

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

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



One Community
for Sustainable
Energy

DICLAIMER



One Community
for Sustainable
Energy

The views, opinions, and information expressed in this presentation were compiled from sources believed to be reliable for information and sharing purposes only, and are solely those of the presenter; do not necessarily reflect the views and opinions of the ASEAN Centre for Energy (ACE) and/or the ASEAN Member States. Any use of this presentation's content should be by ACE's permission.

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.*



1,374.6 million
US\$ 10,983 billion



126.9 million
US\$ 4,123 billion



628.9 million
US\$ 2,432 billion



1,292.7 million
US\$ 2,091 billion



50.6 million
US\$ 1,377 billion

ASEAN – A COMMUNITY OF OPPORTUNITIES



One Community
for Sustainable
Energy

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

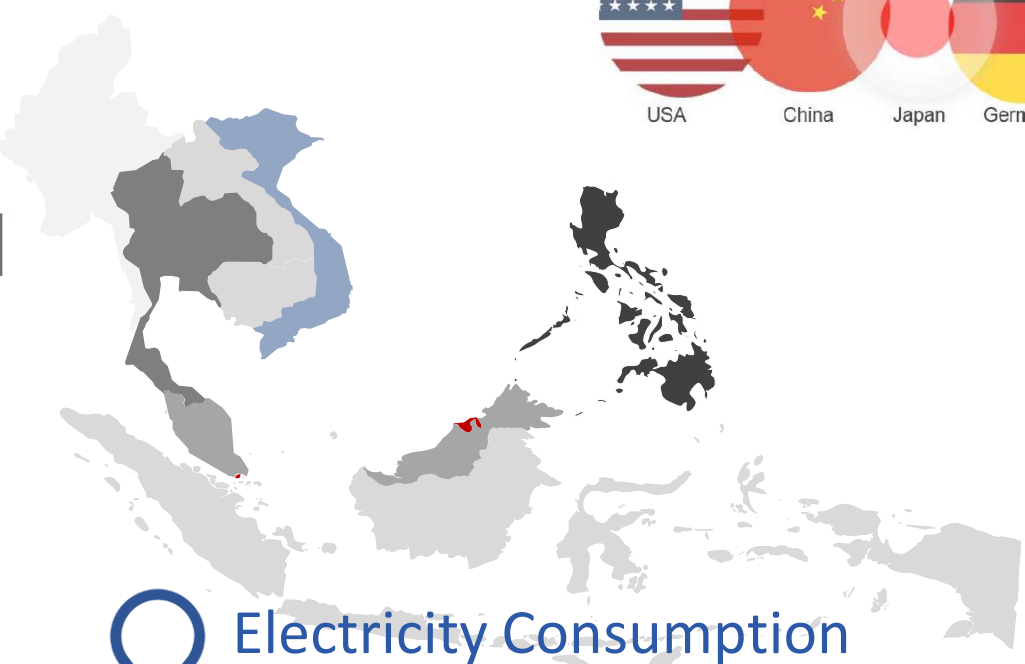
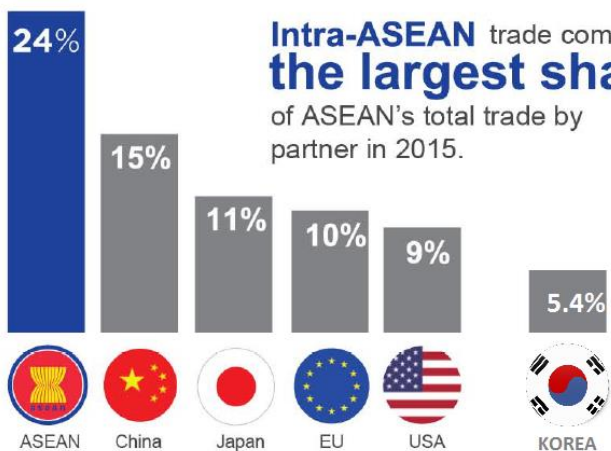
the **6th largest in the world** & the **3rd largest in Asia.**



Total Trade
US\$ 2.367 Trillion

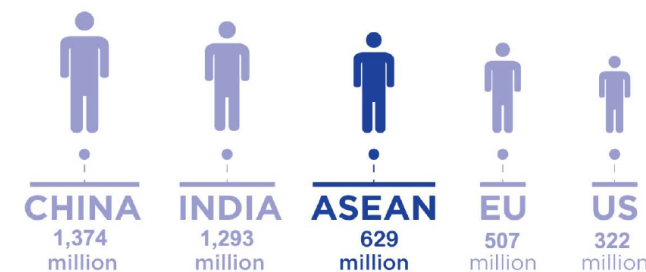
Major Trading Partners

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.



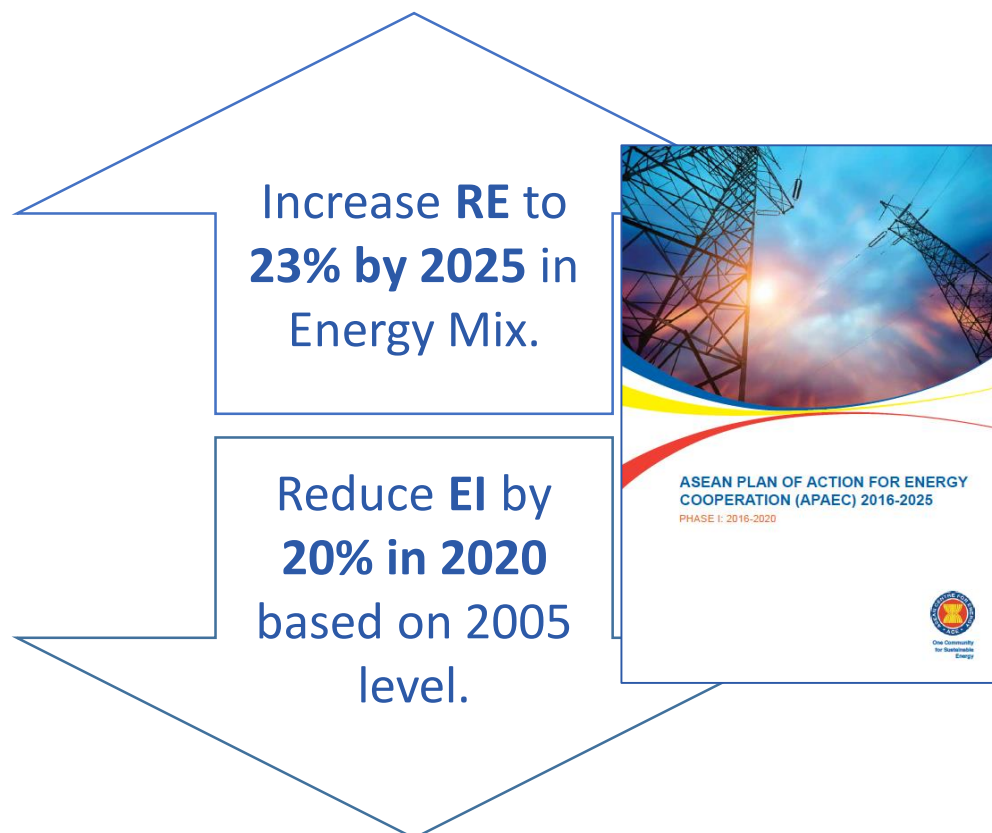
ASEAN ENERGY BLUEPRINT



One Community
for Sustainable
Energy

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



One Community
for Sustainable
Energy

RE – NATIONAL TARGETS

27% Installed
Capacity (2030)



30% TFEC (2025)



21% Installed Capacity² (2030)

927 MW¹ (2017)



15,300 MW (2030)

30% TFEC (2036)



350 MWp (2020)



10% Installed Capacity (2035)

2,080 MW² (2020)



23% TPES (2025)

¹ Large Hydro only

² Exclude Large Hydro (>30 MW)

%RE TARGET – COMPARE TO ASIA MAJOR



One Community
for Sustainable
Energy

1,250 GW (2020)



11% TPES (2035)



22-24%
Power Generation
(2030)

175 GW (2022)

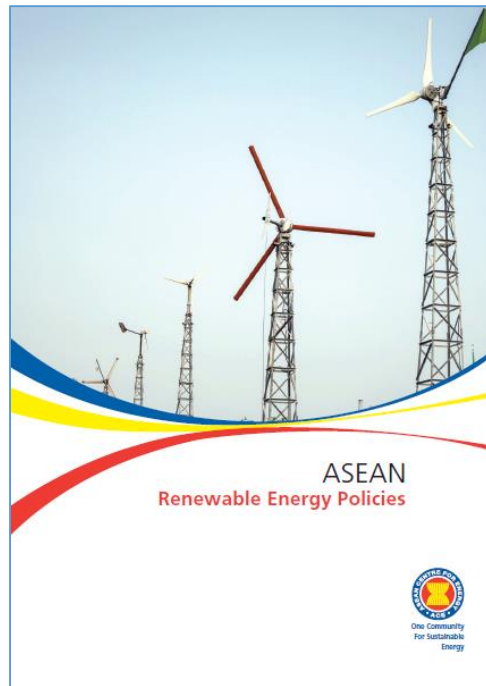


23% TPES (2025)

RE – NATIONAL POLICIES



One Community
for Sustainable
Energy

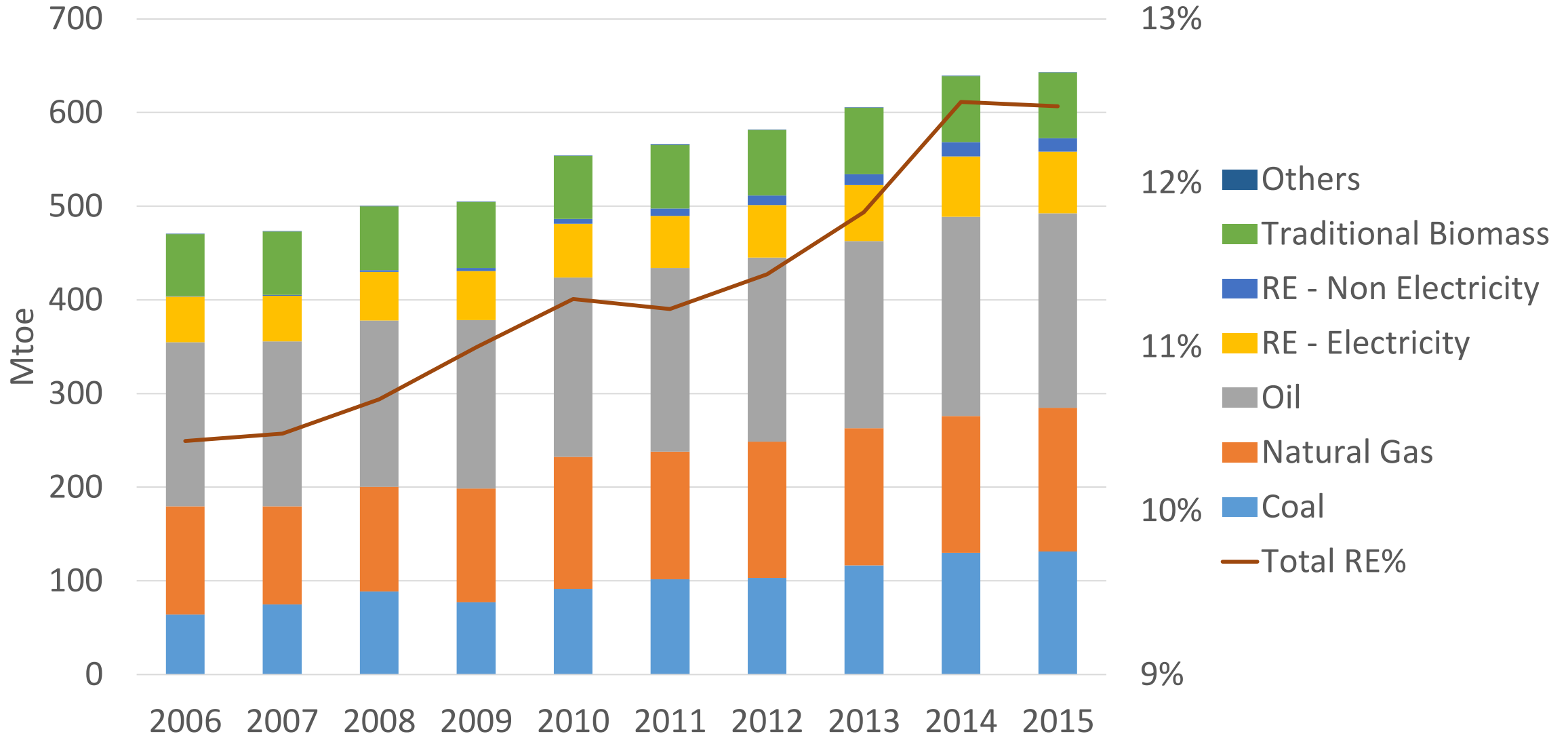


| Policy | Brunei Darussalam | Cambodia | Indonesia | Lao PDR | Malaysia | Myanmar | The Philippines | Singapore | Thailand | Vietnam |
|----------------------|-------------------|----------|-----------|---------|----------|---------|-----------------|-----------|----------|---------|
| RE Target | Yes | 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



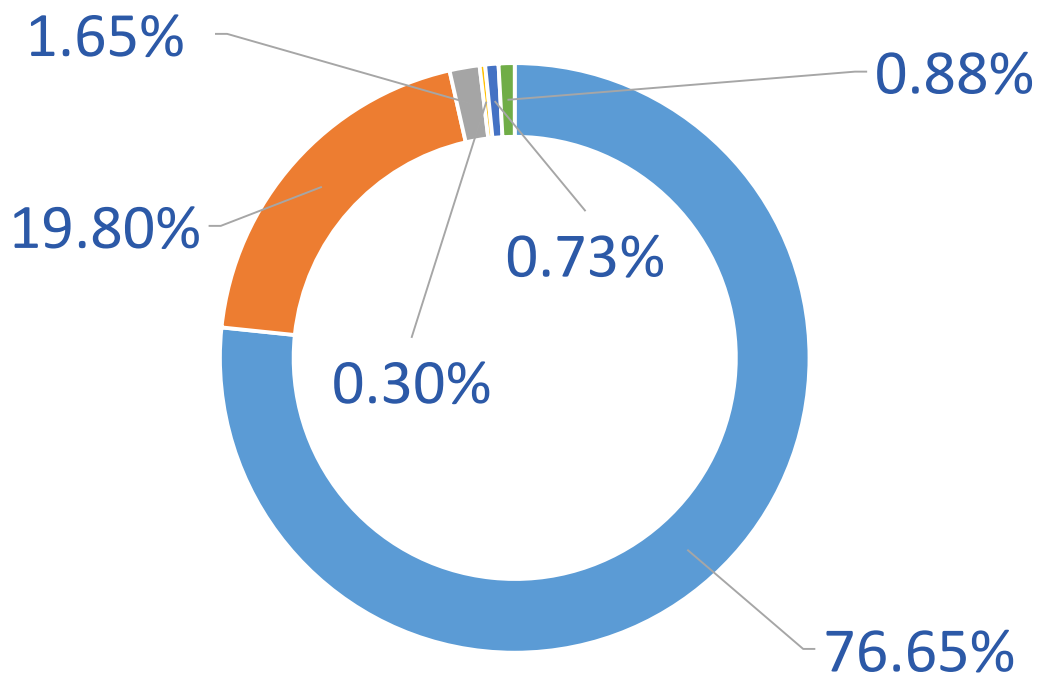
Community
Sustainable
Energy



RE PROGRESS 2015 - ELECTRICITY

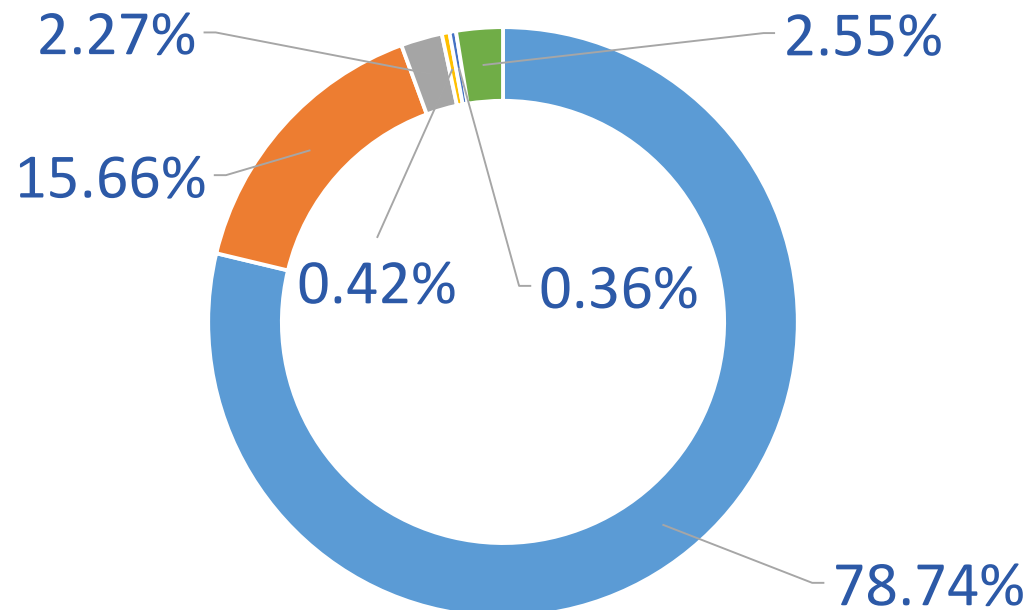
203 MW

Installed Capacity



930 TWh

Power Generation

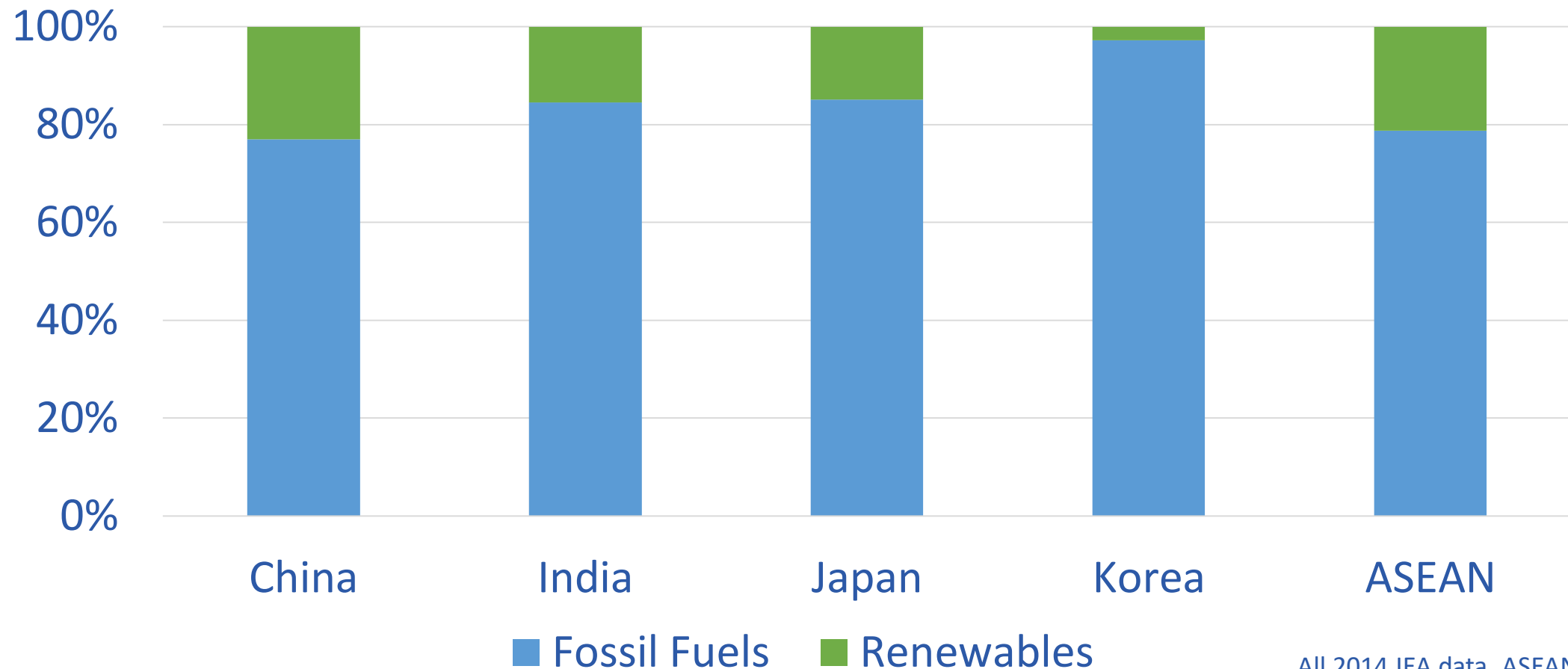


■ Fossil Fuels
 ■ RE Hydro
 ■ RE Geothermal
 ■ RE Wind
 ■ RE Solar
 ■ RE Biomass

%RE GENERATION – COMPARE MAJOR ASIA



One Community
for Sustainable
Energy

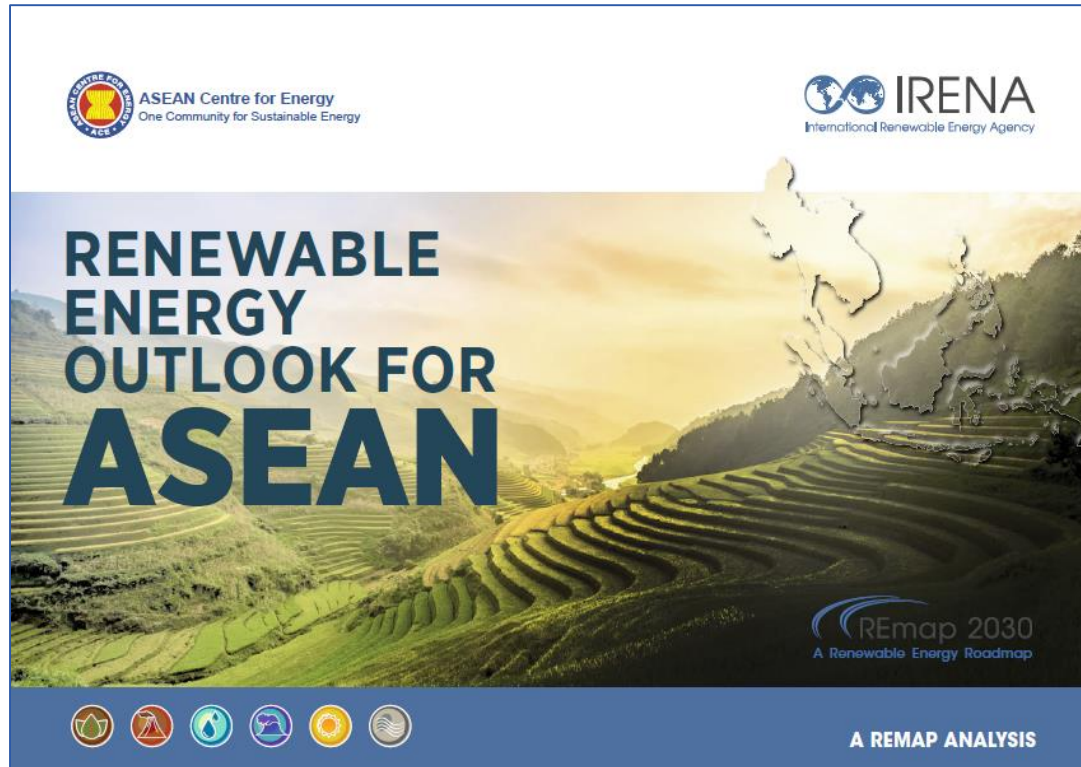


All 2014 IEA data, ASEAN 2015

RE OUTLOOK 2025 – REmap



One Community
for Sustainable
Energy



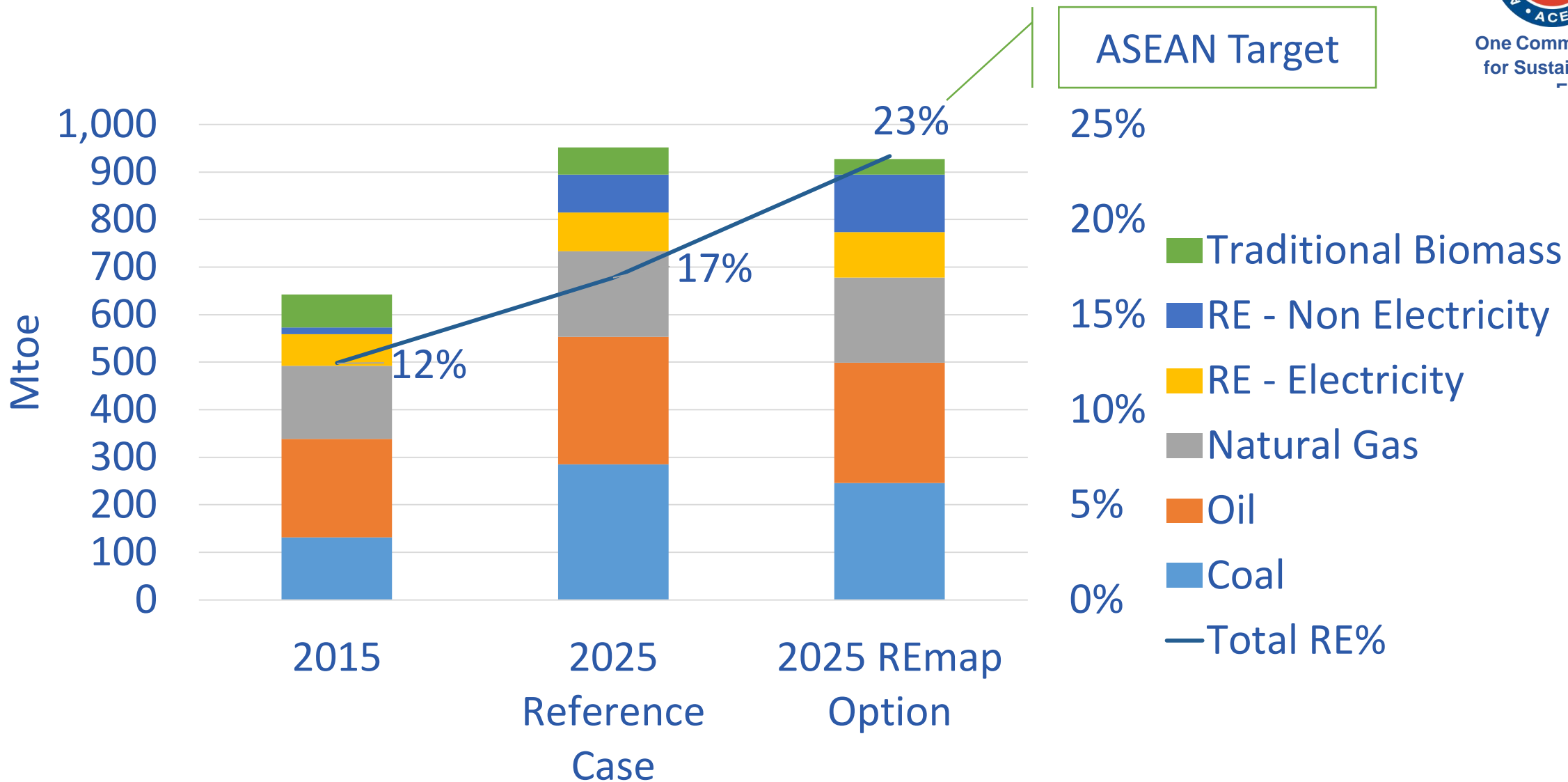
Two RE Scenarios:

- ✓ 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



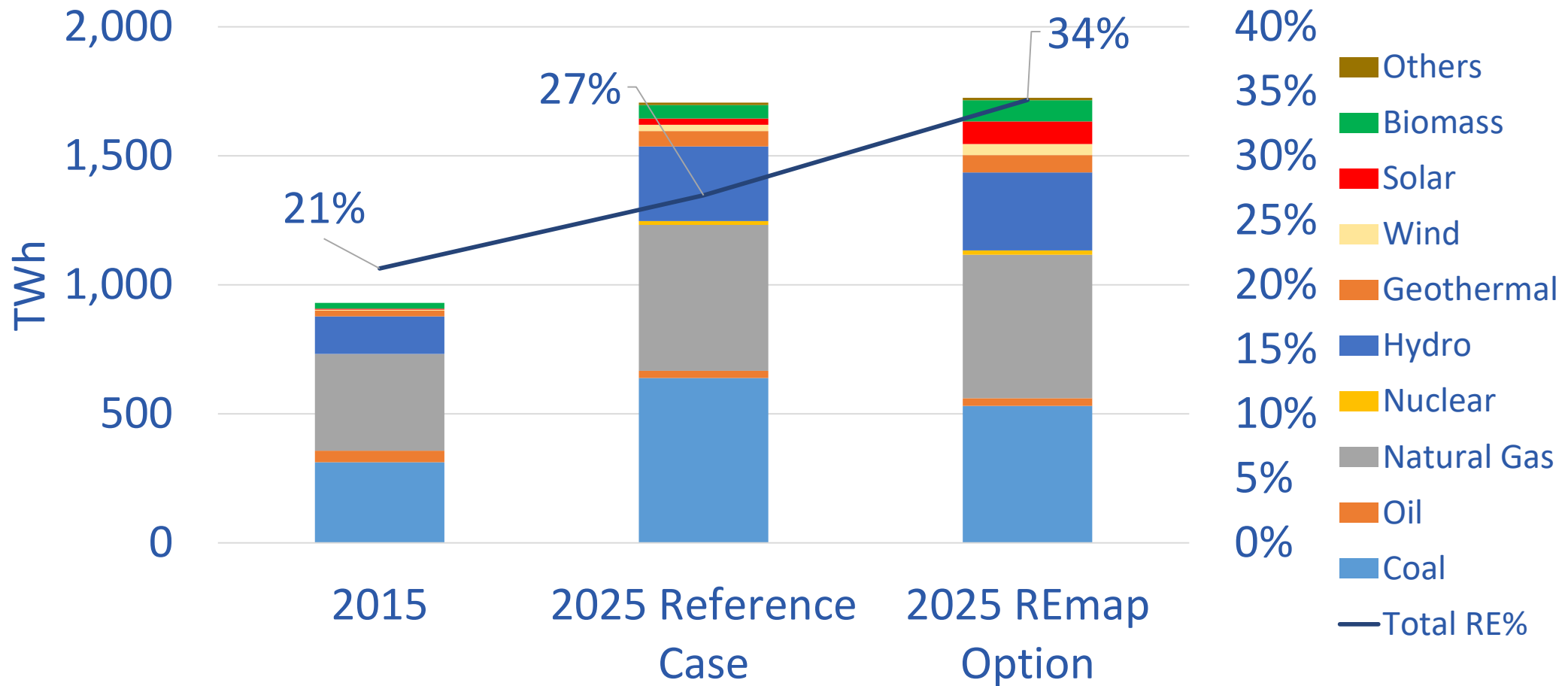
One Community
for Sustainable
Energy



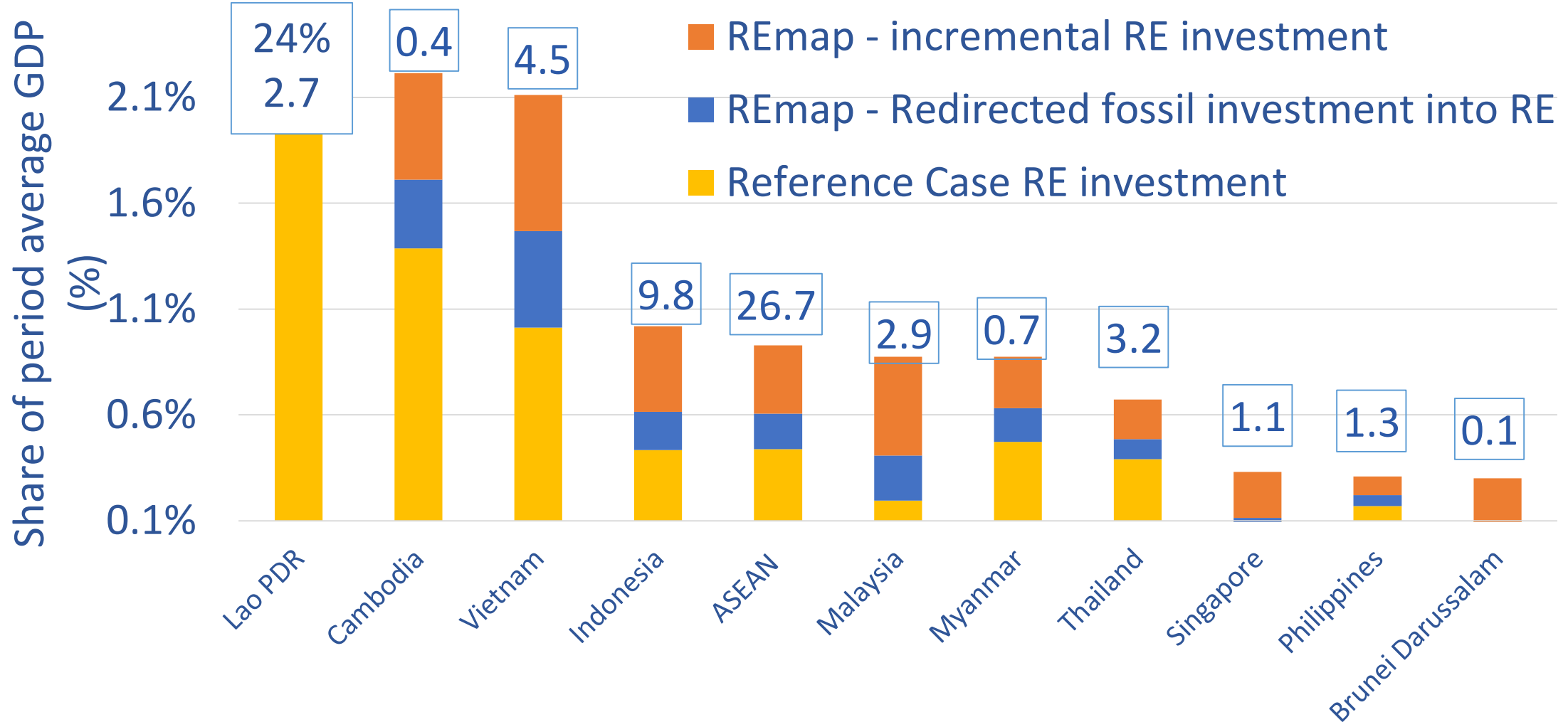
RE OUTLOOK 2025 – POWER GENERATION



One Community
for Sustainable
Energy



RE OUTLOOK 2025 - INVESTMENT



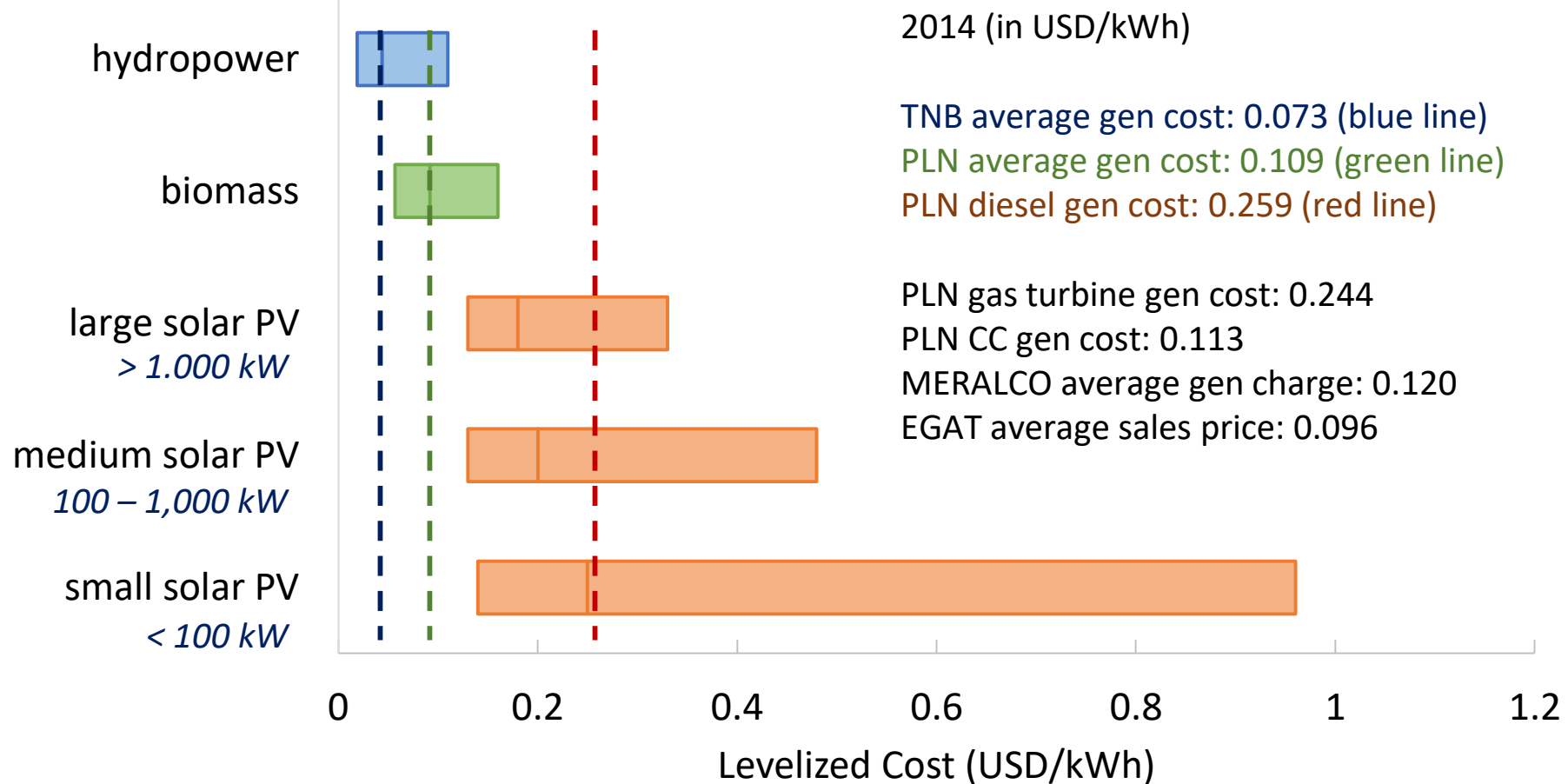
Note : Lao PDR very high (24%), Brunei Darussalam and Singapore very low (0.1%) GDP

LCOE Study - compare to gen cost



One Community
for Sustainable
Energy

Renewables have become competitive

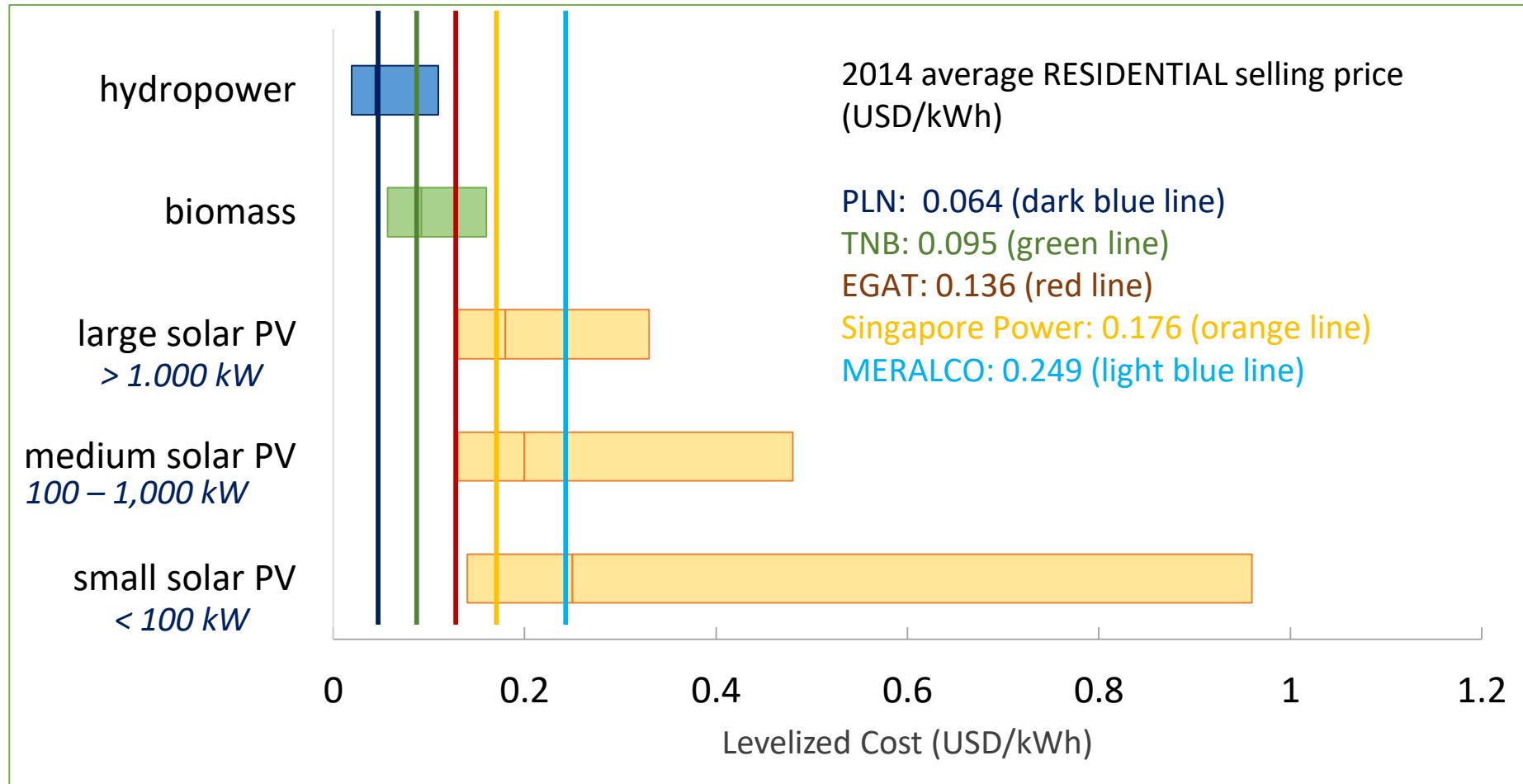


LCOE Study - compare to residential selling price

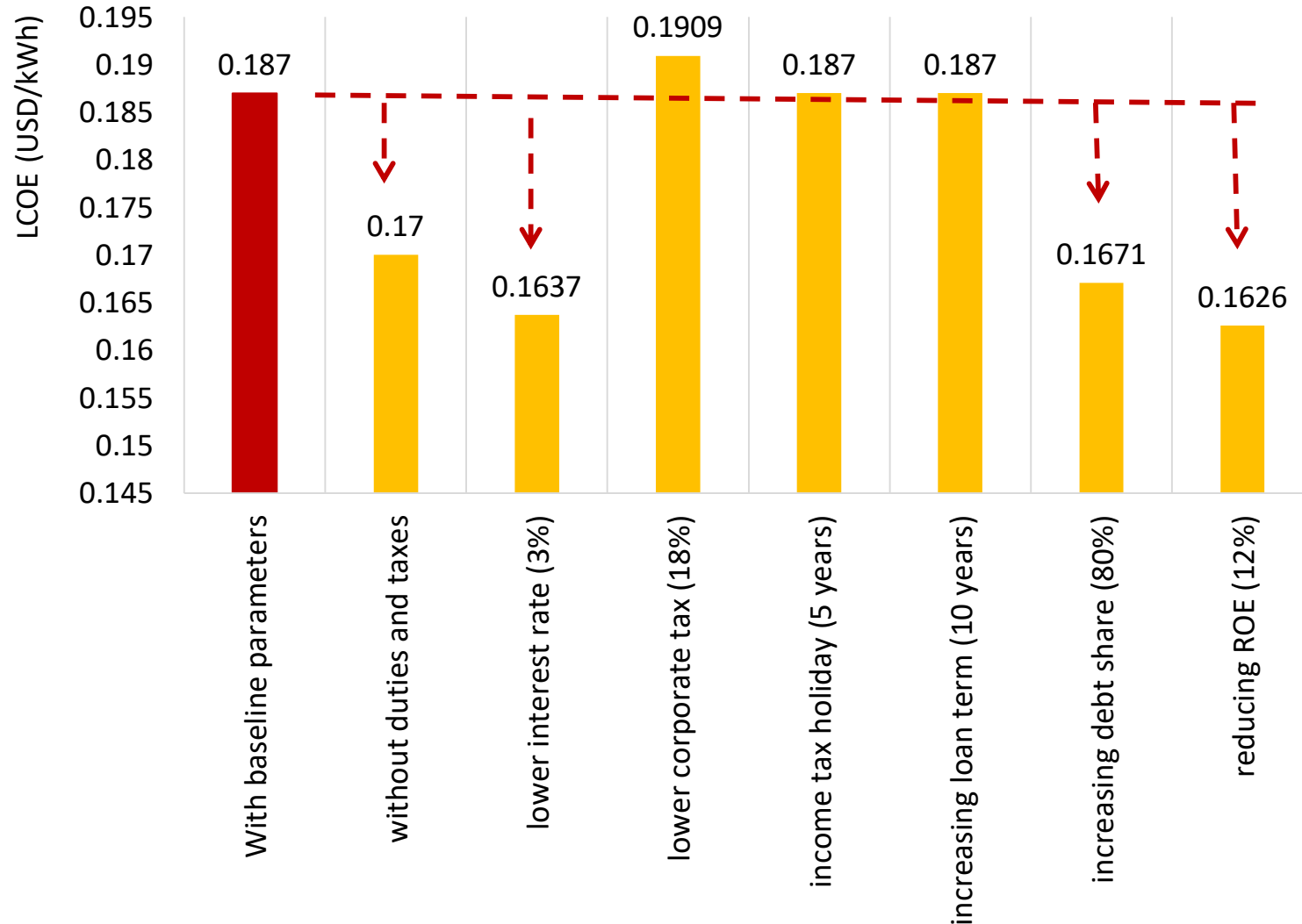


One Community
for Sustainable
Energy

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



One Community
for Sustainable
Energy

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.)



One Community
for Sustainable
Energy



All ACE publications are available for download from

www.aseanenergy.org/publications

Thank you.



**One Community
for Sustainable
Energy**