

# Meeting Net Zero and Sustainable Energy Financing Need in SEA

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# The ASEAN context

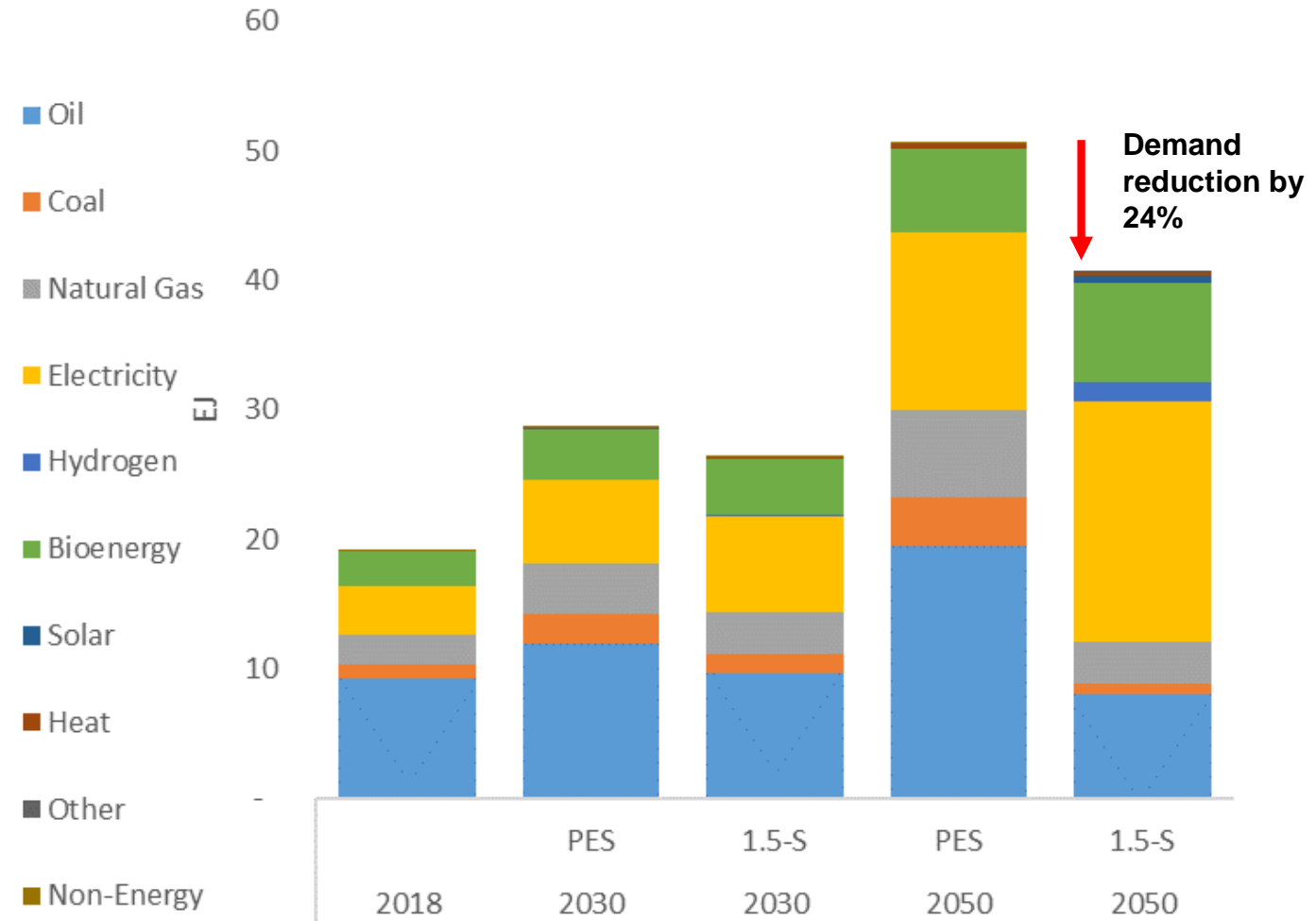
- Economic and population growth will result in a 2.5-fold increase in energy demand by 2050 in ASEAN.
- ASEAN still depends heavily on fossil fuels, around 86% of primary energy demand in 2021.
- The region has insufficient supply of fossil fuels for current demand and widening gap into the future. The ASEAN dependence on imported coal has increased continuously since 2005 (ACE)
- New push on global level to reach net-zero emissions around mid-century, and some ASEAN countries have already pledged to achieve net-zero emissions.
- Renewables have hit historic lows in terms of cost. ASEAN has significant untapped renewable energy potential.
- IRENA's has produced three new reports that highlighting region's potential pathways to decarbonized future:
  - Renewables Outlook for ASEAN: towards regional energy transition
  - Indonesia Energy Transition Outlook
  - Malaysia Energy Transition Outlook



# ASEAN energy demand growth and energy mix to 2050

- IRENA’s 1.5-S will see a big push towards electrification, renewables and energy efficiency, which will reduce energy demand by 22% compared to the Planned Energy Scenario (PES)
- Electricity will comprise 45% of the total final consumption in 1.5-S, compared to below 20% today
- Hydrogen will play a role especially in the industry sector and for international bunkering (not shown figure)
- Renewable direct use will grow, namely bioenergy, but fossil fuels will still be consumed
- Investments in energy efficiency make up around one-third of investment, with the EI rate increasing from 1.1%/yr to 2.5%

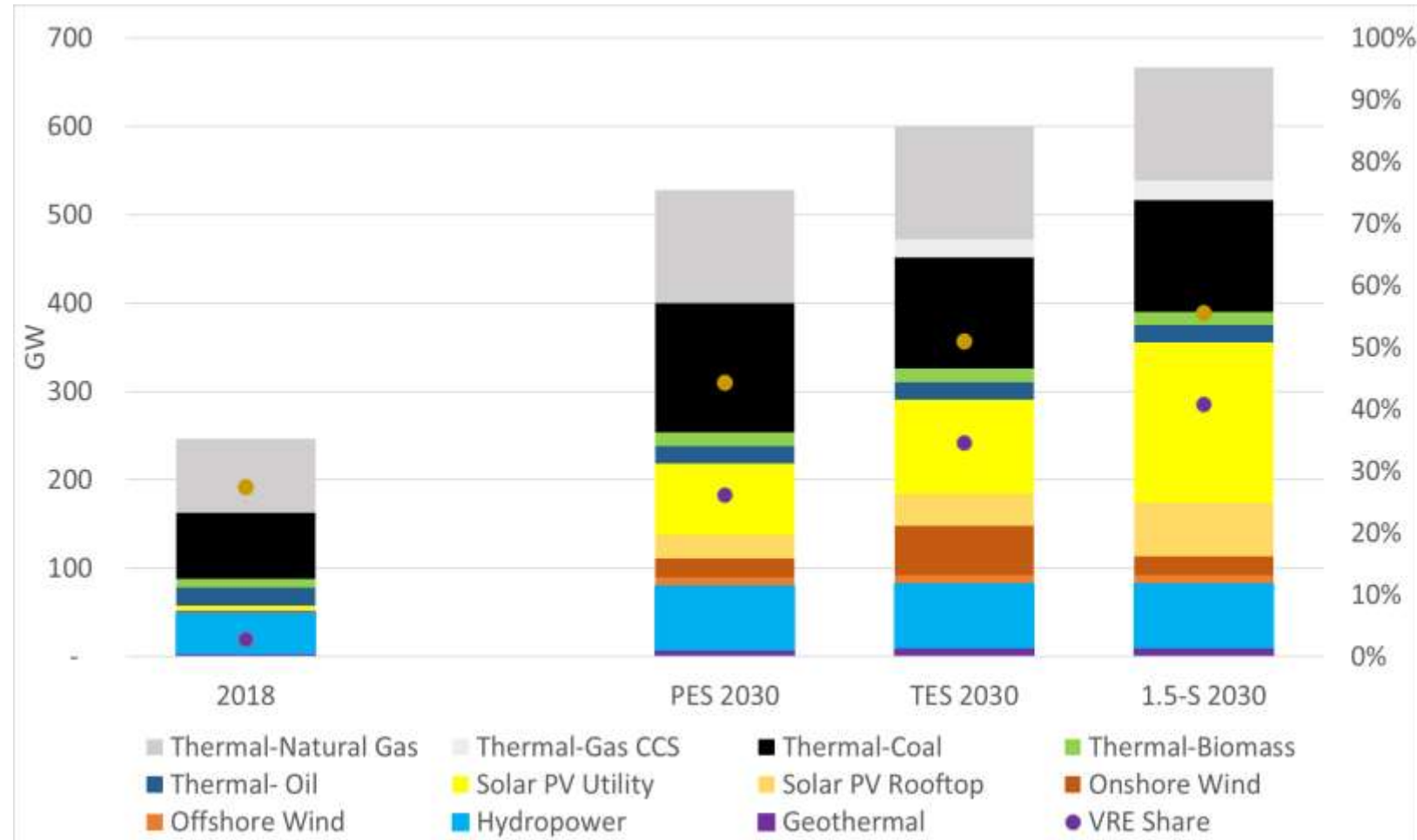
**Total Final Energy Consumption (EJ)**



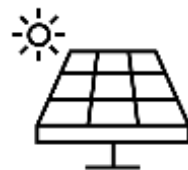
# Transforming the power sector

## Southeast Asia capacity expansion

- Scenarios ranging from the Planned Energy Scenario (PES) to a deep decarbonizing pathway (1.5-S), to understand further the RE implementation in the region
- Solar PV will rise to as high as 241GW. Wind installed capacity as high as 65GW.
- Regional interconnection will be key in enabling high shares of renewables



# Key investments opportunities to 2030

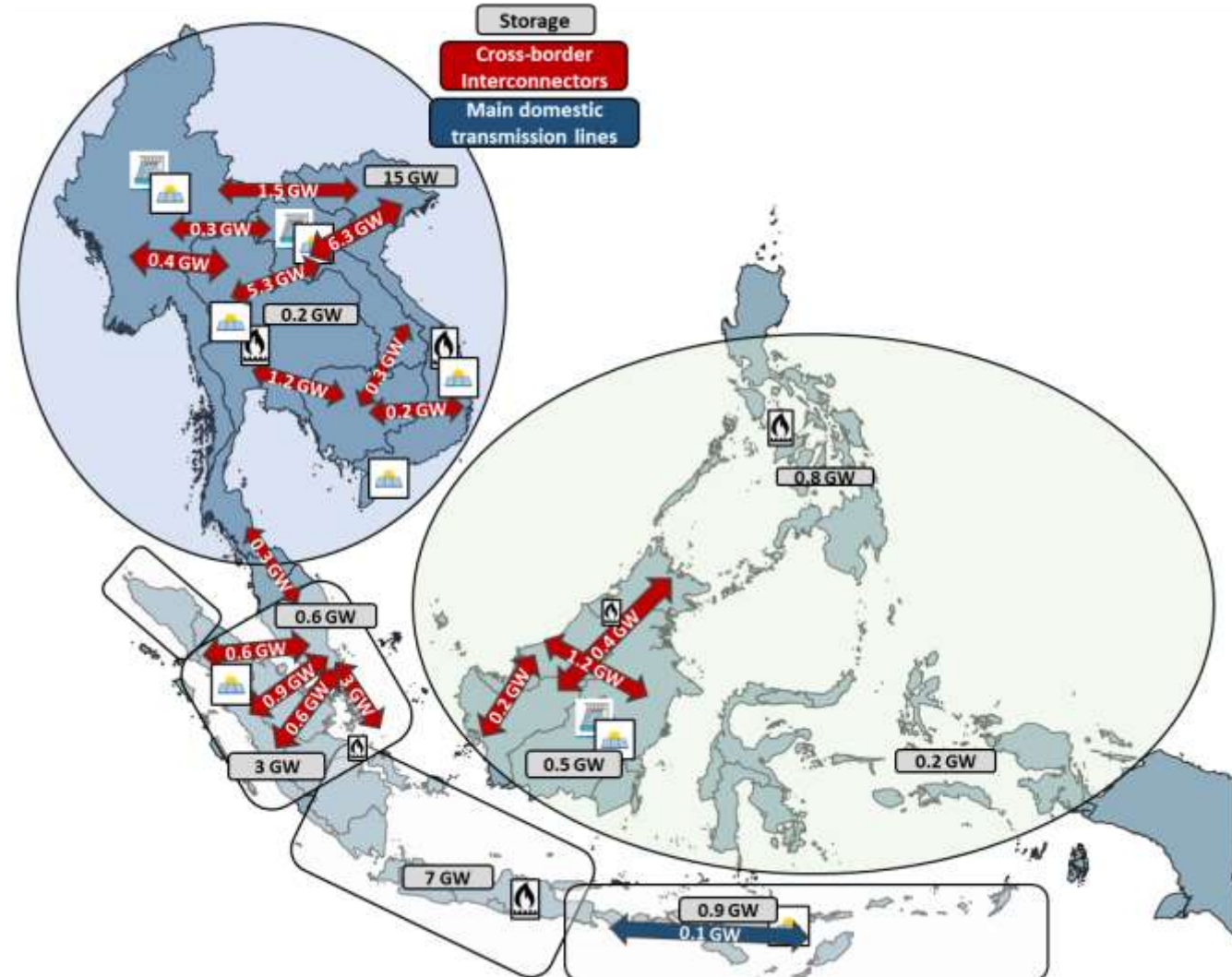


Sector	Technology	Investment to 2030
<b>Power</b>	Solar PV	156
	Hydro	56
	Other RE (non-hydro)	90
<b>Electrification &amp; Energy efficiency</b>	Energy efficiency	224
	EV Charging Infrastructure	47
<b>Grid &amp; Flexibility</b>	Transmission	92
	Distribution	69
	International Transmission	13
	Storage	8
	Biofuel Supply	66
<b>Total energy transition investment requirement (billion USD)</b>		<b>822</b>

# Transforming the power sector – interconnectors as key enabler

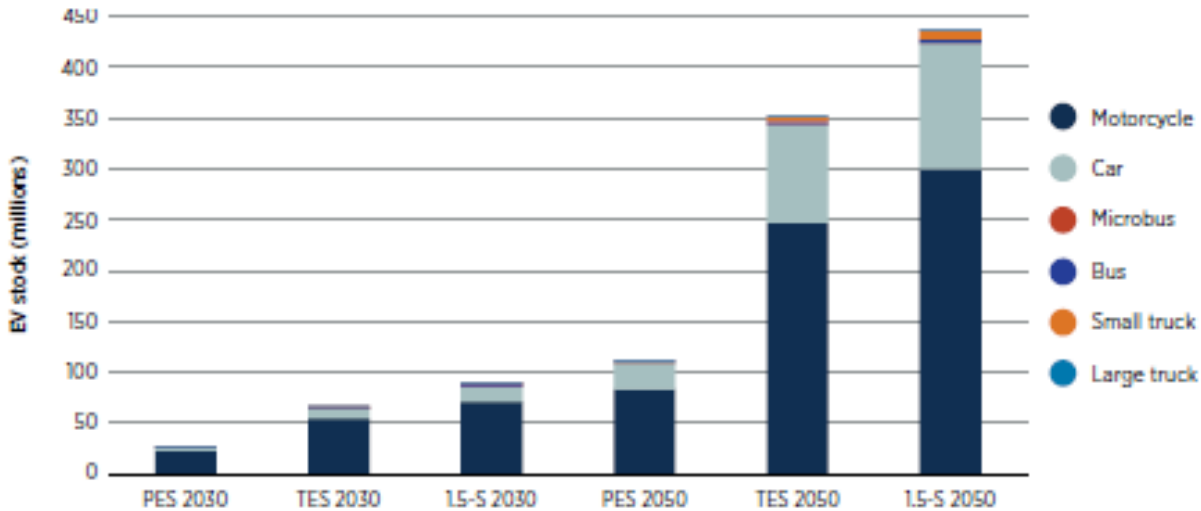
## Transmission and storage – ASEAN 1.5-S in 2030

- **Significant investments in grids**
  - Investments: up to 13 billion (international transmission), 92 billion (national transmission), 69 billion (domestic distribution)
  - Transmission planning should start today: Planning to commissioning takes 7-10 years
- **Storage is cost effective mainly starting in 2030s**
  - Investments: 8.5 billion

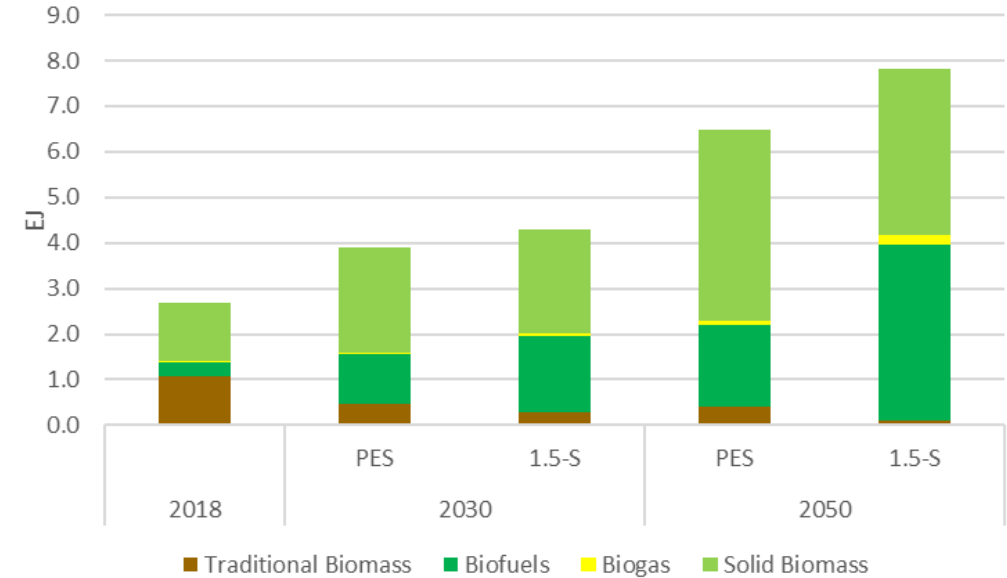


# The transport electrification, bioenergy role and green H<sub>2</sub>

- In the 1.5-S by 2050, **80% of all road vehicles will run on electricity**
- **Biofuel's** role is focused largely on **heavy-duty transport**.



Electric vehicles by type

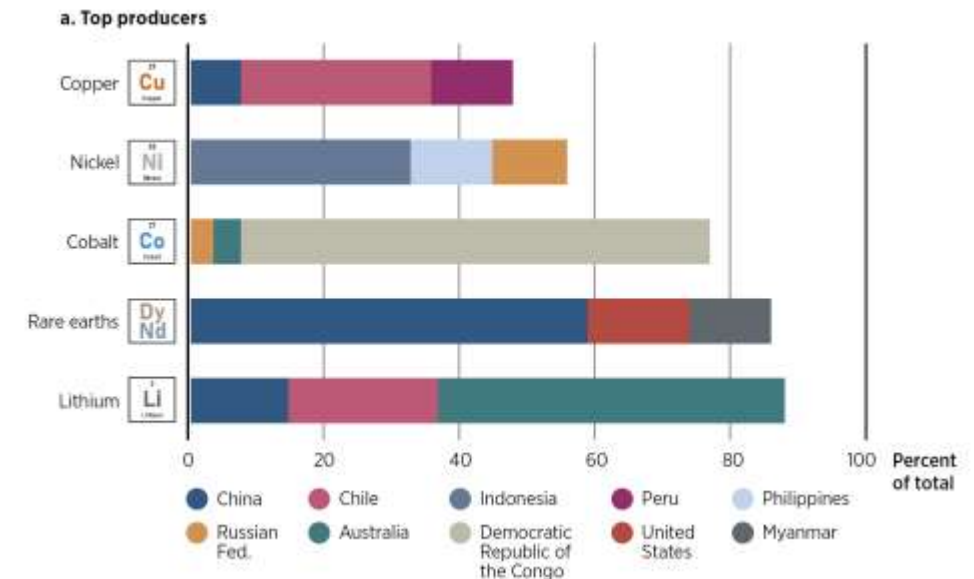
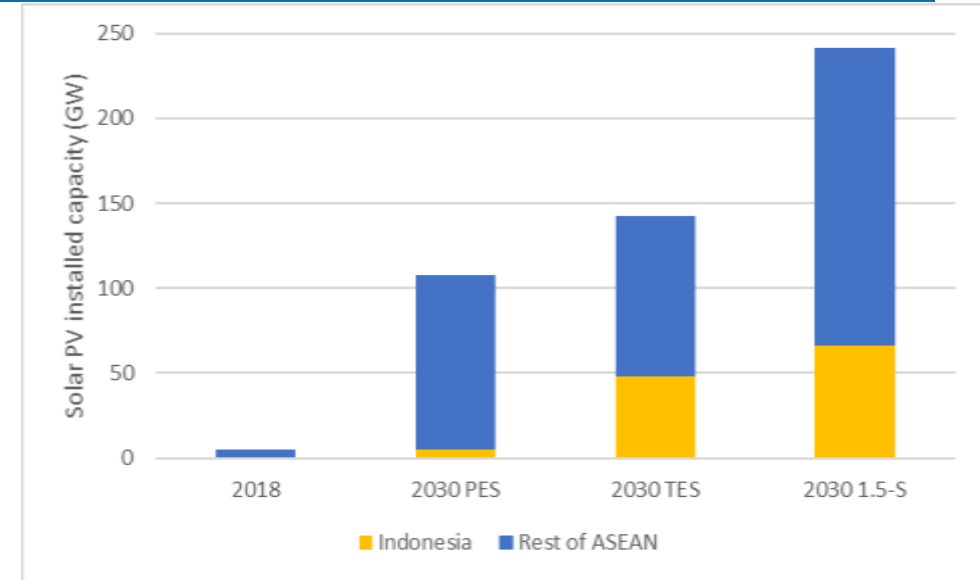


## Bioenergy consumption

- **Modern bioenergy** consumption will also need to increase from 2.7 EJ in 2018 to almost 8 EJ in 2050.
- **Green H<sub>2</sub>**, will comprise of 4% TFEC by 2050

# Opportunities in the supply chain

- Solar PV is key in power sector regardless the scenarios with capacity additions to 2030 ranging from 100 GW to as high as 245 GW.
- ASEAN countries are home for some of the critical materials needed for energy transition technologies manufacturing such as battery and PV modules.
- ASEAN regions projected EV stock and installed solar PV in the future, topped with abundance of renewables resources and critical materials, will attract foreign investment and couple the region's industry sector
- ASEAN region will benefit from economic gain, technology transfer, whilst reducing dependency towards non-indigenous fossil resources that will grow scarce and more expensive.





# Key points for ASEAN

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- The ASEAN region over the next three decades will see TFEC almost triple, electricity demand increase up to 5 times, energy GHG emissions double; all while indigenous domestic fossil fuel supply is shrinking and import dependency is rising
- To 2030, the RE share can increase to 26% of primary energy, up from just above 14% today. Longer-term to 2050 the RE share will rise to over two-thirds of energy demand, cutting energy-related CO2 emissions by 75% compared to PES in 2050, or less than half compared to today.
- To 2030 investments need to total just under 900 billion USD in ASEAN. Longer-term cumulative energy investment will need to triple to USD 6.3 trillion over the period to 2050, or around USD 200 bln/yr, plus 100 bln/yr for EVs.
- 64% of energy investments are for power generation, grids, storage and energy flexibility. In the 1.5-S RE 100 scenario, an additional USD 1.2 trillion will need to be invested in power capacity and enabling infrastructure by 2050 over the RE90.
- A significant opportunity exists to produce clean energy and for clean energy technology manufacturing.

Thank you

