Introductory Presentation:
Essential Enabling Frameworks for RE Multilateral Power Trade

Manila, 5\textsuperscript{th} June

Presentation by:
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The ASEAN Power Grid in a Nutshell - Work Priorities and Regional Collaboration

18 priority interconnection has been identified
9 out of 18 has been operated
Several are currently on-going FS: Sumatra – P. Malaysia (new) & Kalimantan – Sabah (new), Thailand – Malaysia (upgrade existing)

Infrastructure Development

<table>
<thead>
<tr>
<th>Status</th>
<th>MW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing</td>
<td>7,700</td>
</tr>
<tr>
<td>On-going project (Up to 2025)</td>
<td>1,245</td>
</tr>
<tr>
<td>Grand Total (Up to 2040)</td>
<td>17,550</td>
</tr>
</tbody>
</table>

ASEAN Interconnection Master Plan Study (AIMS) III

- Phase 1: Capacity Expansion Planning (2020, updated in 2022)
- Phase 2: Grid Performance Analysis (2020, updated in 2022)
- Phase 3: Multilateral Market Analysis (2024)

Market Development

- Lao PDR – Thailand – Malaysia – Singapore PIP (2022)
- Expansion to other subregion
Could APG enable greater shared RE utilization in the region?

Key points from the AIMS III study on renewable energy:

- AIMS III, Phases 1&2 identified 18 interconnectors projects and 62 vRE potential sites to be utilized in the region through APG (42 solar sites equal to 8119 GW capacity and 20 wind sites equal to 342 GW).

- The existing efforts of ASEAN Member States (AMS) to deploy renewable energy will lead to a significant increase in RE share through the establishment of APG.

- To exploit this RE potential, ASEAN foresees 17.5 - 24.5 GW* of interconnector capacity under APG by 2040.

- From a technical standpoint, all APG interconnections are viable and can accommodate the VRE capacity to achieve the ASEAN RE Target. However, the governmental policy infrastructure requirements need significant improvement.

- Provided cross-border interconnections and strengthening of the grid at national levels are implemented, the ASEAN grid will be capable of evacuating vRE capacity to achieve ASEAN RE Target.

* Based on Updated PDP Scenario & ASEAN RE Scenario)
What is the key driver of RE MPT in the region?

1. ASEAN countries higher RE target and ambition for decarbonization

2. Corporate consumer demand RE electricity for their operation
Does (RE) cross-border power trade exist in ASEAN and what are the enablers?

**Grid to Grid power trade**

LTMS PIP Phase 1

- Power purchase amount is up to 100 MW through the existing interconnection system between Lao PDR – Thailand – Malaysia – Singapore
- Commencement of the LTMS-PIP on 23 June 2022 (2 years contract)
- Total Energy Transfer amount 266 million kWh (from 23 June 2022 – Present)

- Wider benefit for grid development
- Cultivate capacity for regional market
- Slower to be developed
- Requires inter-governmental agreement & regulatory harmonization needed (planning, operation)

**Generation to Grid**

- Straightforward and faster to be developed
- Faster to encourage additional RE capacity
- Do not encourage national grid development

**Renewable Energy Tagging and certification needed**
How to increase vRE utilization in cross-border trading under APG?

VRE utilization is a significant driver of interconnector realization under APG; thus, efforts and focus need to also shift towards transmission/interconnections apart from creating demand and supply of renewables.

For grid-to-grid RE MPT

? Transmission/ interconnectors

↑investment for RE projects

RE buyers (demand)

1 Planning
- New transmission/interconnector

2 Operation
- Grid congestion
- Dispatch/curtailment
- System stability & reliability

3 Investment
- Grid technology upgrade
- Capacity addition

NEEDS (regionally)

Coordination & Alignment
- Coordinated Regional Interconnectors Planning (AIMS)
- Feasibility Study

Harmonization to ensure interoperability
- Data sharing framework
- Grid code harmonization
- Available Transmission Capacity methodology
- Third party access

Market creation & working business model
- Supporting cross-border policy tools (REC framework, Wheeling charges)
- Regional market platform
- Transmission financing model

TOOLS (regionally)

- Planning:
  • Coordinated Regional Interconnectors Planning (AIMS)
  • Feasibility Study

- Operation:
  • Data sharing framework
  • Grid code harmonization
  • Available Transmission Capacity methodology
  • Third party access

- Investment:
  • Grid technology upgrade
  • Capacity addition

For grid-to-grid RE MPT

↑investment for RE projects

RE buyers (demand)
What are needed to advance the regional interconnectivity under APG?

National and regional efforts and advancement are equally important to accelerate regional interconnectivity under APG.

<table>
<thead>
<tr>
<th>ASEAN level cooperation</th>
<th>ASEAN Plan of Action of Energy Cooperation (APAEC) 2020-2025 (&amp; next cycle)</th>
<th>APG MoU Renewal</th>
</tr>
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<tbody>
<tr>
<td><strong>Regional Effort and collaboration by ACE &amp; partners</strong></td>
<td><strong>1 Planning</strong>&lt;br&gt;Coordination &amp; Alignment</td>
<td><strong>2 Operation</strong>&lt;br&gt;Harmozinization to ensure interoperability</td>
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<tr>
<td><strong>(APG-AP)</strong>&lt;br&gt;CASE&lt;br&gt;UN ESCAP</td>
<td></td>
<td>APG Roadmap (Output 2)&lt;br&gt;Analytical work of AIMS III Phase 3 (Output 3)</td>
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<td><strong>US Aid</strong></td>
<td>Workshop &amp; Capacity building on APG topics and support APAEC implementation</td>
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<tr>
<td><strong>USTDA</strong></td>
<td>Feasibility Study of APG interconnectors</td>
<td>Community of Practice &amp; Workshop on technical topics for utilities</td>
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<td><strong>ERIA</strong></td>
<td>Study on Intergovernmental Agreement on APG Institution</td>
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<tr>
<td><strong>GLOBAL PST Consortium</strong>&lt;br&gt;AFD, JICA, World Bank (upcoming)</td>
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- **ASEAN level cooperation**
  - Regional Power Market Study
  - Financing Facility (upcoming)

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  - Workshops and Capacity building on APG topics and support APAEC implementation

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  - Analytical work of AIMS III Phase 3 (Output 3)

- **APG MoU Renewal**
  - Proposed pilot for MPT (Output 4)

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Thank You

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