

## Executive Summary

The technical improvement report on energy outlook and energy saving potential in East Asia is composed of three main chapters.

**The Chapter 1** discussed the national data improvement and use this national data for estimating some ASEAN countries of their demand equations aiming to assess the integrity of their historical national data as a potential database to be used in projecting energy demand. In the past, the EAS energy outlook and saving potential relies greatly on the IEA's historical energy data. However, the working group of this study wants to create its country data by looking into each country data and try to treat the national data based on the practical knowledge of the country experts who involved in the preparation of country energy outlook. To start with, only five countries were chosen to check the historical data correction to use for the energy outlook. The national energy data improvement should be accurate, complete and timely to be used in formulating statistical demand model using regression analysis. The main database file for 1990 to 2013 final energy consumption by major economic sector and subsector and socio economic parameters were established and being exported to the forecasting tool. Assessment on the national energy data was made through applying regression analysis to estimate energy demand functions such as electricity demand in residential sector. At the end, national energy data of two ASEAN countries are assessed very well and these data can be used for energy outlook modelling. But remaining three countries need more efforts to improve their national energy data. In this regard, the working group decided to postpone use of national energy data in future.

**The Chapter 2** is the case studies, where the working group set a scenario of keeping CO<sub>2</sub> emission frozen at 2013 level up to 2040. In this case, it is very challenging tasks for the some EAS countries to find the best energy mix, while keeping CO<sub>2</sub> level from 2013 till 2040. The upscaling renewable energy together with energy efficiency programmes remain the key energy policy towards low carbon economy in EAS countries. The Paris Agreement is a bridge between today's policies and climate-neutrality before the end of the century. However, ERIA's energy outlook and saving potential 2016 showed that although the emission reductions under the APS are significant, CO<sub>2</sub> emissions from energy demand in the APS case in 2040 will still be above 2013 levels and more than three times higher than 1990 levels. This chapter 2 explore the possibility of each country scenario in ASEAN plus Australia and China to frozen the CO<sub>2</sub> emission from 2013 level till 2040. Since some countries such as Japan, Korea, China and New Zealand will likely foresee the reduction of energy consumption, thus they are not included in this case study.

The scenarios setting for this case study are:

- Apply renewable energy and nuclear power generation aggressively;
- Apply energy efficacy and conservation (EEC) to achieve the maximum energy savings;
- Frozen the CO<sub>2</sub> emission from 2013 level till 2040, and how it affect the compositions of energy mix in each country

To achieve this scenario, each country will needs to make a drastic change to their energy mix, with very high ambitious of energy savings from energy efficiency and conservations and high

contribution from renewable energy where nuclear option become dispensable. This study surely makes clear that reduction of CO2 emissions is very difficult for some EAS countries under their expected economic growth.

**The Chapter 3** is the review of the countries' nationally intended contributions to COP 21. The review showed how countries lay out targets or programmes aiming at reducing the CO2 emissions. Some countries have clear policy and targets and some are not. Thus it is very important that countries will need to lay out the road map on how they wish to concretely contribute to the COP 21, through clear actions and programmes with timeframe.

Finally, this technical report is an exercise for the working group to improve their national data, practicing the intellectual scenarios of keeping the CO2 emission at 2013 level till 2040 and reviewing the countries' NDC commitment. The report will improve the capacity of national experts on the energy outlook, and also help policy to think out the possibility of contributing to COP 21 by cutting back the CO2 emission, or keeping the emission at 2013 level till 2040.