Executive Summary

After the publication of *Myanmar Energy Statistics 2019* (ERIA, 2019), which contains energy balance tables for 2000–2016 and analyses of energy demand and supply, the Economic Research Institute for ASEAN and East Asia (ERIA) continued to support the Oil and Gas Planning Department (OGPD), Ministry of Electricity and Energy (MOEE) to produce *Myanmar Energy Outlook 2040* based on *Myanmar Energy Statistics 2019*. ERIA provided training on the econometrics approach to OGPD, MOEE staff members. The approach consists of two parts: (i) estimation of energy demand formulas applying the ordinary least square method using *Myanmar Energy Statistics 2019,* and (ii) development of future simulation models that forecast future energy balance tables by 2040 under several macro assumptions such as growth rates of gross domestic product (GDP) and population.

GDP is an important assumption: energy demand is highly correlated with GDP historically and globally. We assume that current economic growth of Myanmar will continue until 2040, averaging 6.3%. Lowering the birth rate in the next 2 decades will require 0.7% average growth. The crude oil price will go up because of tight demand and supply, with the nominal price of US$185 in 2040. We included several energy development plans in the simulation models, such as installed capacity of solar photovoltaic (solar/PV) and hydropower plants.

Total final energy consumption (TFEC), which consists of industry, transport, commercial buildings, and residences, will increase 3.0% per year by 2040, much lower than GDP growth rate. Oil will increase 4.9% per year and electricity 7.0% by 2040. Biomass, however, will increase only 0.3% and will be almost flat until 2040. Thus, biomass will surely mitigate the TFEC growth rate.

Total primary energy supply (TPES) will increase at 3.5% per year by 2040, lower than GDP, for the same reason that TFEC will increase. TPES consists of coal, oil, gas, hydropower, renewable energy, and biomass. The major imported fuel is oil, but by 2040 all fossil fuels will depend on imports because domestic production of gas, for example, will decline. As a result, current import dependency (14% in 2016) will surely increase to 49%. Myanmar's energy supply security will be vulnerable. Therefore, the following policies are recommended:

(1) An energy efficiency and conservation policy, especially to mitigate electricity consumption, is the priority. Electricity consumption by commercial buildings is not large but new commercial buildings will increase rapidly all over Myanmar. The country will surely encourage businesses to apply energy efficiency schemes, such as the Green Building Index, in constructing new buildings.

(2) Myanmar is famous for producing natural gas and exporting large amounts of it to Thailand and China. But natural gas production is forecasted to decline. An option is to shift from natural gas power generation to coal, using domestic coal and applying clean coal technology.

(3) Biomass will phase out gradually, from 51% of total energy in 2016 to 24% in 2040, and the use of conventional energy such as oil and electricity will increase. Biomass should be used more, especially in rural areas, but so should an efficient biomass cooking stove.

(4) Hydropower is clean power and should be developed continuously, paying attention to environmental issues. Hydropower (especially during the rainy season) and solar/PV power (in the dry season) can complement each other.