

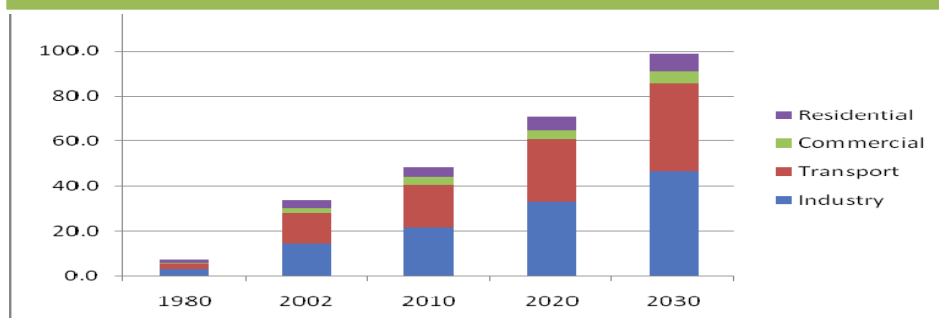
Overview of Actions in Reducing Emissions and Issues for Malaysia

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Energy Demand



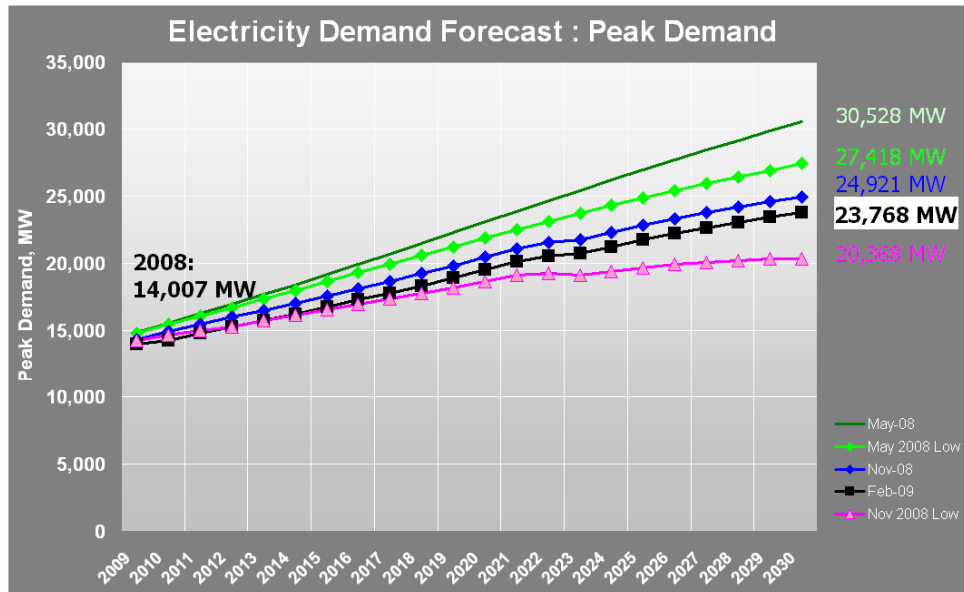
Final Energy Demand by Sector (Mtoe)

Source: APERC Analysis

- Projected to grow at 3.9% per year
- ~100Mtoe in 2030 nearly 3 times the 2002 level
- Industrial Sector has the highest growth rate of 4.3% followed by transportation at 3.9%



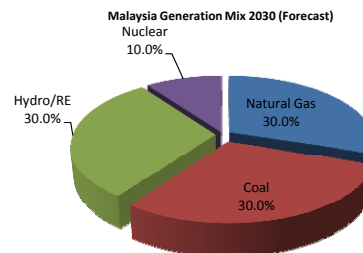
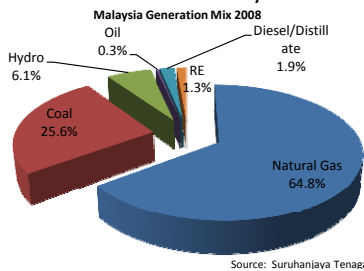
Malaysia Energy Scenario



Malaysia Electricity Generation

Towards A Sustainable Generation Mix by 2030

Gas 30% - Coal 30% - Hydro & Renewables 30% - Nuclear 10%



2015 to 2020:

- Bakun 800/1000MW in 2015 and second 800/1000MW in 2017. Another 1000MW import from Sarawak in 2019 (tentative)
- Gas to the power sector to be maintained at 1,350 mmscfd for the entire period
- No new coal plants
- Remaining Peninsula hydro to be developed

Post 2020 (2021 – 2030):

- Another 5,000 MW import from Sarawak by 2030
- Gas to the power sector must be maintained at 1,350 mmscfd for the entire period
- 2 x 1,000 MW of Nuclear plants by 2030
- Small hydro and other renewables to be developed

RE as A Mitigating Action

- From Petroleum Development Act 1974 and currently promotes 5 Fuel Diversification Policy under the 9th Malaysian Plan
 - 5th Fuel = RE
- RE based sources and environmental friendly technology is expected to play an important role in meeting with Malaysia's Energy Demand and at the same time Reducing CO₂ emissions.
 - Potential technology (based upon current technology in Malaysia): Clean Coal, Solar and Biofuels
- However no national emission reduction targets have been determined



Barriers of Clean Technology

- Limited technologies, limited application, limited funds
- Imported green technologies are expensive, hence low market penetration, cannot compete
- High maintenance/ manufacturing cost
- Limited of indigenous collaboration between research institution and industry



Countermeasure

- Countermeasures
 - Strategic Plans (Branding MEGTW, Blueprints for RE and EE)
 - Labelling of Energy Efficient Devices
 - Small Renewable Energy Programmes (SREP)
 - Joint Venture/Partnership with foreign companies (commercial basis)
 - Tax Incentives/Exemption
 - Renewable Energy Power Purchase Agreement (REPPA)
 - Increase Research Funds for Clean Tech



Government Action Plan

- Current Action plan include:
 - Roadmap for Renewable Energy Such As Solar and BioFuel, e.g.
 - Solar
 - BioFuel
- Demonstration Projects
 - SURIA1000
 - MBIPV
 - BIOGEN
 - Clean Coal Technology application
- Effects
 - Proof of concept
 - Raise Awareness
 - Not much else..



Big Hydro

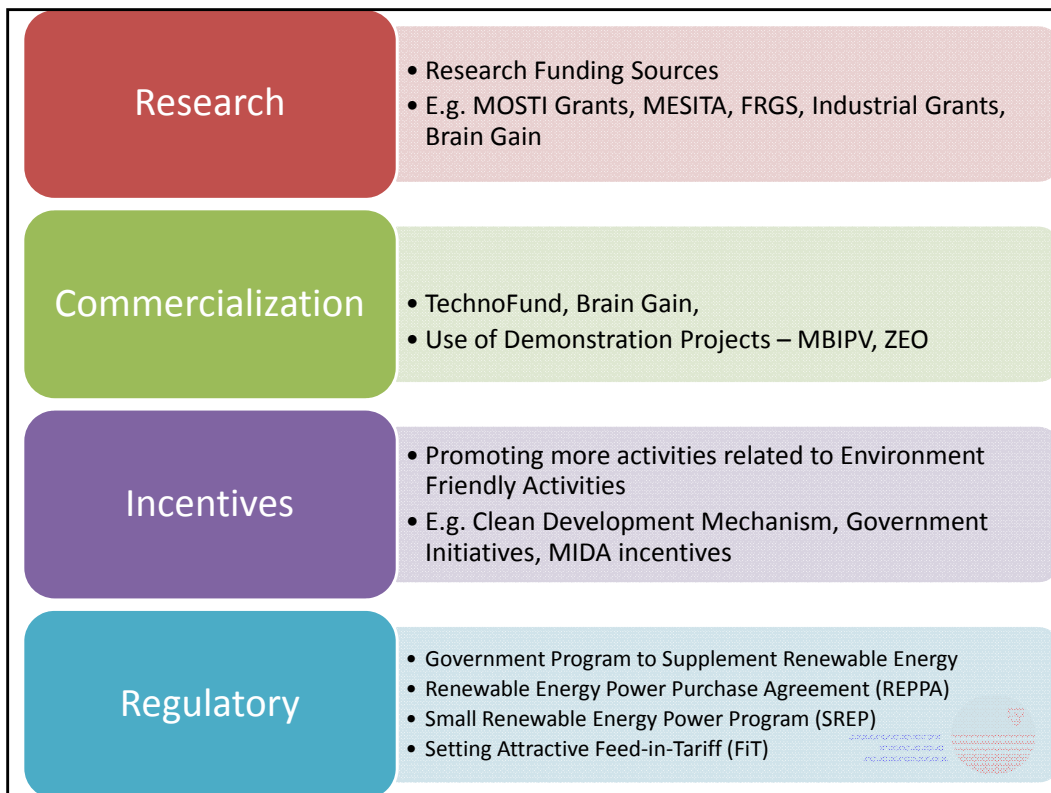
- Sarawak Corridor of Renewable Energy
- Sarawak River Systems has a Potential of 20,000MW
- High Cost of Development
- Technical Challenges in HVDC Transmission for Transmission to Peninsular
- Issues on actual delivery



Background Selected RE Options


- **Solar**
 - Lots of potential for electricity production
 - Numerous manufacturers have set up base in Malaysia
 - Major Exporter of Solar Panel in 3 years (Top 5)
 - No Tech Transfer as technology cost are prohibitive
 - Holds long Term potential
- **Biofuel**
 - New Market in recycling of waste cooking oil
 - Indigenous Technology
 - Holds the most potential in Malaysia in the short term





Research

- Grants sources supporting research and technology transfer which includes green and environmental friendly technologies
- Grants would come from various sources
 - Ministry of Science Technology (MOSTI)
 - Companies, TNB, TNBR, MESITA
- Grants recipients
 - Institute of higher learning
 - Research Institutions
 - Any individual/companies with innovative ideas!
- Grants are replenished yearly
 - Shows government efforts in driving research



Commercialization

- Grants for metamorphosis from lab scale prototype to commercialization ready products
- Grant sources
 - Ministry of Science Technology (MOSTI)
 - Companies, TNB, TNBR, MESITA
- Bio-diesel appears to have the most potential for commercialisation? Why?



Incentives

- Clean Development Mechanism
 - Government's commitments towards the KYOTO protocol
 - High cost of entry (audit process considered too prohibitive for some)
- Malaysian Industrial Development Authority (MIDA)
 - Pioneer Status with Tax Relief/Exemption Incentives
 - Allowances on RE related activities/equipments
- SURIA 1000 incentives



Conclusion

- **General**

- Research funding mechanism from government exists
- Malaysia has capacity to absorb technology but not to develop and commercialise technology on large scale
- Sporadic development of local technology – not sufficient to address issue on a large scale
- No economic or regulatory incentive for Technology Transfer
- Fossil fuels are subsidised, making RE uncompetitive



Conclusion

- **Possible Solutions**

- Commercial viability appears to be the deciding factor in most cases
- Involvement of Venture Capital for viable indigenous research findings
- Introduce better Feed-in-Tariff for RE (from 17cents/kWh to 21cent/kWh)
- Some Regulation on emissions required to make RE attractive
- Political will to reduce subsidies for fossil fuel bases subsidies
- Making the case to pay now or later



THANK YOU

