

**ENERGY  
TRANSITION  
HUB**

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# Energy Transition to Renewable Energies: Opportunities for Australian cooperation with Vietnam

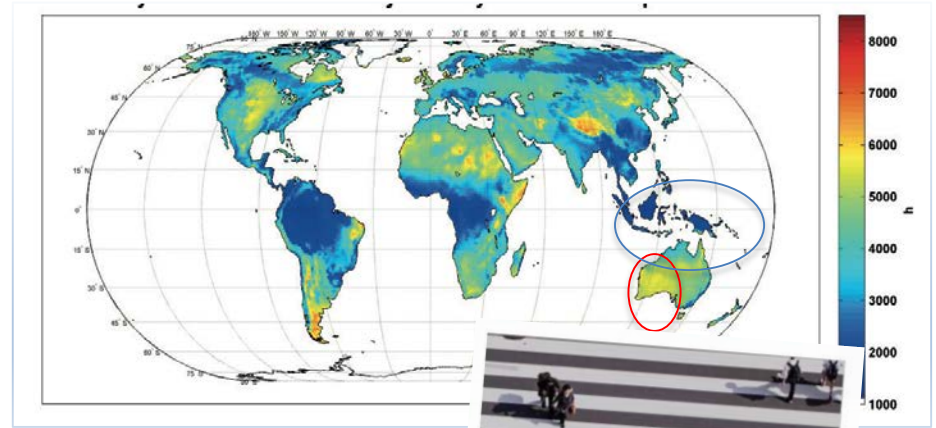
Presentation by Ursula Fuentes, Murdoch University

Authors of ETH briefing:

Anna Chapman, Tania Urmee, Caitlin Shem, Ursula Fuentes

# Hub Project - Opportunities for cooperation with South East Asia – federal and state level

- Close trade and political ties Australia and SEA
- SEA region developing very dynamically
- at a crossroads re energy system
- Challenge: to keep pace with economic growth
- ✓ implement the Paris Agreement
- ✓ and achieve sustainable development goals.



<https://www.energy-transition-hub.org/project/opportunities-energy-cooperation-south-east-asia>

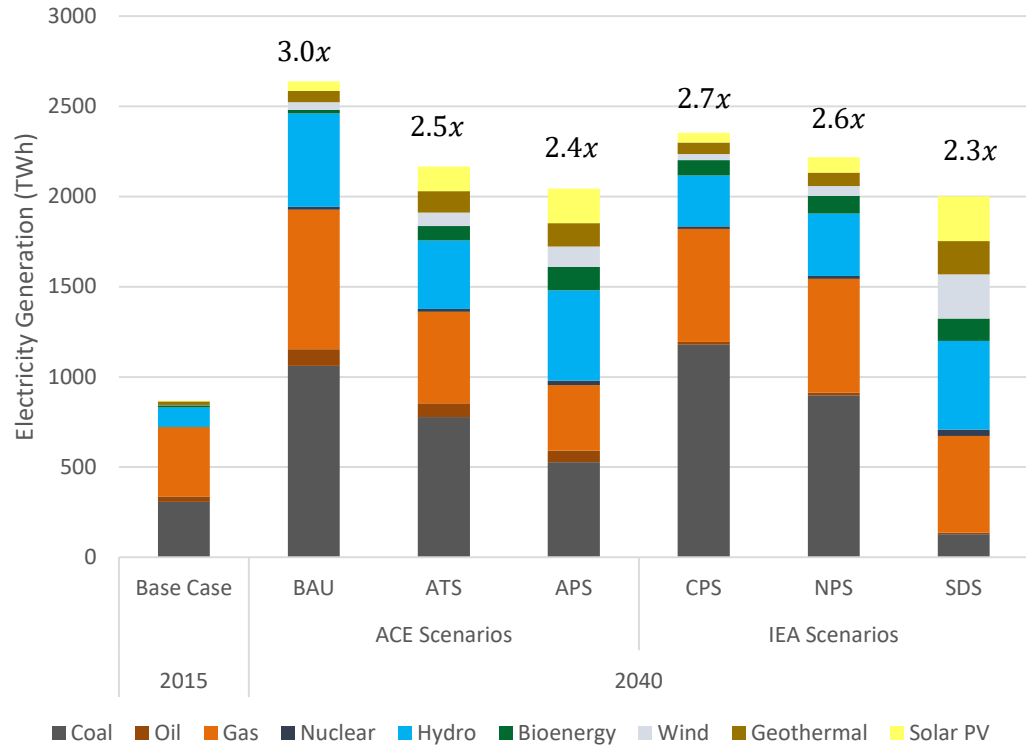
- How RE based pathways can benefit SEA
- How Australia could support this development
- Funder: DFAT (through Melbourne University)
- Briefing papers: ASEAN, Indonesia, Vietnam, Philippines
- Forthcoming: Scenario analysis/modelling – Western Australia



# SEA Electricity demand growing fast – coal dominating growth



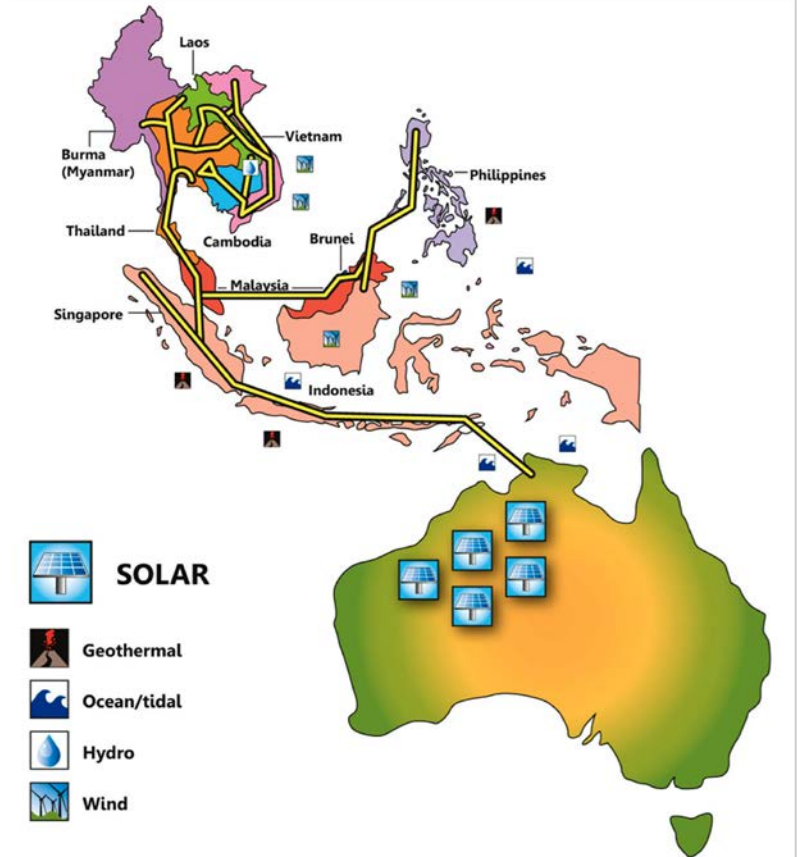
- Demand increasing at rates well above world average
- Currently electricity generation dominated by fossil fuels (83%)
- Significant fraction of projected global coal capacity growth
- Not consistent with PA



Electricity Generation in IEA and ACE Scenarios for 2040 (IEA 2017a, ACE 2017b)

# 100% Renewable Energy

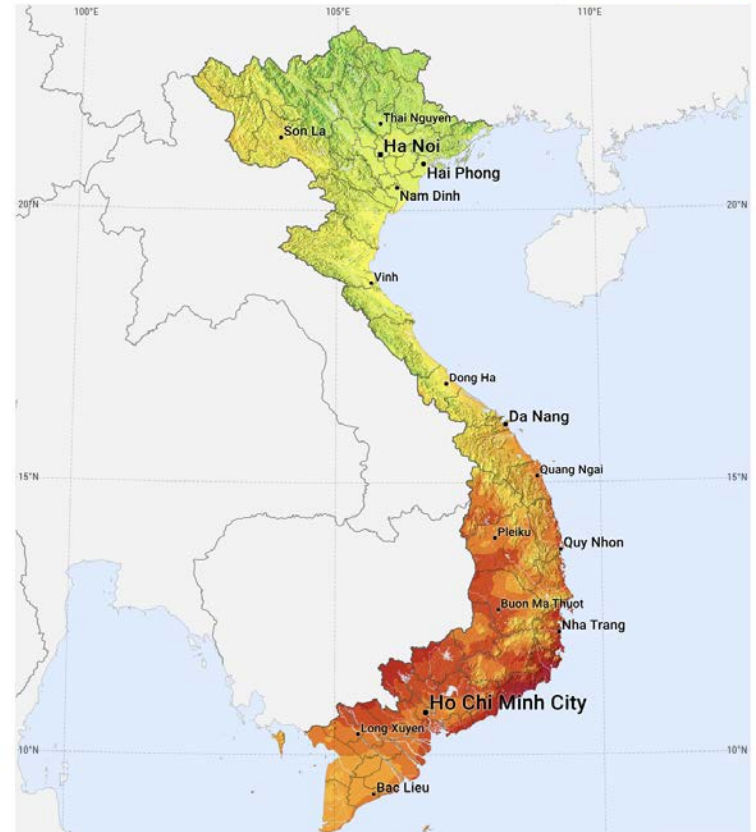
- RE and Storage technologies – costs falling
- Transmission grids for integration
- Sector coupling, electrification
- Green hydrogen
- Desalination, industrial demand
- More integrated analysis needed
- Opportunities for Australia and SE Asia



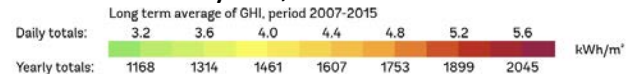
Source: Gulagi, Dimitri, Breyer: A Cost Optimized Fully Sustainable Power System for Southeast Asia and the Pacific Rim, Energies, 2017

# Vietnam background

- rapid economic and population growth
- one of the most energy-intensive economies in South East Asia
- 100% electricity access was achieved in 2016
- population and economic growth create mounting pressure on energy resources and heightening the need for a secure and sustainable energy supply
- GHGs have increased more than 50% in the past decade
- Vulnerable to climate change, currently updating NDC target.

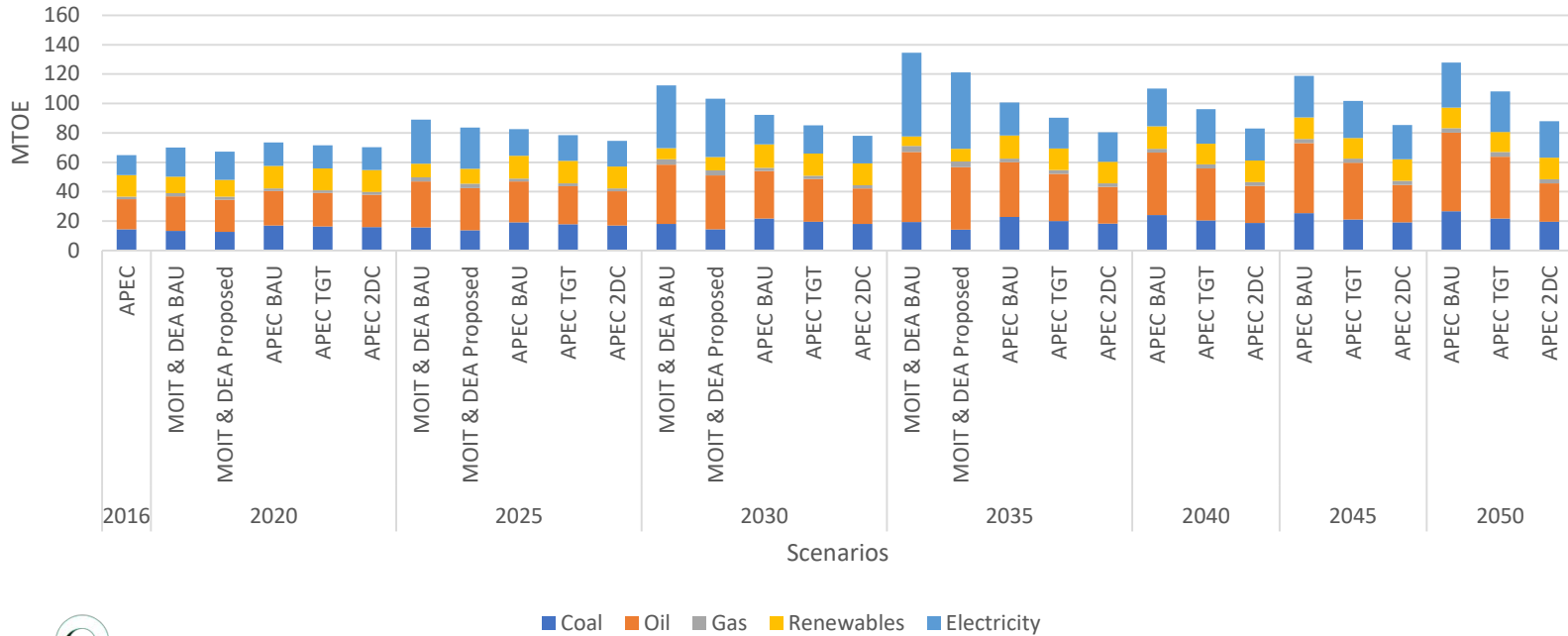


## Climate Analytics, 2019



# Vietnam energy systems at crossroads

## Final Energy Demand Scenarios



# Energy targets

Category	Policy and targets
Efficiency	Vietnam's National Energy Efficiency Programme 2019-2030 (VNEEP3): <ul style="list-style-type: none"><li>- Reduce total final energy consumption by 5-7% in 2025 compared to BAU levels, and by 8-10% in 2030</li></ul>
Electrification	Rural Electrification Programme: <ul style="list-style-type: none"><li>-to electrify rural Vietnam</li></ul>
Renewables	Renewable Energy Development Strategy (REDS): <ul style="list-style-type: none"><li>- increase renewable energy in the total primary energy consumption to 31% in 2020, 32.3% in 2030, 44% in 2050</li></ul>
Greenhouse gas emissions	NDC: 8% below BAU by 2030 or 25% below BAU conditional on international support. (excluding industrial processes)  National Green Growth Strategy 2011-2020: <ul style="list-style-type: none"><li>- reduce GHG emissions intensity by 8-10% below 2010 levels by 2020</li><li>- reduce energy consumption per unit of GDP by 1-1.5% per year</li><li>- reduce GHG emissions from energy activities by 10-20% below BAU</li></ul>

# Vietnam: Progress with Policies supporting RE

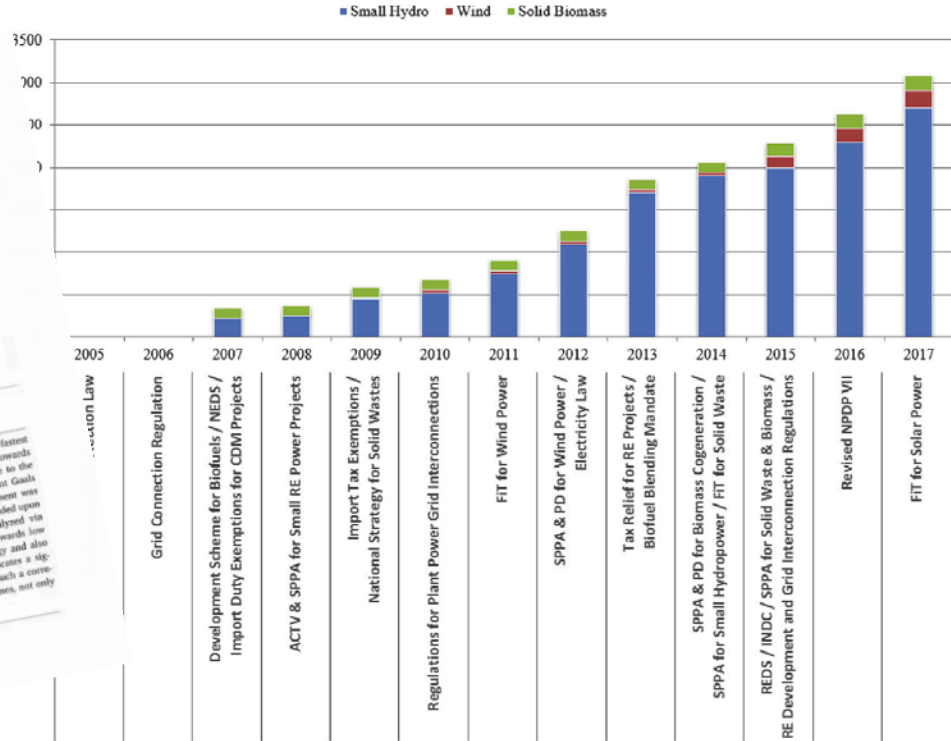
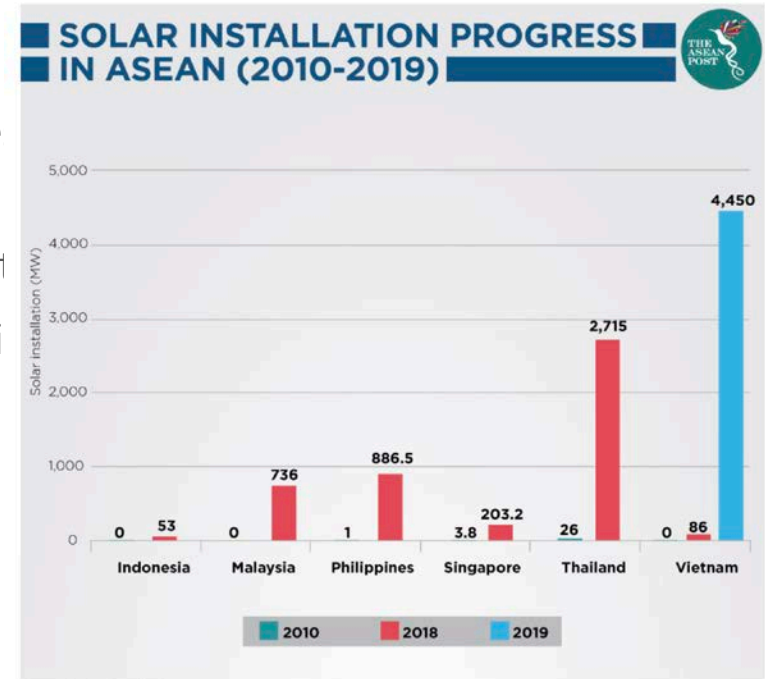


Fig. 14. Policy and renewable energy installed capacity timeline.  
Sources: collated from (ACE, 2016; MOIT and DEA, 2017; IRENA, 2018b).



# Policy gaps and barriers - and opportunities

- Balancing supply and demand regionally
- Indirect fossil fuel subsidies hinders renewable uptake
- Utility scale RE entails large upfront investment
- SOEs manage the energy sector, creating barriers for private market
- difficult to determine the level of implementation or success of policies.
- Many policy mechanisms, varying targets, creating competition not coordination.



Source: ASEAN Centre for Energy

Source ASEAN Post 12 Nov 2019

# Renewable energy potential and sustainable development - Investment opportunities

Investment in gas and coal, despite Paris Agreement commitment

Renewable energy, energy storage and energy efficiency cost effective

Benefits for Sustainable Development

- MOIT and DEA 2019
- APERC 2019
- Teske et al 2019
- Breu et al. 2019

Large RE potential – solar and wind

- utility scale solar: 48 GW
- onshore wind power: 40 GW
- offshore wind: 609 GW

(Teske et al., 2019)

- 2016: less than 1% of electricity generation

- ❖ Economic stimulus package in response to Covid 19 includes over USD 11 billion to support the economy (3.5% of GDP) (IMF 2020, as of April 22)

# Options for collaboration between Australia and Vietnam

Current focus on coal, no evidence of collaboration on RE. But options include :

- Support for studies into renewable energy expansion between Australia and Vietnam
- Support for energy efficiency projects to manage energy demand
- Collaboration on removing policy barriers, exchanging policy development, and attract investment in RE
- collaboration on phasing out coal, ensuring a just transition
- exploring options from renewable energy power based fuels: Options might include offshore wind, green hydrogen, HVDC transmission lines
- opportunities for green hydrogen export to Vietnam
- cooperation on updating both Australia and Vietnam's NDC pledge for 2020 and developing long term strategies towards net-zero emissions and 100% renewable energy

# Conclusion

Building on the strong partnership between Vietnam and Australia, and in line with the 2030 Agenda for Sustainable Development and the Paris Agreement, Australia can support Vietnam in transitioning to renewables through exploring:

- Opportunities for meeting Vietnam's energy demand with technology, infrastructure, and policy upgrades in renewable energy and energy efficiency.
- Opportunities to harvest the world-class renewable energy of Australia, particularly its solar and wind resources, and export green energy through hydrogen as a carrier, through an HVDC transmission line to South East Asia, and through energy intensive goods to help meet Vietnam's energy demands.
- Plus: Unprecedented opportunity to combine RE support with the economic stimulus package response to Covid-19.

The logo for the Energy Transition Hub, featuring a stylized, intertwined 'E' and 'H' shape in white, yellow, and blue. The text 'ENERGY TRANSITION HUB' is positioned to the left of the logo.

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# Energy Transition to Renewable Energies: Opportunities for Australian cooperation with the Philippines

Presentation by Anna Chapman, Murdoch University  
Authors of ETH briefing:  
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# Key Messages

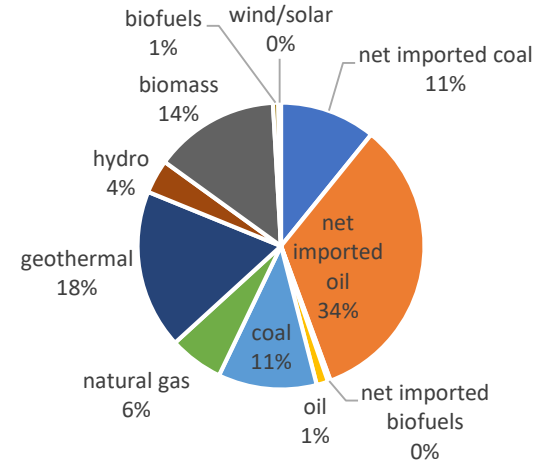
- power outages, numerous islands and increasing energy demand → need to diversify and decentralise power system with RE and storage
- COVID-19 health and economic crisis → importance of ensuring access to secure and affordable energy, Developing infrastructure focused on a low carbon economy
- Highly vulnerable to climate change → Meeting Paris target and SDGs
- Studies show the potential to meet targets is there. → Remove barriers to RE, and redirect fossil fuel investment, regional cooperation.

# Philippines background

- Electricity outages
- Intensifying energy demand
- Electrification underway, - many islands, needs to be affordable
- two major electricity grids connecting the islands of Luzon, Visayas and Mindanao
- 132 small isolated island grids powered mainly by diesel generators
- Some political support for RE, but RE has not kept up with demand

# The Philippines energy systems at crossroads

- Energy supply dominated by fossil fuels 63%
- Renewables 37%
- Net fossil fuel importer
- Imports 44% of the TPES
- Dependent on oil imports for transport and coal for power.
- Coal risks grid instability displacing peaking plants, stranded assets and increased emissions

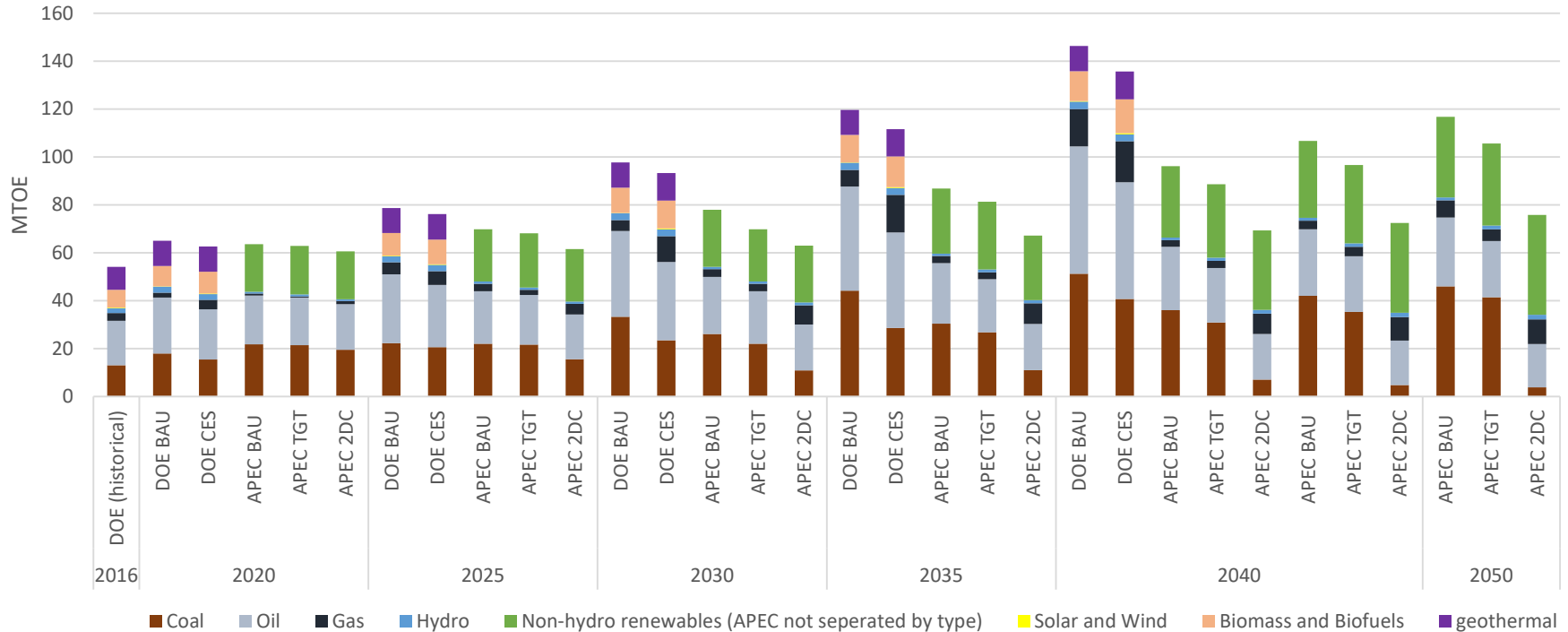


*Philippines Total Primary Energy Supply.  
Data from DoE 2017c.*



# Energy Sector Projections and Scenarios

Total Primary Energy Supply (MTOE)



# Energy and climate targets

<b>Electrification:</b>	Achieve 100% electrification by 2022 for targeted households (accessible to the grid) and 2040 for off grid areas
<b>Renewable energy:</b>	Triple renewable energy capacity from the 2010 level by 2030, i.e. 5.4GW to 15.3GW Increase renewable energy capacity to at least 20 GW by 2040
<b>Efficiency:</b>	Reduce aggregate energy intensity by 25% in 2030, and 45% by 2035 from 2005 levels
<b>Greenhouse gas emissions</b>	Paris Agreement Intended Nationally Determined Contribution: 70% below BAU by 2030 conditional on international support.

# RE Policies

- Renewable Energy Act 2008
  - Renewable Portfolio Standards
  - Feed-in-tariff
  - Green Energy Options Program
  - Net Metering.
- 2020: Green Energy Tariff Program

# Investments, trade and international relations

- Executive Order 30 establishing the Energy Investment and Coordinating Council to simplify approvals and permit processes.
- Investment in (non-hydro) renewable energy is growing, with an estimated compound annual growth rate of 11.2% from 2018 to 2030 (GlobalData 2019).
- businesses are seeing the need to divest from coal.
- The Green Energy Tariff Program (GETP) planned for 2020 is expected to spur further renewable investment.
- Covid-19: Finance Secretary has proposed an economic stimulus plan, with Pillar Four (valued at P830.47 billion) aimed at economic recovery to invest in social and infrastructure programs

# Renewable Energy Potential

## RE potential capacity:

- Hydro 10,000 MW
- Geothermal 4,000 MW
- Wind 76,600 MW
- Ocean 170,000 MW
- Biomass 500 MW
- Solar 5 kWh/m<sup>2</sup>/day

(DOE 2019)

## Summary of studies:

- Replace FiT with other subsidies to reduce total system cost by 22% (Mondal et al 2018)
- 30% and 50% RE achievable for electricity generation by 2030 for Visayas and Luzon grid. (USAID and DOE 2018).
- PV – battery systems are favourable for most offgrid islands. (Meschede 2019).
- Submarine cables cheapest for 35 islands, and RE based hybrid system for most islands (Bertheau and Cader 2019).
- One Earth Climate Model developed decarbonization pathways to limit global warming to 1.5°C above pre-industrial levels, through 100% renewable energy by the mid century (Teske et al. 2019).

# Renewable energy → Sustainable development

- Clean and affordable energy (SDG 7)
- Energy Security and lower prices (not relying on volatile price of diesel)
- Reduced air pollution
- Society benefits – community cohesion, social mobilisation etc

# Policy gaps and barriers

- Limited political commitment
- Government support for coal
- Institutional framework lacks effective coordination
- Grid Challenges
- Regulatory instability and uncertainty
- Policy framework issues
- Permit issues
- Foreign ownership
- Lack of capabilities and resources
- Keeping up with innovation
- Public perceive coal as cheap and affordable

# Options for collaboration between Australia and Philippines

- Research to determine a 100% renewable energy pathway for the Philippines with international support and opportunities for renewable energy imports
  - Remove barriers to renewable energy uptake and investment, and develop options for further renewable energy supportive policies
  - Develop together grid infrastructure and renewable energy capacity building programs
  - Work jointly on issues related to climate vulnerability and resilient energy systems
- Support research and implementation to help reduce the energy demand



# Conclusion

Developing the PH – AUS partnership in line with the 2030 Agenda for Sustainable Development and the Paris Agreement, AUS can support the PH in transitioning to renewables:

- Opportunities for collaboration between the two countries to meet the Philippines energy demand throughout the islands with technology, grid infrastructure, microgrids and off-grid solutions, removal of policy barriers and policy upgrades for electrification and renewable energy, taking into account high vulnerability to climate change.
- Opportunities for Australia to export renewable energy, including through hydrogen to meet the Philippines energy demand and reduce its fossil fuel import dependence.
- Opportunities for the best use cases in the Philippines for renewable hydrogen imports in different economic sectors.