Energy Cooperation & Prospects for ACMECS

Setting the scene

2nd Mekong – Australia Policy Dialogue: Energy & Electricity Futures for ACMECS Members

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Overview

I. Trends in electricity access (SDG7) & Demand

- 1. Progress and barriers for universal, reliable, electricity access
- 2. Energy demand as a driver for electricity sector

II. Trends in electricity generation

- 3. Role & trends in Hydropower
- 4. Role & trends in Fossil Fuels

II. Opportunities for a sustainable electricity transition

- 5. RE Technology
- 6. Investment
- 7. Regional connectivity
- 8. Demand side Management
Achieving the SDGs
Trends in electricity access & demand
Universal electricity access
Rapid expansion of national electricity grids but challenge of last mile connections, service reliability and low consumption

Enabling factors
- Political commitment
- Public investment
  - Transmission
  - Rural electrification (inc. decentralised electricity systems)
- Mechanisms for private investment in generation
- Availability of domestic hydropower & fossil fuels

Challenges
- Reaching last mile communities is difficult & uneconomic with grid
- Quality & reliability in rural areas
- Reliance on traditional energy sources.
- Low levels of consumption (tiers 0-2)

Access to electricity (% population)
Source: World Bank, 2020, World Development Indicators Database
Electricity Demand
Higher growth rate than GDP and likely so in the foreseeable future

EXHIBIT 2
Growth in GDP and Electricity Demand

Notes: Primary Vertical Axis: billion kWh
Secondary Vertical Axis: Billion 2010 USD

Demand elasticity to GDP (2005-2018):

- VN 1.9 – 2.3 (max 2005)
- Thai 0.85 – 1.2 (max 2010)
- Laos: 0.84 – 2.4 (max 2010)
- Cambodia 2.0 – 2.8 (max 2015)
- Myanmar 0.1 – 2.25 (max 2015)
Meeting the demand
Trends in electricity generation
Hydropower

Abundant resource catalysing early growth in national power sectors

Thailand develops hydro for domestic supply

Vietnam develops hydro for domestic supply

Laos scales hydro development for power exports with smaller contribution to domestic supply

Cambodia develops hydro for domestic supply & exports

Myanmar develops hydro for domestic supply

Source: World Bank, 2020, World Development indicators Database & IEA for 2018

% hydropower in national generation mix
Fossil Fuels
CLMTV is a region of increasing carbon intensity

Grid emission factor (kg CO2/kWh)

EXHIBIT 4
Carbon intensity of national power sectors

Source: Author calculations based on IEA data and IPCC guidelines
Decarbonising CLMTV
Opportunities for a sustainable electricity transition
Technology
Rapid deployment of non-hydro RE led by policy incentives & falling costs but not yet at scale needed

EXHIBIT 5
CLMTV Electricity transition in 2019 (units are MW)

Source: IRENA Data and statistics tool 2020

Enabling factors
- Falling tech. costs
- Policy incentives

Challenges
- Variable generation
- Grid integration
- System change.

Source: IRENA Data and statistics tool 2020
Private – sector Investment
Private sector investment increases 10X since 1996, overwhelmingly generation (coal + hydro)

EXHIBIT 6
Cumulative investment (left) and by technology type (right) invested in by private sector

Source: World Bank, PPI data base 2020
Demand management
Thailand and Vietnam have embarked on Demand side management however still substantial room to for deployment in all countries

Energy Efficiency
- Reduce energy consumption
- Key measures include: Enforcement of building code, MEPS deployment and promoting greater use of LED.

Distributed Energy Resources
- Behind the meter energy generation
- Rooftop solar has been deployed in Vietnam and Thailand
  - Vietnam 1 GWp in 20 months, 2GWp in 24months, maybe 3GWp in 26months!
  - Thailand: introduced roof top solar 2013-2015 but not as successful due to cancellation of the FIT.

Demand Side Management
- Financial & educational measures to reduce peak load
- Targeting large consumers
- Most successfully used in Thailand with price incentives
- Vietnam has a voluntary DSM scheme
Regional electricity trade
Renewables & Hydro offer opportunities to take advantage of super & sub-national scales

- Super-grids (all)
  - More efficient & economical
  - Allow increasing share of variable RE
  - Less curtailment
  - Lower reserve margins

- Distributed grids (Myanmar, Cambodia)
  - Faster progress on universal electricity access for rural areas
  - More economic national power system
  - Higher RE penetration

Source: ASEAN Power Grid Summit 2018
All are entry points for the renewable energy transition
Thank you...