

# Perspective on Accelerating RE to reach ASEAN's 23% aspirational target

Asia Clean Energy Forum 2017, ADB, Manila  
Deep-dive session - 6 June 2017



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# DICLAIMER



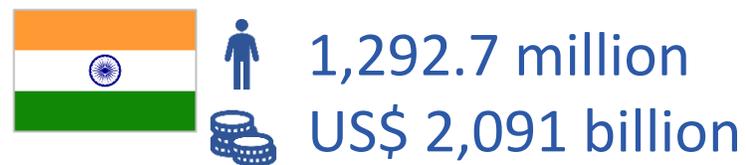
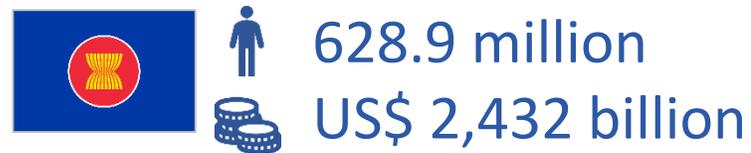
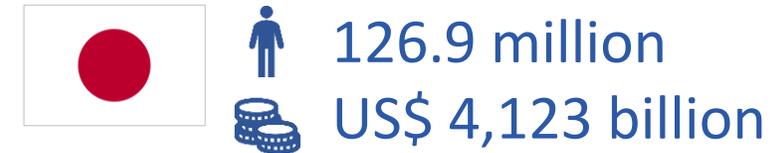
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# ASIA, and ASEAN

Asia is:

- *The largest and most populous continent.*
- *The fastest growing economic region, and*
- *The largest continental economy by GDP PPP in the world.*



# ASEAN – A COMMUNITY OF OPPORTUNITIES



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The ASEAN Economic Community:

- *Calls for a well-connected ASEAN to drive an integrated, competitive and resilient region*
- " ... ASEAN as a single market ... "

At US\$ 2.4 trillion, ASEAN economy in 2015 was

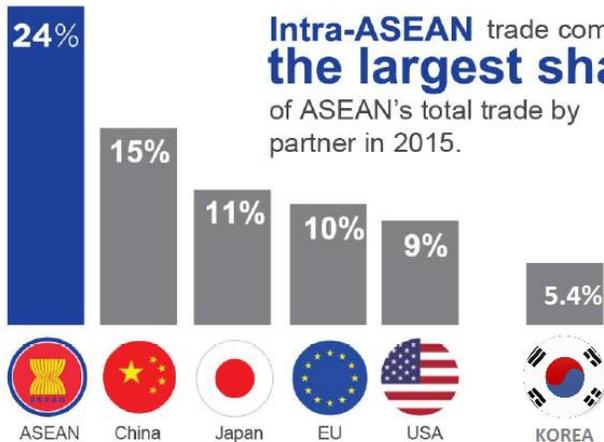
the **6th largest in the world** & the **3rd largest in Asia.**



Total Trade  
US\$ 2.367 Trillion

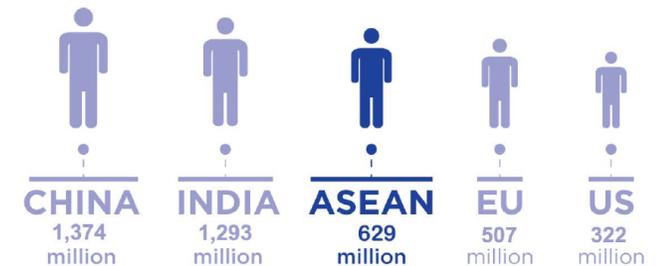
## Major Trading Partners

Intra-ASEAN trade comprised  
**the largest share**  
of ASEAN's total trade by  
partner in 2015.



Electricity Consumption  
1,502 kWh/cap

Collectively, ASEAN population was the  
**3rd largest in the world** in 2015.



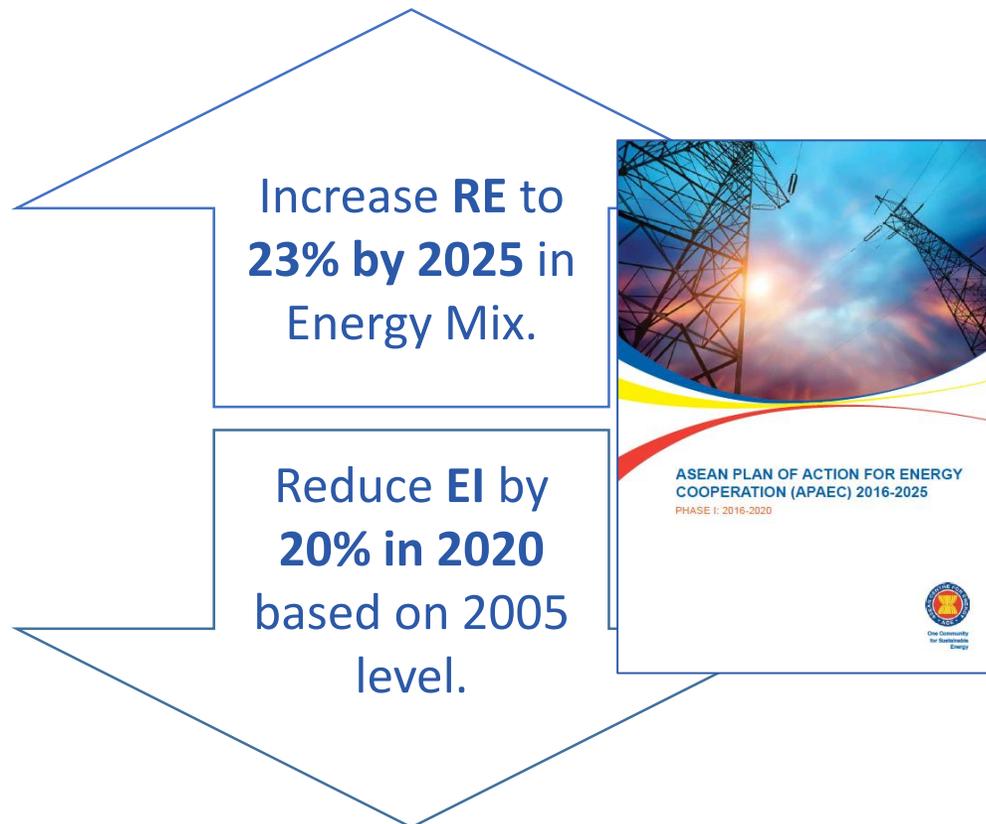
# ASEAN ENERGY BLUEPRINT



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## 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



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# RE – NATIONAL TARGETS

27% Installed  
Capacity (2030)



30% TFEC (2025)



21% Installed Capacity<sup>2</sup> (2030)

927 MW<sup>1</sup> (2017)



15,300 MW (2030)

30% TFEC (2036)



350 MWp (2020)



10% Installed Capacity (2035)

2,080 MW<sup>2</sup> (2020)



23% TPES (2025)

<sup>1</sup> Large Hydro only

<sup>2</sup> Exclude Large Hydro (>30 MW)

# %RE TARGET – COMPARE TO ASIA MAJOR



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1,250 GW (2020)



11% TPES (2035)



22-24%  
Power Generation  
(2030)

175 GW (2022)



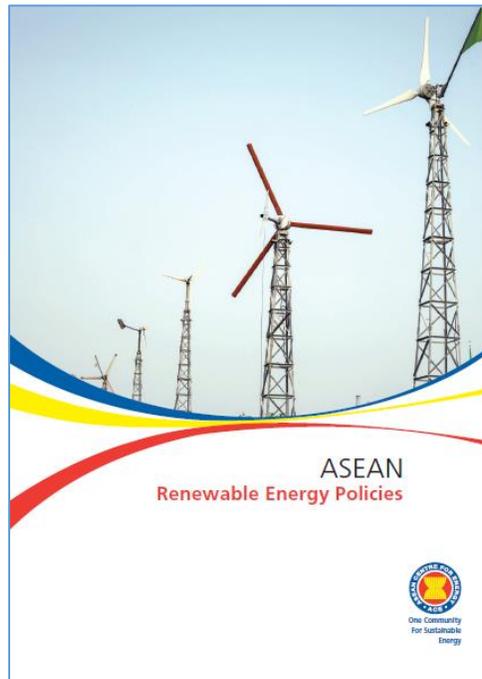
23% TPES (2025)



# RE – NATIONAL POLICIES



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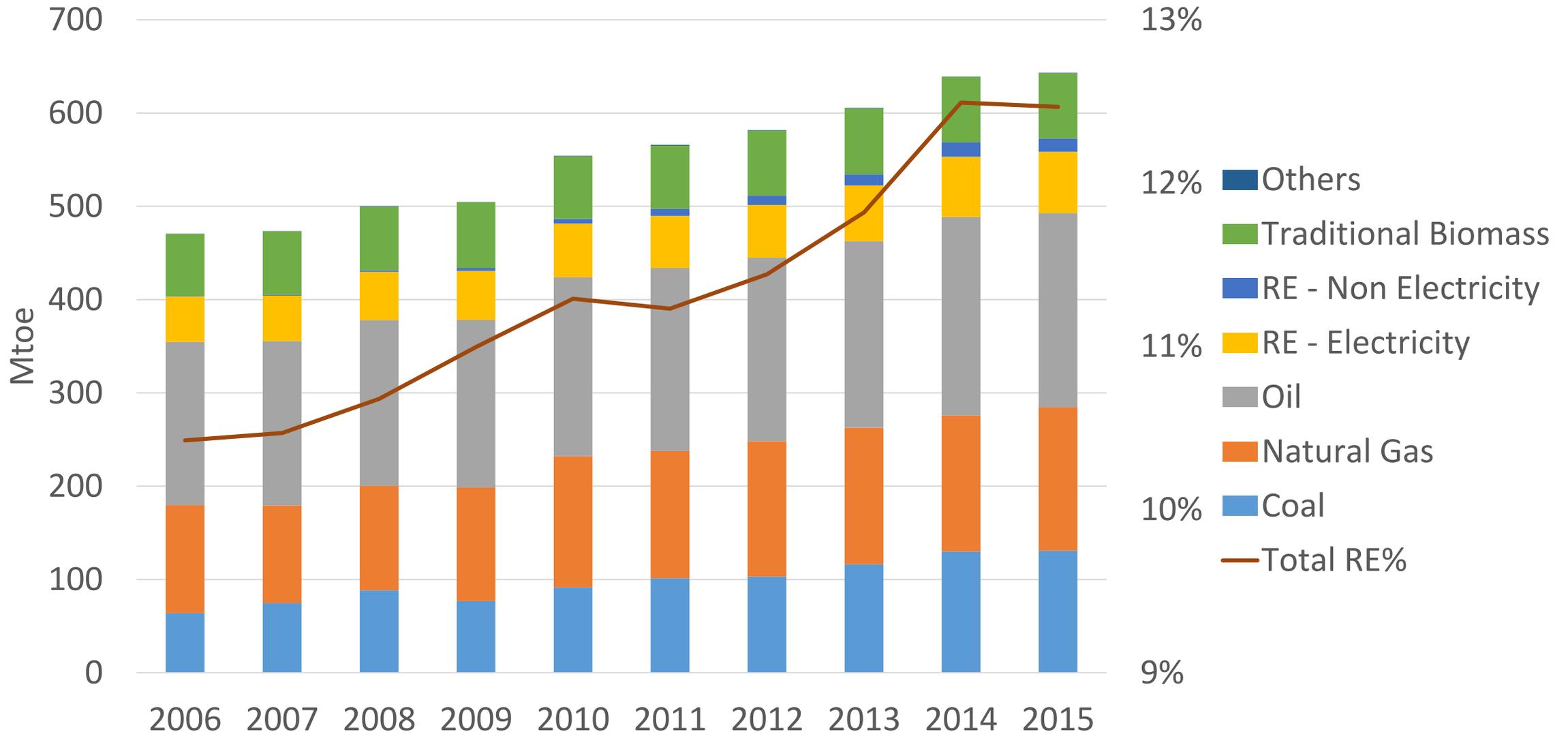


Policy	Brunei Darussalam	Cambodia	Indonesia	Lao PDR	Malaysia	Myanmar	The Philippines	Singapore	Thailand	Vietnam
RE Target	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Selling Tariffs	No	No	Yes	No	Yes	No	Yes	Yes	Yes	Yes
Incentives	No	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Financing support	No	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Permits and Licences	No	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Technical aspects	No	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes

# RE PROGRESS 2015 – ENERGY MIX



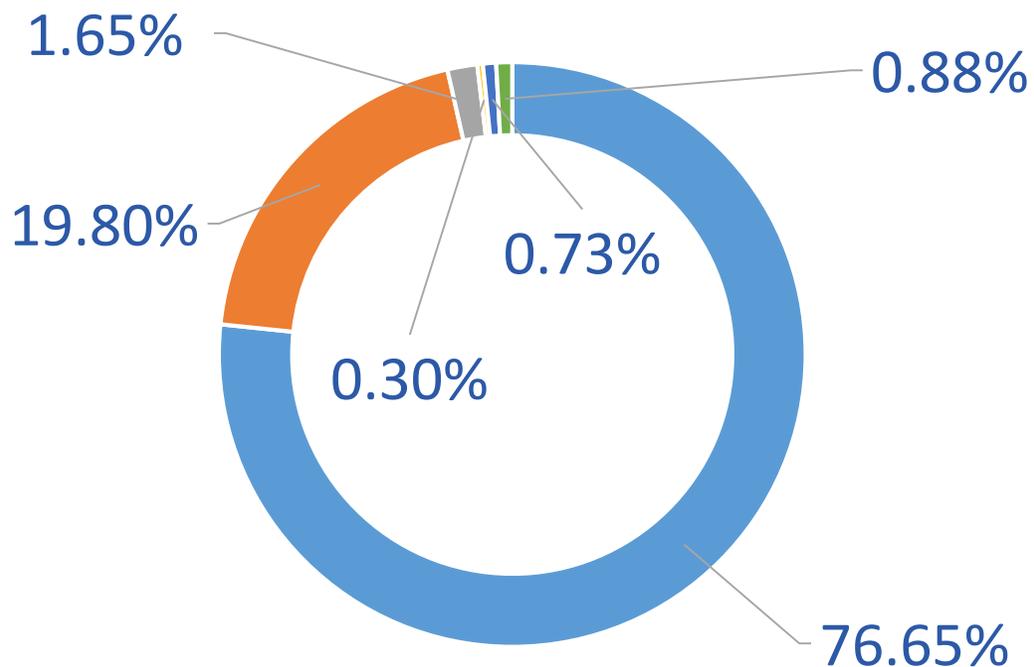
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# RE PROGRESS 2015 - ELECTRICITY

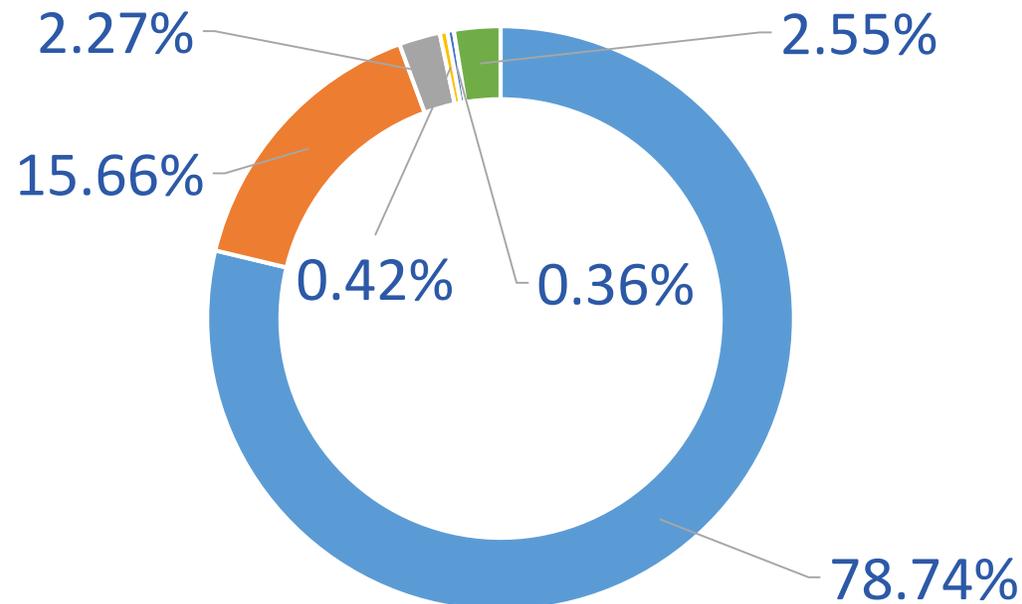
203 MW

Installed Capacity



930 TWh

Power Generation

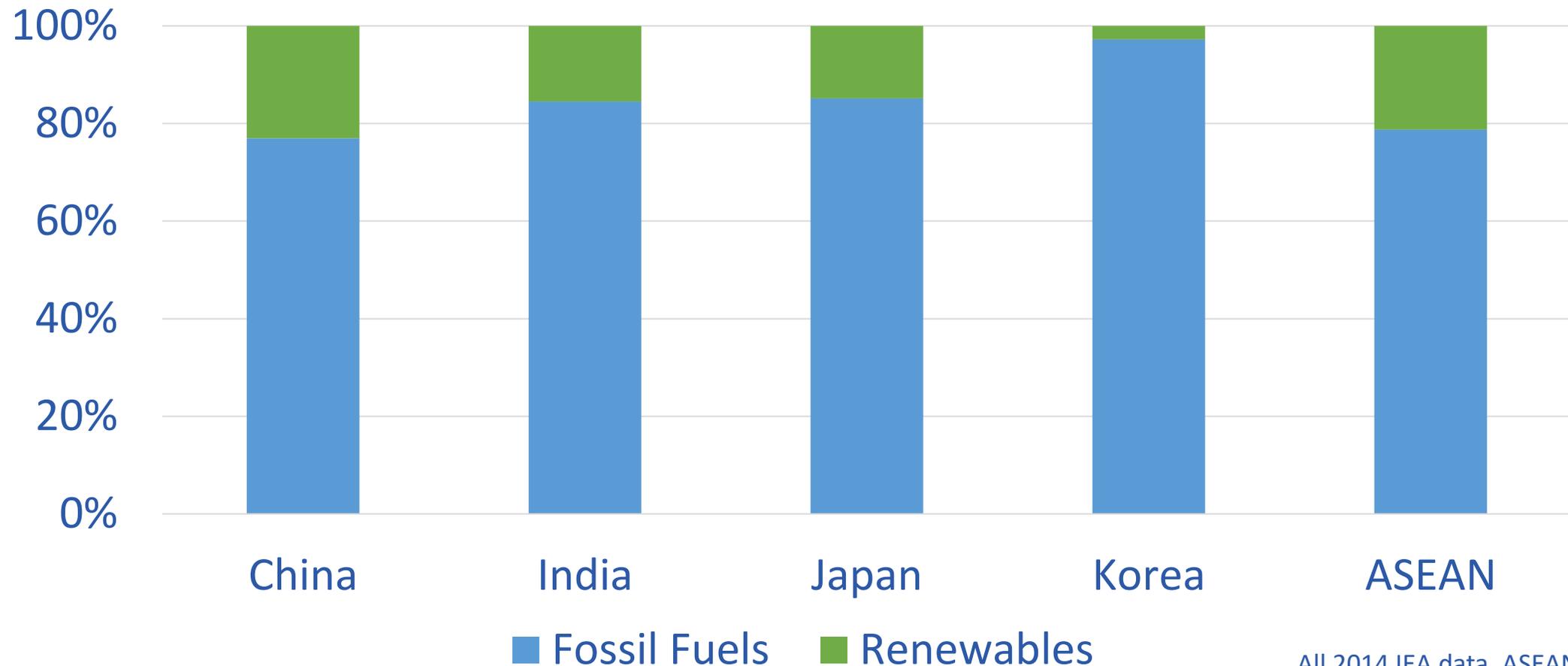


■ Fossil Fuels  
 ■ RE Hydro  
 ■ RE Geothermal  
 ■ RE Wind  
 ■ RE Solar  
 ■ RE Biomass

# %RE GENERATION – COMPARE MAJOR ASIA



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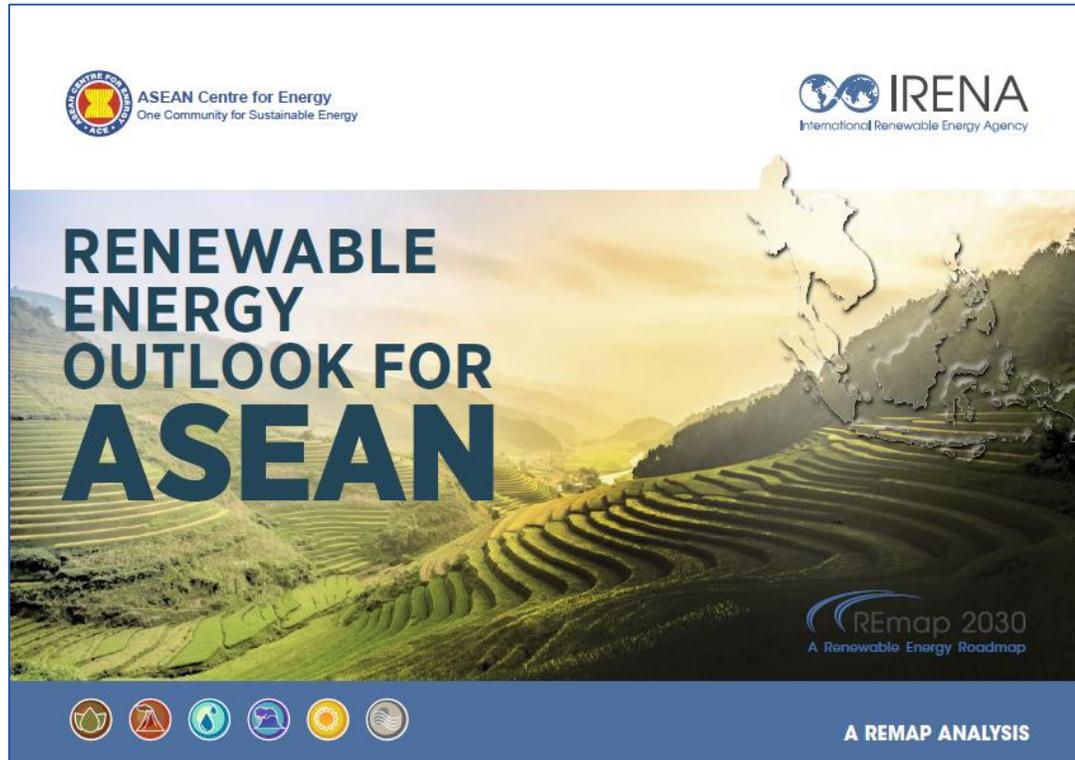


All 2014 IEA data, ASEAN 2015

# RE OUTLOOK 2025 – REmap



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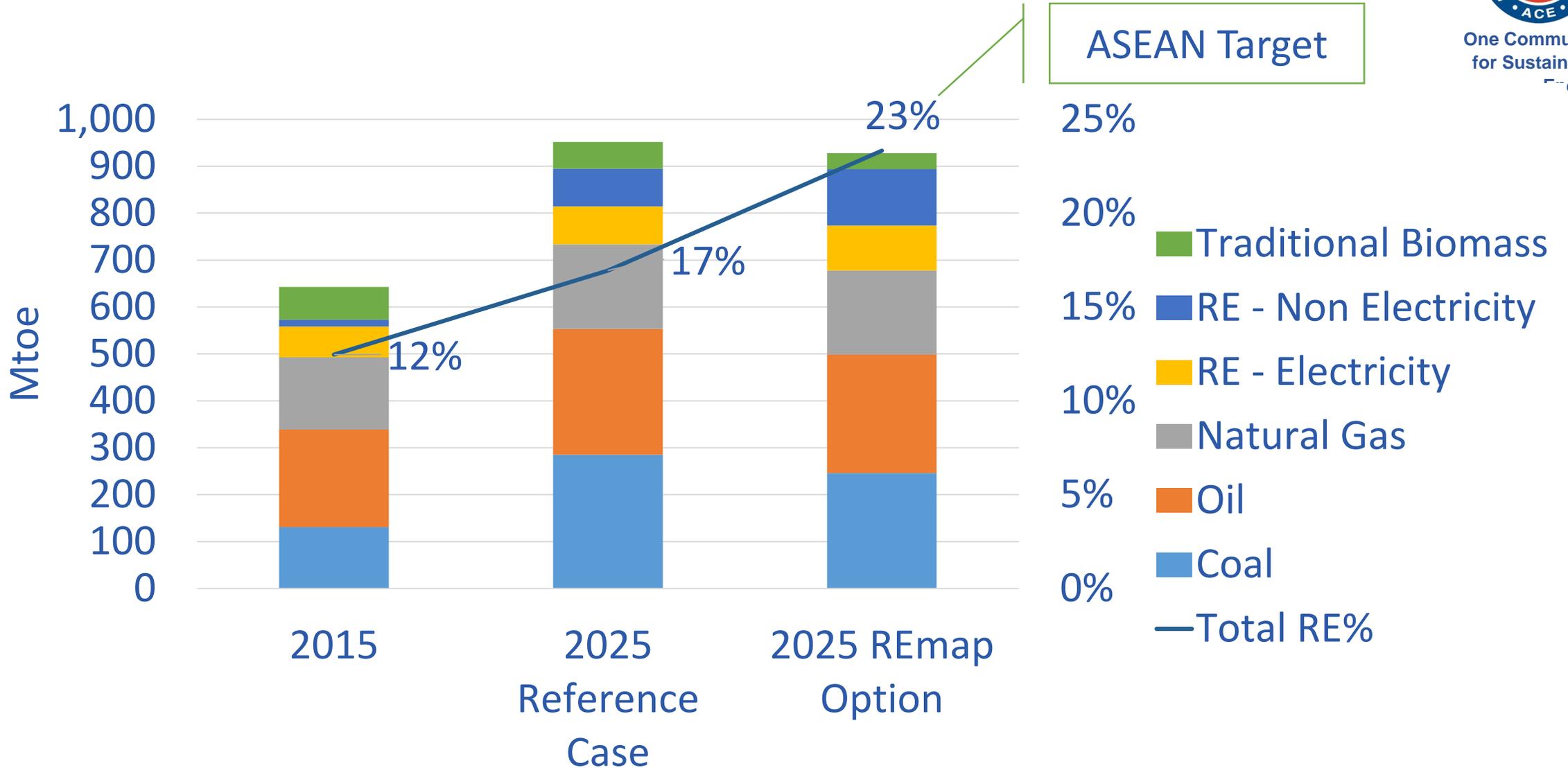
## Two RE Scenarios:

- ✓ Reference Case is based on ASEAN Member States (AMS) renewable energy policies.
- ✓ RE Map Option is considering various options in achieving the ASEAN aspirational target of 23% RE in 2025.

# RE OUTLOOK 2025 – ENERGY MIX



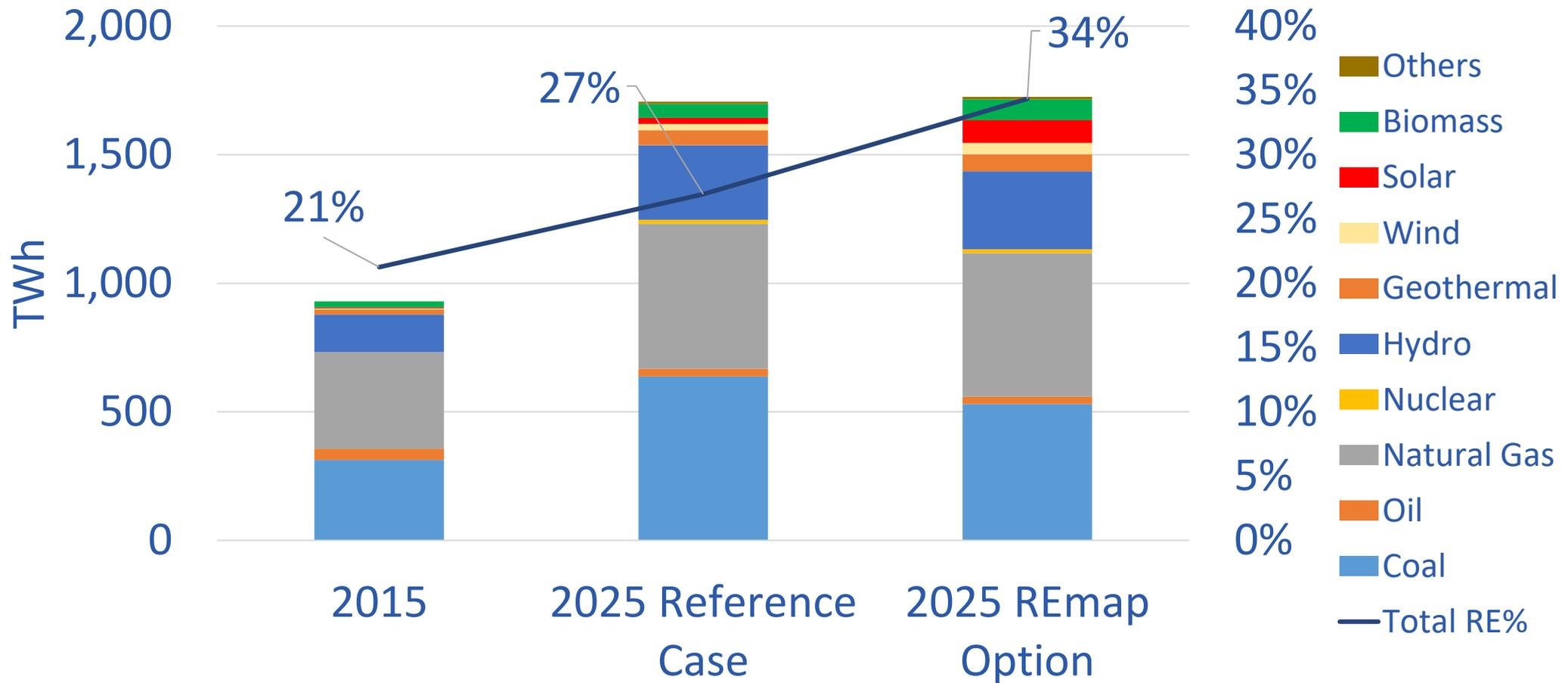
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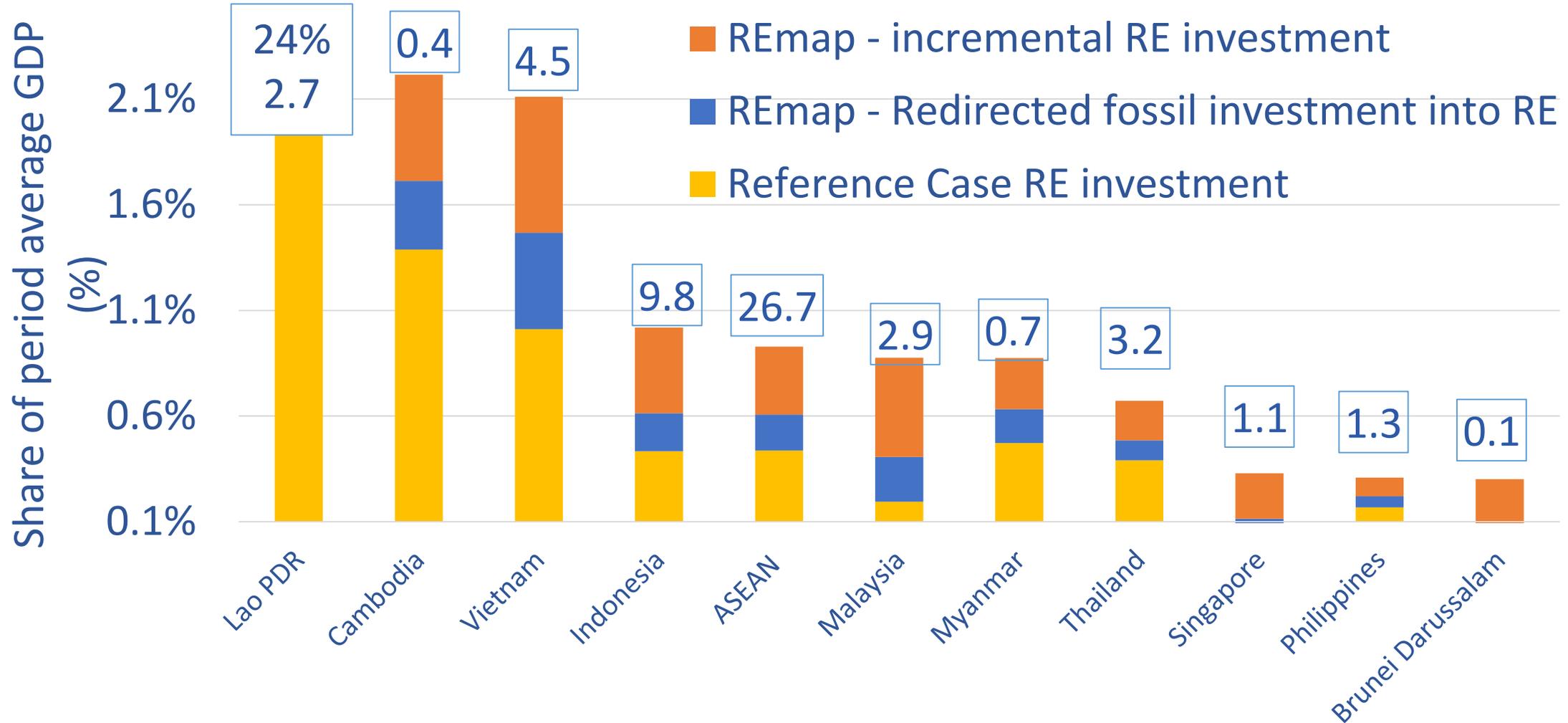
# RE OUTLOOK 2025 – POWER GENERATION



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# RE OUTLOOK 2025 - INVESTMENT



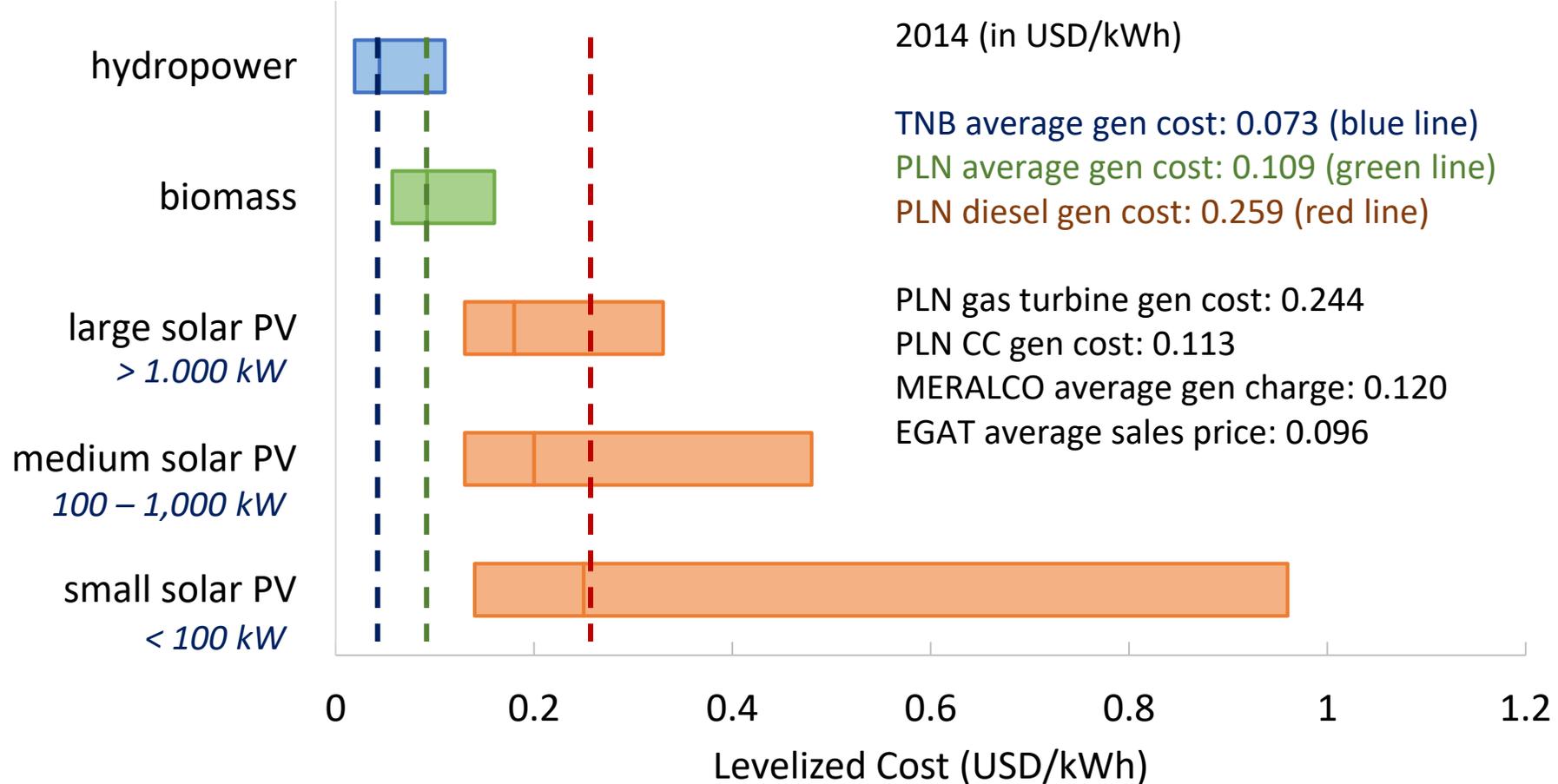
Note : Lao PDR very high (24%), Brunei Darussalam and Singapore very low (0.1%) GDP

# LCOE Study - compare to gen cost



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Renewables have become competitive

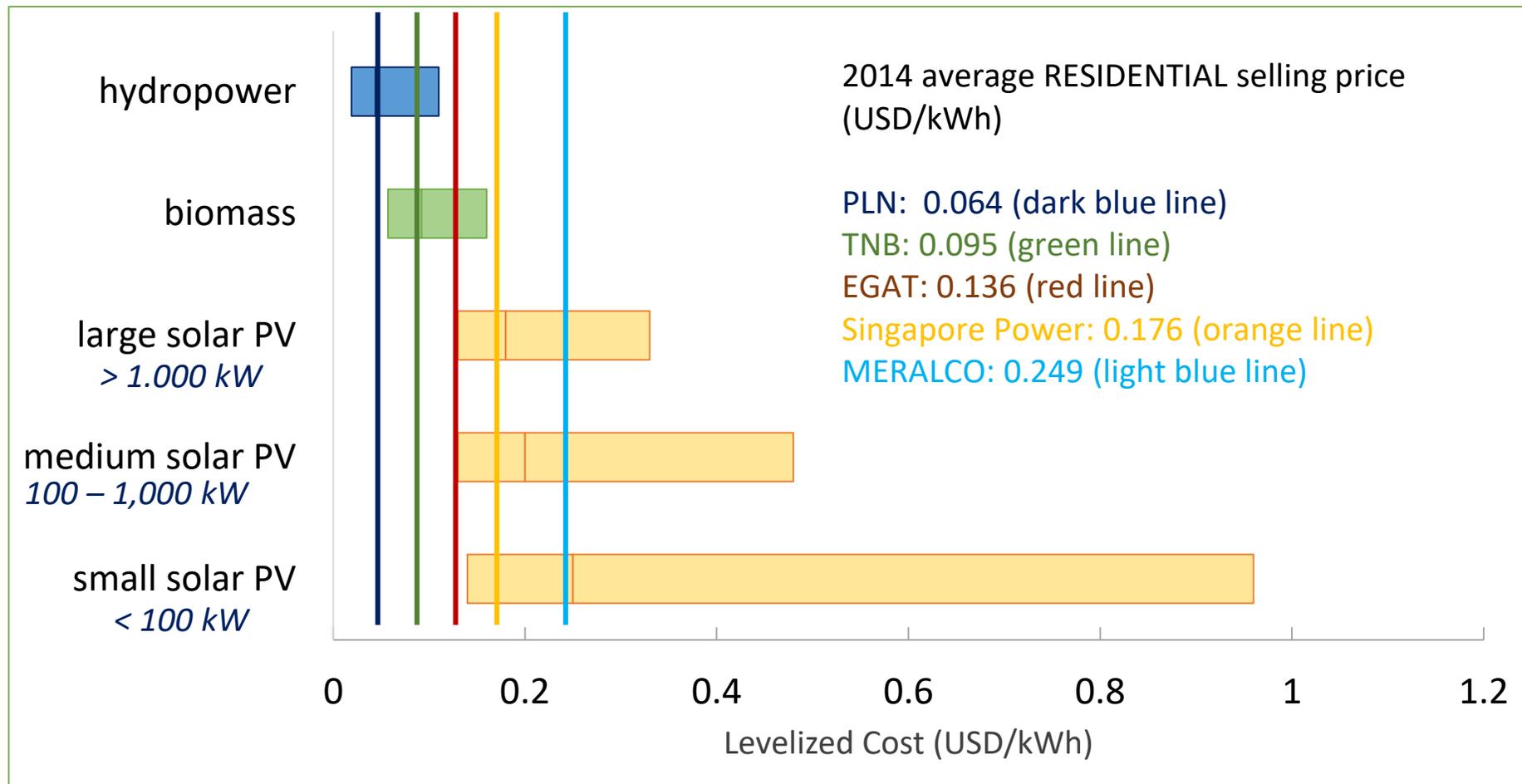


# LCOE Study - compare to residential selling price

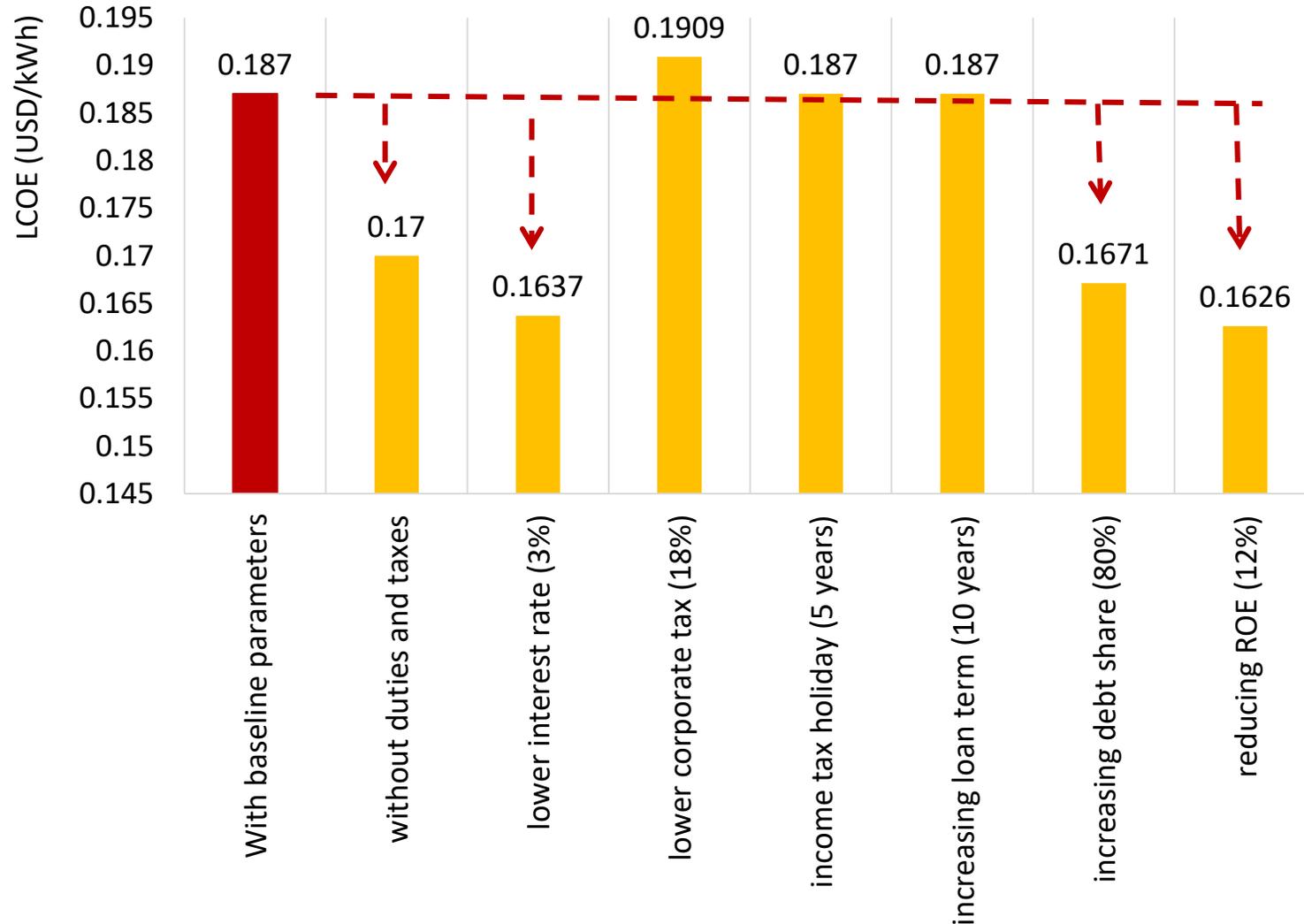


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The subsidy to electricity price could caused the non-competitiveness of RE



# Policy Impacts on LCOE



- The following measures reduces either the capital or operating cost:
  - exemptions from import duties and taxes,
  - lowering of loan interest rate,
  - increasing debt share and reducing ROE
- Any policy measure that targets the reduction of capital and operating costs
  - positive effect on LCOE
  - improve the competitiveness of a specific renewable energy technology project.

# OPPORTUNITIES AND CHALLENGES



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## Opportunities

- The geographical characteristics encourage the off-grid or distributed power generation development by using renewables.
- Abundant RE Potential abundant.
- Stringent policy on environmental supports and accelerates the market growth for renewable energy.

## Challenges

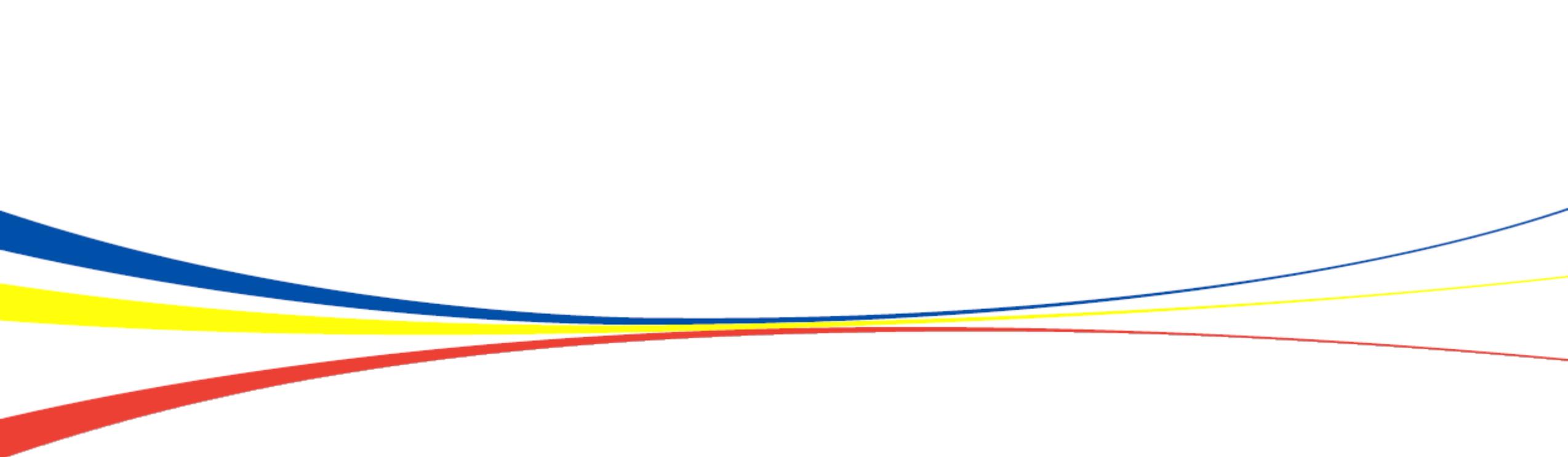
- Still relative high cost – high investment needed.
- Budget constraint to allocate subsidy more into RE.
- Capability in developing the renewable technology.
- The absence of financing mechanism and its local bank participations in supporting renewable energy.

# CONCLUSION

- ASEAN 23% aspirational target, although ambitious to reach by 2025, is grounded in a firm awareness of the region's wealth of renewable energy resources.
- The region will need to invest 1% of its GDP annually into renewable energy capacity to reach its 23% target – requires strategic partnership with global community.
- ASEAN Member States can benefit from global trends (technology, funding, etc.)



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