Japan-UK joint LCS Third workshop on February 13-15 2008, Tokyo, Japan

Vision and Pathway towards Low carbon society in Malaysia



Contents







-BACKGROUND-Final commercial energy demand by sector in Malaysia

Sources	Peta Joules (PJ)			Percentage of the total			
	2000	2005	2010	2000	2005	2010	Growth rate (p.a.)
Industrial ¹	477.6	630.7	859.9	38.4%	38.6%	38.8%	6.4%
Transport	505.5	661.3	911.7	40.6%	40.5%	41.1%	6.6%
Resident/commercial	162.0	213	284.9	13.0%	13.1%	12.8%	6.0%
Non energy	94.2	118.7	144.7	7.6%	7.3%	6.5%	4.0%
Agriculture/Forestry	4.4	8.0	16.7	0.4%	0.5%	0.8%	15.9%
Total	1,243.7	1,631.7	2,217.9	100.0%	100.0%	100.0%	6.3%

Source: Ministry of Energy, water and communication and EPU Malaysia, - Ninth Malaysia Plan 2006

- BACKGROUND-Current trend and policies- CO2 emission



- BACKGROUND -

CO2 emissions in Malaysia, Asia and the World (2000)

Comparison		Malaysia	Asia	World
CO ₂ emissions	Total 2000 (mil. toe)	123.6	7,837.0	23,895.7
	% change since 1990	120.3%	35.1%	12.7%
	Per capita (2000)	5.4	2.2	3.9
Cumulative CO ₂	Fossil Fuels & cement	1,714	175,087	781,501
tons)	From land use change	20,654	163,621	315, 122
CO ₂ emission by sector (as % of total emission)	Transportation	26.2%	13.3%	24.1%
	Industry & Construction	23.1%	24.7%	18.5%
	Electricity	25.5%	40.1%	38.3%

Source: WRI, 2007

ISSUES AND CHALLENGES

- **Pollution** of environment.
- **Conservation of flora and fauna** in balance within it's natural habitat.
- Lack of society awareness towards environmental health and cleanliness.
- Limited natural resources for future generation.
- Exploration of new opportunities and fields or renewed with added value which contributes to socio-economical development.
- Enhancement of Malaysian role internationally regarding natural resources and environment.

- BACKGROUND -

Current Policies on CO2 reduction efforts in Malaysia

- Most of the developing countries would consider economic development before handling environmental issues. But not completely neglecting the environmental and global warming issues. In the case of Malaysia, emphasis was placed on improving environmental quality through better management in major areas of concern i.e. air, water quality, solid waste management and utilization of cleaner technologies.
- In the National Environmental Policy adopted in 2002, strategies towards sustainable development were highlighted. However, a comprehensive low carbon emission policy and carbon reduction target are NOT mentioned officially.
- In the Ninth Malaysia Plan (2006-2010), policy strategies were outlined to increase energy efficiency and promotion of the use of renewable energy.
- National biofuel policy aimed at reducing dependence on depleting fossil fuel, promoting demand for palm oil as stabilizing its price at remunerative level.

NATIONAL BIOFUEL POLICY -5 STRATEGIC THRUSTS-

THRUST 1: BIOFUEL FOR TRANSPORT

Diesel for land and sea transport will be a blend of 5% processed palm oil and 95% petroleum diesel. This B5 diesel will be made available throughout the country. As this sector is the main user of diesel which is highly subsidised, it will be given priority in this policy.

THRUST 2: BIOFUEL FOR INDUSTRY

B5 diesel will also be supplied to the industrial sector including for firing boilers in manufacturing, construction machinery, and generators.

THRUST 3: BIOFUEL TECHNOLOGIES

Research, development and commercialisation of biofuel technologies (including technologies for extraction of minor components therein) will be effected and adequately funded by both the government and private sectors including venture capitalists to enable increased use of biofuel.

THRUST 4: BIOFUEL FOR EXPORT

Worldwide interest reflects the important role of biofuels in energy for sustainable development. Malaysia will have an edge to supply the growing global demand for biofuel. The establishment of plants for producing biofuel for export will be encouraged and facilitated.

THRUST 5: BIOFUEL FOR CLEANER ENVIRONMENT

The use of biofuel will reduce the use of fossil fuels, minimise the emission of green house gases (carbon dioxide), carbon monoxide, sulphur dioxide and particulates. Increased use of biofuel will enhance the quality of the environment.

-BACKGROUND -

INSTITUTIONAL FRAMEWORK RELATED TO ENERGY PLANNING

- Ministry of Natural Resources & Environment (NRE)
 - NRE was established in 27 March 2004 Combination of departments from 4 Ministries resulting the NRE's areas of responsibilities.
 - The ministries are:
 - Ministry of Land and Co-operative Development (KTPK);
 - Ministry of Science Technology and Environment (KSTAS);
 - Ministry of Primary Industries (KPU); and
 - Ministry of Agriculture (KP)
- Energy Commission Malaysia
 - The Energy Commission is the regulator for the electricity and gas supply industry. At the time it was created its key role was the regulation of the energy industry based on the powers provided for in the Energy Commission Act (2001) and the other related Acts.
 - The Energy Commission is also charged with overseeing the new regulatory framework for the industries of energy activities.

ASEAN CHARTER – 13Th summit -2007

- 2 Environmental declarations
 - Asean declarations on the environment sustainability
 - Committing Asean to environmentally sound practices
 - Declaration on climate change
 - reflecting the stance Asean take at UN climate change meeting in Bali in December 2007
 - Should avoid a gap between binding greenhouse gas emissions reductions that are now in place and the new ones that will kick in Post Kyoto.
 - Asean leaders agreed to intensify cooperation on joint research, development and deployment of low emission technologies but acknowledged that fossil fuel would continue to play major role in the region's energy mix.

Asean declarations on the environment sustainability related to low carbon society roadmap

- **Nuclear power** to be used alongside other alternative energy sources, like solar, hydro, wind, tide, biomass, biofuels, and geothermal energy.
- Environmental pollution like annual haze should be tackled by measures to improve country's capacity to cope public awareness, law enforcement and combating illegal logging and its trade..
- Get developed countries to give financial resources and technology transfer and capacity building in accordance with the UN agreements on climate change and energy security should not give rise to more trade and investment barriers.

Asean declarations on the environment sustainability

- Works towards an effective, fair, flexible and comprehensive agreement on climate change to replace present Kyoto protocol which expires in 2012.
- Developed countries should continue taking the lead in substantially reducing their emissions given their historical responsibility, economic strength and capabilities.
- Promote clean development mechanism (CDM) under Kyoto Protocol which encourages developed countries to support 'green' projects in developing countries to make up for pollution in their own areas.
- Encourage **innovative green financing** to stimulate investment in climate friendly technology and development.

3.0 Future scenarios towards Low-Carbon Society IN Malaysia (2050)

High growth industrialized nation scenario 2050

- Economic and industry
- Population
- Housing
- Infrastructure

(a) High growth industrialized nation scenario 2050 - Economy and Industry

Structure change from agro base to value added manufacturing then finally k economy driven by high value added industry in IT and bio technology.

2000-2020

Heavy industry- car/ motor //Bio-technology industry /medium labour intensive /Medium IT and high tech industry (OSS)

2020-2050

Hi tech industry development/ K economy based - IT based

Less labor intensive/ Multi media Super corridor and cyber cities fully implemented.

High tech and technopolis development

(b) High growth industrialized nation scenario 2050 - Population

- Total Population of about **56 million**.
- Increase in population growth from 2.6%p.a.to 3%p.a (international migration esp skilled and experts) attracted to job opportunities due to high economic growth.
- Household size drop from 4.6 to 4.0 per household
- Smaller family size due to lower birth rate
- Lower mortality due better health facility
- Lower fertility due to late marriage and working female.
- Longer life expectancy.

(c) High growth industrialized nation scenario 2050 - Land use

- Rapid urbanization due to industrialization (62% (2000) to 80% (2050)
- **Decrease in Forest area** from 63% to 40% because of continuing rapid urbanization and Agriculture farming.
- Conurbation pattern of urbanization (National Physical Plan)
- **Promote Mixed and compact city** (National urbanization Policy)

(d) High growth industrialized nation scenario 2050 -Infrastructure

- Increase penetration of internet/Piped gas (from 5% to 50%)
- Increase public transport High speed Rail system/Increase rail rider ship/ Increase MRT and LRT in major cities with supporting feeder bus services.
- Improve **waste disposal** Incinerator usage in major conurbation area.
- Improve energy efficiency Use of energy saving device and CHP

Scenarios towards low carbon society 2050

Kaya Identity



Key options to reduce GHG emissions

- Population Not feasible
- Reduce per capita intensity- Through Education.
- Reduce energy intensity Energy efficiency technology, urban planning and transportation planning.
- Reduce carbon intensity Alternative source of energy

Possible combinations of countermeasures

- Immediate
 - CDM support
 - Green action to crack down on illegal logging as well as to increase forest cover to trap greenhouse gas carbon dioxide
- Long term CREATION OF LOW CARBON CITIES / REGION
 - Transportation sector
 - Service share and efficiency in passengers and goods transportation (modal share and trip distance) is influenced by compact city, TOD development and pro public transport policy local government
 - Industrial sector
 - Service share and efficiency in industrial sector
 - Residential and commercial sector
 - Service share and efficiency in residential sector is influenced by energy efficient technology, alternative energy source, ecology education and electronics and digital lifestyle.
 - Carbon sink
 - Heart of Borneo project which covers a total of 220,000 sq km forest in Brunei, Indonesia and Malaysia.
 - To tackle peat land fires and develop sustainable land clearing

Roadmap to achieve LCS

- Mitigation measures.
- Pragmatic and cost effective ways of reducing greenhouse gases emissions such as
 - greater use of public transport
 - protecting the carbon sinks such as forest and peat/ wetland
 - Cut wastage or use of 3R (reuse, reduce and recycle).
- Major investment in R &D in green technology and energy efficient technology / engines.
- Designing and building more energy efficient cities or eco villages (planning of low carbon cities and region)

Developing Low carbon cities and region

- Planning for low carbon cities/region involves creation of low carbon society by promoting low carbon emission, particularly CO2.
- Reducing CO2 concentration can be done through land use change and promote lesser dependence on fossil fuel use.
- Urban planning through land use planning and development control can play vital role in implementing the concept of low carbon cities/ region.

4.0 Barriers and necessary actions to realize LCS

Barriers

- Importance of economic growth and improving the lives of the people and all these required economic growth and resources which means continued dependence on energy, in particular on fossil fuel.
- Malaysia as a newly developing nation is presently undergoing a rapid industrialization process and have investment in manufacturing, infrastructure development and hence have high demand for energy consumption.

Necessary actions

- Government intervention LCS measures and Spatial policies
- Subsidies PPP/ taxation
- Clean Technologies

5.0 Policy recommendation

Holistic policy at national and regional levels

- Reduce per capita activity
 - Education Establishment of recycling system
- Reduce energy intensity
 - Urban transportation policy Transit development
 - Low energy building
 - Urban planning policy at National Physical plan and Local plan promoting Brownfield development
- Reduce Carbon intensity
 - At National energy supply policy promote the use of alternative fuel (bio-fuel)
 - At National Forest Conservation Policy and agricultural policy to prevent deforestation and promote reforestation to increase carbon sink
- Collaboration with experts from develop nation to transfer technology on efficient energy planning.

Case study

Iskandar Development Region 2,216 km² Population 1,353,200







ISKANDAR DEVELOPEMENT REGION

Geographical facts:

- Area 2,217 sq km @ 547,821 acres
- 2.5 times size of Singapore
- 48 times size of Putrajaya
- Population 1.4 Million



Rationale

- Integrated logistical and urban system
- Coincides with existing districts and mukim boundary
- Major conservation area, major committed and proposed projects

- Area of national strategic importance
- Strategically located at the epicenter of Asia Pacific region's China-India-ASEAN growth nexus
- One economic space with Singapore and Batam



IDR development policies related to low carbon cities

- Energy efficient buildings and sustainable neighborhood design
 - Green building rating
 - Creating healthier and more resource-efficient models of construction, renovation, operation, maintenance and demolition
 - Neighborhood with self-contained facilities to reduce the use of private vehicles
- Sustainable land use and transportation
 - Mixed land use, public transport, compact city development
 - □ Transit Planning Zones within 400m radius of rail stations
- Natural and green environment
 - □ 150,000 ha. of natural and green environment

DS 1 – Ensure balance development within the SJER by reaffirming distribution and enhancing efficiency by focusing development in certain corridors and nodes.



DS 2 – Protect and conserve natural, historic and open space resources to improve the quality of life.

DS 3 – Focus development in areas where existing and adequate infrastructure exists.



- DS 4 Promote in-fill and redevelopment in existing communities, including brownfield sites.
- DS 5 Enhance accessibility by improving Regional and East-West linkages as well as provide alternative modes of public transportation.



DS 8 – Manage Regional Growth Especially in the Periphery Areas of SJER DS 9 – Plan for innovative and sustainable infrastructure and utilities.





Conclusion

Scenarios towards low carbon cities/region 2050

 For a fast growing nation with rapid urbanization such as Malaysia, implementation of planning of low carbon cities/ region concept can be an effective policy strategy to achieve the Vision and Path way towards LCS.

• Reduce Energy intensity

- Low energy building
- Establishment of recycling system
- Transit development
- Brownfield development
- Reduce Carbon intensity
 - Use of alternative fuel (bio-fuel)
 - Prevent deforestation and promote carbon sink