

Climate Change Highlights in ASEAN



Impact of Growing Energy Demand on Climate Change

The yearly energy supply is increasing, in line with energy demand. The energy production, specifically the burning of fossil fuels, apparently is the main contributor to greenhouse gas (GHG) emissions in the world, which becomes the major influencing factor on global climate change.

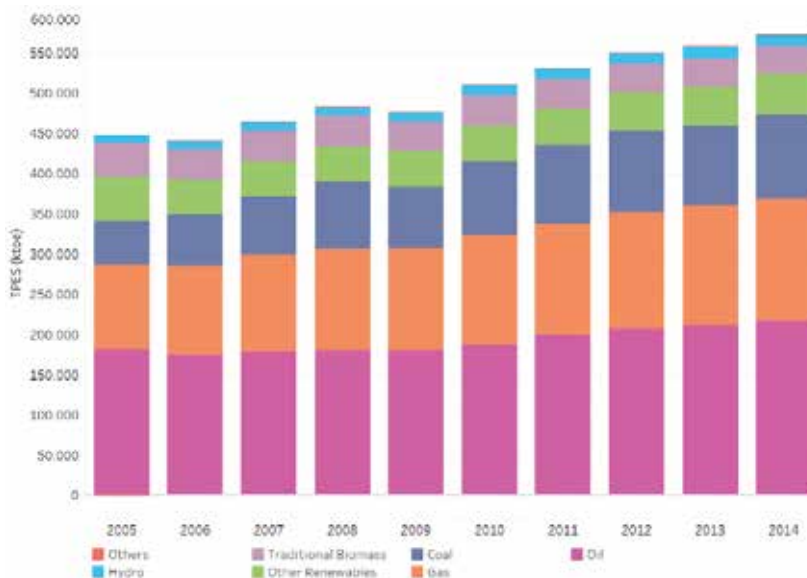


Figure 1: TPES figure of ASEAN from AEDS (2005-2014)

In 2014, the total primary energy supply (TPES) in ASEAN was 574,136 ktoe or growing by 2.8% annually. The largest share is still dominated by Oil at 37.7% (226,618 ktoe), followed by Gas 26.5% (144,502 ktoe), and Coal 18.1% (139,031 ktoe) while the energy supply from coal had rapidly grown by 8% annually.

Since 2005, ASEAN's has experienced an increase of 28.2% in overall energy supply that has been met mainly by fossil fuel use. In specific, the use of coal in installed capacity has been the fastest-growing in ASEAN, growing by 10.5% annually. This significant growth has brought not only rapid economic development but also energy-related CO2 emissions. In 2014, the energy-related CO2 emissions from power sector reached around 560 Mt/yr while the total energy-related CO2 emission from coal (including all sectors) reached around 600 Mt/year. Even worse, according to IRENA's projection, the use of coal in energy supply would increase by 91% in 2025.

574,136 ktoe
Amount of primary energy supply in 2014

28.2%
Increase of primary energy supply since 2005, the biggest from fossil fuel

28.2%
RE share growth annually in TPES from 2005-2014

195,690 MW
Total of ASEAN installed capacity in 2014

7.5% RE share
growth annually in total installed capacity since 2005

10.5%
Growth of coal annually as the fastest fuel growing in installed capacity since 2005

560 Mt/yr
The energy-related CO2 emissions from power sector

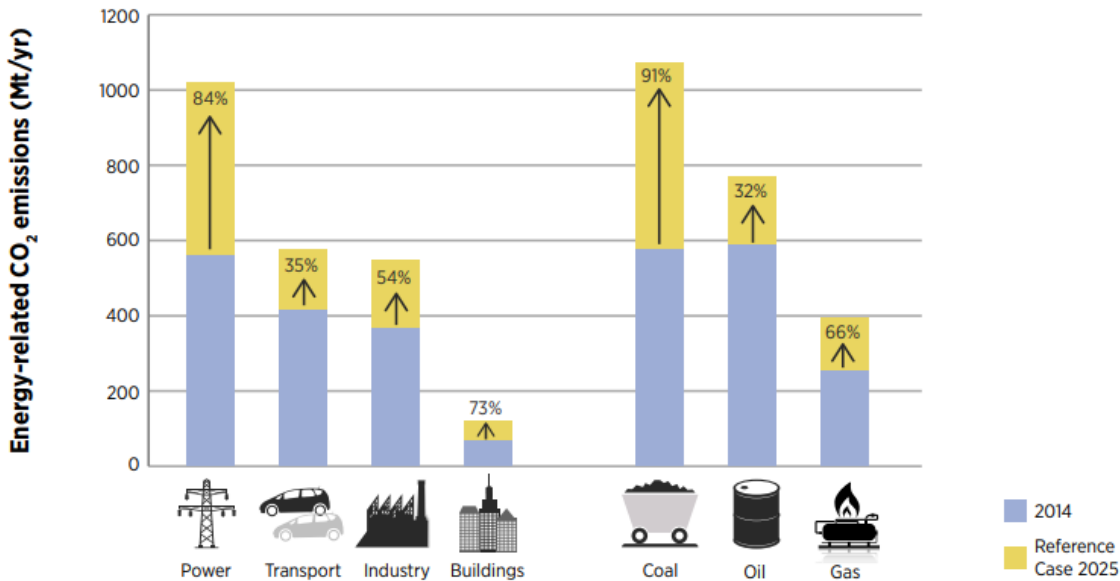


Figure 2: ASEAN's Energy-Related CO2 emissions by Sector and Fuel, 2014 (Source: IRENA, Renewable Energy Outlook for ASEAN, 2016)

Renewable Energy as the Mitigation Effort

Climate change mitigation act is essential. The goal of preventing the average temperature of worldwide increase to well below 2 ° C above the pre-industrial level and limiting the rise to 1,5 ° C has been set under the Paris Agreement. Implicit in these goals is the urgent need for a transition to low-carbon energy alternatives, which could reduce the two-thirds of global emissions. Renewable Energy (RE), coupled with energy efficiency (EE) gains, can cut the potential energy-related CO2 emissions by 90% in 2050. RE could supply four-fifths of the world's electricity, massively cutting carbon emissions and helping to mitigate climate change (IRENA, Renewable Energy Outlook for ASEAN, 2016).

In ASEAN, the RE share is about 11.8% of total primary energy supply (67,516 ktoe) as of 2014, which is growing by 2.8% annually. In terms of installed capacity, the growth of RE share is even lower at only 7.5% annually. This growth is relatively low if compared to the growth of coal of 10.5% annually. Thus, ASEAN should act immediately to increase the RE share, in the face of visible climate impact.

Total of ASEAN installed capacity was 195,690 MW in 2014, and fossil fuel (non-renewable) still held the dominant share (73.3%), with an exception in Cambodia, Lao PDR and Myanmar where the share of renewable installed capacity is

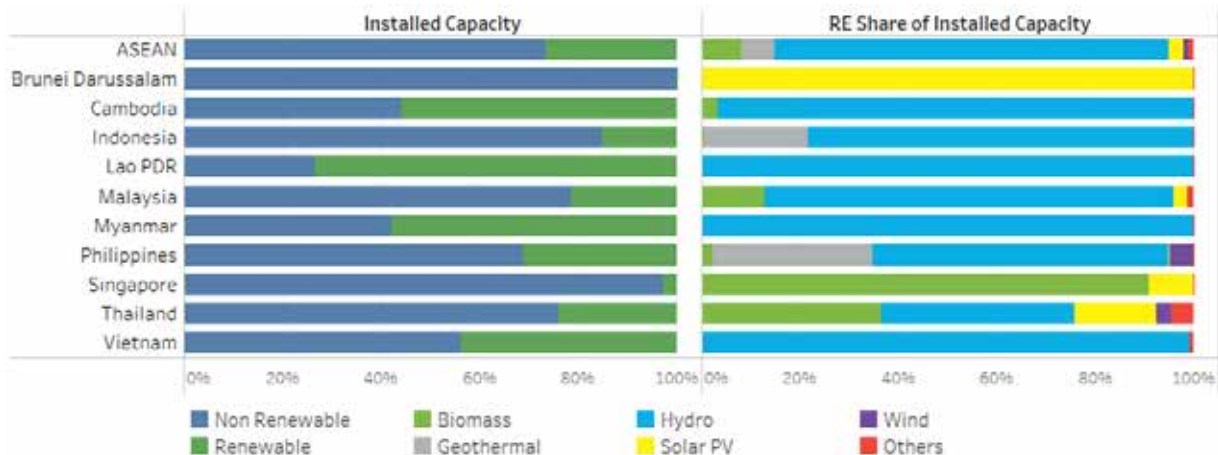


Figure 3: ASEAN's Installed Capacity and Renewable Energy Share





higher than non-renewable. Regionally, the largest share of renewable energy is hydro (80%), followed by biomass (8.1%), geothermal (6.7%), and solar (3.1%). The Mekong region, Indonesia, and Malaysia have enormous hydroelectric potential where the share is exceeding 80%. While Singapore and Thailand contributed to the share of biomass in ASEAN with the share are exceeding 90% and 30% respectively, Indonesia and Philippines contributed to the share of geothermal in ASEAN with the share are around 20% and 30% respectively.

Renewable energy is a component of Nationally Determined Contributions (NDCs) as a key climate solution. As of now, each country has a different level of detail in NDCs and has unique RE policy to achieve its national RE and EE goal. Based on ASEAN Energy Outlook 5, the ASEAN Member States (AMS) need to achieve the AMS target scenario (ATS) and ASEAN progressive scenario (APS) as the projection of future development of the ASEAN energy system, and it implies the successful implementation of RE and EE policies also stronger penetration of RE technologies as a result of untapped domestic potentials as present-ed in Figure 4.

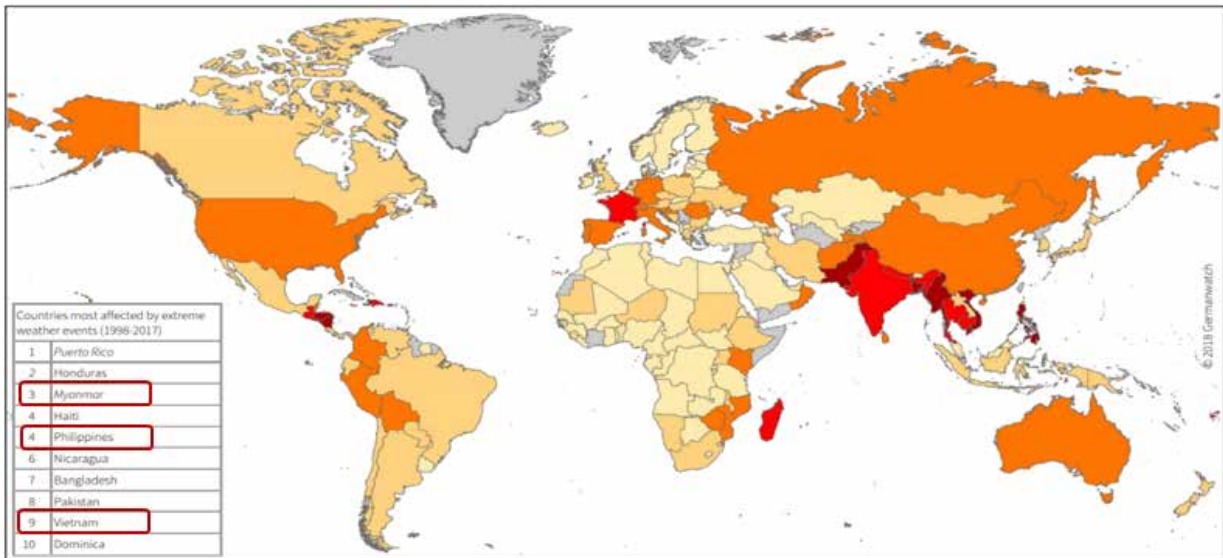
	Modern renewable energy share in TPES
2014	11.8%
ATS 2025 AEO5	17.5%
Brunei Darussalam	+0.2%
Cambodia	+0.3%
Indonesia	+0.6%
Lao PDR	+2.5%
Malaysia	+0.2%
Myanmar	+0.5%
Philippines	+0.7%
Singapore	+0.0%
Thailand	+0.5%
Vietnam	+0.2%
APS 2025 AEO5	23%

Figure 4: RE Share in TPES according to different scenarios

Regarding ASEAN’s renewable energy share of 23% in 2025, ASEAN has to hard work in closing the gap. If ASEAN manages to close the gap in achieving 23% of regional RE target in 2025, the energy-related CO2 emission can be limited to 1,996 Mt/yr (IRENA, Renewable Energy Outlook for ASEAN, 2016).

Economic Impact of Climate Change

With the significant increase in GHG emissions, ASEAN is the most vulnerable regions to climate change. According to the Germanwatch’s “Global Climate Risk Index 2019”, half of ASEAN countries are in the top 20 of the worlds’ most affected countries by extreme weathers. If climate change is left unaddressed, ASEAN will lose 6.7% of combined gross domestic product (GDP) by 2100 (ADB, 2009). In addition to the mitigation effort for long-term impact through RE development, the adaptation effort also is necessary to manage the unavoidable impact shortly.



Italic: Countries where more than 90% of the losses or deaths occurred in one year or event

Climate Risk Index: Ranking 1998 - 2017 1-10 11-20 21-50 51-100 >100 No data

