Long-Term Energy Scenarios (LTES) for developing national energy transition plans in Asia.

Webinar series

Peninsular Malaysia Generation Development Plan

Mohd Rizal bin Ramli
Suruhanjaya Tenaga / Energy Commission Malaysia
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Presentation Outlines

1. Development of scenarios
   • Regulatory overview
   • Planning governance
   • Moving Forward: Integrated System Planning

2. Use of scenarios
   • Purpose of scenario planning
   • Communication of scenario results

3. Scenario capacity building
Regulatory Overview

Minister of Natural Resources, Environment and Climate Change
- For matters relating to the supply of electricity

Ministry of Economy
- For matters relating to the supply of gas through pipelines (natural gas & LPG)

Suruhanjaya Tenaga (Energy Commission)
- A statutory body responsible for regulating the energy sector, specifically the electricity and piped gas supply industries, in Peninsular Malaysia and Sabah.

Electricity Supply and Piped Gas Industries

Electricity Supply Industry Structure in Peninsular Malaysia

- Ministry of Natural Resources, Environment and Climate Change (NRECC)
  - Suruhanjaya Tenaga (ST)
  - Single Buyer
  - Grid System Operator
  - Generators with PPA/SLA
  - NEDA Participants
  - Interconnections
  - Oversight Panel Chaired by ST
    - Members:
      - Suruhanjaya Tenaga (ST)
      - Representatives from NRECC
      - Industry experts appointed by ST
  - Ring-fenced dept. within TNB
    - TNB Grid
    - Franchised Retailers
    - TNB Retail
    - Consumer

PPA: Power Purchase Agreement  SLA: Service Level Agreement  NEDA: New Enhanced Dispatch Arrangement  TNB: Tenaga Nasional Berhad
Planning Governance

- **JPPPET has been mandated by the Cabinet** to determine the planning and direction of the country’s electricity supply industry.

- **JPPPET membership:**
  1. Secretariat - Ministry of Natural Resources, Environment and Climate Change (NRECC)
  2. Ministry of Finance (MOF)
  3. Ministry of Economy (MOE)
  4. Ministry of Investment, Trade and Industry (MITI)
  5. Ministry of Utilities Sarawak
  6. Economic Planning Unit Sarawak, Sabah
  7. Energy Commission (ST)
  8. Sustainable Energy Development Authority (SEDA)
  9. Tenaga Nasional Berhad (TNB)
  10. Sabah Electricity Sdn. Bhd. (SESB)
  11. Petroliam Nasional Berhad (PETRONAS)

- Demand projection considering emerging trends (e.g., EE, EV, RE)
- System reliability assessment
- Fuels projection
- New capacity requirement
Moving Forward: Integrated System Planning

- **System Development Plan** to be introduced to integrate both the generation and transmission components in the planning process.
- Planning scenarios to reflect future uncertainties involving **decentralization and decarbonization** of demand and supply outlook.
Use of scenarios

Purpose of scenario planning

- Input
  - Fuel Market Data
  - Scenario Demand & Energy Forecast
  - Scenario Drivers (e.g., gov't, policy)
  - Potential Candidates
  - Transmission Network Expansion

- Generation Capacity Outlook Model (LT Phase)
  - Generation expansion retirement and storage
  - Estimate tariff
  - Unit commitment outcome

- Generation Time-sequential Model (PASA, MT, ST Phase)
  - Test and confirm system reliability and operability
  - Identify preferred capacity expansion options

- System Development Plan

- Transmission Engineering assessment
  - Potential sites review and nodal assessment
  - Assess and select additional transmission options
  - Power system analysis

- System Development Statement

Communication of scenario results

- Report publications
- Stakeholder engagements

LT: Long Term  MT: Medium Term  ST: Short Term  PASA: Projected Assessment of System Adequacy
Scenario capacity building

In-house modelling capacity

- Actively engaged in user group meetings with global industry-leading energy modelers
- Participate in technical training with integrated assessment model consultant

Collaboration among agencies/institutions for scenario development

- Kementerian Sumber Asal Alam Sekitar dan Pertanian (KSAAS)
- Kementerian Ekonomi
- Suruhanjaya Tenaga (ST)
- Seda Sistem Operasi (SSO)
- Grid System Operator (GSO)
- Single Buyer
- Sarawak Energy
- PETRONAS
- IEPRe
Thank you for your attention

IRENA
International Renewable Energy Agency

ESCAP
Economic and Social Commission for Asia and the Pacific

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