



Centre for Strategic
Energy and Resources



ISETS
INTERNATIONAL SOCIETY FOR
ENERGY TRANSITION STUDIES

Charting Singapore's Net-Zero future

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Founding Member, Council Member, Honorary General Secretary, ISETS

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About the Co-founder, Dr Victor Nian



Founding Member, Council Member, and Honorary General Secretary, International Society for Energy Transition Studies.



Founder and Executive Director, UNiLAB on Integrated Systems Analysis Tools.



International Expert, Asia Carbon Institute



Consultant, ASEAN Centre for Energy.



EXCO (Associate) Member, IEA Energy Technology Systems Analysis Programme.



Associate trainer, Civil Service College, Singapore.



Affiliated Expert Member, Global Energy Interconnection Development and Cooperation Organisation.



Consultant, Asian Development Bank Institute.



Global advisory board member of the India-based Lodha & Co's ESG section.



Founder and Chairman, Applied Micro Systems Pte Ltd – a carbon and sustainability research & consulting company.



Visiting Fellow, Hughes Hall, University of Cambridge.



Adjunct Full Professor, Tianjin University of Commerce.



Visiting expert, Shanghai Maritime University

Overview

The Centre for Strategic Energy and Resources (CSER) is an independent think-and-do tank with a global headquarters in Singapore.

What we do:

We build enabling ecosystems to accelerate energy transition and platforms for communicating strategic issues in energy and sustainability in Asia.

What we believe:

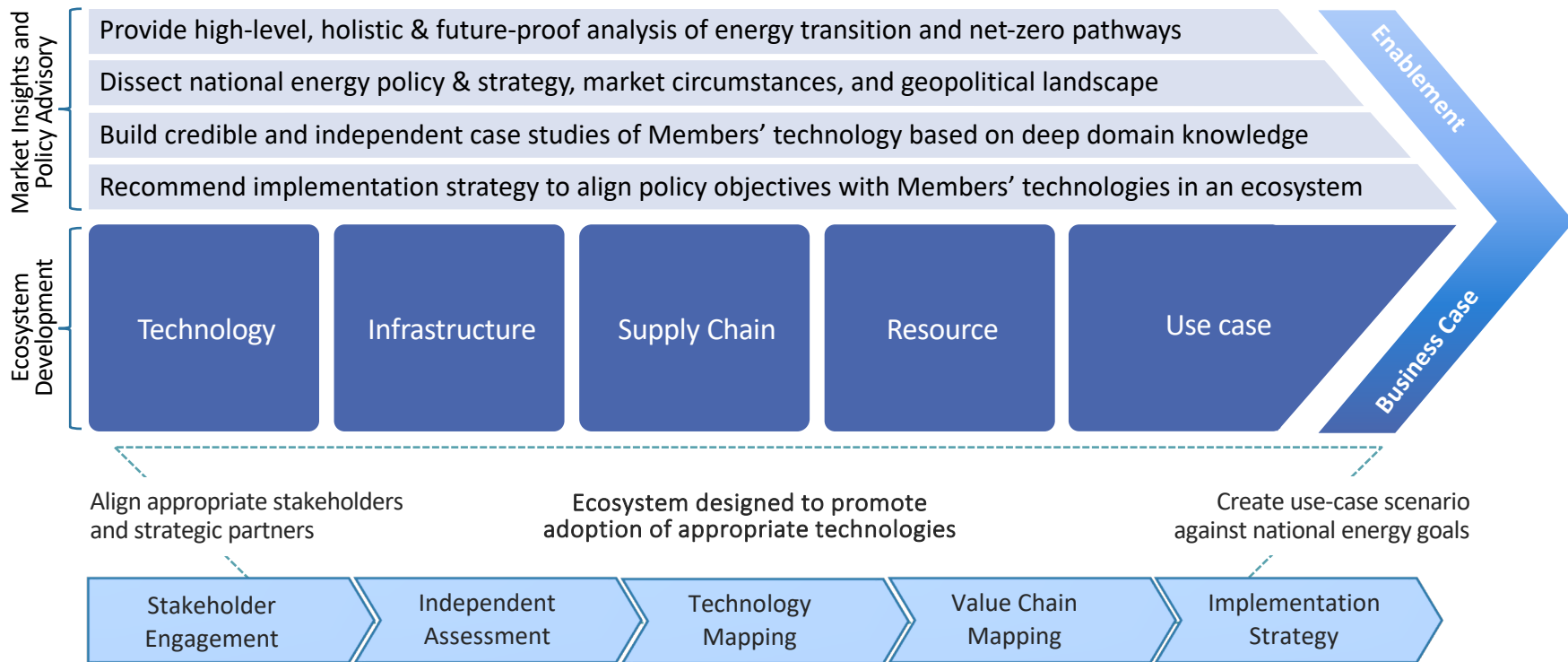
“Knowledge and innovation without borders.”

What we value:

- Network of experts from 50+ countries and organisations.
- Independent, evidence-based, and unbiased views.
- Innovative, practical and nationally appropriate solutions.



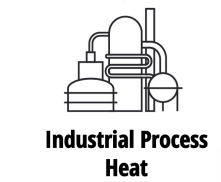
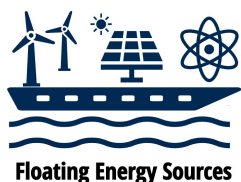
CSER builds enabling ecosystems to accelerate energy transition in Asia



An example of CSER's clean energy ecosystem concept

Offshore floating multi-utility complex

- Climate adaptation measure with future-proof infrastructure
- Multiple downstream use cases serving the needs of multiple economic sectors
- Safe, secure, clean and affordable energy supply supported by flexible ownership models
- Consortiums of companies mapped along the value chains.
- A platform for public and private sector stakeholders to collaborate and accelerate energy transition.



- Water Desalination**
Solving the water scarcity problem
- Specialty Chemicals**
Providing centralised heating for specialty chemical industry clusters
- RHVAC system**
Delivering tri-generation option

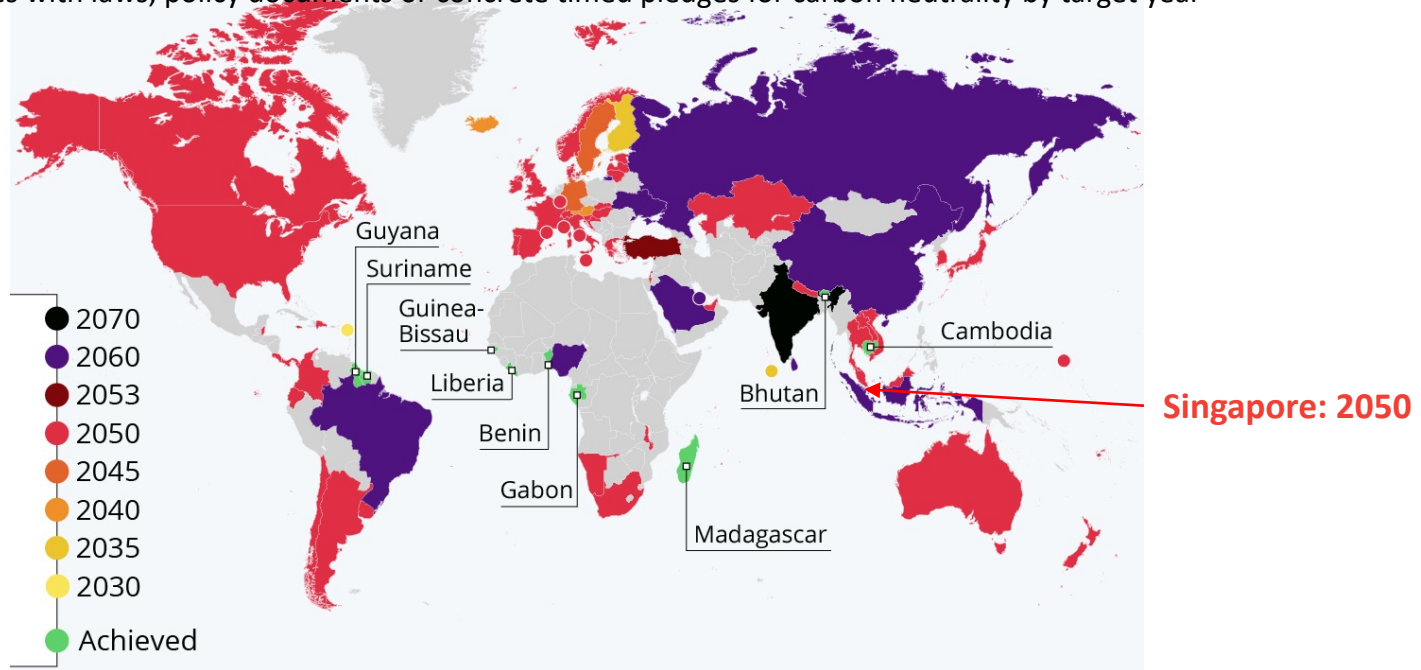
- Industrial Applications**
For direct use in steel production and oil refining processes
- Road and air transport**
For direct use in fuel cells for cars, buses and airplanes
- Electricity re-generation**
Blending Hydrogen into natural gas fired power plants

- Hydrogen Carrier**
Solving the transportation issue for hydrogen
- Marine Fuel**
For ships and offshore units
- Fertilizer**
For use in agriculture

Green & low-carbon transition: the world's most urgent mission

The Road to Net Zero

Countries with laws, policy documents or concrete timed pledges for carbon neutrality by target year



- As of May 2022, **127 countries** have proposed or are prepared to set carbon-neutral targets, covering **90%** of global GDP, **85%** of the total population, and **88%** of carbon emissions.
- However, fewer than a quarter of announced net zero pledges are fixed in domestic legislation and few are yet underpinned by specific measures or policies to deliver them in full and on time.

Plans for addressing energy security and sustainability

October 2019: The “4 Switches”



Our Energy Story

The energy sector has come a long way over the last 50 years and now faces new challenges from climate change. As part of the whole-of-nation movement towards greater sustainability, our energy future will be guided by these 4 Switches:

- Solar
- Natural Gas
- Regional Power Grids
- Low-Carbon Alternatives



February 2021: The “Green Plan 2030”



March 2022: Energy 2050 Committee Report

Transformational changes for Singapore's power sector to reach

NET-ZERO BY 2050



SUPPLY

Decarbonising our power supply with more solar, electricity imports and low-carbon alternatives.



GRID

Building a smarter power grid to support the adoption of cleaner energy.



DEMAND

Managing energy demand and encouraging energy conservation.



Using cleaner energy sources across all sectors



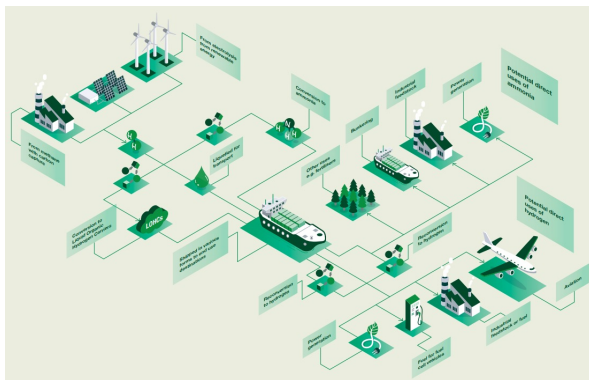
HDB rooftop PV



Floating solar PV system on Tengeh Reservoir



Energy storage project of Jurong Island



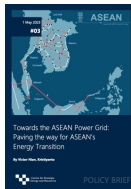
Singapore's National Hydrogen Strategy:
major decarbonisation pathway



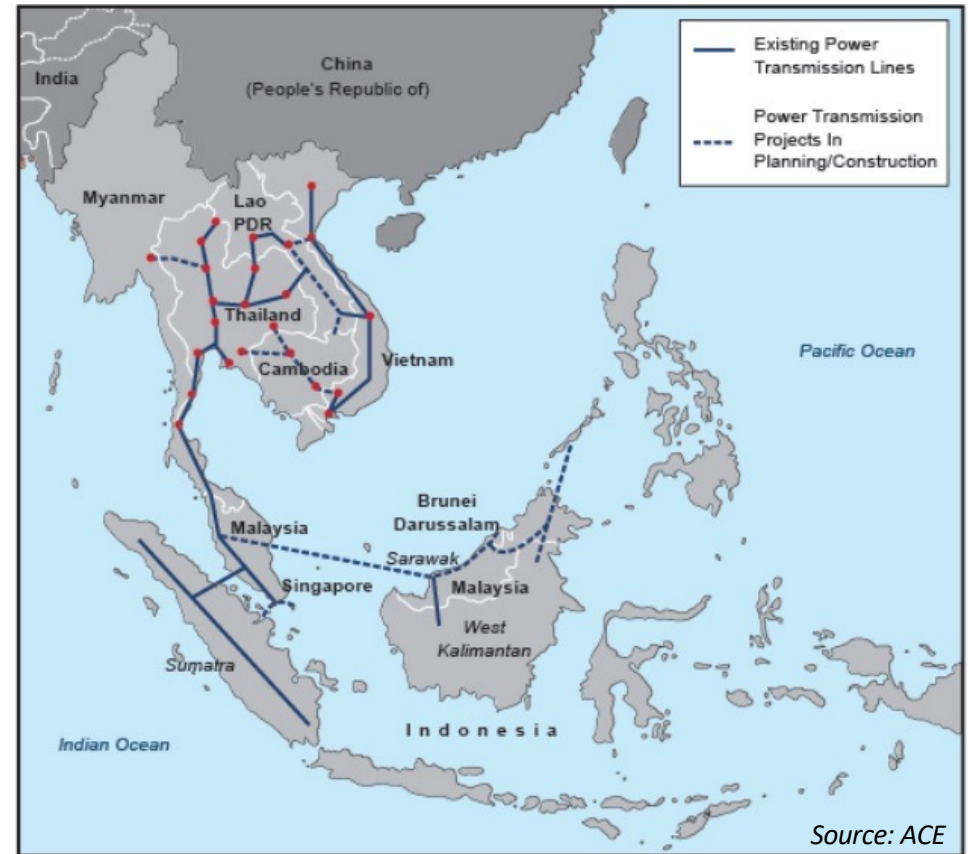
Regional power grids: import 4GW of low
carbon electricity by 2035

ASEAN Power Grid (APG) Initiative

- LTMS-PIP: enable access to carbon-free electricity from Laos
- Opportunities:
 - Matching green electricity supply with energy hungry megacities and industrial clusters
 - Moving towards a regional integrated market framework for electricity trade
- Challenges:
 - A fair, transparent, and robust regional energy market framework for electricity trade
 - Geopolitical and other external factors impacting the security, reliability and affordability of APG



CSER Policy Brief: Towards the ASEAN Power Grid: Paving the way for ASEAN's Energy Transition, 1 May 2023.



Source: ACE

- A portfolio approach to addressing our energy and climate change issues
- Public private partnership in developing nationally appropriate mitigation actions
- International collaboration in driving energy transition and sustainable development effort



Centre for Strategic
Energy and Resources

Join our ecosystem and gain access to strategic insights on energy transition

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