

# A Study on the Proposed Harmonisation of Grid Codes and Minimum Operational Technical Standards for Interconnections under the ASEAN Power Grid (Regional)

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## Terms of Reference | 20 June 2024

The Association of Southeast Asian Nations (ASEAN) has long pursued the ASEAN Power Grid that could promote energy security while increasing the renewable energy deployment into the grids. To inform the implementation of the APG, ASEAN Interconnection Masterplan Studies (AIMS III) Phase 3 will be conducted to lay out the foundation for establishing a multilateral power trade in ASEAN. As part of the AIMS III Phase 3 studies, the main output of this Terms of Reference will be a report on the proposed harmonisation of grid codes and minimum operational technical standards for interconnections under ASEAN Power Grid. The implementation of this project will be done in close coordination with the ASEAN Power Grid Advancement Program (APG-AP) consortium members.



## Table of Contents

<b>I. Introduction</b>	<b>3</b>
<b>II. Summary</b>	<b>3</b>
<b>III. Project Details</b>	<b>3</b>
A. Rationale	3
B. Impact	4
C. Objectives, Outcomes and Outputs	4
D. Sustainability and Gender Mainstreaming	5
<b>IV. Project Deliverables</b>	<b>5</b>
A. Detailed Tasks and Deliverables	5
Deliverable 1 - Inception Report	6
Deliverable 2 - Part 1 Report on the Proposed Harmonisation of Grid Code and Minimum Operational Technical Standards for Interconnections under the APG	7
Deliverable 3 - Part 2 Report on the Proposed Harmonisation of Grid Code and Minimum Operational Technical Standards for Interconnections under the APG	8
Deliverable 4 - Final Report on the Proposed Harmonisation of Grid Code and Minimum Operational Technical Standards for Interconnections under the APG	8
B. Consultations, Communications, and Dissemination	9
<b>V. Reporting and Coordination</b>	<b>11</b>
A. Contract Monitoring Requirement: Monthly Progress Report	11
B. Quality Assurance and Quality Control	12
<b>VI. Other Information</b>	<b>13</b>
<b>VII. Timeline for the Project</b>	<b>13</b>
<b>VIII. Key Stakeholders</b>	<b>14</b>
<b>IX. Results-Based Monitoring Framework</b>	<b>16</b>
<b>X. Qualification and experience of the service provider and evaluation criteria</b>	<b>17</b>
A. Qualification and Experience of the Service Provider	17
B. Evaluation Criteria	21
Eligibility and Formal Criteria	21
Qualification Criteria	21
Technical Criteria	22
Section 1: Offeror's qualification, capacity and expertise (20 Points)	23
Section 2: Proposed Methodology, Approach and Implementation Plan (35 Points)	24
Section 3: Key personnel proposed and Sustainability Criteria	25
C. Financial Criteria	27

## 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 interrelated 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 grids, and (iv) expanding knowledge and awareness building.

## II. Summary

2. The present document outlines the Terms of Reference (ToR) for A Study on the Proposed Harmonisation of Grid Code and Minimum Operational Technical Standards for Interconnections under the ASEAN Power Grid. This project is part of the ASEAN Power Grid Advancement Program (APG-AP), a program aiming to accelerate the realisation of regional power trade in the Association of Southeast Asian Nations (ASEAN). One of the outputs of the APG-AP is to deliver ASEAN Interconnection Masterplan Study (AIMS) III Phase 3, to which this ToR covers one of the work packages within AIMS III Phase 3 scopes.
3. The report on the harmonisation of the grid codes and technical standards will require an assessment of the existing technical arrangements of cross-border power trades in ASEAN and reflection of the international best practices for harmonising such technical specifications. The proposed harmonisation strategies could address the potential technical bottlenecks in establishing and implementing multilateral power trade in ASEAN. The report produced under this project will be one of the main official references for the ASEAN Member States to pursue the implementation of the APG, requiring a close coordination with the APG-AP's consortium members, namely UNOPS-ETP, ASEAN Centre for Energy (ACE), Clean, Affordable and Secure Energy project (CASE), and the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP).

## III. Project Details

### A. Rationale

4. The implementation of cross-border power trades under the ASEAN Power Grid (APG) starts from the bilateral levels which turn into sub-regional and eventually regional levels. Through this bottom-up process, the harmonisation of the grid codes and technical standards occur at each interconnection level. With the increasing number of cross-border power interconnections that are decentralised, the grid codes and technical standards harmonisation becomes varied.

5. Such a diversity in the grid codes and other technical standards could be a bottleneck for further implementation of the cross-border power trade, especially with the increasing ambition for ASEAN to have a multilateral power trade being implemented. Based on the previous AIMS studies, there are 18 potential bilateral interconnections and there are ongoing sub-regional power interconnections and trade in ASEAN that are operating under their respective technical specifications. To facilitate the acceleration of the regional power grid with a working multilateral power trade arrangement, there is an urgent need to have harmonised grid codes and other technical standards.
6. The assignment specified in this ToR will focus on developing a proposed harmonisation of grid code and minimum operational technical standards for interconnections under the APG. This project is part of the APG-AP's support to completing the ASEAN Interconnection Masterplan Study (AIMS III) Phase 3. The study should be developed in close coordination with other AIMS III Phase 3 studies on (i) the minimum requirements and (iii) the methodology development of ASEAN-wide integrated resource and resilience planning (IRRP) that will be used as a formal reference for the APG stakeholders in their efforts to establish a multilateral power market in ASEAN.<sup>1</sup> The overall oversight of this project will be done by UNOPS-ETP in close collaboration with the APG-AP consortium, particularly the ASEAN Centre for Energy (ACE).

## **B. Impact**

7. The project will contribute to the advancement of low-carbon power systems in Southeast Asia through the multilateral power trading arrangement that could facilitate increased renewable energy uptake. The impact will be facilitated through the recommended grid codes and technical standards harmonisation that the ASEAN member states could consider when implementing cross-border power trade.

## **C. Objectives, Outcomes and Outputs**

3. The objective of this project is to carry out part of the AIMS III Phase 3 studies. Specifically, the ToR covers the proposed harmonised grid codes and operational technical standards for interconnection for the APG. The study will provide a granular assessment of the current practices in grid codes and technical standards within ASEAN, including in the existing bilateral and sub-regional interconnections. The recommendations will then provide a reference point for the upcoming interconnection projects and facilitate the acceleration of regional power trade implementation with increased renewable energy penetration.
4. The outcome of this project is to shift the APG from study phase to implementation through the necessary technical assistance in the form of analytical works for the multilateral power trade and pilot projects. This project will specifically contribute to the outcome by proposing the recommended approaches in harmonising the grid codes and technical standards that the APG

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<sup>1</sup> For the detailed summary of the AIMS III Phase 3 focus areas, please refer to [Annex 1 - Overview of APG-AP](#).



stakeholders can refer to. Through this support, it will help accelerate the process of synchronising the technical aspects of cross-border power trade based on the landscape scanning in ASEAN and reflections from the international good practices.

5. The primary output of this project is **a report on the proposed harmonised grid codes and minimum operational technical standards for interconnection under the APG**. The report will include a landscape scanning of the current state of grid codes and technical standards in ASEAN based on the existing interconnections and provides a recommended pathway to harmonise them. Various consultations and events will be held throughout the project period that will facilitate the buy-in from the ASEAN member states. The recommended grid codes and technical standards harmonisation strategy will help the advancement of the APG implementation, including for the pilot multilateral power trade.

#### D. Sustainability and Gender Mainstreaming

6. ETP is committed to promoting and supporting gender mainstreaming through 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

#### A. Detailed Tasks and Deliverables

7. 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.
8. The main objective of this ToR is to produce **a report on the proposed harmonised grid codes and minimum operational technical standards for interconnection under the APG**. Drawing from the existing best practices and information on the grid codes and technical standards in ASEAN countries, this report will provide recommendations for basic criteria for system planning connection. In addition, it will also develop operational rules and responsibilities to be followed by the generating stations, transmission utilities and distribution utilities, in view of international experience and technical complexities involved in grid code harmonisation of power systems in ASEAN.
9. This report is broken down into several milestone deliverables. To which, the consultant will be assessed based on these milestone deliverables with each milestone being linked to payment. The milestone deliverables defined in this ToR are summarised in the following table.

**Table 1. List of Deliverables**

Milestone	Deliverable	Target delivery and payment timeline	% of Payment
1	Deliverable 1 - Inception Report	Month 1	10%
2	Deliverable 2 - Part 1 Report on the Proposed Harmonised Grid Code and Technical Standards	Month 3	25%
3	Deliverable 3 - Part 2 Report on the Proposed Harmonised Grid Code and Technical Standards	Month 6	35%
4	Deliverable 4 - Final Report on the Proposed Harmonised Grid Code and Technical Standards	Month 8	30%
Non-personnel Reimbursable Costs	Consultations, communications, and dissemination	Months 1, 3, 5, 8 (TBC)	N/A, at cost
Continuous - Contract Monitoring Requirement	Monthly Progress Report	Monthly submission	N/A

10. The acceptance of the milestone deliverables will be based on the review of the AIMS III Phase 3 Working Group (see Reporting and Coordination section). The review turnaround time is approximately 14 calendar days and depending on the review outcome, the consulting entity may be asked to improve the deliverable prior to acceptance.

11. All reports will be circulated widely to the relevant authorities and coordinating bodies and will receive time-bound comments for correction and augmentation, which the selected entity will incorporate to improve the quality of the outputs.

### Deliverable 1 - Inception Report

12. The consultant must submit the Inception Report within a month after the contract signing date. The Inception Report should outline the detailed work plan that will be undertaken throughout the project period. At the minimum, the **Deliverable 1** shall contain:

- a. Introduction and project background
- b. Scope of Services
- c. Methodology and Workplan, including approach, methodology and project Gantt chart
- d. A detailed approach as to how each deliverable will be met and what each submission will contain (outline of the study / report, data requirements, methodology for carrying out the analysis)
- e. Stakeholder mapping and analysis and communication / outreach plans
- f. Project management inclusive of organisational chart detailing key personnel, their roles and responsibilities, as well as their locations
- g. Risks, mitigations and assumptions
- h. Monitoring and Evaluation Framework, presented in the form of the ETP Results Based Monitoring Framework (RBMF)
- i. PowerPoint Presentation

## **Deliverable 2 - Part 1 Report on the Proposed Harmonisation of Grid Code and Minimum Operational Technical Standards for Interconnections under the APG**

13. Deliverable 2 focuses on the **stepwise strategy to set up grid code recommendations for the APG**. At the minimum, **Deliverable 2** shall include:

- a. Executive Summary
- b. Introduction
- c. Methodology
- d. The current state of grid code and technical standards in ASEAN
- e. International best practices for grid codes harmonisation
- f. Stepwise strategy to set up the recommended grid code
- g. Strategy to develop and implement grid codes in ASEAN
- h. PowerPoint Presentation of the main report

14. **The proposed stepwise strategy for setting up grid code recommendations** will provide the basic criteria for system planning, connection and operational rules and responsibilities to be followed by the generating stations, transmission utilities. In producing the report, the consultant is expected to simultaneously reflect on the international experiences while considering the technical complexity involved concerning grid code harmonisation of regional power systems in ASEAN. At a minimum, this Task will require the consultant to do the following:

- a. Analysis of the existing technical framework and applicable grid code documents for each AMS
- b. Analysis of similar studies on grid codes recommendations for ASEAN-wide or sub-regional grid code (examples of reference studies include the GMS Harmonized Grid Codes Study, USAID SPP Study on Technical Gaps of Country Grid Codes in ASEAN, AERN Framework on Grid Codes and Technical Standards, the study by NREL and other international experiences)

- c. Identification of the minimum requirements for an ASEAN-wide harmonised grid code
- d. Recommendations for developing and implementing a harmonised ASEAN grid code in a stepwise manner

### **Deliverable 3 - Part 2 Report on the Proposed Harmonisation of Grid Code and Minimum Operational Technical Standards for Interconnections under the APG**

15. Deliverable 3 comprises the second half of the report that lays out the technical specificity of grid code and technical standards for interconnections under the APG. At the minimum, **Deliverable 3** shall contain:

- a. Executive Summary
  - b. Introduction
  - c. Methodology
  - d. The current state of grid code and technical standards in ASEAN
  - e. International best practices for grid codes harmonisation
  - f. Stepwise strategy to set up the recommended grid code
  - g. Strategy to develop and implement grid codes in ASEAN
  - h. PowerPoint Presentation of the main report
16. The specific tasks to produce this deliverable covers the **strategy to develop and implement grid codes** necessary for ASEAN multilateral power trade on regional power coordinator, based on interconnection prioritisation reflected in the four scenarios (AIMS III phase 2) by check-listing some of the subcomponents (listed in the right-hand column). At a minimum, this Task will require the consultant to do the following:
- a. Defining harmonised technical standard for system and market operation (RTO/ ISO non-discriminatory service mechanism)
  - b. Defining ex-post congestion management strategy, ex-ante congestion management strategy (physical transmission rights (PTs) and financial transmission rights (FTR))
  - c. Defining harmonised wheeling charge methodology
  - d. Defining information disclosure
  - e. Defining interconnector capacity calculation methodology (based on the resulted interconnection development resulted from four scenario AIMS III phase 2 study)
  - f. Defining ancillary service market design

### **Deliverable 4 - Final Report on the Proposed Harmonisation of Grid Code and Minimum Operational Technical Standards for Interconnections under the APG**

17. Deliverable 4 forms the final report of the proposed harmonisation of grid code and minimum operational technical standards for interconnections under the APG that merges the initial two parts of the report delivered as Deliverables 2-3. The consultant is expected to develop integrated introduction, methodologies, and conclusion sections and ensure the overall flow and cohesion of the report.



18. In addition to the main report, the consultant will deliver two (2) briefing notes that provide a summary of the key messages from the full report. The topics of these briefs should be proposed by the consultant to APG-AP PMU for approval.
19. At the minimum, **Deliverable 4** shall comprise:
- a. Executive Summary
  - b. Introduction
  - c. Methodology
  - d. The current state of grid code and technical standards in ASEAN
  - e. International best practices for grid codes harmonisation
  - f. Stepwise strategy to set up the recommended grid code
  - g. Strategy to develop and implement grid codes in ASEAN
  - h. 2 (two) briefing notes
  - i. PowerPoint Presentation of the main report

## **B. Consultations, Communications, and Dissemination**

20. **Consultations and dissemination** includes activities that the consultant will need to participate as part of the information gathering, validation, and dissemination. The activities will be done in close coordination with the APG-AP PMU, particularly ACE and UNOPS-ETP. Consultations with key relevant APG stakeholders at the country and regional levels are critical to carry out the assignment successfully.
21. More specifically, the consultant will participate and present (if required) in the following events that will be organised by the APG-AP consortium. The consultant is required to include a financial proposal under the “non-personnel reimbursable costs” budget line to cover travel costs for attending these events:
- a. One in-person kick-off meeting for AIMS III Phase 3 upon contract signing (location TBD in Southeast Asia) that will be organised by APG-AP consortium, inviting the AIMS III Phase 3 stakeholders.
  - b. One coordination meeting to be organised tentatively in Dec 2024 in Jakarta, Indonesia where the consultant may be asked to present the progress of work in coordination with APG-AP consortium members.
  - c. One final validation workshop in Q1 2025 (location TBD in Southeast Asia) to share the findings of the report, during which feedback from relevant stakeholders will be received.
22. In addition, the consultant will organise one consultation workshop, which should be budgeted in the proposal (including meeting logistics, meals (2 coffee breaks and lunch per day and 1 dinner), and travel sponsorships) with the following specifications:
- a. Total participants: 50 people (meeting venue capacity must accommodate this number)

- b. Location: Jakarta or one of the ASEAN capital cities, except Singapore (TBC)
  - c. Duration: 2 days
  - d. Tentative Date: September 2024
  - e. Travel sponsorship: 30 people (3 from each ASEAN Member State) with entitlements covering economy class return flights and [UN Daily Subsistence Allowance \(DSA\)](#) (2 days)
  - f. The remaining 20 participants will be self-funded
23. The consultation workshop will be reimbursed against the actual costs. The consultant is required to propose in the financial proposal for the non-personnel costs associated with consultation and dissemination workshop participation. For the consultation workshop that the consultant will organise, the consultant shall handle all tasks related to the workshop including organising the logistics, meals, inviting participants and speakers, booking the venue, and executing the actual workshop. The non-personnel costs will be reimbursed against the actual up-to-the-ceiling price proposed in the bidding.
24. The consultant must adhere to the UN travel management policy that includes:
  - a. Economy class airfare with the most direct route
  - b. [UN DSA](#) to cover accommodations, meals, transportations, and incidentals.
25. **Communication Products.** The consultant will also be required to develop communications and dissemination products from the project at the end of the project. The communications products form the contractual requirements from the UNOPS-ETP for every contract managed. The consultant is required to submit the communication products as part of Deliverable 5 along with the other required items indicated above. The following table provides the details of the required communication products for this assignment:

**Table 2. Project Communications Requirements**

No.	Communications Items	Quantity
1	<b>Social media posts</b> 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 ( <a href="#">LinkedIn</a> , <a href="#">Facebook</a> , <a href="#">Twitter</a> ),	1 post per platform per public workshop/event
2	<b>Press Releases</b> 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	<b>Articles for ETP Website</b> The Consultant will compile texts, following which the ETP team will publish the article on	2 - including 1 by mid project, and 1 upon project completion

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

26. **Visibility.** The Consultant shall take all appropriate measures to ensure that the Communications and Visibility requirements provided by ETP will be adhered to for all project related activities. The Communications and Visibility requirements will be shared to the awarded offerer upon signature of the contract.

## V. Reporting and Coordination

### A. Contract Monitoring Requirement: Monthly Progress Report

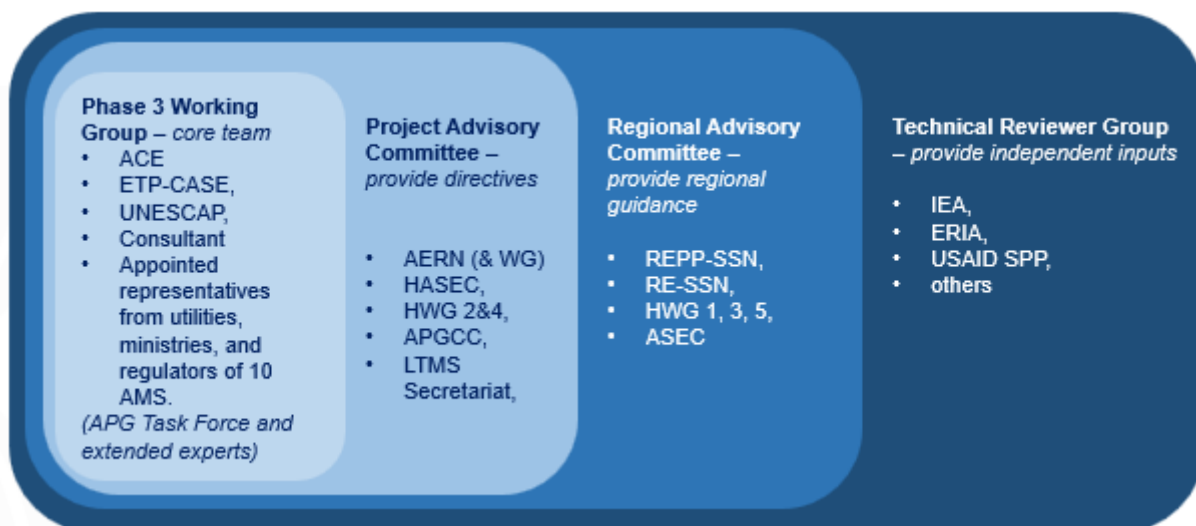
27. In addition to the listed deliverables, the consultant is required to submit monthly progress reports. Failure to submit this report may result in the payments being withheld.
28. The monthly progress report includes a concise narrative (in short bullet points) of the completed activities contributing towards the milestones and the indicative next steps. It serves as the monitoring report between the consultant and UNOPS-ETP.
29. The monthly progress report includes the following standard items:
- General progress update
  - Updated Gantt chart
  - Risk identification and mitigation
  - Communications activities and materials
30. The final monthly progress report will include the above items and the followings:
- Summary of lessons learned from the project implementation

- b. Recommendations on potential next steps to build on this project
31. 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.
32. The templates (Excel spreadsheet) for both the monthly progress report and RBMF will be shared at the project kick-off stage.

## B. Quality Assurance and Quality Control

33. All milestone deliverables are expected to be produced under the overall supervision of UNOPS-ETP and ACE. The quality of the deliverables will be ensured by the AIMS III Phase 3 Working Group that comprises ACE, UNOPS-ETP, CASE, UNESCAP, and the appointed representatives from the ASEAN member states. The following figure provides the overview of the Working Group:

**Figure 1.** AIMS III Phase 3 Working Group Structure



34. The consultant is required to have at least one personnel based in Jakarta in ACE's office on a full-time or part-time basis throughout the project duration. The objective of having Jakarta-based expert(s) is to improve the communications and reporting on progress through regular meetings and on an ad-hoc basis to inform and receive guidance from UNOPS-ETP and ACE on material issues related to the delivery of the report. The Jakarta-based personnel is ideally one of the core team members defined in the Personnel Qualifications. However, a mid-level personnel that has the same level of experience as the core team will be considered.
35. The team lead will also be responsible for coordinating with other AIMS III Phase 3 consultants delivering different Work Packages. Such a coordination will be done in close consultation with UNOPS-ETP and ACE.

36. All deliverables are subject to review by UNOPS-ETP, the AIMS III Phase 3 Working Group (see Figure 1) 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 turnaround time for the feedback is 14 calendar days and the consultant will be required to revert with any necessary adjustments within 7-14 days after receiving the feedback.

## VI. Other Information

37. A public facing, publishable Executive Summary in professional English and layout must be submitted with each deliverable.
38. A public facing, professionally laid-out PowerPoint presentation highlighting key information must be submitted and presented at meeting(s) organised by ACE, UNOPS-ETP and/or relevant stakeholder groups.
39. The consultant must consider and highlight specific gender considerations in their proposal.

## VII. Timeline for the Project

40. The project will require 8 (eight) months to complete. The actual project timeline will be presented by the consultant and agreed upon in the Inception Report.

**Table 3. Proposed timeline of the project's deliverables**

No.	Deliverable	Months							
		1	2	3	4	5	6	7	8
1	Deliverable 1 - Inception Report								
2	Deliverable 2 - Part 1 Report on the Proposed Harmonisation of Grid Code and Minimum Operational Technical Standards for Interconnections under the APG								
3	Deliverable 3 - Part 2 Report on the Proposed Harmonisation of Grid Code and Minimum Operational Technical Standards for Interconnections under the APG								
4	Deliverable 4 - Final Report on the Proposed Harmonisation of Grid Code and Minimum Operational Technical Standards for Interconnections under the APG								
5	Deliverable 5 - Consultations, communications, and								



dissemination									
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## VIII. Key Stakeholders

41. The key stakeholders/donors of this project are provided in the following table and the Working Group Structure for AIMS III Phase 3 is provided in Figure 1.

**Table 4. List of stakeholders/ donors of this project**

Stakeholder	Explanation
UNOPS-ETP	UNOPS-ETP will provide funding and engage international and local expertise to deliver outputs 2-4 as approved on a component to component basis. UNOPS-ETP will also support and lead as necessary, convening of the parties to marshal and aid decision-making with the aim to achieve the project outputs and objectives
ACE	ACE, as the designated ASEAN Secretariat implementing and coordination agency for the ASEAN Plan of Action for Energy Cooperation (APAEC) 2016-2025 Phase II that sets ASEAN policies and programs will lead the project through a dedicated project management unit (PMU). ACE will provide the required linkages to political decision-making and events at Senior Officials' Meeting on Energy (SOME) and ASEAN Ministers of Energy Meeting (AMEM) level to ensure the endorsements of APG-AP and its outputs, and coordination with ASEAN and ASEAN Secretariat to drive and coordinate a progressive and forward-moving implementation to achieve the objectives of the Project. ACE will also be in charge of the data collection process and provide the technical capacity for the analytical works
HAPUA	HAPUA will convene the appropriate and relevant parties at the country level in the process, engaging utility stakeholders at appropriate levels, sectors and national ministries when and where their decision-making is required to make concerted and timely progress to achieve the objectives of the Project
AERN	AERN will conduct dialogue on the regulatory aspects of the APG-AP ensuring dissemination of information to its membership

ASEAN Secretariat	ASEAN Secretariat will support APG-AP with guidance and suggestions to ensure inclusive consultations and information sharing with the ASEAN institutions relevant to APG-AP
ESCAP	ESCAP will provide complementary advisory and coordination services for the project, utilising in particular its intergovernmental processes to connect the activities beyond ASEAN Member States with the Asia region more broadly. AGP-AP will be able to leverage additional advisory and coordination services and possible further support from the Green Grids Initiative (GGI)'s wider ecosystem of partners through ESCAP's role as the lead of GGI Asia-Pacific Working Group
GIZ- Clean, Affordable and Secure Energy (CASE) or Southeast Asia	CASE is involved in the ASEAN Power Grid Advancement Program as the funder for Output 1 on the coordination where it supports the setting up of a Project Management Unit in ACE. CASE signed the trilateral Partnership Agreement with ACE and UNOPS-ETP and is the integral part of the APG-AP that will be involved in the quality control process of the Outputs 2-4 that UNOPS-ETP will perform
USAID Southeast Asia Smart Power Program (SPP)	USAID SPP is supporting APG as part of its overall assistance to the achievement of ASEAN Plan of Actions on Energy Cooperation II that ultimately will strengthen regional power systems through regional power trade and clean energy technology deployment.
USAID Clean Power Asia	USAID Clean Power Asia carried out the implementation of AIMSIII Phases 1-2 which assessed the viability of cross-border power trade through 2040 with a particular focus on increasing variable renewable energy penetration into the power grid. It also supported National Renewable Energy Laboratory (NREL) to develop a renewable energy data explorer and carried out studies to facilitate cross-border power trades between Laos and Vietnam.
Asian Development Bank (ADB)	ADB supported the multilateral power trade between Laos-Thailand-Malaysia Power Integration Project (LTM-PIP) which was expanded to Singapore. In addition, ADB also supports the expansion of regional power trade to the Greater Mekong Subregion (GMS).

42. The consultant is expected to identify and engage with other relevant stakeholders as part of this project.

## IX. Results-Based Monitoring Framework

43. The Results of the Project are monitored through the following Framework in the following table. This assignment will contribute mainly to the Strategic Objective 3 of ETP on Extending Smart Grid while also contributing to the Strategic Objective 4 on Knowledge and Awareness Building. All activities will update the achievement of the indicators and explained in the narrative reports.

**Table 5. Results-Based Monitoring Framework Outline**

ETP Pillars	Result(s)	Description	Indicator Number	Program Indicator(s)	Target
Extending Smart Grid	Short-Term Outcome (By 2025)	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	IN 3.1-01	No. of technical recommendations and solutions implemented by the grid operators for planning and operation, leading to smart grid	1 technical recommendation on grid code and technical standards
Knowledge and Awareness Building	Short-Term Outcome (By 2025)	4.1. Stakeholders (relevant Government entities, Public sector companies, Financial institutions, Private entities, Academia, and Consumers) involved in the RE/EE value chain, are knowledgeable and better informed to advance the	IN 4.1-01	No. of studies, research, new evidence gathered and published, for raising awareness, improving knowledge base, driving decisions, and dissemination	1 report
			IN 4.1-02	No. of trainings, knowledge sharing events, and/or awareness workshops organized at national and regional levels building institutional capacity and knowledge networks	1 workshop
			IN 4.1-02 A	Total no. of attendees	50 people
			IN 4.1-02	Total no. of female attendees	50%

		energy transition agenda	B		
			IN 4.1-03	No. of articles, press releases on social media, and mass media, for outreach releases on social media, and mass media, for outreach	2 briefing notes
			IN 4.1-04	Total no. of entities supported through Technical Assistance	5 entities (ACE, ASEAN Secretariat, APGCC, HAPUA, AERN)

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

## X. Qualification and experience of the service provider and evaluation criteria

### A. Qualification and Experience of the Service Provider

45. 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.
46. The consultant that will implement the project on behalf of UNOPS-ETP should fulfil the following requirements:
- The company should have minimum 5 years of experience with at least 2 similar contracts or projects within related sectors, such as regional power market and system modelling/energy transmission and integration/relevant similar fields, particularly in ASEAN.
  - Offeror must provide a minimum of two (2) customer references (including name, email address and/ phone number of the focal point) within any of the last 5 years.
47. Furthermore, the experience and similar capacities and services of the consultant include but not limited to the following:
- Extensive experience in power sector policy and regulation, power systems, transmission planning, operation, expansion, and regulation, and power market development and transmission is required. Experience from the ASEAN region is highly desirable.

- b. Experience in policy and regulatory analysis, energy modelling, economic/financial analysis, data collection, compilation and validation on both regional and national levels to carry out the project is desired.
  - c. In-depth understanding of the ASEAN initiatives of the ASEAN Power Grid, ASEAN Plan of Action for Energy Cooperation (APAEC), ASEAN Interconnection Masterplan Study (AIMS) and relevant policies is required.
  - d. In-depth understanding of the key ASEAN governing institutions and stakeholders of Heads of ASEAN Power Utilities Authorities (HAPUA), Renewable Energy Sub-sector Network (RE-SSN), Regional Energy Policy and Planning Sub-sector Network (REPP-SSN), ASEAN Energy Regulators Network (AERN), ASEAN Power Grid Consultative Committee (APGCC), ASEAN Ministers of Energy Meeting (AMEM), Senior Officials Meeting on Energy (SOME), and relative stakeholders in the context of energy is an advantage.
    - i. Proven work experience with governmental authorities, international donors/development partners, and utilities in Southeast Asia is a preference.
    - ii. Considering the importance of close coordination with stakeholders in ASEAN, it is expected that the team proposed consists of experts who understand the regional context of Southeast Asia.
48. The following are the minimum positions that should be included in the team. Bidders should make an assessment of the additional positions needed (if any) to complete the assignment as per Terms of Reference, including identifying at least one personnel to be based in Jakarta on a full-time or part-time basis to improve the communications and reporting on progress through regular meetings and on an ad-hoc basis to inform and receive guidance from UNOPS-ETP and ACE on material issues related to the delivery of the report. Bidders should include a table containing the key personnel, location throughout the project, and the total person days involved in the project. It is noteworthy that the consultant is responsible for ensuring the Jakarta-based personnel has the legal permit to stay and work in Indonesia as UNOPS will not be able to provide any work permit sponsorship.

**Table 6. List of Team Qualifications**

No.	Required Experts	Qualification
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1	Team Lead	<p><b>Education</b></p> <ul style="list-style-type: none"> <li>- Advanced university degree (Master's degree or equivalent).</li> <li>- Experts with a first level university degree (Bachelor's degree or equivalent) and additional 2 years of relevant experience will be considered in lieu of Advanced degree.</li> </ul> <p><b>Experience</b></p> <ul style="list-style-type: none"> <li>- A minimum professional experience of 10 years in a field relevant for energy sector policy, planning, and cross-border power trade is required.</li> <li>- At least 7 years of experience out of the total number of years of experience should be in leading projects of similar sizes and scale in power market development in a multidisciplinary team setting.</li> <li>- Experience in cross-border transmissions and operations in one or more ASEAN countries.</li> <li>- Experience in working with ASEAN and its member states on power or energy sector.</li> </ul>
2	Southeast Asia Legal, Regulatory, and Policy Expert (Power Sector Specific)	<p><b>Education</b></p> <ul style="list-style-type: none"> <li>- Advanced university degree (Master's degree or equivalent) in a relevant field, such as energy policy, legal studies, international relations, and public policy.</li> <li>- Experts with a relevant first level university degree (Bachelor's degree or equivalent) and additional 2 years of relevant experience will be considered in lieu of Advanced degree.</li> </ul> <p><b>Experience</b></p> <ul style="list-style-type: none"> <li>- A minimum professional experience of 7 years in a field relevant to power sector policy, regulations, and law is required.</li> <li>- Experience in developing and/or implementing legal arrangements for cross-border power trade.</li> <li>- Experience in designing institutional arrangements for cross-border power trade.</li> <li>- Experience in cross-border power trade in ASEAN countries.</li> </ul>

3	Transmission and Power Systems Operations Expert	<p><b>Education</b></p> <ul style="list-style-type: none"> <li>- Advanced university degree (Master's degree or equivalent) in a relevant technical field, such as energy/power systems, engineering, and energy modelling.</li> <li>- Experts with a relevant first level university degree (Bachelor's degree or equivalent) and additional 2 years of relevant experience will be considered in lieu of Advanced degree.</li> </ul> <p><b>Experience</b></p> <ul style="list-style-type: none"> <li>- A minimum professional experience of 7 years in a field relevant to power transmissions and operations is required.</li> <li>- Experience in the power transmission works from the operations and technical standpoints, including grid codes.</li> <li>- Experience in cross-border power transmission and its relations to power trade.</li> <li>- Experience in power transmissions and operations in ASEAN countries.</li> </ul>
4	Power Systems Planning Expert	<p><b>Education</b></p> <ul style="list-style-type: none"> <li>- Advanced university degree (Master's degree or equivalent) in a relevant technical field, such as energy/power systems, engineering, and energy modelling.</li> <li>- Experts with a relevant first level university degree (Bachelor's degree or equivalent) and additional 2 years of relevant experience will be considered in lieu of Advanced degree.</li> </ul> <p><b>Experience</b></p> <ul style="list-style-type: none"> <li>- A minimum professional experience of 7 years in a field relevant to power system modelling or a relevant modelling experience is required.</li> <li>- Experience in power or energy planning, including renewable energy incorporation.</li> <li>- Experience in cross-border power transmission modelling or planning.</li> <li>- Experience in power transmissions and operations in ASEAN countries.</li> </ul>

49. Considering the importance of close coordination with stakeholders in Southeast Asia, it is expected that the team proposed consists of consultant(s) who understands the local context in Southeast Asia.
50. 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 submission of invoice and payment-related documents.

## B. Evaluation Criteria

### Eligibility and Formal Criteria

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

**Table 7. List of Preliminary Examination Criteria**

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 fulfil this requirement	<ul style="list-style-type: none"> <li>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.</li> <li>Form B: Proposal Submission Form</li> </ul>
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	<ul style="list-style-type: none"> <li>All documentation as requested under Instructions to Offerors Article 10, Documents Comprising the Proposals</li> </ul>
3. Offeror accepts UNOPS General Conditions of Contract as specified in Section IV: Contract Forms	<ul style="list-style-type: none"> <li>Form B: Proposal Submission Form</li> </ul>

### Qualification Criteria

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

**Table 8. List of Qualification Criteria**

Criteria	Documents to establish compliance with the criteria
1. The company should have minimum 5 years of experience with at least 2 similar contracts or	<ul style="list-style-type: none"> <li>Certification of incorporation of the Offeror</li> </ul>

Criteria	Documents to establish compliance with the criteria
<p>projects within related sectors, such as regional power market and system modelling/energy transmission and integration/relevant similar fields, particularly in ASEAN.</p> <p>In case of a joint venture (JV), at least one of the JV members should fulfil this criteria</p>	<ul style="list-style-type: none"> <li>Form F: Performance Statement Form</li> </ul>
<p>2. Offeror must provide a minimum of two (2) customer references (including name, email address and/ phone number of the focal point) within any of the last 5 years.</p> <p>In case of a JV, at least one reference from the JV should be submitted</p> <p>UNOPS may contact the customer reference when the bidder is awarded the contract.</p>	<ul style="list-style-type: none"> <li>Form F: Performance Statement Form</li> </ul>
<p>3. Financial Capacity/financial stability:</p> <ul style="list-style-type: none"> <li><b>Minimum annual turnover:</b> USD 300,000 in any of the past 2 years</li> <li><b>Liquidity:</b> Sufficient liquidity demonstrable by at least <u>one</u> of the following: <ul style="list-style-type: none"> <li>- A current ratio (current divided assets by current liabilities) of at least 1 in any of the past 2 years.</li> <li>- Access to a line of credit or bank overdraft.</li> <li>- Other financial means to meet a working capital/cash flow requirement of USD 50, 000 (should the bidder be selected).</li> </ul> </li> </ul> <p>In case of a JV, annual turnover is calculated based on the total annual turnover of the JV members. In case of a joint-venture, at least one of the JV members should demonstrate sufficient liquidity.</p>	<p>Offeror should submit audited financial statements for the past 02 years or any other document/ statement accepted by the local government authorities in which the offeror is legally registered to provide the services.</p>

## Technical Criteria

53. Technical evaluation will be carried out to bids that pass the eligibility, formal and the qualification criteria, with requirements as follows:
54. 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
55. Minimum pass score: 70% of maximum 80 points = 56 points

**Table 9. Technical proposal points allocation**

Section No.	Description	Points Obtainable
1.	Offeror's qualification, capacity and expertise	20
2.	Proposed Methodology, Approach and Implementation Plan	35
3.	Key Personnel proposed and Sustainability Criteria	25
<b>Total Technical Proposal Points</b>		<b>80</b>

### Section 1: Offeror's qualification, capacity and expertise (20 Points)

No.	Details	Points
1.1	<p>Brief description of the consultant (organisation), including the year and country of incorporation, and types of activities undertaken, including relevance of specialised knowledge and experience on similar engagements done in the past.</p> <p>Bidders partnering up with a local entity to provide for the strategic consultation, translations; as well as the communications expertise is considered a valuable asset.</p>	15
	1. Experience in projects of comparable size, type, complexity and technical specialty <b>(5 points)</b>	
	2. Demonstrates an understanding of the local context with regards key stakeholders, legal, regulatory and policy landscape <b>(5 points)</b>	
	3. Demonstrates an ability to engage with ASEAN stakeholders for information	



	gathering and dissemination <b>(5 points)</b>	
1.2	General organisational capability which is likely to affect implementation: Management structure and management controls for this project, and the extent to which any part would be subcontracted. In case of JV, there is a clear designation of the roles and responsibilities between JV members.	5

## Section 2: Proposed Methodology, Approach and Implementation Plan (35 Points)

No.	Description	Points
2.1	<p>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</p> <p>1. Description of the offeror's approach to the identification of primary and secondary data sources and its collection methods based on the proposed scenarios. <b>(7 points)</b></p> <p>2. Description of the offeror's approach to developing the analytical methods and deep-dive plans for the report. <b>(7 points)</b></p> <p>3. Description of the offeror's approach to obtaining the buy-in from the ASEAN member states on the direction and approaches to developing the report(s). <b>(5 points)</b></p> <p>4. Description of the offeror's approach to developing communications materials based on the project deliverables. <b>(3 points)</b></p> <p>5. Description of the offeror's approach to linking with the broader APG works, including the other AIMS III Phase 3 studies being carried out in parallel. <b>(3 points)</b></p>	25
2.2	<p>Quality Assurance Plan</p> <p>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.</p>	7

2.3	Implementation Timeline	3
	Bidder submits a detailed implementation timeline which includes detailed activities to be undertaken during this assignment, and is completed with gantt chart.	

### Section 3: Key personnel proposed and Sustainability Criteria

No.	Criteria	Description	Points
3.1.	Team Lead	<p><b>Education (1 point)</b></p> <ul style="list-style-type: none"> <li>- Advanced university degree (Master's degree or equivalent)</li> <li>- Experts with a first level university degree (Bachelor's degree or equivalent) and additional 2 years of relevant experience will be considered in lieu of Advanced degree.</li> </ul> <p><b>Experience (6 points)</b></p> <ul style="list-style-type: none"> <li>- A minimum professional experience of 10 years in a field relevant for energy sector policy, planning, and cross-border power trade is required. <b>(2 points)</b></li> <li>- At least 7 years of experience out of the total number of years of experience should be in leading projects of similar sizes and scale in power market development in a multidisciplinary team setting. <b>(2 points)</b></li> <li>- Experience in cross-border transmissions and operations in one or more ASEAN countries. <b>(1 points)</b></li> <li>- Experience in working with ASEAN and its member states on power or energy sector <b>(1 points)</b></li> </ul>	7

3.2.	Southeast Asia Legal, Regulatory, and Policy Expert (Power Sector Specific)	<p><b>Education (1 Point)</b></p> <ul style="list-style-type: none"> <li>- Advanced university degree (Master's degree or equivalent) in a relevant field, such as energy policy, legal studies, and public policy.</li> <li>- Experts with a relevant first level university degree (Bachelor's degree or equivalent) and additional 2 years of relevant experience will be considered in lieu of Advanced degree.</li> </ul> <p><b>Experience (4 points)</b></p> <ul style="list-style-type: none"> <li>- A minimum professional experience of 7 years in a field relevant to power sector policy, regulations, and law is required. <b>(1 point)</b></li> <li>- Experience in developing and/or implementing legal arrangements for cross-border power trade. <b>(1 point)</b></li> <li>- Experience in designing institutional arrangements for cross-border power trade. <b>(1 point)</b></li> <li>- Experience in cross-border power trade in ASEAN countries. <b>(1 point)</b></li> </ul>	5
3.3.	Power Sector Expert	<p><b>Education (1 point)</b></p> <ul style="list-style-type: none"> <li>- Advanced university degree (Master's degree or equivalent) in a relevant field, such as energy policy, engineering, and business administration.</li> <li>- Experts with a relevant first level university degree (Bachelor's degree or equivalent) and additional 2 years of relevant experience will be considered in lieu of Advanced degree.</li> </ul> <p><b>Experience (4 points)</b></p> <ul style="list-style-type: none"> <li>- A minimum professional experience of 7 years in a field relevant to power sector, such as energy policy, power transmissions and operation, and cross-border power trade arrangement is required. <b>(1 point)</b></li> <li>- Experience in designing and/or implementing strategies for power trade. <b>(1 point)</b></li> <li>- Experience in designing and/or implementing power sector stakeholder engagement strategies. <b>(1 point)</b></li> <li>- Experience in cross-border power trade in ASEAN countries. <b>(1 point)</b></li> </ul>	5

3.4.	Power Systems Planning Expert	<p><b>Education (1 point)</b></p> <ul style="list-style-type: none"> <li>- Advanced university degree (Master's degree or equivalent) in a relevant technical field, such as energy/power systems, engineering, and energy modelling.</li> <li>- Experts with a relevant first level university degree (Bachelor's degree or equivalent) and additional 2 years of relevant experience will be considered in lieu of Advanced degree.</li> </ul> <p><b>Experience (4 points)</b></p> <ul style="list-style-type: none"> <li>- A minimum professional experience of 7 years in a field relevant to power system modelling or a relevant modelling experience is required. <b>(1 point)</b></li> <li>- Experience in the power or energy planning, including renewable energy incorporation. <b>(1 point)</b></li> <li>- Experience in cross-border power transmission modelling or planning. <b>(1 point)</b></li> <li>- Experience in power transmissions and operations in ASEAN countries. <b>(1 point)</b></li> </ul>	5
3.5.	Sustainability Criteria	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.	3

## C. Financial Criteria

56. The financial part of those proposals that are found to be technically compliant will be evaluated as follows.
57. The maximum number of points that a bidder may obtain for the Financial Proposal is 20. The maximum number of points will be allocated to the lowest evaluated price bid. All other prices will receive points in reverse proportion according to the following formula:

58. Points for the Financial Proposal of a bid being evaluated =

$$\frac{[\text{Maximum number of points for the Financial Proposal}] \times [\text{Lowest price}]}{[\text{Price of proposal being evaluated}]}$$

59. Financial proposals will be evaluated following completion of the technical evaluation. The bidder with the lowest evaluated cost will be awarded (20) points. Financial proposals from other bidders will receive prorated points based on the relationship of the bidder's prices to that of the lowest evaluated cost.

**Formula for computing points: Example**

Points = (A/B) Financial Points
Bidder A's price is the lowest at \$20.00. Bidder A receives 20 points
Bidder B's price is \$40.00. Bidder B receives $(\$20.00/\$40.00) \times 20$ points = 10 points

60. The total score obtained in both Technical and Financial proposals will be the final score for the proposal, with 80% allocated to the Technical proposal and 20% to the Financial proposal. The proposal obtaining the overall highest score will be considered as the winning proposal. This proposal will be considered to be the most responsive to the needs of UNOPS in terms of value for money.
61. The selection of the preferred bidder will be based on a cumulative analysis, analysing all relevant costs, risks and benefits of each proposal throughout the whole life cycle of the services and in the context of the project as a whole. The lowest priced proposal will not necessarily be accepted.