

ENERGY SECTOR PROGRAM ASSESSMENT*

A. Introduction

1. Purpose of the Sector Program Assessment

1. The Independent Evaluation Department (IED) has prepared a country assistance program evaluation (CAPE) to provide the Asian Development Bank (ADB) Board of Directors and Management with an independent assessment of past operational performance in Indonesia. The CAPE findings and recommendations will be an input into the preparation and design of the new country partnership strategy (CPS) that will guide ADB operations in Indonesia from 2020 to 2024. Specifically, the CAPE (i) provides an independent assessment of the performance of ADB's country programs and identifies factors affecting performance, and (ii) draws forward-looking lessons and makes recommendations for the next CPS.

2. The CAPE was the second independent evaluation of ADB's country strategy in Indonesia and assessed the outcome of ADB support from January 2005 to December 2018.

2. Country Strategy Objectives and Focus Areas

3. The strategic objectives, cross-cutting themes and drivers, and focus areas and primary sectors set out in these country planning documents are summarized in Table 1.

Table 1: Key Objectives and Areas of Engagement of ADB Country Strategies, 2006–2018

CSP, 2006–2009	CPS, 2012–2014	Interim CPS, 2015	CPS, 2016–2019
Strategic objectives			
Higher pro-poor sustainable growth and social development	Inclusive growth and environmentally sustainable development with climate change mitigation and adaptation	Inclusive growth and environmentally sustainable development	More inclusive and environmentally sustainable growth
Sector Focus			
(i) Infrastructure, (ii) financial sector deepening, (iii) decentralization of government functions, (iv) Millennium Development Goals, and (v) environment and natural resources	(i) Agriculture and natural resources, (ii) vocational education, (iii) energy efficiency and renewable energy, (iv) access to finance, (v) transport and trade logistics, and (vi) access to water supply and sanitation	(i) Infrastructure development (energy sector policy, clean energy, agricultural water supply); (ii) human development, skills, urban health and sanitation; and (iii) enabling economic policies (capital markets, financial inclusion)	(i) Infrastructure services (energy efficiency, clean energy, rural irrigation, bulk water supply, urban sanitation, support for higher value agriculture and aquaculture); (ii) economic governance (public sector management, service delivery, business environment, finance sector strengthening, and financial inclusion); and (iii) enhanced human resource development (education quality and skills development, social protection and health services)

CSP, 2006–2009	CPS, 2012–2014	Interim CPS, 2015	CPS, 2016–2019
Thematic Focus			
Governance and anticorruption Mainstream strengthening national and subnational governance in all operations; Address corporate governance issues in lending to state owned enterprises; Include substantial governance components in program loans; Promote anticorruption efforts and accountability of regional governments	Deepen partnerships with development partners; knowledge management (providing advisory assistance and sharing good practices); governance and capacity development (managing financial management systems and fiduciary risks at local and national level); gender equity; regional cooperation	Same as that of CPS 2012–2014 Public sector management and governance Knowledge services to assist the government in using its resources efficiently and effectively.	Climate change and environment, Private sector development, Good governance, Knowledge partnerships, Gender equity and Regional cooperation CPS will be focused to maximize the value addition and catalytic role of ADB assistance given that ADB lending under the CPS is less than 1% of public investment

ADB = Asian Development Bank, CPS = country partnership strategy, CSP = country strategy and program.

Source: Asian Development Bank.

4. A shift to budget support related to public sector management (PSM) was seen during the CPS, 2006–2009, but a gradual shift back to project investments was expected in later CPSs.

5. CPS, 2012–2014 had anticipated a shift from program to project lending but during implementation the country context changed, leading to more demand for budget support from the government. Deficit financing requirements increased due to the strain on the current account, devaluation of the rupiah, and high global petroleum prices. The Interim CPS in 2015 was consistent with CPS, 2012–2014 and focused on (i) infrastructure development, (ii) human development, and (iii) policies enabling economic activities.

6. CPS, 2016–2019 focused on (i) improved infrastructure services, (ii) better economic governance, and (iii) enhanced human resource development—the three high-priority areas identified by Indonesia’s National Medium-Term Development Plan, 2015–2019. Policy-based lending (PBL) remained the preferred lending modality over the evaluation period, and the focus of this was mostly on finance, capital market development, and PSM. PBL accounted for 74% of total lending volume during 2005–2018. The CPS noted that the tilting of the lending program toward policy-based loans was partly due to the government’s perception of the high transaction costs of conventional projects, land acquisition issues, as well as the government’s preference for the use of country systems.

7. In line with evolving CPS strategic priorities, the sectoral evolution of the lending portfolio during the evaluation period has shown a continuing focus on energy, with the technical assistance (TA) portfolio closely aligned with the lending portfolio.

3. Methodology

8. The CAPE covers all sovereign loans and grants, nonsovereign loans and investments, and TA approved during 2005–2018. The CAPE also assesses knowledge products and services produced during the period. This sector assessment covers the entire energy program. Table 2 summarizes the energy portfolio.

Table 2: Asian Development Bank Energy Portfolio, 2005–2018

Item	Amount (\$ million)
Sovereign Lending	2,774.5
Grants	10.6
Technical Assistance	20.1
Sub-total	2,805.2
Nonsovereign Lending	1,764.2
Total	4,569.4

Source: Asian Development Bank.

9. ADB’s energy program (sovereign and nonsovereign operations) in Indonesia is largely ongoing and there are few self-assessed project completion reports (PCRs), TA completion reports (TCRs), or extended annual review reports (XARRs). Hence most information has been taken from reports and recommendations of the President (RRPs), TA reports, and stakeholder interviews (including those from other donors), as well as from visits conducted in Indonesia. Site visits were conducted in Lombok on one ongoing sovereign loan.

B. Sector Context

1. Background

10. Since Indonesia emerged from the Asian financial crisis of 1997–1999, the nation’s economy has grown at more than 5% per year and has more than doubled in size since 2000, from \$2,000 per capita to \$4,350 in 2017.¹ This economic growth has been accompanied by massive growth in the nation’s power supply system and an increase in electricity consumption from 79.2 terawatt-hours (TWh) in 2000 to 223.1 TWh in 2017,² an average of 845 kilowatt hours (kWh) per capita. However, Indonesia’s provision of public services, in infrastructure, welfare, and education has been poor. This is to a large degree attributable to energy subsidies that took funds away from investment in infrastructure, social welfare, and education. The subsidies also had adverse impacts on the energy sector itself by overstimulating consumption and by fostering wasteful uses of energy.

11. The country struggled to put in place an appropriate planning or policy framework to meet its energy challenges in an affordable and inclusive way during its period of economic growth in 2000–2014. The lack of comprehensive planning to integrate fuel- and electricity-related issues had led to lopsided priorities, ad hoc decision making, and resulting suboptimal investments in infrastructure. Regulatory uncertainty and an uneven playing field favouring state-owned companies meant that the private sector mostly stayed away from the energy sector. In addition, those projects that did get under way often ground to a halt as they encountered a tangle of permitting and licensing obstacles and poor coordination between central and local government agencies. Subsidized energy and electricity prices gave rise to runaway demand. State-owned monopolies that were being regulated on a cost-plus margin formula had no incentive to manage this demand or to become more efficient.

12. The government is now addressing many of the issues precipitated by the subsidies and the growth in energy consumption. Most importantly, the government has slashed subsidies for petroleum products and electricity from about \$27 billion in 2014 (15% of total national government expenditure) to approximately \$3.2 billion in 2017.³ The removal of subsidies is reducing uneconomic uses of energy and is enabling the government to invest in productive infrastructure. The energy sector continues to face formidable challenges. These include (i) providing power to the more than 30 million people who still

¹ <https://tradingeconomics.com/indonesia/gdp-per-capita>

² CEIC. Indonesia Energy Consumption (<https://www.ceicdata.com/en/indonesia/electricity-consumption/electricity-consumption-total>).

³ The Ministry of Energy and Mineral Resources (MEMR) expects this to increase to \$5.7 billion in 2018, as a result of the freeze in tariff increases to poor households and the increase in generation cost. IED meeting with MEMR, 29 March 2019.

lack access to electricity; (ii) ensuring the financial viability of the sector in the face of growing investment needs; and (iii) promoting cleaner forms of indigenous energy to meet the country's international climate change commitments, reduce environmental degradation, and enhance energy security.

13. Indonesia's energy sector is low on inclusiveness when compared with other members of the Association of Southeast Asian Nations (ASEAN), who have generally achieved universal access. Although Indonesia is making steady progress and attained an 88.3% electrification ratio⁴ by the end of 2015, the electrification approaches that have served the nation so well until now need to be modified to address the task of providing access to electricity for the remaining 30 million people, many of whom live below the poverty line and in undeveloped areas and/or isolated islands.

2. Power Sector

14. **National energy priorities.** Expanded electrification with priority given to regions outside Java is an important pillar of the government's infrastructure investment plan. The plan includes increasing the electrification ratio from 89% in 2016 to near 100% by 2024, 56 gigawatts (GW) of new power generation capacity by 2028, and an increased share of renewable energy in the national energy mix from 13% in 2016 to 23% in 2025.⁵ Independent power producers are expected to account for 34 out of 56 GW of this new capacity with over \$40 billion of private sector financing. In line with the government emphasis on strengthening infrastructure and providing electricity to all, including the eastern provinces in its mid-term development strategy (2015–2019), the government-owned State Electricity Company (PLN), formulated a plan to add 35 GW of generating capacity.

15. However, serious delays in meeting the capacity addition target are likely. The plan for implementing the 35 GW target—as envisaged by the Committee for Acceleration of Priority Infrastructure Delivery (KPPIP)—entails private sector involvement in developing 26.6 GW as independent power projects (IPPs), while 8.6 GW are to be developed through traditional public sector projects. For IPPs, the government will not offer any sovereign guarantees and there is no viability gap fund either; hence it is difficult to see a rapid expansion of IPP capacity.

16. The 35 GW target does not include renewables, which can help increase electricity access, especially in eastern provinces and are an integral part of the government's commitment to meeting its greenhouse gas (GHG) emission reduction commitments. The current tariff for renewables is set at 85%⁶ of the average cost of generation for a particular power system. This means that the renewable energy tariff is much lower than the cost of renewable energy in areas where coal-fired generation is predominant (i.e., the average cost of generation is about Rp1,000 per kWh). However, in remote areas currently served by diesel (where the average cost of generation is \$0.27 or >Rp3,500 per kWh), the tariff is attractive for small scale integrated solar and diesel systems, solar and storage systems, or wind farms.

17. An exception to the above is the tariff for waste-to-energy, which is set at \$0.135 per kWh, as per a presidential decree to override the tariff set for other renewables.

18. In early 2019, there was a capacity surplus in Java and electricity deficits in many eastern provinces. As the electrification rate in Java is very high (99%), the proposed interconnection with Bali will alleviate some of the surplus. There is also potential for Java to connect with Sumatra, but this has not gone beyond the feasibility stage.

19. There are still significant numbers of the population without access to electricity. In meeting the government's 100% electrification program by 2020, primarily to provide electricity in Indonesia's far-flung areas that are still off the national grid, the Electric Power Supply Business Plan outlines the use of

⁴ Measured at the village level.

⁵ MEMR, National Energy Master Plan 2017, and the Electric Power Supply Business Plan 2019–2028 of the PLN.

⁶ MEMR meeting memorandum, 29 March 2019.

communal solar electricity stations, tower photovoltaic (PV), and solar home systems. In 1997 Indonesia launched the “50 MWp One Million Roof Program,” AusAID and the World Bank targeted 400,000 and 200,000 units respectively but installed only 36,400, and 8,540 units. Lack of concessional funding, and the sharp decline in the rupiah caused these initiatives to fail⁷ and the units have fallen into disrepair due to lack of maintenance. The government donated a large number of solar systems to Aceh survivors in 2014; however, the lack of maintenance and trained service people left a large proportion of these unusable.

3. Energy Sector Constraints

20. The key constraints include: (i) poor fiscal sustainability of subsidies and inadequate governance, (ii) an uncertain and high-cost regulatory environment that discourages private sector investment in power and gas markets, and (iii) a regulatory environment that is not conducive to expanding access to clean energy options.

21. Indonesia has lagged in the development of fuels such as natural gas and in the developing its widespread renewable energy resources: geothermal, solar, wind, biomass, and waste-to-energy in favour of increased reliance on the more straightforward development of coal-fired generation capacity.⁸

22. The government of Indonesia is dealing with the legacy of its response to the Asian financial crisis of 1997–1998 and from Indonesia’s switch from becoming an oil exporter in 2004 to steadily increasing its reliance on oil imports. In 2001, the government started providing direct subsidies in order to protect consumers from the impacts of increasing energy prices. At its peak in 2013, the government was spending approximately Rp300 trillion (\$30 billion) on energy subsidies, equivalent to 2.5% of the gross domestic product (GDP). In 2010, GDP growth rates peaked at 6.4%, thereafter there has been a slow but steady decline that continues to this day. At the same time, Indonesia has performed poorly in a number of health and infrastructure areas, particularly in outlying islands where provision of services is challenging and costly.⁹ The country’s poor performance in infrastructure was largely attributable to subsidies for energy consumption, which take funds away from investment in infrastructure, social welfare, and education.¹⁰

a. Power Sector

23. In the power sector, the value of subsidies provided to PLN peaked in 2012 when they met some 46% of PLN’s financial costs. PLN’s pricing of electricity was below the level that would have helped encourage investment in renewable energy. Economic pricing of power supply would also have helped improve the profitability of developments in remote locations, where costs of supply significantly exceed PLN’s average financial costs.

24. The sheer magnitude of subsidies for consumption not only increasingly constrained the government’s capacity to support development of infrastructure but also obscured the importance of ensuring that PLN could generate sufficient funds from internal sources and strengthen its ability to leverage returns and fund investment in power supply facilities. Continued investment was needed to

⁷ Outhreda, H. and Retnanestria, M. *Insights from the Experience with Solar Photovoltaic Systems in Australia and Indonesia*. University of New South Wales. Sydney.

⁸ Coal is therefore expected to contribute 60% of the energy mix in 2019 compared with 48% in 2014.

⁹ Center of Logistics & Supply Chain Studies. *State of Logistics Indonesia*. 2013. Indonesia’s infrastructure gap remains wide compared to its peers, particularly in transport and power. Logistics costs account for about 24% of GDP in Indonesia, compared to Thailand (20%), the People’s Republic of China (18%), and Malaysia (13%).

¹⁰ World Economic Forum. 2015. *Global Competitiveness Report 2014–2015*. Geneva (“Well-developed infrastructure reduces the effect of distance between regions, integrating the national market and connecting it at low cost to markets in other countries and regions. In addition, the quality and extensiveness of infrastructure networks significantly impact economic growth and reduce income inequalities and poverty. A well-developed transport and communications infrastructure network is a prerequisite for the access of less-developed communities to core economic activities and services”).

meet both the ongoing rapid growth in demand for electricity as well as to increase the rate of electrification.

25. Another major shortcoming of the government's policy of paying subsidies to meet the difference between PLN's tariff revenue and its production costs was that PLN had little, if any, financial incentive to reduce costs and/or improve its operating efficiency. The Ministry of Energy and Mineral Resources (MEMR) has issued progressively stringent regulations on PLN service quality (Permen ESDM 33/2014 and 8/2016) and PLN continues to make progress in improving the efficiency of its operations, by strengthening transmission interconnections to reduce losses and enable a move away from use of oil and other expensive fuels toward generation in power stations with lower production costs.

26. The low electricity selling price, coupled with cumbersome licensing procedures, also discouraged potential private investment in energy supply initiatives. Detailed implementation guidelines are often delayed by years, creating regulatory uncertainty for private sector investors. Once initiated, projects encountered cumbersome licensing procedures and challenges in permitting, licensing, land acquisition, and environmental approvals, caused by overlapping jurisdictions among ministries, agencies, and different levels of government.

27. The government recognized that coordination and regulations by multiple ministries and difficulties in land acquisition were hindering the development of private sector development in Indonesia. To overcome these obstacles, in 2014 the government formed the KPPIP, which was charged with leading coordination to accelerate priority infrastructure and promoting improvements in quality of project preparation. The coordinated government approach has resulted in a significant reduction in the time it takes to acquire land for private sector projects.

28. Until recently, setting up a private power project in Indonesia involved over 50 licenses, and required over 3 years to complete. To help overcome the licensing and other approval hurdles that have delayed IPPs in the past, the government has set up a national one-stop shop as well as 33 provincial one-stop shops that enable developers to fast-track handling of license applications. In 2016, selected energy projects were further streamlined through the one-stop shop's 3-hour expedited licencing process.

b. Clean Energy (Renewable Energy and Energy Efficiency)

29. Indonesia is well endowed with renewable resources. Hydropower and geothermal energy have the greatest potential. In spite of Indonesia's renewables potential, the share of renewables in electricity generation amounted to 15% of total generation in 2002 but declined to around 10% in 2015, due mainly to slower growth in hydropower and geothermal utilization when compared with coal.¹¹

30. Indonesia's need for electrification in remote areas means that distributed and off-grid solar photovoltaic (PV) applications have substantial potential to either displace costly diesel-fired generation and/or provide un-electrified households with PV lighting systems. PV mini-grids are expected to feature prominently in the government's rural electrification program.

31. Although the Energy Law in 2007 laid out a clear hierarchy of policy and planning requirements, implementation has been fragmented. Institutional factors, including uncoordinated planning among a large number of ministries impede clean energy planning and program development.¹² Besides, the government has prioritized provision of funds provided to the energy sector for subsidies rather than promotion of renewables.

¹¹ PLN's geothermal and hydropower production as a proportion of its total production in 2015.

¹² The law stipulates a national energy policy that will in turn guide a national energy plan. This energy plan serves as the basis for a national electricity plan, which then guides utility business plans. The law also stipulates a parallel regional policy and planning framework for local implementation of the national policies and plans.

32. **Scope for demand-side efficiencies.** Before they were significantly reduced by MEMR¹³ in 2016, electricity subsidies worked against improvements in the efficiency of electricity use. The National Energy Conservation Master Plan envisaged that improvements in the energy efficiency of domestic appliances, street-lighting, and other high-energy users could reduce energy consumption by 2025 by as much as 17% as compared with a business-as-usual scenario.¹⁴

c. Gas and Oil Sector

33. Natural gas, which accounts for about 16% of Indonesia's total primary energy supply, is facing rapidly growing domestic demand. The country is a mature player in the natural gas industry and has been present in the global liquefied natural gas (LNG) market since 1977. It was the world's largest LNG supplier before Qatar surpassed it in 2006. The country is still the largest gas producer in Southeast Asia and benefits from ample gas reserves. Indonesia's current gas resources are 135.55 trillion standard cubic feet (TSCF), spread across several locations with proven reserves of 99.06 TSCF.

34. Despite this, Indonesia's natural gas production has remained virtually static for many years and has declined recently: production in 2004 was 1.44 million barrel of oil equivalent (BOE) per day compared with 1.22 million BOE per day in 2014.¹⁵ Consequently the country is facing a shortage as the domestic appetite for natural gas necessitates a re-routing of gas supplies from export markets to domestic markets. Significant obstacles to reversing recent declines in gas production exist, such as the high costs of production of stranded and marginal gas resources, heavy carbon dioxide content in some new fields, and a lack of infrastructure to bring gas to market. There is also increasing uncertainty over the extension of older production sharing contracts (PSCs) which are now nearing their end. Delays in renegotiating expiring gas PSCs and a lack of clear procedures for renegotiation have discouraged investment and led to decreased production.¹⁶

35. The regulated domestic pricing regime and the prioritization of gas for certain sectors complicates and extends the government approval process. Domestic market "obligation" gas sales to end users hinder increases in gas production while driving growth in domestic demand. New PSCs require producers to supply 25% of production to the domestic market. This domestic gas is sold at prices individually negotiated by the supplier and the consumer and approved by MEMR. Until the last few years these prices were consistently below the gas export price. The increased consumer demand for natural gas, particularly for the electricity sector, requires a renewed focus on developing additional supplies.

36. Crude oil production in Indonesia has been on a downward trend for the past decade, with most oil production now coming from mature fields. As a result, the country became a net oil importer in late 2004. Despite the government's efforts to stimulate exploration by offering new acreage and a joint study facility, these initial incentives have not been particularly successful in attracting new investors.

C. ADB Energy Sector Program Strategies and Portfolio

1. ADB's Experience in the Sector

37. **ADB operations.** ADB sovereign projects and programs approved during the CAPE period were as follows:

¹³ MEMR has issued Permen ESDM Nos. 28/2016 and 29/2016. These remove subsidies for all consumers except for who qualify in the 450 VA category.

¹⁴ MEMR Workshop on Renewable Energy and Energy Efficiency and Conservation. The 4th BIMP-EAGA Power and Energy Infrastructure Cluster Meeting, February 2016.

¹⁵ Production data from the Directorate General for Oil and Gas, MEMR.

¹⁶ PSCs form the basis for sharing of revenues between developers and the government. Twenty-nine PSCs will expire by 2020 and developers are unwilling to make further investments without guaranteed long-term revenue streams.

- (i) The Java–Bali Distribution Improvement Project (approved in March 2010). The project was designed to reduce carbon dioxide (CO₂) emissions by lowering technical losses in the Java–Bali distribution network. It also included a pilot program to reduce peak demand in island networks by promoting energy efficient lighting for residential consumers.
- (ii) The Low Carbon and Resilient Development Program (approved in November 2011). This was cancelled in December 2011 at the request of the government.
- (iii) The West Kalimantan Grid Strengthening Project (approved in August 2013). The project intended to use electricity imported from Malaysia to reduce energy costs by replacing expensive diesel generation thereby improving affordability.
- (iv) The Java–Bali 500 kilovolt Transmission Project (approved in December 2013). The project intended to transport excess generation from Java to Bali and replace much of the high-cost generation in Bali. The project included significant system strengthening on both Java and Bali to allow for projected increased loads.
- (v) Four policy-based loans that included budget support for the Ministry of Finance through the Sustainable and Inclusive Energy Program, Subprograms 1 (approved in September 2015) and 2 (approved in September 2017).
- (vi) Two results-based loans (approved in December 2015) and two more (approved in September 2017) used by PLN to increase electricity access to consumers in Sumatra and in Eastern Indonesia through distribution network enhancements. The first two loans were the first instance of this loan modality.

ADB nonsovereign loans approved during the CAPE period were as follows:

- (i) The Tangguh Liquefied Natural Gas Project (approved in December 2005).
- (ii) The Sarulla Geothermal Project (approved in November 2013).
- (iii) Two loans for the Rantau Dedap Geothermal Development Project, the second of which included a rollover of a previous investment (approved in June 2014).
- (iv) A loan for HSBC Bank USA, National Association (Tangguh Liquefied Natural Gas Expansion), approved in December 2016.
- (v) Five loans for Vena Energy (formerly PT Energi Bayu Jeneponto), Phase 1 and Phase 2 were approved in November 2017 and April 2018 for wind and solar projects.
- (vi) The PT Jawa Satu Power (Jawa-1 LNG-to-Power) Project, approved in August 2018.
- (vii) The PT Medco Ratch Power Riau (Riau Natural Gas Power) Project, approved in December 2018.

ADB TA projects approved during the CAPE period were as follows:

- (i) Java Bali 500 kilovolt Power Transmission Crossing Project, project preparatory TA, (approved in August 2009).
- (ii) Geothermal Power Development Project, project preparatory TA (approved in August 2010).
- (iii) Implementing Effective Climate Change Adaptation Policy, capacity development TA (approved November 2011).
- (iv) Scaling Up Renewable Energy Access in Eastern Indonesia, capacity development TA (approved December 2012).
- (v) Planning a Pilot Carbon Capture and Storage Activity, capacity development TA (approved July 2013).
- (vi) Sustainable and Inclusive Energy Program, policy and advisory TA (approved December 2014).
- (vii) Supporting Sustainable Infrastructure Assistance Program - TA Cluster Management Facility (Subproject 1), policy and advisory TA (approved June 2013).
- (viii) Development of West Timor Wind Power, project preparatory TA (approved March 2015).
- (ix) Eastern Indonesia Sustainable Energy Access Sector Project, project preparatory TA (approved March 2016).
- (x) Banten and South Sulawesi Wind Power Development, project preparatory TA (approved April 2016).

- (xi) Strengthening Verification in Results-Based Programs in Indonesia (Subproject 8), capacity development TA (approved May 2016).
- (xii) Pilot Carbon Capture and Storage Activity in the Natural Gas Process, project preparatory TA (approved September 2016).
- (xiii) Scaling Up Energy Efficiency, policy and advisory TA (approved September 2017).
- (xiv) Sustainable Infrastructure Assistance Program- Indonesia Energy Sector (Subproject 14), policy and advisory TA (approved April 2018).
- (xv) Sustainable Infrastructure Assistance Program - Supporting Sustainable and Universal Electricity Access in Indonesia (Subproject 13), project preparatory TA (approved August 2018).

D. Evaluation of ADB's Energy Sector Program in Indonesia

38. The assessment evaluated performance against five criteria: relevance, efficiency, effectiveness, sustainability, and development impact.¹⁷ This section rates the ADB projects collectively against each of the criteria and provides a justification for the rating.

39. The assessment of the performance of ADB's sovereign support to the energy sector was based on eight sovereign loans (which included six cofinancing loans), four of which have closed. Only one loan had a PCR and this was validated as *successful*. Of the 15 TA projects, nine had been completed (six had TA completion reports).

40. ADB's nonsovereign operations included 11 loans, of which 8 had been fully disbursed. One project had been evaluated and verified.

1. Relevance

41. ADB's sovereign and nonsovereign support for Indonesia's energy program was *relevant* in terms of its alignment with national priorities and consistency with ADB's sector and country strategies and donor and government coordination. The relevance of the design and modality as well as support for capacity development were also considered.

42. At the strategic level, ADB's Strategy 2020 sought to help developing member countries meet their growing energy demands in a sustainable manner by (i) supporting an expansion of energy supply through rehabilitated and expanded transmission and distribution facilities; (ii) promoting energy efficiency through supply-side and demand-side measures; (iii) supporting clean energy; and (iv) facilitating the removal of policy, institutional, regulatory, technological, and legal constraints on promoting efficient energy use and promoting regional cooperation.

43. ADB's country strategies and programs have supported Indonesia's energy and other infrastructure sectors (Table 1). ADB's CPS, 2016–2019 focused on (i) improved infrastructure services, (ii) better economic governance, and (iii) enhanced human resource development—the three high-priority areas identified by the National Medium-Term Development Plan, 2015–2019.

a. Relevance of Sovereign Operations

44. The Java Bali Distribution Improvement project approved in March 2010 contributed to ADB's and Indonesia's policies on climate change by increasing the efficiency of the largest power grid in Indonesia by reducing technical losses. These reductions decreased the emission of GHG per unit of power consumed. The intended outcome was aligned with the government's development strategy and ADB's country and energy sector strategies. The project is rated *relevant*.

¹⁷ IED. 2015. *Guidelines for the Preparation of Country Assistance Program Evaluations and Country Partnership Strategy Final Review Validations*. Manila: ADB.

45. The West Kalimantan Grid Strengthening Project was rated *relevant* by the CAPE. The loans were relevant to ADB's continued support for regional cooperation. The project was also aligned with ADB's energy sector assessment strategy and road map and the Brunei Darussalam-Indonesia-Malaysia-Philippines East ASEAN Growth Area (BIMP-EAGA) blueprint,¹⁸ which made improving infrastructure facilities a priority and power interconnection a key strategic pillar. The project was also in line with the ASEAN Connectivity Plan.¹⁹ ADB supported investment in strategic transmission assets that connected regions or countries to optimize power networks by removing transmission bottlenecks and transmitting cheaper power from one area to the other, thereby helping achieve overall regional socioeconomic and environmental improvement. This project was consistent with ADB's CPS, 2012–2014²⁰ and country operations business plan (COBP), 2013–2014,²¹ which supported the government's economic growth target of 6.3%–6.8% per annum in 2010–2014 and targeted 7% after 2014. The project was also consistent with ADB's Energy for All Initiative.²²

46. The Java-Bali 500 Kilovolt Transmission Project was rated *relevant* by the CAPE. The development of power infrastructure required to relieve power supply constraints and regional transmission interconnection projects is an integral part of the ADB energy sector strategy to reduce the overall generation reserve requirements, improve system stability and reliability, and enable transmission of comparatively cheaper and less polluting power from one area to another. The project was consistent with ADB's CPS, 2012–2014 and COBP, 2013–2014 for Indonesia.

47. The policy-based loans for the Sustainable and Inclusive Energy Program, Subprograms 1 and 2 were *relevant* to restarting the development of energy infrastructure which has been a drag on development since 2000. Promoting energy security was one of three strategic pillars in the CPS, 2015–2019. The CPS said that, to improve energy security, ADB would help the government to (i) undertake sector policy reform to make access to energy sustainable and inclusive; (ii) strengthen the reach, reliability, and efficiency of the nation's electricity grid; and (iii) enable greater use of clean sources of primary energy, particularly in hydropower, geothermal, and gas-fired power generation. ADB would also provide TA for activities to expand energy efficiency, carbon capture and storage, and access to electricity. These priorities were aligned with ADB's 2014 Midterm Review of Strategy 2020, which emphasized the need for inclusive economic growth, infrastructure development, and policy-based engagements in middle-income countries. In addition, ADB planned private sector operations to support the expansion of LNG production in eastern Indonesia and other gas and renewable energy projects. The program would complement and underpin ADB's proposed project loans during 2015–2019 for geothermal, hydropower, and gas-fired power generation projects, as well as results-based loans for strengthening the electricity grid that would use a new government modality providing a sovereign guarantee to state-owned enterprises. The program represented a coordinated effort by several development partners to support the government's reform agenda.

48. The results-based loans to support PLN to increase electricity access to consumers in Sumatra and in Eastern Indonesia were *relevant* and part of a larger medium-term package of ADB support for strengthening Indonesia's electricity grid and increasing access for consumers in more remote areas in the eastern regions of the country. The loans complemented the broader policy reform support being provided by the policy-based loan series and the strategic project investments in gas-fired power generation and renewable energy power plants approved and being planned during 2015 to 2019. The Sustainable and Inclusive Energy Program enabled the development of private sector renewables which

¹⁸ BIMP-EAGA. 2012. *BIMP-EAGA Implementation Blueprint, 2012–2016*. <http://bimp-eaga.org>. The ASEAN Secretariat, August 2012. ASEAN Connectivity. Jakarta.

¹⁹ ADB. 2012. *Country Partnership Strategy: Indonesia, 2012–2014*. Manila.

²⁰ ADB. 2012. *Country Operations Business Plan: Indonesia, 2013–2014*. Manila.

²¹ ADB. 2012. *Country Partnership Strategy: Indonesia, 2012–2014*. Manila, and ADB. 2012. *Country Operations Business Plan: Indonesia, 2013–2014*. Manila.

²² <http://www.adb.org/sectors/energy/programs/energy-for-all-initiative> (Increasing Access to Electricity).

are being connected to the infrastructure funded by the results-based loans. The results-based loans were included in ADB's COBP, 2015–2017 for Indonesia and aligned with the priorities outlined in the interim CPS, 2015. They were intended to finance a slice of the overall broader program needs, as identified in PLN's Electric Power Supply Business Plan, 2016–2025 for grid development in Eastern Indonesia; and the National Medium-Term Development Plan, 2015–2019.

b. Relevance of Nonsovereign Operations

49. The Tangguh Liquefied Natural Gas Project was highly *relevant* as it was guided by the government's five priority areas to achieve sustainable economic growth. The project supported and contributed to the promotion of ADB's operational priorities, particularly by (i) generating substantial financial benefits for both the central and local governments to enable sustainable economic growth, which can reduce poverty, as well as by directly assisting various poverty reduction initiatives in Irian Jaya; (ii) supporting the government policy of restructuring the oil and gas subsector with the largest private sector investment since the financial crisis in 1997; and (iii) supplying clean energy to countries in the region.

50. The loan for HSBC Bank USA, National Association (Tangguh Liquefied Natural Gas Expansion), was aligned with ADB's Midterm Review of Strategy 2020 since it promoted environmentally sustainable growth.²³ Expanding the LNG infrastructure and domestic gas supply in Indonesia has the potential to offset GHG emissions generated by coal-fired or diesel-fired power plants. The project was also consistent with ADB's Interim CPS, 2015²⁴ because it sought to improve Indonesia's energy security, diversify its domestic fuel mix, and support economic growth in the less-developed eastern region of the country. In line with Indonesia's National Energy Policy²⁵ and ADB's Energy Policy 2009, ADB has focused on promoting power generation alternatives that are more sustainable than coal- and diesel-fired generation. Energy projects that utilize natural gas and efficient combined cycle technology can contribute to economic development in a more sustainable way than coal- or diesel-fired projects. The project is rated *highly relevant*.

51. The Sarulla Geothermal Project was consistent with ADB's Strategy 2020, which emphasized support for environmentally sustainable growth and development of the private sector.²⁶ The strategy supported expanding environment-friendly technologies for clean energy generation and energy efficiency, as well as a larger role for private sector financing of infrastructure through public–private partnerships (PPPs). Through the administration of the ADB Clean Technology Fund (CTF) and Clean Energy Financing Partnership Facility loans, the project increased direct, value-adding cofinancing in nonsovereign projects supporting multiple strategies and objectives under ADB's Finance++ approach.²⁷ The project was aligned with ADB's CPS, 2012–2014 for Indonesia.²⁸ It supported the strategy's second pillar of environmental sustainability through climate change mitigation, which prioritized projects designed to promote renewable energy and energy efficiency. The project also supported the government's long-term objectives under the CTF investment plan for Indonesia²⁹ to deploy CTF resources to leverage commercial financing of geothermal projects. The project was consistent with ADB's Energy Policy, which emphasized investment in energy efficiency, renewable energy, and wider access to energy.³⁰ Although ADB reached its internal goal of investing \$2 billion per annum in clean energy in

²³ ADB. 2014. *Midterm Review of Strategy 2020: Meeting the Challenges of a Transforming Asia and the Pacific*. Manila.

²⁴ ADB. 2015. *Indonesia Interim Country Partnership Strategy*. Manila (<https://www.adb.org/countries/indonesia/strategy>).

²⁵ Government of Indonesia. 2014. *National Energy Policy*. Jakarta.

²⁶ ADB. 2008. *Strategy 2020: The Long-Term Strategic Framework of the Asian Development Bank, 2008–2020*. Manila.

²⁷ The Finance++ approach enhances ADB's direct loan financing by (i) leveraging resources through partnerships, and (ii) providing knowledge to developing member countries to maximize development effectiveness.

²⁸ ADB. 2012. *Country Partnership Strategy; Indonesia, 2012–2014*. Manila.

²⁹ Government of Indonesia. 2013. *CTF: Revision of the Country Investment Plan for Indonesia*. Jakarta.

³⁰ ADB. 2009. *Energy Policy*. Manila.

2011, the project helped sustain that level of investment in 2013 and further bolstered the private sector role in catalyzing additional resources in the renewable energy sector.³¹ The project is rated *relevant*.

52. The loans for the Rantau Dedap Geothermal Development Project had a similar scope to the Sarulla Project and are also rated as *relevant*.

53. The Vena Energy Project was a cluster of wind and solar projects. The first phase consisted of a 72-megawatt (MW) wind power plant in Jeneponto, South Sulawesi. The second phase consisted of a 21 MW solar PV power plant in Likupang, North Sulawesi and three 7 MW solar PV power plants in Pringgabaya, Selong, and Sengkol in Lombok, West Nusa Tenggara. The project was *highly relevant* as it supported private sector infrastructure and environment, two of the five core pillars of ADB's long-term strategy as reaffirmed by the Midterm Review of Strategy 2020. The project was consistent with ADB's CPS, 2016–2019 in supporting the expansion of infrastructure and environment-friendly technologies for clean energy generation.³² The project contributed to the objectives of Indonesia's National Energy Policy (2014) and to the 2015 commitment to the Paris Agreement under the United Nations Framework Convention on Climate Change.³³ The project was mentioned in the Electric Power Supply Business Plan, 2017–2026 PLN project pipeline for South Sulawesi.

54. The PT Jawa Satu Power (Jawa-1 Liquefied Natural Gas-to-Power) was aligned with the Electric Power Supply Business Plan, 2018–2027, which stressed increased use of LNG as a source of fuel. It anticipated that LNG use as a share of total natural gas use would increase from 33% in 2018 to almost 60% in 2027. The project also supported private sector participation in infrastructure, a core pillar of ADB's long-term strategy, as affirmed by Strategy 2030.³⁴ The project was consistent with ADB's CPS, 2016–2019 in supporting the expansion of infrastructure and environment-friendly technologies for clean energy generation.³⁵ It also contributed to the objectives of Indonesia's National Energy Plan.³⁶ The project was consistent with ADB's Energy Policy³⁷ which stated that support for power infrastructure using LNG should be broadened. The project was fully aligned with ADB's energy sector strategy for Indonesia, which aimed to strengthen the reach, reliability, and efficiency of the nation's electricity grid; and to enable greater use of clean energy. It also complemented the recent ADB policy-based loans to the MEMR and PLN (which sought to increase gas production and supply) and direct investments in the energy sector by private investors. The project is rated *highly relevant*.

55. The PT Medco Ratch Power Riau (Riau Natural Gas Power) Project was similar to the PT Jawa Satu Power Project (although the combined-cycle gas turbine plant capacities are different). The project is also rated *highly relevant*.

c. Relevance of Technical Assistance

56. Of the 19 ADB TA operations in Indonesia, nine were project preparatory TA, five were capacity building TA, four were policy and advisory TA, and one was advisory and operational TA.

57. The Sustainable and Inclusive Energy Program was supported by 12 TA projects (Table 3). As for both subprojects of the program, they are rated *relevant*. The two TA projects not listed in Table 3 are ongoing. They are supporting further aims of the program and are also rated *relevant*.

³¹ Of the \$2.3 billion in clean energy financing ADB provided in 2012, 42% (\$996 million) was through ADB's Private Sector Operations Department.

³² ADB. 2016. *Country Partnership Strategy: Indonesia, 2016–2019: Towards a Higher, More Inclusive and Sustainable Growth Path*. Manila.

³³ United Nations Framework Convention on Climate Change. 2015. *Intended Nationally Determined Contribution Republic of Indonesia*.

³⁴ ADB. 2018. *Strategy 2030: Achieving a Prosperous, Inclusive, Resilient, and Sustainable Asia and the Pacific*. Manila.

³⁵ ADB. 2016. *Country Partnership Strategy: Indonesia, 2016–2019: Toward a Higher, More Inclusive, and Sustainable Growth Path*. Manila.

³⁶ Government of Indonesia. 2017. *National Energy Plan (Presidential Regulation No. 22/2017)*. Jakarta.

³⁷ ADB. 2009. *Energy Policy*. Manila.

Table 3: Sustainable and Inclusive Energy Program Technical Assistance Cluster

TA Number	Fiscal sustainability and sector governance	Private Participation in Power and Gas Markets	Regulatory environment for increased access to clean energy
7583			X
8287			X
8407			X
8484			X
8661		X	
8826	X	X	X
8858			X
9082			X
9189			X
9370			X

Source: Asian Development Bank.

58. The TA for the Java–Bali 500 KV Crossing Project resulted in a loan for the project. It was completed in 2014 and is thus rated *relevant*.

59. The TA for the Geothermal Power Development Project was completed in 2014. It addressed issues of land acquisition, feed-in tariffs, and exploratory funding. It therefore addressed constraints that were blocking the rapid expansion of the private sector in geothermal power development and was expected to lead to at least two loans in the sector. The CAPE concurs with the TA completion report that it was *relevant*.

60. The project preparatory TA for the Development of West Timor Wind Power was consistent with ADB’s Interim CPS, 2015 for Indonesia³⁸ because it sought to improve Indonesia’s energy security, diversify its domestic fuel mix, and support economic growth in the less-developed eastern region of the country. In line with Indonesia’s National Energy Policy³⁹ and ADB’s Energy Policy 2009, it is therefore rated *highly relevant*.

61. A capacity development TA supporting the implementation of the results-based loans to support PLN to increase electricity access to consumers in Sumatra and in Eastern Indonesia is rated *highly relevant*, in line with the rating for the project loans.

d. Financing Modality

62. **Results-based lending.** ADB funding for the expansion of the PLN distribution sector required multiple projects spread across wide geographic areas and was not suitable for standard project funding due to the dispersed nature of the work and small procurement lots. This type of project was best supported using the results-based lending (RBL) approach, where the focus is not on inputs but on delivery of specific and measurable results through effective strategic planning, system strengthening, optimal resource allocation, systematic implementation, and monitoring and evaluation (M&E). The use of such an approach also helped lower transaction costs for PLN and enabled ADB to rely on and strengthen PLN practices, systems, and institutional capacity. It allowed for larger, more flexible, and programmatic financing for the sector with an emphasis on results. This approach provided ADB with the opportunity to collaborate with PLN and use its financing leverage to improve the effectiveness and efficiency of PLN’s entire electricity grid strengthening program, to be rolled out during 2015–2024. It also enhanced the predictability and amount of sector financing, helping to attract additional financing from other development partners. However, ADB’s value addition in the first group of RBL loans can be

³⁸ ADB. 2015. *Indonesia Partnership Strategy*. Manila (<https://www.adb.org/countries/indonesia/strategy>).

³⁹ Government of Indonesia. 2014. *National Energy Policy*. Jakarta.

questioned, given that the targets set for some disbursement-linked indicators (DLIs) were below the historical growth rates,⁴⁰ and that the targeted improvements were marginal and might have been achievable without ADB support.⁴¹ Nonetheless, the RBL approach encouraged other development partners to join the program. The World Bank will provide financing of \$500 million for Sumatra using its program-for-results modality, which is similar to RBL. ADB and the World Bank have coordinated their due diligence assessments and have harmonized key DLIs to support a common results framework for the program.

63. **Policy-based lending.** For the Sustainable and Inclusive Energy Program, Subprograms 1 and 2, ADB used a policy lending approach to facilitate interrelated changes in the energy sector which would enable: (i) improved fiscal sustainability and sector governance, (ii) increased private participation in power and gas markets, and (iii) increased access to clean energy for consumers. The policy-based loan thus aimed to remove the bottlenecks hindering the financial recovery of the state-owned PLN and also aimed to reduce its financial burden by encouraging the private sector to undertake a larger role by addressing the regulatory environment and removing policy barriers. The loan provided budget support and was accompanied by 12 TA projects which provided the necessary capacity building and technical support to develop the necessary policies and implementation procedures to attain the targeted changes, without which the desired outcomes could not be achieved. The loans were cofinanced by the World Bank and KfW, and the TA projects were supported by AusAID financing, which enabled a much larger scope to be addressed.

64. **Project lending.** The remainder of the sovereign loans were project-based, suitable for large-scale procurement and the use of engineering, procurement, and construction contractors (e.g., in West Kalimantan). For the nonsovereign loans that funded renewable energy, ADB was also able to provide additional funding through the Clean Technology Fund, and the inclusion of low-cost Leading Asia's Private Infrastructure Fund (LEAP) funding (Japan International Cooperation Agency [JICA]) which reduced the cost of borrowing. Further, the longer tenure of ADB-funded nonsovereign loans contributed to the viability of the renewable energy projects, enabling profitability at low PLN tariffs. In one case, the longer tenure offered by ADB funding and the ability to bundle a mix of renewable energy (wind and solar) projects enabled the project to meet the required hurdle rates, which would not have been possible for the solar element as a stand-alone project.

e. **Knowledge Solutions and Innovation**

65. In addition to the capacity development provided by most of the loans and TA projects, knowledge solutions were provided by the Sustainable and Inclusive Energy Program. This took the form of support for the development of policies, implementation guidelines, and industry regulation. The smart grid project in the second group of RBL loans was one of the first to be developed and installed in Indonesia and the use of pre-paid and smart meter technology was a new development for PLN. Other areas of new technology included the implementation of supervisory control and data acquisition (SCADA) and remotely controlled grid reclosers in the smaller grids, which allow the grid operators to identify and redress system faults automatically.

f. **Development Coordination within the Indonesia Energy Sector**

66. Other multilateral and bilateral development partner agencies also supported the Indonesia power sector, in particular AusAID (later the Department of Foreign Affairs and Trade of Australia [DFAT]), the World Bank, KfW, and JICA. These agencies also supported sector reform, improvements to the transmission and distribution network, rural electrification, clean energy development, and energy efficiency among other forms of support.

⁴⁰ For example, an increase in the number of PLN customers.

⁴¹ For example, frequency of supply interruptions at the medium voltage level.

67. There was good, formal and informal coordination between ADB and other development partners. Regular coordination meetings were held at least twice a year on geothermal development with the World Bank, and bilateral agencies from France, Germany, Japan, New Zealand, and the United Kingdom. The first Sustainable and Inclusive Energy Program project was cofinanced by Agence Française de Développement (AFD), the World Bank and KfW. There were no conflicting programs being supported by development partners. Many of the TA projects supporting the Sustainable and Inclusive Energy Program were funded through AusAID, while other development partners provided complementary support to the regulatory reforms and improved governance. Other examples of cofinancing included: (i) joint cofinancing with AFD of the West Kalimantan Grid Strengthening Project; (ii) parallel cofinancing of the Sumatra RBL and “program for results” with the World Bank, with closely coordinated results indicators and program actions, and a single independent verification agent administratively managed by ADB for both loans; (iii) parallel cofinancing of the Eastern Indonesia RBL with KfW, with fully harmonized results indicators and program actions, and a single independent verification agent administratively managed by ADB for both.

g. Project Design

68. All projects were intended to improve the overall energy efficiency and thus the environmental impacts of the energy sector, by supporting: (i) loss reductions in the transmission and distribution sectors in the grid related loans, and (ii) the enabling policy for replacing coal generation with gas-fired and renewable energy. Nonsovereign loans focused on implementing renewable and non-coal-fired generation. However, in some cases, the design and monitoring framework (DMF) indicators were not defined properly and could not be used to measure scale or to gauge the outcomes. All sovereign loans were intended to increase access to reliable energy, leading to inclusive economic growth, more reliable services at hospitals, schools, and water suppliers. The projects that included transmission and distribution enhancements were also expected to employ significant numbers of local workers. No specific direct gender-related objectives were stated, rather these were referred to as expected indirect effects.

h. Overall Relevance Rating

69. Overall, ADB support for the energy sector is rated *relevant*.

2. Effectiveness

a. Effectiveness of Sovereign Operations

70. The expected outcomes of the Java–Bali Distribution Improvement Project were: an increase in PLN’s power distribution and quality, including a deferral of \$100 million in investments in new distribution networks, reduced distribution losses (from 8.4% to 7%), and reduced system average interruption frequency index (from 6.8 to 3 times per year per customer). The effectiveness was difficult to monitor because of poorly defined outcome indicators. It was not possible to measure the first outcome indicator “deferred investments in distribution network” because PLN was carrying out, in parallel, large investments in new distribution networks to connect 4.5 million additional customers. Outputs could not be measured on a project basis. They could only be measured on a grid basis, since the different inputs were integrated across several locations in the Java–Bali network. The DMF indicators were not defined properly and could not be used as a measuring scale to assess impact achievement. The main objective of the project was to support PLN in improving the distribution network to reduce technical losses, save energy, reduce associated 300,000 tons CO₂ emissions per year, and increase access to a reliable grid power supply. While the project provided substantial support based on grid-level data presented in the PCR, the pilot efficient lighting component—which accounted for only 1.4% of total cost—was not effective and had a limited effect on the overall rating. The CAPE concurs with the PVR that the project was *effective*.

71. The West Kalimantan Grid Strengthening Project is ongoing, with over 78% of the loans disbursed as of 31 March 2018. The 150 kV transmission lines and 150/20 MVA substation have been energized, and up to 228 MW peak load has been registered on the interconnection with Malaysia. Nearly 1,500 new households have been connected. As a result, several redundant diesel-fired generators have been shut down and the average cost of supply has dropped from Rp2,342 /kWh to Rp1,315 /kWh. Furthermore, grid strengthening to the east coast will provide more reliable and cheaper power to the commercial palm plantations. There are no delays or issues with implementation, and the project is likely to meet most of its targets, hence it is assessed *likely effective*.

72. The Java–Bali 500 KV Transmission Project was rated less than effective. In Package 3, the construction of 11 substations was completed, and completion certificates were issued by the contract closing date of 31 August 2018. However, Packages 1 (Java Grid strengthening) and 2 (Bali Grid strengthening) have not been implemented due to the inability to obtain permits in Bali at the point of the transmission crossing. During a special project administration mission in March–April 2018, PLN agreed to continue implementing Package 3 and project implementation consultant contracts as per contract amendments agreed with ADB. PLN and ADB also agreed during the mission to retain \$20.8 million (8.37%) while partially cancelling the remaining \$228.1 million (91.63%) from the total ADB and ASEAN Infrastructure Fund (AIF) loan amount of \$249 million. PLN submitted a request letter for partial cancellation of Packages 1 and 2 to the Ministry of Finance and BAPPENAS on 2 October 2018. BAPPENAS has agreed to process the partial cancellation as proposed by PLN. It is envisaged that the project may require at least 6 years for implementation as new alignments for the 500 kV crossing are yet to be finalized. Land permit issuance is uncertain and no contract awards are expected in the near future.

73. The Sustainable and Inclusive Energy Program has delivered 19 out of the 22 planned regulatory and policy changes envisioned during project preparation through its two subprograms. The project is rated *effective*. The implementation of these regulatory and policy changes did, however, encounter a number of delays and issues due to the large number of policy changes and the large number of ministries and agencies involved in the process, making coordination and reaching agreements difficult. Additionally, the feed-in tariffs and dispatch rules that were developed were later overturned in favour of a tariff cap set at 85% of regional generation costs. Later still, this tariff cap was partially overturned with a presidential intervention for the waste to electricity tariff. In addition, the full-cost recovery of electricity, through tariffs introduced in 2014, continue to be indexed quarterly, with the exception of the lifeline tariffs which were frozen during the election period. The impact of the Sustainable and Inclusive Energy Program to date has been to turn the public sector PLN from a loss-making institution requiring increasingly large subsidies into a corporation with the ability to meet most of its revenue requirements and to service its debts. The main thrust of this combination of PBL and TA has been:

- (i) To introduce policies that enabled the use of the PPP modality for power generation from geothermal, variable renewable energy (VRE) and other renewable energy projects, and to increase access to electricity through a mix of grid extension and investment in mini-grids, micro-grids and isolated systems.
- (ii) To enable greater demand-side energy efficiency by encouraging energy service companies to adopt equipment energy efficiency standards and labelling, improve municipal energy efficiency through efficient street lighting systems, and other measures.
- (iii) To facilitate electricity tariff rationalization. However, this remains a challenging task, particularly because of the need to balance the government’s fiscal concerns with PLN’s financial viability issues as well as social, environmental, and climate change considerations and commitments.
- (iv) To improve PLN’s financial and nonfinancial performance (especially service delivery to electricity customers).

- (v) To facilitate gas market expansion using PPPs. The government has updated the gas infrastructure master plan, and has introduced more flexible fiscal terms in production sharing contracts (PSCs) for exploration activities.

74. Although the results-based loans for the expansion of the PLN distribution sector have not been completed, they are rated *likely to be effective*. Disbursements for both projects have exceeded 78%, and DLIs are generally being achieved or overachieved, with only residential sales lagging (Table 4). Beside the DLIs, a number of program action plans (PAPs) have been included in the loans and are also being monitored. These cover waste management, customer complaint resolution, environmental management, and contractor management. The monitoring results of the PAPs and DLIs are included in management reporting systems. The indicators were developed and agreed with PLN and are being independently verified through a contractor, funded by ADB TA. The reports are monitored by senior management and independently verified. M&E is being broadened. Comments received during IED's meetings with PLN in Jakarta and Lombok and from the implementation consultant indicate that there is very strong ownership of the projects and monitoring by PLN regional staff. Since procurement and environmental management do not need ADB approval, the loan processing and implementation is far more efficient than a standard project loan and thus outputs are more efficiently delivered.

**Table 4: Achievement of Disbursement-Linked Indicators
Targets (as of December 2018)**

Targets	% Achievement by 2018
New Customer Connections	106%
Residential Sales	92%
Feeder Interruptions	127%
Lines Reconductored	103%
Distribution Transformers installed	251%
Length of Distribution Lines Installed	158%

Source: Asian Development Bank.

b. Effectiveness of Nonsovereign Operations

75. The Tangguh Liquefied Natural Gas Project is rated *highly effective* by the CAPE. It has become a primary source of foreign exchange income and has generated income for both the central and regional governments. The project employed up to 10,920 people during construction, with 97% of workers locally hired. The extended annual review report (XARR) reported an increase in household income of 168% since 2003 in 10 villages where the project delivered livelihood programs (however, no targets were set for this outcome).

76. In the Sarulla Geothermal Project, the Silang-Kitang-I Langit (SIL) reservoir feeds the first unit of the power plant which began commercial operations in March 2017. The second unit, fed by the Namora-I Langit reservoir, began commercial operations in October 2017. The third unit, also fed by the Namora-I Langit reservoir, began commercial operations in May 2018, reaching full completion under the Energy Sales Contract. The projects will provide renewable energy at a lower cost than PLN-run plants in the eastern part of Indonesia. The project is rated *effective*.

77. Regarding the Rantau Dedap Geothermal Development Project, an initial power purchase agreement (PPA) with PLN was signed in 2012, to develop 220 MW of geothermal power. Following exploratory drilling in 2016, the PPA was renegotiated in September 2017 to reflect the changes and to maintain the required hurdle rate. The project is expected to begin operations in early 2020 and is thus rated *likely effective*.

78. For the Tangguh Liquefied Natural Gas Expansion, the loan supported the development by the operators (British Petroleum) of the third train of the LNG plant. Production will be 75% for the domestic

market and 25% for export, with PLN as the main customer for the third train. The project is due for completion in 2020; however, given the previous results of the project, it is likely to be *highly effective*.

79. For the Vena Energy Wind Solar Project, the first phase consisted of a 72 MW wind power plant in Jeneponto, South Sulawesi and was commissioned in September 2018. The second phase consisted of a 21 MW solar PV power plant in Likupang, North Sulawesi and three 7 MW solar PV power plants in Pringgabaya, Selong, and Sengkol in Lombok, West Nusa Tenggara. These projects have been commissioned and are awaiting PLN approval to begin operations. The projects will provide renewable energy at a lower cost than PLN-run plants in the eastern part of Indonesia. In addition to providing employment and training for local people, Vena Energy has actively sought community support for its ventures and has invested significant funds in community infrastructure. The project is rated *effective*.

80. It is too early to assess the effectiveness of the Jawa-1 Liquefied Natural Gas-to-Power Project and the Riau Natural Gas Power Project. The former, which was approved in August 2018, is required to achieve financial closure by August 2019.

c. Effectiveness of Technical Assistance

81. The Sustainable and Inclusive Energy Program TA cluster is rated the same as the loans: *effective*.

82. The PPTA for the Java–Bali 500 kV Crossing Project resulted in a loan for the project, and is rated *effective*.

83. The TA for the Geothermal Power Development Project was completed in 2014. Outputs included (i) a report on the structure and operating procedures of a risk mitigation fund for geothermal exploration; (ii) reports provided to Geo Dipa Energi regarding their expansion plans at Patuha, technical failures, and expansion plans at Dieng, and recommendations on the company's general procurement frameworks; and (iii) reports on a geothermal tariff methodology, and Unlocking the Potential of Geothermal Energy in Indonesia, posted on the ADB and World Bank websites (April 2015). The ADB-World Bank joint report was particularly influential as it directly informed MEMR's new pricing regulation and provided inputs to a revision of Geothermal Law No. 27/2003. The report on the Risk Mitigation Fund was well received and the fund was established in December 2012, with two tranches of funds totalling \$250 million from the state budget. The CAPE concurs with the TCR for the TA, that it was *effective*.

84. The project preparatory TA for the Development of West Timor Wind Power produced (i) a grid integration study, which provided useful information for stabilization measures required for wind power in a remote area; and (ii) environment and socioeconomic baseline assessments which were rated *less than satisfactory* by the TCR. However, the knowledge gained was seen as helpful as it was used by ADB in its appraisal and funding of the 72 MW South Sulawesi wind project. The project preparatory TA is thus rated *effective*.

85. Capacity development TA supporting the implementation of the results-based loans for the expansion of the PLN distribution sector is rated *likely to be effective*, in line with the rating for the project loans.

d. Overall Effectiveness Rating

86. ADB's portfolio in the energy sector is rated *effective*.

3. Efficiency

a. Efficiency of Sovereign Operations and Technical Assistance

87. The efficiency of a project is largely based on the calculation of an economic internal rate of return (EIRR) when benefits are well defined.⁴² Process efficiency is also assessed, particularly in cases of policy-based assistance and TA projects.

88. For the Java–Bali Distribution Improvement project, the PVR recalculated the EIRR at completion at 22.9%. Implementation started after more than 3 years of delay. Both the ADB and AFD loans were not fully disbursed, with some \$29 million or 29% of the total loan proceeds unused. Besides, the ADB and PLN incurred higher monitoring and management costs because of project delays, changes in scope and location, and the poor performance of the consultants. Design inefficiencies affected project implementation by incurring long delays and additional management and supervision.⁴³ Nonetheless, the CAPE concurs with the PVR rating of *efficient*.

89. The West Kalimantan Grid Strengthening Project is ongoing. As the preliminary results indicate good progress with no significant delays, and the large reduction in the overall cost of supply, it is likely to be *efficient*.

90. The Java-Bali 500 KV Transmission Project is rated *less than efficient*. It will meet only a small proportion of planned outputs with the cancellation of the remaining \$228.1 million (91.63%) from the total ADB and AIF loan amount of \$249 million.

91. The Sustainable and Inclusive Energy Program has achieved most of its targeted reforms with some delays. For 2020 to 2023, the total cost of implementing the programs is estimated to be \$31 billion, with economic benefits expected to total \$53 billion. Reduced subsidies alone will save the government an additional \$38 billion for the same period.⁴⁴ The program is thus rated *efficient*.

92. The results-based loans for the expansion of the PLN distribution sector, although not completed, are rated *likely to be efficient*. Procurement and environmental management do not need ADB approval, the loan processing and implementation is far more efficient than a standard project loan and thus outputs are more efficiently delivered. The general overachievement of the DLIs and the PAPs have improved the operational procedures of PLN and have become entrenched in PLN culture.

93. The TA projects associated with the above projects have the same efficiency ratings.

b. Efficiency of Nonsovereign Operations

94. The Sarulla geothermal projects provide renewable energy at a lower cost than the average PLN-run plants in the country. Financial data are not publicly available; however, the ability to close financing and to begin operations with a low tariff, negotiated before the 85% PLN cost of supply, suggests the project is *highly efficient*.

95. For the Rantau Dedap Geothermal Development Project, the initial PPA with PLN signed in 2012 was renegotiated in September 2017 to reflect the changed assessment of the geothermal resource and to maintain the required hurdle rate. The project is expected to begin operations in early 2020 and is thus rated *likely efficient*.

⁴² ADB. 1997. *Guidelines for the Economic Analysis of Projects*. Manila.

⁴³ The project design did not allow sufficient time for delivery of procured materials, bidding for contractors had multiple rounds due to lack of experience, and contracts were awarded to firms with transmission experience but not distribution—which led to further delays.

⁴⁴ ADB. 2018. *Final Report on the Sustainable and Inclusive Energy Program*. Manila.

96. For Vena Energy, the project's two phases have been instrumental in assisting the sponsors to bridge the financing gap and bring these projects to market. Concessional financing was needed to improve returns to overcome first-mover risks as well as to address various technical and regulatory challenges. These transactions are expected to demonstrate the commercial viability of limited recourse financing for renewable energy projects and help Indonesia unlock its renewable energy markets to the private sector. Financial data are not publicly available; however, the ability to close financing for the project and to begin operations with a low tariff, negotiated before the 85% PLN cost of supply, suggests the project is *likely to be efficient*.

97. At this stage, given that the Jawa-1 Liquefied Natural Gas-to-Power and the Riau Natural Gas Power projects have not reached financial closure, it is not possible to assess their efficiency.

c. Overall Efficiency Rating

98. ADB's portfolio in the energy sector is rated *efficient*.

4. Sustainability

a. Sustainability of Sovereign Operations

99. The Sustainable and Inclusive Energy Program has turned the public sector PLN from a loss-making institution requiring increasingly large subsidies, into a corporation with the ability to meet most of its revenue requirements and to service its debts. The company should return to profitability in 2020–2023 and, with continued improvements in governance and operations, PLN should be able to operate profitably, with subsidies for lifeline tariffs only.

100. The West Kalimantan Project has reduced the cost of generation on the island by nearly 50%. The RBL projects have improved the M&E and operational efficiency of PLN. Further, the projects improved staff capacity by providing on-the-job training on transmission planning, environmental management, and social safeguard implementation. The PCR for the Java Bali Distribution Improvement project also indicated that training for procurement for international competitive bidding was *successful*.

101. In addition to the above, PLN has a well-educated and experienced technical workforce with a strong customer focus. Further to the 20-year PPA with Sarawak Hydro Power, PLN has signed another 30-year contract with YTL Malaysia for the supply of 1,220 MW in West Java. These all contribute to a high likelihood of a sustainable financial and operational outcome for the recently completed and ongoing ADB projects.

b. Sustainability of Nonsovereign Operations

102. The completed geothermal and renewable energy plants have begun operations, with long-term, albeit low, tariff PPAs with PLN which were regarded as commercially viable by the project sponsors and lenders. The high level of international experience of the operators, coupled with the changes in PLN financial outlook, suggests that these projects will be *likely sustainable*.

103. Similarly, the Tangguh projects have long-term off-take contracts both in Indonesia and externally, with a history of very profitable operations, and are expected to remain highly sustainable.

104. The ongoing geothermal and LNG projects are being developed by operators who have a large portfolio of energy projects and extensive experience in the region, and are likely to bring the projects to a successful commercial operation.

c. Sustainability of Technical Assistance

105. Technical assistance supporting the Java–Bali Grid Strengthening, Geothermal Development, West Timor Wind Power, the Sustainable and Inclusive Energy Program, and the RBL projects have all contributed positively to the outcomes of ADB projects and provided valuable capacity building to support the implementation of these projects. They are *likely to be sustainable*.

d. Overall Sustainability Rating

106. ADB’s portfolio in the energy sector is rated *sustainable*.

5. Development Impact

107. The DMFs for sovereign loans, with the exception of the Java–Bali Distribution upgrade, were very well designed. All had clear, measurable outputs in the case of policy loans and outcomes in the project loans as well as milestones to achieve these. In the case of the results-based loans, both the DLIs and the PAP indicators were measurable. Whereas carbon effects from the widely dispersed nature of the Java–Bali Grid Strengthening could not be measured, the West Kalimantan project is capable of measuring these by comparing the conventional generation with hydro. One missing factor in all the monitoring of sovereign projects is baseline social data on the extent and quality of public services, which does not enable the economic and social impacts of the projects to be clearly monitored. The CAPE notes that the Tenggara and Vena energy projects both engaged extensively with the local population and both were monitoring the impacts of their projects. However, there were no baseline data for other projects. The CAPE rates the development impact *satisfactory*.

E. Thematic Issues

1. Support for Inclusive Economic Growth

108. The country strategies during the CAPE period were selective in their sector choices and promoted inclusive growth through a diversified, knowledge-based economy; employment creation from a more balanced economy; and greater access to economic opportunities for women and the poor in secondary towns and rural areas. They prioritized transport, urban infrastructure and services, and energy in a holistic approach as each was a necessary factor for growth. Infrastructure was important to inclusive growth and diversification by creating and expanding economic opportunities and improving access to economic opportunities. Reliable electricity enables working hours and productivity to increase and creates jobs, while urban infrastructure and services provide access to basic services such as water and sanitation, education, and health by reducing the time and costs of reaching services. The design and implementation of modern infrastructure in itself embeds technical knowledge, expertise, and managerial and implementation-related practices, which developing countries can use to replicate and such investments.

109. ADB’s support for expanding and improving generation, transmission, and distribution systems had the direct benefit of expanding electricity supply and access, particularly by the projects in West Kalimantan and the two RBL projects in the rural areas of Eastern Indonesia. All of these increased access to electricity in more remote regions. This in turn had the potential to expand economic opportunities for rural communities, including women. With support from ADB, the expansion of rural networks which are now providing a continuous supply of electricity to a section of rural customers are likely to have similar impacts on expanding economic opportunities.

2. Support for Gender Equity

110. There were no specified interventions supporting gender equity.

3. Support for environmentally sustainable growth

111. Energy plays a prominent role in the government's vision for Indonesia, which includes a focus on increasing renewable energy and energy efficiency. The relevance of ADB support to the energy sector was also assessed in terms of its energy efficiency, and both the West Kalimantan Project and the RBL projects have led to measurable decreases in line losses and corresponding CO₂ reductions. The current ADB TA supporting IPPs has targeted two geothermal projects, and one gas-fired plant, which are all more efficient than coal-fired plants. Additional LNG from the expansion of the Tenggua field will also be used in Java to reduce emissions. The imports from the hydropower project in Malaysia will have an impact of at least 400,000 tons of CO₂ (based on 50 MW of imports) but this is likely to rise significantly as the PPA has recently been increased to a minimum of 140 MW. The RBL projects are part of a larger PLN program. The ADB contributions to loss reductions are not measurable, but nevertheless do contribute to the overall increases in efficiency. Similarly, until baseline data at a local level are available, the contribution of ADB-funded projects to increases in access cannot be accurately assessed.

112. The Sustainable and Inclusive Energy Program supported energy efficiency reforms and the government established a legal basis for energy service companies to operate and raise financing. The government also launched a nationwide pilot program for energy-efficient street lighting in 83 cities under Subprogram 2. Energy-efficiency appliance labelling has begun; however, no major programs which target industries or buildings with high-energy consumption have been targeted. KPPIP has indicated the need for a large increase in energy-efficiency programs in Indonesia⁴⁵ to reduce the need for additional generation and to lower its industry energy intensity.

4. Support for Regional Cooperation and Integration

113. **Facilitating regional power and gas trade and cooperation.** ADB continues to support cross-border gas and power connectivity and trade with neighbouring countries. The West Kalimantan Project is importing clean hydropower from Malaysia, and the hydropower PPA with Malaysia has already been increased from a base load of 50 MW to a minimum of 140 MW. Malaysia is actively assessing a further increase in supply, and with the improved investment climate for IPPs, PLN will be in a better position to negotiate similar projects.

5. Support for Economic Diversification

114. **Policy and institutional reform.** ADB has collaborated with development partners in projects which have generated very important policy and institutional reforms for (i) a sustainable tariff regime for the energy sector, (ii) an enabling regulatory environment to promote competition and attract private investment, and (iii) the increased use of renewable energy and energy efficiency. The Sustainable and Inclusive Energy Program projects have made a significant contribution to private sector development.

6. Support for Governance and Capacity Development

115. All sovereign projects actively supported capacity development in the energy sector (Table 5). PLN has commended the quality of the capacity building support received during project implementation and acknowledged the usefulness of the knowledge transfer for better operations, maintenance, and operational and financial management.

⁴⁵ Meeting with ADB CAPE Independent Evaluation Mission, March 2019.

Table 5: Capacity Development, 2011–2017

Capacity Building	Number of Projects
Procurement	1
Technical Monitoring	2
Resource assessment	2
Safeguards Assessment and Monitoring	6
Policy Assessment	2
Tariff Evaluation	2
Greenhouse Monitoring	1
Financial Management	2

Source: Asian Development Bank.

7. Overall Evaluation

116. The overall rating based on this assessment of ADB sovereign support for the energy sector in Indonesia is *successful* (Table 6). ADB assistance was *relevant, effective, efficient, sustainable, and satisfactory* in terms of development impact.

Table 6: Overall Assessment

Rating Criteria	Criteria Weight	Assessment	Score	Weighted Average Score
Relevance	0.2	Relevant	2	0.4
Effectiveness	0.2	Effective	2	0.4
Efficiency	0.2	Efficient	2	0.4
Sustainability	0.2	Likely Sustainable	2	0.4
Development impacts	0.2	Satisfactory	2	0.4
Overall assessment	1.0	Successful		2.0

Source: Independent Evaluation Department.

F. Other Evaluations

1. Performance of ADB

117. ADB's performance in the energy sector in Indonesia is rated *satisfactory*, based on the adequacy and quality of the country strategies, the program, responsiveness to client needs, and adherence to ADB policies and procedures.

118. **Adequacy and quality of CPSs and COBPs.** The energy sector assessments, strategies, and business plans in ADB's CPSs and COBPs during the CAPE period were well aligned with the government's goals for the energy sector. They focused on expanding the availability of and access to energy by reducing losses, strengthening infrastructure, promoting clean energy, and increasing energy efficiency.

119. **Responsiveness to client needs.** Stakeholders met during the evaluation mission considered that ADB staff were helpful and responsive to the needs of project beneficiaries. ADB was generally acknowledged to have been responsive in following up on issues raised in project reviews and monitoring visits.

120. **Adherence to ADB policies and procedures.** ADB has provided project preparatory TA to assist clients to design subprojects that comply with ADB procedures and safeguard requirements, and to prepare funding requests. ADB has also supported capacity development for project management units so they can comply with ADB environmental and social safeguards and monitoring and reporting requirements. This support helped clients to comply with ADB safeguard policies and was well regarded by project beneficiaries. One exception was a nonsovereign client, who noted that, after a change in an

ADB project officer, there had been a difference in interpretation of the environmental management plan, requiring significant and expensive changes to the plan.

2. Performance of the Borrower and the Executing and Implementing Agencies

121. **Ownership and commitment.** The borrower and the executing and implementing agencies, including other stakeholders in the Sustainable and Inclusive Energy Program and RBL projects (the Ministry of Energy, Ministry of Finance, BAPPENAS, and PLN) were all highly committed to the projects funded by ADB. They supported the country's needs and goals for the energy sector. They also recognized the need to comply with ADB safeguard policies and procedures. In all projects, ADB safeguard policies were fully complied with. In the nonsovereign sector, the commitment to beginning profitable commercial operations was high, but an understanding of long-term environmental management was also evident. Companies made a commendable effort to involve and support local communities for long-term operations.

122. **Involvement during implementation.** For sovereign operations, while executing and implementing agencies were engaged and involved during project implementation, their capacity varied widely. The participants in the Java–Bali Grid Strengthening Project had insufficient experience in international competitive bidding. This had an impact on the project and caused major delays. The implementing agencies that were visited all appeared to have PMUs with highly trained staff.

3. Issues

123. The following issues, in line with the operational priorities of Strategy 2030, arose from the evaluation of ADB support for Indonesia's energy sector during the CAPE period.

124. Energy-efficiency impacts from the Sustainable and Inclusive Energy Program are still very small, and the KPPIP acknowledges that there is a strong need to expand the initiatives. They need a much wider focus and to include industrial and commercial sectors. Any decision for further policy development and intervention in the energy sector should focus strongly on energy efficiency on both the supply and demand sides, and should involve (i) both the private and public sectors; (ii) demonstration projects in both sectors; and (iii) the participation of at least two financial institutions, with concessional funding to demonstrate the financial viability of projects.

125. There are still significant numbers of people in remote areas with no access to electricity. Previous projects have not been successful or sustainable as a result of a lack of finance and trained people to service the technology. As ADB intends to increase its assistance to these communities, it should adopt more widespread use of small-scale renewable technology, particularly in the remote eastern parts of the country. This would support efforts to aid wider inclusiveness. Concessional funding may also be required to fund any gap between PLN-provided assets and connections to these assets. Consideration should be given to training a large number of women in the maintenance of off-grid solar installations.

4. Lessons

126. Policy-based project designs need to be simplified if they are to achieve better outcomes. The Sustainable and Inclusive Energy Program built on earlier multisector policy loans⁴⁶ which addressed 10 sectors, including energy. The PVR of an earlier multisector policy loan rated it *less than successful*, as the wide range of sectors being addressed, the number of ministries involved, and the very difficult coordination between the stakeholders hampered achievement of the intended outcomes. The lack of significant reforms was attributable to the project's overly broad scope, the large number of stakeholders, and the poorly designed monitoring framework. The current Sustainable and Inclusive Energy Program has taken these lessons into account and has a much more focused, single-sector monitoring framework, with significantly fewer policy outcomes, are supported by 12 well-targeted TA projects that assist with the background work to prepare the policies and build capacity in policy development and implementation. However, better coordination among ministries could be achieved if KPPIP is mandated by the government to enforce this.

127. RBL programs can deliver benefits to ADB clients by helping them to implement their own programs more effectively. The mix of outcomes, outputs, and institutional changes often pursued in the same results-based programs led to a holistic results management approach within the government. The CAPE concurs with the IED evaluation of RBL programs since results in the Indonesia projects have had identical outcomes to those described in the RBL evaluation: (i) a focus on program systems, (ii) concentration on implementation, (iii) an emphasis on results, (iv) an increase in intergovernmental accountability, (v) leveraging of donor alignment around a shared set of results, and (vi) the "mindset change" of RBL stakeholders with a shift from thinking about inputs and transactions to thinking about results and systems.

128. Facilitating overall energy sector improvements will require a strategy that encompasses a mix of complementary policy- and project-based loans and TA. This evaluation of ADB's energy sector performance indicates that ADB's lending and non-lending activities fitted very well with the needs of the sector. ADB's energy sector approach can be viewed as strategic and holistic. It worked to improve the sector's performance through targeted policy changes which have an impact on sector governance and financial viability and provide the necessary support measures for further development through both private and public sector investments. This holistic approach to energy sector assistance—which included policy analysis, capacity building, and projects that demonstrate the viability of new technology—has created synergies among the programs. Examples include:

- (i) The policy-based loans included a large TA component, which, for example, enabled the development of renewable energy policies and implementing guidelines. In turn, these policies have enabled the development of nonsovereign renewable energy projects in the eastern regions of Indonesia. These projects are now being connected to end consumers through RBL-funded loans, completing a cycle of implementation in the energy sector.
- (ii) The pilot LED Municipal Streetlight and PLN Substation Retrofit Project was developed as a result of a very small-scale demonstration project funded by an ADB TA project. The subsequent multidonor pilot project was implemented in two cities in Indonesia and supported by the PBL which created the regulatory environment.

129. Project success requires close and long-term relationships between ADB staff and government counterparts. It also needs the government to have strong ownership of the project. Feedback from loan recipients indicates a high level of satisfaction with ADB's lending and TA activities, in particular assistance with safeguard implementation through RBL projects has been very well received by PLN. There are two major contributing factors to the success of the ADB projects. First, ADB staff have maintained very close and long-term relationships with their counterparts which have been translated into projects

⁴⁶ Loans 2263, 2264, 2475, and 2708, Grant 064, and TA 4728.

which meet Indonesia's needs. Second, there is a very strong sense of ownership of the projects by their PLN counterparts accompanied by a consumer focus.

5. Recommendations

130. The CAPE makes the following recommendations specific to the energy sector. ADB should:

131. **Simplify policy-based project designs to improve their focus and to achieve intended outcomes.** The lack of significant reform outcomes in one of the completed policy-based loans was attributable to its overly broad scope, the large number of stakeholders and a poorly designed monitoring framework. In view of this, the ongoing Sustainable and Inclusive Energy Program has a better focus with significantly fewer policy outcomes.

132. **Adopt a strategic and holistic approach to improving the energy sector's overall performance.** Targeted policy changes that impact on sector governance and financial viability provide the necessary legal and regulatory basis for public and private sector investments. There have been many synergies between the sovereign and nonsovereign projects; for example, PBL outputs have supported new private sector investments, which, upon completion, have then been connected to new consumers through infrastructure built by ADB's RBL projects.

133. **Focus on operational priorities of Strategy 2030 where there are glaring opportunities.** Among the priority areas are: (i) providing energy access to all as one of the essential steps to removing poverty, with supply of quality, reliable, and affordable energy through a mix of grid extension and distributed generation systems; and (ii) improving the efficiency of energy supply and demand, which can reduce consumers' energy bills, and in turn reduce their resistance to full-cost recovery tariffs.

* This is a redacted version of the document, which excludes information that is subject to exceptions to disclosure set forth in ADB's Access to Information Policy.