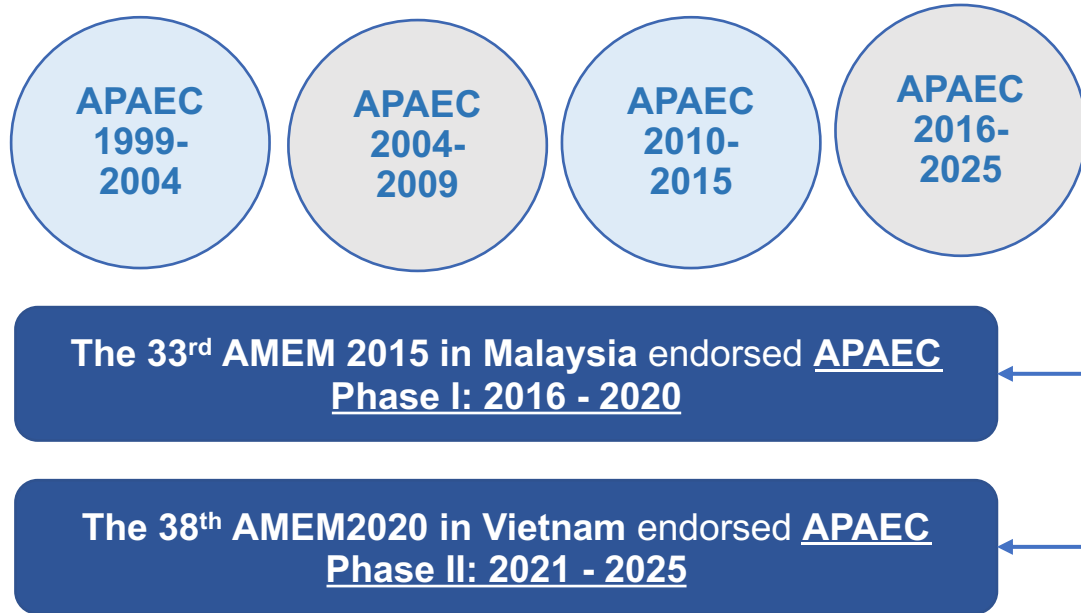


# ASEAN Plan of Action for Energy Cooperation (APAEC) 2016-2025



## APAEC Phase II Theme and Sub-theme

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

Accelerating Energy Transition and Strengthening Resilience Through Greater Innovation and Cooperation

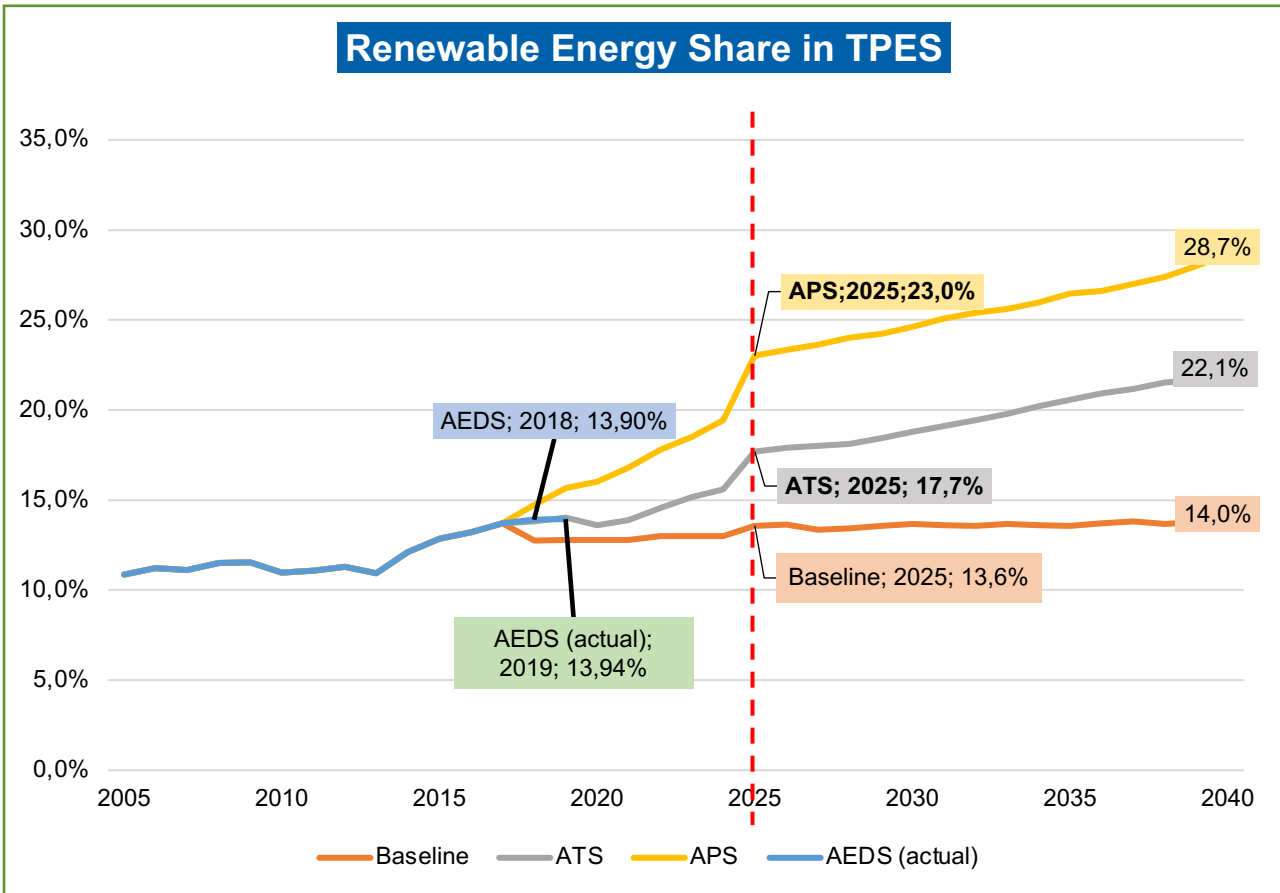
## Regional Target in 2025:

23% Renewable Energy in Total Primary Energy Supply (TPES)

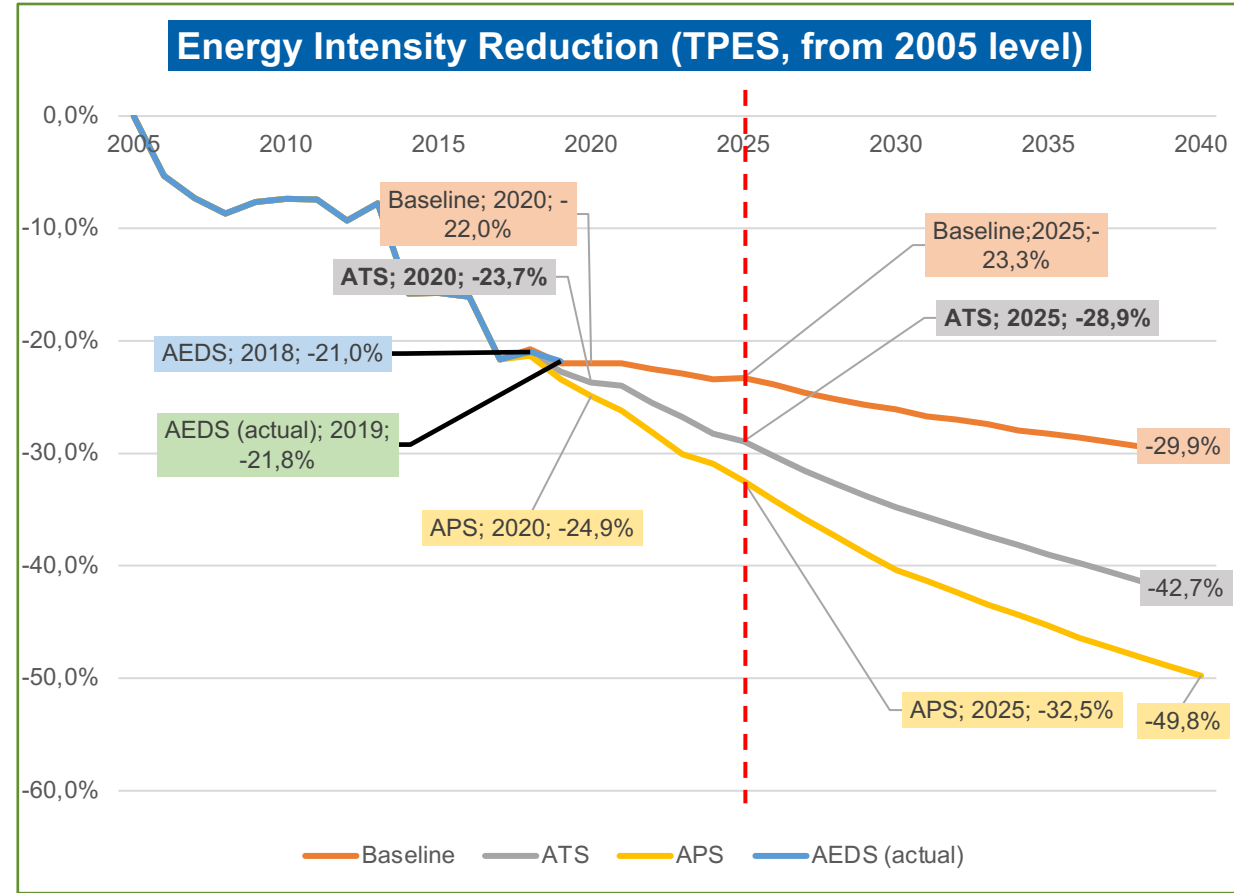
32% Energy Intensity Reduction (compared with 2005 level)

# Gap to Achieve APAEC Target

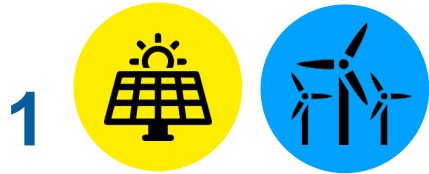
## Renewable Energy Share in TPES



## Energy Intensity Reduction (TPES, from 2005 level)



# Decarbonisation in ASEAN Power Sector



1

Notable increase in solar and wind, and further reduction in fossil fuel-based plant



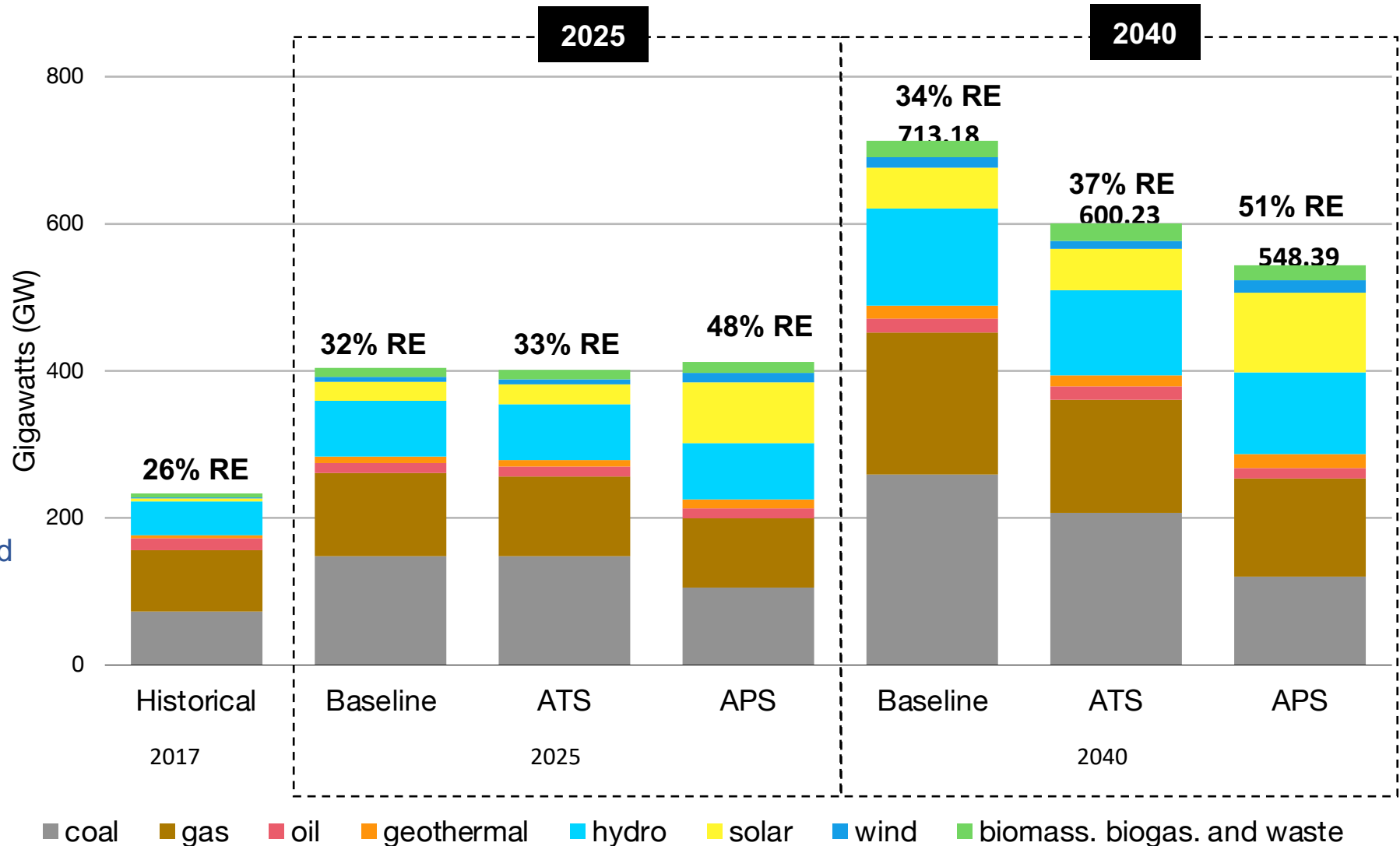
2

High efficiency, low emission (HELE) coal technologies are adopted, such as: supercritical and ultra-supercritical



3

Phase out of fossil-fuel based power plant



ASEAN Electric Generation Capacity

# AIMS III – Upgrading ASEAN Power Grid for Increased Renewables

Resource Potential + Protected Areas + Urbanized Areas + Water Bodies + Terrain Features + Other Relevant Features = Technical Potential

Technical Potential				
vRE	Region/Country	Gross Capacity (GW)	Gross Annual Generation (TWh/year)	Gross Capacity Factor
Solar	ASEAN	8,119	12,004	12-23%
Wind	ASEAN	342	766	18-30%

## ASEAN Interconnection Projects (Updated in August 2020)

Status	MW
Existing	7,720
Ongoing (up to 2021)	555 - 625
Future	18,369 - 21,769
<b>Grand Total</b>	<b>26,644 - 30,114</b>

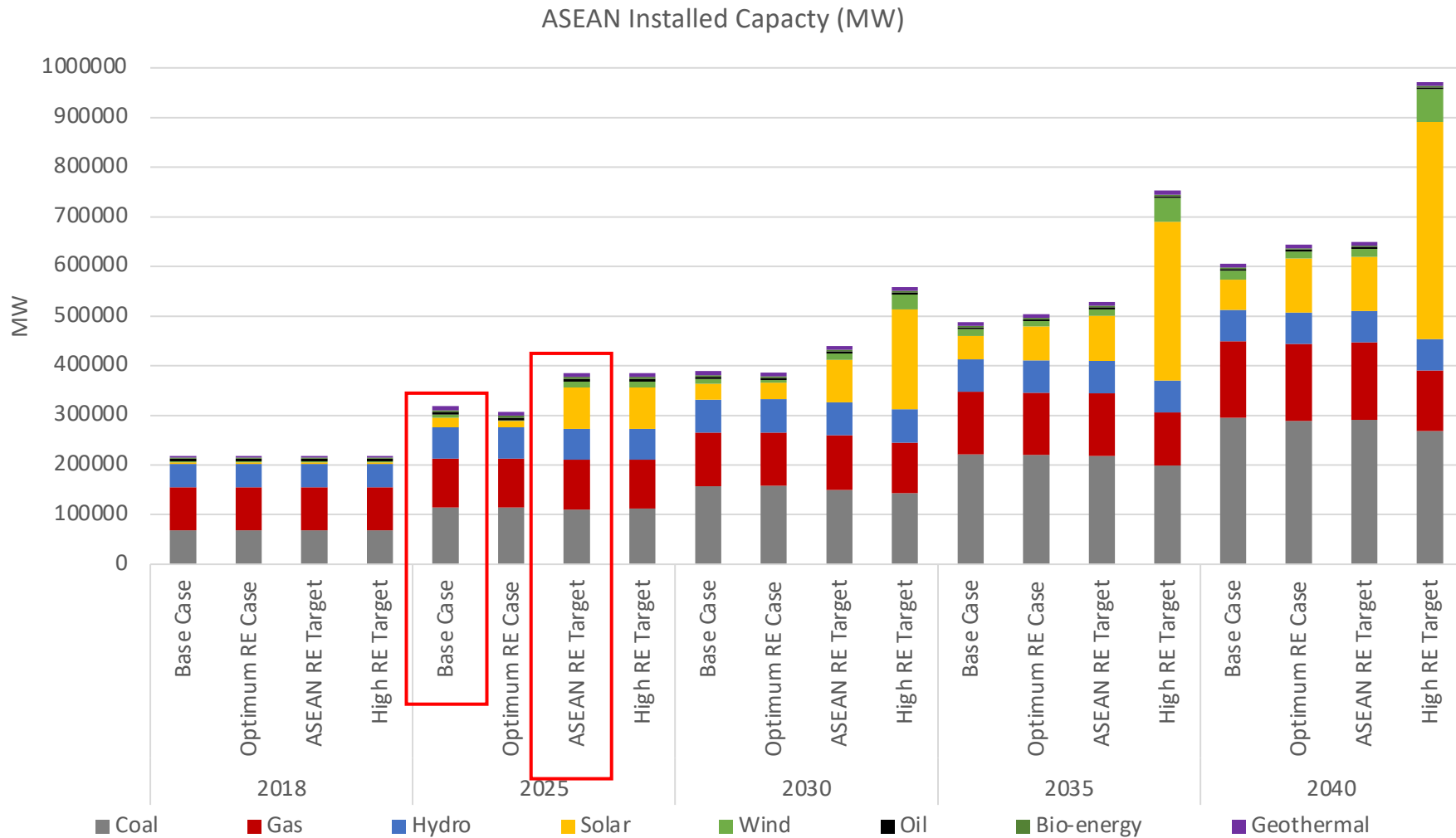
Project ID	Project Name	Earliest COD
1)	P.Malaysia – Singapore • Plentong – Woodlands • P.Malaysia – Singapore (2 <sup>nd</sup> link Plentong – Woodlands)	Existing 2020
2)	Thailand – P.Malaysia • Sadoo - Chuping • Khlong Ngae – Gurun • Su Ngai Kotok – Rantau Panjang • Khlong Ngae – Gurun (2 <sup>nd</sup> Phase, 300MW)	Existing Existing TBC TBC
3)	Sarawak – P. Malaysia	TBC
4)	P.Malaysia – Sumatra	TBC
5)	Batam – Singapore	TBC
6)	Sarawak – West Kalimantan	Existing
7)	Philippines – Sabah	TBC
8)	Sarawak – Sabah - Brunei • Sarawak – Brunei • Sarawak – Sabah	Existing 2021 2022
9)	Thailand – Lao PDR • Nakhon Phanom - Thakhek - Theun Hinboun • Ubon Ratchathani 2 - Houay Ho • Roi Et 2 – Suvannakhet - Nam Theun 2 • Udon Thani 3 - Na Bong - Nam Ngum 2 • Nakhon Phanom 2 – Thakhek – Then Hinboun (Exp.) • Mae Moh 3 – Nan2 – Hong Sa (3Units) • Udon Thani 3 – Nabong (converted to 500KV) • Ubon Ratchathani 3 – Pakse – Xe Pian Xe Namnoy • Khon Kaen 4 – Loi 2 – Xayaburi • Thailand – Lao PDR (New)	Existing Existing Existing Existing Existing Existing Existing Existing Existing Existing Existing TBC
10)	Lao PDR – Vietnam • Xekaman 3 – Thanh My • Xekaman 1 – Pleiku 2 • Nam Mo - Ban Ve • Luang Prabang - Nho Quan	2016 - 2020 Existing Existing TBC TBC
11)	Thailand – Myanmar	TBC
12)	Vietnam – Cambodia (New) • Chau Doc – Takeo – Phnom Penh • Tay Ninh – Stung Treng	Existing TBC
13)	Lao PDR – Cambodia • Ban Hat - Kampong Sralao • Ban Hat - Stung Treng	Existing Existing post 2020
14)	Thailand – Cambodia (New) • Watthana Nakhon – Aranyaprathet – Banteay Meanchey • Thailand – Cambodia	Existing post 2020
15)	East Sabah – North Kalimantan	TBC
16)	Singapore – Sumatra	TBC

LEGEND: Existing (solid line), Under Construction (dashed line), Future (dotted line)

TBC stands for to be confirmed  
The Existing Project as of August 2020  
The Priority Projects, which refer to the APAEC 2016-2020, are underlined and indicated in Red.

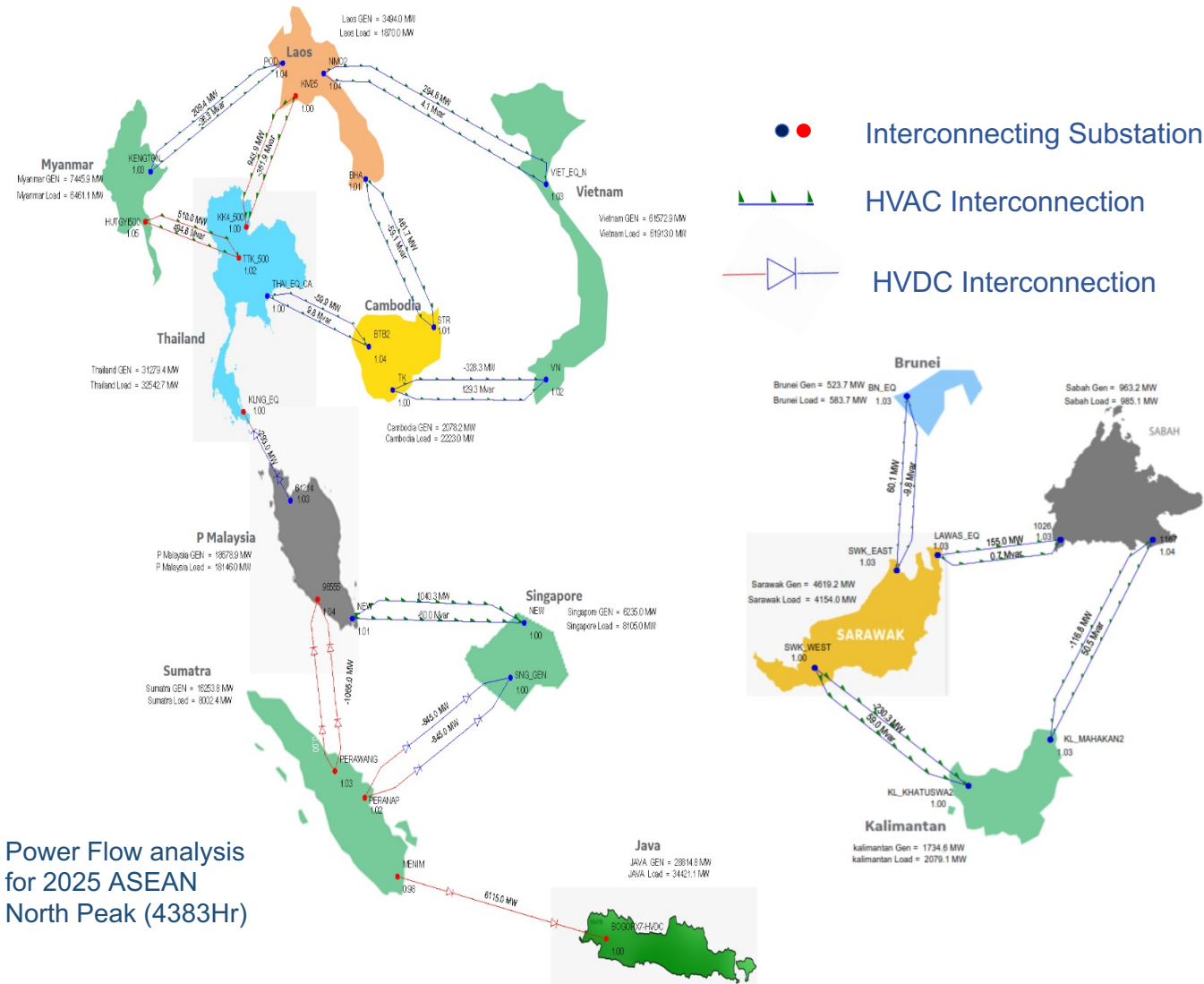
- AIMS III sets out the study of ASEAN Interconnection Projects – by considering the RE potential for each AMS, to achieve ASEAN aspiration RE Target in 2025 35% share in installed capacity
- With around 8TW and 340GW of solar and wind capacity being put into consideration, AIMS III consolidating wind and solar into the ASEAN Interconnection Projects

# AIMS III – Future mix in Five Year Landscapes



- In 2025, under the Base Case, (all) renewable energies is around 31% of the total installed capacity. But under APAEC RE Target, it increased up to 35%
- To accommodate these needs, the existing ASEAN Interconnection Projects by Regions must be **upgraded**
- The planned ASEAN Interconnection Projects for APAEC target will unlock **the potential of power trade up to 145,635GWh** in the region.
- With around **20,687GWh** of **RE resource could be traded**, assuming all other type of energy are fixed

# AIMS III – Proposed Interconnections for Increased Renewables



- Achieving ASEAN RE Target in 2025 will require 19,918 MW of interconnection capacity.
- Potential commitment to establish the priority projects under APG up to 2025.

**\* Providing cross-border interconnections and strengthening of the grid at national levels are implemented, the ASEAN Power Grid will be capable of evacuating vRE capacity to achieve the ASEAN RE Target.**