

Chapter 1

Background, Objectives, and Methodology of the Study

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Chapter 1

Background, Objectives, and Methodology of the Study

1. Background

ASEAN is now one of the most dynamic and fastest-growing economic regions in the world, and the current growth is expected to continue. The region is projected to see its annual growth of at least 4% or even more over the next 5 years.

While member states of the Association of Southeast Asian Nations (ASEAN) (AMS) bear minimal responsibility for global carbon emissions, they are equally suffering from the recent impacts of climate change. It is natural that the AMS committed to the Paris Agreement not long after the international agreement was in place. Malaysia is targeting to reduce greenhouse gas (GHG) emissions intensity against gross domestic product (GDP) by 45% by 2030. Thailand is committed to an unconditional 20% emissions reduction by 2030 against its business-as-usual scenario under which emissions may increase in the same period by as much as 25%. Indonesia is consistent with its commitment to reduce emissions by 29% or by 41% with international support by 2030.

The rest of the AMS follow; all AMS are trying hard to address the emission reduction requirements mainly through renewable energy introduction. ASEAN sets an aspirational target to increase the component of renewable energy to 23% by 2025 in its primary energy mix. The four countries deemed to be more vulnerable in view of their ambitious target of renewable energy development are Indonesia, Malaysia, the Philippines, and Viet Nam.

Indonesia is committed to 23% renewable energy in total primary energy supply by 2025, while Malaysia is confident about its target of 2,080 MW of renewable energy installed capacity by 2020 (excluding large hydro). The Philippines is making strenuous efforts towards the target of 15.2 GW of renewable energy in 2030. Viet Nam is committed to the target of 32% renewable energy against the overall installed capacity of 130.37 GW by 2030. Some AMS are struggling to enhance renewable energy introduction to expedite regional electrification in addition to achieving the emission reduction targets.

It is to be noted that renewable energy is variable and intermittent by nature. Looking at the issue from a technical point of view, the ongoing and forthcoming massive introduction of renewables will enhance energy sustainability and resilience only if the existing fossil fuel power plants are appropriately controlled and operated with enough flexibilisation as per the requirements dispatched by the grid through the introduction of techniques, best practices, and technologies such as the Internet of Things and/or artificial intelligence.

The situation may vary from one country to the other. Usually, gas power plants are given the role. However, some countries where coal power is dominant over gas power use coal-fired power plants (CFPPs), as in the case of India.

To sustain the present high growth while enhancing energy resilience, ASEAN will be required to address the emerging issue of possible grid fluctuation with the massive introduction of renewables.

2. Objectives

The ultimate objective of this study is to provide best practices and applicable measures and technologies for CFPPs for the flexible and yet optimal operation to contribute to the

- 1) stabilisation and sustainability of the national and transnational grids, and
- 2) minimisation of possible negative impacts by the massive introduction of renewables on the grid and the existing CFPPs.

3. Methodology

- 1) Formulation of by-country strategies for technology introduction, implementation, and sharing

The study focuses on identifying and formulating by-country strategies to facilitate introduction, implementation, and sharing

- electronic communication with Working Group members for information and advice to formulate the optimal strategy for each target AMS,
- collective discussions at the two-time Working Group meetings as referred to 2), and
- internet surveys to enhance the accuracy of the strategies to be formulated.

- 2) Working Group activities

- Two-time Working Group meetings are planned as part of the Study Working Group activities, for which members will be nominated through the relevant government institutions and utilities, as shown in the quoted list of institutions below, to provide advice and support for the sake of enhanced outcomes of the study.
- Working Group members are to interact with the Study Team about energy and electricity policy updates, observed issues and barriers, etc. to jointly identify the optimal scenario of grid stabilisation supported by the required measures to be taken at the plant end.
- Working Group members may be asked to provide views on the possibility and/or necessity of plant surveys in case relevant crucial information is not available through literature study.

- The purpose of each Working Group meeting is as follows:
 - 1st Working Group meeting: Discussion on topics such as potential technology introduction in each AMS, issues to be addressed, envisaged best practices, policy measures to be taken, benefits, and advantages, etc.
 - 2nd Working Group meeting: Draft report presentation by JCOAL covering proposals for each AMS discussion on the draft for incorporating comments and advice from the Working Group members to formulate policy recommendations as referred to in section 5.

4. Expected Recommendations

- 1) Guidelines for the optimal policy framework for ASEAN to facilitate the flexible operation of coal-fired power s to ensure the optimal stabilisation of the grid
- 2) By-country strategies for introduction, implementation of flexible operation at CFPPs, and sharing of best practices
- 3) Guidelines for the optimal policy framework for ASEAN to facilitate the flexible operation of CFPPs to ensure the optimal stabilisation of the grid.
- 4) By-country strategies for introduction, implementation of flexible operation at CFPPs, and sharing of best practices.
- 5) Policy recommendation to the East Asia Summit to facilitate the by-country policy efforts based on the proposed strategies.