

## TERMS OF REFERENCE FOR CONSULTANTS

### A. Background

1. The Asian Development Bank (ADB) is interested in procuring the services of a qualified team of energy-sector expert consultants comprising international and national consultants to assist the Government of Indonesia in a review and assessment of Indonesia's energy sector development to identify key policies to address the energy trilemma of security, sustainability and affordability in Indonesia. The aim is to support the government in the identification of key energy-related pillars and indicators to inform the Medium-Term National Development Plan (RPJMN) 2020–2024 (RPJMN20). The firm will work closely with the Ministry of National Development Planning (BAPPENAS), the executing agency.

2. The TA subproject will support BAPPENAS in the formulation of an Energy Sector Assessment with the following output—provide policy advice for energy sector planning in Indonesia in the form of an Energy Sector White Paper for 2020–2024.

3. The White Paper will include a comprehensive assessment of energy supply and demand in Indonesia drawing on existing forecasts and energy sector modeling and based on an analysis of the four existing evaluation indicators for the energy-related actions under the RPJMN suggest a revised set of progress indicators. The policy suggestions are to be based on an accompanying opinion survey of the public's view of key energy sector issues.

4. The analysis will comprise all energy sectors but put a focus on the following areas: (i) the electricity sector, (ii) increasing renewable energy and the identification of financial mechanisms to support renewable energy development, (iii) sustainable energy pricing and energy supply cost, (iv) energy efficiency measures to limit energy consumption and emission increases, (v) the identification of technological and regulatory innovation, and (vi) a sustainable energy-strategy for the newly identified Special Economic Zones.

5. The RPJMN 2015–2019 (RPJMN15) energy sector goals will form the benchmarks for the initial analysis. The sector review will also seek to assess ADB's contribution to the targets under the RPJMN15 and evaluate the role of the key central and regional government, state-owned, and private sector players in this process.

6. The consultants will have extensive experience in general energy sector analysis, forecasting, and planning as well as in the identification of actionable and realistic policy targets for five-year national development planning. The consultants also need to have an excellent understanding of the need to balance the delivery of basic energy services with transformational policy targets and the constraints imposed by limited public sector resources. In addition, the consultants should have expert knowledge of power sector development and pricing. It is estimated that a total of 66.6 person-months of consulting services are required to undertake this work. Of these inputs, 40.0 person-months are to be engaged through a firm. In addition, an energy analyst (national, 10 person-months) to be based in Indonesia Resident Mission, an energy planning specialist (international, 3 person-months), short-term marginal cost specialist (international, 4 person-months), a monitoring and evaluation specialist (national, 5 person-months), and a senior policy advisor (national, 4.6 person-months) will be hired through individual contracts. ADB will engage consulting firms and individual consultants in accordance with ADB Procurement Policy (2017, as amended from time to time) and the associated Project Administration Instructions/Technical Assistance (TA) Staff Instructions.

## B. Consulting Services

### 7. Project scope. TA subproject activities will include, but not be limited to the following:

- (i) prepare an assessment of achievements and gaps under the RPJMN15;
- (ii) prepare a detailed work plan for completing the energy sector portion of the RPJMN20;
  - a. identify key stakeholders and their role in the process, and prepare plans for coordination; and
  - b. identify key milestones for the preparation of the energy sector portion of the RPJMN20. The 1<sup>st</sup> draft white paper on the energy portion of the RPJMN will need to be prepared by November 2018. The milestones and actions identified should then be refined until completion of the draft by BAPPENAS in October 2019.
- (iii) collate and review existing policy documents of the government on energy sector issues;
  - a. gather relevant information, including but not limited to: Presidential Decree 5/2006 and 2/2015, National Energy Policy, Masterplan for Acceleration and Expansion of Indonesia's Economic Development, National Electricity Plan, Electricity Supply Business Plan, Indonesia Energy Sector Outlooks, the 16 economic policy packages launched by President Joko Widodo until now, etc.; and
  - b. analyze and summarize the government's policy directions, identifying areas multiple policy documents address and potential discrepancies among them.
- (iv) undertake a survey on public perceptions of energy sector development, pricing, sustainability;
- (v) collate and review existing reports and analyses on energy sector issues by relevant stakeholders;
  - a. gather relevant information, including but not limited to:
    1. gas development master plan by the World Bank;
    2. ADB's 2016 Energy Sector Assessment, Strategy and Roadmap;
    3. International Energy Agency (IEA) Indonesia In-depth Review of the Energy Sector 2015;
    4. ADB and IEA studies on energy sector subsidies in Indonesia;
    5. ADB study on low carbon development pathways in Indonesia;
    6. ADB's report on Carbon Capture and Storage in Indonesia;
    7. ADB Energy Outlook 2016; and
    8. Southeast Asia Energy Outlooks by Association of Southeast Asian Nations Centre for Energy, IEA, International Renewable Energy Agency, etc.
  - b. analyze and summarize the background research and policy recommendations of these reports, and identify areas that align with the government's policies in item (ii) above and potential discrepancies with government policies.
- (vi) conduct a workshop with relevant stakeholders to present the result of items (i)–(iii) and collect their inputs;
- (vii) Based on the analyses in items (ii) and (iii) and input from the workshop, identify focus areas of RPJMN15 for energy sector and goals to be achieved within the next RPJMN period, paying attention to trilemma of energy security, sustainability, and affordability;

- (viii) In the context of energy self-sufficiency, supplementary analyses on fuel conversion from gas to liquids in the transportation and petrochemical sector and small-scale liquefied natural gas supply for small islands in Eastern Indonesia need to be included;
- (ix) identify key bottleneck issues in achieving the goals in item (iv), and potential policy improvements and necessary actions by the government as well as the areas for collaboration with development partners;
- (x) Based on the results from items (i)–(vi) above, identify a list of priority projects in the energy sector with potential funding source for each of them;
- (xi) prepare a draft of a white paper on the energy sector portion of the RPJMN20, based on items (i)–(vi) above. Special attention should be paid to the key issues in the energy sector such cost and price of electricity, renewable energy development, grid development, RPJMN assessment indicators, sustainable energy planning for special economic zones, downstream gas infrastructure, electrification.
- (xii) conduct a workshop with relevant stakeholders to present the result of item (x) and collect their inputs;
- (xiii) prepare a presentation material summarizing the draft of the RPJMN20 compiled in item (vii) above;
- (xiv) conduct a workshop to present the draft of the white paper on the energy sector portion of the RPJMN20 and collect inputs from stakeholders;
- (xv) reflect the inputs received from the stakeholder workshop in item (xi) and prepare the final version of the white paper; and
- (xvi) support BAPPENAS in the finalization of the energy portion of the RPJMN20, and reflect any input from stakeholders on the white paper to prepare a final report.

8. The estimated budget for the firm is \$620,000, to include, but not limited to: remuneration, international and local travel, surveys, reports and consultations. The qualifications and outline terms of reference for the key consultants, with a minimum level of effort, are outlined below. Key personnel listed below are required to spend at least 50% of their time in Jakarta, Indonesia.

9. **Senior energy sector expert (and team leader) (international, 8 person-months).** The international expert should preferably have a master's degree in energy economics and/or electrical engineering with a minimum of 20 years' professional experience, of which 15 years should be in senior positions in energy policy formulation. The expert shall have completed three or more country sector review assignments as team leader and/or key team member. Experience in Emerging Asia or comparable middle-income countries in Latin America, Africa, or the Middle East is important. As team leader, this expert will be responsible for all TA subproject outputs and will serve as liaison with BAPPENAS, and the ADB Project Officer. The expert will seek and coordinate the inputs of all team members and ensure the quality and timely submission of the analysis. Specifically, the expert will:

- (i) lead the analysis of the energy sector;
- (ii) coordinate with BAPPENAS on priorities and targets;
- (iii) coordinate with relevant stakeholders;
- (iv) lead the consultant team and bring in the needed sector-specific expertise;
- (v) lead the development of the White Paper sector analysis and bring in the needed sub-sector expertise and integrate their analysis into the overall White Paper;
- (vi) lead the development of the survey questionnaire with the survey company;
- (vii) ensure the quality of the analysis and recommendations;
- (viii) develop the revised assessment indicators;

- (ix) focus on energy cost and pricing; and
- (x) lead the technical consultation process.

10. **Energy sector expert (national, 15 person-months).** The national expert should preferably have a master's degree, in energy economics and/or electrical or civil engineering, with a minimum 15 years' professional experience and a minimum 8 years in energy sector development and policy formulation in Southeast Asia and a minimum of four years in Indonesia. Experience in power sector development, renewable energy promotion, and energy pricing is desirable. The expert will:

- (i) will work out of BAPPENAS and serve as key person for the analysis at BAPPENAS on a day-day basis with BAPPENAS;
- (ii) prepare the overall energy sector assessment;
- (iii) evaluate the outcome of the RPJMN15;
- (iv) ensure consistency of the RPJMN20 targets with existing policies and studies;
- (v) lead the electricity sector analysis with inputs from the renewable energy expert, electricity grid transmission and distribution expert;
- (vi) integrate the sub-sector specific analysis into the White Paper;
- (vii) prepare the stakeholder discussions and workshops; and
- (viii) ensure White Paper is consistent with Indonesia's energy-sector and related policies.

11. **Renewable energy specialist (international, 2 person-months).** The specialist should preferably have a master's degree, in energy economics, electrical engineering, or civil engineering, with a minimum 10 years' professional experience in variable renewable energy development. Experience in grid integration planning and management also desirable. The expert will:

- (i) provide inputs on key technologies for renewable energy development in Indonesia;
- (ii) analyze the potential for renewable energy additions per power system in Indonesia and liaise closely with the land specialist on cost and land availability; and
- (iii) identify major obstacles and drivers that impede renewable energy development and outline actions to create a conducive environment for renewable energy development within the regulatory and financial context of the power sector and the country.

12. **Electricity grid transmission and distribution specialist (international, 2.5 person-month).** The expert will preferably have a master's degree in engineering or other relevant field, and at least 10 years of experience in transmission and distribution grid engineering and experience with the design, specification and installation of on and off-grid wind and solar-based systems, and in power electric engineering with the design, specification, and implementation of high, middle and low voltage systems, including battery storage. The expert will:

- (i) review the state and planning for Indonesia's main power grids and assess medium-term strategies to increase on- and off-grid provision of variable renewable electricity supplies;
- (ii) prepare an assessment of the needed grid investments, improvements in grid management capabilities, and advantages and disadvantages of on- and off-grid solutions to reach 100% of electrification;

- (iii) provide an analysis of battery storage solutions to increase renewable energy supply while safeguarding grid stability; and
- (iv) work closely with the electricity and renewable energy specialists and ensure consistency of the analysis and messages.

13. **Downstream gas specialist (international, 2.5 person-months).** The expert should preferably have a master's degree in oil and gas engineering or civil engineering with a minimum 10 years' professional experience in planning and implementing gas downstream infrastructure projects. The expert will have experience in gas infrastructure planning and a good understanding of liquified natural gas, and multi-modal gas transport, which is key in an island nation. The expert will:

- (i) assess Indonesia's current downstream gas infrastructure and supply chain management;
- (ii) assess the current and future infrastructure needs based on Indonesia's energy, power, gas, and petrochemical sector planning;
- (iii) discuss the advantages and possibilities for third party access under the new holding company for oil and gas; and
- (iv) evaluate the role and scope of the regulator.

14. **Energy efficiency specialist (international, 1.5 person-months).** The expert should preferably have a master's degree and a minimum experience of 15 years relevant experience, broad experience in energy efficiency project implementation, financing, and policy development, and prior experience. The Team Leader will oversee the work and outputs of the other team members and report to the ADB project officer.

- (i) assess the potential savings of energy efficiency actions in Indonesia over the medium-term;
- (ii) identify policies and regulations with immediate impact on energy consumption in the medium-term;
- (iii) identify long-term systemic policy actions;
- (iv) identify financing and regulatory bottlenecks and solutions; and
- (v) identify sub-national actions in municipalities and industrial zones.

15. **Additional (or non-key) positions.** Following is a list of suggested additional positions whose services may be required to address the terms of reference, and related person months of inputs. However, these are indicative, and the firms may employ their own interpretation of the type and number of positions, and related person months.

16. **Geothermal energy specialist (national, 1.5 person-months).** The expert should preferably have a master's degree in geothermal engineering and at least 8 years of prior experience in geothermal exploration and policy. The specialist will:

- (i) assess the progress made on the revision of the geothermal law and related implementing guidelines;
- (ii) assess the current de-risking approach to encourage an increase in geothermal exploration;
- (iii) liaise with the transmission and distribution expert on the necessary grid extension to exploit Indonesia's geothermal potential;
- (iv) liaise with the land expert on forest and land access questions; and
- (v) suggest key policy milestones for geothermal development.

17. **Land specialist (national, 1.5 person-months).** The expert should preferably have a broad experience with land and forestry issues in Indonesia and the processes and permits needed for land acquisition in Indonesia as well as the relevant educational qualifications. The specialist should have an excellent understanding of the infrastructure issues related to land and the environmental safeguards aspects. The specialist will:

- (i) support the energy-related specialists with hands-on advice on land-related aspects relating to their analysis and recommendations;
- (ii) analyze and evaluate the recent policy changes on land policies to enhance the construction of energy-related infrastructure; and
- (iii) make suggestions how to balance environmental concerns and infrastructure needs and translate this into concrete policy recommendations.

18. **Energy infrastructure investment specialist (international, 1.5 person-months).** The expert should preferably have a master's degree in finance. The expert shall have a minimum 10 years of experience in energy sector related investment planning. The expert will guide the analysis for:

- (i) the energy investments needed to reach the goals set by the Indonesian government; and
- (ii) assess the investment cost of the recommendations under the White Paper.

19. **Translator/Administrator (national, 3 person-months)**

20. **Communications/Lay-Out Specialist (national, 2 person-months)**

21. **Individual contract positions.** Following is a list of individual contract positions whose services are required to address the terms of reference, and related person months of inputs.

22. **Energy analyst (national, 10 person-months).** The energy analyst should have a master's degree or at least a bachelor of arts degree with minimum 3 years of work-experience in government coordination in the energy sector in Indonesia. The energy analyst will support the coordination of the TA on the ADB side.

23. **Energy planning specialist (international, 3 person-months).** The energy planning specialist should have a master's degree in energy and policy planning and hold at least 5 years of experience in the translation of national planning into regional planning. The specialist will support the national and regional planning exercises and assist in ensuring consistency between the RPJMN and related energy planning documents.

24. **Short-term marginal cost specialist (international, 4 person-months).** The short-term marginal cost specialist should hold a master's degree in energy economics and/or commodity markets and have at least 7 years' experience in the assessment of fuel cost pricing for electricity generation and commodity markets price developments. The specialist will assist with the calculation of the marginal cost of electricity generation in Indonesia.

25. **Monitoring and evaluation specialist (national, 5 person-months).** The monitoring and evaluation specialist will hold a master's degree and have at least 7–10 years' experience in the monitoring of infrastructure development process in the field. The specialist will support the monitoring and evaluation of the 35-gigawatt program.

26. **Senior policy advisor (national, 4.6 person-months).** The senior policy advisor will hold a Master’s degree and should have at least 15 years’ experience in business and government in senior positions. The senior policy advisor will assist with the high-level coordination of the assessment ensuring that senior policymakers and related Ministries are fully informed.

### C. Reporting Requirements

27. The following reports will be delivered based on the schedule in the table below. All deliverables will be in Bahasa Indonesia and English.

**Table: Summary of Major Outputs and Activities**

<b>Major Outputs</b>	<b>Delivery Date</b>	<b>Key Activities with Milestones</b>
1. Provide policy advice for energy sector planning in Indonesia	June 2019	<p><b>1. Assessment of achievements under RPJMN 2015–2019</b></p> <p>1.1 Analysis of state of Indonesia’s energy sector, outlook, indicators, RPJMN 2015–2019 achievements (June 2018)</p> <p>1.2 Annotated table of contents (July 2018)</p> <p>1.3 First-level senior official discussion (July 2018)</p> <p><b>2. First draft report for energy sector planning 2020–2024 for discussion with government officials and stakeholders (November 2018)</b></p> <p>2.1 Sector-level roundtables (August/September 2018)</p> <p>2.2. Policy, regulatory, indicator draft targets (October 2018)</p> <p>2.3 Public Opinion survey (October 2018)</p> <p>2.4 Roundtable discussion of 2<sup>nd</sup> level outcomes and targets (November/December 2018)</p> <p><b>3. Second and final draft report for discussion with government officials (January 2019)</b></p> <p>3.1 Follow-up dive-deep sector discussions on priority topics (January/February 2019)</p> <p>3.2 Capacity and financial investment targets (January 2019)</p> <p>3.3 Deepening of policy and regulatory proposals (April–June 2019)</p> <p><b>4. Final dissemination conference at Minister-level (October/November 2019)</b></p> <p><b>5. High-Quality Analytical Sector Thought Papers (March 2019)</b></p>