

# The 5<sup>th</sup> ASEAN



# Outlook 2015 - 2040

APERC Annual Conference 2018  
Japan, 30-31 May 2018



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Energy

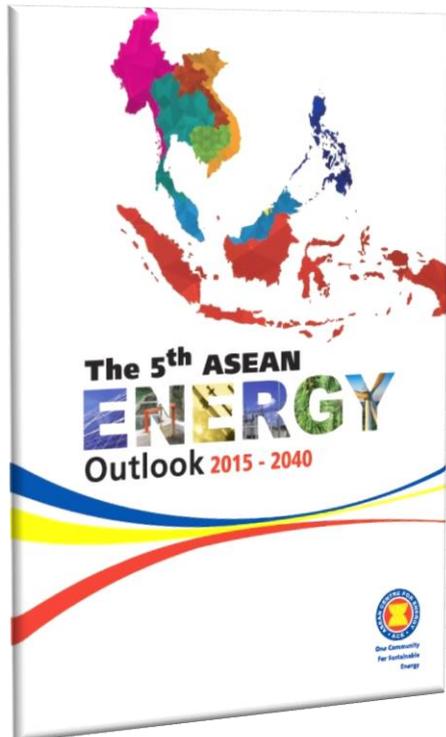
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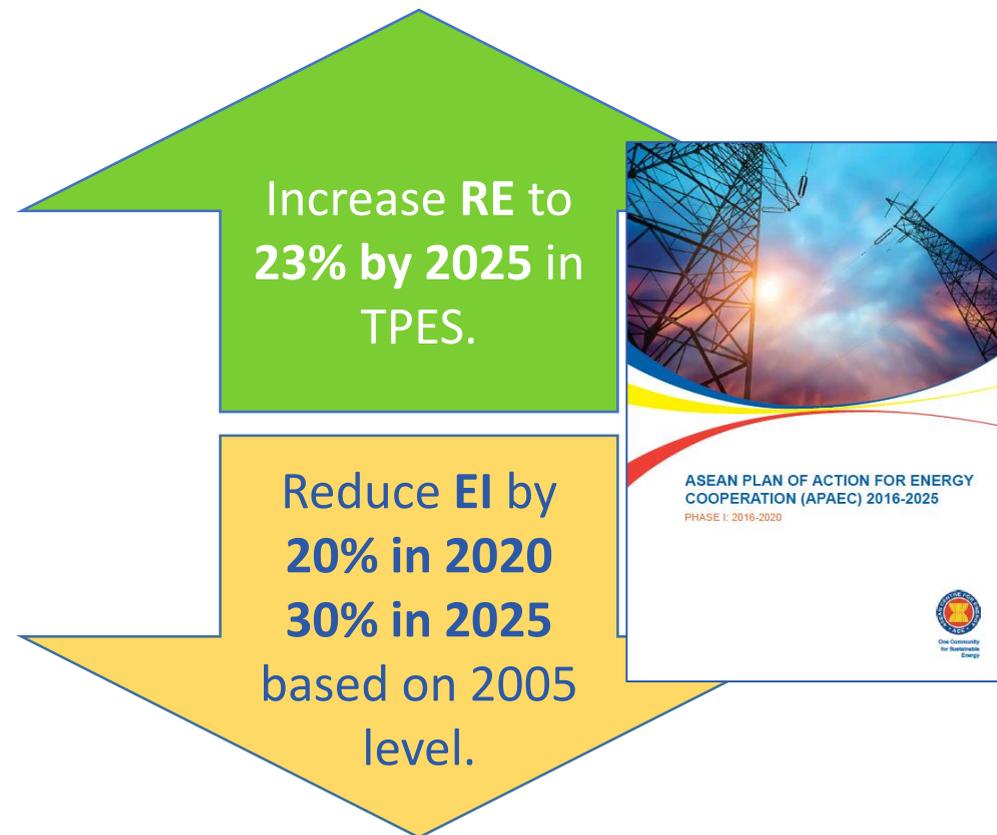
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# Understanding the Outlook: APAEC 2016-2025

## ASEAN Plan of Action for Energy Cooperation (APAEC) 2016-2025

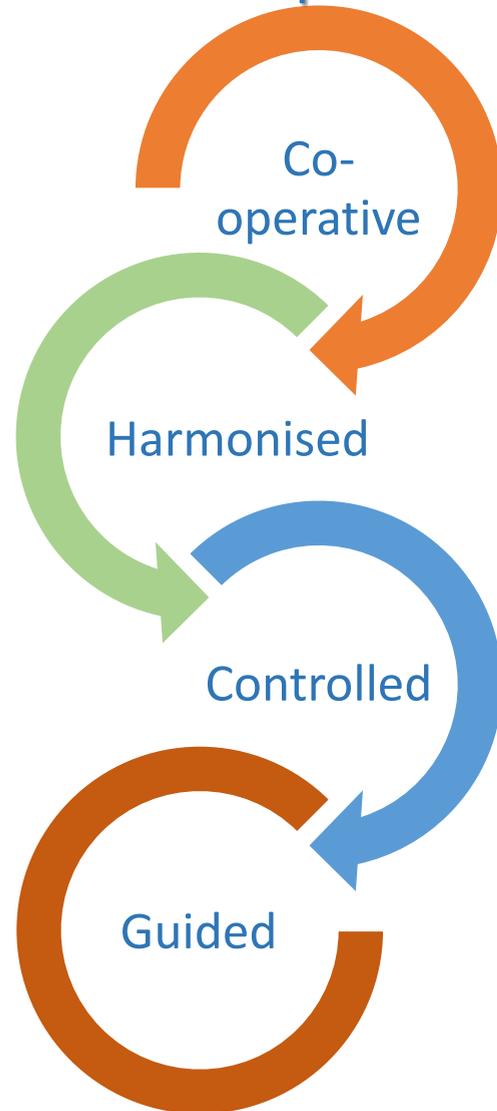
→ “Enhancing Energy Connectivity and Market Integration in ASEAN to Achieve Energy Security, Accessibility, Affordability and Sustainability for All”.



- ASEAN Power Grid
- Trans-ASEAN Gas Pipeline
- Coal and Clean Coal Technology
- Energy Efficiency and Conservation
- Renewable Energy
- Regional Energy Policy and Planning
- Civilian Nuclear Energy

# Understanding the Outlook: Development Approach

## AEO Development Approach



## Scenario Philosophy

### Business-as-Usual Scenario (BAU)

Given no significant changes to past practices

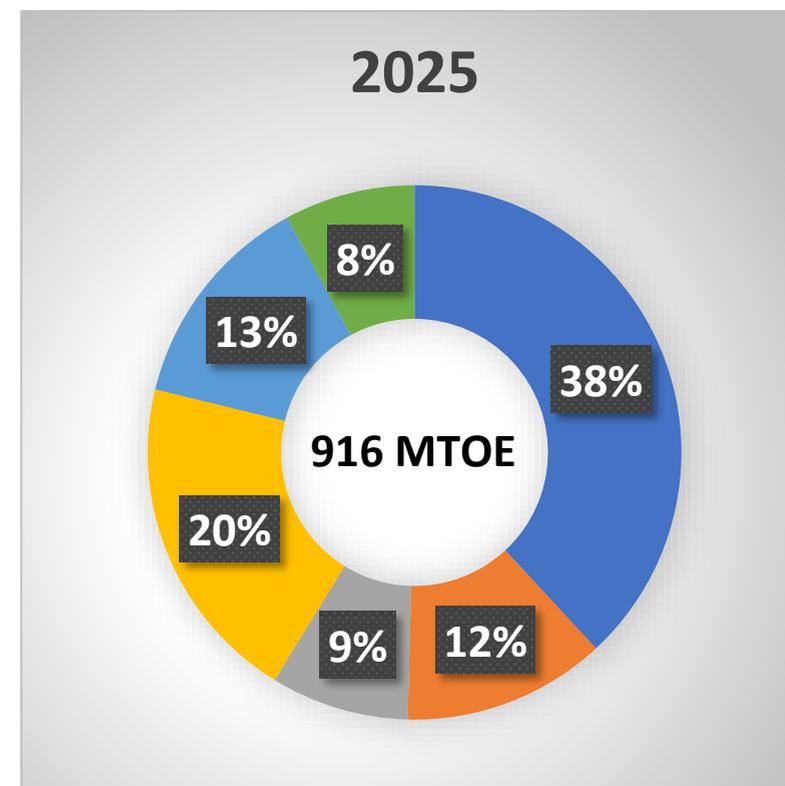
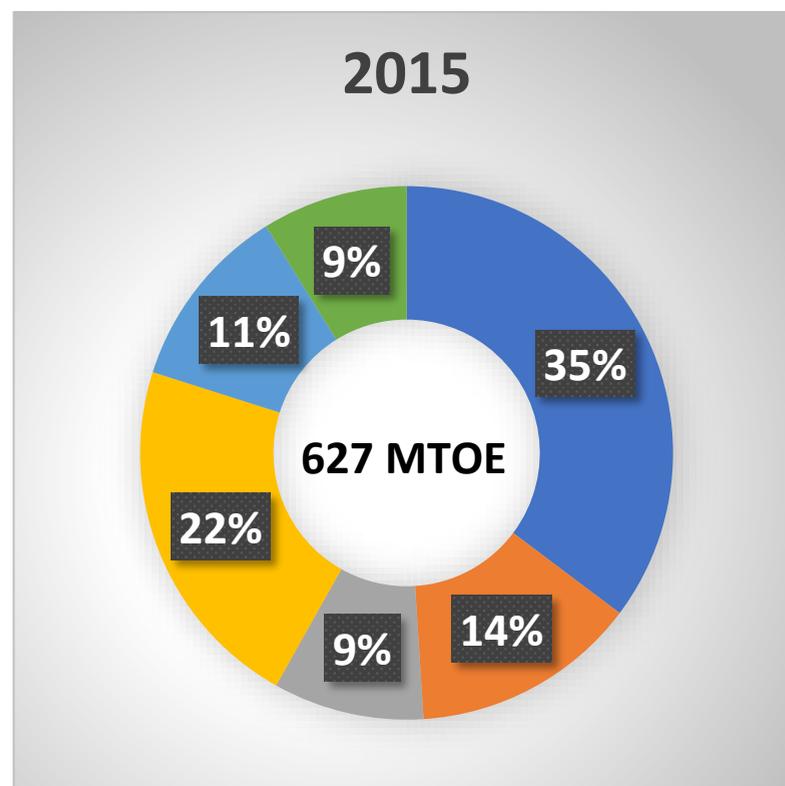
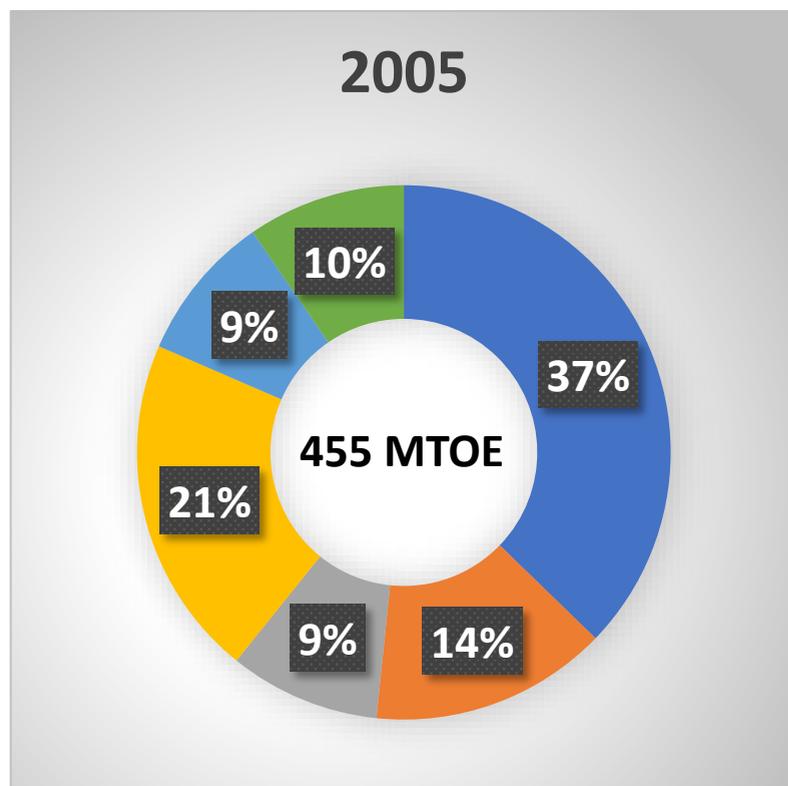
### AMS Targets Scenario (ATS)

Assuming officially energy policies and targets at national level are fully attained.

### ASEAN Progressive Scenario (APS)

Assumes a higher ambition level in esp. EE & RE technologies.

## Total Primary Energy Supply – by Countries



■ Indonesia 
 ■ Malaysia 
 ■ Philippines 
 ■ Thailand 
 ■ Vietnam 
 ■ Rest of ASEAN



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## ATS Scenario: In-depth

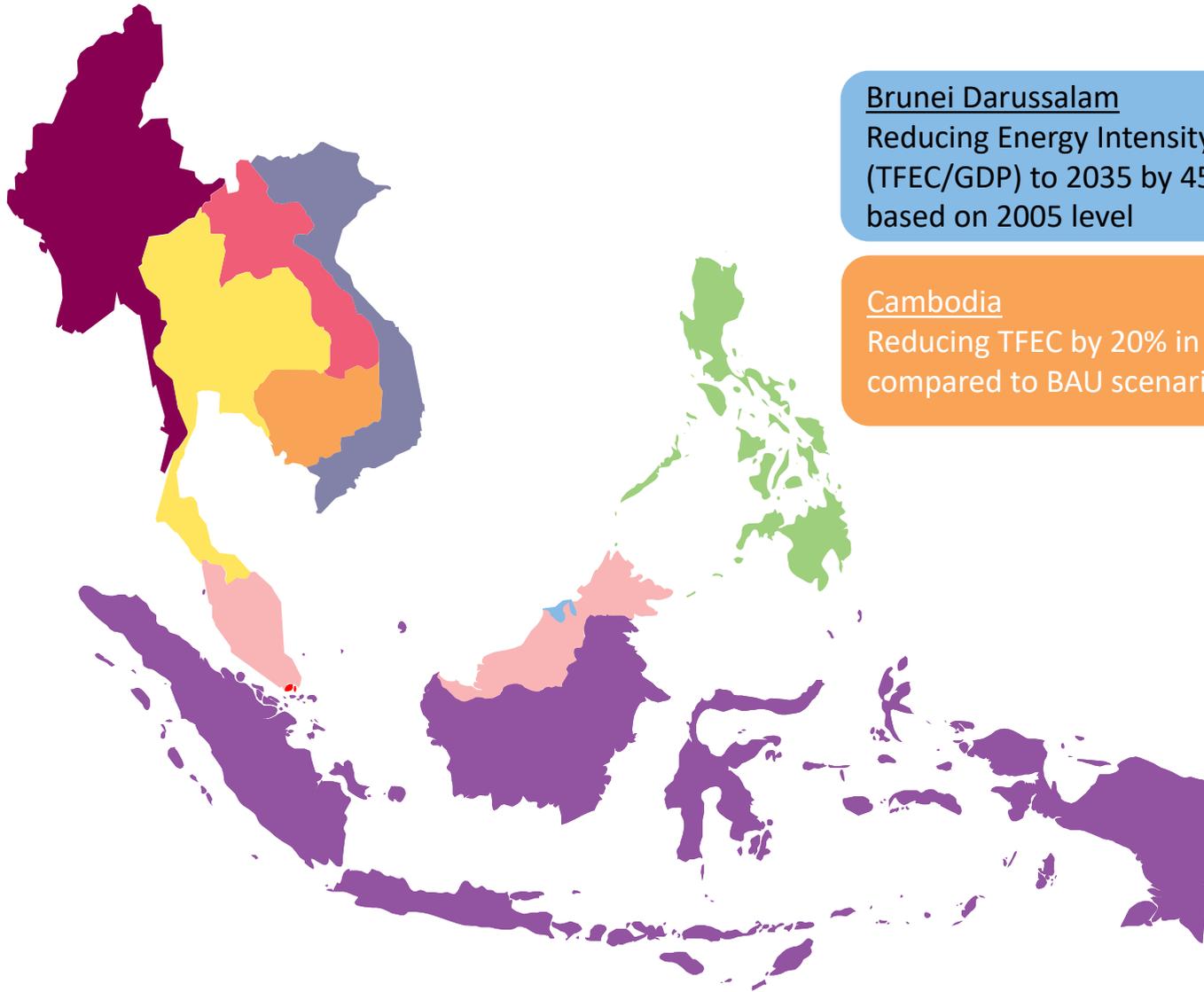
- ASEAN is composed by 10 different AMS, with very different stages of policy implementations.
- In AEO5, we created a **database with all the national policies that affect**
  - 1) Renewable Energy
  - 2) Energy Efficiency
  - 3) Power Development Plan

**It is crucial to understand the difference between targets and policies**  
**Targets which are goals in the future**  
**Policies which are measures that are in place to reach targets**



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# ATS Scenario: AMS Targets on Energy Efficiency



Brunei Darussalam  
Reducing Energy Intensity (TFEC/GDP) to 2035 by 45% based on 2005 level

Cambodia  
Reducing TFEC by 20% in 2035 compared to BAU scenario

Indonesia  
Reducing TFEC in 2025 by:

17% in industry  
20% in transportation  
15% in household  
15% in commercial buildings

As compared to BAU scenario

Myanmar  
Reduce electricity consumption in TFEC by 20% in 2030 compared to BAU scenario

Singapore  
Reducing EI (TFEC/GDP) by 35% from 2005 levels by 2030

Thailand  
Reducing Energy Intensity (TFEC/GDP) by 30% in 2036 compared 2010 level

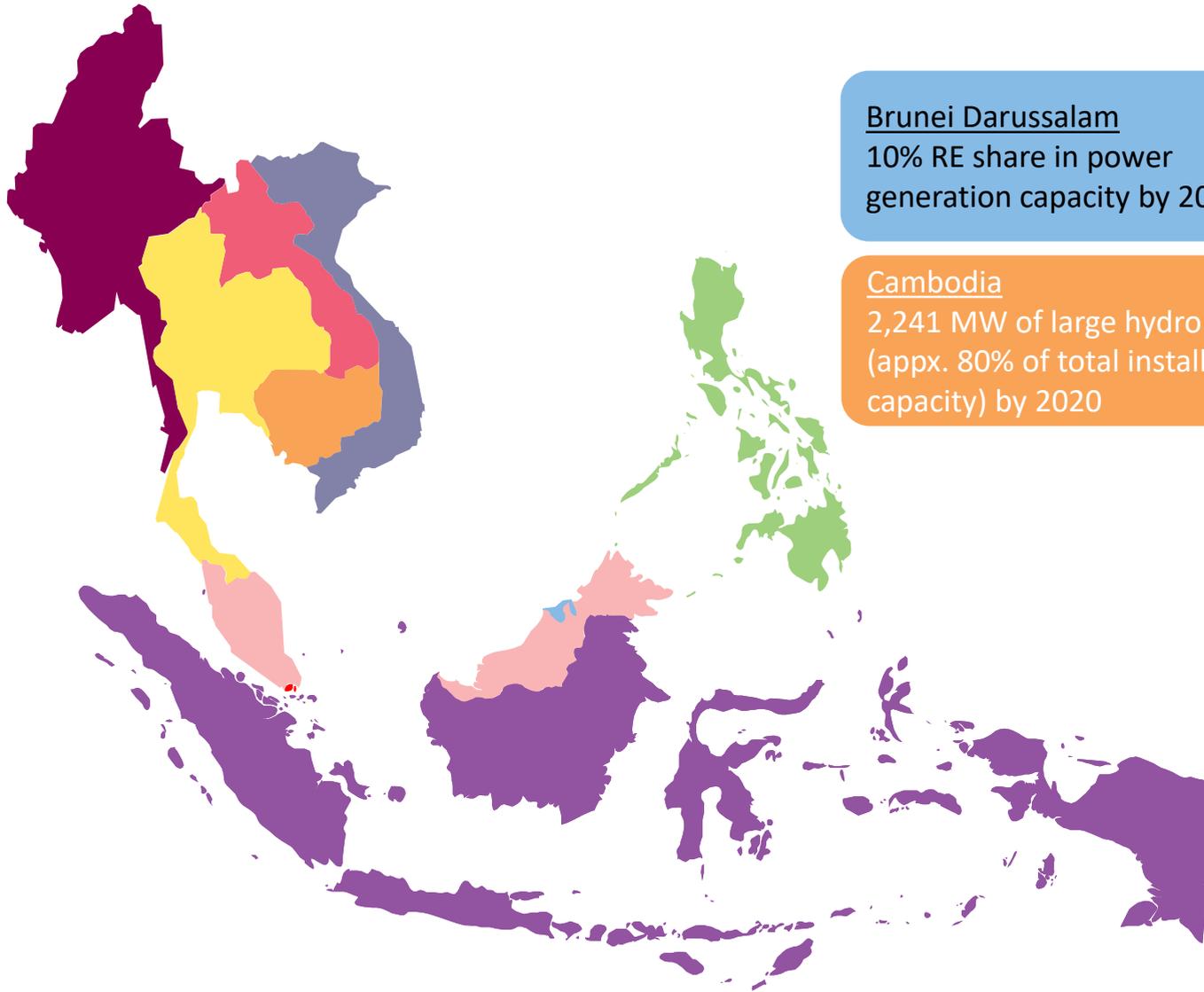
Lao PDR  
Reducing TFEC by 10% in 2030 compared to BAU scenario

Malaysia  
Reduce electricity consumption in TFEC by 8% in 2025 compared to BAU scenario

Philippines  
Reducing TFEC by 1% per year compared to BAU scenario until 2040

Vietnam  
Reducing TFEC by 8% in 2020 as compared to BAU.  
Reduce Energy Intensity of Energy Intensive Industries by 10% by 2020.

# ATS Scenario: AMS Targets on Renewable Energy



Brunei Darussalam  
10% RE share in power  
generation capacity by 2035

Cambodia  
2,241 MW of large hydro  
(appx. 80% of total installed  
capacity) by 2020

Indonesia  
23% RE share of TPES (around  
92.2 Mtoe in 2025) which  
consist of 69,2 Mtoe (45.2  
GW) for electricity and 23  
Mtoe for non-electricity and  
31% RE share in 2030

Myanmar  
27% RE share to the national  
energy mix by 2030

Singapore  
350 MWp solar PV by 2020;  
10,140 tonnes per day for  
WTE by 2018

Thailand  
30% RE share in total energy  
consumption by 2036 (~19  
GW of RE in power capacity)

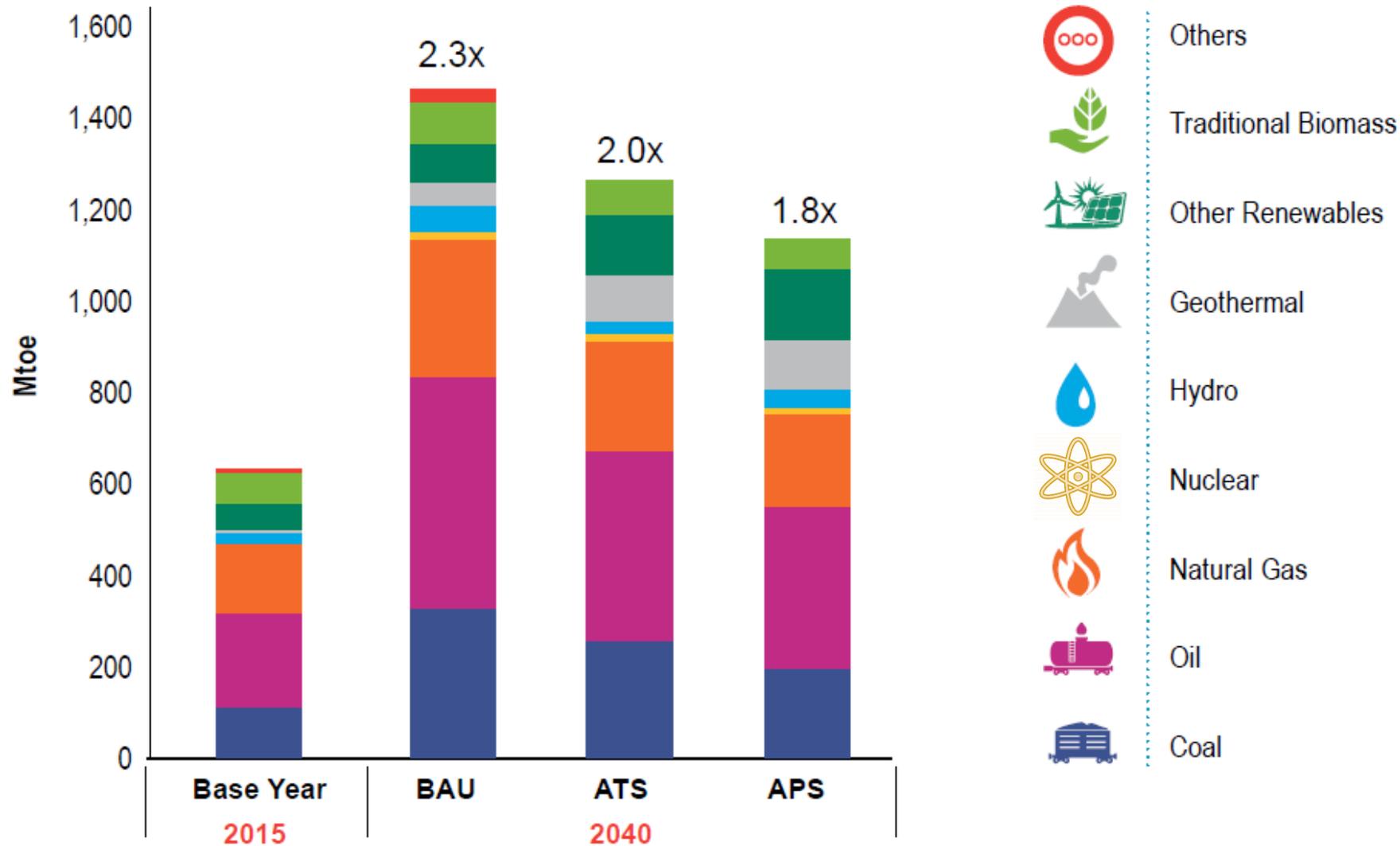
Lao PDR  
30% RE share of total energy  
consumption by 2025

Malaysia  
RE installed capacity of 2080  
MW (excluding large hydro)  
by 2020

Philippines  
15,2 GW RE installed capacity in  
2030. Additional capacity:  
277 MW biomass in 2015; 2,345  
MW wind in 2022; 5,398 MW  
hydro in 2023; 75 MW ocean  
energy in 2025; 284 MW solar in  
2030; 1495 MW geothermal

Vietnam  
21% RE in 2020, 13% RE in  
2025, and 21% RE in 2030 of  
installed capacity

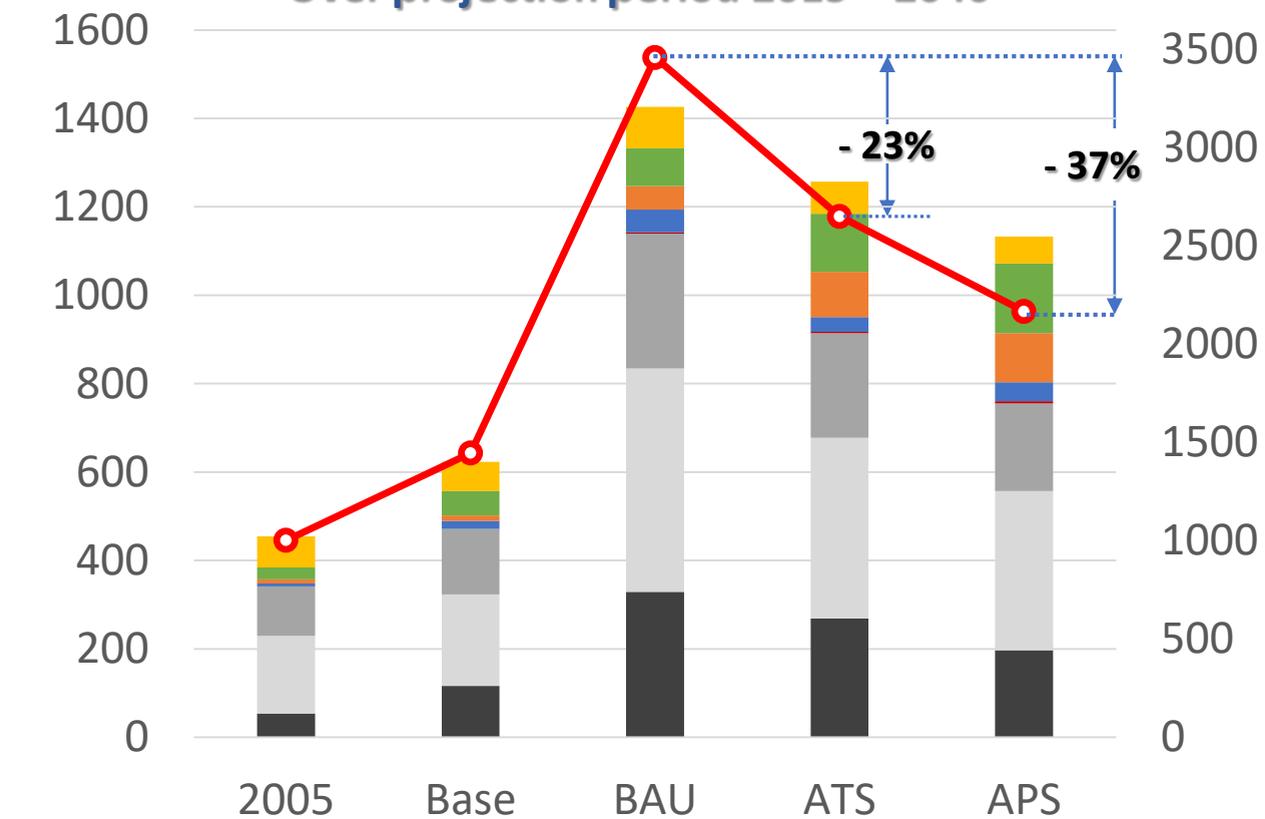
# AE05 Key Findings: TPES



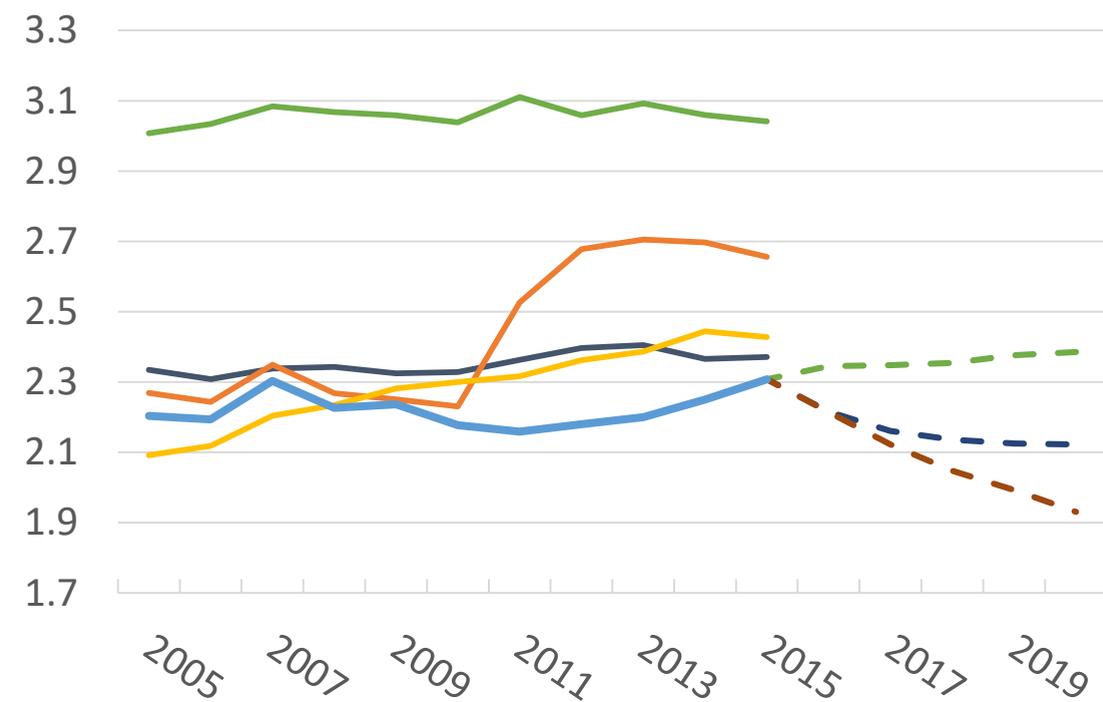
- *Considerably increased, but substantial savings can be achieved.*
- *In all scenarios, oil still has the largest share, followed by coal in BAU and ATS, but RE in APS.*
- *Some rural and remote areas are still relying on traditional biomass.*

# Emissions

**Over projection period 2015 – 2040**



**Comparison of CO<sub>2</sub> per TPES (t CO<sub>2</sub> eq / toe)**



- Coal
- Oil
- Natural Gas
- Nuclear
- Hydro
- Geothermal
- Other Renewables
- Traditional Biomass

- Germany
- Japan
- China
- India
- - BAU
- - ATS
- - APS
- ASEAN



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## Key Findings

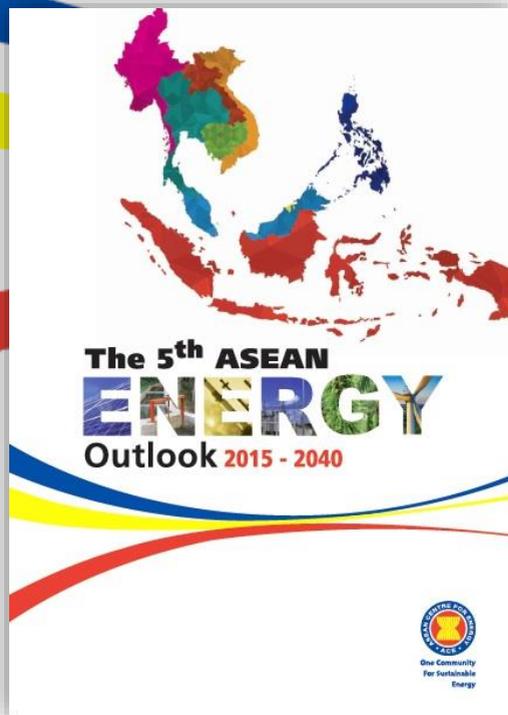
- ❖ TPES grows by 3.9% per annum in the APAEC period and 3.4% over the long term (2040)
  - ✓ Oil remains the single largest fuel in the primary fuel mix over the whole period, ~ 35%
  - ✓ Coal outstrips NG as the main source beyond 2020 in the power sector
- ❖ The EI target in all probability will be reached, projecting a probable improvement by about 5 %.
- ❖ ASEAN needs to scale up its RE uptake to meet its 23% target – reaching the APAEC targets will require not only focusing on the power sector, but also deploying RE in end-use sectors of Transport and Industry
- ❖ ASEAN takes cognizance of its NDC obligation; however meaningful reduction are only seen in APS

**Enhance synergies between EE and RE targets including policies moving towards the APS**

**Formulate RE policies beyond the power sector**

**Improve data availability**

# Thank You!



## REPORT CITATION

ACE (2017). *The 5<sup>th</sup> ASEAN Energy Outlook (AEO5)*. ASEAN Centre for Energy (ACE), Jakarta.

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