

# Energy Outlook and Challenges of ASEAN

Presented by:

**Sanjayan Velautham**

Executive Director

ASEAN Centre for ENERGY (ACE), Jakarta



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Energy Mix

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# ASEAN: A Community of Opportunities



**Total  
Trade  
USD 2.6  
trillion**

population: 625 million  
area: 4,480,106 km<sup>2</sup>

8.5 % of world's population

56% living in rural areas

GDP growth 2003-2013:  
5.1 %

Remarkable sustained growth rate

GDP per capita 3,831.8 US\$

High disparity within the region

electricity consumption: 1,178 kwh/cap  
Electrification : 78.7%

About half of world's average

energy intensity:  
0.435 koe / \$05p

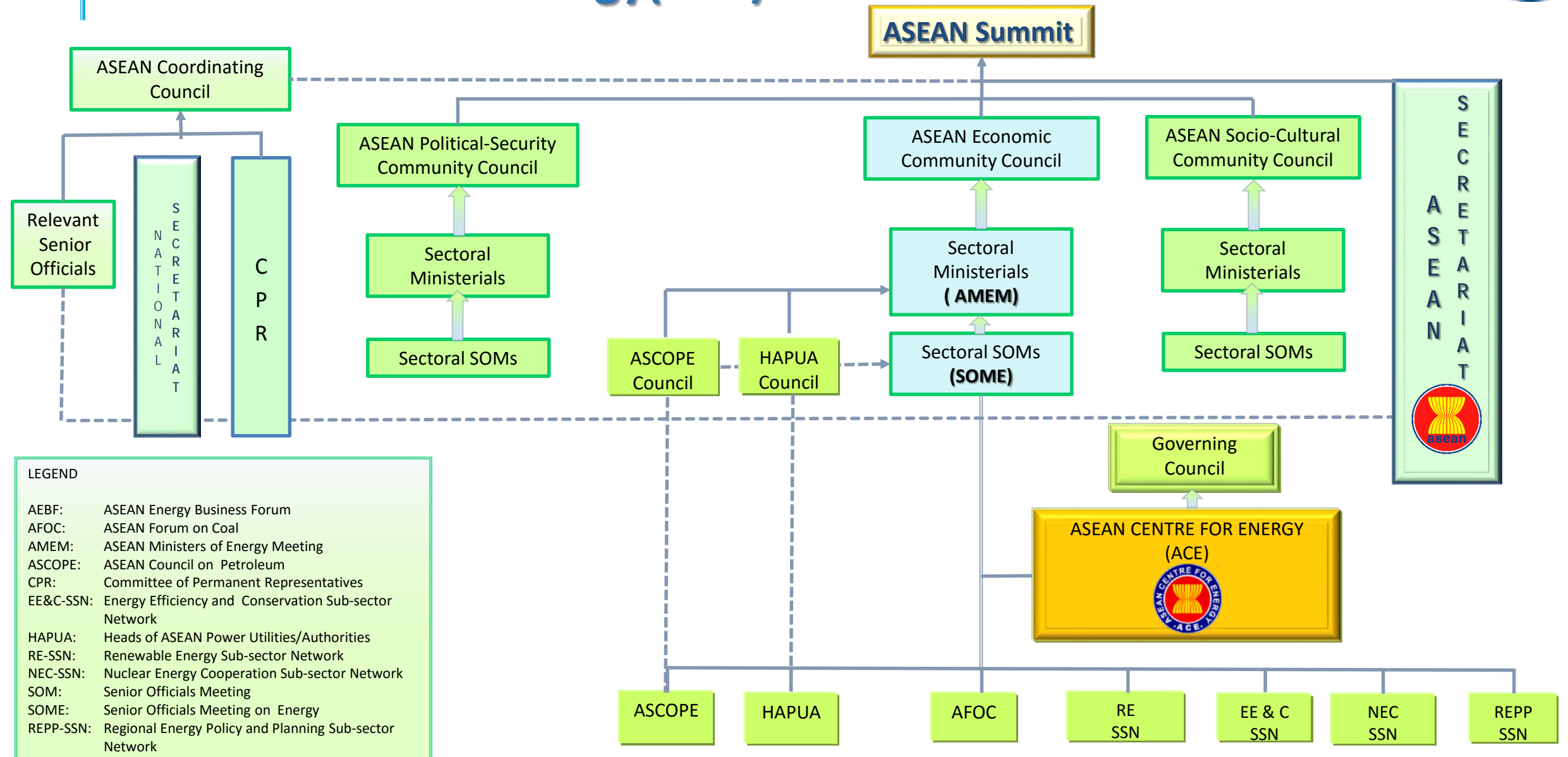
About half of world's average

*The ASEAN Economic Community:*

- *Effectively implemented on 31 December 2015,*
- *Calls for a well-connected ASEAN to drive an integrated, competitive and resilient region.*

*... to establish ASEAN as a single market and production base with the goal of making ASEAN more dynamic and competitive."*

# ASEAN Centre for Energy(ACE) in ASEAN



## ACE Cooperation

Through ASEAN Center for Energy (ACE), cooperation and collaboration in energy sector are done by

- conducting capacity building,
- technical and good practices exchange and
- policy research and analytics

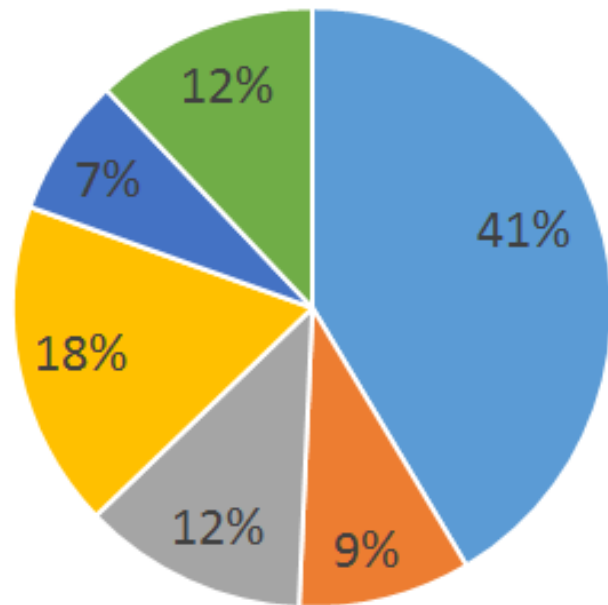
Some of Ongoing Programmes:

1. ASEAN+3 Mitigation Cooperation Programme (China, Korea and Japan)
2. ASEAN-Japan Energy Efficiency Partnership (ECCJ)
3. ASEAN - Renewable Energy Support Program (GIZ)
4. ASEAN-Canada Nuclear and Radiological Program (DAFT)

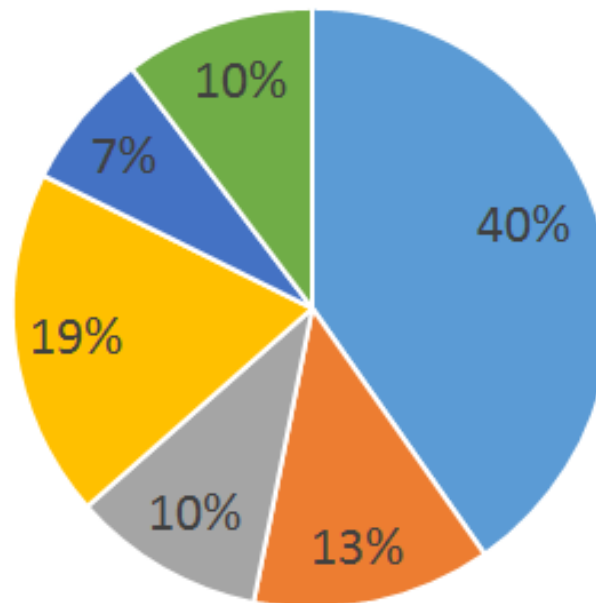


# Total Primary Energy Supply -Historical Comparison

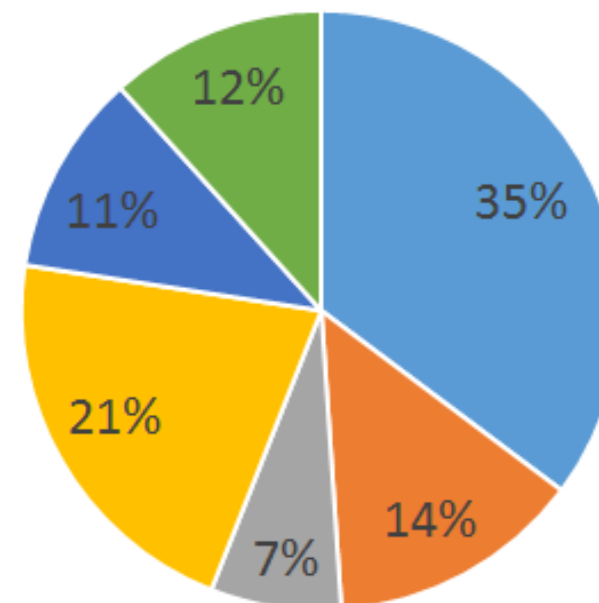
1990 = 238 Mtoe



2000 = 386 Mtoe



2013 = 618 Mtoe



■ Indonesia

■ Malaysia

■ Philippines

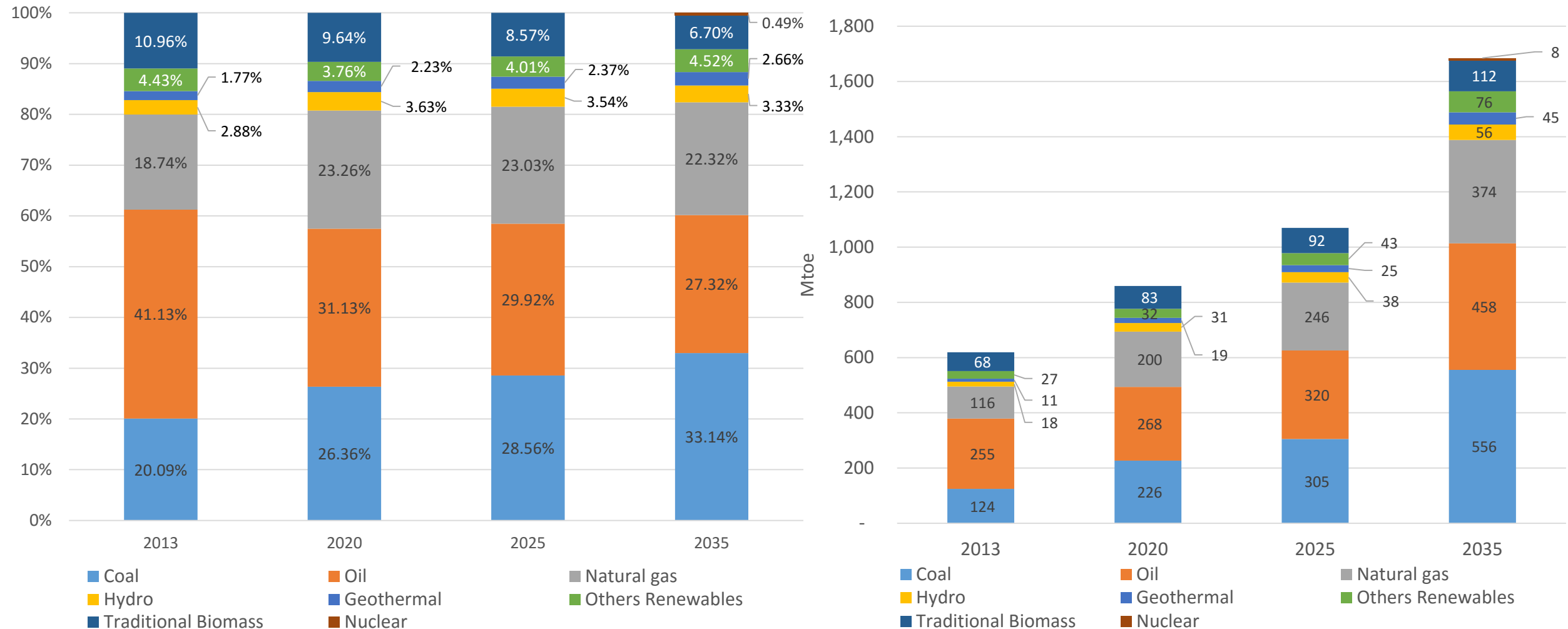
■ Thailand

■ Viet Nam

■ Rest of ASEAN

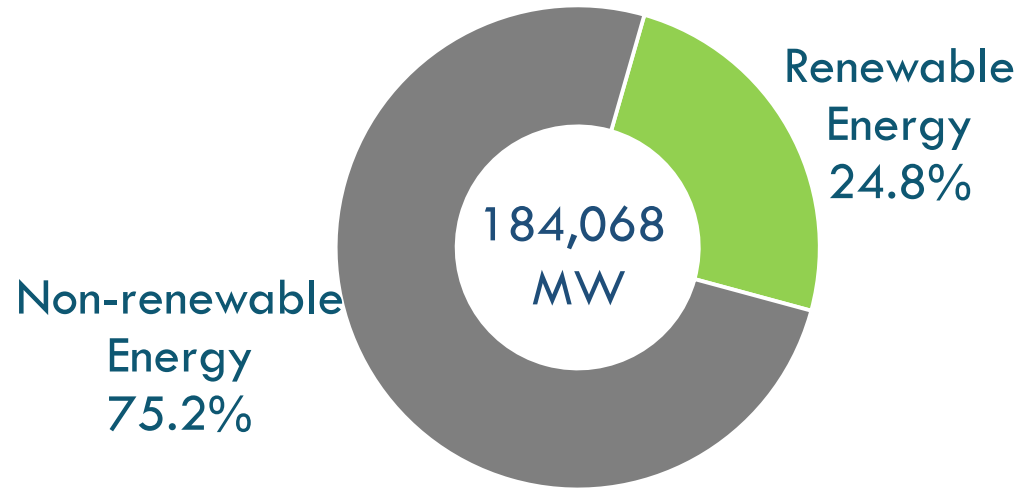
# ASEAN ENERGY OUTLOOK

## PROJECTED TPES 2013 - 2035

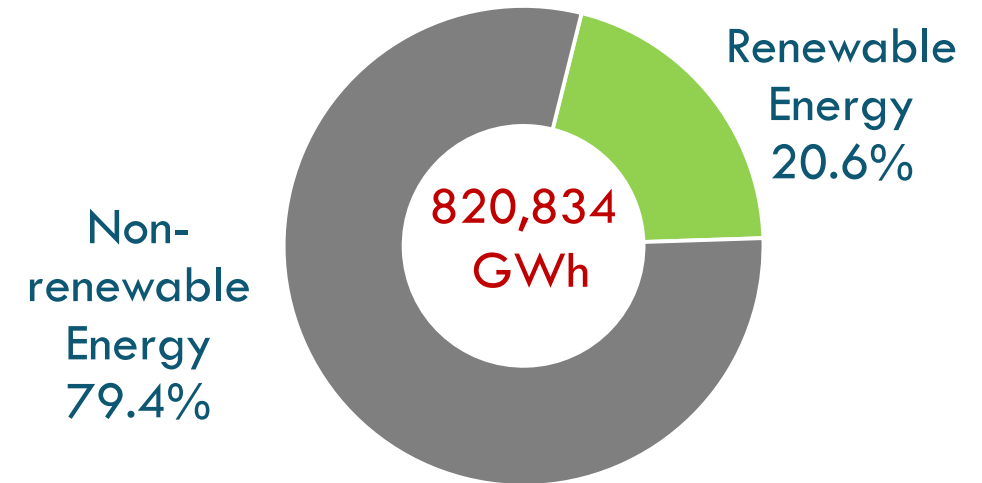
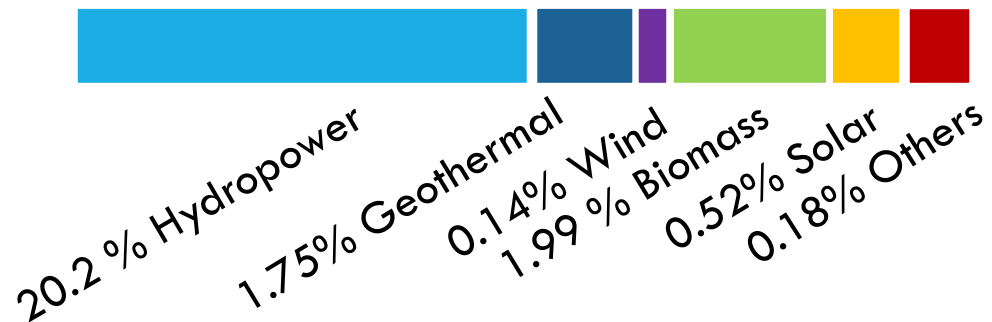




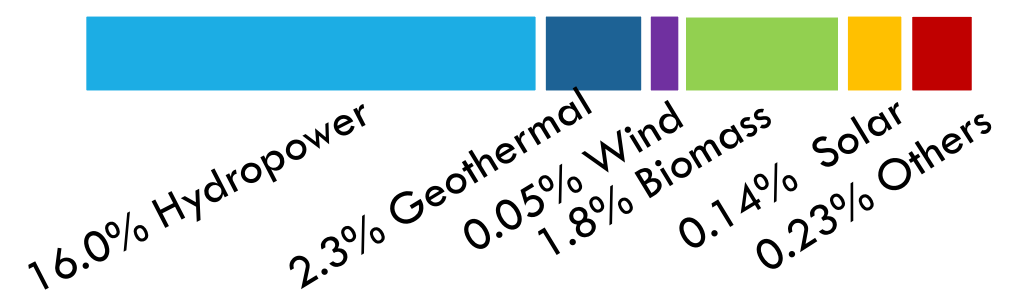
# RE MIX IN POWER CAPACITY / GENERATION



Installed Power Capacity for Renewable Energy :  
45,584.9 MW



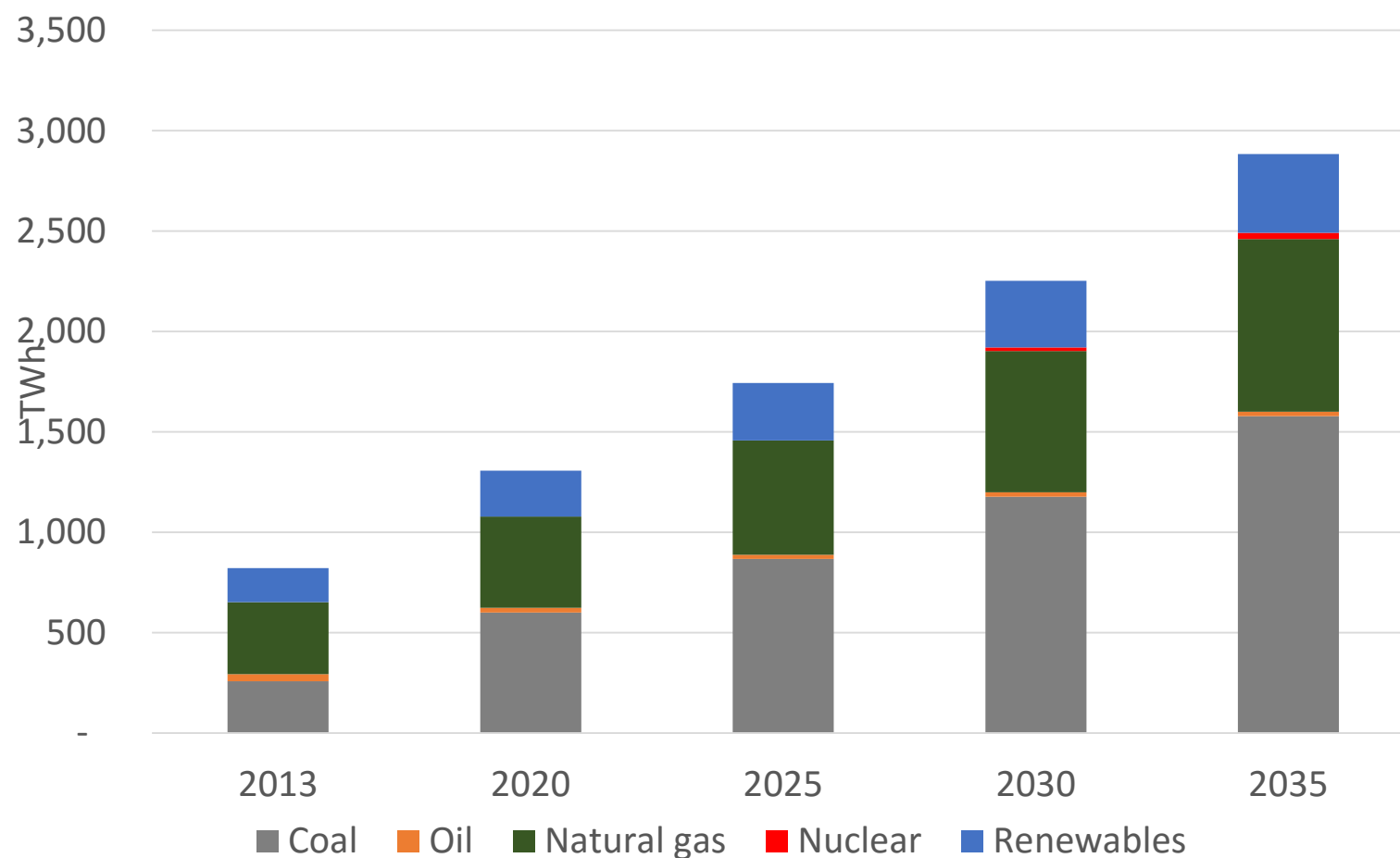
Power Generation for Renewable Energy  
169,073 GWh



\*Others : Biogas and waste

Sources : ACE Database, as of 2013.

# PROJECTION ON ELECTRICITY GENERATION



✓ BAU scenario - average growth at 5.8 % per year.

# ASEAN ENERGY BLUEPRINT

- The ASEAN Plan of Action for Energy Cooperation (APAEC)

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

- Phase I – 2016-2020 – endorse by the ASEAN Ministers of Energy

- 7 Areas of Focus

- ✓ *ASEAN Power Grid*

- ✓ *Trans ASEAN Gas Pipeline*

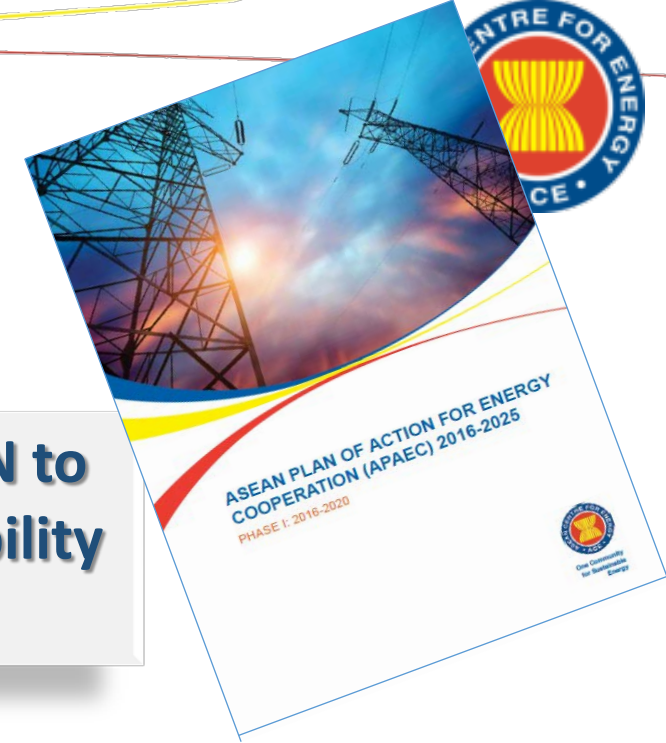
- ✓ *Coal & Clean Coal Technology*

- ✓ *Energy Efficiency & Conservation*

- ✓ *Renewable Energy*

- ✓ *Civilian Nuclear Energy*

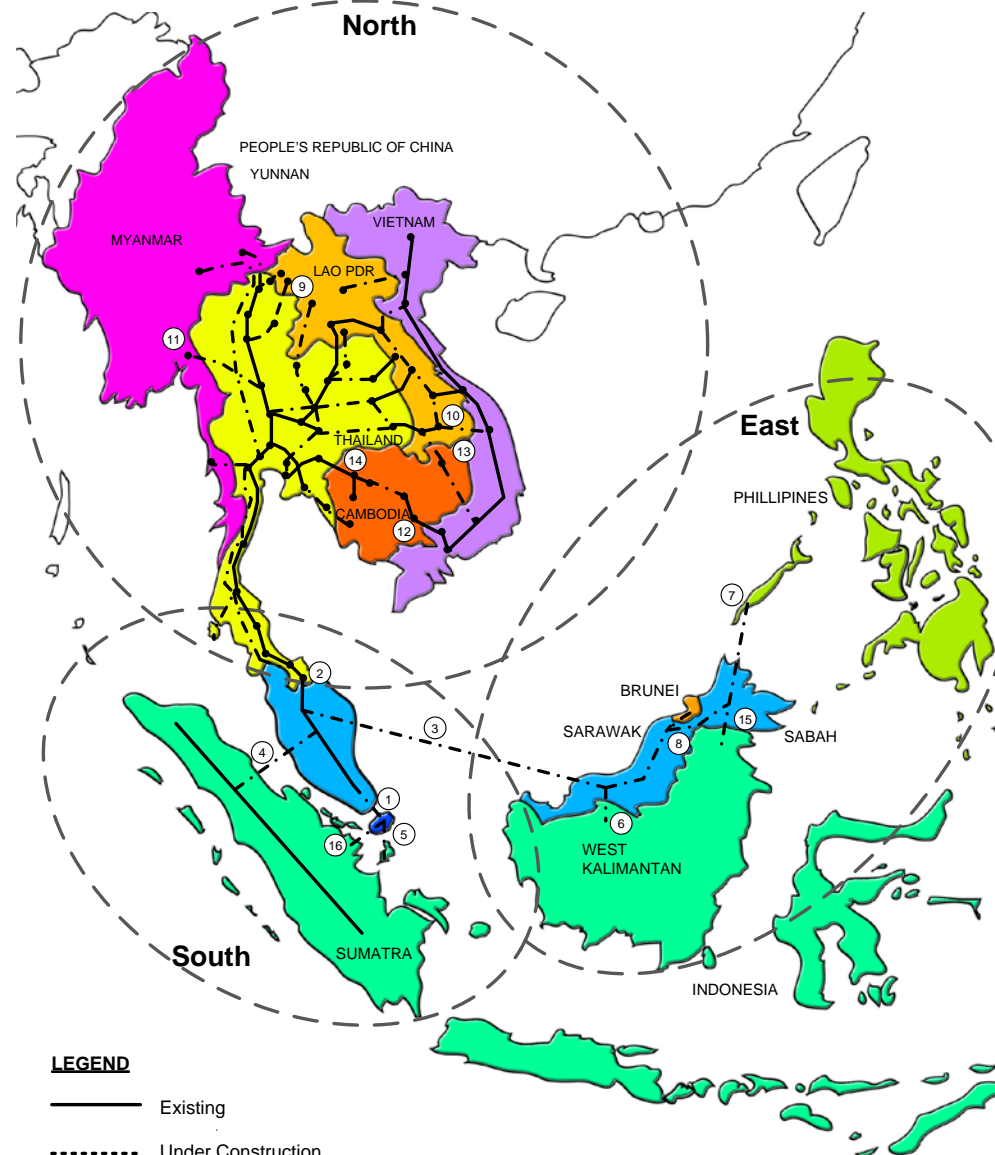
- ✓ *Regional Energy Policy and Planning*



# ASEAN POWER GRID (APG)



One Community  
for Sustainable  
Energy



## LEGEND

- Existing
- - - - - Under Construction
- . - . - Future

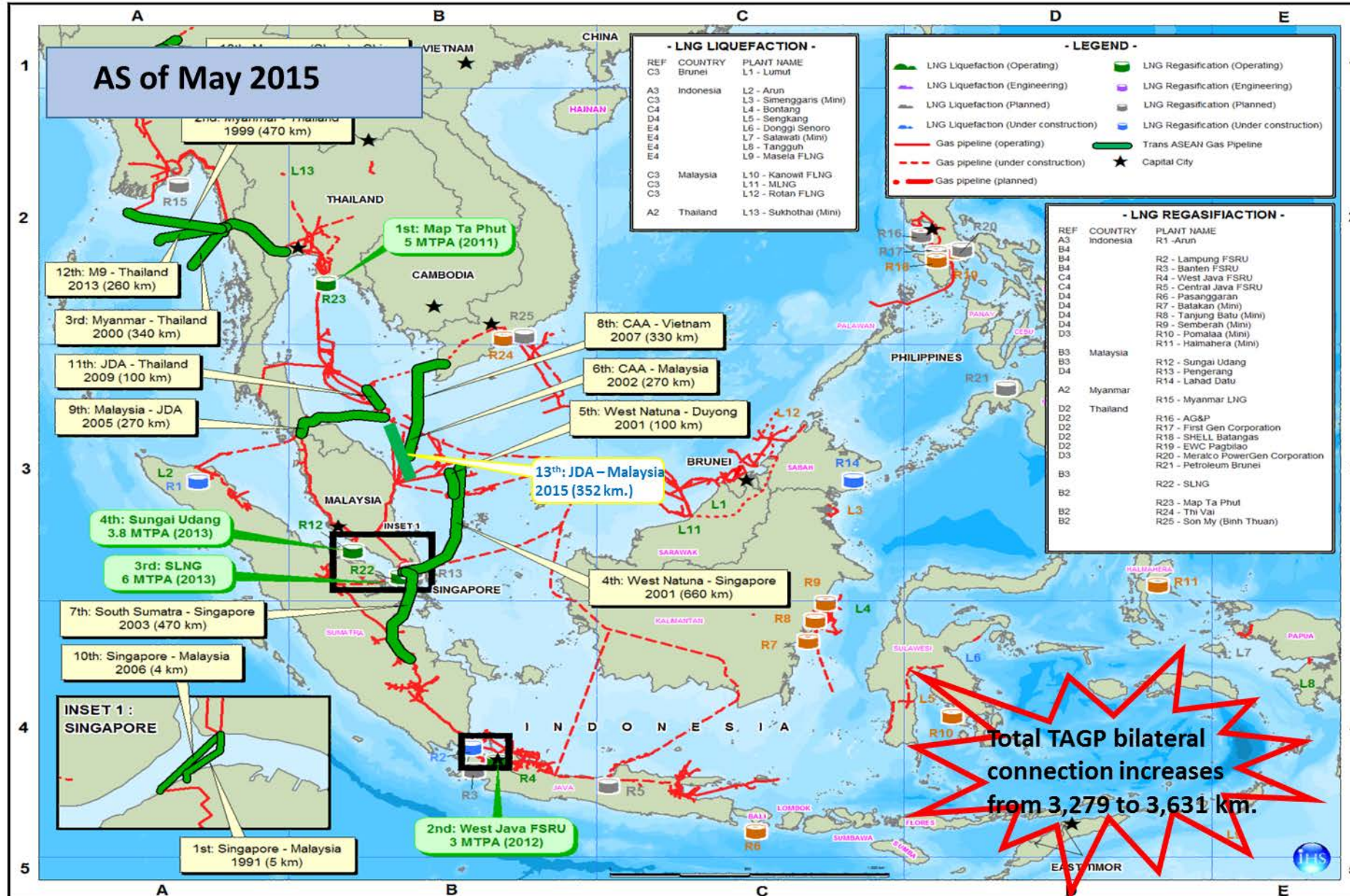
	Earliest COD
1) P.Malaysia - Singapore (New)	Connected (post 2020)
2) Thailand - P.Malaysia	Connected
• Sadao - Bukit Keteri	Existing
• Khlong Ngae - Gurun	Existing
• Su Ngai Kolok - Rantau Panjang	TBC
• Khlong Ngae – Gurun (2 <sup>nd</sup> Phase, 300MW)	TBC
3) Sarawak - P. Malaysia	2025
4) P.Malaysia - Sumatra	2020
5) Batam - Singapore	2020
6) Sarawak - West Kalimantan	2015
7) Philippines - Sabah	2020
8) Sarawak - Sabah – Brunei	
• Sarawak – Sabah	2020
• Sarawak – Brunei	2018
9) Thailand - Lao PDR	Connected
• Roi Et 2 - Nam Theun 2	Existing
• Sakon Nakhon 2 – Thakhek – Then Hinboun (Exp.)	Existing
• Mae Moh 3 - Nan - Hong Sa	2015
• Udon Thani 3- Nabong (converted to 500KV)	2019
• Ubon Ratchathani 3 – Pakse – Xe Pian Xe Namnoy	2019
• Khon Kaen 4 – Loei 2 – Xayaburi	2019
• Nakhon Phanom – Thakhek	2015
• Thailand – Lao PDR (New)	(2019-2023)
10) Lao PDR - Vietnam	Connected
11) Thailand - Myanmar	2018-2026
12) Vietnam - Cambodia	Connected
13) Lao PDR - Cambodia	2017
14) Thailand - Cambodia (New)	post 2020
15) East Sabah - East Kalimantan	post 2020
16) Singapore – Sumatra	post 2020



# TRANS-ASEAN GAS PIPELINE (TAPG)



One Community  
for Sustainable  
Energy



Status 2015

✓ 13 bilateral gas pipeline connecting 6 countries

✓ 4 RGTs existing 4 more expected by 2020.

## RE & EE

**Increase % RE**

### **Renewable Energy:**

Aspirational target of 23% by 2025 in ASEAN Total Primary Energy Supply.

Awareness among policy makers, private sectors and public

R&D network on RE technology development

### **Energy Efficiency & Conservation:**

To reduce energy intensity by 20% in 2020 based on 2005 level.

Harmonise Standards  
Green building codes

**Reduce EI %**



# COAL & NUCLEAR

**Increase CCT**

## **Coal**

Increasing at CAGR of 7%  
Increase CCT technology &  
Carbon Capture  
ASEAN Coal Database  
and Information System  
(ACDIS)

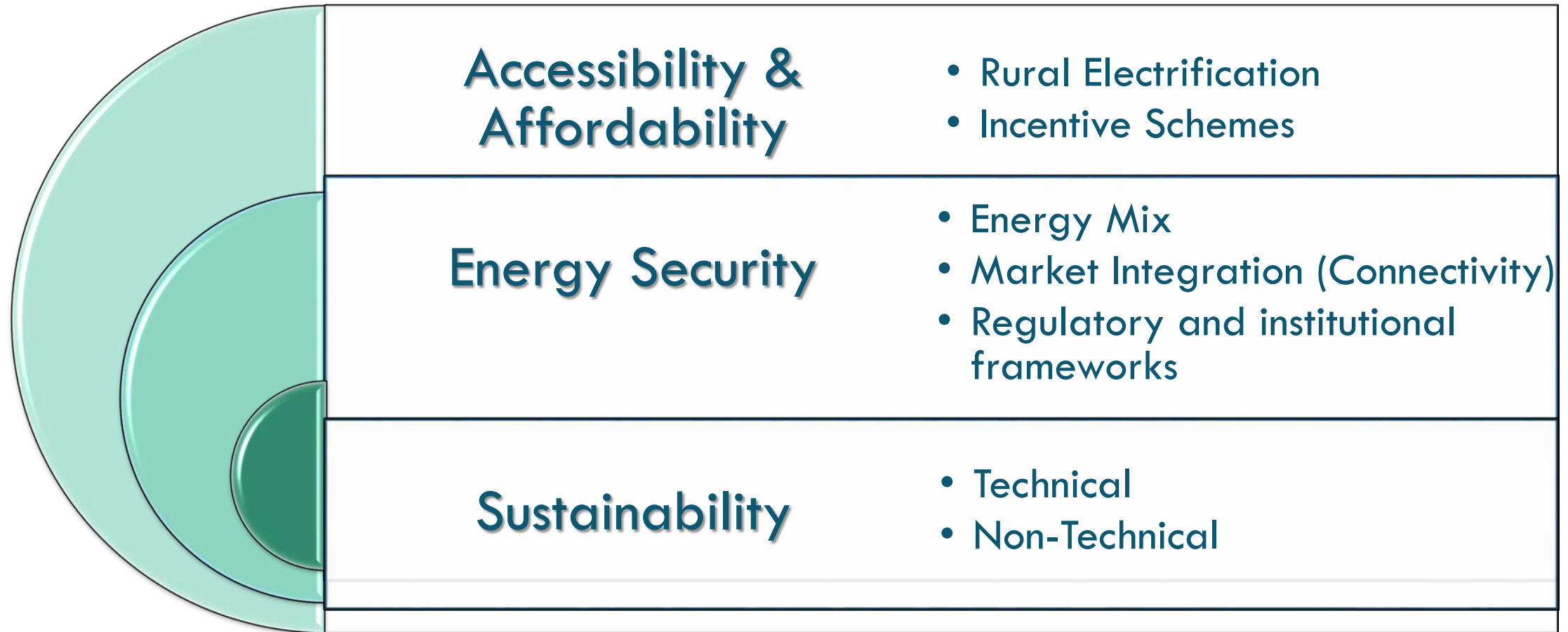
## **Nuclear for Civilian Use**

First unit in 2028  
(probable)  
Capability & Capacity  
Strengthen regional  
cooperation on nuclear  
Public awareness

**Increase Awareness  
and capacity**

## Conclusion : Energy Challenges in ASEAN

Energy generation/utilisation, combined with sustainable energy development, is one of the many challenges that we face in a world of economic prosperity, social development and environmental preservation.



**Thank you**