2nd International Sustainable Energy Summit (ISES) 2014

National Sustainable Energy Framework and Policy

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KeTTHA
KEMENTERIAN TENAGA, TEKNOLOGI HIJAU DAN AIR

OUTLINE

1. GLOBAL ENERGY SCENARIO

2. MALAYSIA
   (a) Introduction
   (b) Energy Scenario
   (c) Government Policy & Commitments

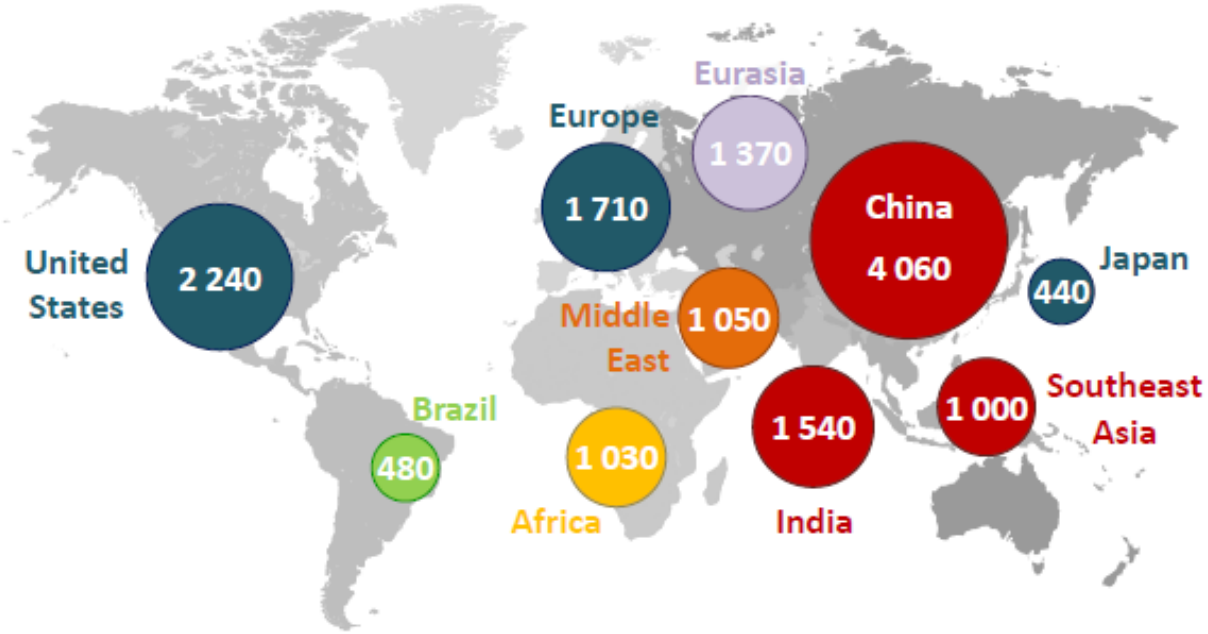
3. SUSTAINABLE ENERGY POLICY

4. WAY FORWARD

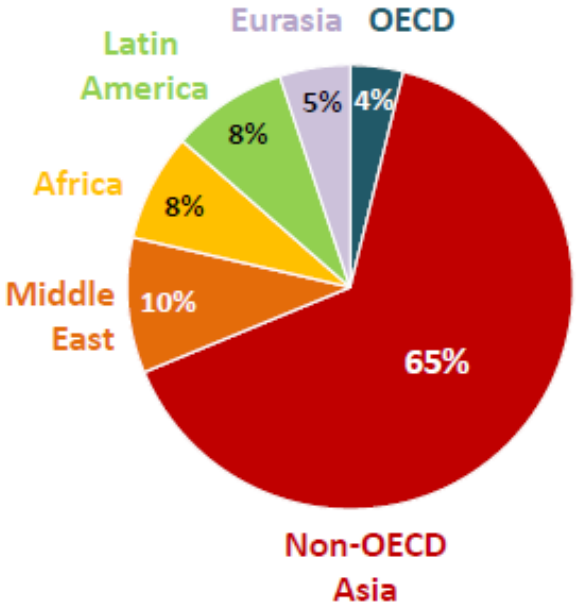
1) GLOBAL ENERGY SCENARIO

Global Energy Demand

Primary energy demand, 2035 (Mtoe)



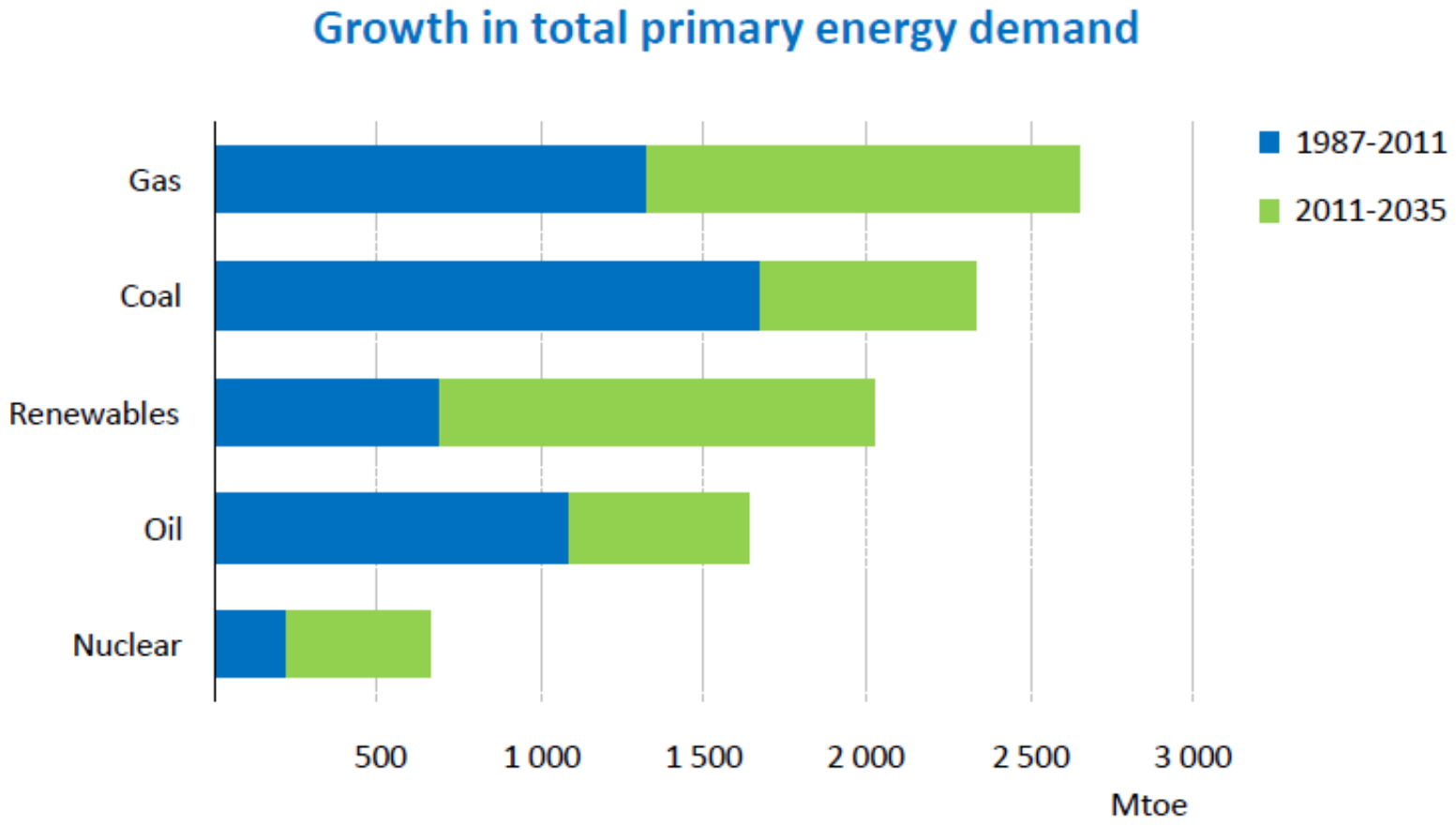
Share of global growth 2012-2035



China is the main driver of increasing energy demand in the current decade, but India takes over in the 2020s as the principal source of growth

Source : IEA World Energy Outlook 2013

Global Energy Demand by Fuel

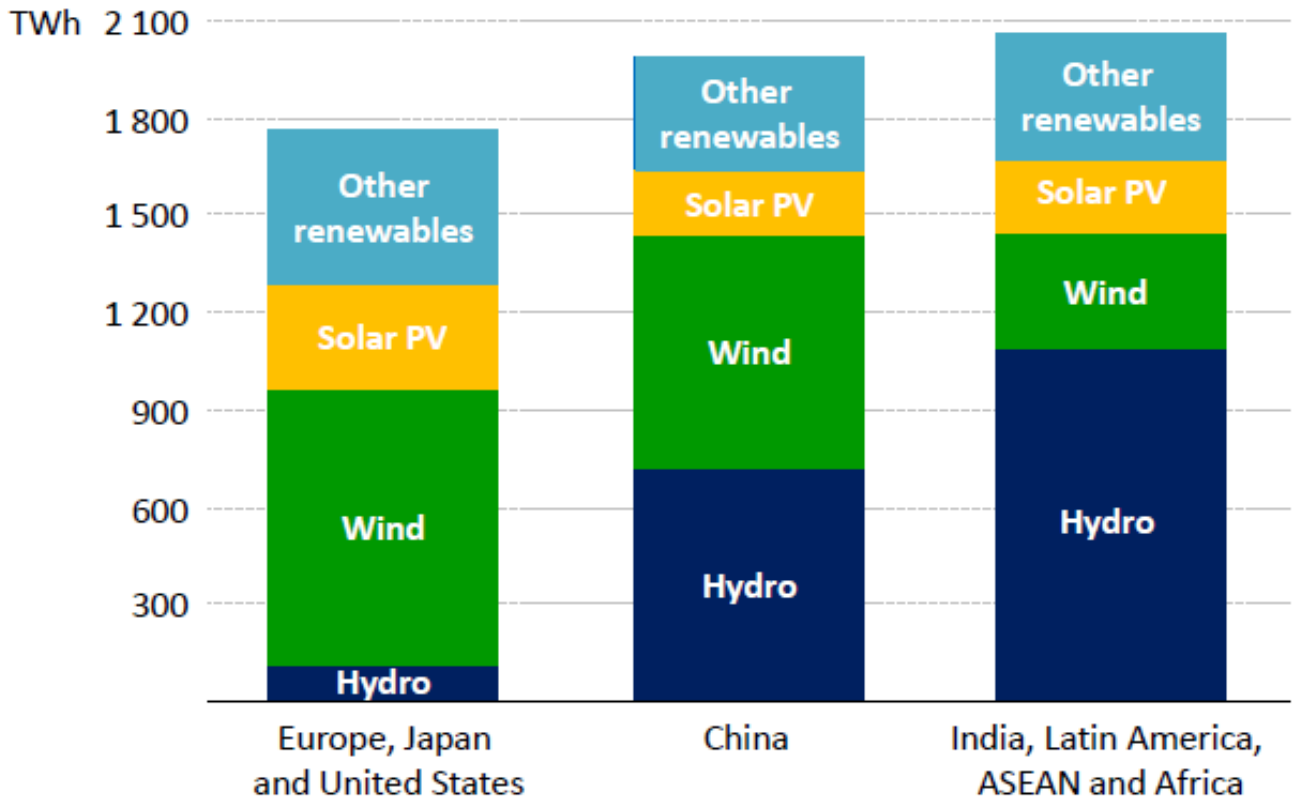


Today's share of fossil fuels in the global mix, at 82%, is the same as it was 25 years ago; the strong rise of renewables only reduces this to around 75% in 2035

Source : IEA World Energy Outlook 2013

Rising Share of Global RE

Growth in electricity generation from renewable sources, 2011-2035



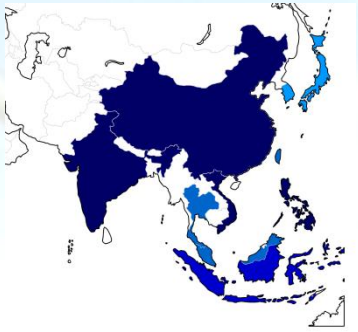
The expansion of non-hydro renewables depends on subsidies that more than double to 2035; additions of wind & solar have implications for power market design & costs

Source : IEA World Energy Outlook 2013

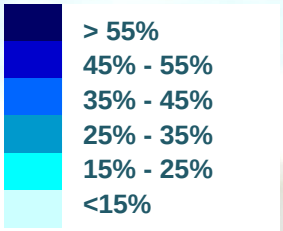
REGIONAL ENERGY SECURITY SNAPSHOT

Coal Dependence in the Power Sector Today

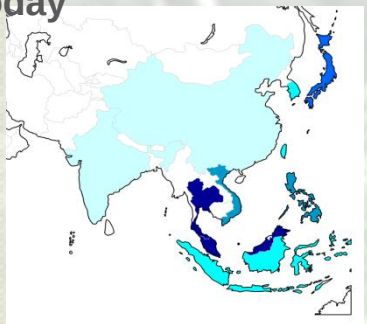
Coal Dependence in the Power Sector in 2030



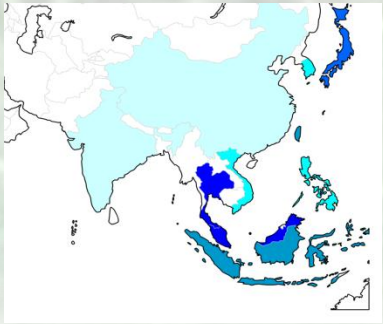
Share of Generation Mix



Gas Dependence in the Power Sector Today



Gas Dependence in the Power Sector in 2030



- Diminishing domestic energy supplies is forcing SEA markets to re-evaluate its long-term policies on fuel mix, diversification options and infrastructure developments

Source: IHS CERA

2) MALAYSIA

2 (a): Introduction: Key Statistics

Economic Indicators (2013)	
Population	29.7 million
Area	329,847 sq km
GDP	RM1,008.2 billion
GDP Growth	5.0%~6.0%
Per capita income	USD10,687

Energy Resources (2012)	
Oil	5.9 billion barrel
Gas	92.12 tscf
Coal	2.95 bil. mt
Hydro Potential	20 GW

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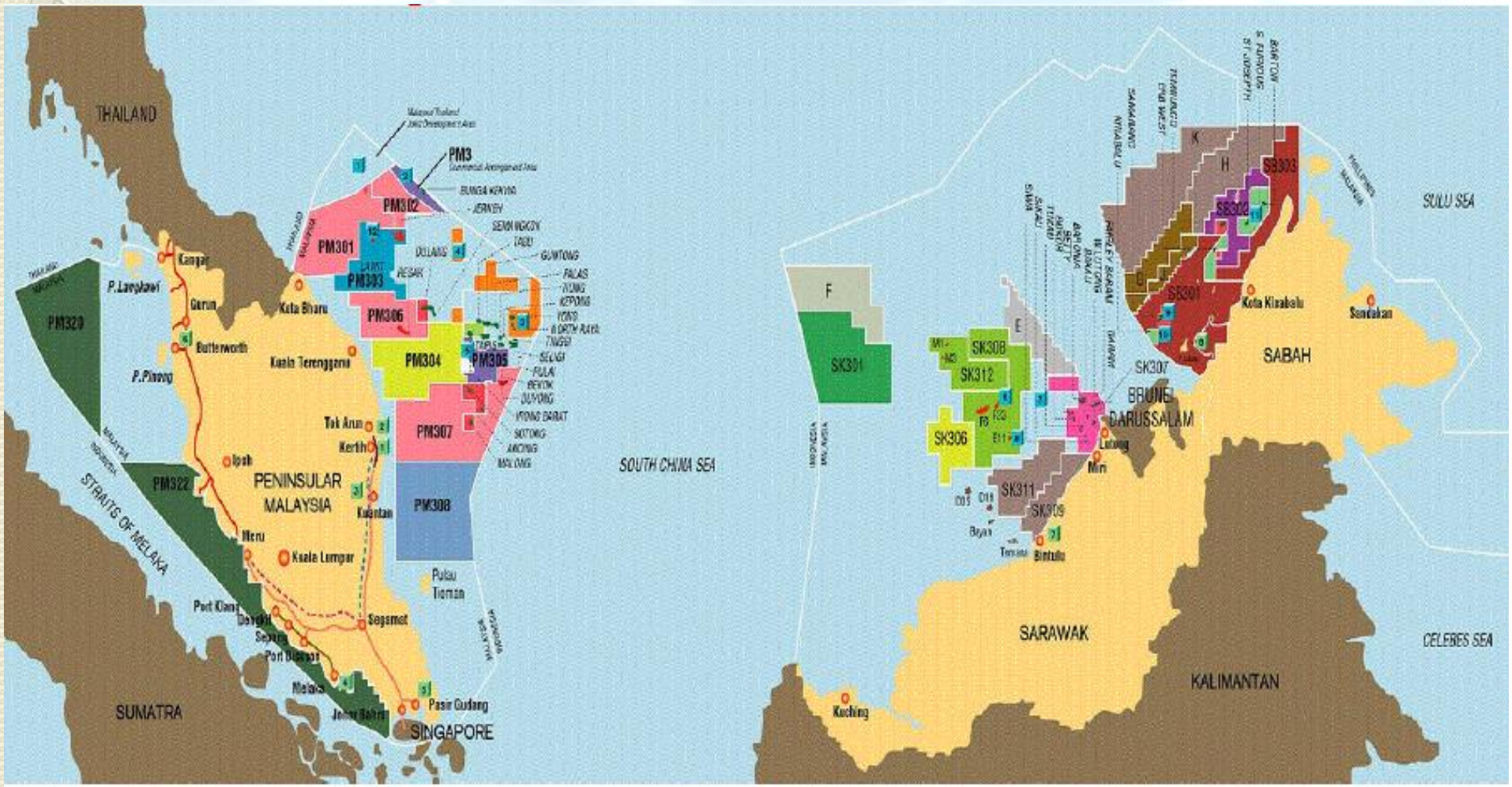
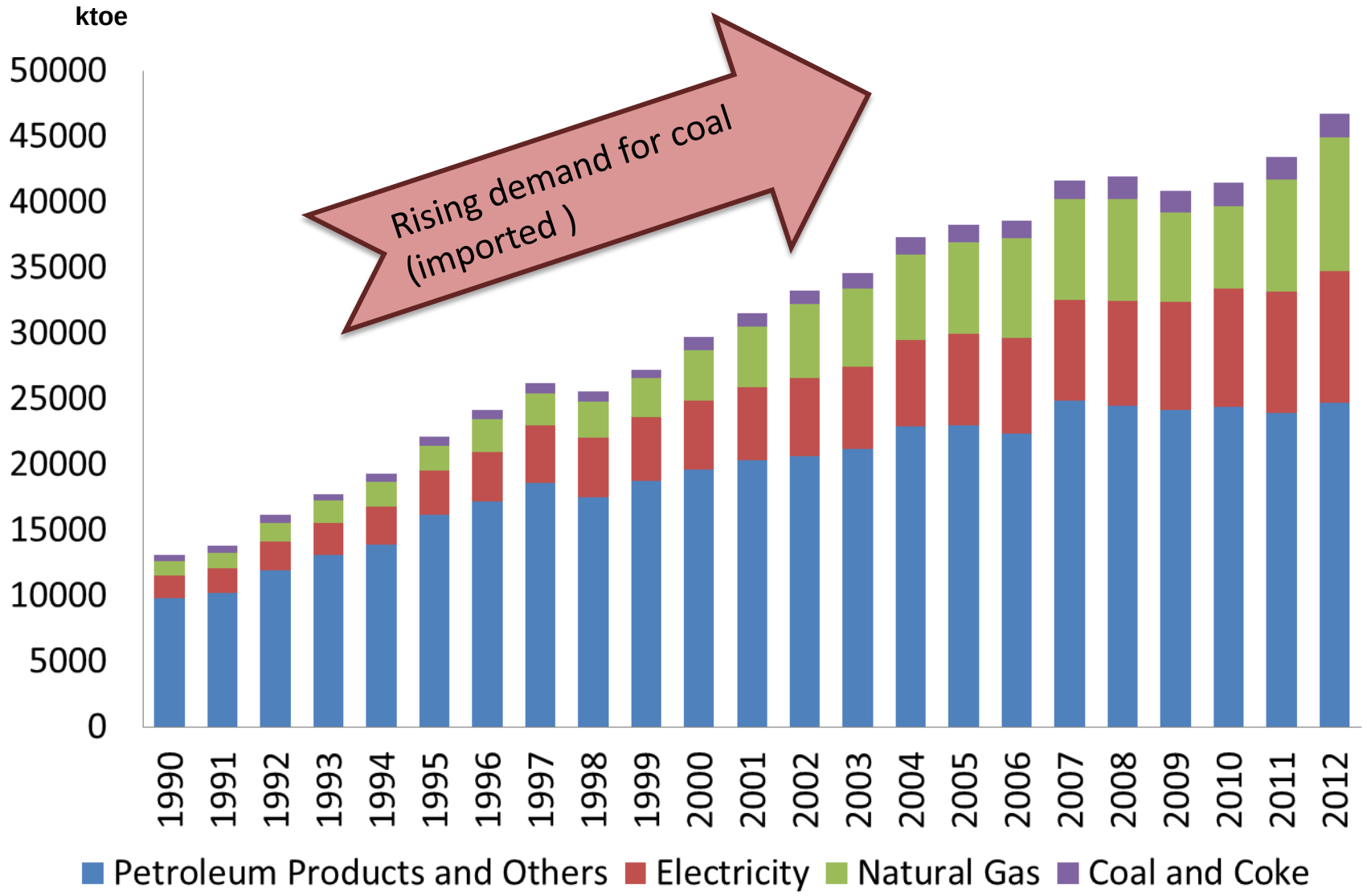
MALAYSIA: OIL & GAS RESERVES



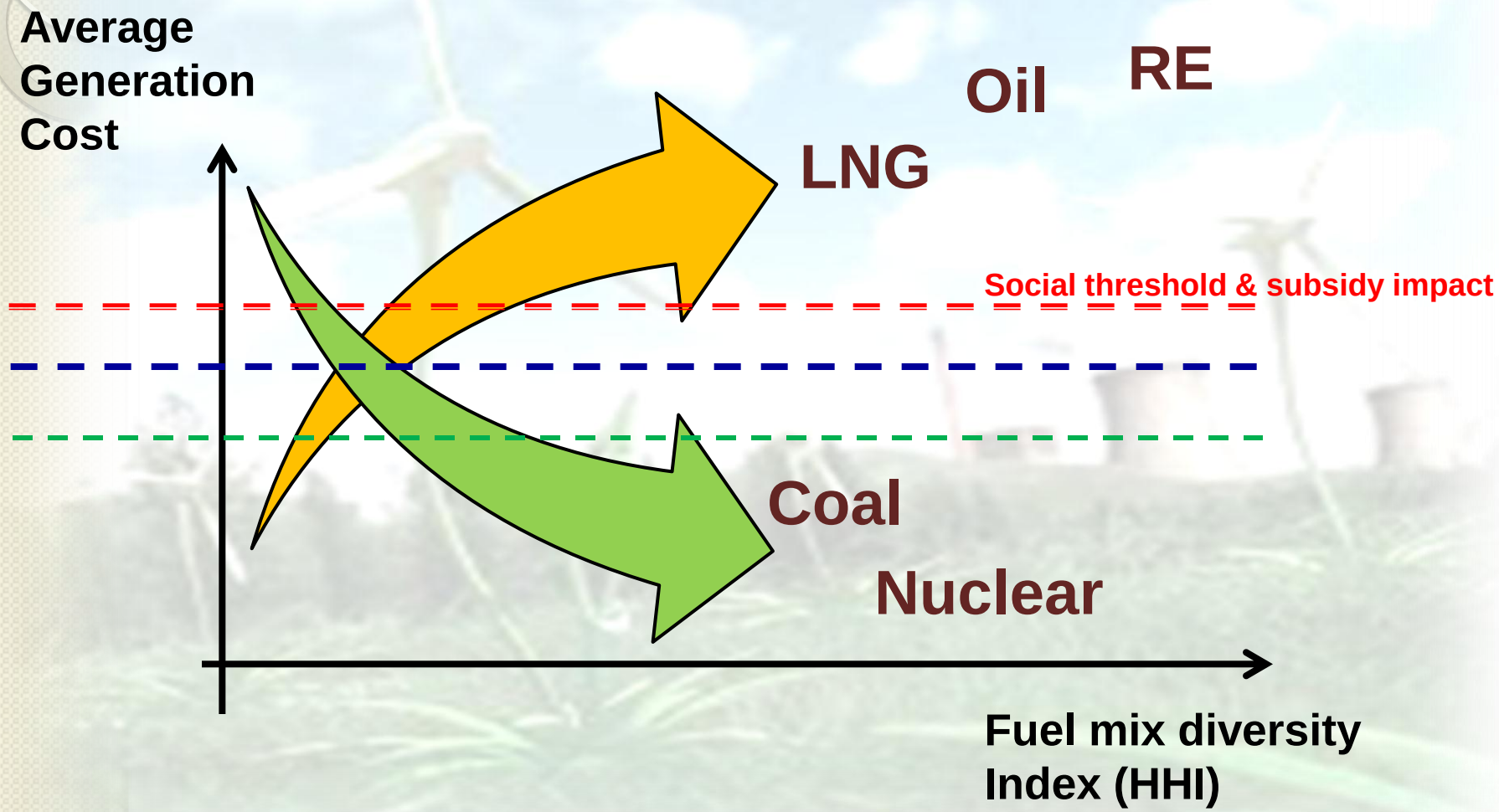
CRUDE OIL : 5.954 billion barrels NATURAL GAS : 92.122 trillion standard cubic feet

(source: National Energy Balance 2012 - as at 1st January 2012)

2 (b): Energy Scenario
FINAL ENERGY CONSUMPTION BY TYPE OF FUELS



Cost Tradeoffs in Fuel Diversification



Source: IHS CERA

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Government Committment

"…Malaysia is adopting an indicator of a voluntary reduction of up to 40 per cent in terms of emissions intensity of GDP (gross domestic product) by the year 2020 compared to 2005 levels…"

YAB Dato' Sri Mohd Najib Tun Abdul Razak
Prime Minister of Malaysia

15th Conference of Parties (COP-15)
17 December 2009

Global CO_2 Emission Reduction Initiatives

Country/ region	Targets
Europe	▪ GHG reduction : 20% to 1990 level by 2020 ➢ 20% electricity mix from RE sources by 2020
USA	▪ GHG reduction : 17% to 2005 level by 2020 ➢ No national target- only state level
Australia	▪ GHG reduction : 25% to 2000 level by 2020 (condition all parties agree to stabilise CO2 concentration below 450ppm) ➢ 20% electricity mix from RE sources by 2020
Japan	▪ GHG reduction : 25% to 1990 level by 2020
Korea	▪ GHG reduction : 30% from BAU by 2020 ➢ 21% electricity mix from RE sources by 2050
Indonesia	▪ GHG reduction : 26% to 2005 level by 2020
China	▪ GHG reduction : 40%-45% to 2005 level by 2020

POLICY INTERVENTIONS

3) SUSTAINABLE ENERGY POLICY: GOALS & WAY FORWARD

Renewable Energy Development in Malaysia

8th Malaysia Plan (2001 – 2005)

- RE as the 5th fuel
- 5% RE in energy mix

9th Malaysia Plan (2006 – 2010)

- **Targeted RE capacity to be connected to power utility grid:**
  - 300 MW - Peninsular Malaysia;
  - 50 MW - Sabah
- **Targeted power generation mix:**
  - 56% natural gas, 36% coal, 6% hydro, 0.2% oil, 1.8% Renewable Energy
- **Carbon intensity reduction target: 40% lower than 2005 levels by 2020**

RE as of 31 Dec. 2013

- Connected to the utility grid (as of 2013): 149.78 MW
- Off-grid: >430MW (private palm oil millers and solar hybrid)

Malaysian National RE Policy and Action Plan 2010
Strategic Thrusts

Strategic Thrusts of the National RE Policy & Action Plan

Strategic Thrust 1

Introduce **Legal** and **Regulatory** Framework

Strategic Thrust 2

Provide **Conducive Business** Environment for RE

Strategic Thrust 3

Intensify **Human Capital** Development

Strategic Thrust 4

Enhance RE **Research** & Development

Strategic Thrust 5

Create Public **Awareness** & RE Policy Advocacy Programs

Malaysian National RE Policy and Action Plan 2010

- To enhance the utilisation of indigenous renewable energy resources to contribute towards national electricity supply security and sustainable socio-economic development

Malaysian National RE Policy and Action Plan 2010

Objectives:

a) To increase RE contribution in the national power generation mix;

b) To facilitate the growth of the RE industry;

c) To ensure reasonable RE generation costs;

d) To conserve the environment for future generation; and

e) To enhance awareness on the role and importance of RE.

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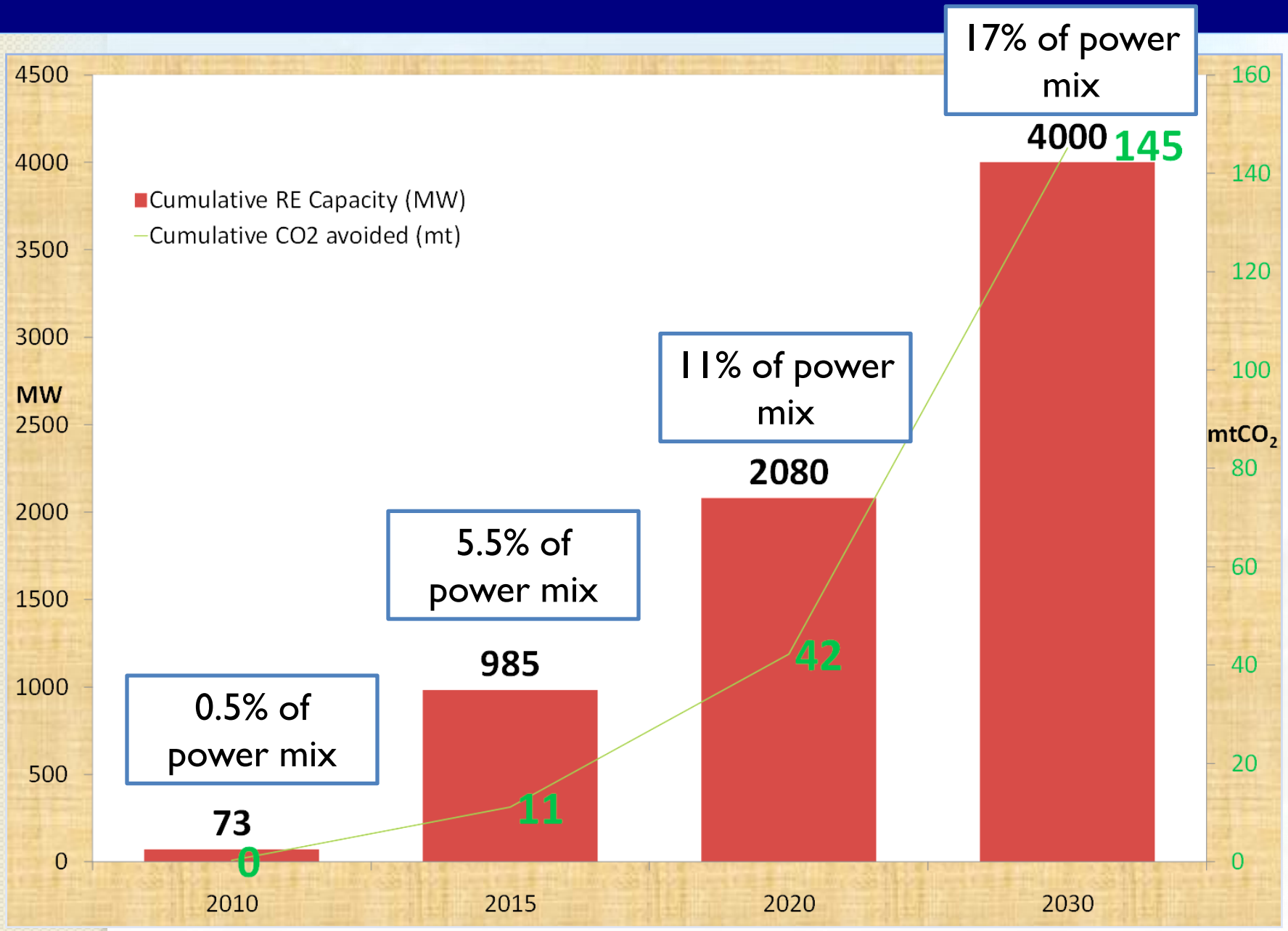
Malaysian National RE Targets



Note: RE capacity achievements are dependent on the size of RE fund

Renewable Energy Act 2011 (Act 725)

- Enabled the establishment of SEDA Malaysia
- Launched the Feed-in Tariff Mechanism (FiT)
- Establish the RE Fund to finance the FiT.
- Came into force on 1st December 2011

FiT Status As of 31 January 2014

No.	Renewable Energy Sources	Approved (MW)	FiTCD (MW)
1	Biogas	29.53	11.73
2	Biomass	166.49	50.40
3	Small Hydro	130.99	15.70
4	Solar Photovoltaic (PV)	209.06	85.36
	• Individual	26.28	20.82
	• Non - Individual	182.78	64.54
Total		536.07	163.19

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ENERGY EFFICIENCY

EE Regulatory Framework

- **Electricity Supply (Amendment) 2001-Act A1116**
  - **Empowers the Minister to promote the efficient use of electricity (Section 23A, 23B & 23C)**
    - Determine efficiency standards;
    - Installation to meet efficiency requirements; and
    - Equipment to meet efficiency requirements

EE Regulatory Framework

- **Efficient Management of Electrical Energy Regulations 2008**
  - **Requires installations consuming 3 million kWh or more over a 6-month period to engage a registered energy manager to:**

➢analyse total consumption of electrical energy;

➢advise on the development and implementation of measures to ensure efficient management of electrical energy; and

➢monitor the effectiveness of implemented measures

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EE Regulatory Framework

- The Minimum Energy Performance Standards (MEPS) on refrigerators, televisions, air-conditioners, domestic fans and lightings; and

- Building Code on Energy Efficiency: Section 38 of the Uniform Building by Laws (UBBL).

Fiscal And Financial Incentives for EE

- Companies Providing Energy Conservation Services

- Pioneer Status or
- Investment Tax Allowance

- Companies Incurring CAPEX For Conserving Energy For Own Consumption

- Investment Tax Allowance or
- Import duty and sales tax exemption

- Owners Of Buildings Awarded With The GBI Certificate

- Tax exemption equivalent to 100% of the additional capital expenditure incurred to obtain the GBI Certificate

EE Program: Showcase of EE Buildings

Showcase Energy-Efficient Buildings

Low Energy Office LEO

- 1st showcase model completed in 2004 (GBI-Silver)
- demonstrate the feasibility of EE design standards as implied in MS1525 :2001 Code of Practice on EE & Use of RE for Non-Residential Buildings
- Building Energy Index – **100 kWh/m^2 annually**
- **CO2 reduction 56%**

Green Energy Office GEO

- 1st certified green building in Malaysia (GBI-Certified).
- Demonstrate advance EE and RE design for commercial building- 2007
- Building Energy Index - **65kWh/m^2 annually**
- Solar Energy - 35kWh generated
- **CO2 reduction 86%.**

Diamond Building

- Improved from both LEO & GEO building experience.
- Platinum certificate, from Malaysia's Green Building Index (GBI) and Singapore's Green Mark.
- Building Energy Index- **85 kWh/m^2 annually**

EE Program: Labeling & Ratings

- Energy rating 1 to 5-Star
- Appliance energy rating (equals the number of stars)
- Model information
- Energy consumption (in kWh/year)
- Energy saving compared to an average 3-Star model (in percentage)

- Refrigerators
- Wall mounted split unit air conditioners
- Domestic fans (standing, ceiling, table)
- Television

The list is available at www.st.gov.my

EE Program: Sustainability Achieved Via Energy Efficiency (SAVE)

2012 TOTAL TARGET ENERGY SAVINGS
127.3GWh

New appliances

Energy reduction potential

GNI impact

~USD1.6 Billion

SAVE Program

Type of Appliances		Fridges	Air - Conditioners	Chillers
				
Allocation	Target # of Units	100,000 units	65,000 units	72,000RT
	Offered Rebates Per Unit	RM200	RM100	RM200
	Total Budget	RM20mil	RM6.5mil	RM14.4mil
Savings[1]	Energy	24.9GWh	48.75GWh	53.6GWh
	Cost	RM5.4mil	RM10.6mil	RM16.8mil
	CO_2 (tons/year)	17,181	33,638	36,992
	Estimated Lifetime Savings[2]	RM38mil	RM74.4mil	RM252mil

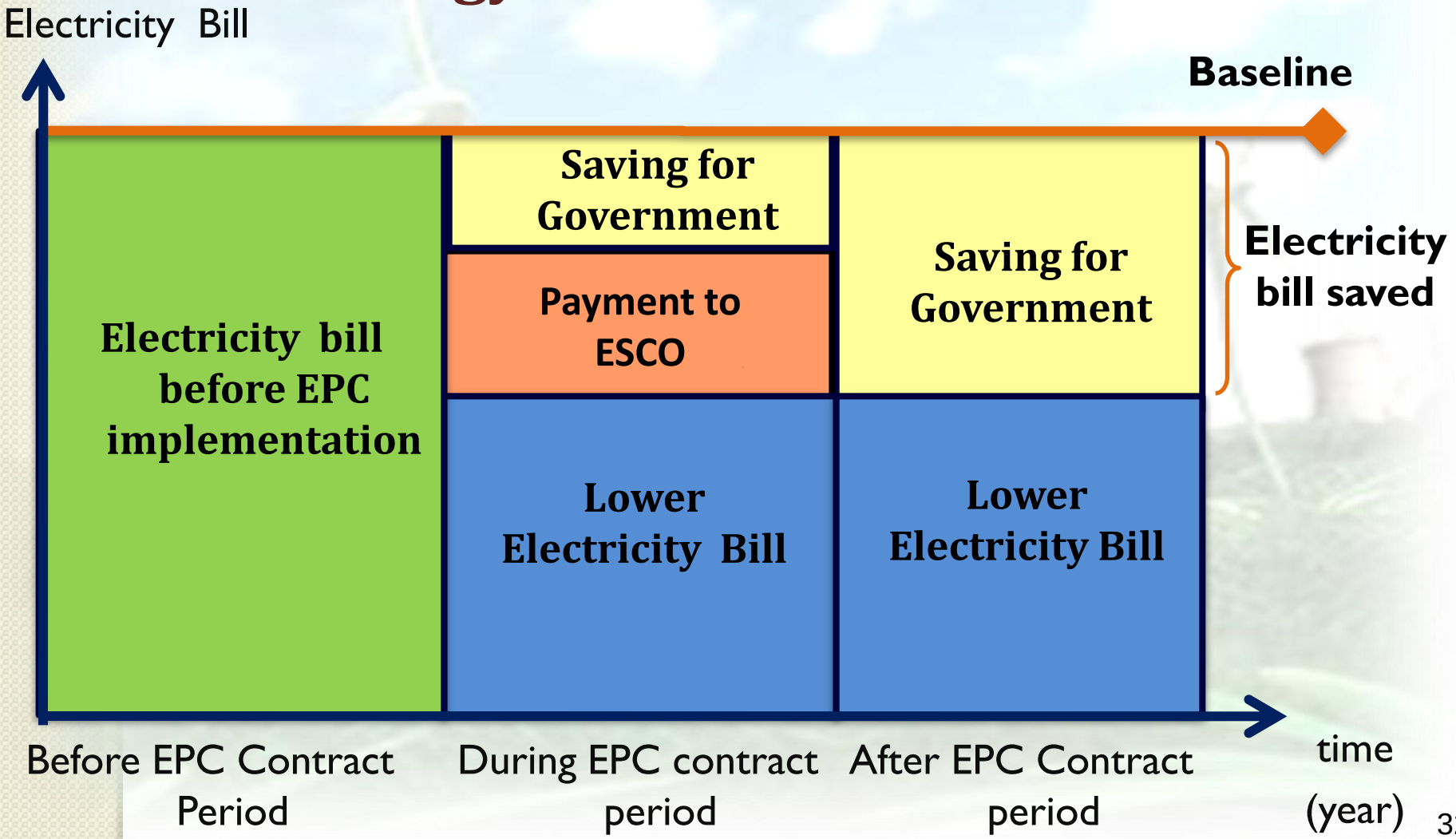
Expected Total Energy Savings[2] : 1,319.6GWh (equivalent to RM364.2mil)

[1] Target energy and cost savings at current tariff rate

[2] Lifetime saving for fridge and air conditioner in 7 years; for chillers in 15 years

EE Program: EPC for Government Buildings

Energy Performance Contract



National Energy Efficiency Action Plan (NEAAP)

- NEEAP's main objective is to enhance the nation's energy efficiency & conservation initiatives over a 10-year period.
- NEEAP is focused on the industrial sector, buildings and equipment .
- NEEAP's targets are:

Targets	Short (3rd Year)	Medium (6th Year)	Long/Total (10th Year)
Electricity Savings (GWh)	2,774	14,840	50,594
Monetary Savings (RM Mill)	832	4,373	14,627
Electricity consumption reduction (%)	1.3	3.4	5.6

WAY FORWARD

a) Renewable Energy

- Redefine Renewable Energy to include off-grid renewables (i.e. solar, & biomass) and non-FiT hydro;

- Ramp-up Renewable Energy capacity through:
  - Utility scale Solar PV
  - Net-metering
  - Introduce regional standards for PV Systems

WAY FORWARD

- New RE Resources
  - Geothermal
  - Wind Resource Assessment
  - Geothermal potential assessment

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WAY FORWARD

b) Energy Efficiency

- Implement National Energy Efficiency Action Plan (NEEAP)
- Energy audit and Retrofit in Government Buildings in 2014
- 5% saving for electricity bill for all Government agencies

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THANK YOU