ENERGY TRANSITION PARTNERSHIP
Powering Prosperity and Enabling Sustainability in South East Asia

The Southeast Asian Energy Transition Partnership (ETP) is a multi-donor Forum that brings together government donors, philanthropies, and Southeast Asian governments to accelerate the energy transition in Southeast Asia.

Integrating Battery Energy Storage System (BESS) into the Grid for Energy Transition

(Indonesia)

Terms of Reference | June 2024

This project aims to establish an in-depth analysis of Battery Energy Storage Systems (BESS) in Indonesia by delivering model-based grid analyses, crafting a specialised BESS business model, an integrated policy framework and roadmap, national standards (SNI) development, and capacity-building initiatives. This comprehensive strategy addresses the significant demand for battery capacity outlined in the General Plan for Electricity Supply (RUPTL) and the anticipated utilisation of BESS in the 2060 Net Zero Emission Roadmap. Key components include a tailored business model, energy modelling with BESS integration, and capacity-building efforts, all aligned with Indonesia's energy goals and sustainability objectives.

UNOPS AFD Federal Ministry for Economic Affairs and Climate Action Department for Energy Security & Net Zero Environment and Climate Change Canada / Environnement et Changement climatique Canada Australian Government Department of Climate Change, Energy, the Environment and Water CIFF CHILDREN'S INVESTMENT FUND FOUNDATION SEQUOIA CLIMATE FOUNDATION

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I. Introduction

1. The Southeast Asia Energy Transition Partnership (ETP) brings together governments and philanthropies to work with partner countries in the region. ETP supports the transition towards modern energy systems that can simultaneously ensure economic growth, energy security, and environmental sustainability. To contribute to the achievement of the UN's Sustainable Development Goals (SDGs) and the Paris Climate Agreement objectives, ETP works in Southeast Asia, with a focus on three priority countries, namely Indonesia, the Philippines, and Vietnam. ETP's strategy is built around four inter-related pillars of strategic engagement that are squarely aligned to address the barriers to energy transition. These are (i) policy alignment with climate commitments, (ii) de-risking energy efficiency and renewable energy investments, (iii) extending smart grinds, and (iv) expanding knowledge and awareness building.

II. Summary

2. This project aims to establish a robust foundation for Battery Energy Storage Systems (BESS) in Indonesia by delivering detailed model-based analyses to assess BESS integration for grid stability, reliability, and efficiency enhancement. The initiative includes crafting a specialised BESS business model tailored to the national context, integrated policy framework and roadmap, development of a set of national standards (SNI) for BESS and the implementation of capacity building and workshops. Together, these outputs form a cohesive strategy to propel the successful integration, regulation, and capacity-building essential for fostering a sustainable and effective BESS ecosystem in Indonesia.

III. Project Details

A. Rationale

3. In the 2021-2030 General Plan for Electricity Supply (RUPTL), there is a significant demand for 943 MW of battery capacity. Moreover, the 2060 draft of the Net Zero Emission Roadmap anticipates substantial utilisation of Battery Energy Storage Systems (BESS), with IEA energy modelling forecasting the initiation of BESS deployment around 2030, and a notable increase in deployment post-2040. To support the integration of BESS into the power system, several key components are necessary. These include the establishment of a roadmap, a tailored business model, and energy modelling with a focus on more aggressive BESS integration. Additionally, comprehensive standards need to be developed, and capacity-building initiatives for BESS are essential. These measures are crucial for ensuring the effective integration and utilisation of BESS within the Indonesian power system, aligning with long-term energy goals and sustainability objectives.

B. Impact

4. The impact of this project is significant, as it supports the integration of BESS into Indonesia's power system, aligning with long-term energy goals and fostering economic growth. By establishing a robust regulatory framework, business model, and technical standards, the project creates a conducive environment for investment and innovation in the BESS sector. Additionally, comprehensive training programs will empower local stakeholders, contributing to sustainable development and resilience in Indonesia's energy sector.

C. Objectives, Outcomes, and Outputs

5. The objective of this project is to help Indonesia expedite its energy transition efforts by facilitating effective integration of BESS into Indonesia's energy infrastructure. This project will contribute to policy alignment with climate commitments and de-risking investment, development, and operation of BESS and ensure the success of renewable energy investments and deployment in Indonesia. It will support Indonesia in achieving the RE generation goal.

6. The outcome of this project encompasses enhanced policy coherence and regulatory clarity, improved strategic planning for BESS deployment, strengthened business models tailored to Indonesia's energy needs, and optimised BESS capacity deployment into the grid.

7. The primary outputs of this project are:
    i. Assessment and model-based analysis of BESS integration for enhanced grid stability, reliability, and efficiency;
    ii. BESS business model tailored to fit the Indonesian national context involves creating a framework that addresses the country's unique energy needs, regulatory landscape, and socio-economic conditions;
    iii. Integrated policy framework and roadmap for BESS as a comprehensive initiative designed to provide a strategic and structured approach to the integration of Battery Energy Storage Systems (BESS) in Indonesia;
    iv. A set of draft of SNI specifically for BESS to ensure uniformity, safety, and reliability;
    v. Capacity Building that consists of training programs for BESS management, with the primary goal is to enhance the knowledge, skills, and capabilities of key stakeholders.

D. Sustainability and Gender Mainstreaming

8. ETP is committed to promoting and supporting gender mainstreaming in its project implementation. The Project shall be inclusive of the invited stakeholders during the consultation and seek a balanced representation of women. The implementing partner should

identify the implications, its outputs and contributions to gender equality in the project activities. This task shall be accomplished through a clear methodology and approach.

IV. Project Deliverables

9. In line with the outputs and outcomes expected from this project (see Project Background), this section provides additional information on specific deliverables that will be required in order to accomplish the above project outputs.

10. Table 1 outlines the key deliverables which are expected in this project. Additional details on associated activities for each deliverable follows Table 1.

Table 1. Key deliverables

#	Deliverables	Target delivery and payment date	Payment (%)
1	Inception Report including a communications plan and outline of all main reports	Month 1	10%
2	- Draft of national standards (SNI) for BESS - Eight full-day Technical Committee Meetings	Month 4	15%
3	- Assessment and Model-Based Analysis of BESS Integration for Enhanced Grid Stability, Reliability, and Efficiency - Two half-day consultation workshops	Month 6	30%
4	- Create a BESS deployment and operation business model tailored to fit the Indonesian national context - Two half-day consultation workshops	Month 8	15%
5	- Integrated Policy Framework and Roadmap for BESS - Two half-day consultation workshops	Month 11	10%
6	- Training Programs for BESS Management - Three-full-day training	Month 12	10%
7	- Final report and Academic Manuscript for Proposed New Regulation - One consultation workshop	Month 14	10%

Deliverable 1: Inception Report including a communication plan

11. The consultant must prepare a detailed work plan and mobilise the necessary resources. As a deliverable, the consultant must develop and submit a detailed inception report detailing the plan, ensuring the expectations of ETP are aligned with the understanding of the project from the consultant.

12. The inception report should contain, as a minimum:

    a. Introduction and project background
    b. Scope of Services
    c. Methodology and Workplan, including approach, methodology and project Gantt chart for project implementation and outline/table of contents of all deliverables
    d. A detailed approach as to how each deliverable will be met and what each submission will contain, including how gender equality and social inclusion will be mainstreamed throughout the project
    e. Audience mapping and analysis and communication/ outreach plans
    f. Identification of suitable media channels to be used for communicating the project and rationale for choosing them
    g. A donor coordination strategy, including a plan to reach out to the organisations
    h. Project management inclusive of organisational chart detailing key personnel, their roles and responsibilities, as well as their locations (strong in country team and project management is expected)
    i. Risks, mitigations and assumptions
    j. Monitoring and Evaluation Framework, presented in the form of the ETP Results Based Monitoring Framework (RBMF)
    k. Communications Plan as described in the below table.
    l. The consultant is responsible for drafting a detailed communications plan which will be embedded in the Inception Report. The minimum requirements for the project communications materials are as follows:

Table 2: Project Communications Requirements

No.	Communications Items	Quantity
1	**Social media posts** The Consultant will provide texts (approx 100 words) and photos (minimum 2). The ETP team will publish the content on ETP's social media sites (LinkedIn, Facebook, Twitter),	**1** post per platform per public workshop/event
2	**Press Releases** The Consultant will compile texts (approx 500 words), following which the ETP team will publish the press release on ETP website.	**1** per public workshop/event
3	**Articles for ETP Website** The Consultant will compile texts, following which the ETP team will publish the article on ETP website. The articles must be impactful and engaging, and capture key project activities and impact. Each article must be submitted with a minimum of 3 high-quality photos/graphics.	**2** - including 1 by mid project, and 1 upon project completion

4	**Project wrap-up presentation** A 15-20 minute recorded presentation (with slide deck) summarizing key highlights of the project. The recording will be featured on the ETP website as a knowledge item.	**1** upon project completion
5	**Database of project photographs from events/activities**	**15-20** high-quality images per workshop/event/activity, inclusive of 'action shots' capturing key speeches, activities and participant engagement

Deliverable 2: Draft of national standards (SNI) for BESS according to the list agreed by MEMR.

13. The development process of SNI for BESS requires close consultation with MEMR to ensure that the standards align with the national regulatory framework and technical requirements. This task requires collaboration with experts and stakeholders from the BESS industry, research institutions, and government agencies to ensure the standards are comprehensive and inclusive of all relevant aspects of BESS deployment, such as safety, reliability, and efficiency. The proposed SNI should be developed in a systematic and logical manner, taking into account the current state of BESS technology and international best practices.

14. The deliverable is required to have, at minimum, the following components:

    a. The importance of researching and understanding the standards of the BESS. This could include any specific guidelines, norms, or standards set by relevant organisations.
    b. Propose a set of national standards specifically for BESS to support development of BESS in Indonesia. These standards will cover technical specifications, safety requirements, performance benchmarks, environmental aspects, and interoperability guidelines, ensuring the uniform quality and safety of BESS across the country. This task requires close consultation with Ministry of Energy and Mineral Resources and collaboration with relevant experts and stakeholders, to ensure the standards are inclusive of all relevant aspects of BESS deployment. The proposed standard should be developed in a systematic and logical manner, taking into account the current state of BESS technology and international best practices.
    c. Translation and adaptation of the International Electrotechnical Commission (IEC) standards, specifically IEC TS 62933-2–2:2022, unit parameters and testing methods - application and performance testing, and IEC TS 62933-3-1:2018, planning and performance assessment of electrical energy storage systems (general specification).
    d. Organization of Technical Committee Meetings (TCM)[1] to facilitate the translation and adoption of the IEC TS 62933-2–2:2022 and IEC TS 62933-3-1:2018 within the Indonesian national context. Consultant shall prepare the logistical arrangement of the TCM with following the details below:

        i. Hybrid event conducted in Bahasa Indonesia

[1] Bidders shall provide a breakdown of all non-personnel costs associated with the organization of the techinical committee meetings in the financial proposal. The payment for logistical arrangements for the meetings will be released on a pro-rated basis and as a lumpsum together with deliverable 2 report.

ii. 8 Full-day meetings with 2 coffee breaks and lunch each day
iii. workshop located Jakarta, Bogor, Depok and Tangerang area
iv. At minimum, 20 offline participants per meeting

Deliverable 3: Report on Assessment and Model-Based Analysis of BESS Integration for Enhanced Grid Stability, Reliability, and Efficiency

15. This deliverable provides an assessment of the national grid system, integrating subsystem analysis with value streams/use cases of additional benefits of BESS and renewable energy potential combined with BESS. This deliverable is required to have, at minimum, the following components:

    a. BESS additional benefits to Indonesia's power system:
        i. An analysis of BESS value streams/use cases for the grid system/additional benefits of BESS, i.e., energy arbitrage, ramping support, ancillary services, loss reduction, and others. Subsequently, conduct energy model assessments of the grid system in Indonesia, including its subsystems that consist of major systems in *Jamali, Sumatra, Kalimantan, Sulawesi* and other systems *Maluku, Papua, Nusa Tenggara*, and integrate this analysis with the possibility of integrating with the role of BESS.
        ii. Identify optimal locations and scales for BESS deployment to enhance grid stability, reliability, and efficiency.[2]

    b. BESS with RE Integration:
        i. Assessment of the potential of renewable energy to meet emission reduction targets in electricity generation.
        ii. Development of an accurate energy modelling system to analyse and simulate various scenarios with optimal deployment of BESS integration.
        iii. Analyse frequency stability issues with high RE penetration.
        iv. Identify optimal locations and scales for BESS to enhance frequency stability of RE sources.

    c. BESS in Specific Area of electricity systems
        i. Assessment of selected electricity systems with potential BESS support, namely Madura, Nias, Mentawai, Simeulue, Sabang, Thousand Islands (Pulau Seribu), Ternate, Ambon, Morotai, and other isolated grids.
        ii. Identify optimal locations and scales for BESS deployment to enhanced grid stability, reliability, and efficiency.

    d. Estimating the Levelized Cost of Electricity (LCOE) Estimation: Estimating the LCOE associated with the BESS based on identified use cases.
    e. List of potential project pipelines for investment for BESS development in Indonesia.

[2] This activity will be a desktop assessment.

f. Organize at least two consultation workshops[3] to disseminate the outputs delivered by the consultants and gather input and feedback from relevant stakeholders to be incorporated into the final version of the outputs. The consultant shall prepare the logistics of the consultation workshops following the details below. Post-workshop report is required to be submitted. The post-workshop report outline can be found in the details of the consultation workshop organization section.

   i. Two half-day workshop, or equivalent in a (up to 4-star) hotel/ meeting venue, inclusive of one coffee break and lunch
   ii. hybrid, with live interpretation through Zoom or other software
   iii. workshop located in Jabodetabek area
   iv. at minimum 30 offline participants per workshop

g. In addition to the deliverable report, as a standalone document, the consultant is required to prepare a policy brief to be prepared for decision makers highlighting recommendations and suggested actions.

Deliverable 4: Create a BESS deployment and operation business model tailored to fit the Indonesian national context.

16. This deliverable serves to formulate a specialized business model for BESS deployment and operation in Indonesia, particularly for PLN and/or private (IPPs), aligned with the intricacies of the local electricity market. This deliverable is required to have, at minimum, the following components:

    a. Insights from successful business models implemented in various countries for reference and best practices.
    b. Market Analysis: Conduct a thorough analysis of the Indonesian energy market to identify opportunities, challenges, and potential stakeholders relevant to Battery Energy Storage Systems (BESS).
    c. Exploring business models for the private sector/PLN to monetize through benchmarking with international practices
    d. Propose a business model specifically designed to address the unique requirements and challenges within the Indonesian context.
    e. Financial viability assessment: Evaluate the financial feasibility of the proposed business model, considering investment costs, operational expenses, and potential revenue streams within the Indonesian context.
    f. Risk assessment: Identify potential risks associated with the BESS business model and develop strategies to mitigate these risks effectively.

[3] Bidders shall provide a breakdown of all non-personnel costs in the financial proposal. The payment for logistical arrangements for the consultation workshops will be released on a prorated basis and as a lumpsum together with deliverable 3 report.

g. Technology integration: Identify and propose technology solutions into the business model to enhance the efficiency and effectiveness of BESS operations.
h. Environmental impact assessment: High-level assessment of the environmental impact of the proposed business model, incorporating sustainable practices and ensuring compliance with environmental regulations.
i. Regulatory compliance: Identify and recommend regulatory frameworks to support the proposed business model.
j. Organise at least two consultation workshops[4] to disseminate the outputs delivered by the consultants and gather input and feedback from relevant stakeholders to be incorporated into the final version of the outputs. The consultant shall prepare the logistics of the consultation workshops following the details below. The post-workshop report is required to be submitted. The post-workshop report outline can be found in the details of the consultation workshop organisation section.

    i. Two half-day workshops in a (up to 4-star) hotel/ meeting venue, inclusive of coffee breaks and lunch
    ii. hybrid, with live interpretation through Zoom or other software
    iii. workshop located in Jabodetabek area
    iv. at minimum 30 offline participants per workshop

k. In addition to the deliverable report, as a standalone document, the consultant is required to prepare a policy brief to be prepared for policymakers highlighting recommendations and suggested actions.

Deliverable 5: Integrated Policy Framework and Roadmap for BESS Integration

17. In this deliverable, the consultant must conduct comprehensive research on Indonesia's BESS landscape, addressing regulatory, technical, and policy aspects. Additionally, develop a tailored policy framework and integration plan, considering global best practices for seamless BESS adoption into the national grid. This deliverable is required to have, at minimum, the following components:

    a. Conduct a thorough examination of the current state of BESS in Indonesia, with a specific focus on the regulatory environment, industry standards, and technical requirements. This analysis considers crucial factors including safety, reliability, efficiency, and compatibility.
    b. Identify existing policy gaps and barriers that hinder BESS integration and renewable energy deployment in the local context.
    c. Analyze the regulatory frameworks, incentives, and policies that have effectively promoted BESS adoption in different regions.

[4] Bidders shall provide a breakdown of all non-personnel costs in the financial proposal. The payment for logistical arrangements for the consultation workshops will be released on a prorated basis and as a lumpsum together with deliverable 4 report.

d. Power Purchase Agreement Guidance for BESS: Create a guidance on the creation of a PPA ensure that the guideline addresses the unique characteristics and requirements of BESS.
e. A policy framework for BESS integration, customized to Indonesia's context and based on international best practices, including regulatory framework proposals to encourage widespread BESS adoption.
f. Timeline and Milestones: Establish a clear timeline with well-defined milestones to track progress and ensure timely completion of each phase of the integration.
g. Phased Integration Plan: Develop a detailed roadmap outlining the step-by-step phases for the integration of Battery Energy Storage Systems (BESS) into the grid.
h. Roadmap outlining a phased integration of BESS into the grid, ensuring a cohesive and effective transition process.
i. Technical Guidelines: Provide technical specifications and guidelines to ensure a smooth integration process, covering aspects such as grid compatibility, connectivity, and system optimization.
j. Resource Allocation Plan: Provide a plan for the allocation of resources, including manpower, technology, and financial investments, required for successful integration.
k. Pilot Project Identification: Identifying and detailing options of pilot project for BESS integration to test and refine the proposed frameworks and integration plans in a controlled, real-world environment.
l. Organize at least two consultation workshops[5] to disseminate the outputs delivered by the consultants and gather input and feedback from relevant stakeholders to be incorporated into the final version of the outputs. The consultant shall prepare the logistics of the consultation workshops following the details below. The post-workshop report is required to be submitted. The post-workshop report outline can be found in the details of the consultation workshop organization section.

    i. Two half-day workshops in a (up to 4-star) hotel/ meeting venue, inclusive of coffee breaks and lunch
    ii. hybrid, with live interpretation through Zoom or other software
    iii. workshop located in Jabodetabek area
    iv. at minimum 30 offline participants per workshop

18. In addition to the deliverable report, as a standalone document, the consultant is required to prepare a policy brief to be prepared for policymakers highlighting recommendations and suggested actions.

[5] Bidders shall provide a breakdown of all non-personnel costs in the financial proposal. The payment for logistical arrangements for the consultation workshops will be released on a prorated basis and as a lumpsum together with deliverable 5 report.

Deliverable 6: Training Program for BESS Management

19. The consultant must develop a training program and conduct three-day workshops, covering various topics related to BESS (see para 18.c.), with the primary goal aimed at enhancing the knowledge, skills, and capabilities of key stakeholders, including government officials and energy professionals. This deliverable is required to have, at minimum, the following components:[6]

    a. Training Materials: Encompasses the development of various educational resources, including presentations, manuals, handouts, case studies, and practical exercises.
    b. Teaching Methods: Involves the execution of diverse teaching approaches to enhance learning, such as lectures, hands-on exercises, group discussions, and simulations.
    c. The training program should at least cover the following topics:
        i. Technical aspects (design, construction, operation): Encompasses the engineering and operational aspects of BESS, covering its design, construction, and day-to-day operation.
        ii. Grid integration: Addresses the integration of BESS with the electrical grid, highlighting the technical and operational considerations involved.
        iii. Safety protocols: Emphasizes the importance of safety measures and protocols to ensure the secure operation of BESS.
        iv. Maintenance: Covers the procedures and practices related to the upkeep and maintenance of BESS systems.
        v. Operational best practices: Involves teaching the participants the most effective and efficient ways to operate BESS based on industry best practices.
        vi. Cross-regional insights within Southeast Asia pertaining to BESS.

20. Consultant shall organize the training following the details below:[7]

    a. At least three-full-day training in a (up to 4-star) hotel/ meeting venue, inclusive of two coffee breaks and lunch each day
    b. workshops located in Bandung area
    c. At maximum 40 offline participants at the workshop
    d. Out of the 40 participants, accommodation should be arranged for 20 government and State-Owned Eneterprise (SOE) official participants

Deliverable 7: Final Report:

21. This report serves as a comprehensive summary of the entire project. It provides stakeholders with a detailed account of the project's objectives, processes, outcomes, and recommendations. It should be well-structured, evidence-based, and accessible to a wide range of stakeholders to ensure its impact and usefulness.

22. At a minimum, the final report should encompass:

[6] The training program materials must be submitted and approved by ETP and government beneficiary at least 2 weeks prior to conducting the training workshops.
[7] Bidders shall provide a breakdown of all non-personnel costs in the financial proposal. The payment for logistical arrangements for the training workshops will be released as a lumpsum together with deliverable 7 report. Should air travel be necessary, the consultant shall propose the most direct and economical airfare. The per diem rates for travellers shall not exceed UN Daily Subsistence Allowance (DSA) rate for the given destination https://icsc.un.org/Home/DailySubsistence.

a. Executive Summary: A concise overview of the project, highlighting its purpose, key findings, and recommendations. This section should provide a quick understanding of the project's significance.

b. Project Background and Rationale:

    i. Background: A detailed description of the project's background, including the context in which it was initiated, the need it addresses, and the goals it aims to achieve.

    ii. Rationale: An explanation of why the project is essential, focusing on its alignment with national energy transition goals, the Just Energy Transition Partnership target, and the Indonesian Net Zero Emissions (NZE) target by 2060.

c. Methodology: A description of the methodologies, tools, and approaches used during the project's execution. This should include information on data collection, analysis, and stakeholder engagement.

d. Stakeholder Engagement: An overview of how stakeholders were engaged throughout the project, including their roles and contributions.

e. Findings and Recommendations:

    i. Key Findings: A presentation of the project's key findings, including insights gained from training sessions, stakeholder feedback, and data analysis.

    ii. Recommendations: Concrete recommendations for further actions, improvements, or policy changes based on the project's findings. These recommendations should be actionable and specific.

f. Impact Assessment: A comprehensive evaluation of the project's influence on Indonesia's energy transition, particularly within the context of integrating BESS into the grid. This entails analyzing the project's role in advancing Indonesia's climate commitments, fostering sustainable economic growth, facilitating job creation in the context of a sustainable energy future, and methodically reducing greenhouse gas (GHG) emissions.

g. Lessons Learned: Reflection on the lessons learned during the project's execution, including what worked well and areas for improvement in future initiatives.

h. Sustainability and Future Steps:

    i. Sustainability Plan: A discussion of how the project's outcomes and initiatives will be sustained beyond its completion.

    ii. Future Steps: Recommendations for the next steps or follow-up actions that can build upon the project's achievements.

23. This report serves as a comprehensive summary of the entire project. It provides stakeholders with a detailed account of the project's objectives, processes, outcomes, and recommendations. It should be well-structured, evidence-based, and accessible to a wide range of stakeholders to ensure its impact and usefulness.

24. The Final Report serves as a comprehensive document that not only records the project's progress but also provides a roadmap for future initiatives in integrating BESS into the grid for energy transition. It should be well-structured, evidence-based, and accessible to a wide range of stakeholders to ensure its impact and usefulness.

25. Organize one consultation workshop[8] to disseminate the outputs[9] delivered by the consultants and gather final input and feedback from relevant stakeholders to be incorporated into the final report. The detailed agenda needs to be discussed with ETP and the Ministry of Energy and Mineral Resources prior to the workshops. The consultant shall prepare the logistics of the consultation workshops following the details below. The post-workshop report outline can be found in the details of the consultation workshop organization section.

    i. One half-day workshop in a (up to 4-star) hotel/ meeting venue, inclusive of coffee break and lunch
    ii. hybrid, with live interpretation through Zoom or other software
    iii. workshop located in Jabodetabek area
    iv. At minimum, 50 offline participants

26. As a standalone document, the consultant must prepare an academic manuscript for the proposed new regulation.[10]

27. Table 3 below provides a summary of minimum number of meetings required for each category for the whole contract.

Table 3. Summary of Meetings

Type of meetings	Quantity	Details
Technical Committee Meeting	8	• Hybrid event conducted in Bahasa Indonesia • 8 Full-day meetings with 2 coffee breaks and lunch each day • workshop located Jakarta, Bogor, Depok and Tangerang area • At minimum, 20 offline participants • Organized in a hotel/meeting venue (up to 4-star) the Jabodetabek area or nearby cities • Organized under deliverable 2

[8] Bidders shall provide a breakdown of all non-personnel costs in the financial proposal. The payment for logistical arrangements for the consultation workshop will be released as a lumpsum together with deliverable 7 report.

[9] Prior to disseminiation, all outputs must be approved my ETP and beneficiary.

[10] The academic manuscript for regulation development should comprise at least comprehensive literature reviews, data analysis, and evidence-based recommendations to support policy-making. It serves as a valuable resource for policymakers, regulators, and stakeholders by providing in-depth insights into relevant issues, policy implications, and alternative solutions. Additionally, it strengthens arguments and propositions during the legislative process, aiding evidence-based decision-making.

Type of meetings	Quantity	Details

Consultation workshops	7	• Half-day, inclusive of lunch and refreshment
		• Hybrid modality (on-line and in-person),
		• Bilingual, with live-interpreter through Zoom or similar platform
		• Number of participants:
		  ○ Minimum 30 in-person participants for 6 workshops under Deliverables 3, 4, and 5
		  ○ Minimum 50 in-person participants for 1 workshop under deliverable 7
		• organized in a hotel/meeting venue (up to 4-star) the Jabodetabek area or nearby cities

Training Program	1	• At least three-full-day training in a (up to 4-star) hotel/ meeting venue, inclusive of two coffee breaks and lunch • Workshops located in Jabodetabek area • At maximum 40 offline participants • Organized under deliverable 6

Details of Consultation Workshop Organization

28. The consultant is expected to handle all tasks related to the workshop including organising the logistics, inviting participants and speakers, booking the venue, and executing the actual workshop. Bidders shall provide a breakdown of all non-personnel costs in the financial proposal. The payment for logistical arrangements for the workshops will be released as a lumpsum together with deliverables.

29. The detailed agenda needs to be discussed with ETP prior to the workshops. Gender and social inclusion considerations have to be taken into consideration (see para 16). All key stakeholders related to the topic, particularly governmental entities, should be engaged. Journalists should be invited to disseminate the findings of the workshop, if deemed necessary and subject to the beneficiary's approval.

30. The consultant is required to submit a post-workshop report as part of the deliverable report that includes the following components:

    i. Description of the workshop (e.g., background, objective, organisation)
    ii. Workshop agenda and participant components
    iii. Workshop proceedings (e.g., summary of presentations, key points raised, important insights, significant outcomes or decisions)
    iv. Gender considerations

v. Stakeholder engagement
vi. Monitoring and implementation
vii. Media and communication
viii. Conclusion and next steps

Monthly Progress Report:

31. In addition to the listed deliverables, the consultant is required to submit monthly progress reports. Failure to submit this report may result in the payments being withheld.

32. The monthly progress report includes a concise narrative (in short bullet points) of the completed activities contributing towards the milestones and the indicative next steps. It serves as the monitoring report between the consultant and ETP.

33. The monthly progress report includes the following standard items:

    i. General progress update
    ii. Updated Gantt chart
    iii. Risk identification and mitigation
    iv. Communications activities and materials

34. The final monthly progress report will include the above items and the followings:

    i. Summary of lessons learned from the project implementation
    ii. Recommendations on potential next steps to build on this project

35. On a quarterly basis, the consultant is required to provide the updated results against the Results Based Monitoring Framework (RBMF) in a provided template. The data must be gender-disaggregated, where applicable.

36. The templates (Excel spreadsheet) for both the monthly progress report and RBMF will be shared at the project kick-off stage.

Other key information:

- A public facing, publishable Executive Summary (approximately 2 pages) in professional English must be submitted with each deliverable.

- A public facing, catchy powerpoint presentation highlighting key information must be submitted with each deliverable.

- All project deliverables and presentations must be submitted in English and the local language.

- All deliverables are subject to review by ETP, and beneficiary entity(ies) where applicable, before approval. If there are comments and suggestions, the deliverables need to be revised accordingly before payment is released.

- The consultant is required to update the results and achievements of the project in accordance with the agreed project level Results-Based Monitoring Framework, as per the approved template. All results, where applicable, must be gender disaggregated

- The consultant is required to organise and execute all aspects of the workshops, including organisation and logistics.
- The consultant must consider and highlight specific gender considerations in their proposal.
- The consultant must be available to attend 1 in person workshop with the ETP secretariat in the region. The costs for this will be covered outside the financial scope of this proposal.
- The consultant, or an active organisation within the applying consortium, must have in-country presence.

V. Timeline for the Project

37. The project will require 14 months. The actual project timeline will be presented by the consultant and agreed upon in the Inception Report.

Table 4. Proposed timeline of the project's deliverables

No.	DELIVERABLES	Month													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Inception Report including a communications plan														
2	Draft of national standards (SNI) for BESS.														
3	Assessment and Model-Based Analysis of BESS Integration for Enhanced Grid Stability, Reliability, and Efficiency														
4	Create a BESS Deployment and Operation Business Model Tailored to Fit the Indonesian National Context.														
5	Integrated Policy Framework and Roadmap for BESS														
6	Training Programs for BESS Management														
7	Final report and Academic Manuscript for Proposed New Regulation														

VI. Key Beneficiaries

38. The key beneficiaries of this project are provided in table 1.

Table 5. List of beneficiaries of this project

Beneficiary	Benefit	Explanation
Ministry of Energy and Mineral Resources	Accelerated renewable energy integration	MEMR can accelerate the integration of renewable energy sources with Battery Energy Storage Systems (BESS), contributing to Indonesia's transition towards sustainable energy sources.
State-Owned Electricity Company : PT. Perusahaan Listrik Negara (PLN) (Persero)	Enhanced grid reliability and energy management capabilities	By integrating BESS into the grid, PLN can optimize energy storage, balance supply and demand fluctuations, and improve system stability. This contributes to a more resilient power infrastructure,
Ministry of National Development Planning (Bappenas)	Enhanced energy policy development	By providing insights into BESS integration, economic feasibility, and regulatory requirements, the project empowers policymakers to formulate evidence-based policies that support sustainable energy development and address the country's energy needs in a holistic and strategic manner.
Coordinating Ministry of Maritime and Investment Affairs	Improved investment climate and economic growth	By creating a roadmap for BESS integration and addressing regulatory barriers, the project facilitates private sector participation, leading to economic growth and development in the energy sector.

VII. Results Based Monitoring Framework

39. The Results of the Project are monitored through the following Framework in Table 2. All reports will update the achievement of the indicators.

Table 6. Results Based Monitoring Framework Outline

Integrating BESS into the Grid for Energy Transition

IMPACT

- GHG Emissions avoided or reduced – estimates of fossil fuel mix replaced in % (Coal, Natural Gas, Oil)
- Share of RE in the total primary energy supply (TPES)

- Additional RE (non-combustible) installed capacity (GW)

OUTCOME

1. Policy alignment with climate commitments
3. Extending smart grids
4. Knowledge and awareness building

OUTPUT

1.1 National RE and EE policies, regulations, standards, and energy plans reflect a clear commitment to Energy Transition agenda and integrated into sectoral plans to contribute to the achievement of Paris Agreement

3.1 National energy strategy and sectoral plans involve evidence-based planning for an improved national-smart-grid system along with related infrastructure and innovative technologies

4.1. Stakeholders[11] involved in the RE/EE value chain, are knowledgeable and better informed to advance the energy transition agenda.

INDICATOR	TARGET
IN 1.1-02.1 - No. of RE and EE policies, laws, regulations, and/or technical standards developed/revised and presented to the government entities	At least 1 policy/regulation on Standardization in the Electricity Sector that include standard for BESS are developed/revised and presented to the government entities
IN 3.1-02 - No. of technical design, demo, modelling projects supported for smart infrastructure	1 Indonesian National Standard (SNI) for BESS prepared and proposed for approval by BSN.
IN 4.1-01 – No. of studies, research, new evidence gathered and published, for raising awareness, improving knowledge base, driving decisions, and dissemination	At least 1 study on international best practices in BESS integration gathered and published, for raising awareness, improving knowledge base, driving decisions, and dissemination
IN 4.1-02 - No. of trainings, knowledge sharing events, and/or awareness workshops organised at national and regional levels building institutional capacity and knowledge networks	At least 1 training on BESS integration organised at national level building institutional capacity and knowledge networks

ACTIVITIES

Component 1

- A detailed work plan for the development of the national standards for BESS.
- National consultation workshops to collect feedback on the draft of SNI for BESS

Component 2

- Facilitate coordination with MEMR and PLN to develop an energy modelling system that accurately

[11] Government entities, Public sector companies, Financial institutions, Private entities, Academia, and Consumers.

assesses the impact of a more aggressive VRE mix combined with BESS integration on the national energy grid.

- Forecasting the optimal deployment of BESS capacity, predicting grid stability improvements, estimating the impact to LCOE of the VRE.
- Identify existing policy gaps and barriers that hinder BESS integration and renewable energy deployment in the local context.
- Analyze the regulatory frameworks, incentives, and policies that have effectively promoted BESS adoption in different regions.
- Develop a comprehensive policy framework for BESS integration, incorporating international best practices and tailored to Indonesia's needs, with ongoing support through to the implementation of the recommendations.
- Develop training programs and curricula on BESS integration, including technical aspects (design, construction, operation), grid integration, safety protocols, maintenance, and operational best practices.
- Create training materials, including presentations, manuals, handouts, case studies, and practical exercises.
- Implement a variety of teaching methods, including lectures, hands-on exercises, group discussions, and simulations.

40. The results are reported with additional supporting information and evidence where applicable and necessary.

VIII. Qualification and experience of the service provider and evaluation criteria

A. Qualification and Experience of the Service Provider

41. The consultant's project team should demonstrate the capacity to execute the works and should include all essential roles filled with personnel with relevant experience. CV's of the personnel proposed should be used to verify this information.

42. The following are the **minimum positions** that should be included on the team. Bidders should make an assessment of the additional positions needed (if any) to complete the assignment as per Terms of Reference:

    a. Team Lead (1 member)
    b. BESS Technical Specialist (1 member)
    c. Energy Market Specialist (1 member)
    d. Energy Policy Specialist (1 member)
    e. Energy Modeler (1 member)

43. The minimum requirements per position are stated in the Evaluation Criteria, under Technical Criteria section 3.

44. Additional positions such as the ones suggested below, may be proposed to effectively implement and execute the work plan. While these additional positions do not have assigned scores under the Key Personnel evaluation section, having these positions included in the proposal as the team composition may be considered as strength in the technical evaluation section 2, the implementation of the workplan and methodology.

    f. Legal Specialist (1 member)
    g. Investment Specialist (1 member)
    h. Environmental Impact Specialist (1 member)
    i. Gender and Social Inclusion Specialist (1 member)

40. Considering the importance of close coordination with stakeholders in Indonesia, it is expected that the team proposed consists of consultant(s) who understand the local context in Indonesia.

41. The bidder should also assign a Contract Manager who would liaise on the non-technical part of the contract implementation, including coordination, liaising with key counterparts, liaising with UNOPS on the submission of invoice and payment-related documents.

B. Evaluation Criteria

Eligibility and Formal Criteria

45. The *criteria contained in the table below will be evaluated on **Pass/Fail** basis and checked during Preliminary Examination of the proposals.*

Criteria	Documents to establish compliance with the criteria
1. Offeror is eligible as defined in Instructions to Offerors, Article 4. In case of JV, all JV members should fulfill this requirement	• Form A: Joint Venture Partner Information Form, all documents as required in the Form, in the event that the Proposal is submitted by a Joint Venture. • Form B: Proposal Submission Form
2. Completeness of the Proposal. All required Questionnaires (if any), Returnable Bidding Forms, and other documentation requested under the Document Checklist section have been provided and are complete	• All documentation as requested under Instructions to Offerors Article 10, Documents Comprising the Proposals
3. Offeror accepts UNOPS General Conditions of Contract as specified in Section IV: Contract Forms	• Form B: Proposal Submission Form

Qualification Criteria

46. The criteria contained in table below will be evaluated on Pass/Fail basis and checked during Qualification Evaluation of the proposals.

Criteria	Documents to establish compliance with the criteria
1. The company should have a minimum of 5 years of continuous experience in delivering similar projects in the past with a track-record of success. In case of JV, at least one of the JV members should fulfil this criteria	• Certification of incorporation of the Offeror • Form F: Performance Statement Form
2. Offeror must provide a minimum of two (2) customer references from which similar services have been successfully provided (including name, email address and/ phone number of the focal point), within any of the last 5 years. In the case of JV, at least one reference from the JV should be submitted. UNOPS may contact the customer reference when the bidder is awarded the contract	• Form F: Performance Statement Form
3. Financial Capacity/financial stability: Bidder should have a minimum annual turnover of 250,000 USD in any of the past 3 years. In case of a joint venture, annual turnover is calculated based on the total annual turnover of the JV members. The bidder has sufficient liquidity, demonstrated by the ratio of "average current assets / current liabilities" over the last [three (3)] years which must be equal to or greater than one (1) or the bidder has access to a line of credit or bank overdraft or other financial means to meet a working capital/cash flow requirement of USD 250,000 (should the bidder be selected).	• The bidder should submit an audited financial statement/ financial statement verified by a chartered accountant/ Tax declaration statement to the local government, or any similar documents accepted to the local authorities

Technical Criteria

47. Technical evaluation will be carried out to bids that pass the eligibility, formal and the qualification criteria, with requirements as follows:

    a. The maximum number of points that a bidder may obtain for the Technical proposal is 80. To be technically compliant, Bidders must obtain a minimum of 56 points
    b. Minimum pass score: 70% of maximum 80 points = 56 points

48. Technical proposal points allocation

Section number/description		*Points Obtainable*
1.	*Offeror's qualification, capacity and expertise*	*20*
2.	*Proposed Methodology, Approach and Implementation Plan*	*30*
3.	*Key Personnel proposed and Sustainability Criteria*	*30*
Total Technical Proposal Points		*80*

Section 1: Offeror's qualification, capacity and expertise

Section 1: Offeror's qualification, capacity and expertise		**Points**	**Sub-points**
1.1	Brief description of the organization, including the year and country of incorporation, and types of activities undertaken, including relevance of specialized knowledge and experience on similar engagements done in the past. Bidders partnering up with a local entity to provide for the strategic consultation, translations; as well as the engagement expertise is considered a valuable asset.	17	
	1. Experience in projects of comparable size, type, complexity and technical specialty.		6
	2. Demonstrates an understanding of the local context with regards to key stakeholders, legal, regulatory and policy landscape, especially that related to the project.		6
	3. Demonstrates the ability to engage with local stakeholders for effective data collection, information gathering, and dissemination.		5

Section 1: Offeror's qualification, capacity and expertise		Points	Sub-points
1.2	General organizational capability which is likely to affect implementation: management structure, and project management controls. (Max 4 pages written text)	3	
	1. Management structure, management controls, and extent to which any part would be subcontracted. In the case of a JV, there is a clear designation of roles and responsibilities between the JV members.		3
Total points for section		**20**	

Section 2: Proposed Methodology, Approach and Implementation Plan

Section 2: Proposed Methodology, Approach and Implementation Plan		Points	Sub-points
2.1	Description of the Offeror's approach including risk(s) and mitigation measure(s), and methodology for meeting or exceeding the requirements of the Terms of Reference.	25	
	1. Description of the offeror's approach to identification of data sources, scenarios, issues for the deep-dive in the analysis and providing guidance to the government policy makers.		4
	2. Description of the offeror's approach to assessment of assessment and model-based analysis of BESS integration for enhanced grid stability, reliability, and efficiency.		7
	3. Description of the offeror's approach to the creation of BESS deployment and operation business model tailored to fit the Indonesian national context.		5
	4. Description of the offeror's approach to provide analysis for the integrated policy framework and roadmap for BESS.		5
	5. Description of the offeror's approach to provide capacity building related to BESS Management and draft of national standards (SNI) specifically for BESS.		4
2.2	Quality Assurance Plan	3	
	1. A plan outlining how the bidder intends to ensure oversight and quality assurance throughout the assignment,, *including clear process flow between the experts and JV members (if relevant)*. Quality Assurance plan should include discussion on risk-assessment and its mitigation plan		3
2.3	Implementation Timeline	2	

Section 2: Proposed Methodology, Approach and Implementation Plan		Points	Sub-points
	1. Bidder submits a detailed implementation timeline which includes detailed activities to be undertaken during this assignment, and is completed with gantt chart		2
Total points for section		**30**	

Section 3: Key personnel proposed and Sustainability Criteria

Section 3: Key personnel proposed and Sustainability Criteria		Points	sub-points
3.1	Qualifications of key personnel proposed aligned with the Terms of Reference	28	
	<u>Team Lead</u> **Education:** A Master's Degree in Electrical Engineering, Energy, Engineering, Climate Change, Development, Business or related field. A Bachelor's Degree with 2 years of relevant experience is considered equivalent. **Preferred Experience:** • A minimum of 8 years of relevant experience, with a minimum 2 years of leadership experience • Proven expertise in managing complex projects, particularly those related to the BESS, power system, grid infrastructure, renewable energy technologies, electricity market or energy policy. • Experience in stakeholder management and engagement skills, including working with governmental entities, industry stakeholders, and local communities. • Experience as an advisor in international development cooperation projects (i.e. GIZ, WB, ADB, UNDP, etc.). • Experience in policy advocacy and policy brief preparation for policymakers in the energy sector.	7	Education: 2 Experience: 5
	<u>BESS Technical Specialist</u> **Education:** A Master's Degree in Electrical Engineering, Energy Engineering, Power/Energy Systems, or a related field. A Bachelor's Degree with 2 years of relevant experience is considered equivalent. Professional certifications in energy storage, grid integration, or relevant technical areas are advantageous.	6	Education: 1 Experience: 5

	Preferred Experience: • Minimum of 3 years of hands-on experience in analysising BESS solutions within the context of grid stability, renewable energy integration, or energy management • Demonstrated expertise in integrating BESS into electrical grids, including knowledge of grid codes, grid stability requirements, or power quality standards. • Experience in designing BESS systems to provide ancillary services such as frequency regulation, voltage support, or peak shaving is highly desirable. • Demonstrable knowledge of safety protocols and standards related to BESS installation, operation, and maintenance.		
	<u>Energy Market Specialist</u> **Education:** Master's Degree in Electrical Engineering, Energy Economics, Business Administration, or a related field. A Bachelor's Degree with 2 years of relevant experience is considered equivalent. **Preferred Experience:** • Minimum of 5 years of experience in energy market analysis, market design, or policy development, particularly within the context of renewable energy integration or grid modernization. • Experience in conducting analyses of energy markets, including supply-demand dynamics, pricing mechanisms, market trends, or regulatory environments. • Experience in analyzing energy market structures, including wholesale markets, capacity markets, or ancillary services markets. • Proficiency of energy regulatory frameworks, grid codes, or market rules governing the Indonesian energy sector. • Experience in conducting assessments and cost-benefit analyses of BESS integration projects. **Additional requirement:** Considered an asset if based in Indonesia but not strictly required.	5	Education: 1 Experience: 4
	<u>Energy Policy Specialist</u> **Education:**	4	Education: 1 Experience: 3

	Master's Degree in Energy Policy, Public Policy, Public Management, Law, Economics, or a related field. A Bachelor's Degree with 2 years of relevant experience is considered equivalent. **Preferred Experience:** • Minimum of 5 years of experience in analyzing energy policies, regulations, or market mechanisms related to renewable energy deployment, grid modernization, or energy storage integration. • Experience in drafting policy documents, white papers, or regulatory proposals • Experience in engaging with diverse stakeholders, including government agencies, utilities, industry associations, NGOs, and community groups. • Experience in organizing stakeholder consultations, workshops, and policy dialogues to facilitate knowledge sharing and collaboration. **Additional requirement:** • Considered an asset if based in Indonesia but not strictly required.		
	<u>Energy Modeller</u> **Education:** A Master's degree or higher in energy engineering, electrical engineering, renewable energy, or a related field is required. A Bachelor's Degree with 2 years of relevant experience is considered equivalent. Additional certifications or professional qualifications in energy modeling, systems analysis, or renewable energy integration are advantageous. **Preferred Experience:** • Minimum of 5 years of experience in conducting energy modeling studies, scenario analysis, and techno-economic assessments for complex energy systems • Experience in energy modeling software tools to develop detailed models of the Indonesian energy grid, considering various generation sources, demand profiles, transmission infrastructure, and regulatory constraints. • Experience in modeling the integration of variability and intermittency of renewable energy sources into the existing energy grid.	6	Education: 1 Experience: 5

	• Experience in conducting techno-economic analysis of energy systems, including levelized cost of electricity (LCOE) calculations and net present value (NPV) analysis to assess the economic viability of BESS integration projects. **Additional requirement:** • Considered an asset if based in Indonesia but not strictly required.		
3.2	The bidder shall provide a clear statement, approach and methodology that demonstrates its commitment to support and mainstream gender equality and social inclusion through its operations and project implementation activities.	2	
Total points for section		**30**	