Technical Assistance Report

Project Number: 46380-034
Transaction Technical Assistance Cluster (C-TRTA)
August 2018

Republic of Indonesia: Sustainable Infrastructure Assistance Program

Subproject 13: Supporting Sustainable and Universal Electricity Access in Indonesia

Asian Development Bank

CURRENCY EQUIVALENTS
(as of 2 August 2018)

Currency unit	–	rupiah (Rp)
Rp1.00	=	$0.0000692
$1.00	=	Rp14,444

ABBREVIATIONS

ADB	–	Asian Development Bank
COBP	–	Country Operations Business Plan
EGDP	–	Electricity Grid Development Program
GDE	–	Geo Dipa Energi
GPDP	–	Geothermal Power Development Project
GW	–	gigawatt
kV	–	kilovolt
PLN	–	*Perusahaan Listrik Negara* (State Electricity Corporation)
PTSP	–	Power Transmission Sector Project
RPJMN	–	*Rencana Pembangunan Jangka Menengah Nasional* (Medium-Term Development Plan)
RUPTL	–	*Rencana Usaha Penyediaan Tenaga Listrik* (Eletricity Power Supply Business Plan)
SIAP	–	Sustainable Infrastructure Assistance Program
TA	–	technical assistance
TRTA	–	transaction technical assistance

NOTES

In this report, "$" refers to United States Dollars.

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TRANSACTION TECHNICAL ASSISTANCE AT A GLANCE

1. Basic Data — **Project Number:** 46380-034

Project Name	Supporting Sustainable and Universal Electricity Access in Indonesia	**Department/Division**	SERD/SEEN
Nature of Activity	Project Preparation, Capacity Development	**Executing Agency**	Perseroan PT. Perusahaan Listrik Negara
Modality	Subproject		
Country	Indonesia		

2. Sector — **Subsector(s)** — **ADB Financing ($ million)**

Total	**0.00**

3. Strategic Agenda — **Subcomponents** — **Climate Change Information**

Inclusive economic growth (IEG)	Pillar 1: Economic opportunities, including jobs, created and expanded	Climate Change impact on the Project	Low
Environmentally sustainable growth (ESG)	Eco-efficiency Global and regional transboundary environmental concerns Urban environmental improvement		

4. Drivers of Change — **Components** — **Gender Equity and Mainstreaming**

Governance and capacity development (GCD)	Institutional development	Some gender elements (SGE)	✓
Knowledge solutions (KNS)	Pilot-testing innovation and learning		
Partnerships (PAR)	Bilateral institutions (not client government) Implementation Private Sector United Nations organization		
Private sector development (PSD)	Public sector goods and services essential for private sector development		

5. Poverty and SDG Targeting — **Location Impact**

Geographic Targeting	No	Not Applicable	
Household Targeting	No		
SDG Targeting	Yes		
SDG Goals	SDG7, SDG13		

6. Risk Categorization — Risk Categorization does not apply

7. Safeguard Categorization — Safeguard Policy Statement does not apply

8. Financing

Modality and Sources	Amount ($ million)
ADB	**0.00**
None	0.00
Cofinancing	**1.50**
Government of Australia (Full ADB Administration)	1.50
Counterpart	**0.00**
None	0.00
Total	**1.50**

I. THE ENSUING AND ONGOING PROJECTS

1. The transaction technical assistance facility (subproject of the Sustainable Infrastructure Assistance Program [SIAP] technical assistance cluster) will help prepare the following four proposed projects and programs: (i) the Eastern Indonesia[1] Power Generation Sector Project (PGSP); (ii) the Eastern Indonesia Electricity Grid Development Program Phase II (EGDP II); (iii) the Eastern Indonesia Power Transmission Sector Project (PTSP); and (iv) the Geothermal Power Development Project (GPDP).

(i) **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 project is expected for Board consideration in 2018 for $600 million from ADB regular OCR and $35 million from the ASEAN Infrastructure Fund. The program is included in the Country Operations Business Plan (COBP) 2018-2020. 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.

(ii) **EGDP II** is a result-based lending (RBL) program and will support power distribution operations in Kalimantan, following Phase I of EGDP approved in 2017 which covers Sulawesi and Nusa Tenggara. The program is included in the COBP 2018-2020 for $300 million. The outcome is equitable access to electricity for Kalimantan's population. The outputs are (i) distribution system expanded, (ii) clean energy & energy efficiency enhanced, and (iii) institutional capacity and social monitoring enhanced.

(iii) **PTSP** aims to support the development of 150 kV and 70 kV high voltage power transmission systems across Eastern Indonesia. The project is listed in COBP 2018-2020 for $800 million. 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.

(iv) **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 each. A transaction TA and the proposed $300 million regular OCR allocation for the project are included in the COBP 2018-2020.

2. The technical assistance (TA) will also support the implementation of the Eastern Indonesia Electricity Grid Development Program (EGDP) RBL program approved by the Board in

[1] The government uses the term "Eastern Indonesia" to cover all those islands outside Bali, Java, Madura, and Sumatra, specifically, provinces in Kalimantan, Nusa Tenggara, Maluku, Papua, and Sulawesi.

September 2017. The TA will specifically support the implementation of three disbursement-linked indicators dedicated to innovation and institutional strengthening.

3. These ensuing and ongoing projects are focused on the Indonesian electricity sector and require thorough and consistent understanding of relevant policies, regulations, and actors. TA activities will involve similar preparation, due diligence, design, readiness, and implementation support activities. Therefore, this TRTA Facility will reduce transaction costs through minimizing the need for stand-alone TRTAs.

II. THE TECHNICAL ASSISTANCE (TRTA FACILITY)

A. Overall Progress of the TA Cluster

4. The Technical Assistance Cluster (C–TA) 0013–INO: for the Sustainable Infrastructure Assistance Program (SIAP) is financed by the Government of Australia through the Department of Foreign Affairs and Trade, and administered by the Asian Development Bank (ADB). SIAP was approved on 17 June 2013 and is due to close on 30 June 2019. As of 25 July 2018, total commitments are $13,040,712 (73% of total approvals against time elapsed of 85%), and disbursements are $9,034,972 (69% of commitments). Thirteen subprojects have been approved. Four of these are now closed. SIAP is on track to meet its outcome and outputs, including the preparation and implementation of approved ADB projects and programs in Indonesia of more than $5 billion. As of 25 July 2018, C–TA 0013–INO: SIAP has an available balance of $2,377,816, including the ADB management fee and foreign exchange reservations.

B. Subproject Scope

5. 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.[2]

6. 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.[3] 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.

[2] 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).
[3] PLN. 2016. *PLN Statistik*. Jakarta.

7. 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 than 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 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.

C. Subproject Outputs and Activities

8. **Output 1: Power sector projects and programs prepared.** Technical expertise will be provided to prioritize, plan, and prepare a series of investment projects for potential ADB financing. This will enhance the efficiency of project preparation, address cross-common issues among the projects, and will reduce the transaction costs through minimizing the need for stand-alone transaction TAs. Detailed activities will include, as required: (i) feasibility studies; (ii) economic analysis; (iii) financial management assessments, financial evaluation 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; and (vii) safeguards documents on environment, involuntary resettlement and indigenous peoples.

9. **Output 2: Innovation and institutional capacity enhanced.** The TA will support the implementation of loan components on technological innovation, institutional strengthening, and knowledge sharing. These will include technical experts to support the development of smart grid guidelines and design pilot projects, as well as safeguards specialists to improve waste management and stakeholder consultation practices under the Eastern Indonesia Electricity Grid Development Program (EGDP for Sulawesi and Nusa Tenggara). Experts will also provide technical support for the Eastern Indonesia Power Generation Sector Project to accelerate the implementation of subprojects and provide technical inputs for the solar–gas hybrid pilot projects. The TA will also support knowledge development and sharing between PLN, government ministries, and other key stakeholders for policy and regulatory development and energy sector planning, particularly related to increasing natural gas and renewable energy use in Eastern Indonesia.

D. Subproject Cost and Financing

10. The TRTA subproject is estimated to cost $1,530,000, of which $1,500,000 will be financed from the C-TA 0013–INO: SIAP on a grant basis by the Government of Australia, and administered by ADB. The key expenditure items are listed in Appendix 1. The government, including its State-Owned Enterprises, will provide counterpart support in the form of communication facilities and other in-kind contributions. The government was informed that approval of the subproject does not commit ADB to finance any ensuing project.

E. Subproject Implementation Arrangements

11. The TA activities for ensuing investment projects and programs will commence only after the concept paper for the associated project and program is approved by ADB. Concept papers for the EGDP II, PTSP, and GPDP are expected to be approved in the second half of 2018.

12. 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. ADB will administer the TA and be responsible for consultant recruitment in consultation with PLN and GDE. PLN and GDE will mobilize its staff to participate in undertaking analytical work and provide documents, mission facilitation, and other support to carry out the activities.

Table 1: Subproject Implementation Arrangements

Aspects	Arrangements		
Indicative implementation period	June 2018–June 2019		
Executing agency	PLN		
Implementing agency	PLN & GDE		
Consultants	To be selected and engaged by ADB		
	Individual consultants	46 person-months	$584,984
	Firm through QCBS (90:10)	54 person-months	$827,711
Procurement	ADB will engage consultants and all technical assistance financed goods shall be procured in accordance with ADB Procurement Policy (2017, as amended from time to time) and the associated Project Administration Instructions/TA Staff Instructions.		
Disbursement	The TA will be disbursed following ADB's *Technical Assistance Disbursement Handbook* (2010, as amended from time to time).		
Asset Turnover of Disposal Arrangement upon TA Completion	Assets purchased under the transaction technical assistance will be handed over to PLN		

ADB = Asian Development Bank, GDE = Geo Dipa Energi, PLN = State Electricity Corporation, QCBS = quality- and cost-based selection, TA = technical assistance
Source: Asian Development Bank estimates.

13. **Consulting services.** ADB will engage consultants in accordance with *ADB Procurement Policy* (2017, as amended from time to time) and the associated *Project Administration Instructions/Technical Assistance Staff Instructions*. Most technical experts will be engaged through a consulting firm using quality- and cost-based selection method (quality: cost weighting of 90:10) under a time-based contract. The TA subproject envisages 56 international consultant person-months and 44 national consultant person-months, with new project preparatory work to predominantly be done by the firm. For specific positions related to bridge support before firm recruitment, niche support for ongoing loans, specific roles related to social and environmental safeguards, program coordination, procurement, and for specialized technical requirements or urgent, short-term assisgnments, consultants may be engaged using the individual selection method in accordance with ADB procedures. This could be in lieu of, or to supplement specialists from the firm. Disbursements under the TA will be in accordance with ADB's Technical Assistance Disbursement Handbook (2010, as amended from time to time). The terms of reference for consultants are in Appendix 3. 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 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.

SUBPROJECT COST ESTIMATES AND FINANCING PLAN
($'000)

Item	Amount
A. **Government of Australia**[a]	
1. Consultants	
a. Remuneration and per diem	
i. International consultants	1,098.3
ii. National consultants	268.3
b. Out-of-pocket expenditures	
i. International and local travel	46.1
ii. Miscellaneous administration and support costs	5.0
2. Studies and surveys	10.0
3. Goods (computer, printer, etc.)[b]	5.0
4. Training, seminars, workshops, forum and conferences[c]	30.0
5. Contingencies	37.3
Total	1,500.0

Note: The technical assistance (TA) is estimated to cost $1.53 million, of which contributions amounting to $1.5 million financed on a grant basis by the Government of Australia and administered by ADB as a subroject of TAC 0013-INO: SIAP are presented in the table above. The government will provide counterpart support in the form of communication facilities and other in kind contributions. The value of government contribution is estimated to account for 2.0% of the total TA cost.

[a] Administered by the Asian Development Bank.

[b] Assets purchased under the transaction TA will be handed over to the State Electricity Corporation (PLN) and GDE.

[c] Includes rent of venue and other facilities, food and beverages (excluding alcoholic beverages), promotion and training materials, and other related costs. All travel to and from conference/event shall be arranged by the most economical direct route possible. Subsistence allowances payable to out-of-town event participants shall be adjusted if meals are provided as part of the accommodation booking or conference package.

Source: Asian Development Bank estimates.

PROJECTS UNDER TECHNICAL ASSISTANCE FACILITY

Table A2: Indicative Consultants' Inputs Allocation
(person-month)

		Projects/programs and person-month allocations					
		Total	**EGDP (2017)** complex	**PGSP (2018)** complex	**EGDP II (2019)** complex	**PTSP (2020)** complex	**GPDP (2020)** complex
Consultants' Position							
A.	**International Consultants**						
	Team Leader / Chief Engineer	7.0	0.0	0.0	1.0	4.0	2.0
	Power System Engineers	13.0	1.0	0.0	1.0	9.0	2.0
	Mechanical / Thermal Engineers	2.0	0.0	0.0	0.0	1.0	1.0
	Geothermal Engineer	2.0	0.0	0.0	0.0	0.0	2.0
	Geologist	2.0	0.0	0.0	0.0	0.0	2.0
	Financial Analyst	1.5	0.0	0.0	0.5	0.5	0.5
	Energy Economist	1.5	0.0	0.0	0.5	0.5	0.5
	Procurement Specialists	5.0	0.0	1.0	1.0	1.5	1.5
	Environment Specialists	8.0	1.0	0.0	1.0	3.0	3.0
	Social Safeguards Specialists	7.0	0.0	0.0	2.0	3.0	2.0
	Research Associate (full time)	6.0	1.0	1.0	2.0	1.0	1.0
	Resource Persons	1.0	0.0	1.0	0.0	0.0	0.0
	Subtotal A	**56.0**	**3.0**	**3.0**	**9.0**	**23.5**	**17.5**
B.	**National Consultants**						
	Power System Engineers	7.0	1.0	1.0	1.0	3.0	1.0
	Mechanical / Thermal Engineer	2.0	0.0	0.0	0.0	0.0	2.0
	Geologist	2.0	0.0	0.0	0.0	0.0	2.0
	Procurement Specialist	3.0	0.0	0.0	0.0	1.0	2.0
	Environmental Specialists	8.0	3.0	0.0	1.0	3.0	1.0
	Social Safeguards Specialists	12.0	2.0	0.0	2.0	6.0	2.0
	Program Coordinator	8.0	1.0	1.0	2.0	2.0	2.0
	Resource Persons (National)	2.0	0.0	1.0	1.0	0.0	0.0
	Subtotal B	**44.0**	**7.0**	**3.0**	**7.0**	**15.0**	**12.0**
	Total (A+B)	**100.0**	**11.0**	**6.0**	**16.0**	**38.5**	**29.5**

Source: Asian Development Bank estimates.

LIST OF LINKED DOCUMENTS

http://www.adb.org/Documents/LinkedDocs/?id=46380-034-TAReport

1. Terms of Reference for Consultants
2. Concept Paper for Power Generation Sector Project (PGSP)
3. Report and Recommendation of the President for Sustainable Energy Access in Eastern Indonesia—Electricity Grid Development Program (EGDP)