systems.

2. The result-based loan (RBL) for EGDP II supports the State Electricity Cooperation (PLN) in developing electricity distribution networks to connect businesses and households and to enhance the quality of life in Kalimantan, by providing sustainable use of electricity as a key driver of increased economic activity. About one-fifth of Kalimantan's 15 million population live in unelectrified areas or poorly electrified areas. This RBL program will expand distribution system through the installation of distribution lines, improve clean energy and energy efficiency from solar PV plants, and improve waste treatment and enhance social and gender aspects.

3. The sector loan for PTSP will support PLN in the development of 150 kV and 70 kV high voltage power transmission systems across Eastern Indonesia. The project includes rehabilitation, upgrading and expansion of 150 kV and 70 kV transmission lines; and 150/70 kV, 150/20 kV and

70/20 kV substations in Eastern Indonesia, including Kalimantan, Sulawesi, Nusa Tenggara, Maluku and Papua.

4. The sector loan for GPDP intends to support expansion of two geothermal power plants in Java, which will contribute to Indonesia's efforts to increase renewable energy use and reduce greenhouse gas emissions. The outcome will be increased power generation from geothermal resources and lower carbon emissions. The outputs include the construction and commissioning of additional geothermal generating capacity at two existing geothermal power plants of 55 megawatts (MW) each.

5. The RBL for EGDP supports PLN in developing electricity distribution networks to connect businesses and households and to enhance the quality of life in Eastern Indonesia, especially in Sulawesi and Nusa Tenggara, by providing sustainable use of electricity as a key driver of increased economic activity. The program will (i) expand and strengthen the distribution system to improve electrification rates, reduce overloading and address reliability issues for the local population and businesses and (ii) enhance innovation and institution capacity of PLN for environmental management and increase efficiency.

Scope of Work

A PC shall be support staff of the Energy Division, Southeast Asia Department (SEEN), and other Indonesia energy team members as appropriate, for the processing of new loans, grants, and TAs.

Detailed Tasks

- **Research**

i. Prepare TA reports to support proposed and ongoing Indonesia energy projects;
ii. Collect relevant data and information, and conduct analyses for loans, grants, and TAs under preparation;
iii. Compile these analyses in documents, spreadsheets, and slides, in a way useful for ADB operations;
iv. Prepare briefings, background papers and presentations for ADB's internal needs, meetings, conferences, and workshops;
v. Assist in drafting, reviewing and editing project-related documents prepared by the team;
vi. Assist the project teams in any other research tasks as necessary, including simple translation of communication and short documents between Bahasa Indonesia and English and vice versa.

- **Coordination**

vii. Engage with relevant ADB's divisions for loans, grants, and TAs under preparation;
viii. Join site visit to support coordination among ADB, key counterpart and communities in potential project locations;
ix. Facilitate the organization of meetings and events, including the development of agendas, arrangement of venues, and fulfillment of other logistical issues, and assist in the identification and confirmation of speakers and participants;
x. Provide meeting minutes and verify the contents with the participants;
xi. Coordinate with the development partners and consolidate interagency comments;
xii. Coordinate internally with ADB teams and departments concerned;

- **Communication and outreach**

xiii. Prepare outreach materials related to the project;
xiv. Review and proof-read project reports and outreach materials; and,
xv. Prepare other reports as needed.

Qualifications

The PC should have the following qualifications:

i. A minimum of a Bachelor's Degree in engineering, development, finance, economics, environment, or other relevant fields;
ii. Minimum 3 years of experience in assisting research and program administration, preferably in the energy and/or international development fields;
iii. Good knowledge of Indonesian government organizations, including SOEs;
iv. Native Bahasa Indonesia skills and strong oral and written communication skills in English (a written test may be administered as part of the interview process);
v. Strong computer skills, including proficiency in MS Office tools; preference for knowledge of other research and project management tools such as MS Project, research databases, GIS, and web tools; and,
vi. Ability to work as part of a team within a dynamic and multi-cultural environment.

Time Schedule and Resources

The assignment will be based in Jakarta, Indonesia and the PC will report to SEEN staff. The assignment is expected to be for 176 working-days or 8 person-months on a full-time basis, starting August 2018.

[A] This is for immediate hire and not associated with engineering firm work.