



Technical Assistance Report

Project Number: 48323-001
Policy and Advisory Technical Assistance (PATA)
December 2014

Republic of Indonesia: Sustainable and Inclusive Energy Program

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Asian Development Bank

CURRENCY EQUIVALENTS

(as of 7 November 2014)

Currency unit	–	rupiah (Rp)
Rp1.00	=	\$0.0000820008
\$1.00	=	Rp12,195.00

ABBREVIATIONS

ADB	–	Asian Development Bank
BAPPENAS	–	Badan Perencanaan Pembangunan Nasional (National Development Planning Agency)
GW	–	gigawatt
MEMR	–	Ministry of Energy and Mineral Resources
PLN	–	Perusahaan Listrik Negara (State Electricity Company)
PSO	–	public service obligation
RPJMN	–	Rencana Pembangunan Jangka Menengah Nasional (National Medium-Term Development Plan)
TA	–	technical assistance

NOTE

In this report, "\$" refers to US dollars.

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POLICY AND ADVISORY TECHNICAL ASSISTANCE AT A GLANCE

1. Basic Data		Project Number: 48323-001	
Project Name	Sustainable and Inclusive Energy Program	Department /Division	SERD/SEEN
Country Borrower	Indonesia N/A	Executing Agency	Coordinating Ministry for Economic Affairs
2. Sector		ADB Financing (\$ million)	
✓ Energy	Energy sector development and institutional reform		1.00
		Total	1.00
3. Strategic Agenda		Climate Change Information	
Inclusive economic growth (IEG)	Pillar 1: Economic opportunities, including jobs, created and expanded	Climate Change impact on the Project	Medium
4. Drivers of Change		Gender Equity and Mainstreaming	
Governance and capacity development (GCD)	Institutional systems and political economy	No gender elements (NGE)	✓
Knowledge solutions (KNS)	Knowledge sharing activities		
Partnerships (PAR)	Implementation International finance institutions (IFI) Private Sector		
Private sector development (PSD)	Conducive policy and institutional environment Promotion of private sector investment		
5. Poverty Targeting		Location Impact	
Project directly targets poverty	No	Nation-wide	High
6. TA Category:	B		
7. Safeguard Categorization	Not Applicable		
8. Financing			
Modality and Sources		Amount (\$ million)	
ADB		1.00	
Sovereign Policy and advisory technical assistance: Technical Assistance Special Fund		1.00	
Cofinancing		0.00	
None		0.00	
Counterpart		0.00	
None		0.00	
Total		1.00	
9. Effective Development Cooperation			
Use of country procurement systems			No
Use of country public financial management systems			No

I. INTRODUCTION

1. Access to reliable and cost-effective sources of modern forms of energy is a prerequisite for growth and productivity improvement and can help Indonesia avoid the pitfalls of the middle-income trap. While this is particularly true for the country's manufacturing and commercial centers, it is also important that access to modern forms of energy be available to millions of Indonesians living in remote areas across the far-flung archipelago. Most indications are that Indonesia's energy sector is underperforming.¹ Energy security concerns have increased in recent years. A new president and executive team assumed office on 20 October 2014, and reforming the energy sector appears to be one of their key priorities. The Government of Indonesia has requested assistance from the Asian Development Bank (ADB) to take stock of overall regulation in the energy sector and to develop innovative policy proposals, implementing regulations, and improved implementation plans that can help pave the way for a sustainable and inclusive energy future for the country.

2. Consultation missions were fielded in July 2014 and October 2014 during which ADB obtained the government's concurrence on the impact, outcome, outputs, implementation arrangements, cost, financing arrangements, and terms of reference for consultants.² The technical assistance (TA) concept paper was approved on 20 October 2014. The design and monitoring framework is in Appendix 1.³

II. ISSUES

3. Fossil fuels currently dominate Indonesia's energy mix. While Indonesia is particularly well-endowed with geothermal, biomass, solar, wind, and hydropower renewable energy potential, it lags behind its Southeast Asian regional peers in its use of these resources for power generation or transport. With domestic oil production declining, Indonesia is increasingly dependent on imported oil to meet its burgeoning domestic demand. The rate of growth of its gas production has also stalled. In 2013, the country signed agreements to begin importing liquefied natural gas, and it plans to build a series of floating storage and regasification installations to make further use of this external energy source.

4. The electricity subsector epitomizes many of the challenges facing the energy sector overall. Efforts to expand the generation systems are behind schedule, and transmission and distribution also suffer from infrastructure deficits and underinvestment. While the country's revised National Energy Policy (2014) aims to achieve 79 gigawatts (GW) of installed capacity by 2020 and 115 GW by 2025, the total as of 2013 was only about 45 GW. Long delays in the completion of projects under two fast-track programs for generation expansion and continued delays in large fossil-fired, geothermal, and hydropower power projects in the country suggest

¹ National Development Planning Agency (BAPPENAS). 2014. *Medium-Term Economic Infrastructure Strategy—Background Report for RPJMN 2015–2019*, and recent reports by the International Energy Agency and the Asian Development Bank (ADB).

² The government is currently developing its next medium-term development plan (RPJMN) for 2015–2019, which will clearly emphasize expanded infrastructure investments, increased deployment of the country's energy resources for domestic use, and efficiency improvements in the energy sector. These priorities are to be reflected in ADB's draft country partnership strategy, 2015–2019 for Indonesia and the draft energy sector assessment, strategy, and road map that are being finalized. The TA is also in line with ADB. 2014. *Midterm Review of Strategy 2020: Meeting the Challenges of a Transforming Asia and Pacific*. Manila. The midterm review emphasizes the need for inclusive economic growth, infrastructure development, and policy-based engagements in middle-income countries.

³ The TA first appeared in the business opportunities section of ADB's website on 27 October 2014.

that these targets may be difficult to meet under a business as usual scenario.⁴ Related investments in transmission and distribution are also lagging. The power system is becoming less reliable, and blackouts occurred in Sumatra and Java in 2014.⁵ All of these factors severely constrain the country's ability to provide power for industrial and commercial users and connect new households to the grid. At the same time, price distortions stemming from government subsidies have led to bloated energy use and constitute an obstacle to greater energy efficiency and conservation.

5. More than 50 million people, or about 20% of the nation's population, continue to lack access to modern forms of energy (footnote 1). The high cost of delivering fossil fuels to small islands and remote areas in eastern Indonesia, low power loads and the limited ability of households to pay, lack of interconnected grids that can support larger generating units, and a constrained policy environment have made the State Electricity Company (PT Perusahaan Listrik Negara, or PLN) reluctant to add new consumers. Nevertheless, these regions have rich renewable energy potential from solar, micro hydro, wind, and biomass resources that could support a range of grid-connected, mini grid, and household systems. The government has been pursuing some isolated programs. Examples include a PLN solar photovoltaic program in Eastern Indonesia, and a micro-grid-based electrification program undertaken by the Ministry of Energy and Mineral Resources (MEMR). However, the rural electrification effort lacks a comprehensive regulatory framework, a national program with the requisite road map, an institutional framework, and the necessary budgetary resources. As a result, the country's rural electrification programs are performing poorly. The government's goal of providing access to electricity for 90% of the country's people by 2020 may well be delayed by another decade, at the current rate of new connections.

6. Analysis of the energy sector has highlighted several of its persistent challenges and provided potential policy solutions to the problems, as well as road maps to implement the steps necessary. These studies include an in-depth review of the country's energy policy in 2014 by the International Energy Agency and a white paper on energy sector strategy being drafted by ADB to support the government's upcoming medium-term development plan (RPJMN) for 2015–2019.⁶ In 2014, the MEMR prepared a natural gas master plan that includes several policy proposals. The government recognizes the crucial impact that energy will have on the country's future growth and has taken important initiatives on multiple fronts in the sector during 2014.

7. **Improving the efficiency of energy markets.** For example, the government, which is responsible for setting energy prices, increased the price of a 12 kilogram liquefied petroleum gas canister by 23% in 2014 and plans to increase it every 6 months until the price meets market levels by January 2016. The government also announced a nearly 30% hike in transport fuel prices in late 2014. The government has also lowered subsidies for electricity and is moving toward a cost-reflective tariff. In 2013, the MEMR raised tariffs by an average of 5% in quarterly phases, and in 2014, the government announced a further average tariff hike of almost 13% which is to be phased in during the course of the year. The government is also trying to move away from the current framework of the public service obligation wherein PLN is reimbursed for the difference between its actual costs of operation (plus a margin) and its revenue. Alternate schemes under consideration are based on the benchmarking of controllable costs and

⁴ The reasons for the delays vary and include issues related to land acquisition and permitting, and tendering.

⁵ In 2013, the national averages for the distribution network's system average interruption frequency index (7.26) and the system average interruption duration index (5.76) were relatively good, but regional performance was poor, particularly on the most populous island of Java.

⁶ International Energy Agency. 2014. *In-Depth Review of Indonesia's Energy Policy*. Paris.

performance. The government is also evaluating proposals that would increase private sector involvement in the upstream and downstream natural gas sectors.

8. **Scaling up grid-connected renewable energy.** In addition to raising tariffs, the government is putting incentive mechanisms in place to support the scaling up of grid-connected renewable power. The geothermal sector provides a good example of these efforts. In early 2014, ADB, in collaboration with the World Bank, helped the government develop and roll out a new geothermal tariff scheme.⁷ This scheme moves away from fixed feed-in tariffs⁸ to a ceiling price, with tendering approach based on PLN's avoided costs, differentiated by regions of the country. The government, ADB, and other development partners hope that the energy sector will be revived by this new scheme, the recent changes in the tariff regime, a newly reissued geothermal law that allows geothermal activities in certain forest classifications, and recent financing commitments for two large projects led by independent power producers. In 2013–2014, the government announced a program to support grid-connected solar photovoltaic plants through a combination of ceiling prices and tendering. It also announced a feed-in tariff for waste-to-energy projects and hydropower projects of less than 10 megawatts. The government is currently considering alternate incentive schemes for supporting grid-connected wind energy and is preparing an incentive scheme for biomass-based power produced by using agricultural waste or woody biomass as a fuel.

9. **Rural electrification.** A series of new government policy initiatives aim to expand rural access to power. The MEMR has chosen Sumba Island in Eastern Indonesia to be what it calls an “iconic island.”⁹ It aims to use renewable energy to expand access to electricity on the island from the current baseline of about 30% of the population. With support from ADB and other development partners, the government hopes to showcase Sumba as an example of how spatial planning tools, technology approaches, financing models, and implementation approaches using renewable energy can be dovetailed to scale up energy access in remote parts of Indonesia.¹⁰ ADB is undertaking a review of opportunities for and the challenges involved in expanding electrification in Eastern Indonesia under the 2013 TA. This analysis will serve as the basis for convening a high-level dialogue in early 2015 of related ministries and government entities and development partners on how to plan and obtain financing for a large-scale rollout of a rural electrification program in Eastern Indonesia.¹¹

10. The MEMR is beginning a concerted effort to develop energy-efficiency regulations, implementation rules, and standards to realize savings in the use of energy by appliances and in municipal and commercial buildings and street lighting. It has developed specifications and procurement guidelines for upgrading municipal street lighting systems through the use of light-emitting diode technology. The MEMR has also developed minimum efficiency performance standards for air-conditioners. In 2015, ADB will support the issuance of further minimum

⁷ Government of Indonesia, 2014. Ministry of Energy and Mineral Resources. Ministerial Regulation 17/2014 July

⁸ Feed-in tariff is a firm commitment of a certain premium price to be paid for power from a specific renewable energy source that is fed into the power grid.

⁹ ADB 2013. Mid-term Report: *Technical Assistance to the Republic of Indonesia for Scaling Up Renewable Energy Access in Eastern Indonesia*. Manila (TA 8287-INO).

¹⁰ This detailed work complements the ongoing regional energy planning and resource surveys being undertaken by the World Bank, in association with PLN.

¹¹ ADB plans to organize this workshop with the MEMR and development partners such as the World Bank and the United Nations Sustainable Energy for All Initiative. The workshop is tentatively scheduled for early 2015. A white paper on the challenges and prospects for rural electrification in the country is being prepared under ADB TA 8287: *Scaling Up Renewable Energy Access in Eastern Indonesia*.

efficiency performance standards for other appliances by MEMR, including key energy-intensive appliances, such as refrigerators and rice cookers.¹²

11. In summary, the government has demonstrated a commitment to addressing challenges in the energy sector and enabling the transition to a more sustainable and inclusive energy supply. However, a sustained, comprehensive effort is necessary to translate the targets and new regulations into tangible outcomes in the medium term. This will require (i) development of implementation rules and guidelines, and their dissemination to regional and local governments, (ii) development of new regulatory frameworks and institutional mechanisms in such related areas as rural electrification and energy efficiency, (iii) a shift to a more market-driven energy sector, with the establishment of economic energy tariffs and greater private sector participation, and (iv) improved coordination between the various central ministries and actors concerned at the central and the local government levels.

12. This policy and advisory TA will help the newly elected government that took office in October 2014 to consolidate ongoing efforts to reform the sector and implement previously announced regulations and programs. It will also help to develop and put in place the next set of measures needed to broaden and sustain the reform efforts. The TA will also help identify the policy actions that can be supported under a proposed ADB policy loan that will involve two subprogram tranches of an estimated \$400 million each to be processed for approval in 2015 and 2016.¹³

III. THE POLICY AND ADVISORY TECHNICAL ASSISTANCE

A. Impact and Outcome

13. The impact will be a more sustainable and inclusive energy sector in Indonesia. The outcome will be the preparation of a regulatory framework and policy actions for a more sustainable and inclusive energy supply.

B. Methodology and Key Activities

14. The outputs will be: (i) the enabling of more efficient energy markets, (ii) development of a road map for transitioning to cost-reflective electricity tariffs and energy prices, (iii) development of appropriate incentives and programs for scaling up grid-connected renewable electricity supply, and (iv) design of a regulatory and institutional framework for expanding energy access in Eastern Indonesia. Output (i) will include activities focused on improving prospects for private sector investments in the natural gas sector, improving the delivery of subsidies to the power sector and improving financing approaches for PLN, while output (ii) would focus on reduction of subsidies. Output (iii) will focus on tariff and non-tariff incentives for large renewable energy projects, and output (iv) is focused on enabling a planning and implementation approach to bring affordable electricity to Indonesians who currently do not have electricity access. The outputs will be achieved through a combination of policy dialogue, analytical studies, draft regulation, and support for promulgating improved regulations. It is assumed that many of the reform measures that were undertaken before the 2014 election will not be scaled back and that implementation plans already in place will be strengthened. The TA builds on ADB policy and advisory work carried out under the ongoing TA for Scaling up

¹² This work is being financed through ADB. 2013. *Technical Assistance for Asia Energy Efficiency Accelerator*. Manila (TA 8483-REG). It is being administered by ADB's Regional and Sustainable Development Department.

¹³ It also complements related work being undertaken by development partners, such as work on a gas development master plan supported by the Government of Australia and the World Bank.

Renewable Energy Access in Eastern Indonesia, as well as the Asia Energy Efficiency Accelerator regional TA, which is focused on energy efficiency (footnotes 11 and 12).

C. Cost and Financing

15. The TA is estimated to cost \$1,100,000, of which \$1,000,000 will be financed on a grant basis by ADB's Technical Assistance Special Fund (TASF-other sources). The government will provide counterpart support in the form of counterpart staff, office space, reports and documents, secretarial assistance, local communication facilities, domestic transportation, and other in-kind contributions. The cost estimates and financing plan are in Appendix 2.

D. Implementation Arrangements

16. The successful implementation of many of the government's prior policies, programs, and projects has been stymied by a lack of coordination among the various energy sector-related entities at the central level and between the policy-making bodies at the central level and the implementation actors within the regional and local governments. Therefore, the TA will be implemented within an inter-ministerial and interagency context. The Directorate General for Energy within the Coordinating Ministry for Economic Affairs will be the executing agency. The MEMR, the Ministry of Finance, and PLN will be the implementing agencies. Relevant regional and local government officials will be included in the policy analyses and training activities as appropriate. The TA will be managed and administered by ADB through the Energy Division of the Southeast Asia Department.

17. It is estimated that a total of 53 person-months of consulting services, comprising 38 person-months of international consultant services and 15 person-months for a national consultant, will be required for the TA. Of this, 23 person-months of international consultant services and 15 person-months of a national consultant's services are to be engaged through an international firm. The firm will be recruited in accordance with ADB's Guidelines on the Use of Consultants (2013, as amended from time to time), using quality- and cost-based selection (90:10) on the basis of a simplified technical proposal. In addition, an energy analyst (15 person-months, international) will be hired through an individual contract and be based in ADB's Indonesia Resident Mission in Jakarta. The terms of reference for consultants are in Appendix 3. The TA proceeds will be disbursed in accordance with ADB's *Technical Assistance Disbursement Handbook* (2010, as amended from time to time). The TA will be implemented over 36 months from 1 January 2015 to 31 December 2017.

IV. THE PRESIDENT'S DECISION

18. The President, acting under the authority delegated by the Board, has approved the provision of technical assistance not exceeding the equivalent of \$1,000,000 on a grant basis to the Government of Indonesia for Sustainable and Inclusive Energy Program, and hereby reports this action to the Board.

DESIGN AND MONITORING FRAMEWORK

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks
<p>Impact</p> <p>A more sustainable and inclusive energy sector created</p>	<p>By 2021:</p> <p>Proportion of renewable energy in the energy mix increased to 15% (2013 baseline: 7%)</p> <p>Percentage of the population with access to modern forms of energy increased to 85% (2013 baseline: 78%)</p> <p>Use of natural gas for power generation and transport increased</p> <p>PLN's financial status improves (as measured by key indicators such as debt-service coverage ratio, debt-equity ratio, and self-financing ratio)</p>	<p>Government publications</p> <p>ADB country dialogue and consultations</p> <p>PLN's annual audited financial reports</p>	<p>Assumptions</p> <p>The government reform agenda is maintained and sustained.</p> <p>Reforms initiated by the central government are effectively communicated and implemented in all regions and districts of the country.</p> <p>Risks</p> <p>Fall in global gas prices and greater access to cheap shale gas from the United States may lower preference for renewable energy expansion.</p> <p>Policy recommendations may be diluted or modified before the policies are issued.</p>
<p>Outcome</p> <p>A regulatory framework and policy actions for a more sustainable and inclusive energy supply prepared</p>	<p>By 2017:</p> <p>At least two implementing guidelines developed under the government's natural gas master plan promulgated</p> <p>At least two implementation rules for the geothermal sector submitted to the government</p> <p>Proposals for new tariff schemes and incentives for other renewables (e.g., solar photovoltaic and solar photovoltaic rooftop application, wind, biomass) presented to the government</p> <p>A new institutional framework including proposed allocation of dedicated financial</p>	<p>Government and steering committee reports</p> <p>TA completion report</p> <p>Feedback from development partners and stakeholders</p>	<p>Assumption</p> <p>Recommended actions will be accepted and endorsed by the government and other stakeholders.</p> <p>Risk</p> <p>Support for the TA recommendations may be inadequate.</p>

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks
	<p>resources for energy access programs in Eastern Indonesia submitted to the government</p> <p>Government accepts the road map for cost-reflective tariff for deliberation by Parliament</p>		
<p>Outputs</p> <p>1. More efficient energy markets enabled</p> <p>2. Road map for transitioning to cost-reflective electricity tariffs and energy prices developed</p> <p>3. Appropriate incentives and programs for scaling up grid-connected renewable electricity supply developed</p>	<p>By 2017:</p> <p>Guidelines prepared and draft of revised production-sharing agreement contracts (PSCs) prepared</p> <p>Draft guidelines for improved PSCs for shale gas and coal-bed methane development prepared</p> <p>Road maps and implementation plans for setting up a gas pricing scheme, tolling arrangement, and gas aggregator prepared</p> <p>Road map for cost-reflective tariffs and associated smart subsidy and social safety net programs prepared</p> <p>A financing plan for the power sector, including a plan for PLN, prepared and endorsed</p> <p>A road map for PLN to invest in demand-side management and decentralized generation prepared</p> <p>Implementing guidelines in support of the revised geothermal law developed</p> <p>Incentives and tariff-support for wind, biomass, and other grid-connected renewables developed (e.g., rooftop solar photovoltaic plants)</p>	<p>Official regulations and notifications</p> <p>TA progress reports</p> <p>Stakeholders' workshop</p> <p>Mission back-to-office reports and aide memoire</p>	<p>Assumptions</p> <p>Coordination between related ministries and stakeholders is effective.</p> <p>Local governments support the reform measures.</p> <p>Risks</p> <p>A global economic slowdown and the need to bolster Indonesia's growth rate may lead to opposition to increased tariffs from the country's politicians.</p> <p>Some regions in the country may not support a region-specific, cost-reflective tariff.</p>

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks
4. Regulatory and institutional framework for expanding energy access in Eastern Indonesia designed	<p>Electricity Law (No. 30/2009) reviewed to evaluate the emphasis on rural electrification and related amendments and related implementing regulations prepared</p> <p>An institutional and implementation model for rural electrification prepared</p>		
<p>Activities with Milestones</p> <p>1. More efficient energy markets enabled (January 2015–August 2017) 1.1 Review existing draft regulations on gas pricing, gas tolling arrangements, and gas aggregator 1.2 Undertake any requisite policy impact analysis, and support the government to develop regulations, including interagency dialogue and consultations 1.3 Draft the revised policy proposals and regulations for consideration by the government</p> <p>2. Road map for transitioning to cost-reflective electricity tariffs and energy prices developed (January 2015–November 2017) 2.1 Conduct stakeholder consultations, and review existing proposals (e.g., performance-based regulation) 2.2 Undertake quantitative policy analyses, and draft supporting regulations 2.3 Support passage of regulations and setting up of the required institutional, data gathering, and monitoring requirements 2.4 Undertake capacity development and training to phase in the new regulations and reporting requirements.</p> <p>3. Appropriate incentives and programs for scaling up grid-connected renewable electricity supply developed (January 2015–August 2017) 3.1 Review existing regulations, incentives, and programs 3.2 Undertake modeling and quantitative policy analyses to project impacts of policies and incentives 3.3 Draft the revised legal and regulatory framework and incentive structures</p> <p>4. Regulatory and institutional framework for expanding energy access in Eastern Indonesia designed (January 2015–April 2016) 4.1 Review the Electricity Law No. 30/2009, and hold stakeholder consultations 4.2 Review and consolidate existing resource surveys, investment plans, and least-cost energy plans 4.3 Design a proposed institutional arrangement for spearheading activities, and develop related draft regulations 4.4 Support regulatory approval, and support setting up of the institution 4.5 Help develop road map and crowd-in financing</p>			<p>Inputs</p> <p>ADB Technical Assistance Special Fund (TASF-other sources) \$1,000,000</p> <p>Note: The government will provide counterpart support in the form of counterpart staff, office space, reports and documents, secretarial assistance, local communication facilities, domestic transportation, and other in-kind contributions.</p>

ADB = Asian Development Bank, PLN = Perusahaan Listrik Negara (State Electricity Company), TA = technical assistance.

Source: Asian Development Bank.

COST ESTIMATES AND FINANCING PLAN
(\$'000)

Item	Amount
Asian Development Bank^a	
1. Consultants	
a. Remuneration and per diem	
i. International consultants	700.0
ii. National consultants	75.6
b. International and local travel	104.0
2. Workshops	20.0
3. Miscellaneous administration and support costs ^b	40.0
4. Contingencies	60.4
Total	1,000.0

Note: The technical assistance (TA) is estimated to cost \$1,100,000, of which contributions from the Asian Development Bank (ADB) are presented in the table above. The government will provide counterpart support in the form of counterpart staff, office space, reports and documents, secretarial assistance, local communication facilities, domestic transportation, and other in-kind contributions. The value of government contribution is estimated to account for 10% of the total TA cost.

^a Financed by ADB's Technical Assistance Special Fund (TASF-other sources).

^b The miscellaneous administration and support costs include (i) resource contracts to hire specialized expertise (e.g., for geothermal resource exploration or compressed natural gas distribution infrastructure) for very short-term work (5–10 days) through resource contracts; (ii) travel by ADB project team members to international energy policy events as resource persons to present analyses and findings obtained from the TA; and (iii) translation and interpretation expenses.

Source: Asian Development Bank estimates.

OUTLINE TERMS OF REFERENCE FOR CONSULTANTS

A. Background

1. The Asian Development Bank (ADB) seeks to hire a team of consultants to provide broad-ranging policy analyses and implementation support in the energy sector in Indonesia, with a focus on tariff schemes and incentives for large-scale grid-connected renewable energy, energy access and rural electrification, utility regulatory economics, energy prices and electricity tariffs, and natural gas supply and distribution. The consultants are expected to serve as advisors to a small group of senior officials in the Coordinating Ministry for Economic Affairs, the Ministry of Energy and Mineral Resources (MEMR), the State Electricity Company (PLN), the State Oil and Natural Gas Mining Company (PERTAMINA), and the Ministry of Finance.¹ They will provide analytical reviews of current policy prescriptions and proposed regulations, fill in gaps and draft new regulations as appropriate, provide the requisite orientation and training, and prepare policy notes and PowerPoint file explanations to support the dissemination of information by the policy proponents to other stakeholders within and outside the government. Further they will also assist CMEA to track the progress on various high priority energy sector projects and facilitate debottlenecking.

2. The consultants will have extensive experience in the development and implementation of energy sector regulations and policies. They will have to demonstrate direct experience in facilitating energy sector regulatory transformation in an Asian developing country context. They must have excellent written and oral communication skills in English. This will be especially important for the international consultants. The ability to work with different levels of government and with energy experts and non-experts (e.g., in public administration and finance ministries) is required. In-country experience in Indonesia and a working knowledge of the Indonesian language are preferable.

3. It is estimated that a total of 53 person-months of consulting services, comprising 38 person-months of services from international consultants and 15 person-months of services from a national consultant are required for undertaking the work. Of these inputs, 23 person-months of international consultant services and 15 person-months of national consultant services will be procured through an international firm.² The firm will be recruited in accordance with ADB's Guidelines on the Use of Consultants (2013, as amended from time to time), using quality- and cost-based selection (90:10) on the basis of a simplified technical proposal. In addition, an energy analyst (international) will be hired for 15 months, through an individual contract with ADB and be based in ADB's Indonesia Resident Mission in Jakarta. The technical assistance (TA) proceeds will be disbursed in accordance with ADB's *Technical Assistance Disbursement Handbook* (2010, as amended from time to time). The consultant will be responsible for administering the workshops that will be conducted under the TA. The TA will be implemented over 36 months from 1 January 2015 to 31 December 2017. Consulting inputs are to be delivered on an intermittent basis.

B. Consulting Services

4. The consultants' tasks will include but not be limited to the following:

¹ PLN = Perusahaan Listrik Negara, PERTAMINA = Perusahaan Pertambangan Minyak dan Gas Bumi Negara.

² An international energy analyst will be recruited as an individual consultant (15 person-months).

- (i) They will review the revised geothermal law and the new geothermal tariff regime and propose implementation rules and guidance for the MEMR to formalize and disseminate to all the stakeholders. This work is to be done in coordination with the World Bank's assistance to MEMR.
- (ii) Based on market conditions and the status of implementation of various other renewable energy-related regulatory measures, they will develop modifications and improvements, update or draft new regulations, and assist in the implementation of these new measures—for example, updated feed-in tariffs.
- (iii) They will review existing energy-efficiency measures, performance standards, and related work carried out by development partners. In close collaboration with the team implementing ADB's technical assistance for Asia Energy Efficiency Accelerator, they will develop a road map for scaling up energy efficiency measures in the country.³
- (iv) They will develop a regulatory framework for a national electrification rollout, including measures to accommodate off-grid and on-grid solutions, related technology standards, financial models, and implementation models. The models may include a dedicated entity that would be either stand-alone or within PLN.
- (v) They will develop a road map for phasing out electricity subsidies and put in place a scheme for economic tariffs in Indonesia. In doing so, they will draw on work conducted by ADB and the World Bank during 2013–2014. The tariff scheme will include provisions for smart subsidies for poorer sections of society and social safety nets—e.g., cash transfer programs such as one established in 2013 by the government.
- (vi) They will develop a basis for pricing fuels and natural gas and a road map for tariff setting, and conduct extensive consultations with key stakeholders to develop an awareness campaign.
- (vii) They will develop proposals for more efficient provision of public service obligation (PSO) payments to PLN, including such options such as performance-based regulation. This work is to be done in coordination with the World Bank.
- (viii) They will review current policy proposals for the upstream and downstream gas sectors and assist in transforming proposals to regulation.
- (ix) They will track the progress of high priority energy sector projects to be completed during 2015-2017 and develop a tracking platform and assist in debottlenecking. This work is to be done in coordination with JICA's infrastructure debottlenecking project at CMEA.
- (x) They will develop key documentation for a proposed ADB program loan, with subprograms slated for approval in 2015 and 2017, and update the country energy sector assessment, strategy, and road map document by the end of 2016.
- (xi) In carrying out their work, the consultants are expected to coordinate with the experts that are working on other ADB TA projects in Indonesia, including the TA for Scaling Up Renewable Energy Access in Eastern Indonesia,⁴ and the TA for Asia Energy Efficiency Accelerator. The outline terms of reference for each position are in paras. 5–12.

5. **Energy regulatory expert and team leader** (international, 9 person-months). The expert will assume primary responsibility for delivering the scope of work. This will include reviewing key sector-related issues, undertaking the requisite policy analyses, and organizing

³ ADB. 2013. *Technical Assistance for Asia Energy Efficiency Accelerator*. Manila (TA 8483-REG).

⁴ ADB. 2013. *Technical Assistance to the Republic of Indonesia for Scaling Up Renewable Energy Access in Eastern Indonesia*. Manila (TA 8287-INO).

and administering workshops and training related to the TA. The expert will (i) undertake tariff review and development of a road map for economic prices and/or tariffs for fuels and power, and (ii) develop the proposal for a sovereign-backed policy loan for the energy sector to be financed by ADB. The latter will include draft support analyses and documentation (e.g., policy matrices) and updating of the energy sector assessment, strategy and road map, with inputs from the team members. The candidate will preferably have (i) an advanced and interdisciplinary academic degree in engineering, energy economics, or public policy; (ii) prior experience with the power sector in Indonesia; (iii) at least two separate completed technical assignments in Indonesia; and (iv) more than 15 years of relevant professional experience. The team leader will oversee the work and outputs of the other team members and report to the ADB project officer in Jakarta.

6. **Renewable energy economics expert** (international, 2 person-months). The expert will review existing tariff support and incentives schemes for the deployment of geothermal, hydro, solar photovoltaic, wind, and biomass energy, compare these with regional and international best practice, and develop modifications and/or recommendations that can be the basis for updated regulations in Indonesia. The expert will carry out analyses of avoided costs, production cost curves for renewable energy, and the impact of preferential tariffs on subsidy demand. He or she will then prepare the analysis needed to support alternate regulatory proposals. The candidate will preferably have (i) an advanced academic degree in energy economics or industrial economics, (ii) prior experience with the power sector in Indonesia, (iii) at least one completed technical assignment in Indonesia, and (iv) more than 10 years of relevant professional experience. The expert will report to the team leader.

7. **Utility regulatory economics expert** (international, 3 person-months). The expert will review PLN's existing PSO payment framework and build off the analyses recently completed by the World Bank on PSO payments and a proposed performance-based regulation scheme. The expert will work closely with the Ministry of Finance, the MEMR, and PLN to develop and compare alternate methods to improve the efficacy, timing, and targeting of PSO payments; and to develop a revised structure that is based on consultation with all the stakeholders concerned. The candidate will preferably have (i) an advanced academic degree in energy economics or regulatory economics, (ii) prior experience with the power sector in Indonesia, (iii) at least one completed technical assignment in Indonesia, and (iv) more than 10 years of relevant professional experience. The expert will report to the team leader.

8. **Energy access expert** (international, 4 person-months). The expert will review existing work on energy access programs in Indonesia, including work under the ADB TA for scaling up renewable energy access in Eastern Indonesia and work undertaken by the World Bank. Based on regional and international best practice, the expert will develop a road map for the rollout of a comprehensive national program in Indonesia, including regulatory requirements, an institutional model, investment cost estimates, and technology options. The focus of the work is to draw on existing analyses and turn this into policy guidance and implementation guidance that the government can then institutionalize. The candidate will preferably have (i) an advanced academic degree in engineering, environmental science, public policy, or law; (ii) prior experience with energy access programs in at least two developing countries; and (iii) more than 10 years of relevant professional experience. The expert will report to the team leader.

9. **Power engineer** (international, 2 person-months). The engineer will support the evaluation of demand-side energy-efficiency measures and distribution optimization measures, such as smart grids and meters and solar rooftop photovoltaic plants. Specifically, the engineer will conduct a prefeasibility level analysis for an investment program targeting 1 or 2 urban

areas in the country that can be the focus of an output-based or results-based lending program by ADB. The engineer will also provide technical inputs on rural distribution systems and considerations to the energy access specialist. The candidate will preferably have (i) an advanced academic degree in electrical engineering, (ii) prior experience with distribution programs in at least two developing countries, and (iii) more than 10 years of relevant professional experience. The engineer will report to the team leader.

10. **Natural gas regulatory expert** (international, 3 person-months). The expert will support the development and refinement of regulations in the gas sector that will enable greater private sector participation and efficiency improvements in both the upstream and downstream natural gas markets. The government's natural gas master plan has identified several near-term priority areas, such as gas pricing, gas aggregator, and tolling arrangements, as well as revision of the existing production sharing contract terms. The expert will review these proposals and then work with the government to highlight policy impacts, enable broad interagency support for these proposals, and support the drafting of regulations. The candidate will preferably have (i) an advanced academic degree in engineering, economics, public policy, finance, or law; (ii) prior experience with upstream and downstream natural gas issues in at least two developing countries; and (iii) more than 10 years of relevant professional experience. The expert will report to the team leader.

11. **Research assistant** (national, 15 person-months). The assistant will help coordinate meetings with the government, development partners, the private sector, and civil society. The assistant will help with outreach and communication activities, support intra-team communication, prepare final presentations of graphics and tables, finalize PowerPoint presentations for workshops and training programs, and support the experts during their in-country visits. The candidate will preferably have (i) a bachelor's degree in a related discipline, (ii) prior experience and contacts within the energy sector in Indonesia, (iii) a high degree of proficiency in spoken and written English, and (iv) at least 3 years of experience. The assistant will report to the team leader and ADB project officer and be based in CMEA's offices in Jakarta.

12. **Energy analyst** (international, 15 person-months). This position will be filled through the direct hiring of an individual consultant by ADB. The analyst is meant to support all the other experts by conducting background research, undertaking analysis, developing sections of reports, and maintaining a database of reference material. The candidate will preferably have (i) a master's degree in a related discipline, (ii) prior experience with energy sector programs and international development, and (iii) at least 3 years of relevant professional experience. The analyst will report to the team leader and ADB project officer and be based in ADB's offices in Jakarta.

C. Reporting Requirements

13. An inception report will be prepared within 30 days of initiation of the TA project's activities to detail the priority tasks, key milestones, and related timelines. The consultants should consider identifying preliminary key policy actions for the proposed program loan across the different subsectors. A midterm report will be prepared within 18 months of commencement of the study and a final report within 30 months. They will contain the necessary policy recommendations in the form of policy notes, supporting analyses, and implementation plans. Key documentation for a proposed program loan with two tranches (\$400 million each) will be prepared, according to ADB documentation requirements. Other reports, knowledge products, and policy briefing notes will be prepared as required by ADB and the government. The country energy sector assessment, strategy, and road map document will be updated by the end of 2016.