ADB

Report and Recommendation of the President to the Board of Directors

Project Number: 42362
November 2013

Proposed Loans
Republic of Indonesia: Java–Bali 500-Kilovolt Power Transmission Crossing Project

Asian Development Bank

CURRENCY EQUIVALENTS
(as of 25 October 2013)

Currency unit	–	rupiah (Rp)
Rp1.00	=	$0.0000897
$1.00	=	Rp11,145

ABBREVIATIONS

ADB	–	Asian Development Bank
ASEAN	–	Association of Southeast Asian Nations
EIA	–	environmental impact assessment
EMP	–	environmental management plan
LIBOR	–	London interbank offered rate
PAM	–	project administration manual
PLN	–	Perusahaan Listrik Negara (State Electricity Company)
RPJMN	–	Rencana Pembangunan Jangka Menengah Nasional (National Medium-Term Development Plan)

WEIGHTS AND MEASURES

ha	–	hectare
km	–	kilometer
kV	–	kilovolt
MVA	–	megavolt-ampere
MW	–	megawatt

NOTES

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

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PROJECT AT A GLANCE

1. Project Name: Java–Bali 500-Kilovolt Power Transmission Crossing Project 2. Project Number: 42362-013

3. Country: Indonesia 4. Department/Division: Southeast Asia Department/Energy Division

5. Sector Classification:

Sectors	Primary	Subsectors
Energy	√	Electricity transmission and distribution

6. Thematic Classification:

Themes	Primary	Subthemes
Economic growth	√	Promoting economic efficiency and enabling business environment

6a. Climate Change Impact

No Climate Change Indicator available.

6b. Gender Mainstreaming

Gender equity theme (GEN)	
Effective gender mainstreaming (EGM)	
Some gender elements (SGE)	
No gender elements (NGE)	√

7. Targeting Classification:

General Intervention	Targeted Intervention		
	Geographic dimensions of inclusive growth	Millennium development goals	Income poverty at household level
√			

8. Location Impact:

National	High
Urban	Medium
Rural	Low

9. Project Risk Categorization: Complex

10. Safeguards Categorization:

Environment	A
Involuntary resettlement	A
Indigenous peoples	C

11. ADB Financing:

Sovereign/Nonsovereign	Modality	Source	Amount ($ Million)
Sovereign	Project loan	Ordinary capital resources	224.0
Total			224.0

12. Cofinancing:

Financier	Category	Amount ($ Million)	Administration Type
ASEAN Infrastructure Fund	Official-Loan	25.0	Full
Total		25.0	

13. Counterpart Financing:

Source	Amount ($ Million)
Government	161.0
Total	161.0

14. Aid Effectiveness:

Parallel project implementation unit	No
Program-based approach	No

I. THE PROPOSAL

1. I submit for your approval the following report and recommendation on (i) a proposed loan funded by the ordinary capital resources (the A-Loan) from the Asian Development Bank (ADB), and (ii) a proposed loan funded through the participation of the Association of Southeast Asian Nations (ASEAN) Infrastructure Fund (the B-Loan), both to the Republic of Indonesia for the Java–Bali 500-Kilovolt (kV) Power Transmission Crossing Project.[1]

2. The proposed investment project will support the Government of Indonesia in the development of the Java–Bali power transmission network for meeting future power demand in Bali while improving the long-term power supply security and efficiency of the Java–Bali power grid.[2] The project will (i) develop the electricity transmission infrastructure by constructing 220 kilometers (km) of extra high voltage (500 kV) transmission lines with capacity to transmit 1,500 megawatts (MW) of power; (ii) develop 500/150 kV and 150/20 kV substations in Bali and Java; and (iii) support project management.

II. THE PROJECT

A. Rationale

3. **National development plan**. With the aim of transforming Indonesia into a developed country by 2025, the government in May 2011 launched a 14-year master plan to accelerate economic development throughout the archipelago.[3] Infrastructure development, including power infrastructure, is essential in supporting national connectivity required in the development activities of all the sectors identified in the above master plan, hence infrastructure development is a key component of Indonesia's National Medium-Term Development Plan, 2010–2014 (RPJMN).[4]

4. **Power sector assessment.** Peak power demand in Indonesia averaged 30,000 MW in 2012 and is expected to grow at an average rate of 9.4% annually up to 2021.[5] The current average electrification ratio is about 72% in Indonesia, and the government's target is to achieve 90% electrification by 2020. Power shortage has been a critical infrastructure bottleneck throughout the country and fast-track generation programs are being implemented to increase the power generation capacity.[6] In addition, transmission and distribution systems have limited capacities to transmit additional power because of inadequate investments in the past. Therefore, the transmission and distribution networks need to be developed in a coordinated manner to realize the benefits of the new generation capacities and to achieve the government's electrification targets.

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[1] The design and monitoring framework is in Appendix 1.

[2] ADB provided project preparatory technical assistance. ADB. 2009. *Technical Assistance to the Republic of Indonesia for Preparing Java Bali 500 kV Power Transmission Crossing Project*. Manila.

[3] Coordinating Ministry for Economic Affairs. 2011. *Masterplan Percepatan dan Perluasan Pembangunan Ekonomi Indonesia (MP3EI)* (Masterplan for Acceleration and Expansion of Indonesia Economic Development), 2011–2025. Jakarta.

[4] National Development Planning Agency (BAPPENAS). 2010. *Rencana Pembangunan Jangka Menengah Nasional (RPJMN)*. Jakarta.

[5] Perusahaan Listrik Negara (PLN). 2012. *Power Supply Business Plan* (RUPTL), 2012–2021. Jakarta.

[6] In 2006, the government launched an accelerated coal-based power development program to reduce the dependency on expensive oil-based generation. The program aimed at adding 10,000 MW of new generation capacity by 2010. Nearly 70% of this target was largely achieved and completion is expected in 2014. A second accelerated program was launched in 2009 for adding an additional 10,000 MW of generation capacity by 2018. This program foresees 60% of the generation from renewable energy sources, mainly geothermal and hydro.

5. **Bali power supply situation**. Bali is Indonesia's top tourism showpiece.[7] The commercial sector accounts for about 46% of the total energy consumption in Bali, which includes the hotel industry and associated services. However, the Bali power system suffers from frequent outages and blackouts due to low generation reserve margin and transmission bottlenecks. The peak demand in Bali in 2012 was 618 MW and supply capacity was 633 MW, resulting in a generation reserve margin of only 15 MW (2.4%). The demand is projected to grow at an average rate of 9.6% per year during 2012–2022 and expected to reach 1,619 MW by 2022. The Java–Bali power system is linked by two existing 150 kV undersea cables with a total capacity of 200 MW. In addition, two 150 kV undersea cables are being installed by the State Electricity Company (PLN),[8] to add another 200 MW by 2014. There are 526 MW of diesel power generators operating in Bali that will be eventually phased out due to (i) a policy decision by the Bali provincial government to reduce carbon dioxide emissions and minimize noise pollution in Bali; and (ii) the phasing out of diesel-based generation by PLN because they are significantly more expensive to operate than other forms of generation. Therefore, investments are required to augment the power system in Bali by strengthening the transmission capacity from Java to Bali and install more economical, less polluting generating plants in Bali itself.

6. **Technically and economically feasible development option**. Transmission of power from East Java to Bali at 500 kV has been determined as the optimal solution to improve the power supply in Bali based on the power system studies carried out in the preparation of least-cost generation expansion plan and long-term transmission development plan. Therefore, this project is included in PLN's power supply business plan (footnote 5). As the power demand in Bali is only about 2.5% of the total demand of the Java–Bali power grid, coupling it with more efficient generation capacity in Java, transmitting power from Java would be a more technically and economically feasible option before installing new generation plants in Bali. Accordingly, PLN has conducted the initial design of a 500 kV double circuit overhead transmission line from Java to Bali, with a total transmission capacity of 3,600 megavolt-amperes (MVA) with power capacity of 3,000 MW to be operational by 2016.[9] The project will alleviate the imminent shortage of power supply capacity in Bali. The project is also included in the government's Green Book 2013, which lists planned priority external loans.[10]

7. **Project relevance**. The project will contribute to long-term power supply security in Bali and ensure the provision of adequate and reliable power supply that is vital for economic development activities identified in Bali under the Master Plan for Acceleration and Expansion of Indonesia Economic Development (MP3EI) (footnote 3). The project will strengthen the power transmission system by connecting Bali with a 500 kV link to Java–Bali grid, thus facilitating efficient utilization of existing and planned large power generation plants in Java. Hence, the project will enable transmitting comparatively cheaper power to Bali. Currently, PLN relies mainly on expensive diesel-based generation to supply electricity in Bali. The proposed transmission line will reduce operational expenditures, which will also reduce the subsidy payments made to PLN by the government. PLN's investment in the project is also part of its nationwide plan to increase electrification.[11] The development of the 150/20 kV substations

[7] Bali is an internationally renowned tourist and cultural destination that contributes 6% of the national gross domestic product. Tourism generates 67% of Bali's gross regional domestic product, and about 70% of residents are directly or indirectly dependent on the tourism industry.

[8] PT (Persero) Perusahaan Listrik Negara.

[9] Technical losses are less in 500 kV transmission lines and power transfer capacity is higher compared to 150 kV and 275 kV transmission lines, which are the standard high voltage transmission voltages in Indonesia.

[10] National Development Planning Agency (BAPPENAS). 2013. *Daftar Rencana Prioritas Pinjaman (Green Book) 2013.* Jakarta.

[11] The electrification ratio in Bali in 2012 was 69%; the government aims to achieve 90% electrification by 2020.

under the project along the proposed route of the transmission line also ensures improved access to electricity to the local rural communities in the project area.

8. **ADB energy sector strategy.** The development of power infrastructure required to relieve power supply constraints and regional transmission interconnection projects are an integral part of ADB's energy sector strategy to reduce the overall generation reserve requirements, improve system stability and reliability, and enable transmission of comparatively cheaper power from one area to another.[12] In addition, ADB's involvement in the project will ensure strict compliance in the implementation of environmental and social safeguards requirements in accordance with ADB's Safeguard Policy Statement (2009). The project is well aligned to ADB's present energy sector strategy and is consistent with ADB's country partnership strategy, 2012–2014 and country operations business plan, 2013–2014 for Indonesia.[13]

9. **ADB's continued support in the energy sector and experience.** To date, ADB has financed 30 projects in Indonesia totaling about $3.3 billion and 36 technical assistance projects totaling about $14 million focusing on power generation and transmission subsectors. In the transmission subsector, ADB is also providing strategic public–private financing for strengthening the West Kalimantan power grid to facilitate power trade with Sarawak, Malaysia. [14] Furthermore, development of renewable energy, particularly hydro and geothermal and the Sumatra–Peninsular Malaysia 500 kV undersea interconnection is currently under discussion. The ADB's portfolio and sector work is well coordinated among other development partners in Indonesia.[15] Based on the lessons learned, to mitigate the project delays, the project design was enhanced incorporating advance contracting; efficient procurement procedures; project implementation consultants; and on-the-job training for the PLN staff in project implementation, and preparing and implementing safeguard measures effectively.

B. Impact and Outcome

10. The impact of the project will be long-term power supply security to support sustained socioeconomic growth in Bali. The outcome will be increased capacity of the Java–Bali power transmission network.

C. Outputs

11. The project has three outputs: (i) development of 220 km of 500 kV transmission network between Java and Bali (a new double circuit transmission line, which includes the following subcomponents: 131 km line between the Paiton substation and Watudodol in Java, 4 km line across the Bali Strait between Watudodol and Segara Rupek, 10 km line between Segara Rupek and Gilimanuk, and 75 km line between Gilimanuk and Antosari); (ii) development of 500/150 kV and 150/20 kV substations in Java and Bali (the extension of the existing 500 kV Paiton substation in East Java, the construction of a new 500/150 kV, 2x500 MVA capacity substation at Antosari in Bali, and the upgrading of eleven 150/20 kV substations with 600 MVA additional capacity); and (iii) support project management (construction supervision, supervision and monitoring of safeguards, and capacity building).

[12] Sector Assessment (Summary): Energy (accessible from the list of linked documents in Appendix 2).
[13] ADB. 2012. *Country Partnership Strategy: Indonesia, 2012–2014.* Manila; ADB. 2012. *Country Operations Business Plan: Indonesia, 2013–2014.* Manila.
[14] ADB. 2013. *Report and Recommendation of the President to the Board of Directors: Proposed Loan and Administration of Loan and Grant to Indonesia for the West Kalimantan Power Grid Strengthening Project.* Manila.
[15] Development Coordination (accessible from the list of linked documents in Appendix 2).

D. Investment and Financing Plans

12. The project is estimated to cost $410 million. The investment plan is in Table 1.

Table 1: Project Investment Plan
($ million)

Item	Total[a]
A. Base Cost[b]	
1. Development of Transmission Network	207.4
2. Development of High Voltage and Medium Voltage Substations	116.2
3. Project Management	3.3
Subtotal (A)	**326.9**
B. Contingencies[c]	**64.4**
C. Financial Charges during Implementation	**18.7**
Total (A+B+C)[d]	**410.0**

LIBOR = London interbank offered rate.
[a] Includes taxes and duties of $29.6 million; $29.3 million will be government contribution as tax exemption; and $0.3 million value-added and other taxes on consulting services will be financed by Perusahaan Listrik Negara (State Electricity Company).
[b] In mid-2013 prices.
[c] Physical contingencies computed at 10% for civil works and equipment. Price contingencies computed on the basis of domestic inflation of 4.7% (2014), 4.4% (2015), 4.1% (2016), and 4.1% (2017), and foreign inflation rate of 2.2% (2014), 1.9% (2015), 1.8% (2016), and 1.8% (2017). The purchasing power parity method has been adopted for exchange rate adjustment.
[d] Includes interest and commitment charges. Interest during construction for the A-Loan at LIBOR plus 50 basis points (40 basis points contractual spread and 10 basis points maturity premium) and for the B-Loan at LIBOR plus 150 basis points (140 basis points contractual spread and 10 basis points maturity premium).
Sources: Asian Development Bank and Perusahaan Listrik Negara (State Electricity Company) estimates.

13. The government has requested a loan of $224 million from ADB's ordinary capital resources (A-Loan) and $25 million through the participation of the ASEAN Infrastructure Fund (B-Loan) to help finance the project. The A-Loan will have a 20-year term, including a grace period of 5 years, 5% annuity repayment method, an annual interest rate determined in accordance with ADB's London interbank offered rate (LIBOR)-based lending facility,[16] a commitment charge of 0.15% per year on the undisbursed balance, and such other terms and conditions set forth in the draft loan and project agreements. The B-Loan will have a loan term and repayment method similar to A-Loan and an interest rate determined in accordance with its LIBOR-based lending facility (footnote 16). The borrower will relend the loan proceeds to PLN, the executing agency, with a mark-up of 50 basis points through two subsidiary loan agreements (one for the proceeds of the A-Loan and one for the B-Loan).

14. The financing plan is in Table 2.

Table 2: Financing Plan

Source	**Amount** ($ million)	**Share of Total** (%)
Asian Development Bank (ordinary capital resources)	224.0	54.6
ASEAN Infrastructure Fund	25.0	6.1
Government of Indonesia	161.0	39.3
Total	**410.0**	**100.0**

ASEAN = Association of Southeast Asian Nations.
Source: Asian Development Bank and Perusahaan Listrik Negara (State Electricity Company) estimates.

[16] The interest includes a maturity premium of 10 basis points. This is based on the loan terms in para 13 and the government's choice of repayment option and dates.

15. The A-Loan and B-Loan proceeds will finance equipment and civil works for the transmission lines and substations and consultancy services. The government will finance (i) the equipment and civil works for the 14 km portion of the transmission line from Watudodol to Gilimanuk, including the crossing over the Bali Strait; (ii) civil works for the upgrading of 150/20 kV substations; (iii) taxes and duties; (iv) financing charges during implementation; and (v) implementation of land acquisition and resettlement plan, and environmental management plan (EMP).

E. Implementation Arrangements

16. The implementation arrangements are summarized in Table 3 and described in the project administration manual (PAM).[17]

Table 3: Implementation Arrangements

Aspects	**Arrangements**		
Implementation period	April 2014 to March 2019, 60 months (4-year construction period and 1 year of monitoring during defect liability period)		
Estimated completion date	31 March 2019		
Management			
(i) Oversight body	PLN Board of Directors		
(ii) Executing agency	PLN		
(iii) Key implementation agencies	PLN headquarters in Jakarta (15 staff)		
(iv) Implementation unit	PLN Java–Bali regional transmission construction unit with offices in Bali and Surabaya (Java) (8 staff)		
Procurement	ICB with domestic preference	two turnkey packages each having two lots	$245.5 million (ADB, ASEAN Infrastructure Fund, and PLN, excluding taxes and duties)
	ICB with domestic preference	one goods package with two lots	
Consulting services	PIC, consultancy firm QCBS with 80:20 ratio using FTP	207 person-months (62 international person-months and 145 national person-months)	$2.9 million (ADB and ASEAN Infrastructure Fund)
	SMC, Consultancy firm, QCBS with 80:20 ratio using BTP	48 person-months (6 international person-months and 42 national person-months)	$421,500 (ADB and ASEAN Infrastructure Fund)
Retroactive financing and advance contracting	The government requested advance contracting of goods, civil works, and consultancy services, and retroactive financing of up to 20% of the proposed loans that may be incurred prior to effectiveness of the respective loans but not earlier than 12 months before the date of signing of the related legal agreements. ADB management has approved advance contracting and retroactive financing without commitment by ADB to finance the project. The retroactive financing applies to both ADB and ASEAN Infrastructure Fund loans.		
Disbursements	Withdrawal of loans will be in accordance with ADB's *Loan Disbursement Handbook* (2012, as amended from time to time) and detailed arrangements agreed between the government and ADB.		

ADB = Asian Development Bank, ASEAN = Association of Southeast Asian Nations, BTP = biodata technical proposal, FTP = full technical proposal, ICB = international competitive bidding, PIC = project implementation consultant, PLN = Perusahaan Listrik Negara, QCBS = quality- and cost-based selection, SMC = safeguards monitoring consultant.
Source: Asian Development Bank and Perusahaan Listrik Negara (State Electricity Company) estimates.

[17] Project Administration Manual (accessible from the list of linked documents in Appendix 2).

III. DUE DILIGENCE

A. Technical

17. The transmission network and the substation developments under the project are part of the power sector development plans prepared based on system studies that includes several interrelated elements, including demand growth, distribution and transmission system development plans, the least-cost generation expansion plan, and the river basin plan. Wien Automatic System Planning was the software used for the least-cost generation expansion studies and Power System Simulator for Engineering was used for the transmission system studies.[18]

18. Due diligence during project preparation have confirmed adequate project design. Exhaustive engineering design and power system calculations ensure robust and optimal transmission network development based on internationally proven extra high voltage alternating current transmission technology. Technical due diligence covers the overall project, including the 4 km overhead crossing across the Bali Strait, which confirms the overhead transmission line crossing to be the preferred option than undersea cable option due to the technical risks, environmental and social impacts, and higher costs involved with undersea cables and their installation. Technical design of this transmission crossing will involve two towers each with a height of about 376 meters, making them marginally the world's tallest power pylons. There exist other similar transmission line crossings that use high towers with proven technology.[19] The project's technical concept and design meet international standards.

B. Economic and Financial

19. Financial viability was assessed by comparing the incremental costs and benefits of the project. The incremental benefits were calculated based on PLN's revenue stream from power sales while costs include capital investments, operation and maintenance costs, and taxes incurred to install and operate the project. The post-tax financial internal rate of return of the project is 10.5%, which compares favorably with the estimated weighted average cost of capital of 2.5%, confirming the project's financial viability.[20] ADB reviewed PLN's financial performance and projections, including its capacity to finance its investment needs and the adequacy of its capital structure to meet its debt service requirements.[21]

20. The economic analysis confirms that the project is economically beneficial. The analysis yields an economic internal rate of return of 25.5% and the sensitivity analyses show that this expected economic performance is robust.[22] The economic internal rate of return compares the annual streams of economic capital and operating costs against incremental benefits and resource savings due to displacement of the expensive diesel-based power being supplied at present. All costs, benefits, and revenues are expressed in 2013 constant prices. The analysis period includes the construction period of 4 years in addition to 25 years of operation.

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[18] Both are state-of-the art software commonly used by many power utilities across the world.

[19] Zhoushan Island Overhead Power line (370 meters), People's Republic of China; Jiangyin Crossing (346 meters), People's Republic of China; Nanjing Crossing (257 meters), People's Republic of China; Orinoco Crossing (240 meters), Venezuela; Elbe Crossing (227 meters), Germany; Chusi Crossing (226 meters), Japan; Osaki Channel Crossing (223 meters), Japan; and Suez Canal Crossing (221 meters), Egypt.

[20] Financial Analysis (accessible from the list of linked documents in Appendix 2).

[21] Financial Performance and Projections of Perusahaan Listrik Negara (accessible from the list of linked documents in Appendix 2).

[22] Economic Analysis (accessible from the list of linked documents in Appendix 2).

C. Governance

21. ADB's Anticorruption Policy (1998, as amended to date) was explained to and discussed with the government and PLN. The specific policy requirements and supplementary measures are described in the PAM (footnote 17).

22. To ensure transparency and good governance, PLN will publicly disclose information on how loan proceeds are being used on its website. For each procurement contract, PLN will disclose (i) the list of participating bidders, (ii) the name of the winning bidder, (iii) basic details on bidding procedures adopted, (iv) the amount of the contract awarded, (v) a list of goods and services purchased, and (vi) the intended and actual utilization of loan proceeds. ADB will organize special training for PLN staff on ADB procedures, including implementation, procurement, use of consultants, disbursement, reporting, monitoring, and prevention of fraud and corruption. All contracts financed by ADB in connection with the project will be subject to prior ADB approval and will include provisions specifying the right of ADB to audit and examine the records and accounts of the executing agency, and all contractors, suppliers, consultants, and other service providers as they relate to the project.

D. Poverty and Social

23. The poverty and social analysis assessed impacts at the sector level, since identifying specific consumers is challenging in the context of transmission network expansion. The project will benefit poor households in the rural areas of Bali and Java when the government's rural electrification program is implemented. The current electrification ratio in Bali is 69%. The project area is located in East Java and in Bali while the project's main beneficiary area is Bali. The project will ensure adequate and reliable power supply that will enable industrial and commercial growth, especially in the tourism industry, and increased trading activities that create jobs especially for low income groups.[23] Basic public services, including education, health, and water supply, will improve because of increased access to electricity.[24] The social impact assessment carried out in June 2011 indicates that the project will benefit the entire population of 4 million people in Bali. Nearly 20% of the total beneficiary population is below the national poverty line. Further, an estimated 2.6 million foreign tourists and floating population in Bali will also benefit from reliable power supply.

24. Transmission projects are, by their nature, unlikely to provide opportunities to incorporate gender elements into their design, but there will be direct and substantial benefits to women from improved energy supply. The project preparatory due diligence did not highlight specific gender issues, although the project will benefit women and does not have any adverse impacts or widen the gender inequality. The benefits from electricity will accrue largely in the form of labor savings, enhanced social interaction, and broadened options for work and other activities. The resettlement plans for the project include specific actions to ensure women are included effectively in the land acquisition and resettlement process (e.g., female-headed households and poor women).[25]

[23] Bali is the largest tourist destination in the country and is renowned for its highly developed small-scale private enterprises that encompass activities such as art, music, dance, sculpture, painting, leather, and metalworking. The availability of reliable power supply in Bali will help these small-scale private enterprises create additional job opportunities.
[24] Summary Poverty Reduction and Social Strategy (accessible from the list of linked documents in Appendix 2).
[25] Land Acquisition and Resettlement Plan (accessible from the list of linked documents in Appendix 2).

25. The risk of spreading HIV due to the project is very low. Nevertheless, to address any threats during project implementation, information dissemination campaigns will be carried out in the project areas, which will be supervised by independent monitoring consultants.

E. Safeguards

26. **Environment.** The project is classified as environmental category "A" due to some sections of the proposed alignment passing through two national parks. An environmental impact assessment (EIA) has been undertaken covering all project components, including facilities funded by PLN in accordance with ADB's Safeguard Policy Statement (2009).[26] Relevant Indonesian environmental policies, regulations, and guidelines were also considered in the EIA. The draft EIA report was uploaded for public disclosure on the ADB website on 13 August 2012 and updated with a supplementary biodiversity study in June 2013. In accordance with the government's project readiness criteria, PLN prepared a separate EIA (*Analisis Mengenai Dampak Lingkungan*), which was approved by the Ministry of Environment on 16 April 2013.

27. Due consideration has been given to minimize environmental impacts in the selection of the interconnection options and the selection of the final alignment of the transmission line and sites for substations. The most environmentally sensitive aspects of the project are the sections of the alignment through Baluran National Park in Java and Bali Barat National Park. In the Baluran National Park, the alignment will pass through 63 hectares (ha) of wilderness zone and special utilization zone. This includes a modified area of teak plantation that functions as a seasonal wildlife corridor for a small population of endangered *banteng* (Bos javanicus).[27] Approximately 12 km of the alignment will pass through the wilderness zone of Bali Barat National Park. The park's wilderness zone includes several endangered species, but as per the EIA, the presence of wildlife other than birds is rare along the transmission line corridor and in the vicinity. While Gilimanuk Bay may provide seasonal habitat for migratory birds, survey and expert consultants indicated that there are no records of migratory birds in the bay.

28. A comprehensive package of environmental mitigation and offset measures has been designed to support biodiversity conservation in the two national parks. Specifically, the EMP includes measures to (i) avoid negative impacts to sensitive wildlife species through careful scheduling of construction timing and poaching prevention; (ii) minimize vegetation clearing to transmission line foundations, with limited or no clearing along the project right-of-way; and (iii) offset vegetation clearing through targeted restoration actions and the management of invasive species. In addition, PLN will provide financial resources to the two national parks through collaborative agreements, which will include (i) captive breeding programs, release, and monitoring in the wild; (ii) habitat monitoring and restoration in the transmission line right-of-way area; (iii) control of invasive species; (iv) compensation planting; and (v) provision of new water sources that are supportive of the parks' management plans.

29. A grievance redress mechanism has been developed to receive affected persons concerns about the project's environmental performance and facilitate resolution. While PLN has extensive experience in transmission line construction and operation in Indonesia, its project management unit, contractors, and park authorities will be trained on all aspects of the EMP, including mitigation requirements, health and safety requirements, and monitoring. PLN

[26] Environmental Impact Assessment (accessible from the list of linked documents in Appendix 2).
[27] The banteng (*Bos javanicus*), also known as tembadau, is a species of wild cattle found in Southeast Asia, http://en.wikipedia.org/wiki/banteng.

will supervise both the construction contracts and EMP implementation. Regular implementation progress reports will be submitted to ADB. In the event of any change of alignment or the identification of unanticipated environmental impact during project implementation, PLN will revise the EMP. To assist PLN, project implementation consultants will be engaged. In addition, independent safeguards monitoring consultants will also be engaged for independent monitoring of the implementation of the EMP. Comprehensive terms of reference for the consultants, including biodiversity experts, are indicated in the PAM (footnote 17). Further, ADB will implement a small-scale technical assistance to provide long-term conservation benefits through strengthening of operational management, monitoring, and capacity of the park authorities.

30. **Involuntary resettlement.** No physical relocation of houses will be required as a result of the project. There are no houses or structures that will be totally or partially demolished due to the project except several boundary walls. A total of 717 ha of land will be affected by the project (56 ha of permanent acquisition and 661 ha of restricted land use under the right-of-way), comprising 172 ha of forestry land and 545 ha of private or company land. A total of 1,200 households (about 4,000 people) will be affected by the project, of which 305 affected households are considered vulnerable, including 143 severely affected households (about 472 people).

31. The project's involuntary resettlement category is "A" as the number of severely affected people exceeds 200. A detailed land acquisition and resettlement plan has been prepared in consultation with the affected people in 2012 and an updated plan was disclosed on ADB website on 11 November 2013. In accordance with the land acquisition and resettlement plan, people who are displaced will be given compensation at full replacement cost for their affected assets, including crop compensation for the land at the tower locations. The project authorities will arrange training for the displaced people, including specific programs for skills development required in restoration activities that may be implemented in conjunction with nongovernment organizations. All relevant information regarding the project was disseminated and the opinions of the displaced persons were taken into consideration in developing the entitlement matrix. No indigenous people will be affected by the project.

F. Risks and Mitigating Measures

32. The integrated benefits and impacts are expected to outweigh the risks. Major risks and mitigating measures are summarized in Table 4 and described in the risk assessment and risk management plan.[28]

Table 4: Summary of Risks and Mitigating Measures

Risks	Mitigating Measures
Project implementation delays due to issues in land acquisition and resettlement.	PLN has identified the land acquisition requirements for the transmission line has put in place a comprehensive LARP in compliance with Asian Development Banks' safeguards policy statement. The LARP will be updated during detailed design phase with participation and consultation of all affected people. Implementation of LARP will start before the awarding of contracts. Capacity building of PLN staff will be conducted and project implementation consultants will be tasked to assist PLN in the implementation of LARP.
Project implementation delays owing to procurement delays and contractual issues.	Advanced procurement actions and retroactive financing will help mitigate the risk of procurement delays. Project implementation consultants will be recruited to assist the executing agency in contract management and issue resolution.

LARP = land acquisition and resettlement plan, PLN = Perusahaan Listrik Negara (State Electricity Company)
Source: Asian Development Bank estimates.

[28] Risk Assessment and Risk Management Plan (accessible from the list of linked documents in Appendix 2).

IV. ASSURANCES AND CONDITIONS

33. The government and PLN have assured ADB that implementation of the project shall conform to all applicable ADB policies, including those concerning anticorruption measures, safeguards, gender, procurement, consulting services, and disbursement as described in detail in the PAM and loan documents.

34. The government and PLN have agreed with ADB on certain covenants for the project, which are set forth in the loan agreements (A-Loan agreement and B-Loan agreement) and the project agreement.

35. The following conditions to the effectiveness of the A-Loan are set forth in the A-Loan agreement: (i) the subsidiary loan agreement relating to the proceeds of the A-Loan has been executed by the government and PLN and has become effective; and (ii) the B-Loan agreement has been executed and has become effective. The following conditions to the effectiveness of the B-Loan are set forth in the B-Loan agreement: (i) the subsidiary loan agreement relating to the proceeds of the B-Loan has been executed by the government and PLN and has become effective; and (ii) the A-Loan agreement has been executed and has become effective.

V. RECOMMENDATION

36. I am satisfied that the proposed loans would comply with the Articles of Agreement of the Asian Development Bank (ADB) and recommend that the Board approve

(i) the A-loan of $224,000,000 to the Republic of Indonesia for the Java–Bali 500-Kilovolt Power Transmission Crossing Project, from ADB's ordinary capital resources, with interest to be determined in accordance with ADB's London interbank offered rate (LIBOR)-based lending facility; for a term of 20 years, including a grace period of 5 years; and such other terms and conditions as are substantially in accordance with those set forth in the draft loan and project agreements presented to the Board; and

(ii) the B-loan of $25,000,000 to the Republic of Indonesia for the Java–Bali 500-Kilovolt Power Transmission Crossing Project, to be funded through the participation of the ASEAN Infrastructure Fund, on terms and conditions as are substantially in accordance with those set forth in the draft loan and project agreements presented to the Board.

Takehiko Nakao
President

12 November 2013

DESIGN AND MONITORING FRAMEWORK

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks
Impact Long-term power supply security to support sustained socioeconomic growth in Bali	Bali's projected power demand of 1,619 MW in 2022 met Baseline: 618 MW in 2012 Reliability of power supply enhanced by reduction in loss of load probability to 0.274% by 2022 (equates to 1 day/year power interruption) Baseline: 9% in 2012	PLN annual statistics PLN's Power Supply Business Plan, which is revised yearly (RUPTL)	**Assumptions** Government's support and commitment to the power sector Power development plans (transmission and distribution) in Bali implemented in parallel
Outcome Increased capacity of the Java–Bali power transmission network	Power transmission capacity between Java and Bali increased to 2,260 MVA by 2018 Baseline: 230 MVA in 2012	PLN annual statistics PLN operations reports	**Assumption** Planned additional power generation plants in Java are completed
Outputs 1. Development of 500 kV transmission networks between Java and Bali 2. Development of 500/150 kV and 150/20 kV substations in Java and Bali 3. Project management support	220 km of additional 500 kV transmission lines connected to the Java–Bali grid by 2018 2x500 MVA capacity, 500/150 kV new substation added to the Java–Bali grid by 2018 Eleven 150/20 kV substations upgraded, adding 600 MVA capacity by 2018 Completion of land acquisition and resettlement plan by December 2016 Completion of the construction, testing, and commissioning of proposed transmission lines and substations by March 2018 Completion of EMP during construction by March 2018 20 PLN staff trained on implementation and monitoring of EMP and LARP by June 2015	PLN annual statistics PLN operations reports ADB review missions ADB project mid-term review and completion reports	**Assumptions** Major environmental impacts mitigated Stakeholders fully support the project **Risk** Unforeseen delays in acquiring right of way and resettlement

Activities with Milestones	Inputs	
1. 500 kV transmission networks developed	**Total Inputs:**	**$410 .0 million**
1.1. Preliminary design, specifications, and bid documents completed and approved by 10 December 2013		
1.2. EPC contracts awarded by 30 June 2014	**Item**	**Amount ($ million)**
1.3. LARP implementation in place by March 2014 and completed by December 2015	**ADB loan:**	**224.0**
1.4. EMP implementation in place by June 2014 and completed by 31 March 2018	Civil works	28.1
1.5. Construction, testing, and commissioning completed by 31 March 2018	Equipment	159.1
	Consulting services	3.0
2. 500/150 kV and 150/20 kV substations developed	Contingencies	33.8
2.1. Preliminary design, specifications, and bid documents completed and approved by 10 Decemberr 2013		
2.2. EPC contracts awarded by 30 June 2014	**ASEAN Infrastructure Fund Cofinancing:**	**25.0**
2.3. LARP implementation in place by March 2014 and completed by June 2015	Civil works	3.1
2.4. EMP implementation in place by June 2014 and completed by 31 March 2018	Equipment	17.8
2.5. Construction, testing, and commissioning completed by 31 March 2018	Consulting services	0.3
	Contingencies	3.8
3. Project management support		
3.1 Recruitment of PIC and SMC completed by 15 April 2014	**Government Financing:**	**161.0**
3.2 First review mission by 31 December 2014 and follow-up missions every 6 months	Civil works	15.2
3.3 Midterm review mission in March 2016	Equipment	40.5
3.4 Monitoring of LARP until construction completed 31 March 2018	Land acquisition and resettlement	29.1
3.5 Monitoring of EMP until construction completed 31 March 2018 and beyond	Environmental management	1.1
3.6 Training for PLN staff on ADB procedures, including implementation, procurement, use of consultants, disbursement, reporting, monitoring, and prevention of fraud and corruption in June 2014 and March 2015 (3 days, 15 participants)	Taxes and duties	29.6
3.7 Capacity building programs on the implementation and monitoring of LARP; first program in June 2014 and second program in November 2014 (3 days each, 10 participants)	Contingencies	26.8
3.8 Capacity building programs on implementation and monitoring of EMP; first program in June 2014, second program in November 2014, and refreshing program in June 2015 (3 days each, 10 participants)	Financing charges during implementation	18.7
3.9 Issuance of quarterly project progress reports, including separate reports for LARP and EMP implementation		
3.10 Issuance of semi-annual environment monitoring reports		
3.11 Issuance of semi-annual resettlement monitoring reports		
3.12 Issuance of project completion report by December 2019		

ADB = Asian Development Bank; ASEAN = Association of Southeast Asian Nations; EMP = environmental management plan; EPC = engineering, procurement, and construction; km = kilometer; kV = kilovolt; LARP = land acquisition and resettlement plan; MVA = megavolt-ampere; MW = megawatt; PIC = project implementation consultant; PLN = Perusahaan Listrik Negara; RUPTL = Rencana Usaha Penyediaan Tenaga Listrik (Electricity Power Supply Business Plan); SMC = safeguards monitoring consultant.
Source: ADB estimates.

LIST OF LINKED DOCUMENTS

http://adb.org/Documents/RRPs/?id=42362-013-3

1. Loan Agreement: Asian Development Bank
2. Loan Agreement: ASEAN Infrastructure Fund
3. Project Agreement
4. Sector Assessment (Summary): Energy
5. Project Administration Manual
6. Contribution to the ADB Results Framework
7. Development Coordination
8. Financial Analysis
9. Economic Analysis
10. Country Economic Indicators
11. Summary Poverty Reduction and Social Strategy
12. Environmental Impact Assessment
13. Resettlement Plan
14. Risk Assessment and Risk Management Plan

Supplementary Documents

15. Financial Performance and Projections of Perusahaan Listrik Negara
16. Procurement Capacity Assessment