Republic of Indonesia: Java-Bali 500 kV Power Transmission Crossing Project
Java-Bali 500 kV Power Transmission Crossing Project
Project Preparatory Technical Assistance Concept Paper

Date: 05 July 2009

1. Country partnership strategy (CPS) / Regional cooperation strategy (RCS):
   • Year included in CPS/RCS/COBP/ROBP/CPS or RCS Midterm Review Report: 2008
   • Document reference number and date approved:
     • In case of change in the PPTA title, type, or amount, please state reason: The project was initially called the Java Sumatra 500kV High Voltage Direct Current (HVDC) Power Transmission Project that was not pursued due to the fact that the Government decided to chose Japan Government as financier.

2. Coverage
   - Country ☒ Subregional ☐ Interregional
   - Java and Bali Islands ☒ non-sovereign

3. Assistance Focus
   a. Sector(s):
      - Agriculture and natural resources ☐ Industry and trade ☐
      - Education ☐ Public sector management ☐
      - Energy ☒ Transport and ICT ☐
      - Finance ☐ Water supply and other municipal infrastructure and services ☐
      - Health and social protection ☐ Multisector
   Subsector(s): Transmission and Distribution

   b. Targeting classification
      - Targeted intervention ☐ General intervention (more indirectly addressing poverty reduction)

   c. Theme(s)
      - Economic growth ☐ Gender equity ☐
      - Social development ☐ Private sector development ☐
      - Environmental sustainability ☐ Governance ☐
      - Regional cooperation and integration ☐ Capacity development ☐

   Subthemes: Fostering physical infrastructure development

   d. Location impact
      | Relative weight of spatial impact of the project | High | Medium | Low |
      |-------------------------------------------------|------|--------|-----|
      | Rural                                           | ☐    | ☐      | ☐   |
      | Urban                                           | ☐    | ☐      | ☐   |
      | National                                        | ☒    | ☐      | ☐   |
      | Regional                                        | ☐    | ☐      | ☐   |

4. Partnership

5. Name of the Specialist (project team leader) in charge of the project: Xavier Humbert
   - Local Number: 5519
   - Email Address: xhumbert@adb.org

6. Department/Division: SERD/SEEW

7. Key Development Issues to be addressed:
   Key development issues are related mainly to environmental and social issues as well as the policy dialog in terms of tariff that will be necessary to be addressed during the TA in order to make the future project investment financially and economically viable.
8. TA Description:

a. Link to Country Partnership Strategy/Regional Cooperation Strategy

1. Infrastructure development is a key component of Indonesia's Medium Term Development Plan covering the period from 2004-2009. Urgent expansion of infrastructure is required to remove existing bottlenecks, increase service coverage, and attract private sector investments that would help achieve and sustain the projected economic growth. The Government aims to concentrate on upgrading the existing infrastructure and urging greater private sector participation (PSP) in new infrastructure, including energy development (oil and gas, and coal mines), and power generation. The Indonesian gross domestic product (GDP) has gradually increased from 2.5% in 2002 to 6.1% in 2007 since its recovery from the Asian Financial crisis. It is envisaged that GDP growth will be around 5.8% for 2008 due to the combined effect of global economic slow down and high international oil prices. Over the past decade, demand for electricity throughout the country has averaged about 10% per annum and registered 7% growth during the first two quarters of 2008.

2. The Government’s Energy Blueprint (2005-2025) recognizes the present high share of oil in the energy mix, its dependence on oil imports, sub-optimal operation of the energy sector due to subsidized energy prices, and the bottlenecks in generation and transmission systems. The country’s energy policy and strategy on the supply aims at optimizing the use of domestic energy resources, increasing the value added of energy resources while minimizing its environmental impacts, supplying energy to underprivileged and less developed areas, developing national capabilities and capacity to achieve self-sufficiency through increased production capacity of indigenous energy supplies, optimizing energy production, and conserving energy resources. On the demand side, it emphasizes on improving efficiency of end use energy, and diversification of energy sources. Prudent energy pricing, with effective targeting of subsidies for the poor, is required to achieve these objectives.

3. The Fast Track Program (FTP) launched in 2006 aims at (i) reducing its dependency on expensive oil based generation with a current average generation cost of about $0.14US/kWh; (ii) meeting the increased demand for electricity, which has grown at an average of 8% annually since 2003 and is envisaged to grow at about 10% per annum until 2018; and (iii) reducing Government’s fuel subsidy or public service obligation (PSO) to PLN, which has grown from $2 billion/year in 2003 to $7 billion in 2008. The PSO in 2009 will be lower as oil prices have dropped to $40/barrel but could increase in the coming years if international fuel prices go up. The Government’s aim is to gradually reduce the PSO to PLN from 2012 onwards when the new power plants come into operation and thereby enabling PLN to generate power from its thermal power plants and shuts down the diesel/fuel oil power plants.

4. Growth in electricity demand is significant in the coming years as electricity consumption in Indonesia is low compared to its ASEAN neighbors. Indonesia's electrification ratio (the number of residential households with electricity divided by the total number of residential households) is about 70% in 2008.\(^1\) Installed generating capacity increased from 500 MW in 1969 to 20,000 MW in 1997, but since 1997 until 2005 practically, no additional capacity was added. As Indonesian electricity demand is in line with economic expansion, Indonesia is currently facing a deficit of electricity supply as a result of the strong economic growth experienced over the last decade. Gross domestic product (GDP) has grown at an average of 5.8% per annum over the last three years and was expected to grow above 6% per annum during 2008-2010. This has resulted in an electricity demand growth of almost 10% per year. However, with the slow down in global economy, Indonesia's GDP growth and power demand is likely to slow down in 2009 but GDP growth rate is still about 5%, while electricity demand growth is envisaged to be about 7%.

5. With electricity demand growing at almost 10% per year, the reserve margin has decreased to 20% from the safe level of 30%. This decrease, combined with decommissioning of older power plants and problems with natural gas supply, has recently led to widespread load shedding. In securing Indonesia from electricity power crisis due to the growing demand. The Government of Indonesia, through Presidential Regulation No. 71/2006, has taken strategic measures, among others in issuing not only the FTP program for coal-fired plants but also a second fast track program for another 10,000 MW using supercritical coal, geothermal energy, and renewable energy resources. In the generation expansion plan of the Government (2009-2018), it is estimated that the current peak load will increase from 17,647MW in 2008 to 50,938 MW in Java–Bali system out of which, the Bali system alone will see a growth from its current 468 MW in 2009 to 1,271 MW in 2018. The total generation capacity in Java–Bali

\(^{1}\) The electrification rate for Indonesia compares well but still lower with other developing countries in the region such as Vietnam 90%, Thailand, 82%, Philippines 80%, and Singapore 100%.
The system is expected to increase during the same period from 22,296 MW in 2008 to 62,279 MW in 2018. In addition, the Java-Bali power system is expected to receive power from additional generation that are planned to be built in Sumatra near the large coal mines and to be exported to Java through a 3,000MW submarine cables.

6. Electricity tariffs remained the same since 2003, although the cost of supply has more than doubled from Rp615/kWh to Rp1,318/kWh between 2008 and 2004. High oil price increased the cost of supply. Government compensated PLN for the increase through direct subsidy that increased from Rp3,470 billion ($315 million) to Rp83,914 billion ($7.6 billion) during the same period. In addition, PLN increased its borrowing from 33% to 46% of its total assets during the same period. Subsidy amount is tied to certain financial ratio covenants, including a fixed interest coverage ratio, for its global and domestic bonds. PLN receives direct subsidy that covers the shortfall between (i) its operation cost with about 4.5% margin and (ii) the revenue. PLN expects the Government to increase the tariff after the new Government has been installed in October 2009.

7. Bali Island is currently supplied by three power plants with an aggregate installed capacity of 433 MW and by two 150kV submarines cables with a total capacity of 200MW (2x 100MW) for a total demand of 469 MW in 2008. Under the current operation of the power system, with a reserve margin of 20%, the Java System has to supply about 125MW which is about 62% of the maximum capacity of the two remaining cables. It is expected that with the increase of the electrification ratio in Bali Island which is in the range of the average electrification ration of the country (Bali electrification ratio was of 72% in 2008) and in order to meet the Government target to have an electrification rate of 100% in 2020, the existing cables will be fully loaded in the 2015 even if the on-going Independent Power Producer (IPP) of Bali Utara power plant with a capacity of 250MW is planned to be commissioned in 2010.

8. The existing 150kV submarine interconnection between Java and Bali was built in 1987 with a capacity of 6x100MW. However, several failures occurred on the cables and nowadays, only two submarine cables remain. Should a fault occur on one of the two remaining cables, Bali will suffer of severe load shedding that might have a noticeable impact on the economy of the island based mainly on the tourism activity (about 46% of the consumption in Bali is from the commercial sector against 45% from residential and 9% from industries, public services, and buildings). It is worth to note that tourism activities account for 6% of the GDP of the country, generate 67% of Bali's GDP and about 70% of the Bali residents are directly or indirectly dependant of this activity.

9. In the power development plan of Indonesia, the government as mentioned above, plan between 2009 and 2018 to add only 600MW of new generation in Bali Island out of the 40,000MW additional generation that will be built on the Java–Bali system. At the same time, about 180MW of old and inefficient diesel generation will be decommissioned in Bali Island. With the expected demand of 1,271 MW in 2018, it is obvious that the new generation to be installed in Bali cannot meet the requirement, while Java will have at this time some excess of generation. In the same power development plan, the Government is proposing to build an extra high voltage power overhead transmission line with a capacity of 1,500MW between Java and Bali to meet the power demand in Bali.

10. The rationale for this approach is because of its touristy destination, Bali has been classified by the Government as an environmentally protected area, hence (i) developing large coal fired power plants in the island is not suitable, (ii) land is limited and cost of land is more expensive that the one in Java; (iii) repairing the existing damage submarine cables is not appropriate due to their age and also due to the fact that in order to meet the long term demand in Bali, higher voltage level is to be used for limiting the technical losses. Bringing the large power generation with low generating cost and decommissioning expensive oil-fired power plants in Bali will also help the government in its strategy to gradually phase out the PSO without having to proceed with large tariff increases.

11. Due to poor experience with the existing submarine cables, PT PLN has requested ADB to study the feasibility of designing the Java-Bali crossing as an overhead crossing that will be less costly and easier to maintain. The drawback of this proposal is that the overhead crossing will require very high towers on both side of the strait, estimated to be higher than 300m, which will be the highest towers in the world. Taking into account the particular situation of Bali Island as touristy destination, the visual impact of these towers might be judged by the local authority as well as by the Ministry of Tourism and Environment not acceptable.

12. To overcome the possible rejection of PLN's proposed design, the project will also study, as an alternative, the crossing of the strait of Java-Bali by the means of submarine cables. The Java-Bali strait is only 2.4km,
characterized with strong tidal current and some steep slopes that can constitute hazard for submarine cables but that can be mitigated through appropriate engineering design. In addition, its maximum depth of 100m should not constitute at all a major technical issue. If such technical solution is chosen, the study will also take into account the lessons learnt through the existing submarine cables in the final design.

13. ADB has provided 29 loans with a total loan amount of $3.2 billion and 36 technical assistance projects for over $14 million. The loans were primarily in the power sector with only one for the gas sub-sector project. OED evaluation studies based on PCRs and PPARs for the sector shows that ADB has a comparative advantage in providing loans for energy, transport, communications, social infrastructure, and finance projects. Therefore, it should continue to target a substantial part of its assistance in Indonesia to support these sectors. ADB's current energy strategy is focused on the delivery of policy reforms, investments, and capacity building. The two loans approved since the crisis were sector projects which coincided with this strategy, combining policy reforms as well as several subprojects.

14. In the power sub-sector, with few exceptions, the completed loan projects succeeded in achieving their expected outputs and immediate objectives including the provision of additional capacity to match load growth, the removal of transmission system constraints, improvement in system efficiency and reliability, increase in the use of indigenous energy resources (hydropower and geothermal), and contributing to socioeconomic development. The TAs provided useful recommendations to the Government and PLN with respect to institutional strengthening, tariff rationalization, and sector restructuring. At the sector level, the lending was successful in improving the overall operating efficiency of PLN, not just the efficiency of the individual projects. While the assistance and its accompanying covenants were efficacious in enabling PLN to minimize costs of supply, reduce system losses, improve collection efficiency and make well-developed tariff proposals, they were often inefficacious in securing government approvals of such tariff proposals fully or in time, thus leading to financial shortfalls of PLN. Notwithstanding the lack of financial achievement, the overall efficacy of ADB-financed projects was judged to be satisfactory.

15. The Asian Development Bank’s (ADB) country strategy and program (CSP) for 2009-2011 supports the Government’s efforts to address the investment needs through its medium term development plan. These include achieving a balance between businesses-led economic growth, social equity, and environment sustainability, while strengthening the governance of public sector institutions. The CSP highlights the importance of removing infrastructure bottlenecks in the power and transport sectors and to put in place attractive, effective, and transparent incentives for private sector participation in infrastructure development.

16. Reducing poverty remains at the forefront of Indonesia's medium term development plan and has an ambitious target of reducing this to 8.2% by the end of 2009 when the current Presidential term expires. It is estimated that at least 40 million people are still living below the poverty line of $2/day. Wide regional differences are a characteristic of Indonesia and are reflected in the disparities between the rural and urban areas. Java/Bali is home to almost 70% of Indonesia’s population and hub of political and economic life. But it is this over-population with a scarcity of natural resources within these two provinces that significant poverty pockets exist in these areas. With the dominant population scenario, Java/Bali accounts for approximately 58% of the country’s poor with a poverty headcount of about 15.7%. Almost 21 million people in Java/Bali, as per statistics published by the Government, are classified as being poor. In light of it being the most densely populated province of Indonesia, special attention needs to be paid for access to basic infrastructure services such as roads, clean water, and electricity to alleviate the less fortunate households and therefore it cannot afford to be neglected.

17. ADB's participation in power sector restructuring dates back as far back as 1996, ADB undertook a technical assistance, TA INO-30042: Electricity Tariff Rationalization Study with the objective of analyzing the impact of cross subsidies and the social impact of eliminating them and a medium term strategy for developing a post-cross subsidy elimination program. Since then, ADB has been actively engaged in policy and sector dialogue with the Government (Directorate General for Electricity and Energy Utilization, DGEEU) and PLN to make electricity available in a least-cost and environmentally sound manner and improve access for all. The ADB, JICA,

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2 Loan 1982 covers renewable energy and Loan 1983 involves power transmission distribution in Java-Bali and Kalimantan grids.
and the World Bank jointly prepared six policy briefs on issues and constraints facing the main infrastructure sectors (including the power sector) and on reforms needed to address them. Building on these efforts, the Government took a range of critical steps to set the pace for reforms. In February 2006, it released the infrastructure policy package and this resulted in the Infrastructure Reform Sector Development Program (IRSDP) loan series consisting of 3 subprograms starting 2006 and ending in 2010. A summary of the power sector reforms included under IRSDP is summarized in Table 1 below and a more detailed status on the progress in power sector reforms undertaken by ADB in Indonesia is provided in Appendix 5.

**Table 1: Targeted Power Sector Reforms by ADB under IRSDP**

<table>
<thead>
<tr>
<th>Policy Action no.</th>
<th>Undertake long-term planning for the power sector in terms of physical expansion, service coverage, and sector restructuring</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. Revised power sector master plan (RUKN) – completed in 2006</td>
</tr>
<tr>
<td></td>
<td>3. Institutional and financing strategy for meeting the Government’s electrification targets – to be completed in 2010.</td>
</tr>
<tr>
<td></td>
<td>4. Implementation of the electrification strategy – to be completed in 2010</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Policy Action no.</th>
<th>Adopt a legal framework for the energy sector that ensures energy security through diversification of energy sources and energy conservation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. New law on energy – achieved in 2007 with the enactment of Law 30/2007</td>
</tr>
<tr>
<td></td>
<td>2. Government regulations on energy conservation, renewable energy, and supply and utilization of energy – to be completed in 2010</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Policy Action no.</th>
<th>Revise the legal framework for the power sector to remove uncertainty caused by the annulment of Law 20/2002 on electricity by the Constitutional Court</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. Government regulations enabling the purchase of electricity from independent power producers by PLN – completed in 2006</td>
</tr>
<tr>
<td></td>
<td>2. New law on electricity – to be completed in 2010</td>
</tr>
<tr>
<td></td>
<td>3. Implementing regulations for the new law on electricity – to be completed in 2010</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Policy Action no.</th>
<th>Strengthen PLN’s institutional structure and capacity in the areas of project planning and implementation, financial management, and corporate governance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. Policy paper on corporate restructuring of PLN – completed in 2006</td>
</tr>
<tr>
<td></td>
<td>2. Implementation of recommendations of the report – partially completed in 2008 and remainder to be done by 2010</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Policy Action no.</th>
<th>Adopt appropriate tariff policy for PLN customers in line with the cost recovery principle outlined in Presidential Regulation 67/2005 (this refers to cooperation between Government and private sector)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. Strategy for achieving full cost recovery by PLN through efficiency improvements, tariff increases, and transparent subsidies – completed in 2006</td>
</tr>
<tr>
<td></td>
<td>2. Implementation of the full cost-recovery strategy – to be completed in 2010</td>
</tr>
<tr>
<td></td>
<td>3. Review of the tariff structure and tariff-setting process, including the feasibility of an automatic tariff adjustment mechanism – to be completed in 2010</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Policy Action no.</th>
<th>Adopt regulatory arrangements for the power sector that are consistent with the new legal framework and aim at economic regulation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. Assessment of the current regulatory arrangements – completed in 2008</td>
</tr>
<tr>
<td></td>
<td>2. Implementation of recommendations of the assessment – to be completed in 2010</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Policy Action no.</th>
<th>Review the current PSO policy for the power sector to make it affordable for the poor, and to increase PSP and service coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2. Implementation of the revised PSO policy – already ongoing and completed although target was 2010</td>
</tr>
</tbody>
</table>
Policy Action no. 8
Improve the investment climate for independent power producers

1. Presidential regulations on lists of fields closed and conditionally open to investments – completed in 2008
2. Implementation of the above regulation by the Investment Board – to be completed in 2010

18. In addition to the on-going loan that aims mainly to develop and upgrade the transmission system in East Kalimantan and in the Java-Bali system, ADB strategy in terms of public lending has progressively shifted to support the development of transmission and distribution projects rather than focusing in generation projects that can be developed through public operation or private-public partnership. ADB provided technical assistance\(^4\) to study the West Kalimantan–Sarawak Interconnection. Recently, ADB is considering providing a credit risk guarantee to Hong Kong and Shanghai Banking Corporation (HSBC) for the Java Island Transmission Project and a public loan to PLN for the Java-Bali distribution performance improvement project in 2009. The proposed project will complement the later that aims to reinforce the distribution of electricity in Bali Island and increase the electrification rate in this Island from the current 72% in 2008 to 100% in 2020.

19. The proposed project will prepare the ensuing investment project by undertaking the feasibility study of a new 1,500MW power interconnection on a technical, economic, financial, environmental, and social basis. The project Team considered initially a sub-sovereign lending directly to PLN but did not pursue with it because such approach is adequate when the borrower can manage its cash flow. In the present case, PLN has no control of its cash flow due as revenue management of PLN, such as tariff adjustments are decided by the Central Government.

ADB involvement in this operation will not only provide investment loan but will also guarantee the respect of the fragile environment of Bali and will ensure that quality in resettlement in Java and Bali.

b. Impact

20. The construction of 500 kilovolt (kV) transmission line, submarine cables, and substations will allow an import capacity of about 1,500 megawatt (MW) from the Java power grid to the Bali power grid and remove load shedding in Bali by 2015.

c. Outcome

21. Agreement reached between the ADB and PLN on the design and timing of the project.

d. Outputs

22. The feasibility study completed that will include the technical design, the economic and financial viability, and the social and environmental of the transmission lines, submarine cables, and associated substations. Bidding documents will also be developed under the TA.

Tow workshops will be conducted during the implementation of the TA at the inception, and draft final reports stages.

9. Assumptions and risks

1. The main potential issue with this proposed transmission line and substation are mainly related to the social and environmental impact. On the Java side, there is the Baluran National Park and the PPTA will study an adequate route of the transmission line in order to avoid it as much as possible. From the first investigations conducted by PLN it seems that there is a possibility to avoid fully the Baluran Park. While on the Bali side, although the PPTA will try to avoid as much as possible the Bali Barat National Park, it seems that it cannot be fully avoided and some towers might still fall on it. Although PLN received support from the Governor of Bali on the project, the Ministry of Environment did not approve yet the use of the Barat Park. As a mitigation measure, the PPTA will study the possibility of designing the strait crossing using submarine cables because this technical solution, will not require to cross the strait at its narrowest point like with an overhead solution and will allow more flexibility to avoid the National Park by choosing if possible a landing onshore point outside the Park.

2. On the social issues, with more than 100km of overhead transmission lines in East Java, resettlement and land acquisition can be a major issue as East Java is the second most populated province in Indonesia. Special

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\(^4\) ADB 2004, TA 6174-REG: Support to Strategize Regional Cooperation in Southeast Asia. Manila
attention will be made during the implementation of the PPTA on social issue and it can be proposed that the ensuing Loan will become effective only when the resettlement issues have been solved. A detailed resettlement plan and environmental impact assessment report will be prepared during the implementation of the PPTA.

10. Implementation Arrangements

a. Proposed executing/implementing agency (EA/IA) PT PLN (Persero).

b. Institutional/organizational/procurement and financial management assessments on the EA/IA previously conducted

☐ Yes  ☒ No

c. ADB inputs

A consulting firm will be recruited under quality cost base selection method with a ratio of 80:20. It will provide 22 person-months of international and 23 person-months of domestic consulting services. The Team will have expertise system planning, HVAC transmission lines and substation, submarine cable; economic analysis, financial analysis; environmental, social and resettlement issues. Outline Terms of reference are provided as Appendix 2.

d. Complementary inputs to be provided by Government and/or other TA providing agencies

In kind contribution from the Government in providing free office space furniture and free internet and telephone connections estimated to $300,000. Usage fees for internet and telephone will be born to the consultant.

11. Nature/extent of government/beneficiary involvement in identifying or conceptualizing the assistance:

The Ministry of Finance, Bappenas, and the Directorate General for Energy Utilization have been consulted and all supported the proposed project and the ADB involvement in preparing the project. A MOU that records this agreement was signed between PLN and ADB on 26 February 2009.


The total cost of the TA preparation/development is estimated at $1,300,000 equivalent. It is proposed that the ADB under PPTA provide $1,000,000 equivalent on a grant basis from the Japan Special Funds. The Government will finance the remaining $300,000 equivalent.

<table>
<thead>
<tr>
<th>Source</th>
<th>Amount ($)</th>
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<tbody>
<tr>
<td>ADB Financing</td>
<td></td>
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<tr>
<td>TASF-IV</td>
<td></td>
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<tr>
<td>TASF-others</td>
<td></td>
</tr>
<tr>
<td>JSF</td>
<td>$1,000,000</td>
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<tr>
<td>ATF</td>
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<td>APCF</td>
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<td>CCF</td>
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<td>PEF</td>
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<tr>
<td>RCIF</td>
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<tr>
<td>Other trust fund</td>
<td></td>
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<tr>
<td>Government Financing</td>
<td>$300,000</td>
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<tr>
<td>Other Financing</td>
<td></td>
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<tr>
<td>- co-financing:</td>
<td></td>
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<tr>
<td>- parallel co-financing:</td>
<td></td>
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<tr>
<td><strong>Total Cost</strong></td>
<td><strong>$1,300,000</strong></td>
</tr>
</tbody>
</table>

Source: ADB estimates

13. JSF Amount Requested $1,000,000.00

a. Elements that justify JSF financing:

The proposed project is in line with Japan policy in development of the power sector in Indonesia which aims to develop the interconnection between Java-Bali systems and Sumatra one.
b. Coordination with local Japanese Embassy or any other embassy when external funding is involved.

Name of the staff of the local Japanese Embassy / external partner embassy whom you have briefed: Mr. Takehiro Tsuchiya/Second Secretary Industry, Science and Energy.
Date of the discussion: 25 February 2009
Results of the discussion: As a result of the discussion, the Japanese Embassy in Jakarta affirmed its support to the project that is crucially needed for the reliable supply of electricity of Bali. It was also mentioned that the proposed project is fully in line with the Japan's policy in the development of the power sector in Indonesia. It was also agreed that ADB will share the report produce under the TA with JICA.

<table>
<thead>
<tr>
<th>14. Estimated period of TA implementation:</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Approval of TA August 2009</td>
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<tr>
<td>b. Physical completion of TA May 2010</td>
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<tr>
<td>c. Closing of TA September 2010</td>
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</tbody>
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<table>
<thead>
<tr>
<th>15. Expected Year of Ensuing Loan/Grant:</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>16. Indicative Amount of Ensuing Loan/Grant:</td>
<td>$350.00 million</td>
</tr>
<tr>
<td>17. Description of Ensuing Loan: Construction of the 500kV transmission line and crossing between Java and Bali</td>
<td></td>
</tr>
<tr>
<td>18. Indicative loan/grant modality: Project Loan from ADB Ordinary Capital Resources</td>
<td></td>
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</tbody>
</table>
# PRELIMINARY DESIGN AND MONITORING FRAMEWORK

<table>
<thead>
<tr>
<th>Design Summary</th>
<th>Performance Targets/Indicators</th>
<th>Data Sources/Reporting Mechanisms</th>
<th>Assumptions and Risks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Impact</strong></td>
<td>• Java-Bali power interconnection capacity strengthened</td>
<td>• 1,500 megawatt (MW) to be transmitted from the Java power grid to the Bali power grid by 2015.</td>
<td><strong>Assumptions</strong> • The planned additional power plants are built as per schedule in Java and power purchase agreement signed. • Demand in the Java-Bali system continues to grow. <strong>Risks</strong> • Environmental and social issues will delay the project.</td>
</tr>
<tr>
<td></td>
<td>• Absence of load shedding in the Java-Bali grid from 2015 onwards.</td>
<td>• PLN annual report • PLN operating results</td>
<td></td>
</tr>
<tr>
<td><strong>Outcome</strong></td>
<td>• Agreement reached between the ADB and PLN on the design and timing of the project.</td>
<td>• Memorandum of understanding signed by the Government, ADB, the co-financiers and PLN by 30 May 2010 according to the expecting processing schedule.</td>
<td><strong>Assumptions</strong> • No major environmental impacts. • No critical issues with land acquisition and resettlement. • Enough data are available on the sea portion of the project for the determination of the submarine cable route. <strong>Risks</strong> • Implementation delays</td>
</tr>
<tr>
<td><strong>Outputs</strong></td>
<td>1. Technical assessment 2. Financial and economic assessment 3. Social and environmental assessment</td>
<td>• Least cost analysis, technical specifications, detailed cost estimates and procurement plan by April 2010. • Economic and financial justification of the project by April 2010. • Resettlement plan, indigenous development plan, and environmental impact assessment available by April 2010.</td>
<td>• Technical assistance review missions • Tripartite meeting and minutes of the meetings <strong>Assumptions</strong> • Documentation available especially sub sea survey on the straight crossing. • Close cooperation of the developers and PLN. <strong>Risks</strong> • Inadequate counterpart support and performance.</td>
</tr>
<tr>
<td><strong>Activities with Milestones</strong></td>
<td>1.1 Determination of the preliminary routing of the line and environmental and social findings (November 2009) 1.2 Review the feasibility studies that have been carried out for the entire project and carry out the least cost analysis of supplying electricity in Bali (February 2010) 1.3 Preliminary technical design, cost estimates and implementation schedule (February 2010) 1.4 Final conceptual design of the project, detailed cost estimates and</td>
<td>• Technical assistance review missions • Tripartite meeting and minutes of the meetings</td>
<td><strong>Inputs</strong> • ADB $1,000,000 • 22 person-month international consultant $616,000 • 23 person-month domestic consultants $90,000</td>
</tr>
<tr>
<td></td>
<td>1.5 Least cost analysis, technical specifications, detailed cost estimates and procurement plan by April 2010.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
implementation schedule (April 2010)

1.5 Technical specifications and draft bidding documents (April 2010)

2.1 Assess the financial and economic benefits of the Project (April 2010)
2.2 Financial Management Assessment of PT PLN (April 2010)
2.3 Prepare the financing plan and detailed project cost including risk analysis and sensitivity analysis (April 2010)
2.4 Justify the project in financial, economic, social, and environmental terms (April 2010)

3.1 Conduct due diligence on environmental and social impacts on associated facilities - coal fired power plants (April 2010)
3.2 Prepare the EIA, their summary (SEIA), resettlement plan, ethnic minority plan and EMP for the substations, the transmission line, and submarine cables (April 2010)

• Travel $90,000
• Reports and communications $20,000
• Surveys $70,000
• Representatives for contract negotiations $4,000
• Miscellaneous Administration and Support costs $10,000
• Contingencies $100,000
• Government $300,000
• Office accommodation $200,000
• Counterpart staff $200,000
OUTLINE TERMS OF REFERENCE FOR CONSULTANTS

A. Scope of Work

1. The scope of work of the technical assistance (TA) consists in carrying out feasibility study of the HVAC transmission lines and substations of the 500kV Java – Bali power crossing in order to prepare the ensuing investment loan.

B. Methodology

2. Based on the existing pre-feasibility study through field visits, discussion with PT PLN and the relevant Indonesian authorities, the objective of the technical assistance is to confirm the optimum interconnection route and design of the power interconnection.

3. A social survey including the elaboration of a land acquisition and resettlement plan as well as the elaboration of an indigenous development plan if necessary will have to be carried out. An environmental impact assessment (EIA) and its summary are part of the TA.

C. Terms of Reference

4. A consulting firm will be engaged through a firm to provide technical services for a total of 45 person-months of consulting services (22 person-months of international consulting inputs and 23 person-months of domestic consulting inputs).

1. HVAC Power Planning Specialist (3 person-months international – 3 person-months national)

5. The consultant under the supervision and coordination of the team leader will:

   (i) Review and update the demand forecast for Java and Bali systems as well as the generation expansion plans in each system and confirm the transmission capacity of the interconnection through load flow and other power planning system studies;

   (ii) Review the development time schedule of power plants in Java under private sector as well as PLN new generation facilities and will undertake load flow, short circuit, and stability studies;

   (iii) Based on the above review, determine the best options of supplying Bali from the Java taking into account load location, transmission, social, and environmental constraints;

   (iv) Compare the cost of developing power generation in Bali to the construction cost of the second Java – Bali interconnection;

   (v) Review the daily and seasonal peak demand in the Java and Bali subsystems and determine the power flows through the proposed interconnection; and

   (vi) Based on the above, determine the least cost investment for the transmission facility, taking into account the optimal technical design, and the phasing of the investment project that matches with the expecting commissioning dates of the new generation facilities in Java and the expected demand growth in Bali.

2. HVAC Transmission Specialist and Team Leader (5 person-months international – 5 person-months national)
6. The consultant as Team leader will coordinate the activities of other experts, provide quality control, harmonize proposal and recommendations and will ensure of the participation of stakeholders in building ownership. As expert he/she will:

(i) Along with the other team members develop a rationale for ADB to involved in such project and justify why ADB should focus on Java-Bali Grid rather than on other parts of Indonesia.

(ii) Carry out a detailed study of the best option including design of towers, conductors, insulators, earth wire, grounding system, load dispatch facilities, and optimize the route for the transmission line to minimize social and environmental impacts;

(iii) In coordination with the other experts, compare the advantage and disadvantages of linking Java to Bali through overhead line or submarine cables through the Java Bali straight, including the social and environmental aspects of the corresponding technical design;

(iv) Carry out a survey of the whole transmission line in both islands, determine the Right of Way at an early stage that will have minimum social and environmental impact. Special attention will be paid in order to minimize the impacts on the Baluran and Bali Barat National Parks. Together with the social and environmental specialists, prepare and cost the land acquisition, compensation, environmental, and mitigation measures costs;

(v) Prepare a detailed implementation schedule, taking into account any seasonal constraints during construction and the planned commissioning date of the power producers;

(vi) Prepare the technical design of the Paiton-Kapal 500 kilovolt (kV) double circuit power transmission line. During the technical review of the transmission line, the consultant will assess the technical losses of the line to be compared with the actual losses after the said transmission line is commissioned;

(vii) Propose a suitable contract packaging and procurement plan, taking into account the availability of foreign and local funds, co-financing if any, other local regulation or local practices that might have an impact on procurement;

(viii) Carry out the conceptual design of the substation including but not limited to: substation layout, sections, bill of quantities, control system, telecommunication system, and load dispatch center data requirements;

(ix) Study and develop the necessary emergency systems (defense plan) to set up in order to avoid a major fault if one system transmits to the other system. Review the existing emergency systems on the existing submarine cables and propose an upgrade of the existing system, if needed;

(x) Prepare for the financial specialist the detailed cost estimates, broken down into foreign exchange and local currency, for the civil works; supply and erection of the overhead transmission line and substations including other items that might have an impact on the final price such as land acquisition, resettlement, environmental, engineering services, and physical and prices contingencies;

(xi) Prepare a detailed list of equipment; and detailed implementation schedule separately for each substation and the transmission line;

(xii) Prepare the technical specifications, prequalification, if any, and bidding documents for the Paiton-Kapal transmission line and substations in accordance with ADB’s *Procurement Guidelines* (2007, as amended from time to time);
3. **Submarine Cable Specialist** (3 person-months international)

7. The consultant under the supervision and coordination of the team leader will:

   (i) Carry out a review of the available documentation on the marine surveys (including geophysical surveys) in the Java-Bali straight, identify the sensitive environmental locations;

   (ii) Conduct a due diligence on external hazards such as anchoring, fishing, and other factors that might endanger the cables;

   (iii) Based on the above, propose the most suitable route for the cables, their technology (oil filled, mass impregnated, XLPE, etc.), and their physical protection against external aggression such as embedding, concrete mattresses, piping, etc., in order to achieve a target reliability criteria of not more than 1 fault/100km/10 years;

   (iv) Prepare the detailed cost estimates in foreign and local currency for the financial specialist and detailed implementation schedule for the marine portion of the project. Cost estimate will have to include associated cost such as surveys, seabed soil analysis, development of special tools (embedding machine, if any) that will be conducted by the contractor;

   (v) Assess the time for repairing the submarine cable, and with the financial analyst and the economist, assess the economic and financial losses for Bali. Compare such cost with additional generation investment needed to reach the same level of reliability;

   (vi) If such review shows that additional marine surveys need to be conducted, draft the terms of reference, scope, time schedule, and cost estimate in order to carry out such additional surveys; and

   (vii) Prepare the detailed terms of reference for the implementation consultants and assess the level of efforts (number of specialists, estimated person-months for each, including international, and domestic experts) along with the corresponding cost estimates (cost estimates should include provision for the purchase of special tools and equipment as required to perform the services).

4. **Economist** (2 person-months international – 2 person-months national)

8. The consultant under the supervision and coordination of the team leader will:

   (i) Assess the economic benefits of the project in accordance with the relevant ADB’s *Guidelines for Economic Analysis of the Projects* (1997). The quantitative and qualitative economic and financial benefits will take into account but not limited to: (i) the avoidable investment by comparison with alternative solutions (i.e.: additional generation in Bali); (ii) fuel cost savings in Indonesia; and (iii) development of socio-economic activity in Bali due to access to more reliable electricity supply;

   (ii) Identify the risks and undertake appropriate risk and sensitivity analysis with respect to the economic internal rate of return in accordance with ADB’s *Handbook for Integrating Risk in the Economic Analysis of Projects* (2002);

   (iii) Identify stakeholders and conduct a distributional analysis of the net project benefits in accordance with ADB’s *Handbook for Integrating Poverty Impact Assessment in the Economic Analysis of Projects* (2001);
With other team members, prepare a project framework that clearly identifies the proposed project’s impact, outcome, output and activities, targets or benchmarks, monitoring mechanisms, assumptions, and potential risks in accordance with ADB standards; and

5. **Financial Analyst** (3 person-months international – 3 person months national)

The consultant’s activities will be guided by, and outputs prepared in accordance with ADB’s *Financial Management and Analysis of Projects* (2005) as described in the *Financial Due Diligence Methodology Note* (2009). The consultant under the supervision and coordination of the team leader will:

(i) Carry out in-depth financial analysis of the proposed investment, including calculation of the financial internal rate of return and weighted average cost of capital, taking into account all the financial costs and revenues that can be attributed to the proposed project;

(ii) With the other specialists, collate, verify and finalize the cost of the project assess the minimum selling price of electricity in Bali based on purchasing price from Java;

(iii) Identify all risks to the proposed project’s revenue and costs, and conduct relevant sensitivity analyses on its financial rate of return;

(iv) Prepare a detailed project cost estimates table for the proposed investment, taking into account all relevant financial costs that include physical and price contingencies, interest during construction, commitment fees, and up-front fees;

(v) Prepare a financing plan for the proposed project for each potential donor and the overall that includes proposed ADB lending, prospective co-financing, if any, and appropriate counterpart funds for local currency expenditures; and

(vi) Carry out a Financial Management Assessment of PT PLN and propose a design of the funds flow/disbursement mechanism of the ensuing project, based on such assessment.

(vii) Review the financial projections for PLN for the next 10 years. Propose prudent financial covenants to ensure that PLN generates adequate cash flow to finance new investments and to repay their loans.

(viii) With other specialists review the progresses made in terms of power sector reform and work out a plan for the Government to gradually phase out the public service obligation (PSO), recommend tariffs structures to be adopted in order to shave the peak demand in both Java and Bali systems.

6. **Environmental Specialist** (3 person-months international and 4 person-months national)

The consultant under the supervision and coordination of the team leader will:

(i) Conduct an environmental impact assessment (EIA) of the proposed transmission lines and substations, considering the likely impacts associated with construction activities, as well as the long-term impacts during operations;

(ii) Prepare the EIA report and summary EIA base on ADB’s *Environmental Policy (2002)* and *Environmental Assessment Guidelines (2003)*;

(iii) Prepare an environmental management plan (EMP) which will include: (a) details of environmental mitigation and monitoring program to be implemented; (b) clear definition of institutional arrangements and responsibilities for EMP implementation;
(c) assessment of current institutional capacity to implement the EMP and proposed capacity building/institutional strengthening activities; and (d) scope, budget, schedule, frequency, location, and responsibilities for implementation of environmental mitigation, monitoring, and capacity building and institutional strengthening activities; and

(iv) Ensure that the environmental cost and cost of implementing mitigation measures, environmental management and monitoring plans, and any strengthening measures are included in the proposed project’s cost.

7. Social Specialist (3 person-months international and 4 person-months national)

11. The consultant under the supervision and coordination of the team leader will:

(i) Prepare a sample-based social impact assessment, including gender analysis, of the proposed project, including any potential impacts on ethnic minorities; provide mitigation measures/affirmative activities to ensure that ethnic minorities are safeguarded during construction and the project implementation period;

(ii) Conduct due diligence on the social impact assessment and resettlement and ethnic minority plan on upstream generation related to the project (if any), as well as on their implementation; identify inconsistencies with national and ADB social safeguard requirements; recommend solutions or action plans to address these irregularities; and summarize the results in the social impact assessment report;

(iii) Prepare a resettlement plan for the Project components (transmission line, substation and submarine cable), if they will result social impacts that will trigger ADB’s Involuntary Resettlement Policy (1995). If necessary, prepare an ethnic minority-specific action plan for inclusion in each resettlement plans in accordance with ADB’s Policy on Indigenous Peoples (1998). Include a gender action plan in the resettlement plan; assess the social cost associated with the project; and

(iv) Review and assess the risk of spreading HIV/AIDS and other sexually transmitted diseases during the construction phase. Prepare a plan for mitigating the risk to construction workers and communities; the plan will include the requirement for each contractor to prepare and implement an HIV/AIDS and sexually transmitted disease awareness program for its workers, for which the bidding documents will include a budget line item.

D. Reporting

12. The consultants will prepare the following reports for PLN and ADB: (i) an inception report (7 copies) within 1 month after the commencement of services; (ii) a draft final report (13 copies) 6 months after the commencement of services; and (iii) a final report (13 hard copies + 2 soft copies in CD-ROM) 8 months after the commencement of services. Tripartite meetings will be held after submission of the inception, and draft final reports.
## COST ESTIMATES AND FINANCING PLAN
($'000)

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. ADB Financing</strong></td>
<td></td>
</tr>
<tr>
<td>1. Consultants</td>
<td></td>
</tr>
<tr>
<td>a. Remuneration and Per Diem</td>
<td></td>
</tr>
<tr>
<td>i. International Consultants</td>
<td>616.0</td>
</tr>
<tr>
<td></td>
<td>Number of Person-months</td>
</tr>
<tr>
<td>ii. Domestic Consultants</td>
<td>90.0</td>
</tr>
<tr>
<td></td>
<td>Number of Person-months</td>
</tr>
<tr>
<td>b. International and Local Travel</td>
<td>90.0</td>
</tr>
<tr>
<td>c. Reports and Communications</td>
<td>20.0</td>
</tr>
<tr>
<td>2. Surveys</td>
<td>70.0</td>
</tr>
<tr>
<td>3. Miscellaneous Administration and Support Costs</td>
<td>10.0</td>
</tr>
<tr>
<td>4. Representative for Contract Negotiations</td>
<td>4.0</td>
</tr>
<tr>
<td>5. Contingencies</td>
<td>100.0</td>
</tr>
<tr>
<td><strong>Subtotal (A)</strong></td>
<td><strong>1,000.0</strong></td>
</tr>
<tr>
<td><strong>B. Government Financing</strong></td>
<td></td>
</tr>
<tr>
<td>1. Office Accommodation and Transport</td>
<td>100.0</td>
</tr>
<tr>
<td>2. Remuneration and Per Diem of Counterpart Staff</td>
<td>200.0</td>
</tr>
<tr>
<td><strong>Subtotal (B)</strong></td>
<td><strong>300.0</strong></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,300.0</strong></td>
</tr>
</tbody>
</table>

Source: ADB estimates

*Financed by the Government of Japan*
Initial Poverty and Social Assessment

Project Number: 42362-01
July 2009

INO: Java Bali 500kV Power Transmission Project
## INITIAL POVERTY AND SOCIAL ANALYSIS

<table>
<thead>
<tr>
<th>Country/Project Title:</th>
<th>Java-Bali 500 kV Power Transmission Crossing Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lending/Financing Modality:</td>
<td>Project/Sector/Multitranche Financing Facility /Policy-Based, others (please specify)</td>
</tr>
<tr>
<td>Department/Division:</td>
<td>SERD/SEEW</td>
</tr>
</tbody>
</table>

### I. POVERTY ISSUES

#### A. Linkages to the National Poverty Reduction Strategy and Country Partnership Strategy

1. Based on the country poverty assessment, the country partnership strategy and the sector analysis describe how the project would directly or indirectly contribute to poverty reduction and how it is linked to the poverty reduction strategy of the partner country.

2. Electricity has great role in Indonesia for industrial sector, business, social service, and domestic works. Therefore, development progress and economic growth will be influenced significantly by supply and distribution of the electricity energy. In 2007, the economic growth in Bali was 5.85%, while electricity consumption was 11.8%. In the next 10 years, the economic growth in Bali is predicted at approximately 6 – 6.5%. So, the energy need growth is estimated at 11.5% in average. The Bali system is supplied only by three power plants, 433 MW and the existing submarine cables (2x 100MW) linking the Java and the Bali systems. With the current demand in Bali, the system relies mainly on these supplies from Java and the existing submarine cables are already fully loaded. Should a fault occurs on these cables, Bali will suffer of load shedding, for the existing generation in the island not being able to meet the current load. Such scenario will have an important impact on the whole Indonesian economy caused by the displacement of the tourism to some other destinations where the power supply is more reliable. Due to its particular tourism destination the Government has classified Bali as an environmental protected area. In addition, the available land is scarce which make it difficult to develop new generation means. In addition, development of new generation scheme in Bali island will be more expensive than using large power plants that are under development in Eastern Java as part of the Government 1,000MW crash program. The National Poverty Reduction Strategy and the Country Partnership Strategy recognize that one key factor in addressing this issue is to invest in infrastructure that will contribute to the economic growth of the country and thus, directly through job creation or indirectly through economic opportunities such as the development of the tourism industry or the better access to basic services, will help reduce poverty in Indonesia.

#### B. Targeting Classification

1. Select the targeting classification of the project:

   - General Intervention  
   - Individual or Household (TI-H)  
   - Geographic (TI-G)  
   - Non-Income MDGs (TI-M1, M2, etc.)

2. Explain the basis for the targeting classification:  
   The Project is a general intervention and the direct impact on poverty is not expected. The Java – Bali Crossing 500KV Second Power Transmission Interconnection Project will take place in three districts in East Java Province. The supply of electricity energy in Bali now is 562 MW. Due to lack of power station in Bali, the electricity supply must come from Java power plant. The Project will interconnect different transmission lines (Java –Bali crossing) and it will provide long term solution for power shortages in Bali. The interconnection of different transmission lines will increase capacity of electricity supplies in Bali. The increase capacity and reliable source of electricity will have long term impacts on economic growth. It is expected that economic growth will lead to employment opportunity and would have an impact on poverty reduction.

#### C. Poverty Analysis

1. If the project is classified as TI-H, or if it is policy-based, what type of poverty impact analysis is needed?

2. What resources are allocated in the PPTA/due diligence?

3. Under GI, is there any opportunity for pro-poor design (e.g., social inclusion subcomponents, cross subsidy, pro-poor governance, and pro-poor growth)?

4. The focus of the Project does not have opportunity for pro-poor design except the recruitment of labor during civil work which is estimated to absorb around 1,350 local workers. The increase capacity of supply of electricity will increase access to electricity for households, business, industries, etc. East Java is the second greatest populated province in Indonesia which is very potential to be developed as an industrial and trading region while Bali is one of the world’s tourist destination and one of pledging region for Indonesia to scooping up foreign exchange. Tourism
business, industry business, and real estate development require increase capacity of electric supply system in Bali. Economic growth requires sufficient electricity and energy supply and sustained economic growth can contribute to poverty reduction. The industrial growth that needs big capacity of energy will absorb labor force and offer great work opportunity for low income groups. Home industries and small businesses can improve production through improve electric supplies. The electricity energy is also needed for fundamental public services such as education, health, water supply and distribution, etc., and it could also contribute to minimize public service cost. During PPTA study, social and poverty analysis will examine the extent to which reduction of public service cost will have an impact on poor peoples access to social service.

II. SOCIAL DEVELOPMENT ISSUES

A. Initial Social Analysis

1. Based on existing information: Who are the potential primary beneficiaries of the project? How do the poor and the socially excluded benefit from the project?

2. The direct beneficiary of the Project is PLN. As a result of the Project in the future, the number of customers in Bali will increase yearly. The existing customers in 2008 for residential category is 651,137 customers and in the next 10 years, the number of residential customers will reach to 1,021,725 In 2018. The percentage of households using electricity in Bali that have access to electricity is more than 90% except in District of Buleleng (86%), Bangli (85%), and Karangasem (69%). It means that in those three districts, a significant number of household customers including poor households have no electricity access. Electricity is an important source for lighting and smoothing as well as contributing to various domestic works including home industries. In the long run, the project is expected to increase the number of household customers including the poor households with access to electricity due to improve on their income, revenue for small businesses, and convenience for the domestic works as well.

3. What are the potential needs of beneficiaries in relation to the proposed project? N/A

4. What are the potential constraints in accessing the proposed benefits and services, and how will the project address them?

5. Electricity troubles including blackout and current instability have seriously disrupted and even paralyzed public service activities. The power blackouts have negative impacts to the public services such as Hospitals and Healthcare Clinics. In educational services, blackout disrupts teachings and learning activities at schools. In Bali, many poor people have small businesses and home industries. Blackout and instability causes many losses to their businesses. When blackout occurs, they not only lose their steady income but also they have to work even harder so as to meet their targets. The reliable and quality electric supply will reduce black outs and would provide opportunity for sustained source of electricity for businesses, industries, household consumers, etc.

B. Consultation and Participation

1. Indicate the potential initial stakeholders: The initial stakeholders are PLN and affected households from resettlement activities.

2. What type of consultation and participation (C&P) is required during the PPTA or project processing (e.g., workshops, community mobilization, involvement of nongovernment organizations, and community-based organizations, etc.)?

3. The project will follow participatory approach and it will be formulated in the project Resettlement Framework and Resettlement Plan. Participation mechanism facilitate consultation process and it includes socialization of the project, consultation with APs and related stakeholders, and active involvement of APs in the particular project committee and decision – making.

4. During the preparation of resettlement plan, participation will be done through participating APs in the survey so that APs can express their opinion on the project and its impact to their life standard and livelihood. APs will also find expression on their opinion and suggestion on compensation as well as relocation, if any as well as contribute income restoration option through public meeting, groups, and households surveys. In addition, APs will also provide inputs to entitlement provisions and even suggest mechanisms for grievance and complaint redress. At phase of project implementation, APs will engage in project monitoring.

5. What level of participation is envisaged for project design?

- Information sharing
- Consultation
- Collaborative decision making
- Empowerment

6. Will a C&P plan be prepared? Yes No Please explain.
C. Gender and Development

1. What are the key gender issues in the sector/subsector that are likely to be relevant to this project/program?

2. The social analysis of the Project will include constraint faces of women because of blackout and lack of access to electricity to be used for their income earning opportunities, household works, etc. It is expected that quality and reliable source of energy would have positive impacts on use of household equipments, especially kitchen equipments. This could lessen women’s work load in upper and middle income households. Women run home industries, businesses, and other enterprises might experience lower production cost and increased revenue.

3. The negative impact of the Project is related to land acquisition and loss of income for poor women. Gender strategy will be included in the resettlement plan.

4. Does the proposed project/program have the potential to promote gender equality and/or women’s empowerment by improving women’s access to and use of opportunities, services, resources, assets, and participation in decision makings?
   Yes ☐ No ☑ Please explain

5. Could the proposed project have adverse impact on women and/or girls or to widen gender inequality?
   Yes ☐ No ☑ Please explain

III. SOCIAL SAFEGUARD ISSUES AND OTHER SOCIAL RISKS

<table>
<thead>
<tr>
<th>Issue</th>
<th>Nature of Social Issue</th>
<th>Significant/Limited/No Impact/Not Known</th>
<th>Plan or Other Action Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Involuntary Resettlement</td>
<td>The total of the land required for the project is estimated 409,870 m² consisting of 309,870 m² for tower and transmission line as well as 10,000 m² (1 ha) for new high voltage of substation (GITET). The width of the required land may change following the change of project route but it is not significant. Land to be acquired is a combination of private - owned land, PLN, and government owned (local office of Forestry), while based on its function, the land comprises forest, paddy field, and dry field used for vegetables and other secondary crops (tegalan). Categorization of the land function may change due to rerouting of transmission line to avoid the Baluran National Park in East Java and the West Bali National Park in Bali. The 25,000 ha of Baluran National Park can be avoided by rerouting the tower and transmission line, while some areas to be acquired in the West Bali National Park is still in critical issue. Ministry of Environment did not approve the use of West Bali Park as stated in the Letter No. B-787/Dep.I/LH/02/2006 dated 10 February 2006. However, the new Governor of Bali showed his support to this project and will assist PT PLN in getting the permit from the Ministry of Environment.</td>
<td>Significant</td>
<td>☑ Full Plan</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>☐ Short Plan</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>☐ Resettlement Framework</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>☐ No Action</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>☐ Uncertain</td>
</tr>
<tr>
<td>Indigenous Peoples</td>
<td>No indigenous people is expected to be affected by the Project.</td>
<td>Plan</td>
<td>Other Action</td>
</tr>
<tr>
<td>--------------------</td>
<td>---------------------------------------------------------------</td>
<td>------</td>
<td>--------------</td>
</tr>
<tr>
<td>Labor</td>
<td>The Project will create wage employment opportunities during construction. The construction contracts will include provision of fair wages, equal wages for men and women for equal work, and basic facilities in the construction camp.</td>
<td>Plan</td>
<td>Other Action</td>
</tr>
<tr>
<td>Affordability</td>
<td>Not Applicable</td>
<td>Action</td>
<td>No Action</td>
</tr>
<tr>
<td>Other Risks and/or Vulnerabilities</td>
<td>The Project will create wage employment opportunities during construction. The construction contracts will include provision of fair wages, equal wages for men and women for equal work, and basic facilities in the construction camp.</td>
<td>Plan</td>
<td>Other Action</td>
</tr>
</tbody>
</table>

### IV. PPTA/DUE DILIGENCE RESOURCE REQUIREMENT

1. Do the TOR for the PPTA (or other due diligence) include poverty, social and gender analysis and the relevant specialist/s?
   - ☒ Yes   ☐ No   Please explain

2. Are resources (consultants, survey budget, and workshop) allocated for conducting poverty, social and/or gender analysis, and C&P during the PPTA/due diligence?
   - ☒ Yes   ☐ No   Please explain
I. INTRODUCTION

1. Over 70 million Indonesians are estimated to be unconnected to electricity. Of this number, over 80% are estimated to be residing in the rural areas and more than half of these live outside the economic strongholds of Java and Bali. The Government together with PLN is trying to respond to this issue by declaring electricity for all agenda and bring the electrification rate to 90% by 2020. To achieve this vision, at least 1.3 million households need to be connected each year. PLN has currently an installed capacity of about 24,000 megawatts (MW), but with demand growing at almost 10% per year, its reserve margin has decreased to 20% from the safe level of 30%. PLN’s 10-year power development plan is anchored on a fast-track public sector program of 10,000 MW of coal-fired plants and a similar second phase PLN financed IPP program of 10,000 MW using coal, geothermal energy, and renewable energy resources. Both programs are under way, but it will take several years to remove the capacity constraints and displace oil-based generation. PLN also plans to start formulating a new rural electrification strategy to meet the Government’s target of 90% access by 2020.

2. The task of raising finance for the new investments is made difficult by the fact that electricity tariffs have not been increased since 2003, when the average tariff was brought to the pre-crisis level of 6.8 cents/kWh. Because of the significance of oil in PLN’s fuel mix, and during much of 2008 the fuel cost alone exceeded the average tariff. To ensure PLN’s financial sustainability the Government provides a public service obligation (PSO) subsidy, which covers the difference between PLN’s generation costs and the regulated tariffs for different consumer categories. It is important to note that PSO is justified by the Indonesian Constitution of 1945 (UUD 1945, chapter 34, article 3). Setting tariffs as per Electricity Law 15/1985 resides with the President of Indonesia. Raising tariffs and moving towards cost recovery is an issue that both the Government and PLN are extremely well aware of. It is also important to note that PLN has called for an increase in the tariff base regularly but political will has prevented any action from being undertaken. The Government understands well the pressing need to make adjustments to the electricity tariff and some large adjustments amounting to almost 60% since the time of the 1997 financial crisis were made in the past (as mentioned above). This was a major accomplishment and proof of the successful socialization by the Government of this politically sensitive issue. Since then, the average tariff has decreased to $0.062/kWh due to rupiah depreciation and changes in the consumption structure. The Government has announced on several occasions that it will not raise electricity prices until after the 2009 election cycle has reached an end and a new President has been installed.
III. ADB's ROLE IN THE INDONESIAN POWER SECTOR

3. ADB’s participation in power sector restructuring dates back as far back as 1996, ADB undertook a technical assistance, TA INO-30042: Electricity Tariff Rationalization Study with the objective of analyzing the impact of cross subsidies and the social impact of eliminating them and a medium term strategy for developing a post-cross subsidy elimination program. Since then, ADB has been actively engaged in policy and sector dialogue with the Government (Directorate General for Electricity and Energy Utilization, DGEEU) and PLN to make electricity available in a least-cost and environmentally sound manner and improve access for all. Based on the Government's Power Sector Restructuring Policy of 1998, ADB approved a $380 million policy loan (Loan 1673-INO: Power Sector Restructuring Program) and a $20 million capacity building TA loan (Loan 1674-INO: Capacity Building for Establishment of a Competitive Electricity Market) in 1999. In 2002, ADB approved two additional loans with both requiring sector reforms and covering both renewable energy and transmission improvement.

4. At the Consultative Group on Indonesia meeting in January 2005, the Government asked the ADB to provide medium-term support for infrastructure reforms and thereby help implement the country's medium-term development plan. This request led to an intensification of ADB’s policy dialogue with the Government and other development partners. The ADB, JICA, and the World Bank jointly prepared six policy briefs on issues and constraints facing the main infrastructure sectors (including the power sector) and on reforms needed to address them. Building on these efforts, the Government took a range of critical steps to set the pace for reforms. In February 2006, it released the infrastructure policy package and this resulted in the Infrastructure Reform Sector Development Program (IRSDP) loan series consisting of 3 subprograms starting 2006 and ending in 2010. Looking at the power sector alone, the IRSDP includes 8 policy actions leading to 20 outputs to be achieved during the 5 year program cycle.

5. The reforms for the power sector are challenging but progress has been achieved under the first two subprograms (the second one was approved in November 2008) with the third one scheduled for completion in third quarter of 2010. This policy loan mandates an active and ongoing dialogue between the Government and ADB and is conditional on progress being made. Therefore, the ADB together with DGEEU and PLN and Ministry of Energy and Mineral Resources (MEMR) discuss frequently the policy actions and the progress. A summary of the power sector reforms included under IRSDP is summarized in Table 1 below:

<table>
<thead>
<tr>
<th>Policy Action no. 1</th>
<th>Policy Action no. 2</th>
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<tbody>
<tr>
<td>Undertake long-term planning for the power sector in terms of physical expansion, service coverage, and sector restructuring</td>
<td>Adopt a legal framework for the energy sector that ensures energy security through diversification of energy sources and energy conservation</td>
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- Revised power sector master plan (RUKN) – completed in 2006
- Updated power development plan (RUPTL 2007–2016) completed by PLN – completed in 2008
- Institutional and financing strategy for meeting the Government’s electrification targets – to be completed in 2010
- Implementation of the electrification strategy – to be completed in 2010

- New law on energy – achieved in 2007 with the enactment of Law 30/2007
- Government regulations on energy conservation, renewable energy, and supply and utilization of energy – to be completed in 2010
Policy Action no. 3
Revise the legal framework for the power sector to remove uncertainty caused by the annulment of Law 20/2002 on electricity by the Constitutional Court
- Government regulations enabling the purchase of electricity from independent power producers by PLN – completed in 2006
- New law on electricity – to be completed in 2010
- Implementing regulations for the new law on electricity – to be completed in 2010

Policy Action no. 4
Strengthen PLN’s institutional structure and capacity in the areas of project planning and implementation, financial management, and corporate governance
- Policy paper on corporate restructuring of PLN – completed in 2006
- Implementation of recommendations of the report – partially completed in 2008 and remainder to be done by 2010

Policy Action no. 5
Adopt appropriate tariff policy for PLN customers in line with the cost recovery principle outlined in Presidential Regulation 67/2005 (this refers to cooperation between Government and private sector)
- Strategy for achieving full cost recovery by PLN through efficiency improvements, tariff increases, and transparent subsidies – completed in 2006
- Implementation of the full cost-recovery strategy – to be completed in 2010
- Review of the tariff structure and tariff-setting process, including the feasibility of an automatic tariff adjustment mechanism – to be completed in 2010

Policy Action no. 6
Adopt regulatory arrangements for the power sector that are consistent with the new legal framework and aim at economic regulation
- Assessment of the current regulatory arrangements – completed in 2008
- Implementation of recommendations of the assessment – to be completed in 2010

Policy Action no. 7
Review the current PSO policy for the power sector to make it affordable for the poor, and to increase PSP and service coverage
- Review of PSO policy framework for power sector – completed in 2008
- Implementation of the revised PSO policy – already ongoing and completed although target was 2010

Policy Action no. 8
Improve the investment climate for independent power producers
- Presidential regulations on lists of fields closed and conditionally open to investments – completed in 2008
- Implementation of the above regulation by the Investment Board – to be completed in 2010

6. The World Bank has joined together with the ADB in pursuing infrastructure reforms under its Infrastructure Development Policy Loan (IDPL) which commenced one year after that of ADB and together with ISDP is scheduled for completion in 2010. Their program also calls for reforms in the power sector and their policy actions are outlined in Table 2.

Table 2: Targeted Power Sector Reforms by WB under IDPL

<table>
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<tr>
<th>Policy Action no.</th>
<th>Description</th>
<th>Completion Date</th>
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<tbody>
<tr>
<td>Policy Action no. 1</td>
<td>Publication of breakdown of the 2006 PLN PSO compensation payment by region and customer category (updated based on audit by Supreme Audit Agency)</td>
<td>Completed in 2007</td>
</tr>
<tr>
<td>Policy Action no. 2</td>
<td>Publication of the 2007 PLN PSO by region and consumer category; and publication of a forward 3-year PLN PSO plan integrating electrification, investment, and fuel assumptions</td>
<td>Completed in 2008</td>
</tr>
</tbody>
</table>
Policy Action no. 3
Publication of a 3-year PLN PSO forecast, based upon assumptions and a model shared and agreed upon by MEMR, MOF, Ministry of State-Owned Enterprises (MSOE), and PLN
Well on track, to be achieved in 2009

Policy Action no. 4
Review of basic electricity tariff (TDL) and level and coverage of subsidy
Scheduled for completion in 2010

Policy Action no. 5
Increase from 44% to 70% the proportion of the PLN PSO received by residential consumers with connections of less than 900 volt-ampere (VA)
To be completed in 2010

7. One of the reasons for the current high cost of subsidies is reliance on expensive diesel to meet a significant proportion of base load, in addition to its normal role of satisfying peak demand. Most of the currently planned capacity expansion is coal-fired power plants, which will result in significant reductions in the cost of meeting base load. The Government is also pursuing options for connecting natural gas to existing plants which currently burn diesel, and for developing geothermal power projects. The Government has reorganized PLN and appointed a new Board of Directors. One of the changes is to re-establish a planning unit, which will improve the orderly development of investment projects and assist the government in forecasting the fiscal burden of PLN's subsidies. Another element of the recent restructuring is a move to regional business units. PLN's costs vary widely by region, and it is anticipated that this restructuring will facilitate the development of responses to region-specific problems. Studies by ADB, WB, Japan, and other agencies have confirmed that the subsidies are equally accessible to Indonesia's poor and wealthy. Although the lower income and poorer households (connections up to 450 VA) accounted for an average of 14.5% of PLN's electricity sales, data from DGEEU and other agencies and social survey has shown that they received about 29% of the total subsidy allocation which is almost one-third of the total amount and further demonstrates that the poor are not neglected.

III. PROGRESS ON POWER SECTOR DIALOGUE

8. ADB's efforts together with its other partners as a result of its constant engagement in Indonesia's power sector are beginning to show progress but further work is required and the dialogue will continue with all stakeholders. ADB will continue to play a major role in tariff review and PSO policy in the power sector along with other donors and institutions and PLN and DGEEU are beginning to acknowledge the need to maintain the momentum of the power sector reform agenda.

9. Progress has been made towards a better regulatory framework in the power sector as well as others. A collaborative approach has been used to develop the PSO policy has been adopted to review the current practices and arrangements in all infrastructure sectors, and to formulate short- and medium-term recommendations for strengthening sector regulation and establishment of an agency such as a electricity market supervisory board (ESMB) with the key recommendation of having an independent power regulator with the following economic functions: (i) setting (approving) tariffs and other service charges, (ii) establishing standards for the terms and conditions of providing services, (iii) making and enforcing market rules for the sector, (iv) monitoring economic and management performance of the regulated entities, (v) issuing, reviewing, and canceling licenses, (vi) reviewing IPP agreements, and (vii) arbitrating disputes within the sector. Although delegating electricity tariffs to an independent regulator will require time and major legislative reforms, ADB's participation with DGEEU and PLN through IRSDP is encouraging stakeholder participation in regulatory matters, and providing advice to all parties to enable electricity tariffs to reach cost recovery levels.
10. A new electricity law has been drafted by Ministry of Energy and Mineral Resources (MEMR) and submitted to Parliament, where it has been undergoing extensive deliberations and stakeholder consultations to reach a consensus on how to reduce PLN's monopoly and increase competition, while retaining control of the sector through stronger planning and regulation. The draft law allows competition only in power generation but it provides for more than one utility, so that regionalization of power supply is possible. In anticipation of this change, the Ministry of State-Owned Enterprises has prepared a policy paper on PLN's restructuring that envisages the creation of regional subsidiaries and the conversion of PLN from an operator to an investment holding company. The law is still under review by the Parliament and is expected to be approved in early 2010.

11. The review of the PSO policy framework has been completed under the second subprogram of IRSDP and implementation of this study is scheduled in subprogram 3. As a move towards greater transparency and improved control on its budget and financial requirements, the Government at ADB and WB's request had requested PLN to publish on its website a breakdown of the 2007 PSO by region which was done. A three-year forecast of the PSO has also been prepared, assuming no change in tariffs. The cost of the subsidy is expected to decrease in 2010 as new coal-fired generation plants come on line, but increase again in 2011 as debt repayments increase. The oil price, fuel mix (i.e. investment plan), and electrification assumptions underpinning the forecast have been the subject of consultation and agreement between the Ministry of Finance, Ministry of Energy and Mineral Resources, Ministry of State-Owned Enterprises, and the Coordinating Ministry for Economic Affairs. The forecast has been published on PLN's website, and it is also intended to include it as an annex in PLN's power investment plan (RUPTL). In contrast to previous one-year PSO forecasts made by the Ministry of Finance, this year's three-year forecast incorporates the views of several ministries which will help to contain future costs through earlier consideration of the fiscal implications of electrification and investment plans. It is anticipated that publication will assist in raising public awareness of the scope for raising electricity tariffs for the non-poor, facilitating measures to eventually reduce the subsidy.

12. The IRSDP also encourages a detailed review of the tariff structure and tariff-setting process, including the feasibility of an automatic tariff adjustment mechanism by PLN and the Government (DGEEU, MOF, and MSOE). This reform complemented by dialogues between ADB and other partner agencies is expected to be completed in subprogram 3. In the interim, there has been progress in tariff adjustment because under subprogram 2 in April 2008, the so-called disincentive scheme, with unsubsidized tariffs for consumption above a certain threshold, was introduced for large residential customers. This is another step towards improving tariff structure and closer to cost recovery. Although the Government has political difficulties in increasing the regulated tariffs, PLN has been able to increase payments by residential consumers with the largest connection capacity (generally these are the wealthiest consumers), by restructuring the consumption levels at which particular tariffs apply. PLN has also engaged in negotiations with large industrial and commercial consumers to increase payments in return for greater reliability in power availability. This is another outcome of ADB's policy dialogue with the Government and PLN.

IV. CONCLUSION

13. The Government is sending signals that it is committed to reducing the PSO and improving the electricity tariff structure. The average annual growth rate in the number of PLN customers of 11.1% during the past 30 years has been impressive. However, two different patterns of growth occurred: 15.3% per year before the 1997 Asian financial crisis and 6.4% per year thereafter. The sharply lower post-crisis growth has been attributable to funding constraints and PLN's profit-making obligation. ADB and other donors are well aware of this and have been constantly advising the Government on measures to alleviate this situation in the coming years. Japan will start another tariff and subsidy policy review as an extension of its energy efficiency study in August 2009. Similarly the WB will review tariffs and policies
in the geothermal sector together with MEMR. ADB and WB will continue to engage in dialogue with the Indonesian Government to undertake long-term planning for the power sector in terms of physical expansion, service coverage, and sector restructuring.

14. Studies undertaken by the World Bank show that the impacts of increasing tariff are more than offset by improvement in quality of service, increased access for the poor, and improvements to the structure of public finances that most benefit the poor. Taxation and targeted government expenditure to support social goals and enable PLN to move towards cost recovery is indeed a plan of the Indonesian government when the new cabinet is installed later in 2009.

15. Through the IRSDP program, achievement has been made in tariff setting in the water supply, transport, and telecoms sectors and the move towards cost recovery has started. The power sector tariff structure is also beginning to show some movement in light of the recent Ministerial Decree issued in March 2009 whereby tariffs set by independent power producers (IPPs) will no longer be subject to government intervention but will entirely be a corporate arrangement between PLN and the IPP.

16. PLN has been a key player of electricity and will continue to do so and ADB must stay engaged through sector loans, project loans, TAs, and other financial instruments at every opportunity to make a contribution together with the Government to meet the electrification needs and partake in the electricity for all agenda. Engaging with PLN and DGEEU through policy loans such as IRSDP and project loans such as the proposed Java-Bali Distribution Performance Improvement Project and Geothermal Sector Development Project provides ADB the opportunity to have a leading seat at the policy dialogue table with key stakeholders and the Government. Stepping away from the power sector would diminish ADB's visibility and opportunity to participate in further discussions and WB, Japan, and others will further strengthen their presence.

cc: Deputy Director General, SERD
    Country Director (IRM)