# **Energy Statistics in Malaysia**

Workshop on Energy Statistics for ASEAN Countries

21 – 23 November 2017

Kuala Lumpur, Malaysia



### Outline

- Background
- Energy in Malaysia
- Standard Operating Procedures
- Data Collection
- Data Dissemination
- Way Forward



## Background

- In 2010, Energy Commission of Malaysia (EC) has been mandated by Ministry of Energy, Green Technology and Water (MEGTW) to be the focal point for energy data and statistics in the country.
- EC are responsible to prepare and publish National Energy Balance publication
- EC are responsible to give feedback by local and international parties related to energy data and statistics



### Production and Reserves of Oil as of 1st January 2015

	RESER	PRODUCTION (THOUSAND BARRELS PER DAY)				
REGION	CRUDE OIL	CONDENSATES	TOTAL	CRUDE OIL	CONDENSATES	TOTAL
Peninsular Malaysia	1.843	0.362	2.205	220.02	34.21	254.23
Sabah	1.897	0.112	2.009	210.15	2.63	212.79
Sarawak	1.239	0.454	1.693	125.54	69.07	194.60
TOTAL	4.979	0.928	5.907	555.70	105.91	661.62

### Reserves and Production of Natural Gas as of 1st January 2015

		PRODUCTION		
	TRILLIO	MILLION STANDARD		
REGION	ASSOCIATED	NON-ASSOCIATED	TOTAL	CUBIC FEET PER DAY (MMscf/d)
Peninsular Malaysia	8.471	24.022	32.493	1,949.69
Sabah	3.149	11.884	15.032	376.02
Sarawak	2.853	50.034	52.888	4,147.00
TOTAL	14.473	85.940	100.413	6,472.71

Notes (\*): Refers to the amount of gas produced/generated from associated fields

1 cubic feet = 0.028317 cubic metre

Associated Gas: Natural gas produced in association with oil Non-Associated Gas: Natural gas produced from a gas reservoir not associated with oil

Source: PETRONAS



#### Production and Reserves of Coal as of 31st December 2015

	RESERV	ES (MILLION TO	NNES)		PRODUCTION	
LOCATION	MEASURED	INDICATED	INFERRED	COAL TYPE	(METRIC TONNES)	
SARAWAK						
1. Abok & Silantsk, Sri Aman	7.25	10.60	32.40	Coking Coal, Semi-Anthracite and Anthracite	25,842	
2. Merit-Pila, Kapit	170.26	107.02	107.84	Sub-Bituminous	693,457	
3. Bintulu	6.00	0.00	14.00 Bituminous (partly coking coal)		-	
4. Mukah - Balingian	86.95	170.73	646.53	Lignite, Hydrous Lignite and Sub-Bituminous	1,840,145	
5. Tutoh Area	5.58	34.66	162.33	Sub-Bituminous	-	
SUBTOTAL	276.04	323.01	963.10		2,559,444	
SABAH						
1. Salimpopon	4.80	14.09	7.70	Sub-Bituminous	-	
2. Labuan	-	-	8.90	Sub-Bituminous	-	
3. Mallau	-	-	215.00	Bituminous	-	
4. Malibau	-	17.90	25.00		-	
5. SW Malibau	-	23.23	-		-	
6. Pinangan West Middle Block	-	-	42.60	Bituminous	-	
SUBTOTAL	4.80	55.22	299.20			
SELANGOR						
1. Batu Arang	-	-	17.00	Sub-Bituminous	-	
Subtotal	0.00	0.00	17.00		-	
TOTAL	280.84	378.23	1,279.30			
GRAND TOTAL				2,559,444		

Source: Department of Mineral and Geosciences Malaysia

Table 9: Consumption of Coal in metric tonnes

SECTORS	PENINSULAR MALAYSIA SABAH		SARAWAK	MALAYSIA			
Industry	2,684,838	-	136,149	2,820,987			
Power Stations	22,858,325	-	1,930,132	24,788,457			
TOTAL	25,543,163	0	2,066,281	27,609,444			
Source Power Utilities, IFRs, cement, iron and steel manufactures:							

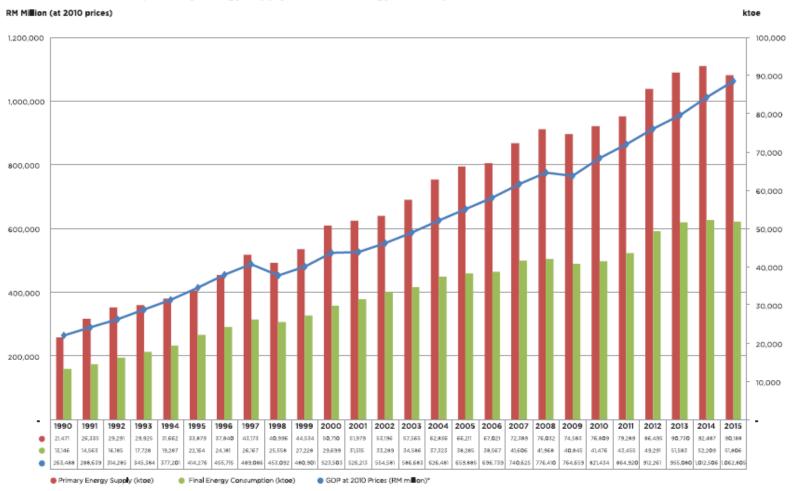
Installed Capacity as of 31st December 2015 in MW

		HYDRO	NATURAL GAS	COAL	DIESEL / MFO	BIOMASS	SOLAR	BIOGAS	OTHERS	TOTAL
4	TNB	2,149.1	4,150.0	0.0	0.0	0.0	0.0	0.0	0.0	6,299.1
LAYSIA	IPPs	0.0	6,344.5	8,066.0	0.0	0.0	0.0	0.0	0.0	14,410.5
AR MAL	Co-Generation	0.0	876.1	0.0	0.0	90.7	0.0	69.5	0.0	1,036.2
PENINSUL	Self- Generation	21	0.0	0.0	399.0	351.8	10	4.9	0.0	758.8
8	FIT	23.6	0.0	0.0	0.0	44.4	206.7	30.4	0.0	305.1
	Subtotal	2,174.8	11,370.6	8,066.0	399.0	486.9	207.7	104.7	0.0	22,809.8
	SESB	76.0	T12.0	0.0	180.9	0.0	0.0	0.0	0.0	368.9
	IPPs	0.0	1,012.6	0.0	189.9	0.0	0.0	0.0	0.0	1,202.5
₹	Co-Generation	0.0	106.8	0.0	0.0	122.7	0.0	0.0	0.0	229.5
SAB	Self- Generation	0.0	0.0	0.0	526.8	135.8	0.1	3.4	0.0	666.1
	FIT	6.5	0.0	0.0	0.0	43.0	18.1	2.7	0.0	70.3
	Subtotal	82.5	1,231.4	0.0	897.6	301.5	18.3	6.1	0.0	2,537.3
	SEB	1,058.8	614.6	480.0	158.3	0.0	0.0	0.0	0.0	2,311.7
×	IPPs	2,400.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2,400.0
SARAWAK	Co-Generation	0.0	289.0	0.0	0.0	0.0	0.0	0.0	0.0	289.0
SAB	Self- Generation	0.0	0.0	0.0	n.e	741	0.3	0.5	51	91.5
	Subtotal	3,458.8	903.6	480.0	169.9	74.1	0.3	0.5	5.1	5,092.2
	Total	5,716.1	13,505.6	8,546.0	1,466.5	862.5	226.3	111.3	5.1	30,439.3
	Share (%)	18.8%	44.4%	28.1%	4.8%	2.8%	0.7%	0.4%	0.0%	100.0%

Source: Power Utilities, IFPs and SEDA Mabysis Note: Excluding plants that not in operation



### Trends in GDP, Primary Energy Supply and Final Energy Consumption

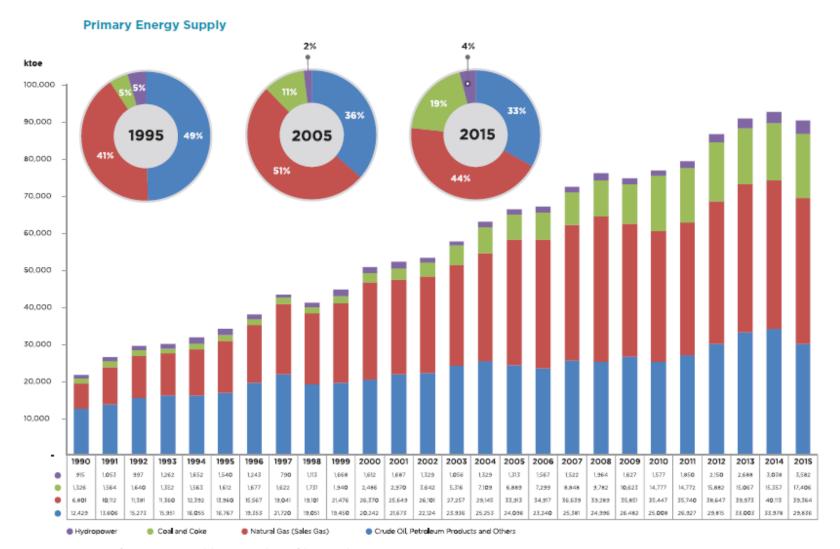


Average Annual Growth Rate per year from 1990 until 2015:

- a. GDP at 5.7%
- b. Primary Energy Supply at5.9%
- c. Final Energy Consumption at5.6%

Source: GDP data by Department of Statistics Malaysia Note: GDP at 2010 Prices (RM Million) for 1990 until 2009 was calculated by Energy Commission





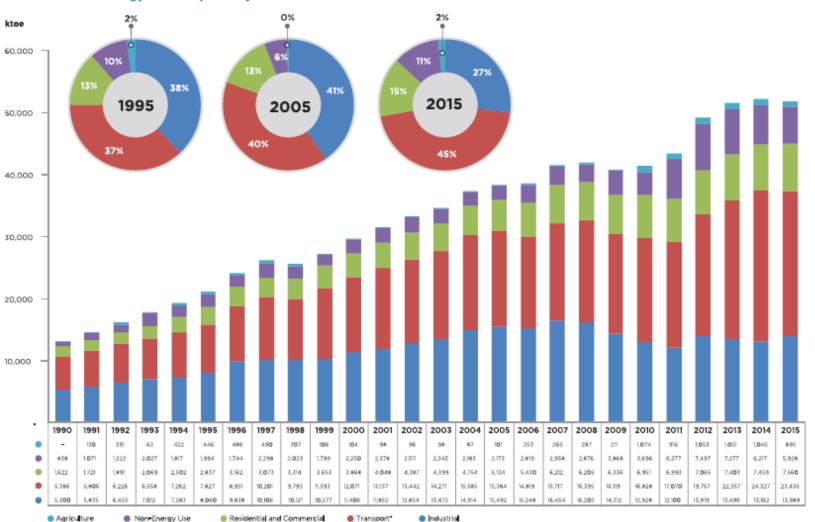
Average Annual Growth Rate per year from 1990 until 2015:

- a. Coal and Coke at 10.8%
- b. Natural Gas at 7.3%
- c. Hydropower at 5.6%
- d. Crude Oil, PetroleumProducts and Others at 3.6%

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



### **Final Energy Consumption by Sectors**



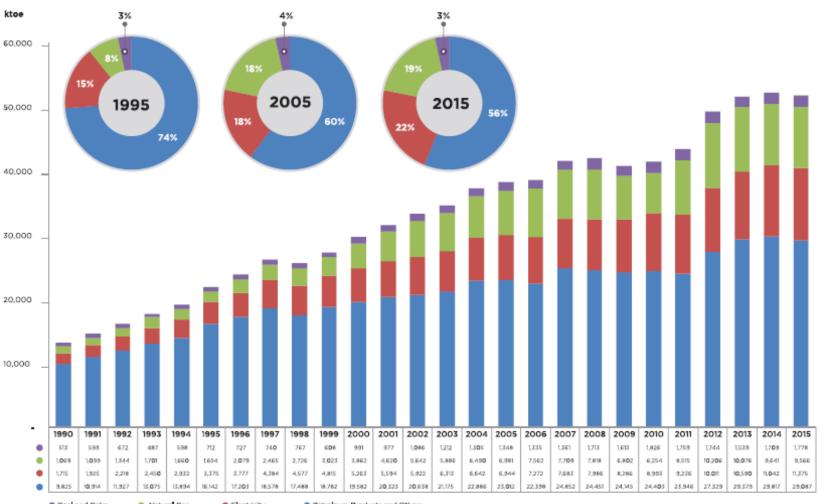
Average Annual Growth Rate per year from 1990 until 2015:

- a. Non-Energy Use at 8.1%
- b. Residential and Commercial at 6.4%
- c. Transport at 6.1%
- d. Industrial at 4.0%

Source: Oil and gas companies, TNB, SESB, SEB, IPPs, cement, iron and steel manufacturers Note (\*): Transport including international aviation



### **Final Energy Consumption by Type of Fuels**



Average Annual Growth Rate per year from 1990 until 2015:

- a. Natural Gas at 9.2%
- b. Electricity at 7.9%
- c. Coal and Coke at 5.1%
- d. Petroleum Products andOthers at 4.4%

Source: Oil and gas companies, TNB, SESB, SEB, IPPs, cement, iron and steel manufacturers



## Standard Operating Procedures

### Overall procedures for producing the National Energy Balance

SOP ID	SOP Type	SOP Title
SOP-MEIH-NEB-001	General Procedure	Preparation of National Energy Balance
SOP-MEIH-NEB-P1	Process Control	Project Initialization SOP for NEB
SOP-MEIH-NEB-P2	Process Control	Data Collection SOP for NEB
SOP-MEIH-NEB-P2(A)	Process Control	Procedure for Managing Late Data Submissions
SOP-MEIH-NEB-P2(B)	Process Control	Procedure for Managing Requests for Training
SOP-MEIH-NEB-P3	Process Control	Data Compilation SOP for NEB
SOP-MEIH-NEB-P4	Process Control	Report Preparation SOP for NEB
SOP-MEIH-NEB-P5	Process Control	Report Publication SOP for NEB
SOP-MEIH-NEB-P6	Process Control	Report Dissemination SOP for NEB

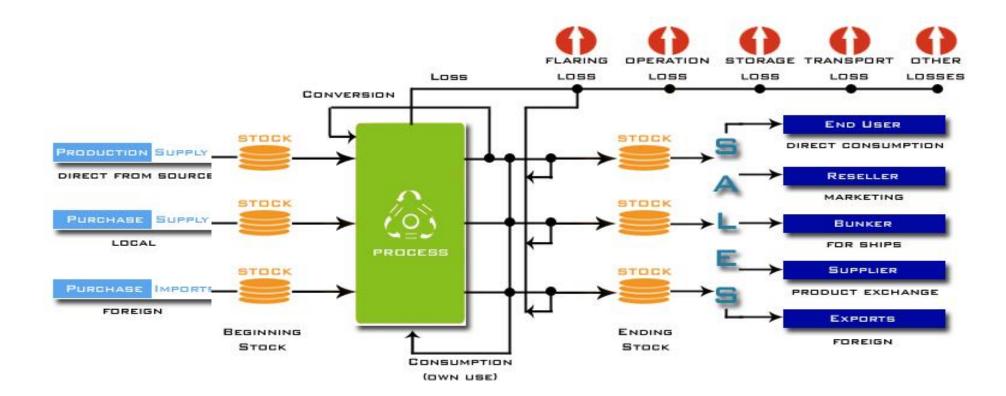


### Data Collection

- Currently, about 70 data providers
- Divided into fuel types; oil, gas, electricity and coal
- In quarterly basis based on region
- Questionnaire based on energy balance format
- Collected via online, email, fax and postage
- Primary and secondary sources
- Common unit of measurement based on fuel types



## Data Collection









- Type in the URL for MEIH Portal in the address bar of the internet Browser (Internet Explorer / Mozilla Firefox / Chrome),
   www.meih.st.gov.my
- Another option is to go to the official website of Suruhanjaya Tenaga, <u>www.st.gov.my</u>. Click on the MEIH icon located in the main page.
- Or go to official website of Ministry of Energy, Green Technology and Water, <a href="www.kettha.gov.my">www.kettha.gov.my</a>. Click on the Malaysia Energy Information Hub link at the main page.



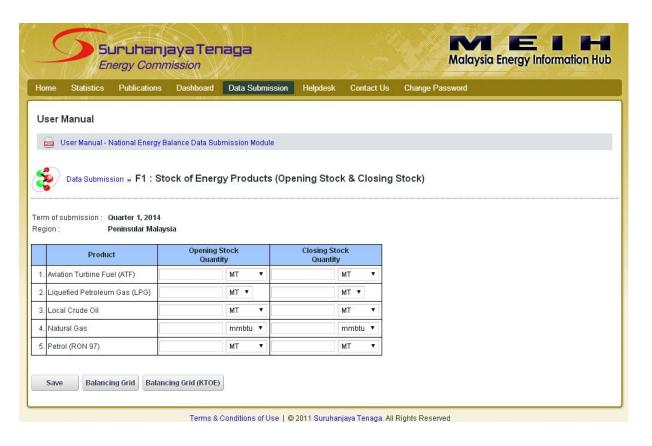
Forms	Form Description	Parameters/Fields
F1	Stock of Energy Products	Open Stock
		Closing Stock
F2	Energy Intake into Plant/Process/Operation	Local Purchase
		<ul> <li>Production Supply/Electricity Generation</li> </ul>
		Foreign Imports
F3	Energy Own Consumption and Conversion/Operations	Own Use/Electricity Own Use
		Conversion Process
F4	Sales of Energy Products by Dsitribution Channels	Sales End User
		Sales Reseller
		Sales Bunker
		Sales Intercompany
		Sales Exports
F5	Losses of Energy Products	<ul> <li>Loss Flaring</li> </ul>
		Loss Storage
		<ul> <li>Loss Operations</li> </ul>
		Loss Others
		<ul> <li>Loss Transportation</li> </ul>

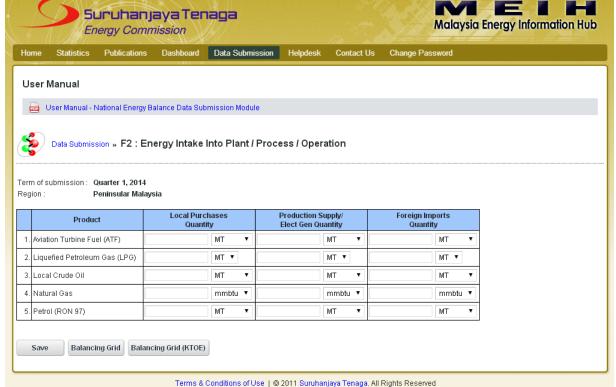
1. Residential/Domestic	5. Industrial	6. Transportation
Retail - Residential Public Lighting	Retail - Industry Forestry & Logging Fishing	Retail - Transportation Road Rail
2. Commerical Retail - Commercial	Mining & Quarry Construction Refining	Air Inland Water
Wholesale & Retail (Hotel / Complexes) Real Estate & Services Government & Military	Ceramic Food, Beverage & Tobacco Glass & Glass Products Rubber, Plastic & Non Metalic	<b>7. Utility</b> Utility Generation - TNB Utility Generation - SESCO Utility Generation - SEB
3. Agriculture	Wood & Furniture Textile Apparel & Leather	Utility Generation - Others
Agriculture & Livestock	Power Generation Brick	8. Bunker
<b>4. Non Engery</b> Non Energy Use	Cement Iron, Steel & Metal Pulp, Paper Products & Printing Chemical & Petrochemical Other Oil Companies General Manufacturing (Others)	International Shipping



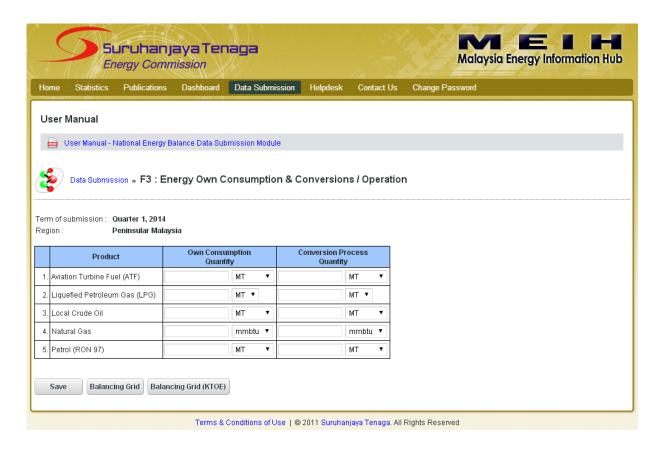
No Product Name	Product Description	No	Product Name	Product Description	No	Product Name	Product Description
1 ATF & Av Gas	ATF (A viation Turbine Fuel)		Electricity	Electricity	75	Trouder Haine	Light Detergent Feedstock
2	A viation Gas (A V Gas)		Fuel Oil	Fuel Oil Bunker	76		Liquid Lubricants
3	DPK (Dual Purpose Kerosene)	40		Fuel Oil	77		MTBE
4 Coal & Coke	Brown Coal Coke	41		Fuel Oil - Cogen	78		Naptha
5	Bituminuous Coal	42		Fuel Oil - Thermal - Steam	79		Oil Sops
6	Charcoal	43		Fuel Oil - Thermal - Utility sets	80		Other Lubes
7	Coal - Thermal - Steam	44		Fuel Oil (other than Residual)	81		Petroleum Solvent (Others)
8	Coke (Semi Coke)	45		Residual Fuel Oil	82		Platformate / Reformate
9	Fuel Wood	46		Fuel Oil (LSWR)	83		Petroleum Jelly
10	Graphite	47	Hydro Power	Elect - Hydro - Major	84		Solid Lubricants
11	Gas Coke	48		Elect - Hydro - Mini	85		Other Waxes
12	Lignite (Brown Coal)		Kerosene	Regular Kerosene	86		Petroleum Waxes
13	Lignite Briquettes		Liqufied Natural Gas	LNG Liquiefied Natural Gas	87		Waxy Raffinates
14	Other Coal		LPG	LPG Liquiefied Petroleum Gas	88	Others	Local Condensate
15	Peat	52	Motor Petrol	Mogas (Others)	89		Crude Residuum
16	Pattern Fuel Briquettes	53		Mogas (w Naptha L 92 RON)	90		Foreign Condensates
17	Petroleum Coke	54		Mogas (w Naptha UL 92 RON)	91		Residuee (FE)
18	Retort Carbon	55		Mogas (w Naptha UL 97 RON)	92		Slops Reprocessed
19	Semi Coke	56		Mogas (wout Naptha L 92 RON)	93	Private Licencee Fossil	Elect - Private Licensee - Diesel
20 Co-Generation Fossil	Elect - Cogen - Diesel	57		Mogas (wout Naptha UL 92 RON)	94		Elect - Private Licencee - Natgas
21	Elect - Cogen - Fuel Oil	58		Mogas (wout Naptha UL 97 RON)		Private Licencee Renewable	Elect - Private Licencee - Biomass
22	Elect - Cogen - Natgas	59	Natural Gas	Butane	96	Refinery Gas	Flared Gas
23 Co-Generation Renewable	Elect - Cogen - Biomass	60		Ethane	97		Refinery Gas
24	Elect - Cogen - Palm Oil	61		Methane	98	Solar	Elect - Solar
25 Crude Oil	Local Crude Oil	62		Natural Gas Fuel	99	Thermal	Elect - Thermal - Combined Cycle - Diesel
26	Other Foreign Crude Oil	63		Natural Gas	100		Elect - Thermal - Combined Cycle - Natgas
27	West Asian Crude Oil	64		NatGas - Thermal - Combined Cycle	101		Elect - Thermal - Geothermal
28 Diesel	Diesel Oil Bunker	65		NatGas - Cogen	102		Elect - Thermal - Steam - Biomass
29	Diesel Oil	66		NatGas - Thermal - Open Cycle	103		Elect - Thermal - OpenCycle - Diesel
30	Diesel - Cogen	67		NatGas - Private Licencee	104		Elect - Thermal - OpenCycle - Natgas
31	Diesel - Thermal - Open Cycle	68		NatGas - Thermal - Steam	105		Elect - Thermal - Steam - Coal
32	Diesel - Private Licencee	69		Propane	106		Elect - Thermal - Steam - Diesel
33	Diesel - Thermal - Steam	70	Non Energy	Bitumen / Asphalt / Mexphalte	107		Elect - Thermal - Steam - Fuel Oil
34	Diesel - Thermal - Utility Sets	71		Bitumen Mastics	108		Elect - Thermal - Steam - Natgas
35	Gas Oil	72		Heavy Detergent Feedstock	109		Elect - Thermal - Utility Sets - Diesel
36	High Speed Diesel Fuel	73		White/Industrial Spirit	110	Wind Turbine	Elect - Wind Turbine
37	3	74		Lubes / Grease			

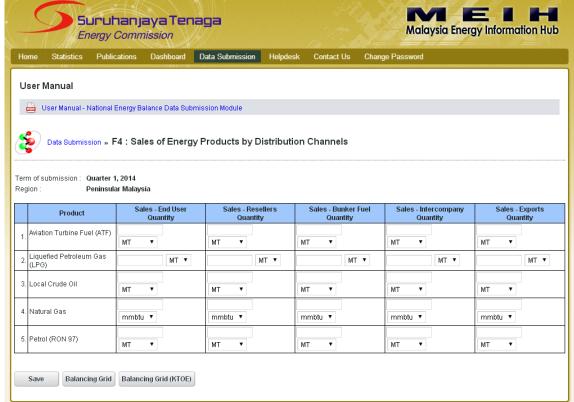




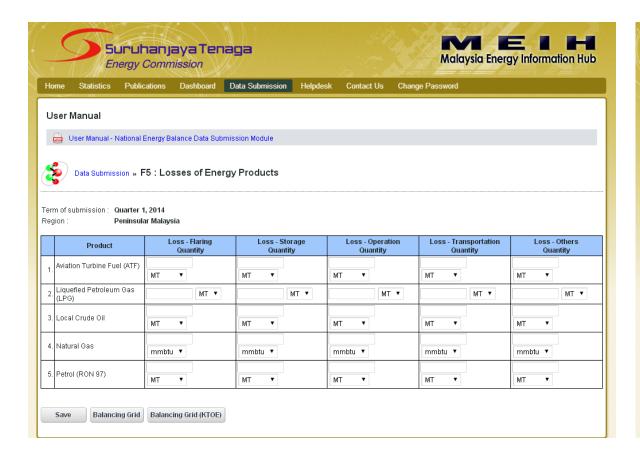


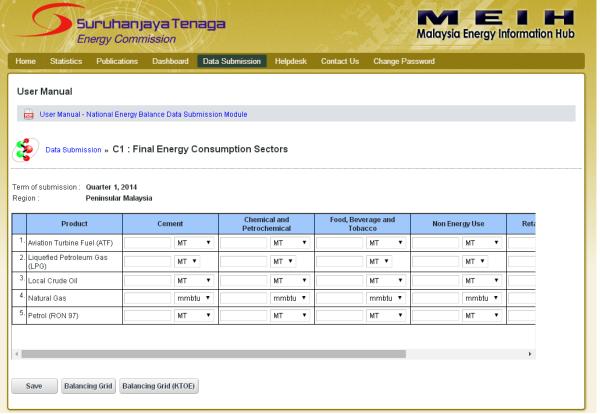








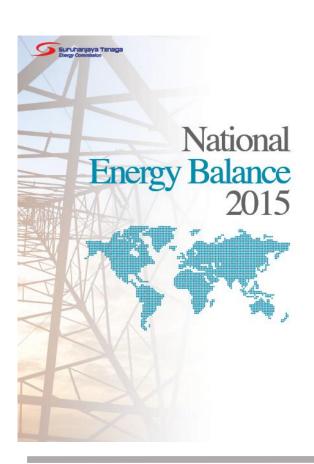






### Data Dissemination

**Publication** 



### Online



#### Summary

- Primary Energy Supply
- Transformation Process
- Final Energy Demand

#### Crude Oil & Petroleum Products

- Reserves
- III Production
- Import & Export
- Final Consumption

#### Natural Gas

- li Reserves
- Production
- Import & Export
- Final Consumption

#### Coal & Coke

- li Reserves
- III Production
- Import & Export
- Final Consumption

#### Electricity

- Installed Capacity
- Electricity Generation
- Final Electricity Consumption

### Economic Data Analysis

#### Economic Indicator

- ₩ GDP
- li Population
- GDP per Capita

#### **Energy Indicator**

- Energy Intensity per Capita
- Energy Intensity per unit GDP



- Performance of Electricity Supply Industry
- Information on Electricity Supply Industry
- Independent Power Producers (IPPs)
- Electricity Distributors
- iii Co-Generators
- Renewable Energy Projects
- iii Electrical Competency Certificates Issued



#### **Energy Prices**

- Petroleum Products
- III LPG
- Natural Gas
- Retail Petroleum
- Tariff



#### Gas Distribution Statistics

- Performance of Gas Distribution System
- Matural Gas Consumption
- Natural Gas Consumers
- Length of Natural Gas Distribution Pipeline
- Gas Competency Certificates Issued

### Mobile Apps



### MyEnergyStats

This mobile application is to access data from the Malaysia Energy Information Hub (MEIH). It can fetch new up-to-date data and filter according to the user needs.

These are the categories provided:

- Energy Reserves
- Energy Supply
- Energy Transformation
- Energy Consumption
- Energy Indicators
- Energy Prices
- Electricity
   Gas Distribution Statistics

Features including filtering according to years and type, pdf generation and bookmarking.

The Malaysia Energy Information Hub (MEIH) serves to establish a comprehensive national energy database to support the dissemination and distribution of energy statistics in Malaysia to local and international stakeholders and the public. MEIH is managed by the Energy Commission (EC) of Malaysia.

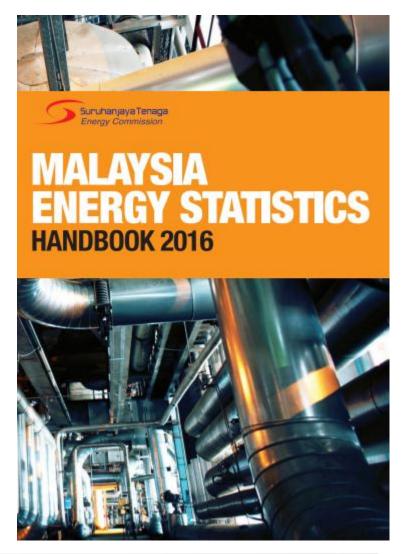






## Other Publications







## Way Forward

### **Energy Survey**

- We already conducted energy survey for Manufacturing, Residential and Commercial sectors
- We will conducting energy survey for Transportation sector in 2018

New Data in National Energy Balance (Proposal)

- GHG Inventory Data for Energy Sector
- Final Energy Consumption data by States in Malaysia
- Energy Outlook



### **Thank You**

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