



# **AFO ENERGY WORKING GROUP**

Country: Malaysia

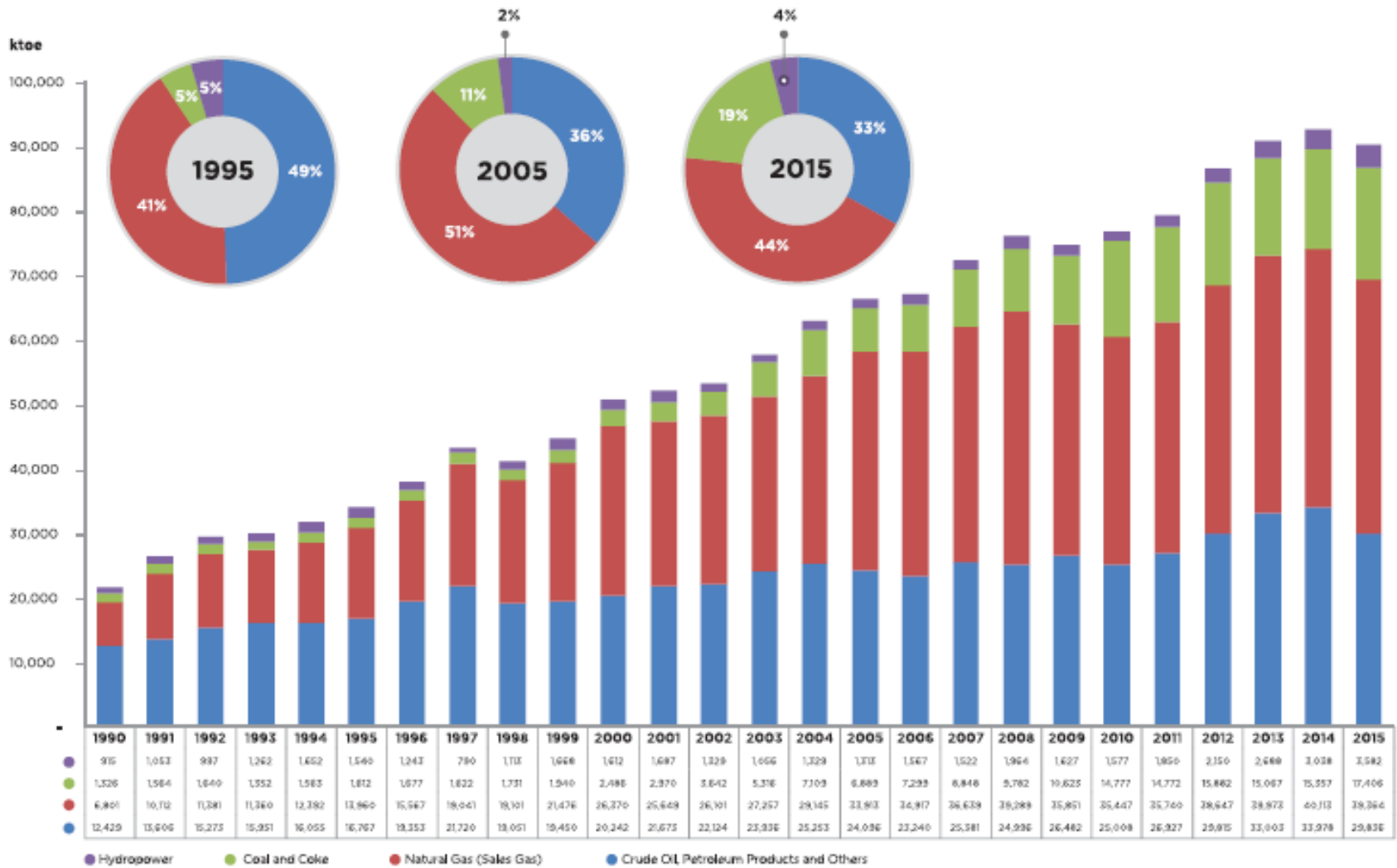
Presented By: Ir. Francis Xavier Jacob

# Presentation Outline

- Latest energy mix
- Rural electrification data and plans
- Policies on Energy Efficiency (EE) and Renewable Energy (RE)
- Type of subsidy instruments
- Upcoming & Past Activities Related To Energy Carried Out by the Institution
- Opportunities/Support Required From AFEO WG Energy

# Energy Mix

# PRIMARY ENERGY SUPPLY



Source: Oil and gas companies, power utilities, IPPs, cement, iron and steel manufacturers

# FUEL MIX IN ELECTRICITY GENERATION (%)

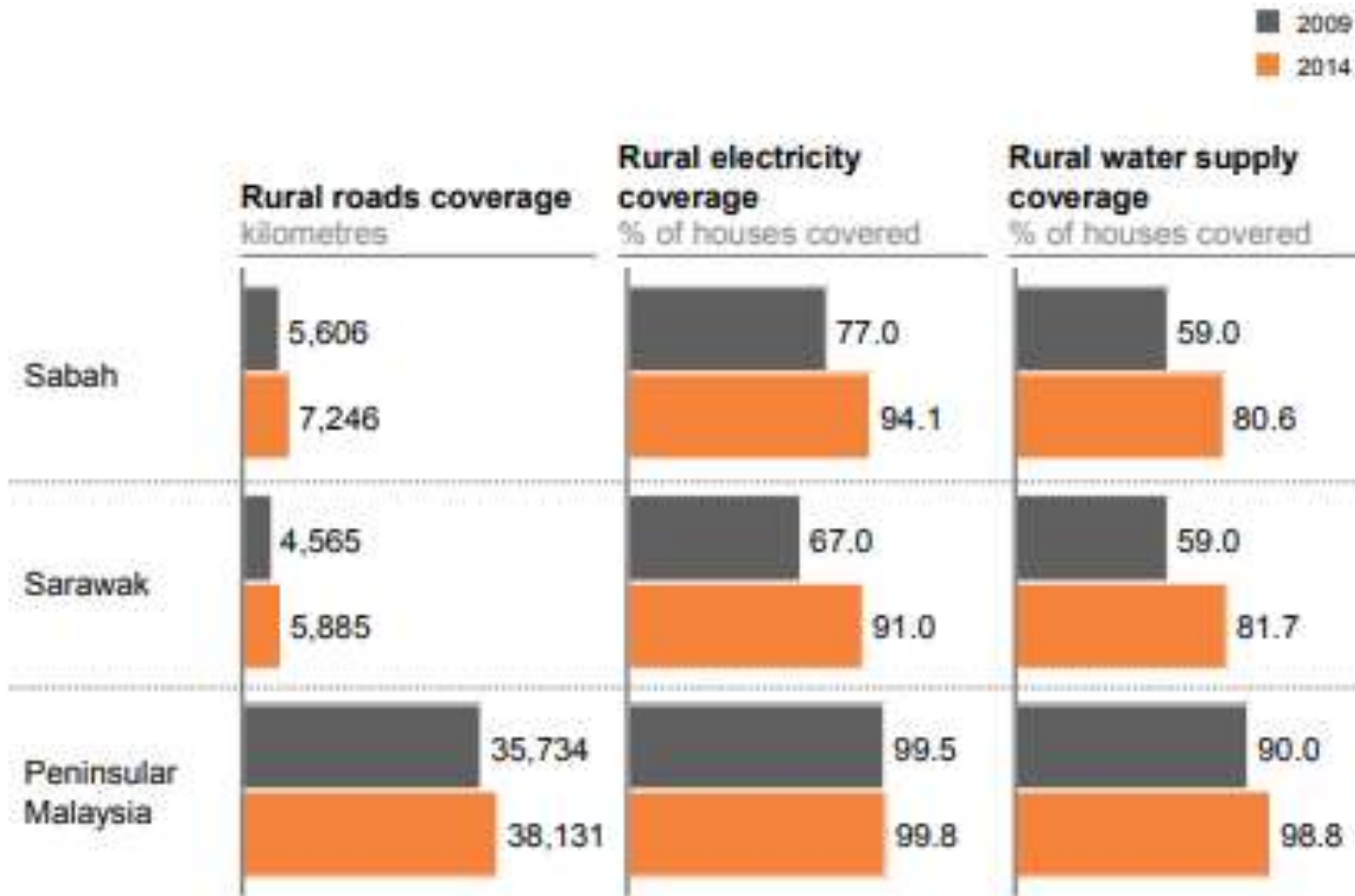
YEAR	OIL	COAL	GAS	HYDRO	OTHERS
1990	41.9	13.8	26.2	17.8	0.3
1995	11	9.7	67.8	11.3	0.2
2000	4.2	8.8	77	10	0
2005	2.2	21.8	70.2	5.5	0.3
2009	2.4	32.5	58	5.9	1.2
2010	1.7	40	52.7	5.5	0.1
2011	7.5	46.6	39.2	6.7	-
2012	4.7	48.3	39.4	7.3	0.2
2014	2.9	43.2	43.8	9.6	0.5
2015	1.1	47.2	40.4	10.8	0.5

# Latest Energy Mix

Fuel	Peninsular	Sabah	Sarawak	Malaysia	
Coal	9,066	0	480	9,546	32.5%
Gas	11,324	968	595	12,886	43.9%
Diesel/MFO	0	187	114	301	1.0%
Large Hydro	2,529	82	3,452	6,062	20.7%
Solar	265	10	11	275	0.9%
Biomass	102	40		142	0.5%
Biogas	55	3		58	0.2%
Mini Hydro	44	6.5		51	0.2%
<b>Total</b>	<b>23,385</b>	<b>1,296</b>	<b>4,652</b>	<b>29,333</b>	<b>100%</b>
RE (incl. large hydro)	2,995 (12.8%)	141 (10.9%)	3,463 (74.4%)	6,599	22.5%

\*as of May 2017

# Rural Electrification Data



Source: Ministry of Rural and Regional Development.



# Rural Electricity Supply (BELB)

- Implemented through on-grid and off-grid
- Sarawak Alternative Rural Electrification Scheme (SARES)

# Policies on EE & RE



# RE Development in Malaysia

8<sup>th</sup> Malaysia  
Plan (2001 -  
2005)

- RE introduced as the **5th Fuel**
- Implied 5% RE in energy mix

9<sup>th</sup> Malaysia  
Plan  
(2006 – 2010)

- Small Renewable Energy Programme (**SREP**)
- Government approved the **National RE Policy & Action Plan (NREPAP)** (Oct. 2010)

10<sup>th</sup> Malaysia  
Plan (2011-  
2015)

- Enactment of **RE Act 2011** & SEDA Act 2011 (27 & 28 April 2011)
- Implementation of **Feed-in Tariff (FiT)**

11<sup>th</sup> Malaysia  
Plan (2016-  
2020)

- Target RE capacity of 2,080 MW
- Implementation of **Large-Scale Solar (LSS)** programme
- Implementation of **Net Energy Metering (NEM)** scheme



# History of EE Initiatives in Malaysia

1. Energy efficiency promotion in the Seventh Malaysia Plan (1996-2000)
2. UNDP-GEF Malaysian Industrial Efficiency Improvement Programme (MIEIP) (1999)
3. Fiscal incentives for EE (2001)
4. Development of Malaysian Standard MS 1525 (2001)
5. DANIDA Capacity building on EE and DSM for key institutions (2002)
6. Energy audit on government buildings (2002)
7. EE and RE in education curriculum and university courses (2002)
8. Energy efficient building demonstration projects (2004)
9. Development of EE guidelines for Malaysian industries (2006)
10. Efficient Management Of Electrical Energy Regulations (2008)
11. Green Building Index (GBI) (2009)



# History of EE Initiatives in Malaysia (cont'd)

12. EE rating and labelling of equipment (2009)
13. Green Technology Financing Scheme (2010)
14. EE equipment rebate scheme (2011)
15. UNDP-GEF Building Sector Energy Efficiency Project (BSEEP) (2011)
16. MS 1525 provisions in Uniform Building By-Laws (2012)
17. Minimum energy performance standards (MEPS) regulations (2013)
18. UNIDO-GEF industrial energy efficiency project (2013)
19. Energy Performance Contracting (EPC) for government buildings (2013)
20. Incentive-based tariff regulation (2014)
21. 5% energy reduction target for government buildings (2014)
22. National Energy Efficiency Action Plan (NEEAP)

# Types of Subsidy Instruments



# Net Energy Metering (NEM) Scheme

- Utility consumers are allowed to install PV systems on their roof for **self-consumption**, with the excess energy being **exported** to the Grid, and **net-off** from their monthly bills at **displaced cost**
- Net bill = [Energy Imported x Utility Tariff] – [Energy Exported x Displaced Cost]
- Installation type – building rooftop only
- Implemented from **1 November 2016**
- Total quota of **500 MW** from 2016 to 2020 (or **100 MW per year**)
- Eligible for **domestic, commercial** and **industrial** consumers, for **rooftop** solar PV system
- For domestic consumers, the maximum capacity is **≤ 12 kWp for single-phase** or **72 kWp for three-phase systems**
- For commercial and industrial consumers, the maximum capacity shall be **75% of maximum demand** (for MV system) or **60% of fuse rating or 60% of current transformer** (for LV system)



# NEM Quota (2016-2020)

## Quota Allocation (proposed)

Location		Peninsular					Sabah				
		2016	2017	2018	2019	2020	2016	2017	2018	2019	2020
Category of Consumers	Domestic/Residential, MWp	20	20	20	20	20	4	4	4	4	4
	Commercial, MWp	35	35	35	35	35	4	4	4	4	4
	Industrial, MWp	35	35	35	35	35	2	2	2	2	2
Sum, MWp		90	90	90	90	90	10	10	10	10	10
Total, MWp (as at 1 <sup>st</sup> Nov 2016)		450					50				

**Note: Quota allocation will be based on first-come first-served basis.**





# Large-Scale Solar (LSS) Projects (cont'd)

- **Second round** of bidding completed in 2017
- Solar PV plants with capacity of 1 – 30 MW selected through **open bidding** process
- Bid opening rates (116 bids received)
  - 1-5 MW – 37.5 to 47 sen/kWh
  - 6-9 MW – 37 to 46 sen/kWh
  - 10-30 MW – 33.98 to 50 sen/kWh
- Award of projects – 40 projects; December 2017
- Total capacity awarded – **556.99 MW**
- Project commissioning in 2019 & 2020
- LSS projects through **direct procurement** process – 8 projects; total capacity **270 MW**

# Upcoming & Past Activities Related To Energy Carried Out by the Institution

# Past Activities



Event: **Half Day Workshop on Low Carbon Energy Alternatives in Malaysia**

Key Moderator: **Datuk Badriyah Abdul Malik, Deputy Secretary General of MESTECC**

Date: **2<sup>nd</sup> Dec 2017**

Venue: **Wisma IEM**

12 November 2018

AFEO Energy Workgroup Meeting, CAFEO  
36, Singapore

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# Past Activities



Event: **Technical Visit to Bukit Tagar Sanitary Landfill**

Date: **27<sup>th</sup> April 2018**

Venue: **Bukit Tagar Sanitary Landfill**

# Past Activities



**Event: Pre-AGM Talk on Sustainable Energy Policy in Malaysia- What's Next?**

**Speaker: Ir Akmal, COO of Sustainable Energy Development Authority (SEDA) Malaysia**

**Date: 5<sup>th</sup> May 2018**

**Venue: Wisma IEM**

12 November 2018

AFEO Energy Workgroup Meeting, CAFEO  
36, Singapore

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# Opportunities/Support Required From AFEO WG Energy

# ASEAN ELECTROTECHNICAL SYMPOSIUM & EXHIBITION 2018

STANDARDS DRIVE GLOBAL VALUE CHAINS

📅 04th - 05th DECEMBER, 2018

📖 CONNEXION CONFERENCE & EVENT CENTRE, KUALA LUMPUR, MALAYSIA



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<http://www.iese.my/>



AFEO Energy Workgroup Meeting, CAPEO  
36, Singapore

# The End