Suruhanjaya Tenaga
Energy Commission

National Energy Balance **2013**

PUBLISHED BY:

SURUHANJAYA TENAGA (ENERGY COMMISSION)
No. 12, Jalan Tun Hussein, Precinct 2, 62100 Putrajaya, Malaysia
Tel: (03)8870 8500 Fax: (03)8888 8637
Toll Free Number: 1 – 800 – 2222 – 78 (ST)
Email: info@st.gov.my

www.st.gov.my
www.meih.st.gov.my

ISSN NO.: 0128 – 6323
ST(P)01/03/2014

PRINTED IN MALAYSIA

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PREFACE

The Malaysian economy expanded by 4.7 percent in 2013 (2012: 5.64 percent), driven by the continued strong growth in domestic consumption. Despite the weaker external environment in the first half of the year, domestic consumption remained resilient throughout the year, led by robust private sector activity.

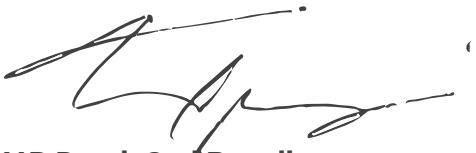
The overall performance of the energy sector in 2013 continued to be strong. The total primary energy supply (TPES) showed a growth of 4.9 percent (2012: 9.1 percent) from the previous year, to register at 90,730 ktoe. On the consumption side, the total final energy consumption (TFEC) grew from 49,291 ktoe in 2012 to 51,583 ktoe in 2013, equivalent to a growth rate of 4.6 percent (2012: 13.4 percent).

The strong growth of energy supply was mainly attributed to a higher production of natural gas while the higher growth in energy consumption was due mainly to increased consumption in the transportation sector. Electricity consumption grew at a slower pace of 5.8 percent compared to that in the previous year of 8.4 percent, resulting in a lower electricity elasticity of 1.22 in 2013 compared to 1.49 in 2012.

As of December 2013, Malaysia's installed capacity was at 29,748 MW of which 81.0 percent or 24,105 MW was in Peninsular Malaysia, 11.6 percent (3,447 MW) in Sarawak and the remaining 7.4 percent (2,196 MW) in Sabah. In terms of fuel mix, for the first time, the shares of coal and natural gas were evenly balanced at 43.7 percent each. This was followed by hydropower at 8.7 percent, fuel oil and diesel at 3.3 percent and the remaining 0.7 percent was from renewable sources.

I wish to thank all relevant government agencies, power utilities, independent power producers, oil and gas companies, coal producers, cement and iron and steel manufacturers, and others, for their continued contribution and support in making the publication of the NEB 2013 a success. I hope this report will be a valuable document for all, particularly in our quest to ensure secure and sustainable energy supply for Malaysia.

Thank you.



Y.B Datuk Seri Panglima
Dr. Maximus Johnity Ongkili
Minister of Energy, Green Technology and Water Malaysia

INTRODUCTION

Energy Commission (ST) is honoured to be mandated by the Ministry of Energy, Green Technology and Water (MEGTW) of Malaysia to be the focal point for energy data in the country. Being the reference point for official energy data in Malaysia, ST has put in efforts to make sure that the quality of the data produced is well maintained. The National Energy Balance (NEB) publication is the medium for the industry, institutional and public user to get information on Malaysia's energy situation through a systematic manner. The reporting format of NEB is based on international standards that have been adopted by all countries in the world.

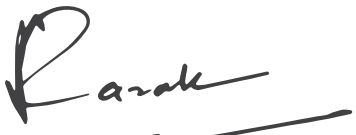
The new era for the NEB started when we launched our Malaysia Energy Information Hub (MEIH) website back in the year 2012. During that time we only offered data dissemination section for the public users to view and download the data. Now, we are proud to announce that most of our data providers are submitting the NEB data though the MEIH online data submission. A series of training had been conducted for all data providers to make sure that they are understand the concept and the objective of the MEIH. Moreover, from time to time we will make sure that the MEIH website is constantly update with the latest data and information.

In the effort to support the policy makers in drafting our national energy policy, we had successfully conducted a survey on the manufacturing sector. Previously our energy consumption data was not broken into sub-sectors and had been reported as lump-sum figures. With the results from the survey we had managed to estimate our manufacturing sub-sectors consumption based on their fuel types. As a result, this will be a good input to the Government especially the policy makers to get a better picture of energy consumption from the manufacturing.

As the focal point for energy data in Malaysia, we will continually support our regional and international agencies by submitting appropriate energy data to them. Through this cooperation, we hope to have a fair exchange of information with other countries that can benefit all. Furthermore, our energy data information will be a good reference to the foreign investors that have interests in our country.

Lastly, I wish to thank the Ministry of Energy, Green Technology and Water for their full support to make sure that our NEB reports are published successfully. To all data providers, your invaluable cooperation is much appreciated and I hope we will continue to enjoy this meaningful commitment.

Thank you.



Dato' Abdul Razak Bin Abdul Majid
Chairman of Energy Commission
Malaysia

DATA COMPILATION

The first stage in compiling the overall energy balance is to rearrange the data to fit into a standard structure of commodity (or partial) balance. The commodity balance shows clearly the production, imports, exports, stock change and consumption for each energy commodity. The basic sequence adhered to in the overall balance is:-

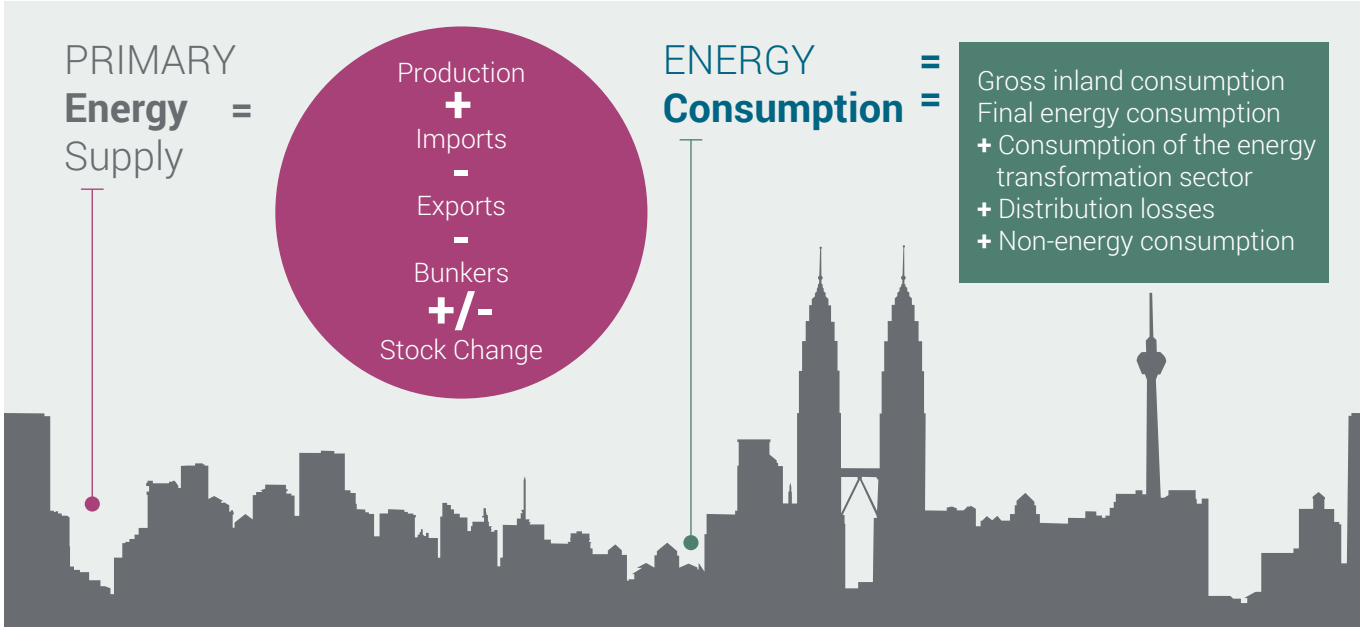
PRODUCTION + IMPORTS - EXPORTS +/- STOCK CHANGE = APPARENT INLAND DELIVERIES (OR CONSUMPTION)

In practice, however, "Apparent inland deliveries" deduced from supply statistics hardly ever match actual sales data. It is necessary, therefore, to include two "statistical discrepancies" - the first to account for the difference in apparent inland delivery of primary supply mainly due to the difficulties in obtaining actual stock change data and difference in data compilation at source and the second to account for the difference in secondary supply as the result of the transformation processes of one form of energy to another.

In addition, the statistical discrepancies also act as a balancing tool to minimise possible errors. In the case of oil and oil products, losses in transportation and distribution, as well as statistical errors are included in the statistical discrepancies. However, for electricity, distribution losses and the sector's own use of electricity are accounted for in the "losses and own use".

Stock changes are not fully accounted for in the balance. It is extremely difficult to obtain stocks of all energy commodities at distributors and final users. Only oil companies' stocks are readily available and these would include stocks at refineries and depots. The statistical discrepancy might thus also include unrecorded stock changes. Coal stocks at TNB power station and a producer in Sarawak are taken into account in this report.

In summary, the flow of energy is represented by the following equations:-



EXECUTIVE SUMMARY

ENERGY/ ECONOMY OVERVIEW

higher economy
growth
in **2013**
4.7%

The Malaysian economy expanded by 4.7 percent in 2013 (2012: 5.6 percent), driven by the continued strong growth in domestic consumption. Despite the weaker external environment in the first half of the year, domestic consumption remained resilient throughout the year, led by robust private sector activity. Private consumption was supported mainly by favourable employment conditions and wage growth. Private investment was underpinned by capital spending in the mining, services and manufacturing sectors.

Despite lower economic growth rate for the country compared to previous year, Malaysia energy supply and consumption posted a strong growth. Total primary energy supply continued to increase at 4.9 percent (2012: 9.1 percent) due to higher production and imports especially from natural gas and petroleum products. Our total final energy consumption recorded a 4.6 percent growth, contributed by higher fuel consumed in the transportation sector.

PRIMARY ENERGY SUPPLY

to **register** at
90,730 ktoe

The total primary energy supply in 2013 increased at 4.9 percent to register at 90,730 ktoe. The increased was contributed by higher natural gas production in 2013. Total natural gas production increased by 2.9 percent to settle at 64,406 ktoe (2012: 62,581 ktoe). The higher production of natural gas was due to higher production from Sarawak gas fields and increased of 6.8 percent compared to the previous year. The production of crude oil, however, decreased by 1.8 percent to register at 28,576 ktoe. Only Sabah oil fields showed an upward trend with a growth of 2.2 percent. This was due to the new deepwater field at offshore Sabah named Gumusut-Kakap. The Gumusut-Kakap field's full development comprises 19 subsea wells which are linked to a permanent structure of the semi-FPS and an oil export pipeline that will bring crude oil to the Sabah Oil and Gas Terminal in Kimanis, Sabah. The system has a design capacity to process up to 150,000 barrels of oil equivalent (boe) per day. The total imports of energy in 2013 also showed an increase with a 13.7 percent growth rate. Analysis by share showed that we are importing about 55.9 percent of oil, followed by coal at 27.3 percent and gas at 26.8 percent. Malaysia's total energy exports decreased by 2.5 percent to settle at 51,899 ktoe. 55.1 percent of total energy export was from gas, followed by oil at 43.9 percent and coal at 0.6 percent.

Analysis by share showed that natural gas had still the largest share of total primary energy supply with 44.1 percent. Natural gas share dropped compared to the previous year's share at 44.7 percent. The share of crude oil, petroleum products and others remained strong with a share of 36.4 percent. The total primary supply of coal and coke constituted 16.6 percent of the total. While the hydropower's share was at 3.0 percent compared to only 2.5 percent during the previous year.

Malaysia's crude oil reserves stood was at 5.850 billion barrels as of 1st January 2013 compared to 5.954 billion barrels in the previous year. The dropped was contributed by lower reserve mainly coming from Peninsular Malaysia with negative growth rate of 3.2 percent. Malaysia's natural gas reserves as of 1st January 2013 increased to 98.320 trillion standard cubic feet (tscf), an increase of 6.7 percent from the 2012 level of 92.122 tscf. The major increase of the natural gas reserves was observed in Sarawak, as the reserves increase by 16.4 percent. There were few discoveries of gas in Sarawak namely Adong Kecil West-1 well in Block SK333, onshore Sarawak and Pegaga-1 well in Block SK320, offshore Sarawak.

ENERGY TRANSFORMATION

LNG

production was

to **register** at **28,037** ktoe

In the year 2013, LNG production increased by 7.8 percent to register at 28,037 ktoe, the highest ever annual production since its operation started. Increased production of LNG was due to higher input of natural gas in LNG plants by 8.4 percent. This high production of LNG in 2013 has enabled Malaysia to ship out 422 cargoes to customers. Malaysia started to import LNG through the commercial start-up of the Melaka Re-gasification Terminal (RGT) in May 2013 at 1,450 ktoe, which will improve the security of natural gas supply in Peninsular Malaysia. It also allows third parties to import LNG and sell natural gas to domestic customers. The total petroleum products produced from Middle Distillate Synthesis (MDS) plant recorded a decrease of 1.6 percent to settle at 478 ktoe. Out of this total, 61.7 percent was for non-energy products, 27.8 percent diesel and 10.5 percent kerosene.

Liquefied Petroleum Gas (LPG) production from LNG had decreased to 172 ktoe as more natural gas was converted to LNG. A similar trend was observed for the LPG production as it registered a negative growth rate to register at 1,174 ktoe in the year 2013. The lower production of LPG from GPP was due to lower input of natural gas in GPP with only at 3,231 ktoe compared to that in the previous year at 6,235 ktoe.

Malaysia's total refinery capacity currently is 492 kilo barrels per day (kbpd), not including the condensates splitter capacity of 74.3 kbpd. In 2013, the total refinery output had decreased by 5.1 percent to register at 24,727 ktoe (2012: 26,047 ktoe). The major drop was from Kerosene, ATF & AV Gas, Non-Energy and Fuel Oil. Diesel registered the highest share (44.7 percent), followed by petrol (19.0 percent), non-energy (12.5 percent), ATF and AV Gas (11.1 percent), fuel oil (5.2 percent), LPG (5.1 percent) kerosene (1.6 percent) and refinery gas (0.8 percent).

ELECTRICITY

end of **2013** was constituted at **29,748** MW, an increase of

Malaysia's total installed electricity generation capacity as at the end of 2013 was 29,748 MW, an increase of 2.1 percent from 29,143 MW in 2012. This was attributed to the additional capacity of 600 MW of the major hydro installation of Bakun project in Sarawak. This made the total capacity of Bakun installation hydro to be 1,800 MW. Gross electricity generation registered at 143,497 GWh, an increase of 6.8 percent from the previous year (2012: 134,375 GWh). On the other hand, the electricity consumption was 123,076 GWh, an increase of 5.8 percent from the previous year (2012: 116,354 GWh). The peak demand for Peninsular Malaysia was recorded at 16,562 MW in the second quarter of the year (2Q 2013), Sarawak at 1,783 MW (in 3Q 2013) and Sabah at 874 MW (3Q 2013). The calculated reserve margin for Peninsular Malaysia in 2013 was 31.3 percent, 14.7 percent for Sarawak and Sabah at 34.1 percent.

The total energy input in power stations had increased by 5.8 percent in 2013 to 30,959 ktoe. Coal and natural gas continued to be the main fuel sources for electricity generation, with a share of 43.7 percent each. It was followed by hydropower at 8.7 percent, diesel and fuel oil at 3.3 percent, while renewables was at 0.7 percent.

Analysis of the electricity consumption by sectors showed that the agriculture sector recorded the highest increase with 7.5 percent compared to the previous year to settle at 32 ktoe (375 GWh). It was followed by the industrial sector, which had increased by 6.6 percent from the previous year to register at 4,809 ktoe (55,886 GWh). The residential sector continued to post a strong growth in 2013 at 6.4 percent to settle at 2,262 ktoe (26,288 GWh). Moreover, the commercial sector also recorded a positive growth of 4.2 percent to register at 3,466 ktoe (40,286 GWh). Electricity consumption for the transportation sector posted a negative growth of 1.1 percent to settle at 21 ktoe (241 GWh) compared to the previous year.

FINAL ENERGY CONSUMPTION

In terms of share, **petrol**

and **diesel**

continued to be the largest contributors to the total consumption for **petroleum products**

Malaysia total final energy consumption posted a growth of 4.6 percent in 2013. The growth was underpinned by the higher fuel consumed in the transportation sector especially for petrol and ATF & AV Gas. The total final energy consumption in the transportation sector recorded an increase of 13.2 percent to settle at 22,357 ktoe (2012: 19,757 ktoe). The high increase in the transportation sector was due to favourable employment conditions and wage growth. During the year, wages in the domestic-oriented industries in the manufacturing sector recorded a stronger growth (10.3 percent; 2012: 6.6 percent), whilst those in the export-oriented industries registered sustained growth (5 percent; 2012: 5.2 percent). The implementation of the minimum wage policy on 1 January 2013 also contributed to the higher wage levels. The Government financial assistance to low- and middle-income households continued to support private consumption, albeit to a lesser extent compared to 2012. These included Bantuan Rakyat 1Malaysia (BR1M), Baucar Buku 1Malaysia (BB1M), and schooling assistance to primary and secondary school students, which in total amounted to RM3.8 billion.

The residential and commercial sectors continue to expand with growth of 4.8 percent to register at 7,403 ktoe. The total final energy consumption in the industrial sector recorded a negative growth of 3.0 percent to settle at 13,496 ktoe. This was due to lower consumption of natural gas and petroleum products as manufacturers switched to electricity as their source of energy. The non-energy sector also recorded a negative growth rate of 2.9 percent to register at 7,277 ktoe. The agriculture sector maintained its energy consumption at 1,051 ktoe (2012: 1,052 ktoe). The industrial GDP for Malaysia in 2013 registered a slightly lower growth of 3.3 percent compared to the year before at 4.4 percent. Malaysia's industrial energy intensity for 2013 was 64 toe/RM Million, an improvement of 6.0 percent from the previous year due to lower growth of the industry and non-energy sector.

The analysis of the total final energy consumption by type of fuels showed that petroleum products constituted about 57.0 percent of total energy consumption, followed by electricity at 20.5 percent, 19.5 percent for natural gas and 3.0 percent for coal and coke. All others fuel types showed an upward trend compared to the previous year except for coal and coke and natural gas. The final consumption of coal and coke decreased 11.7 percent compared to previous year to register at 1,539 ktoe. The final consumption of natural gas decreased by 1.3 percent in 2013 to 10,076 ktoe due to the decrease in consumption from the non-energy and industry sector. The final electricity consumption increased by 5.8 percent compared to the previous year.

In 2013, the total final energy consumption for petroleum products increased by 7.3 percent with the major increase coming from petrol and ATF & AV Gas. Final consumption for petrol increase by 16.7 percent while final consumption for ATF & AV Gas increase by 18.9 percent. In terms of share, petrol (43.4 percent) and diesel (32.8 percent) continued to be the largest contributors to the total consumption for petroleum products. This was followed by ATF and AV Gas (10.3 percent), LPG (10.1 percent), non-energy (2.3 percent) fuel oil (1.1 percent), and kerosene (0.1 percent).

OUTLOOK IN 2014

expanding by

4.5 - 5.5%

The Malaysian economy is expected to remain on a steady growth path in 2014, expanding by 4.5-5.5 percent (2013: 4.7 percent). The growth momentum will be supported by better performance in the external sector amid some moderation in domestic demand.

Malaysia's energy supply and consumption will be expected to grow further in 2014. Positive growth will be expected in the transportation, residential and commercial sectors. Electricity consumption in Sarawak will be expected to grow at a strong rate with many energy intensive industry players becoming fully operational. Furthermore, on the supply side, crude oil and natural gas production are projected to experience positive growth due to higher local and export consumption.

01.

KEY ECONOMIC AND **ENERGY DATA**

TABLE 1: KEY ECONOMIC AND ENERGY DATA

	2013				
	Q1	Q2	Q3	Q4	TOTAL
GDP at current prices (RM million)*	233,898	237,507	250,275	265,053	**986,733**
GDP at 2005 prices (RM million)*	187,093	193,249	200,591	206,678	**787,611**
GNI at current prices (RM million)*	225,861	229,415	242,306	255,025	**952,607**
GNI at 2005 prices (RM million)*	173,708	179,178	187,353	190,246	**730,485**
Population ('000 people)	29,814	29,915	30,002	30,089	**29,915****
Primary Energy Supply (ktoe)	22,176	23,475	22,668	22,412	**90,730**
Final Energy Consumption (ktoe)	12,655	13,229	12,788	12,912	**51,583**
Electricity Consumption (ktoe)	2,532	2,711	2,673	2,673	**10,590**
Electricity Consumption (GWh)	29,433	31,510	31,069	31,064	**123,076**
Per Capita					
GDP at Current Prices (RM)*	31,381	31,758	33,368	35,236	**32,985**
Primary Energy Supply (toe)	0.744	0.785	0.756	0.745	**3.033**
Final Energy Consumption (toe)	0.424	0.442	0.426	0.429	**1.724**
Electricity Consumption (kWh)	987	1,053	1,036	1,032	**4,114**
Energy Intensity					
Primary Energy Supply (toe/GDP at 2005 prices (RM million))	118.5	121.5	113.0	108.4	**115.2**
Final Energy Consumption (toe/GDP at 2005 prices (RM million))	67.6	68.5	63.8	62.5	**65.5**
Electricity Consumption (toe/GDP at 2005 prices (RM million))	13.5	14.0	13.3	12.9	**13.4**
Electricity Consumption (GWh/GDP at 2005 prices (RM million))	0.157	0.163	0.155	0.150	**0.156**

Note:
(*) Quarterly data from Department of Statistics Malaysia
(**) Mid-year population from Department of Statistics Malaysia

TABLE 2: KEY ECONOMIC AND ENERGY DATA BY REGION

PENINSULAR MALAYSIA	2005	2006	2007	2008	2009	2010	2011	2012	2013
GDP at Current Prices (RM million)*	451,305	493,461	546,624	623,052	583,652	653,772	718,666	770,225	810,569
GDP at 2005 Prices (RM million)*	451,305	476,899	506,808	532,612	522,240	564,959	595,224	632,369	663,458
Population ('000 people)**	20,785	21,180	21,577	21,970	22,363	22,754	23,099	23,417	23,726
Final Energy Consumption (ktoe)	32,195	34,390	37,921	38,530	34,521	35,593	35,968	36,683	41,859
Electricity Consumption (ktoe)	6,366	6,669	7,030	7,307	7,567	8,145	8,427	8,791	9,108
Electricity Consumption (GWh)	73,987	77,504	81,710	84,924	87,950	94,666	97,939	102,174	105,861
Per Capita									
GDP at Current Prices (RM)*	21,713	23,298	25,334	28,360	26,099	28,733	31,112	32,892	34,164
Final Energy Consumption (toe)	1.549	1.624	1.757	1.754	1.544	1.564	1.557	1.567	1.764
Electricity Consumption (kWh)	3,560	3,659	3,787	3,866	3,933	4,161	4,240	4,363	4,462
Energy Intensity									
Final Energy Consumption (toe/GDP at 2005 prices (RM million))	71.3	72.1	74.8	72.3	66.1	63.0	60.4	58.0	63.1
Electricity Consumption (toe/GDP at 2005 prices (RM million))	14.1	14.0	13.9	13.7	14.5	14.4	14.2	13.9	13.7
Electricity Consumption (GWh/GDP at 2005 prices (RM million))	0.164	0.163	0.161	0.159	0.168	0.168	0.165	0.162	0.160

Note:
(*) 1. GDP data by States from Department of Statistics Malaysia
2.. GDP for Peninsular Malaysia including Supra State
(Supra State covers production activities that beyond the centre of predominant economic interest for any state)
(**) Mid-year population from Department of Statistics Malaysia

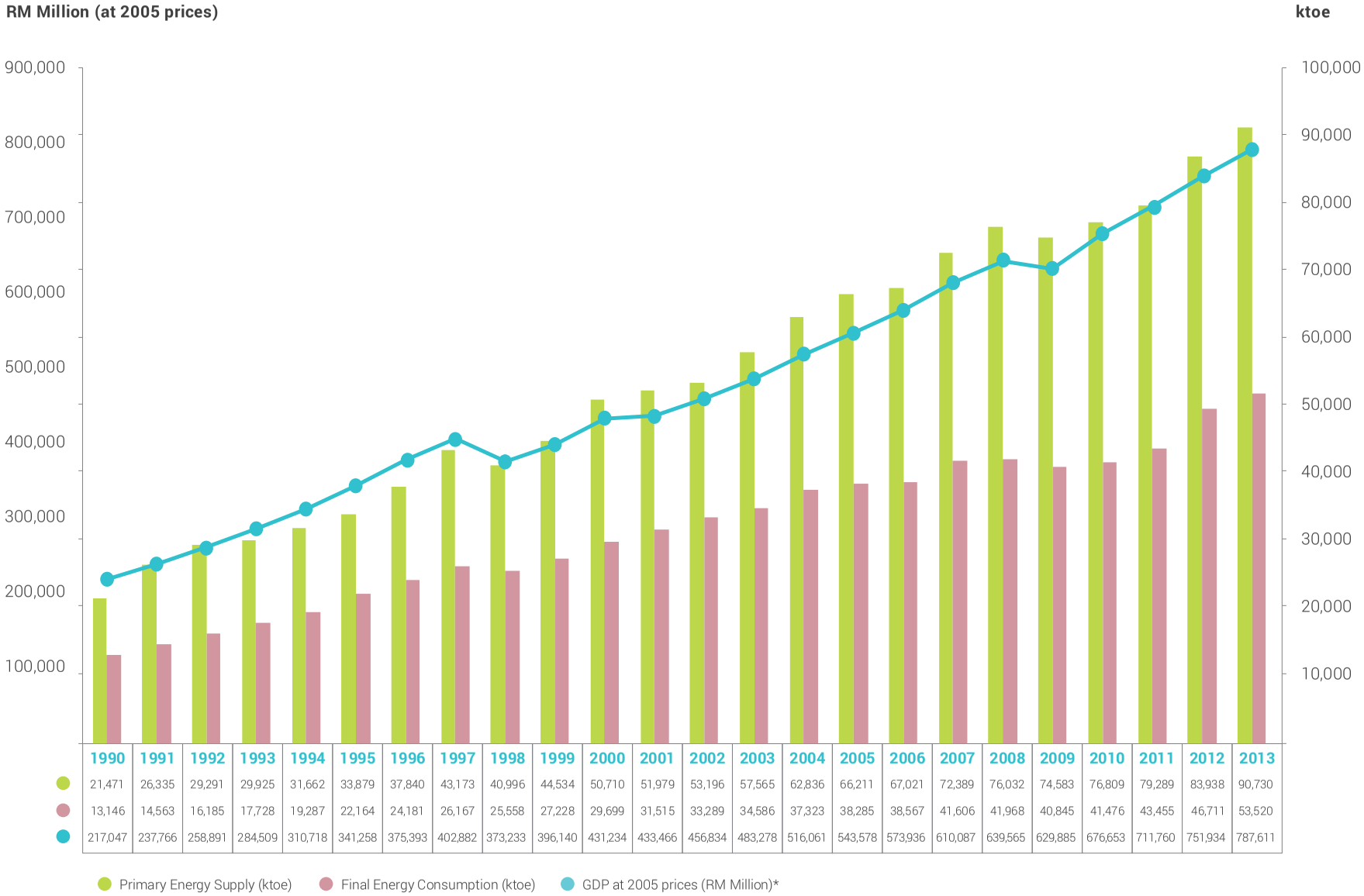
SABAH	2005	2006	2007	2008	2009	2010	2011	2012	2013
GDP at Current Prices (RM million)*	34,573	38,760	45,893	57,510	52,542	58,658	66,654	67,919	68,930
GDP at 2005 prices (RM million)*	34,573	36,772	37,996	41,483	43,472	44,747	45,687	47,686	49,266
Population ('000 people)**	2,978	3,045	3,116	3,190	3,267	3,348	3,435	3,523	3,581
Final Energy Consumption (ktoe)	2,806	2,587	2,879	3,068	3,046	2,758	3,466	4,671	4,097
Electricity Consumption (ktoe)	238	255	285	299	329	355	368	425	439
Electricity Consumption (GWh)	2,766	2,969	3,317	3,474	3,818	4,127	4,275	4,943	5,097
Per Capita									
GDP at Current Prices (RM)*	11,610	12,729	14,730	18,030	16,081	17,520	19,405	19,277	19,248
Final Energy Consumption (toe)	0.942	0.850	0.924	0.962	0.932	0.824	1.009	1.326	1.144
Electricity Consumption (kWh)	929	975	1,065	1,089	1,169	1,233	1,245	1,403	1,423
Energy Intensity									
Final Energy Consumption (toe/GDP at 2005 prices (RM million))	81.2	70.3	75.8	74.0	70.1	61.6	75.9	97.9	83.2
Electricity Consumption (toe/GDP at 2005 prices (RM million))	6.9	6.9	7.5	7.2	7.6	7.9	8.1	8.9	8.9
Electricity Consumption (GWh/GDP at 2005 prices (RM million))	0.080	0.081	0.087	0.084	0.088	0.092	0.094	0.104	0.103

Note:
(*) 1. GDP data by States from Department of Statistics Malaysia
2. GDP for Sabah including WP Labuan
(**) Mid-year population from Department of Statistics Malaysia

SARAWAK	2005	2006	2007	2008	2009	2010	2011	2012	2013
GDP at Current Prices (RM million)*	57,700	64,563	72,823	89,387	76,663	84,897	100,019	103,805	107,234
GDP at 2005 prices (RM million)*	57,700	60,265	65,283	65,470	64,173	66,947	70,849	71,879	74,887
Population ('000 people)**	2,282	2,325	2,366	2,408	2,451	2,487	2,528	2,570	2,608
Final Energy Consumption (ktoe)	3,274	3,330	3,461	3,302	3,277	3,125	4,086	5,358	5,628
Electricity Consumption (ktoe)	339	348	368	380	391	493	445	795	1,043
Electricity Consumption (GWh)	3,940	4,045	4,277	4,416	4,544	5,730	5,172	9,237	12,118
Per Capita									
GDP at Current Prices (RM)*	25,280	25,922	27,591	27,184	26,185	26,918	28,027	27,972	28,713
Final Energy Consumption (toe)	1.434	1.432	1.463	1.371	1.337	1.256	1.616	2.085	2.158
Electricity Consumption (kWh)	1,726	1,740	1,808	1,834	1,854	2,304	2,046	3,594	4,646
Energy Intensity									
Final Energy Consumption (toe/GDP at 2005 prices (RM million))	56.7	55.3	53.0	50.4	51.1	46.7	57.7	74.5	75.1
Electricity Consumption (toe/GDP at 2005 prices (RM million))	5.9	5.8	5.6	5.8	6.1	7.4	6.3	11.1	13.9
Electricity Consumption (GWh/GDP at 2005 prices (RM million))	0.068	0.067	0.066	0.067	0.071	0.086	0.073	0.129	0.162

Note:
(*) GDP data by States from Department of Statistics Malaysia
(**) Mid-year population from Department of Statistics Malaysia

FIGURE 1: TRENDS IN GDP, PRIMARY ENERGY SUPPLY AND FINAL ENERGY CONSUMPTION

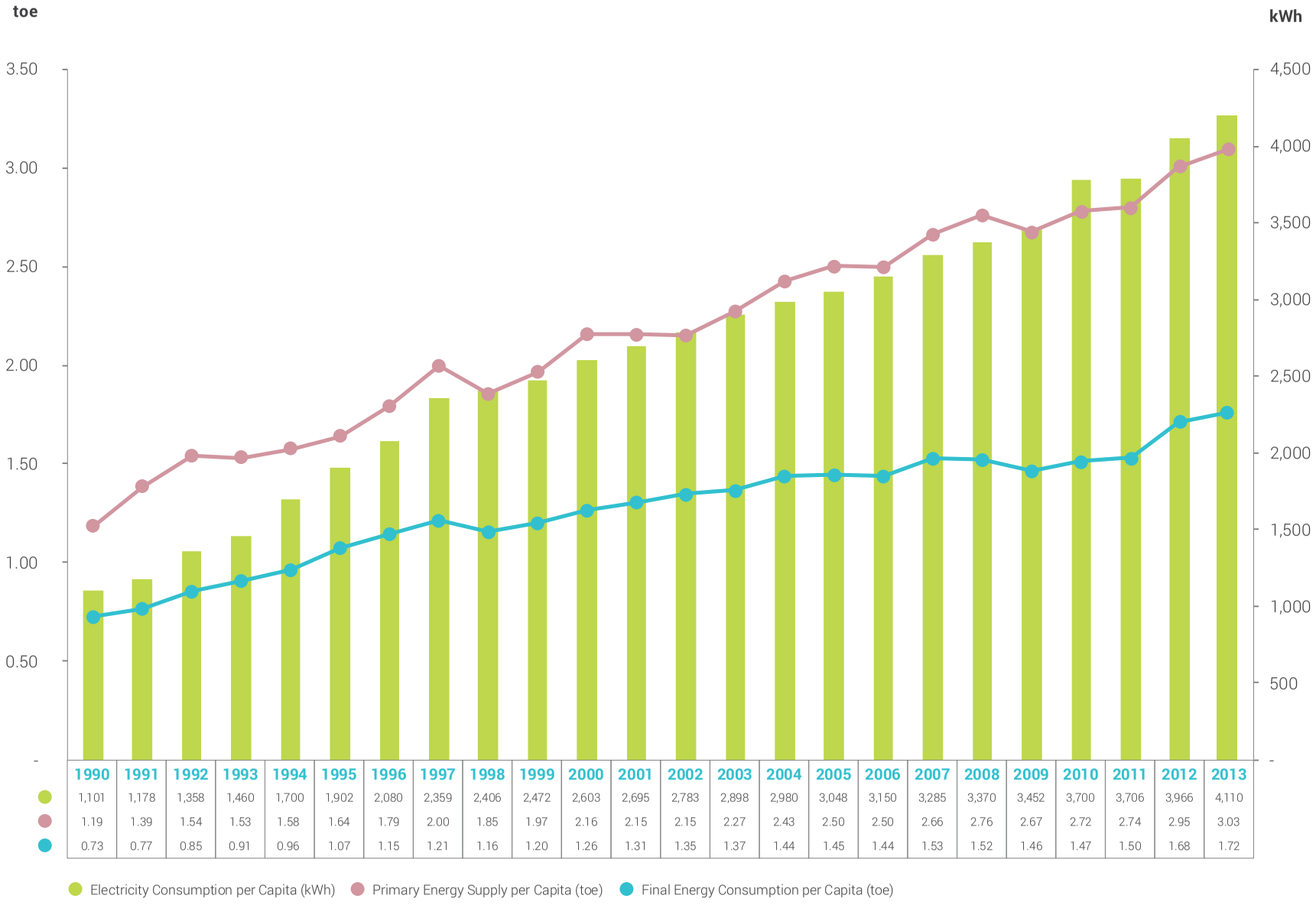


	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Primary Energy Supply (ktoe)	21,471	26,335	29,291	29,925	31,662	33,879	37,840	43,173	40,996	44,534	50,710	51,979	53,196	57,565	62,836	66,211	67,021	72,389	76,032	74,583	76,809	79,289	83,938	90,730
Final Energy Consumption (ktoe)	13,146	14,563	16,185	17,728	19,287	22,164	24,181	26,167	25,558	27,228	29,699	31,515	33,289	34,586	37,323	38,285	38,567	41,606	41,968	40,845	41,476	43,455	46,711	53,520
GDP at 2005 prices (RM Million)*	217,047	237,766	258,891	284,509	310,718	341,258	375,393	402,882	373,233	396,140	431,234	433,466	456,834	483,278	516,061	543,578	573,936	610,087	639,565	629,885	676,653	711,760	751,934	787,611

Source:
GDP data by Department of Statistics Malaysia

Note:
GDP at 2005 Prices (RM Million) for 1990 until 2004 was calculated by Energy Commission

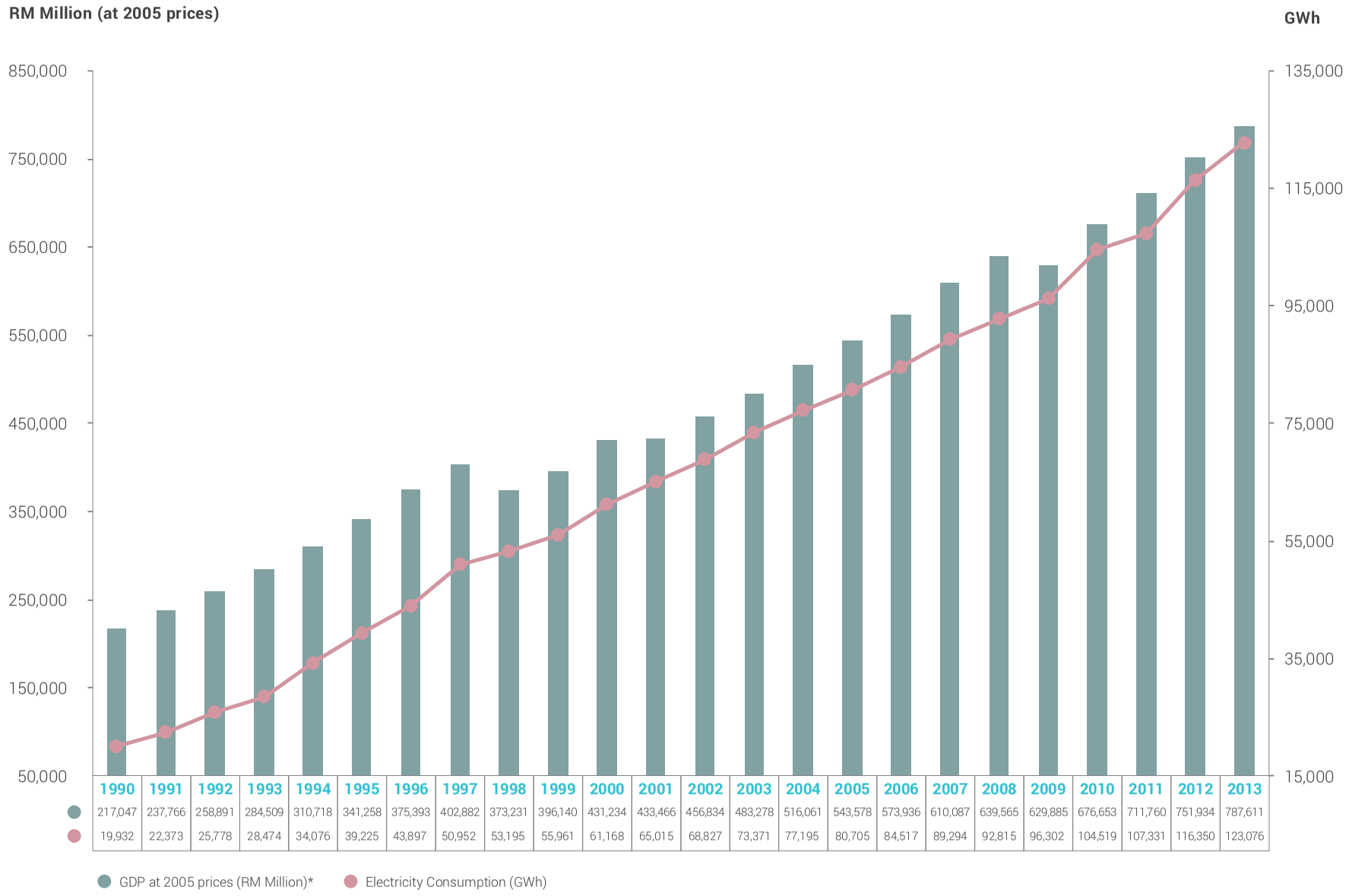
FIGURE 2: PRIMARY ENERGY SUPPLY, ELECTRICITY CONSUMPTION AND FINAL ENERGY CONSUMPTION PER CAPITA



	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Electricity Consumption per Capita (kWh)	1,101	1,178	1,358	1,460	1,700	1,902	2,080	2,359	2,406	2,472	2,603	2,695	2,783	2,898	2,980	3,048	3,150	3,285	3,370	3,452	3,700	3,706	3,966	4,110
Primary Energy Supply per Capita (toe)	1.19	1.39	1.54	1.53	1.58	1.64	1.79	2.00	1.85	1.97	2.16	2.15	2.15	2.27	2.43	2.50	2.50	2.66	2.76	2.67	2.72	2.74	2.95	3.03
Final Energy Consumption per Capita (toe)	0.73	0.77	0.85	0.91	0.96	1.07	1.15	1.21	1.16	1.20	1.26	1.31	1.35	1.37	1.44	1.45	1.44	1.53	1.52	1.46	1.47	1.50	1.68	1.72

Source:
Population data from Department of Statistics Malaysia

FIGURE 3: TRENDS IN GDP AND ELECTRICITY CONSUMPTION

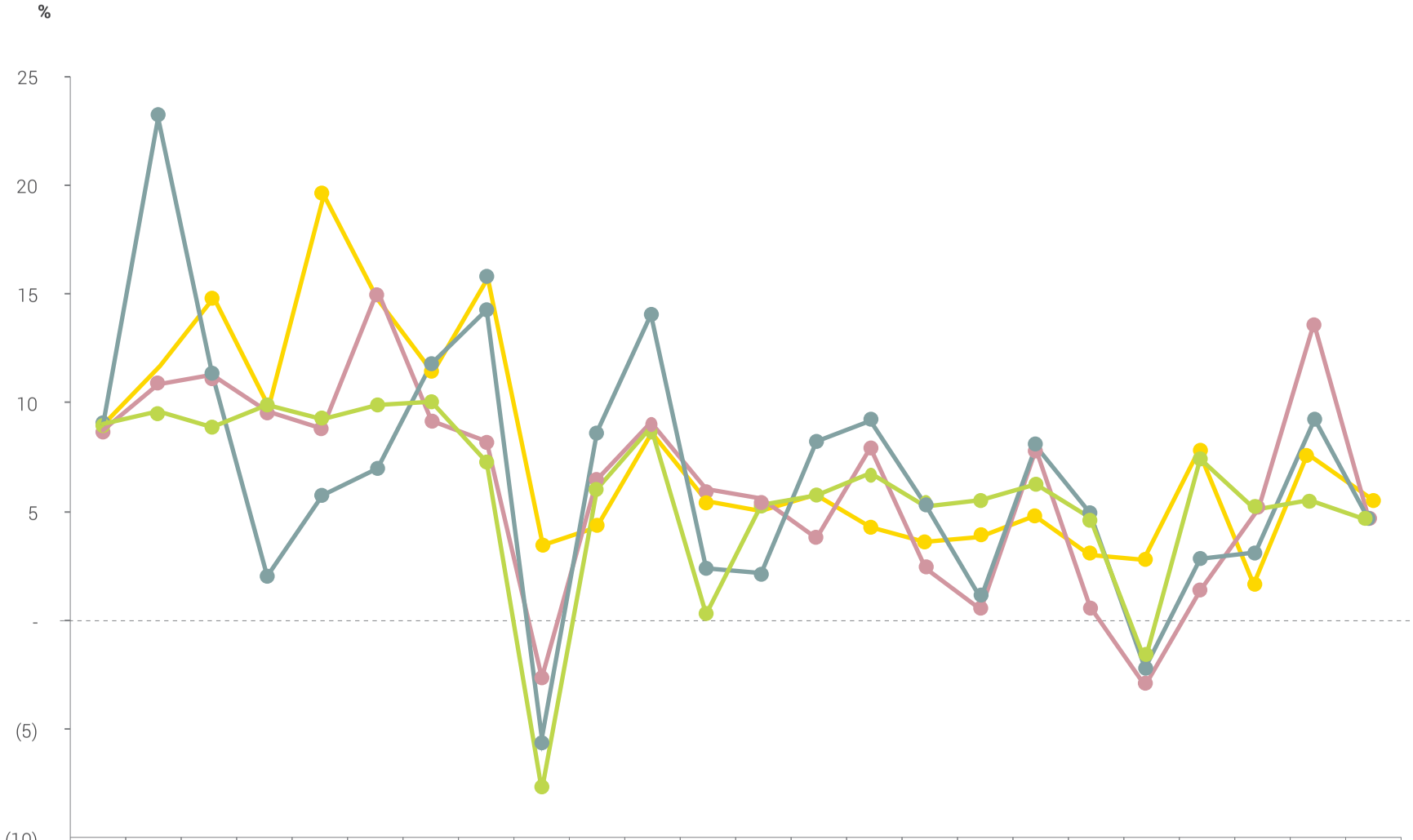


	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
GDP at 2005 prices (RM Million)*	217,047	237,766	258,891	284,509	310,718	341,258	375,393	402,882	373,231	396,140	431,234	433,466	456,834	483,278	516,061	543,578	573,936	610,087	639,565	629,885	676,653	711,760	751,934	787,611
Electricity Consumption (GWh)	19,932	22,373	25,778	28,474	34,076	39,225	43,897	50,952	53,195	55,961	61,168	65,015	68,827	73,371	77,195	80,705	84,517	89,294	92,815	96,302	104,519	107,331	116,350	123,076

Source:
GDP data by Department of Statistics Malaysia

Note:
GDP at 2005 Prices (RM Million) for 1990 until 2004 was calculated by Energy Commission

FIGURE 4: ANNUAL GROWTH RATES OF GDP, PRIMARY ENERGY SUPPLY, FINAL ENERGY CONSUMPTION AND ELECTRICITY CONSUMPTION



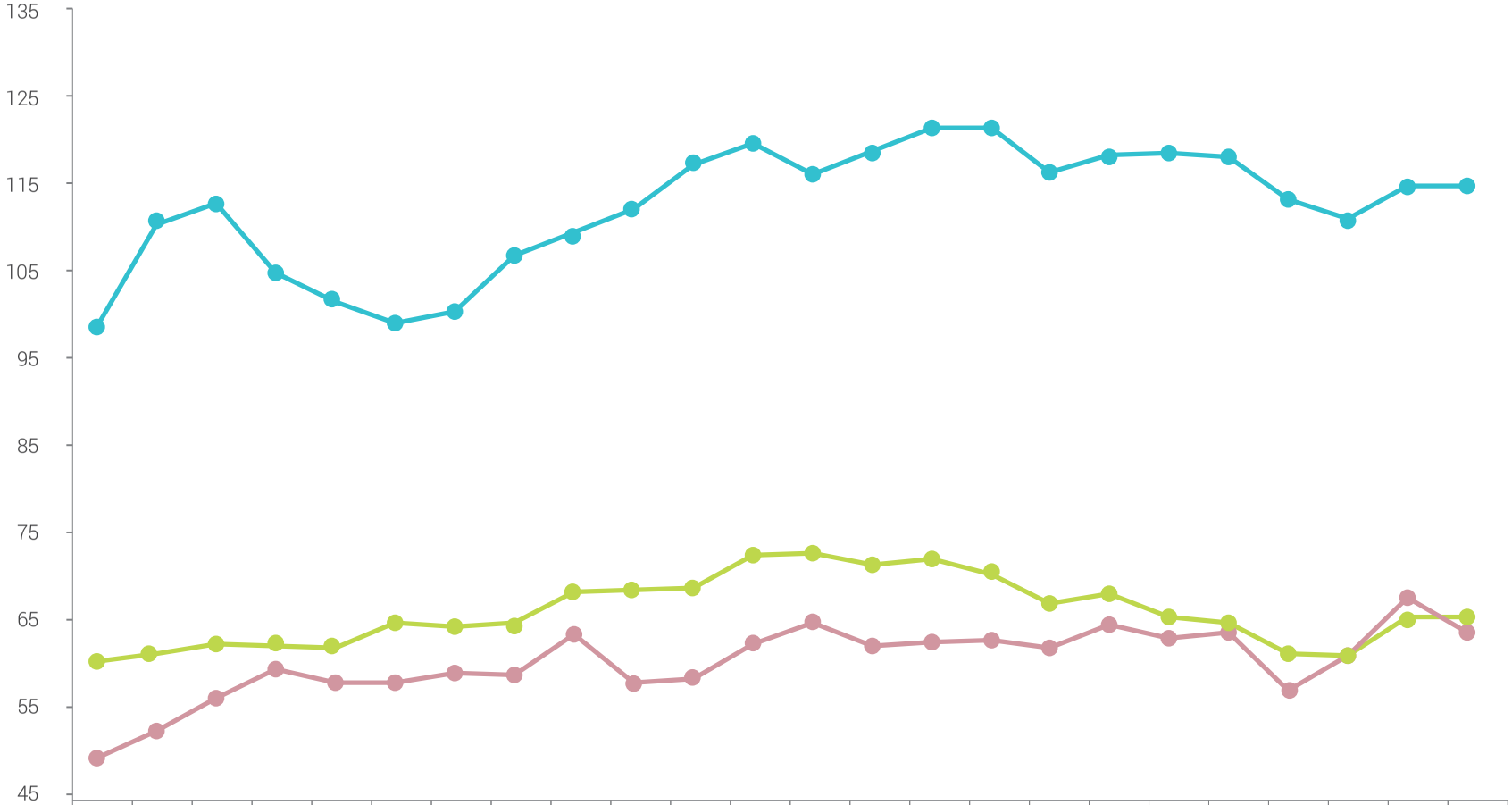
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
GDP at 2005 prices	9.00	9.55	8.89	9.89	9.21	9.83	10.00	7.32	(7.36)	6.14	8.86	0.52	5.39	5.79	6.78	5.33	5.58	6.30	4.83	(1.51)	7.42	5.19	5.64	4.74
Primary Energy Supply	8.90	22.65	11.22	2.16	5.80	7.00	11.69	14.09	(5.04)	8.63	13.87	2.50	2.34	8.21	9.16	5.37	1.22	8.01	5.03	(1.91)	2.98	3.23	9.09	4.90
Final Energy Consumption	8.70	10.78	11.14	9.53	8.79	14.92	9.10	8.21	(2.33)	6.53	9.08	6.11	5.63	3.90	7.91	2.58	0.74	7.88	0.87	(2.68)	1.54	4.77	13.43	4.65
Electricity Consumption	9.70	12.24	15.22	10.46	19.67	15.11	11.91	16.07	4.40	5.20	9.30	6.29	5.86	6.60	5.21	4.55	4.72	5.65	3.94	3.76	8.53	2.69	8.40	5.78

Source:
GDP data from Department of Statistics Malaysia

Note:
GDP at 2005 Prices (RM Million) for 1990 until 2004 was calculated by Energy Commission

FIGURE 5: PRIMARY AND FINAL ENERGY INTENSITY

toe/RM Million (at 2005 prices)



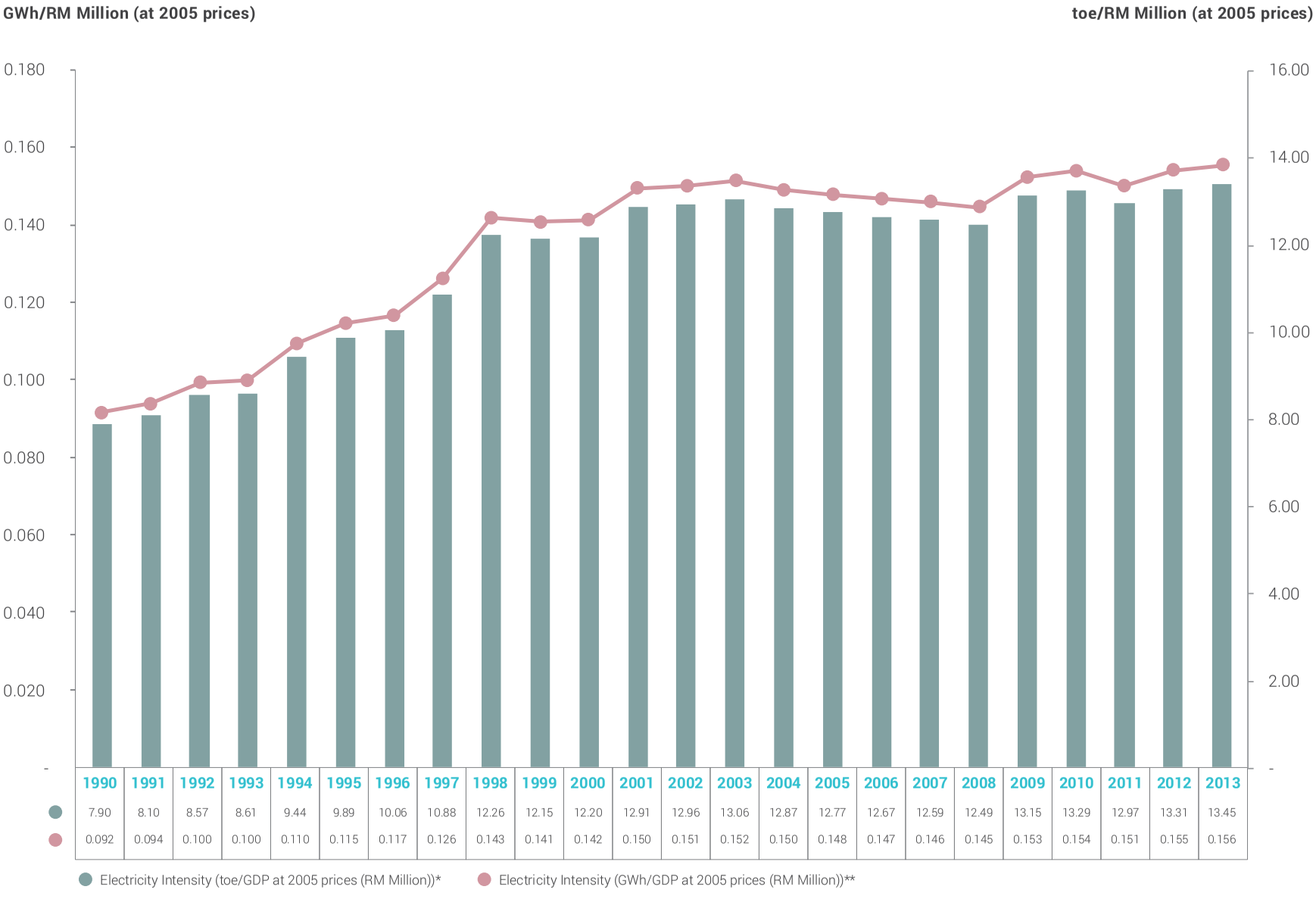
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
●	60.57	61.25	62.52	62.31	62.07	64.95	64.42	64.95	68.48	68.73	68.87	72.70	72.87	71.57	72.32	70.43	67.20	68.20	65.62	64.85	61.30	61.05	65.55	65.49
●	49.43	52.37	56.22	59.68	58.10	57.92	59.07	58.91	63.60	57.91	58.43	62.45	64.90	62.15	62.74	62.80	61.95	64.68	63.23	63.89	57.24	61.07	67.76	63.71
●	98.92	110.7	113.1	105.1	101.9	99.28	100.8	107.1	109.8	112.4	117.5	119.9	116.4	119.1	121.7	121.8	116.7	118.6	118.8	118.4	113.5	111.4	115.0	115.2

● Final Energy Intensity (toe/RM Million at 2005 prices)*
● Industry Energy Intensity ((toe/RM Million at 2005 prices)**
● Primary Energy Supply (toe/GDP at 2005 Prices)***

Source:
GDP data from Department of Statistics Malaysia

Note:
1. Measurement on ktoe is based on Energy Commission calculation
2. Intensity = Quantity of energy required per unit output or activity
3. (*): Final Energy Consumption / GDP at 2005 prices
4. (**): Industrial Energy Consumption / Industrial GDP at 2005 prices
5. (***) Primary Energy Supply / GDP at 2005 prices

FIGURE 6: ELECTRICITY INTENSITY



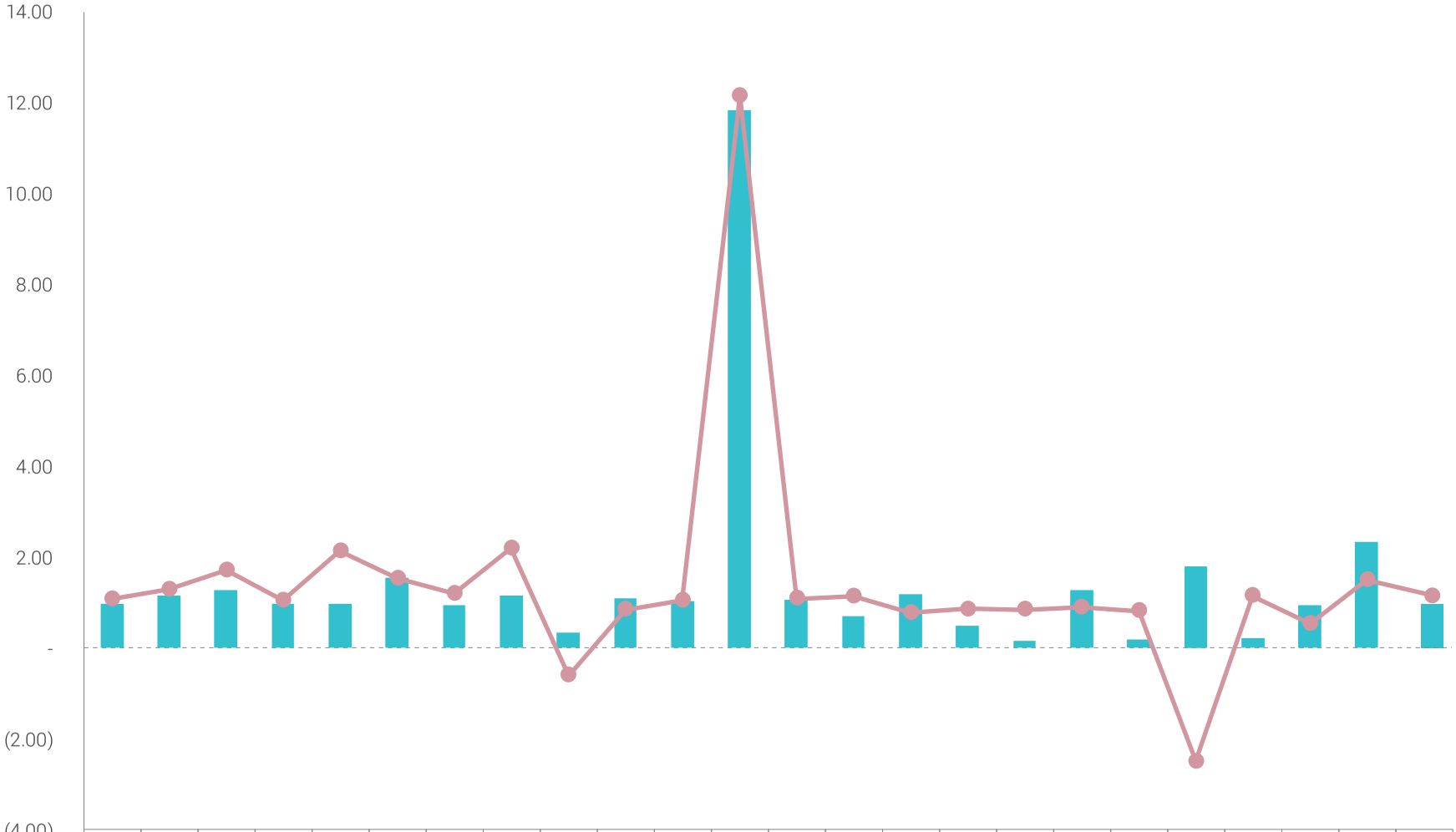
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Electricity Intensity (toe/GDP at 2005 prices (RM Million))*	7.90	8.10	8.57	8.61	9.44	9.89	10.06	10.88	12.26	12.15	12.20	12.91	12.96	13.06	12.87	12.77	12.67	12.59	12.49	13.15	13.29	12.97	13.31	13.45
Electricity Intensity (GWh/GDP at 2005 prices (RM Million))**	0.092	0.094	0.100	0.100	0.110	0.115	0.117	0.126	0.143	0.141	0.142	0.150	0.151	0.152	0.150	0.148	0.147	0.146	0.145	0.153	0.154	0.151	0.155	0.156

Source:
1. GDP data from Department of Statistics Malaysia
2. TNB, SESB, SEB and IPPs

Note:
1. Measurement on ktoe is based on Energy Commission calculation
2. Intensity = Quantity of energy required per unit output or activity

3. (*) Electricity Intensity (toe/RM Million GDP at 2005 prices)
4. (**) Electricity Intensity (GWh/RM Million GDP at 2005 prices)

FIGURE 7: FINAL ENERGY AND ELECTRICITY ELASTICITY



	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Final Energy Elasticity	0.97	1.13	1.25	0.96	0.95	1.52	0.91	1.12	0.32	1.06	1.02	11.81	1.04	0.67	1.17	0.48	0.13	1.25	0.18	1.77	0.21	0.92	2.38	0.98
Electricity Elasticity	1.08	1.28	1.71	1.06	2.14	1.54	1.19	2.19	(0.60)	0.85	1.05	12.15	1.09	1.14	0.77	0.85	0.85	0.90	0.82	(2.48)	1.15	0.52	1.49	1.22

Note:

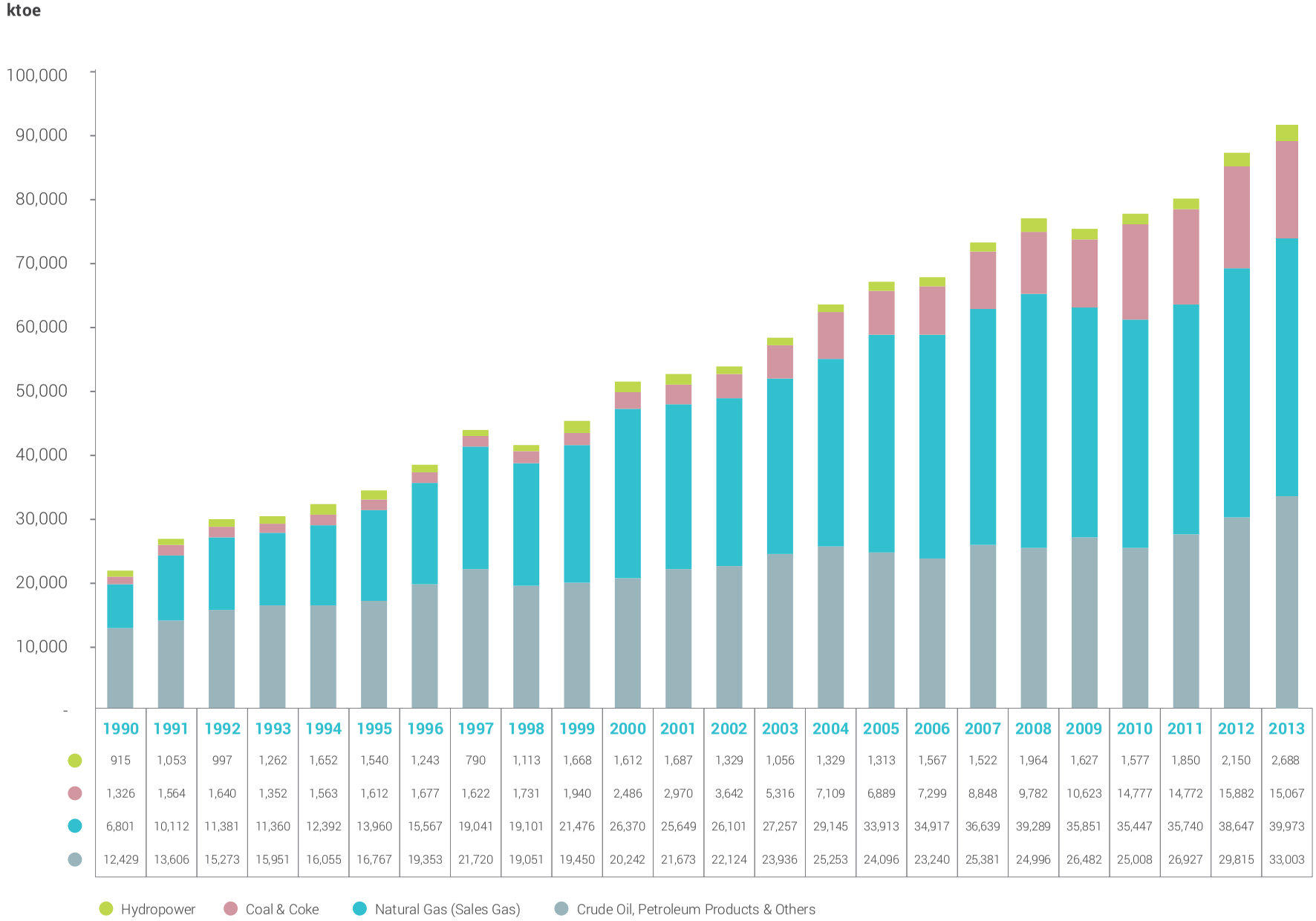
1) Final Energy Elasticity = Ratio between growths of energy consumption with economic growth

$$\text{Final Energy Elasticity} = \frac{\text{Growth Rate of Energy Consumption (\%)}}{\text{Growth Rate of GDP (\%)}}$$

2) Electricity Elasticity = Ratio between growths of electricity consumption with economic growth

$$\text{Electricity Elasticity} = \frac{\text{Growth Rate of Electricity Consumption (\%)}}{\text{Growth Rate of GDP (\%)}}$$

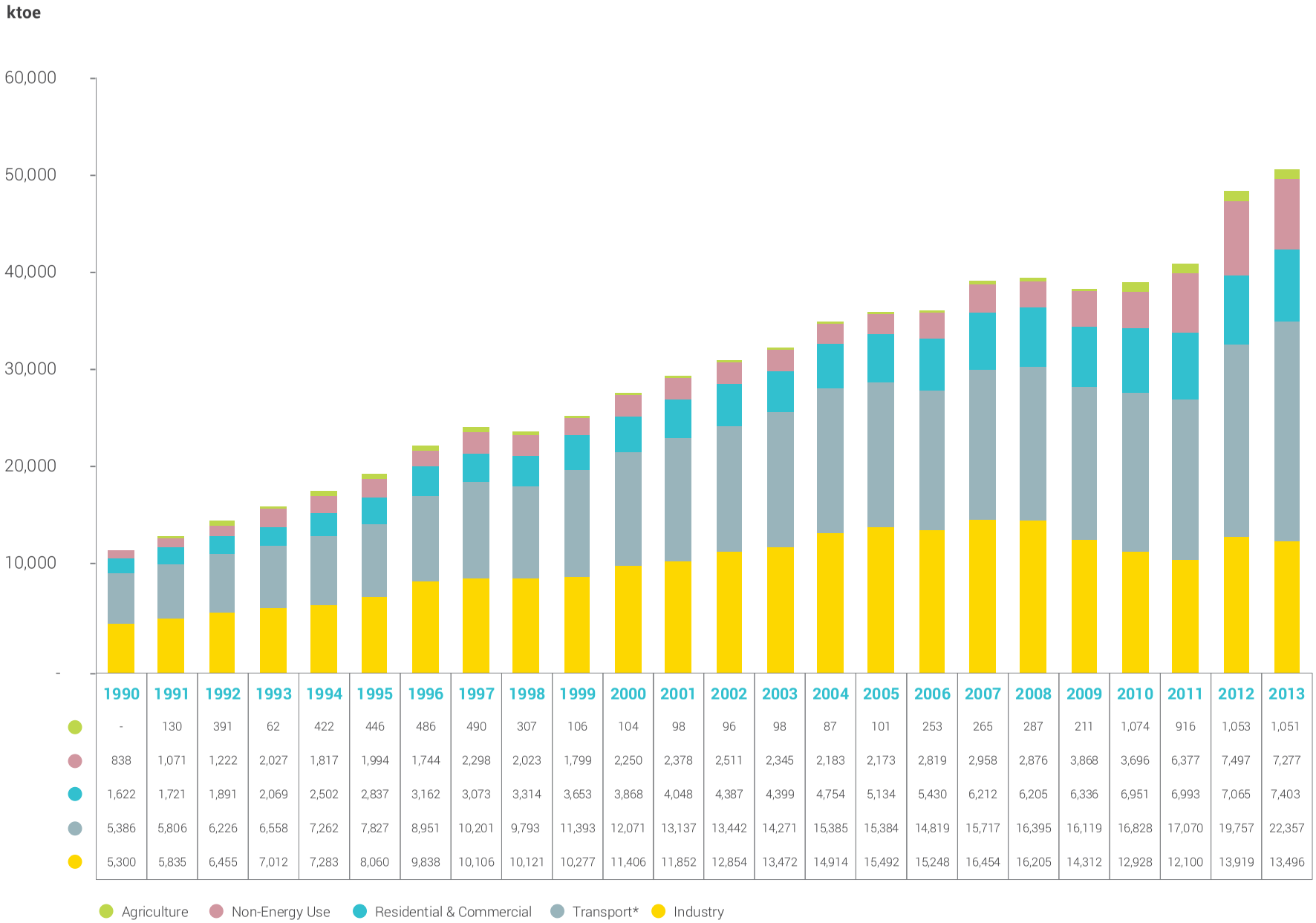
FIGURE 8: PRIMARY ENERGY SUPPLY



	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Hydropower	915	1,053	997	1,262	1,652	1,540	1,243	790	1,113	1,668	1,612	1,687	1,329	1,056	1,329	1,313	1,567	1,522	1,964	1,627	1,577	1,850	2,150	2,688
Coal & Coke	1,326	1,564	1,640	1,352	1,563	1,612	1,677	1,622	1,731	1,940	2,486	2,970	3,642	5,316	7,109	6,889	7,299	8,848	9,782	10,623	14,777	14,772	15,882	15,067
Natural Gas (Sales Gas)	6,801	10,112	11,381	11,360	12,392	13,960	15,567	19,041	19,101	21,476	26,370	25,649	26,101	27,257	29,145	33,913	34,917	36,639	39,289	35,851	35,447	35,740	38,647	39,973
Crude Oil, Petroleum Products & Others	12,429	13,606	15,273	15,951	16,055	16,767	19,353	21,720	19,051	19,450	20,242	21,673	22,124	23,936	25,253	24,096	23,240	25,381	24,996	26,482	25,008	26,927	29,815	33,003

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

FIGURE 9: FINAL ENERGY CONSUMPTION BY SECTORS

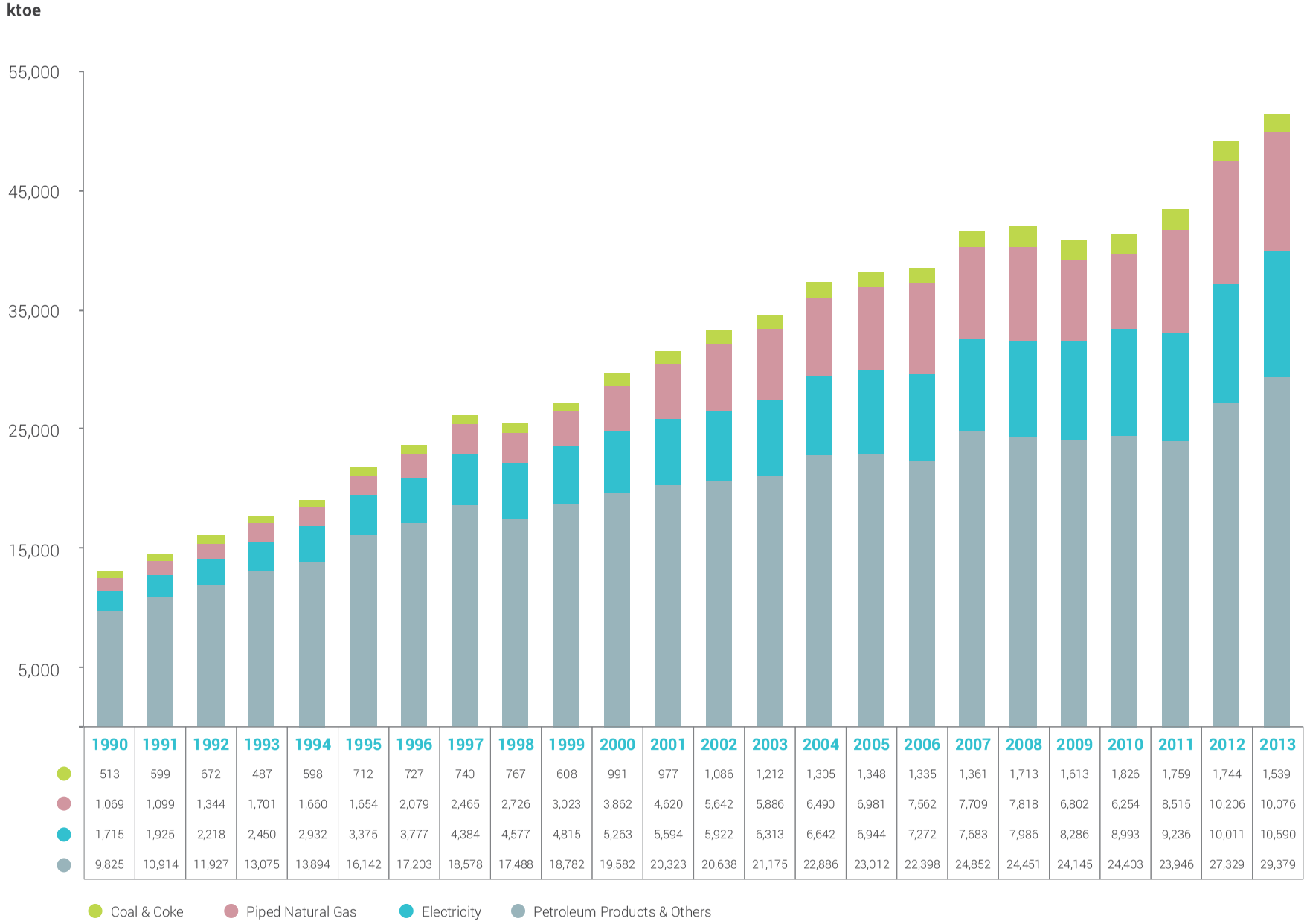


	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Agriculture	-	130	391	62	422	446	486	490	307	106	104	98	96	98	87	101	253	265	287	211	1,074	916	1,053	1,051
Non-Energy Use	838	1,071	1,222	2,027	1,817	1,994	1,744	2,298	2,023	1,799	2,250	2,378	2,511	2,345	2,183	2,173	2,819	2,958	2,876	3,868	3,696	6,377	7,497	7,277
Residential & Commercial	1,622	1,721	1,891	2,069	2,502	2,837	3,162	3,073	3,314	3,653	3,868	4,048	4,387	4,399	4,754	5,134	5,430	6,212	6,205	6,336	6,951	6,993	7,065	7,403
Transport*	5,386	5,806	6,226	6,558	7,262	7,827	8,951	10,201	9,793	11,393	12,071	13,137	13,442	14,271	15,385	15,384	14,819	15,717	16,395	16,119	16,828	17,070	19,757	22,357
Industry	5,300	5,835	6,455	7,012	7,283	8,060	9,838	10,106	10,121	10,277	11,406	11,852	12,854	13,472	14,914	15,492	15,248	16,454	16,205	14,312	12,928	12,100	13,919	13,496

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

Note:
(*) Transport including international aviation

FIGURE 10: FINAL ENERGY CONSUMPTION BY TYPE OF FUELS

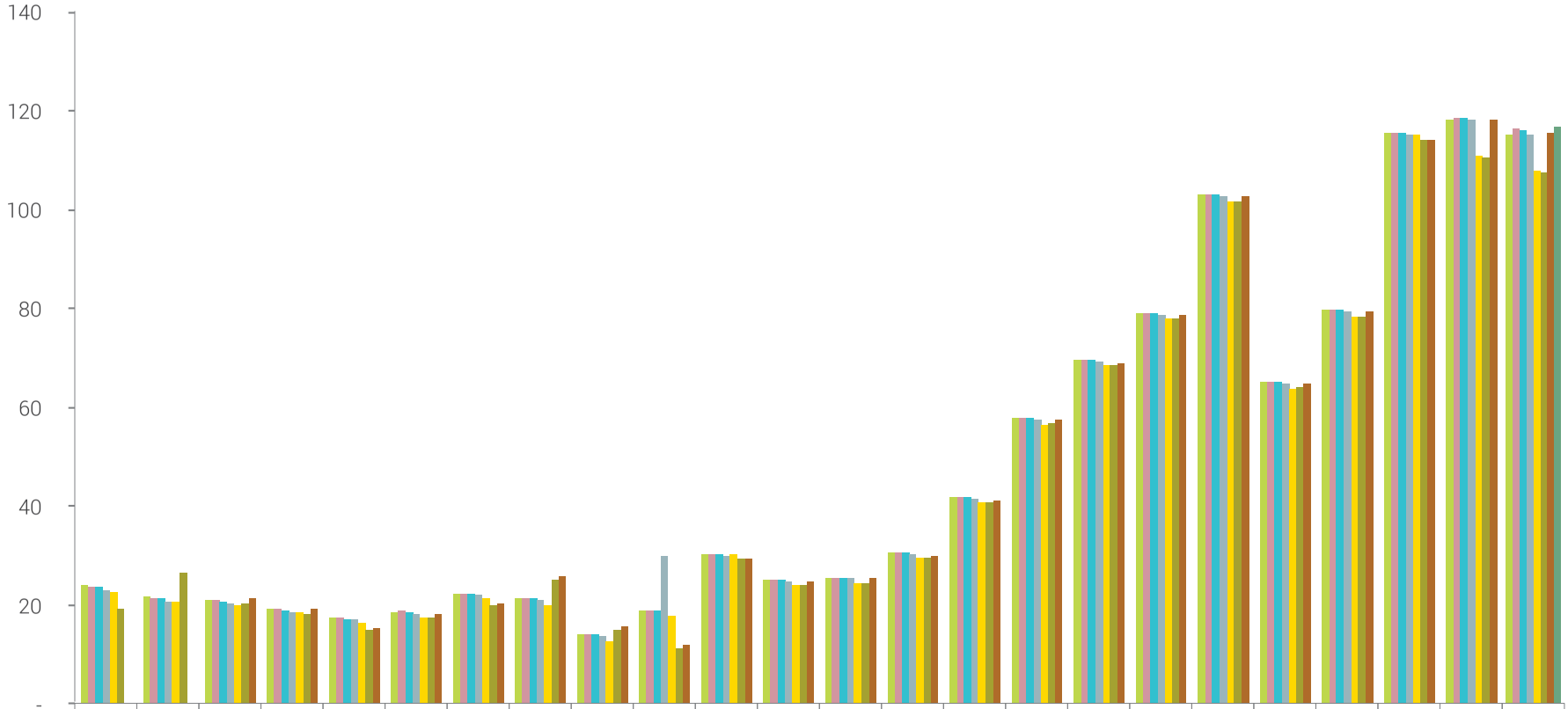


	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Coal & Coke	513	599	672	487	598	712	727	740	767	608	991	977	1,086	1,212	1,305	1,348	1,335	1,361	1,713	1,613	1,826	1,759	1,744	1,539
Piped Natural Gas	1,069	1,099	1,344	1,701	1,660	1,654	2,079	2,465	2,726	3,023	3,862	4,620	5,642	5,886	6,490	6,981	7,562	7,709	7,818	6,802	6,254	8,515	10,206	10,076
Electricity	1,715	1,925	2,218	2,450	2,932	3,375	3,777	4,384	4,577	4,815	5,263	5,594	5,922	6,313	6,642	6,944	7,272	7,683	7,986	8,286	8,993	9,236	10,011	10,590
Petroleum Products & Others	9,825	10,914	11,927	13,075	13,894	16,142	17,203	18,578	17,488	18,782	19,582	20,323	20,638	21,175	22,886	23,012	22,398	24,852	24,451	24,145	24,403	23,946	27,329	29,379

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

FIGURE 11: OFFICIAL SELLING PRICES OF MALAYSIAN CRUDE OIL

USD/Barrel

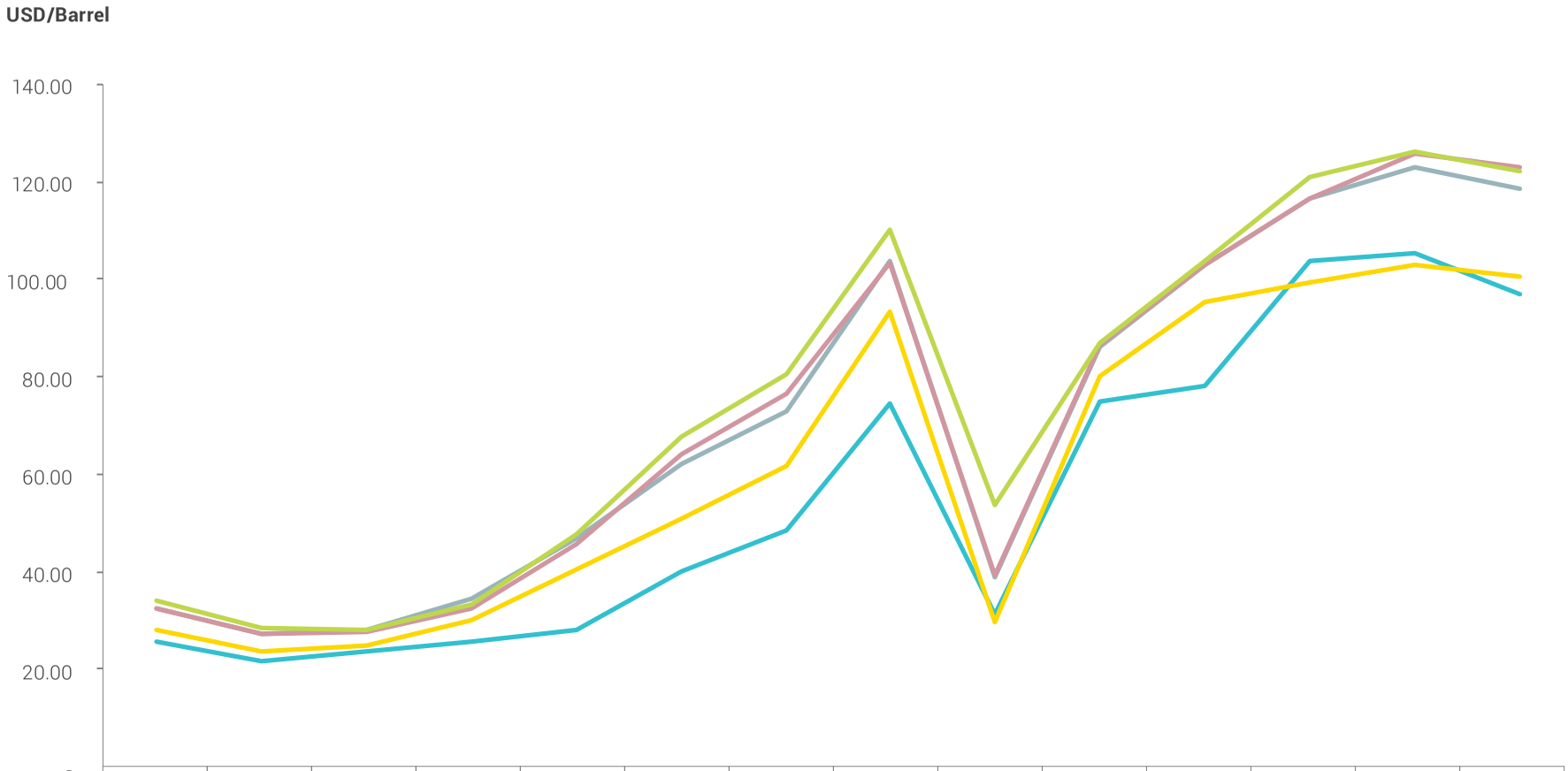


	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Tapis Blend	23.86	21.47	20.98	19.11	17.30	18.53	22.28	21.18	13.81	18.95	30.25	25.06	25.52	30.60	41.84	57.71	69.56	78.96	102.79	64.97	79.51	115.33	118.22	115.3
Labuan Crude	23.76	21.37	20.88	19.11	17.40	18.63	22.38	21.33	13.84	18.95	30.25	25.06	25.52	30.60	41.84	57.71	69.56	78.96	102.79	64.97	79.51	115.33	118.66	116.6
Miri Light Crude	23.56	21.17	20.68	18.91	17.20	18.43	22.18	21.28	13.83	18.95	30.25	25.06	25.52	30.60	41.84	57.71	69.56	78.96	102.79	64.97	79.51	115.33	118.56	116.3
Bintulu Crude	23.06	20.67	20.18	18.46	16.90	18.06	21.89	20.78	13.48	29.95	29.95	24.78	25.22	30.33	41.54	57.43	69.28	78.66	102.49	64.67	79.21	115.03	118.36	115.4
Terengganu Condensate	22.76	20.37	19.88	18.26	16.45	17.33	21.08	19.98	12.61	17.76	30.29	23.86	24.32	29.40	40.64	56.51	68.66	77.91	101.59	63.77	78.31	115.03	110.92	108.0
Bintulu Condensate	19.10	26.35	20.20	18.25	15.00	17.36	19.79	25.13	14.80	11.14	29.09	23.96	24.42	29.50	40.74	56.61	68.45	77.92	101.69	63.87	78.41	114.13	110.62	107.7
Dulang	0.00	0.00	21.15	19.20	15.40	18.16	20.30	25.66	15.57	11.84	29.18	24.68	25.23	29.99	41.17	57.41	68.96	78.59	102.49	64.67	79.21	114.23	118.16	115.7
Kikeh Crude Oil	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	116.6

Tapis Blend · Labuan Crude · Miri Light Crude · Bintulu Crude · Terengganu Condensate · Bintulu Condensate · Dulang · Kikeh Crude Oil

Source:
PETRONAS

FIGURE 12: EX-SINGAPORE PRICES OF MAJOR PETROLEUM PRODUCTS



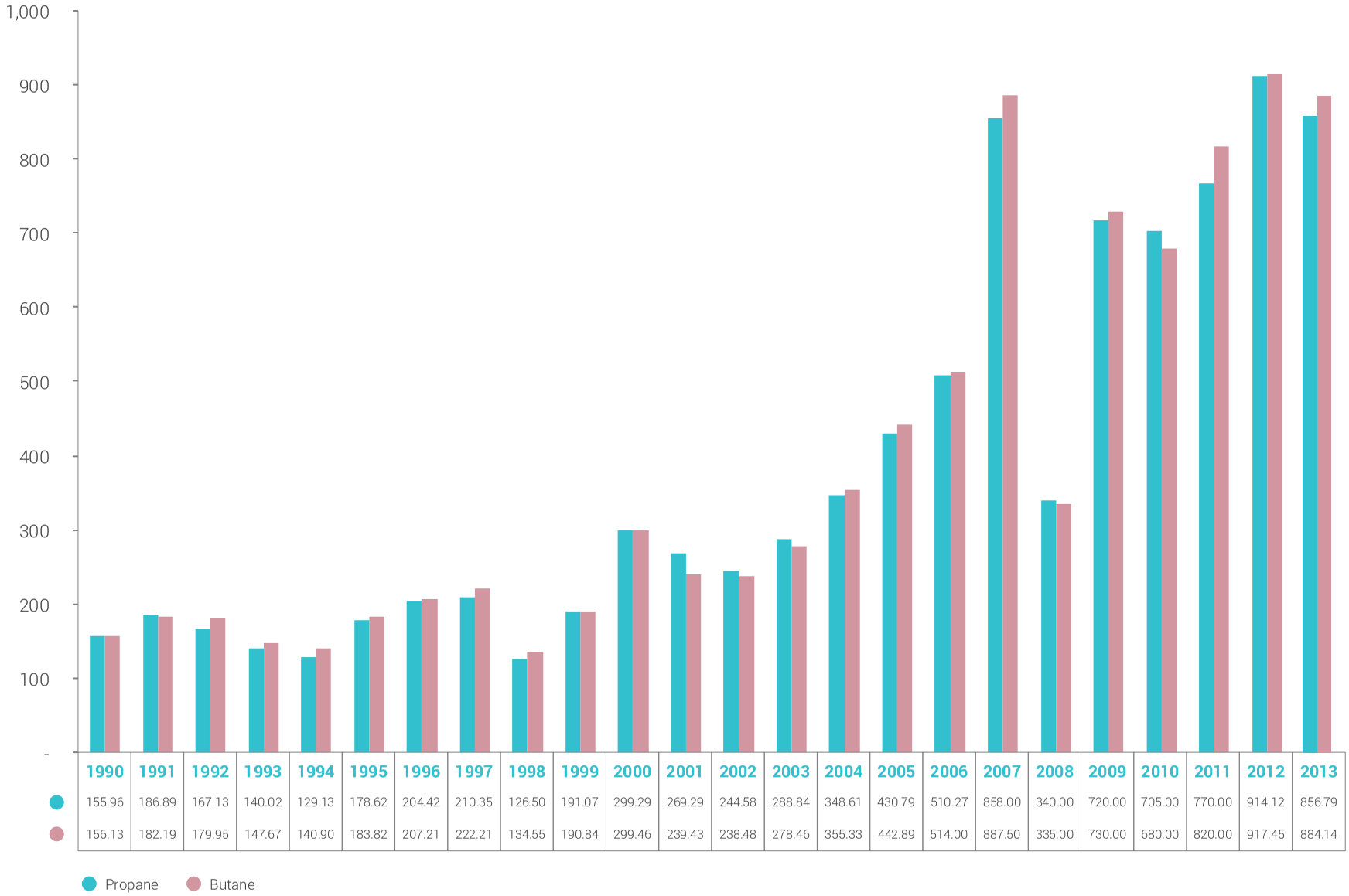
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Motor Petrol (ULG 95)	32.64	27.43	28.04	34.69	47.23	62.38	73.20	104.05	39.25	86.55	103.15	117.00	123.42	119.00
Diesel	32.48	27.32	27.55	32.46	45.92	64.35	76.93	103.74	39.32	86.60	103.17	117.10	126.15	123.27
Fuel Oil	25.82	21.78	23.63	25.72	28.15	40.32	48.84	74.60	31.40	75.30	78.40	104.10	105.72	97.44
Kerosene	34.27	28.32	28.08	33.25	47.69	67.99	80.72	110.50	53.90	87.25	104.30	121.64	126.79	122.85
Naphtha	28.32	23.75	24.93	30.14	40.82	51.04	62.13	93.98	29.90	80.72	95.91	99.90	103.57	100.99

Source:
Platts

Note:
Historical prices have been revised as per revision by Platts

FIGURE 13: ANNUAL LIQUEFIED PETROLEUM GAS (LPG) CONTRACT PRICES – ARAB GULF

USD/Metric Tonne



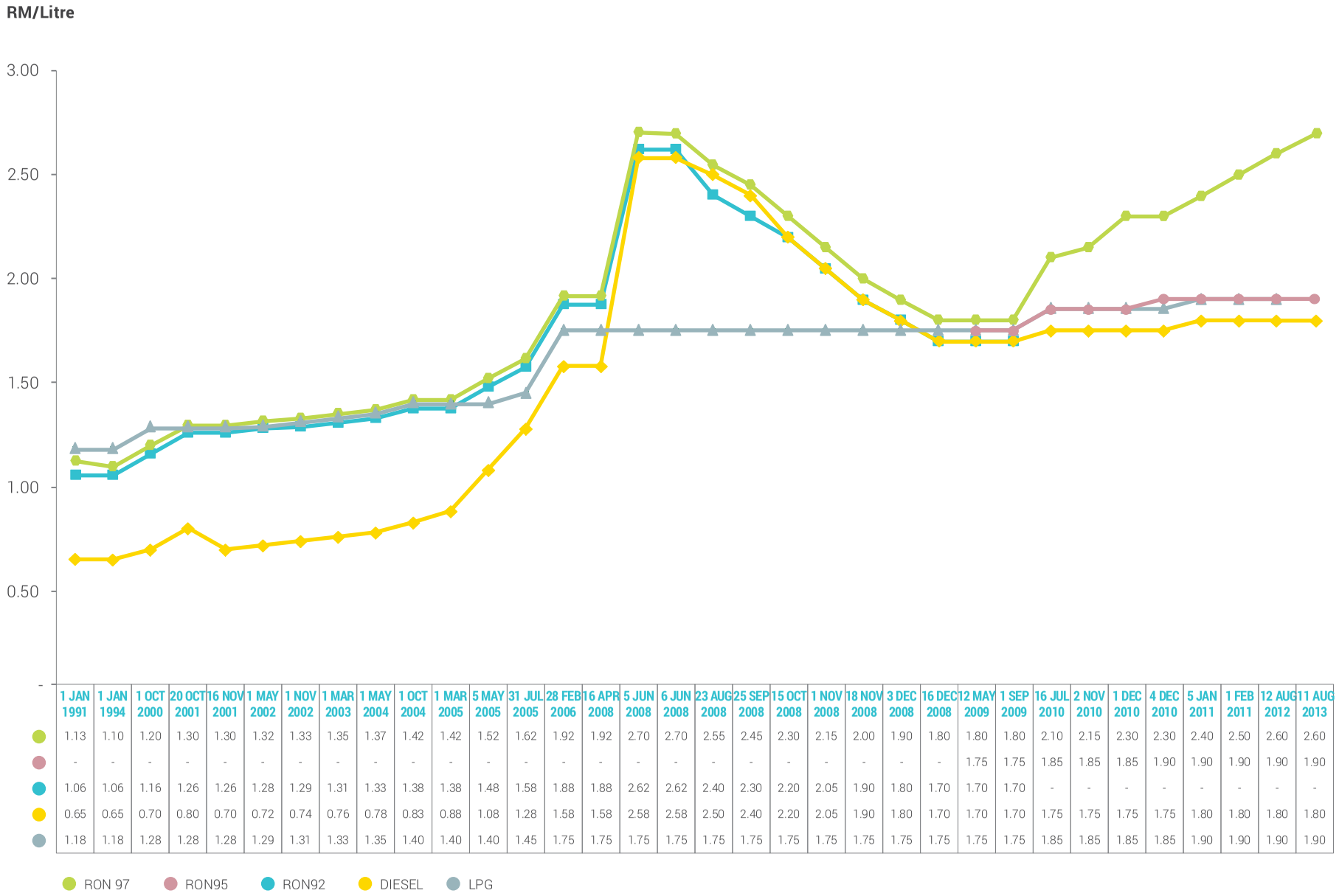
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Propane	155.96	186.89	167.13	140.02	129.13	178.62	204.42	210.35	126.50	191.07	299.29	269.29	244.58	288.84	348.61	430.79	510.27	858.00	340.00	720.00	705.00	770.00	914.12	856.79
Butane	156.13	182.19	179.95	147.67	140.90	183.82	207.21	222.21	134.55	190.84	299.46	239.43	238.48	278.46	355.33	442.89	514.00	887.50	335.00	730.00	680.00	820.00	917.45	884.14

Propane Butane

Source:
Platts

Note:
Historical prices have been revised as per revision by Platts

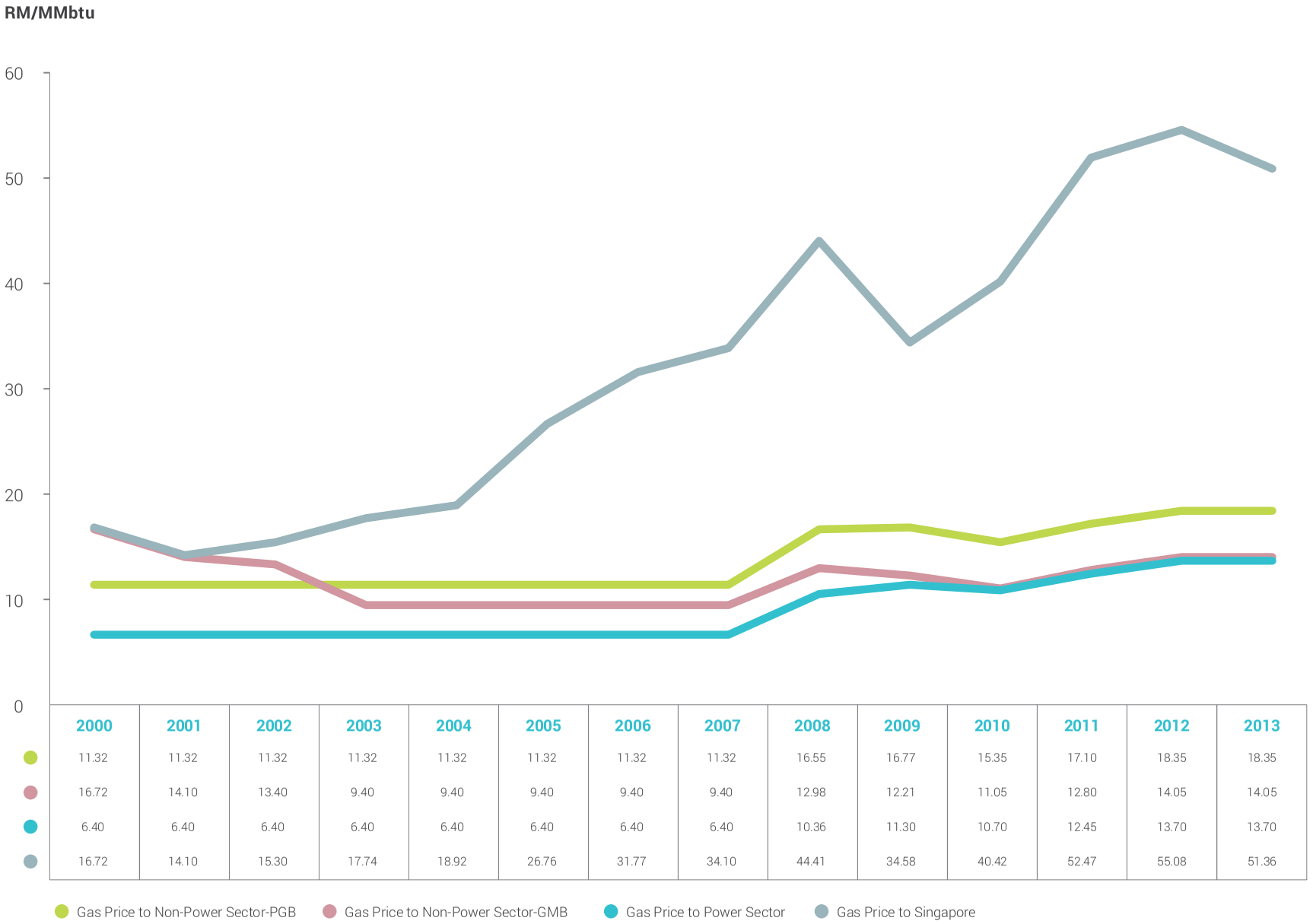
FIGURE 14: RETAIL FUEL PRICES IN MALAYSIA



	1 JAN 1991	1 JAN 1994	1 OCT 2000	20 OCT 2001	16 NOV 2001	1 MAY 2002	1 NOV 2002	1 MAR 2003	1 MAY 2004	1 OCT 2004	1 MAR 2005	5 MAY 2005	31 JUL 2005	28 FEB 2006	16 APR 2008	5 JUN 2008	6 JUN 2008	23 AUG 2008	25 SEP 2008	15 OCT 2008	1 NOV 2008	18 NOV 2008	3 DEC 2008	16 DEC 2008	12 MAY 2009	1 SEP 2009	16 JUL 2010	2 NOV 2010	1 DEC 2010	4 DEC 2010	5 JAN 2011	1 FEB 2011	12 AUG 2012	11 AUG 2013
RON 97	1.13	1.10	1.20	1.30	1.30	1.32	1.33	1.35	1.37	1.42	1.42	1.52	1.62	1.92	1.92	2.70	2.70	2.55	2.45	2.30	2.15	2.00	1.90	1.80	1.80	1.80	2.10	2.15	2.30	2.30	2.40	2.50	2.60	2.60
RON95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.75	1.75	1.85	1.85	1.85	1.90	1.90	1.90	1.90	1.90
RON92	1.06	1.06	1.16	1.26	1.26	1.28	1.29	1.31	1.33	1.38	1.38	1.48	1.58	1.88	1.88	2.62	2.62	2.40	2.30	2.20	2.05	1.90	1.80	1.70	1.70	1.70	-	-	-	-	-	-	-	-
DIESEL	0.65	0.65	0.70	0.80	0.70	0.72	0.74	0.76	0.78	0.83	0.88	1.08	1.28	1.58	1.58	2.58	2.58	2.50	2.40	2.20	2.05	1.90	1.80	1.70	1.70	1.70	1.75	1.75	1.75	1.75	1.80	1.80	1.80	1.80
LPG	1.18	1.18	1.28	1.28	1.28	1.29	1.31	1.33	1.35	1.40	1.40	1.40	1.45	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.85	1.85	1.85	1.85	1.90	1.90	1.90	1.90

Source:
Ministry of Domestic Trade, Co-Operatives and Consumerism

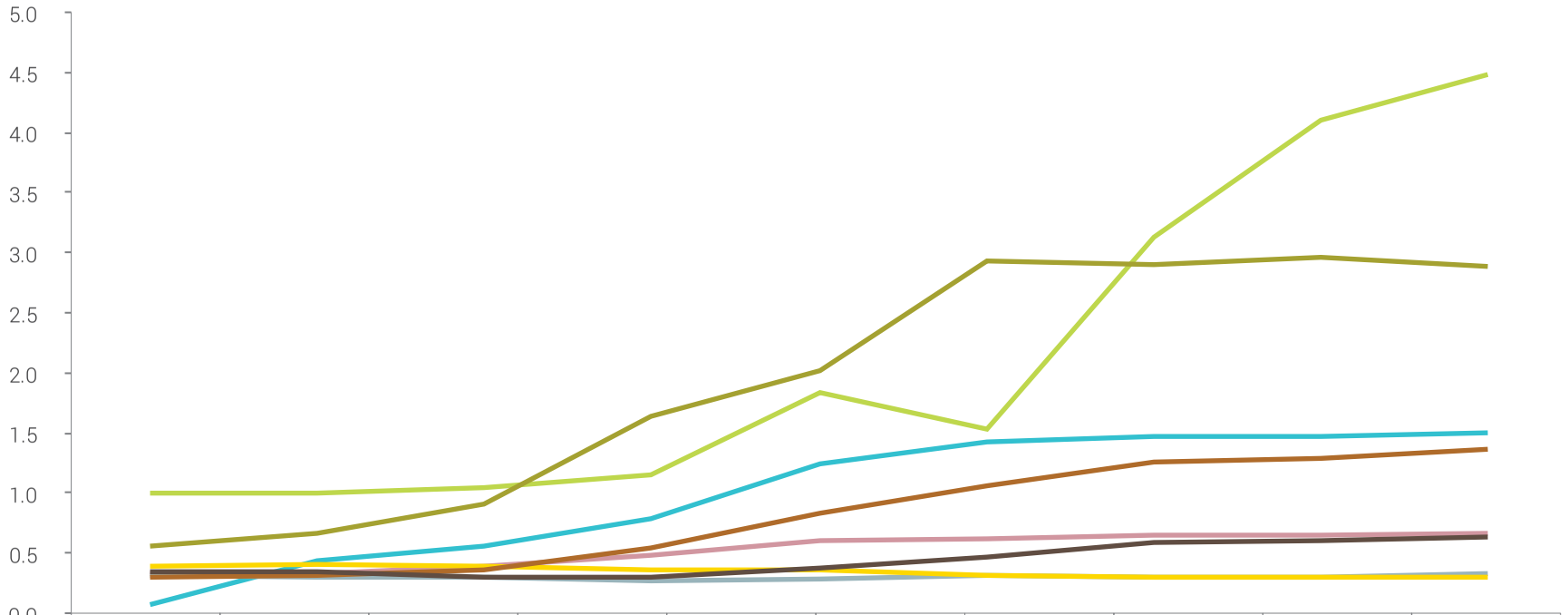
FIGURE 15: AVERAGE ANNUAL NATURAL GAS PRICE IN MALAYSIA



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Gas Price to Non-Power Sector-PGB	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	16.55	16.77	15.35	17.10	18.35	18.35
Gas Price to Non-Power Sector-GMB	16.72	14.10	13.40	9.40	9.40	9.40	9.40	9.40	12.98	12.21	11.05	12.80	14.05	14.05
Gas Price to Power Sector	6.40	6.40	6.40	6.40	6.40	6.40	6.40	6.40	10.36	11.30	10.70	12.45	13.70	13.70
Gas Price to Singapore	16.72	14.10	15.30	17.74	18.92	26.76	31.77	34.10	44.41	34.58	40.42	52.47	55.08	51.36

FIGURE 16: FINAL ENERGY CONSUMPTION PER CAPITA IN ASEAN

Mtoe/RM Million

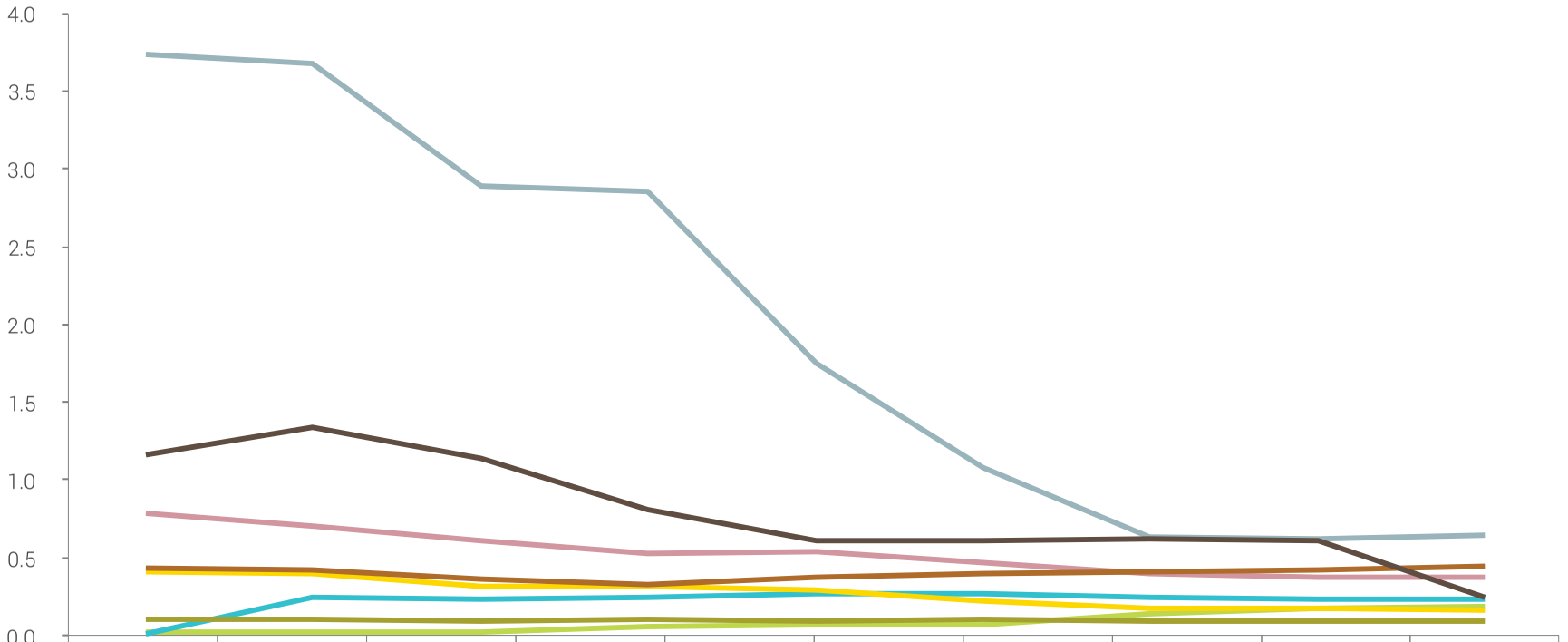


	1971	1973	1980	1990	2000	2005	2009	2010	2011	2012
Brunei	1.000	1.000	1.050	1.167	1.933	1.575	2.750	3.275	4.325	4.725
Indonesia	0.264	0.267	0.329	0.433	0.564	0.590	0.614	0.651	0.653	0.653
Malaysia	0.416	0.397	0.528	0.766	1.264	1.441	1.531	1.526	1.555	1.539
Myanmar	0.267	0.254	0.254	0.239	0.255	0.280	0.265	0.269	0.271	0.274
Philippines	0.347	0.368	0.351	0.321	0.311	0.268	0.250	0.255	0.250	0.249
Singapore	0.519	0.636	0.888	1.670	2.353	3.802	3.978	4.733	4.677	3.021
Thailand	0.252	0.271	0.320	0.506	0.800	1.048	1.137	1.230	1.272	1.381
Vietnam	0.285	0.286	0.243	0.243	0.323	0.429	0.524	0.561	0.584	0.608

Source:
Energy Balances of Non-OECD Countries, 2013 Edition, International Energy Agency (IEA)

FIGURE 17: FINAL ENERGY INTENSITY IN ASEAN

Mtoe/Billion USD 2005



	1971	1973	1980	1990	2000	2005	2009	2010	2011	2012
Brunei	0.024	0.021	0.025	0.051	0.067	0.066	0.115	0.133	0.172	0.184
Indonesia	0.790	0.710	0.614	0.532	0.530	0.469	0.410	0.413	0.394	0.373
Malaysia	0.292	0.238	0.227	0.243	0.260	0.262	0.257	0.243	0.240	0.226
Myanmar	3.729	3.667	2.883	2.848	1.753	1.082	0.762	0.741	0.712	0.633
Philippines	0.406	0.396	0.315	0.319	0.292	0.222	0.188	0.182	0.174	0.166
Singapore	0.099	0.101	0.091	0.102	0.096	0.132	0.135	0.143	0.137	0.087
Thailand	0.424	0.419	0.363	0.325	0.368	0.396	0.401	0.404	0.420	0.439
Vietnam	1.305	1.503	1.282	0.905	0.681	0.668	0.648	0.656	0.652	0.241

Source:
Energy Balances of Non-OECD Countries, 2013 Edition, International Energy Agency (IEA)

02.

OIL

TABLE 3: PRODUCTION AND RESERVES OF OIL AS OF 1ST JANUARY 2013

	RESERVES (BILLION BARRELS)			PRODUCTION (THOUSAND BARRELS PER DAY)		
REGION	CRUDE OIL	CONDENSATES	TOTAL	CRUDE OIL	CONDENSATES	TOTAL
Peninsular Malaysia	1.947	0.388	2.335	208.0	38.7	**246.7**
Sabah	1.826	0.097	1.923	143.9	-	**143.9**
Sarawak	1.088	0.504	1.592	110.5	74.2	**184.8**
TOTAL	**4.861**	**0.989**	**5.850**	**462.4**	**113.0**	**575.3**

Source:
PETRONAS

TABLE 4: REFINERY LICENSED CAPACITY

	LOCATION	START-UP DATE	THOUSAND BARRELS/DAY
Petron Malaysia	Port Dickson, Negeri Sembilan	1960	88
PETRONAS	Kertih, Terengganu*	1983	49
PETRONAS	Melaka	1994	100
Malaysia Refining Company Sdn Bhd (PETRONAS / ConocoPhillips)	Melaka	1998	100
Total			492
TOTAL			**492**

Source:
PETRON, PETRONAS & SHELL

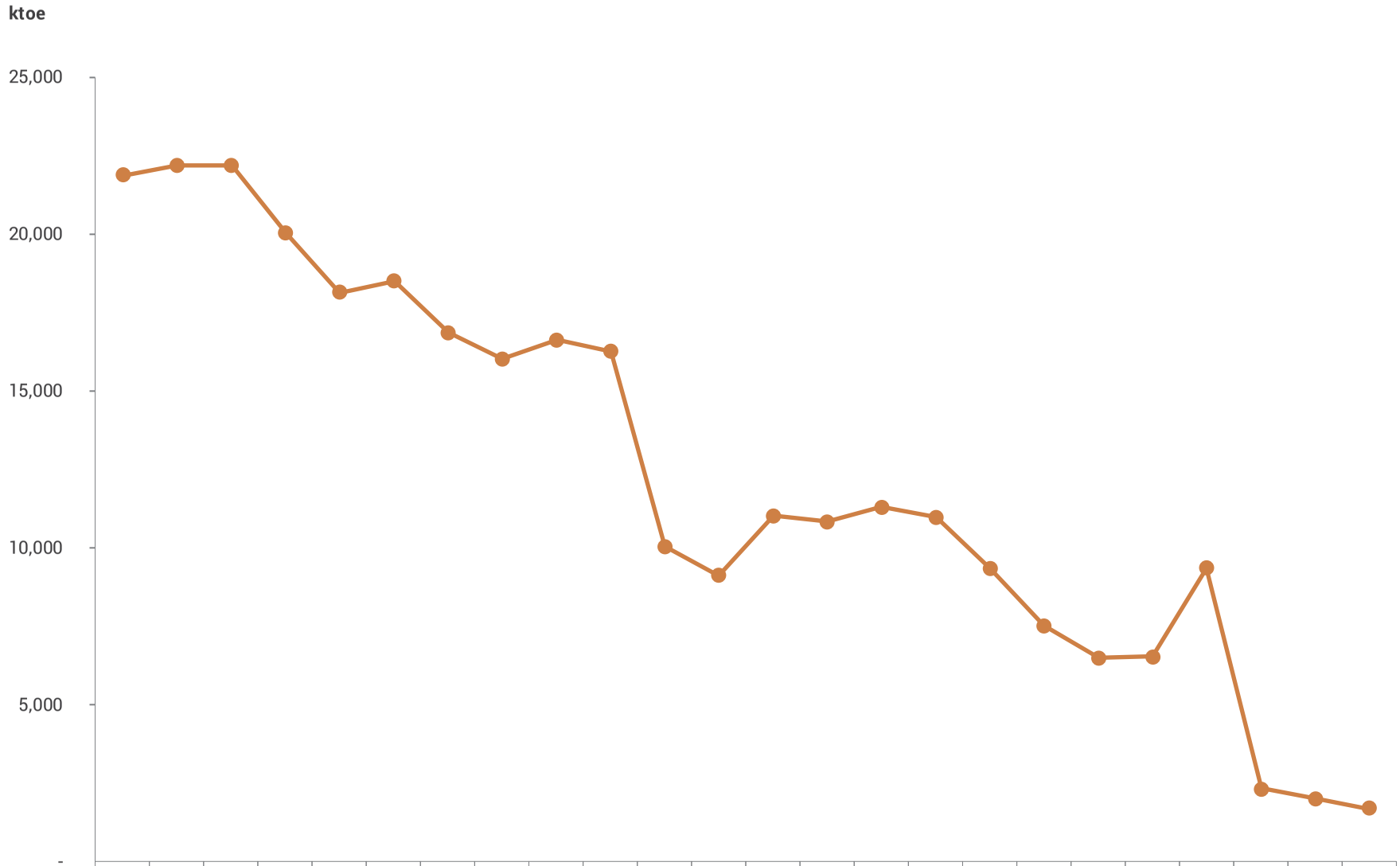
Note:
(*) Excludes condensate splitter of 74,300 bpd

TABLE 5: BREAKDOWN ON SALES OF PETROLEUM PRODUCTS IN THOUSAND BARRELS

PETROLEUM PRODUCTS	PENINSULAR MALAYSIA	SABAH	SARAWAK	TOTAL
Petrol	90,810	5,651	6,520	**102,981**
Diesel	56,398	10,151	12,749	**79,298**
Fuel Oil	2,317	608	0	**2,924**
Kerosene	107	59	68	**234**
LPG	13,661	1,375	1,819	**16,856**
ATF & AV Gas	22,262	458	249	**22,969**
Non Energy	3,045	517	733	**4,296**
Total	**188,601**	**18,820**	**22,139**	**229,559**

Source:
Oil companies

FIGURE 18: NET EXPORT OF CRUDE OIL

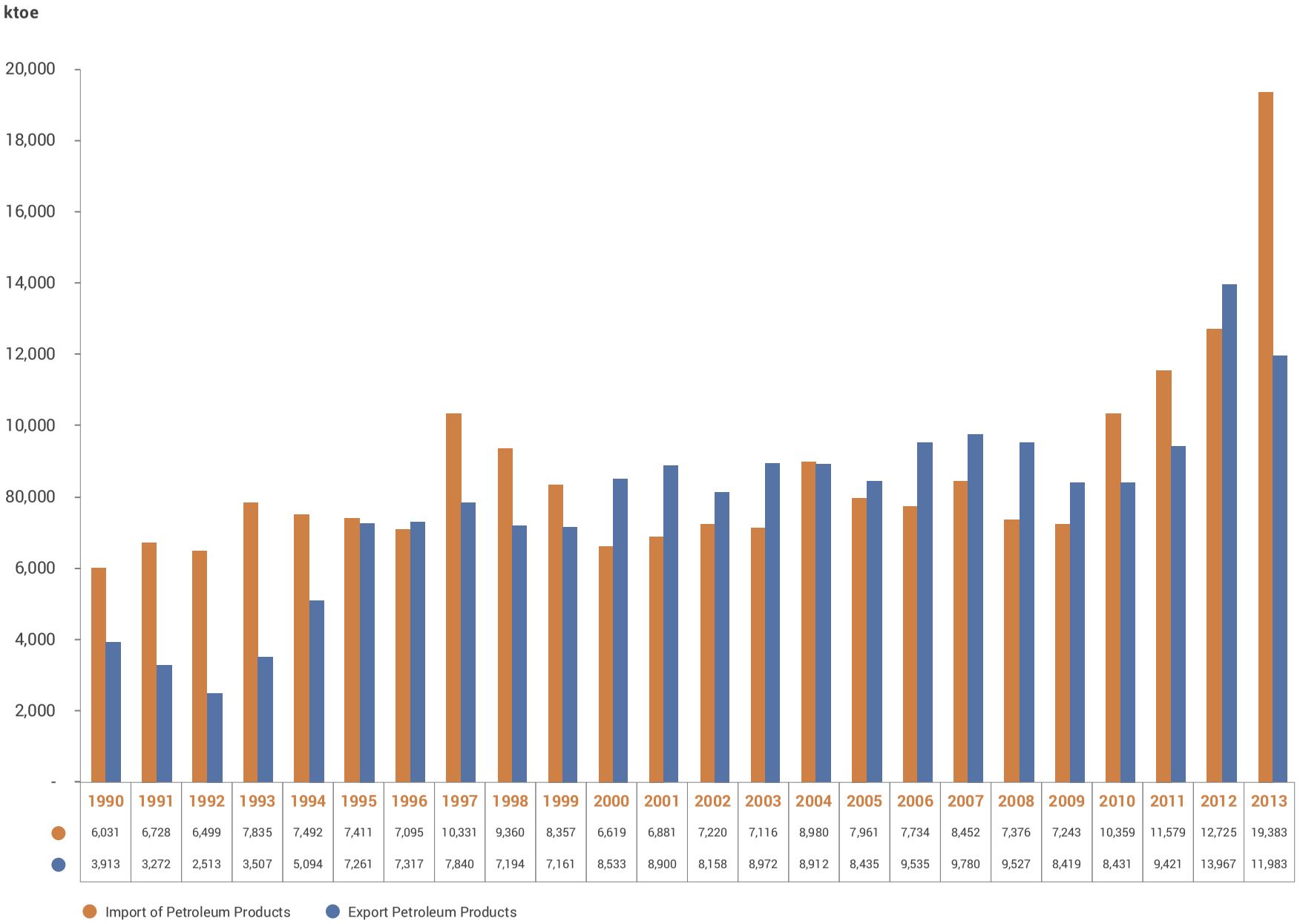


	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Net Export of Crude Oil	21,902	22,200	22,215	20,063	18,160	18,518	16,859	16,022	16,626	16,274	10,036	9,128	11,017	10,826	11,292	10,963	9,342	7,509	6,482	6,517	9,365	2,300	1,994	1,684

Source:
Department of Statistics Malaysia and Oil companies

Note:
Measurement on ktoe is based on Energy Commission calculation

FIGURE 19: EXPORT AND IMPORT OF PETROLEUM PRODUCTS

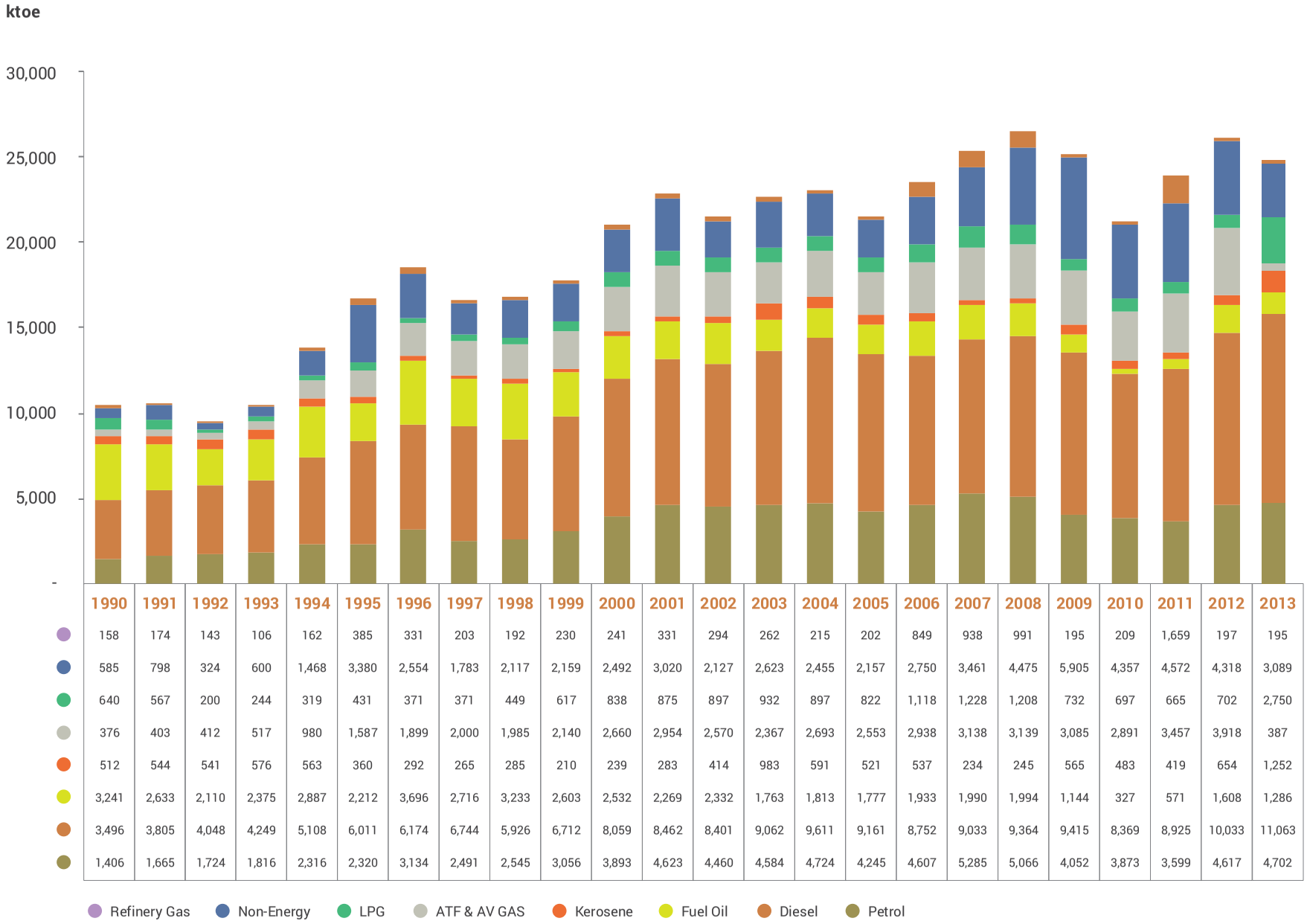


	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Import of Petroleum Products	6,031	6,728	6,499	7,835	7,492	7,411	7,095	10,331	9,360	8,357	6,619	6,881	7,220	7,116	8,980	7,961	7,734	8,452	7,376	7,243	10,359	11,579	12,725	19,383
Export Petroleum Products	3,913	3,272	2,513	3,507	5,094	7,261	7,317	7,840	7,194	7,161	8,533	8,900	8,158	8,972	8,912	8,435	9,535	9,780	9,527	8,419	8,431	9,421	13,967	11,983

Source:
Department of Statistics Malaysia and Oil companies

Note:
Measurement on ktoe is based on Energy Commission calculation

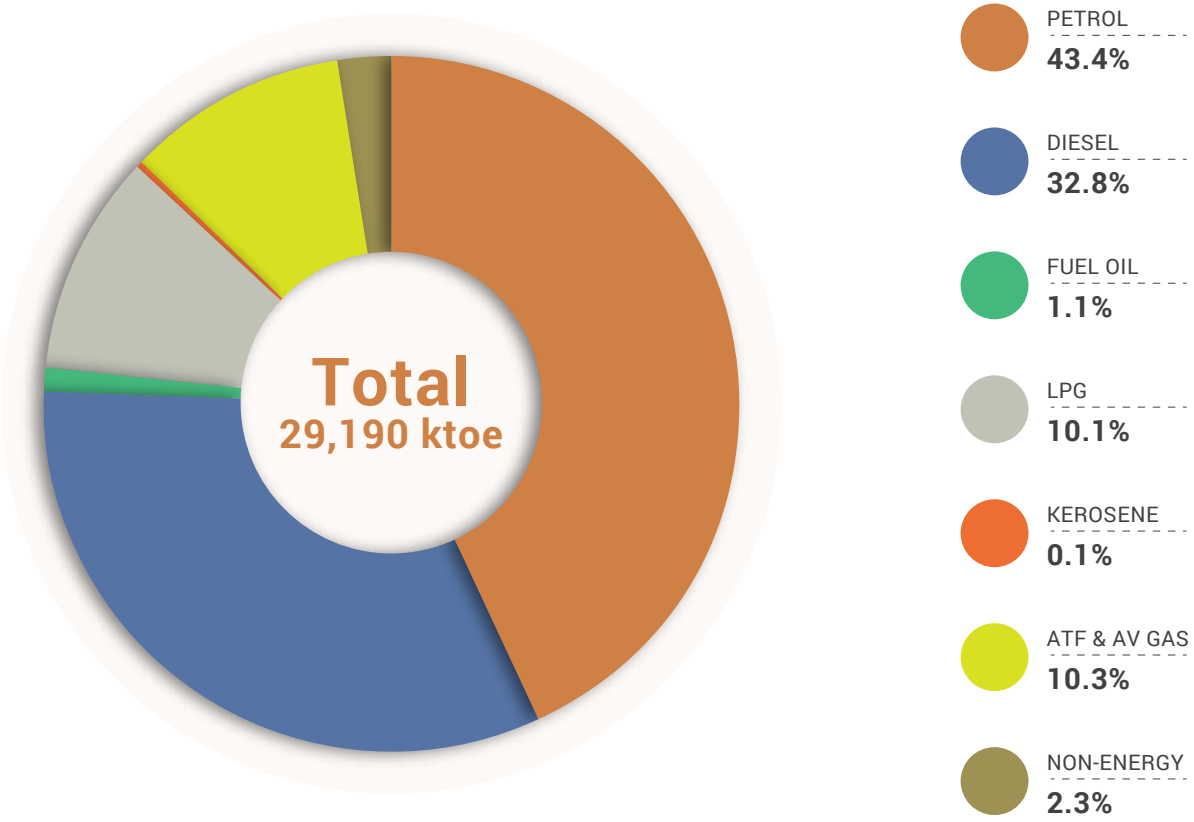
FIGURE 20: PRODUCTION OF PETROLEUM PRODUCTS FROM REFINERIES



	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Refinery Gas	158	174	143	106	162	385	331	203	192	230	241	331	294	262	215	202	849	938	991	195	209	1,659	197	195
Non-Energy	585	798	324	600	1,468	3,380	2,554	1,783	2,117	2,159	2,492	3,020	2,127	2,623	2,455	2,157	2,750	3,461	4,475	5,905	4,357	4,572	4,318	3,089
LPG	640	567	200	244	319	431	371	371	449	617	838	875	897	932	897	822	1,118	1,228	1,208	732	697	665	702	2,750
ATF & AV GAS	376	403	412	517	980	1,587	1,899	2,000	1,985	2,140	2,660	2,954	2,570	2,367	2,693	2,553	2,938	3,138	3,139	3,085	2,891	3,457	3,918	387
Kerosene	512	544	541	576	563	360	292	265	285	210	239	283	414	983	591	521	537	234	245	565	483	419	654	1,252
Fuel Oil	3,241	2,633	2,110	2,375	2,887	2,212	3,696	2,716	3,233	2,603	2,532	2,269	2,332	1,763	1,813	1,777	1,933	1,990	1,994	1,144	327	571	1,608	1,286
Diesel	3,496	3,805	4,048	4,249	5,108	6,011	6,174	6,744	5,926	6,712	8,059	8,462	8,401	9,062	9,611	9,161	8,752	9,033	9,364	9,415	8,369	8,925	10,033	11,063
Petrol	1,406	1,665	1,724	1,816	2,316	2,320	3,134	2,491	2,545	3,056	3,893	4,623	4,460	4,584	4,724	4,245	4,607	5,285	5,066	4,052	3,873	3,599	4,617	4,702

Source:
Oil Companies

FIGURE 21: FINAL CONSUMPTION FOR PETROLEUM PRODUCTS



Source:
Oil Companies

03.

NATURAL GAS

TABLE 6: RESERVES AND PRODUCTION OF NATURAL GAS AS OF 1ST JANUARY 2013

REGION	RESERVES			PRODUCTION
	TRILLION STANDARD CUBIC FEET (TSCF)			MILLION STANDARD CUBIC FEET PER DAY (MMSCFD)
	ASSOCIATED	NON-ASSOCIATED	TOTAL	
Peninsular Malaysia	9.325	25.649	34.974	2,069.83
Sabah	3.764	9.454	13.218	426.48
Sarawak	3.330	46.798	50.128	4,234.22
TOTAL	**16.419**	**81.901**	**98.320**	**6,730.54**

Source:
PETRONAS

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

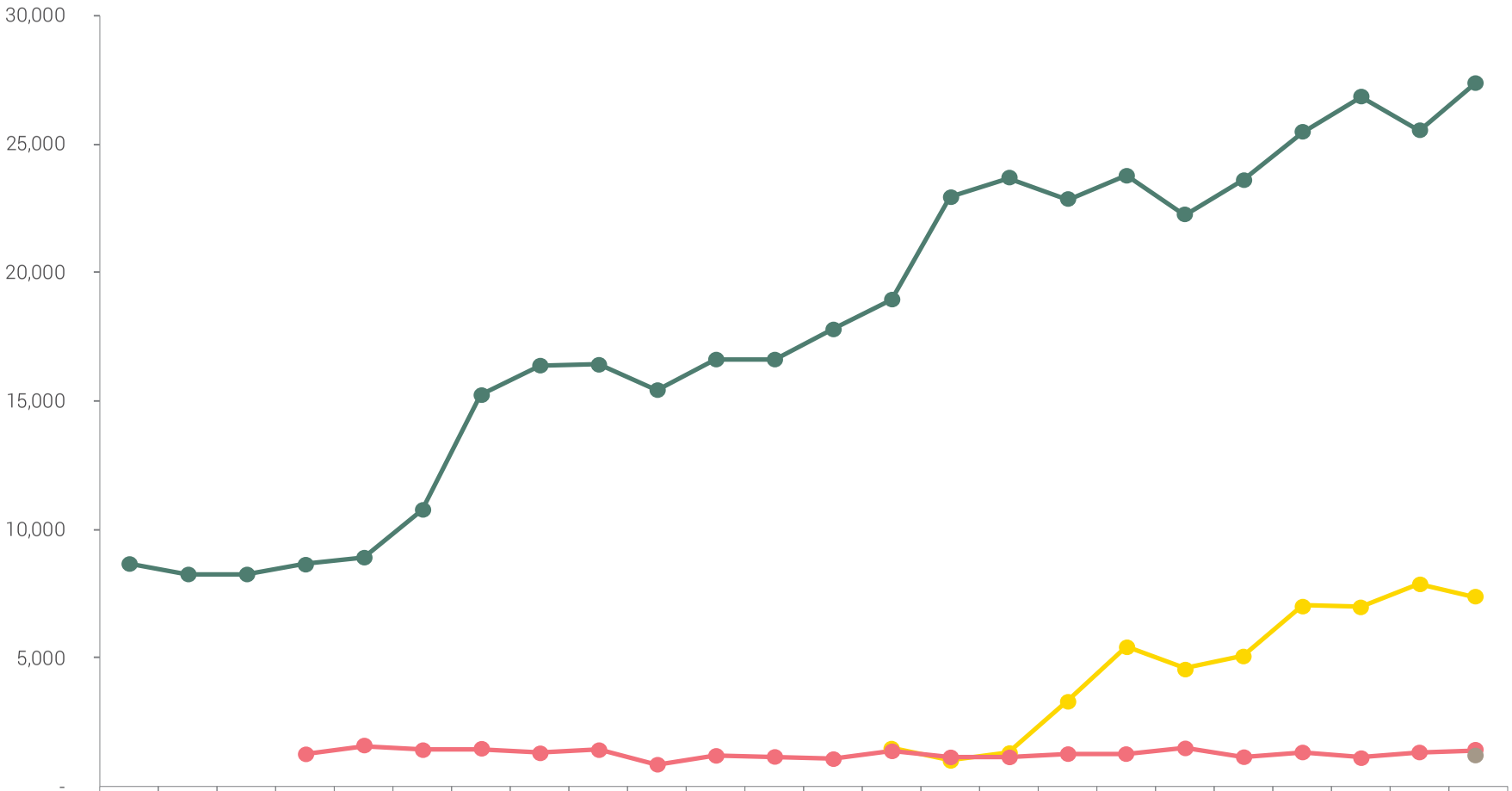
TABLE 7: CONSUMPTION OF NATURAL GAS IN MMSCF

SECTORS	PENINSULAR MALAYSIA	SABAH	SARAWAK	MALAYSIA
Residential	32	-	-	32
Commercial	832	-	-	832
Industry	163,846	5,327	1,889	171,062
Non-energy	97,807	43,596	56,575	197,978
Transport	11,040	-	-	11,040
Power Stations	574,552	31,313	26,989	632,854
Total	**848,109**	**80,236**	**85,453**	**1,013,798**

Source:
Power utilities, IPPs, PETRONAS and gas distribution companies

FIGURE 22: EXPORT AND IMPORT OF PIPED NATURAL GAS AND LNG

ktoe



	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Export LNG	8,686	8,278	8,262	8,654	8,938	10,790	15,251	16,396	16,429	15,445	16,633	16,636	17,803	18,965	22,944	23,707	22,874	23,777	22,277	23,606	25,487	26,856	25,547	27,089
Import Piped Natural Gas	-	-	-	-	-	-	-	-	-	-	-	-	-	1,501	999	1,340	3,313	5,435	4,565	5,055	7,013	6,979	7,866	7,098
Export Piped Natural Gas	-	-	-	1,258	1,589	1,474	1,474	1,340	1,444	860	1,198	1,178	1,098	1,402	1,143	1,134	1,257	1,295	1,524	1,166	1,340	1,147	1,368	1,497
Import LNG	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,450

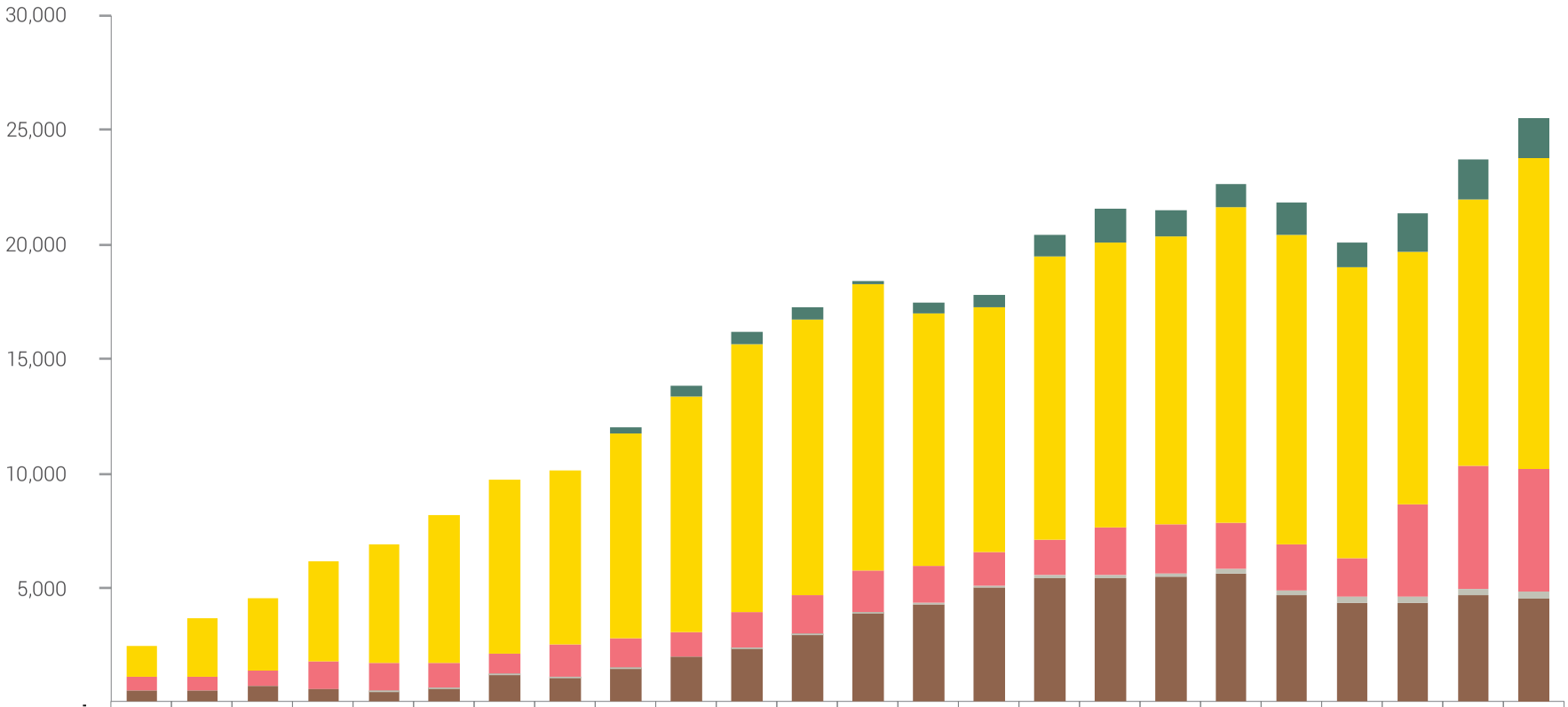
Export LNG Import Piped Natural Gas Export Piped Natural Gas Import LNG

Source:
Department of Statistics Malaysia, gas companies and others

Note:
Measurement on ktoe is based on Energy Commission calculation

FIGURE 23: NATURAL GAS CONSUMPTION BY SECTORS

ktoe

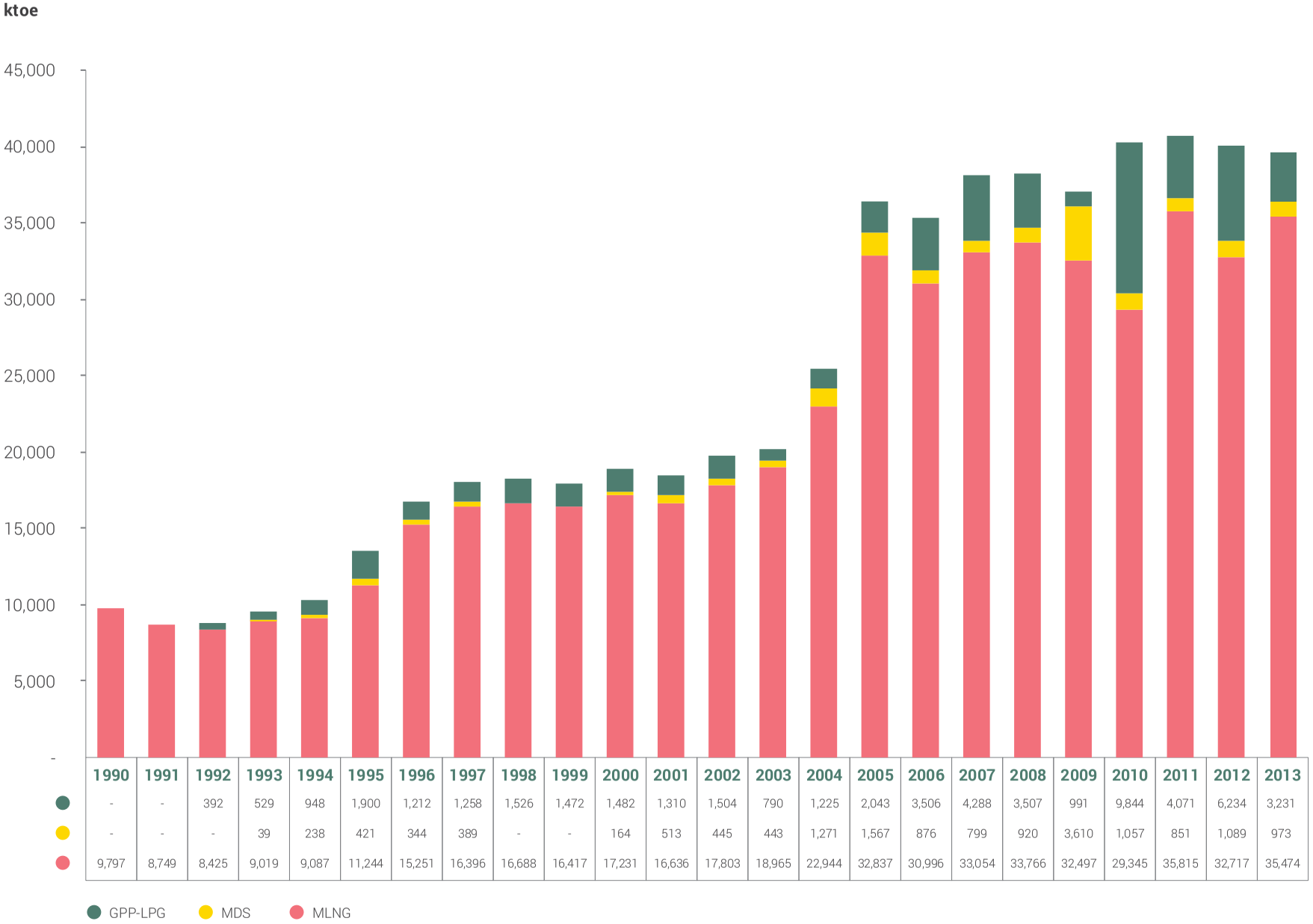


	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Self Generation	-	-	-	-	-	-	-	-	271	488	530	495	128	469	568	923	1,431	1,140	1,030	1,385	1,031	1,697	1,734	1,650
Power Stations	1,361	2,533	3,144	4,374	5,119	6,414	7,489	7,531	8,886	10,162	11,580	11,922	12,424	10,893	10,545	12,271	12,330	12,476	13,651	13,390	12,628	10,956	11,533	13,520
Non-Energy	609	604	657	1,141	1,163	1,064	870	1,378	1,282	1,118	1,512	1,655	1,775	1,616	1,476	1,541	2,110	2,112	2,046	1,995	1,661	3,967	5,336	5,276
Transport	-	-	-	-	5	5	4	5	4	-	7	14	28	40	54	95	120	147	194	236	247	272	292	289
Industry	452	487	679	552	484	577	1,197	1,074	1,430	1,891	2,327	2,937	3,824	4,207	4,937	5,317	5,301	5,416	5,541	4,544	4,310	4,300	4,556	4,488
Commercial	4	4	4	4	4	4	4	4	6	9	12	10	11	18	18	23	24	28	31	25	30	32	22	22
Residential	4	4	4	4	4	4	4	4	4	5	4	4	4	5	5	5	5	6	6	2	6	7	1	1

Self Generation · Power Stations · Non-Energy · Transport · Industry · Commercial · Residential

Source:
PETRONAS, Gas Companies, Power Utilities, IPPs & Self-Generation Plants

FIGURE 24: CONVERSION IN GAS PLANTS



	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
GPP-LPG	-	-	392	529	948	1,900	1,212	1,258	1,526	1,472	1,482	1,310	1,504	790	1,225	2,043	3,506	4,288	3,507	991	9,844	4,071	6,234	3,231
MDS	-	-	-	39	238	421	344	389	-	-	164	513	445	443	1,271	1,567	876	799	920	3,610	1,057	851	1,089	973
MLNG	9,797	8,749	8,425	9,019	9,087	11,244	15,251	16,396	16,688	16,417	17,231	16,636	17,803	18,965	22,944	32,837	30,996	33,054	33,766	32,497	29,345	35,815	32,717	35,474

GPP-LPG MDS MLNG

Source:
Oil and gas companies

Note:
MDS commenced pre-commercialization operation in year 2000

04.

COAL

TABLE 8: PRODUCTION AND RESERVES OF COAL AS OF 31ST DECEMBER 2013

LOCATION	RESERVES (MILLION TONNES)			COAL TYPE	PRODUCTION
	MEASURED	INDICATED	INFERRED		(METRIC TONNES)
SARAWAK					
1. Abok & Silantek, Sri Aman	7.25	10.60	32.40	Coking Coal, Semi-Anthracite and Anthracite	776,586
2. Merit-Pila, Kapit	170.26	107.02	107.84	Sub-Bituminous	2,006,765
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	110,611
5. Tutoh Area	5.58	34.66	162.33	Sub-Bituminous	
SUBTOTAL	**276.04**	**323.01**	**963.10**		**2,893,962**
SABAH					
1. Salimpopon	4.80	14.09	7.70	Sub-Bituminous	
2. Labuan			8.90	Sub-Bituminous	
3. Maliau			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			**1,938.37**		**2,893,962**

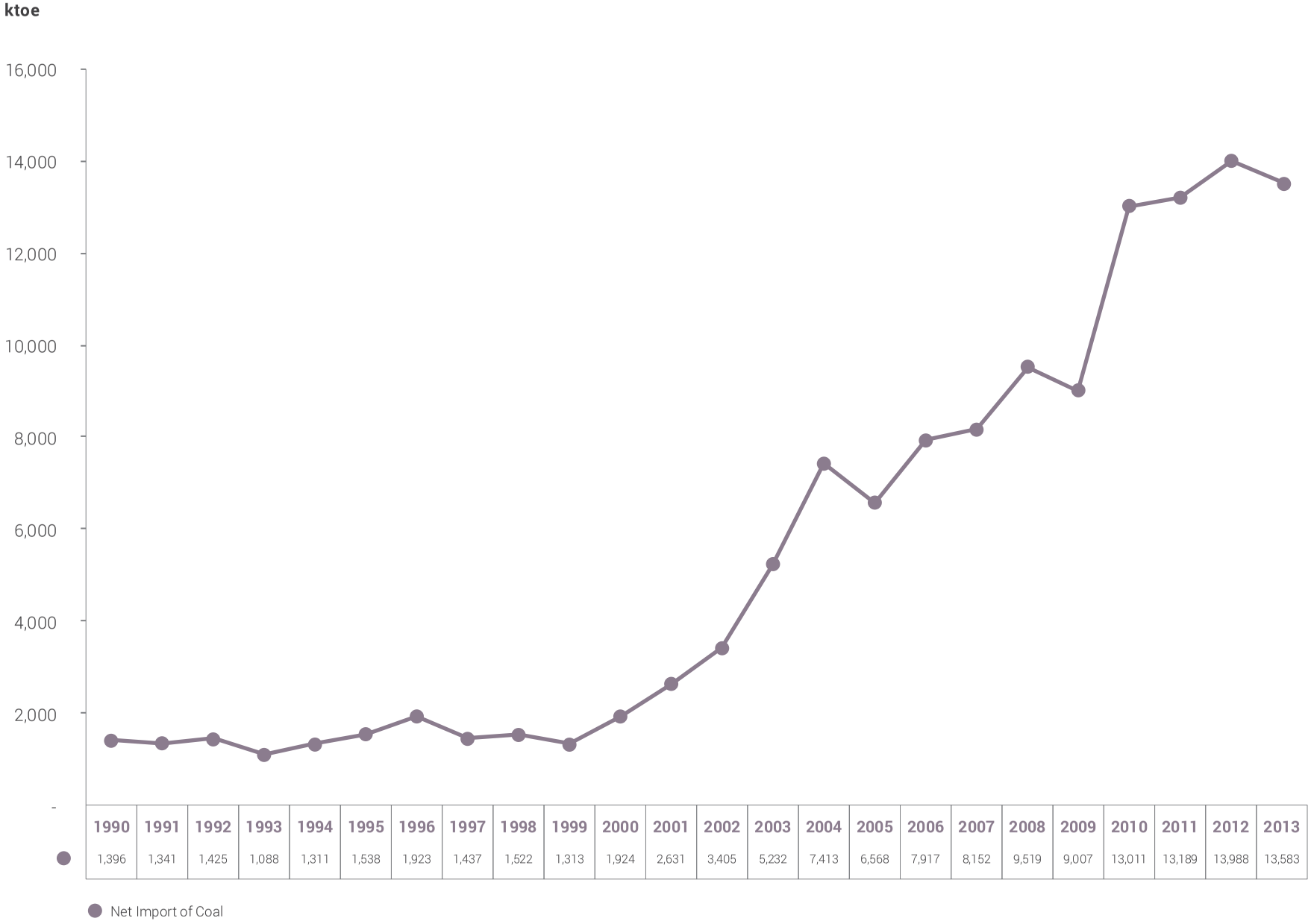
Source:
Department of Mineral & Geosciences Malaysia

TABLE 9: CONSUMPTION OF COAL IN METRIC TONNES

SECTORS	PENINSULAR MALAYSIA	SABAH	SARAWAK	MALAYSIA
Industry	2,375,573	-	66,043	2,441,617
Power Stations	19,338,378	-	2,119,133	21,457,511
TOTAL	**21,713,952**	-	**2,185,176**	**23,899,128**

Source:
Power Utilities, IPPs, cement, iron & steel manufacturers

FIGURE 25: NET IMPORT OF COAL

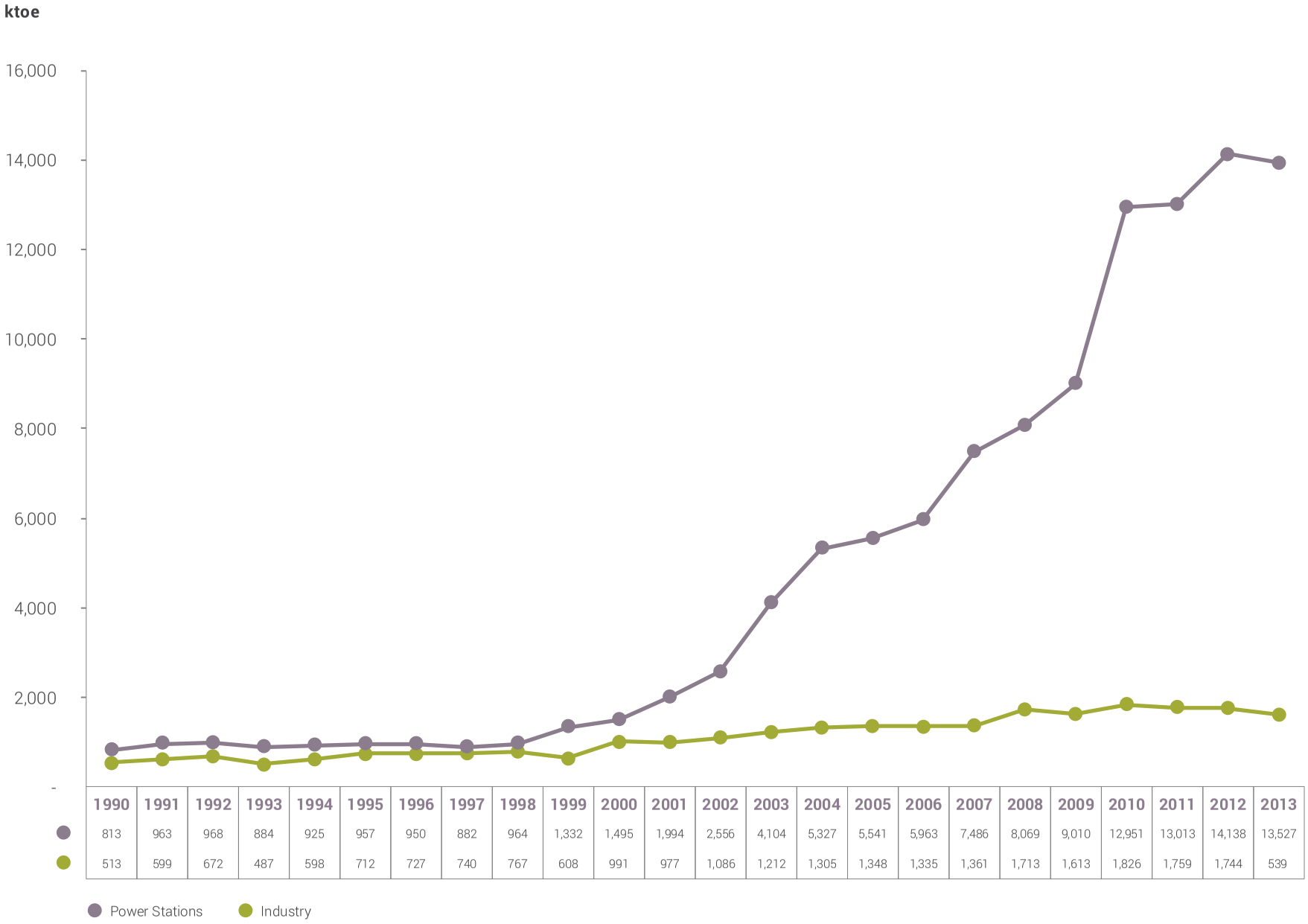


	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
●	1,396	1,341	1,425	1,088	1,311	1,538	1,923	1,437	1,522	1,313	1,924	2,631	3,405	5,232	7,413	6,568	7,917	8,152	9,519	9,007	13,011	13,189	13,988	13,583

Source:
Department of Statistics Malaysia, Power Utilities, IPPs, cement, iron and steel manufacturers

Note:
Measurement on ktoe is based on Energy Commission calculation

FIGURE 26: COAL CONSUMPTION BY SECTORS



	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Power Stations	813	963	968	884	925	957	950	882	964	1,332	1,495	1,994	2,556	4,104	5,327	5,541	5,963	7,486	8,069	9,010	12,951	13,013	14,138	13,527
Industry	513	599	672	487	598	712	727	740	767	608	991	977	1,086	1,212	1,305	1,348	1,335	1,361	1,713	1,613	1,826	1,759	1,744	539

Source:
Power Utilities, IPPs, cement, iron & steel manufacturers

05.

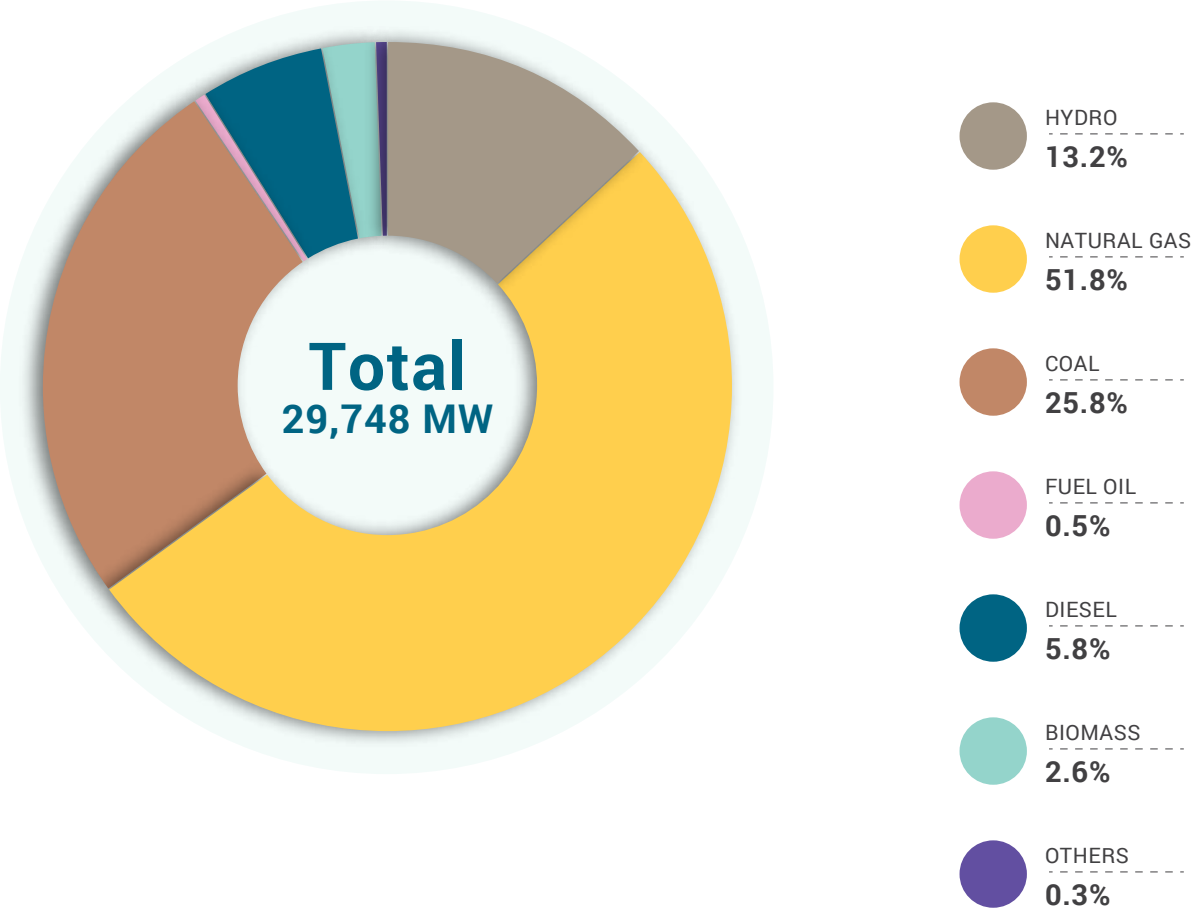
ELECTRICITY

TABLE 10: INSTALLED CAPACITY AS OF 31ST DECEMBER 2013 IN MW

		HYDRO	NATURAL GAS	COAL	FUEL OIL	DIESEL	BIOMASS	OTHERS	TOTAL
PENINSULAR MALAYSIA	TNB	1,911	4,955	-	-	0	-	-	**6,866**
	IPPs	20	8,069	7,200	-	-	-	-	**15,289**
	Co-Generation	-	806	-	-	3	84	-	**893**
	Self-Generation	-	31	-	-	577	370	1	**979**
	SREP / FiT	9	-	-	-	-	2	67	**78**
	SUBTOTAL	**1,940**	**13,861**	**7,200**	**-**	**580**	**455**	**68**	**24,105**
SABAH	SESB	70	112	-	-	394	-	-	**575**
	IPPs	7	529	-	152	-	40	-	**728**
	Co-Generation	-	42	-	-	48	108	-	**197**
	Self-Generation	-	-	-	-	526	123	11	**660**
	SREP / FiT	7	-	-	-	-	30	-	**37**
	SUBTOTAL	**83**	**683**	**-**	**152**	**967**	**300**	**11**	**2,196**
SARAWAK	SEB	108	588	480	-	163	-	-	**1,339**
	IPPs	1,800	-	-	-	-	-	-	**1,800**
	Co-Generation	-	289	-	-	-	-	1	**290**
	Self-Generation	-	-	-	-	9	10	-	**19**
	SUBTOTAL	**1,908**	**877**	**480**	**-**	**172**	**10**	**1**	**3,447**
TOTAL		**3,931**	**15,421**	**7,680**	**152**	**1,719**	**765**	**80**	**29,748**

Source:
Power Utilities and IPPs

FIGURE 27: SHARE OF INSTALLED CAPACITY AS OF 31ST DECEMBER 2013



Source:
Power Utilities, IPPs and Ministry of Public Utilities Sarawak

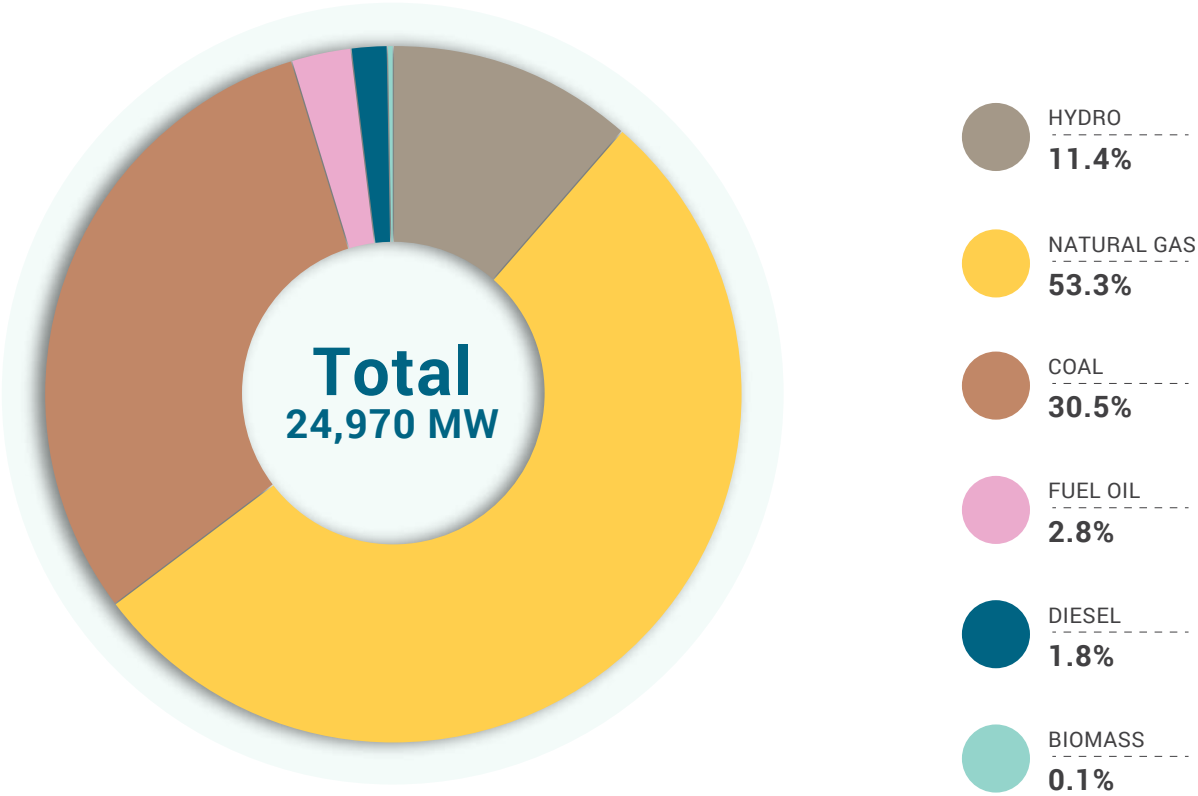
TABLE 11: AVAILABLE CAPACITY AS OF 31ST DECEMBER 2013 IN MW

		HYDRO	NATURAL GAS	COAL	FUEL OIL	DIESEL	BIOMASS	TOTAL
PENINSULAR MALAYSIA	TNB	1,899	4,640	-	-	-	-	**6,539**
	IPPs	20	7,492	7,138	564	-	-	**15,214**
	SUBTOTAL	**1,919**	**12,132**	**7,138**	**564**	**-**	**-**	**21,753**
SABAH*	SESB	69	105	-	-	322	-	**495**
	IPPs	7	494	-	143	-	33	**677**
	SUBTOTAL	**75**	**599**	**-**	**143**	**322**	**33**	**1,172**
SARAWAK	SEB	91	588	480	-	136	-	**1,295**
	IPPs	750	-	-	-	-	-	**750**
	SUBTOTAL	**841**	**588**	**480**	**-**	**136**	-	**2,045**
TOTAL		**2,835**	**13,319**	**7,618**	**707**	**458**	**33**	**24,970**

Source:
Power Utilities and IPPs

Note:
(*) Dependable Capacity

FIGURE 28: SHARE OF AVAILABLE CAPACITY AS OF 31ST DECEMBER 2013



Source:
Power Utilities & IPPs

TABLE 12: INSTALLED CAPACITY OF MAJOR HYDRO POWER STATIONS

STATION	INSTALLED CAPACITY (MW)	TOTAL (MW)
PENINSULAR MALAYSIA		
1. TERENGGANU		
- Stesen Janakuasa Sultan Mahmud Kenyir	4 x 100	400.0
2. PERAK		
- Stesen Janakuasa Temenggor	4 x 87	348.0
- Stesen Janakuasa Bersia	3 x 24	72.0
- Stesen Janakuasa Kenering	3 x 40	120.0
- Chenderoh	3 x 10.7 + 1 x 8.4	40.5
- Sg. Piah Hulu	2 x 7.3	14.6
- Sg. Piah Hilir	2 x 27	54.0
3. PAHANG		
- Stesen Janakuasa Sultan Yussuf, Jor	4 x 25	100.0
- Stesen Janakuasa Sultan Idris II, Woh	3 x 50	150.0
- Cameron Highland Scheme*		11.9
4. KELANTAN		
- Pergau	4 x 150	600.0
- Kenerong Upper	2 x 6	12.0
- Kenerong Lower	2 x 4	8.0
SUBTOTAL		**1,931.0**
SABAH		
- Tenom Pangi	3 x 22.0	66.0
SUBTOTAL		**66.0**
SARAWAK		
- Batang Ai	4 x 27.0	108.0
- Bakun		1,800.0
SUBTOTAL		**1,908.0**
TOTAL		**3,905.0**

Source:
TNB, SESB and SEB

Note:
(*) Cameron Highland Scheme includes Odak, Habu, Kg. Raja, Kg. Terla and Robinson Falls stations

TABLE 13: INSTALLED CAPACITY OF MINI HYDRO POWER STATIONS

STATION	TOTAL (MW)
1. KEDAH	
- Sg Tawar Besar	0.540
- Sg Mempelam	0.397
- Sg Mahang	0.483
2. PERAK	
- Sg Tebing Tinggi	0.178
- Sg Asap	0.110
- Sg Kinjang	0.349
- Sg Bil	0.258
3. PAHANG	
- Sg Sempam G2	0.450
- Sg Pertang	0.492
- Sg Perdak	0.364
4. KELANTAN	
- Sg Renyok G1	0.800
- Sg Renyok G2	0.800
- Sg Sok	0.588
- Sg Rek	0.270
5. TERENGGANU	
- Sg Brang	0.422
SUBTOTAL	**6.501**
SABAH	
- Carabau (Ranau)	2.000
- Melangkap (Kota Belud)	1.000
- Sayap (Kota Belud)	1.000
- Bombalai (Tawau)	1.100
- Merotai (Tawau)	1.100
- Kiau (Kota Belud)	0.375
- Naradau (Ranau)	1.760
SUBTOTAL	**8.335**
SARAWAK	
- Sg Pasir	0.760
- Penindin	0.352
- Sebako	0.333
- Lundu	0.352
- Kalamuku 1	0.500
- Kalamuku 2	0.500
- Sg Keijin	0.500
- Sg Kota 1	2.000
- Sg Kota 2	2.000
SUBTOTAL	**7.297**
TOTAL	**22.108**

Source:
TNB, SESB and SEB

TABLE 14: TRANSMISSION NETWORK IN CIRCUIT – KILOMETRES

UTILITY	500 KV	275 KV	132 KV	66 KV
TNB	668	8,534	11,851	-
SESB	-	493	1,200	163
SEB	-	1,188	398	-

Source:
TNB, SESB & SEB

TABLE 15: DISTRIBUTION NETWORK IN CIRCUIT – KILOMETRES

UTILITY	OVERHEAD LINES	UNDERGROUND CABLES
TNB	487,385	555,272
SESB	7,862	729
SEB	22,350	6,969

Source:
TNB, SESB & SEB

TABLE 16: GROSS GENERATION, CONSUMPTION, AVAILABLE CAPACITY, PEAK CONSUMPTION AND RESERVE MARGIN FOR ELECTRICITY IN MALAYSIA

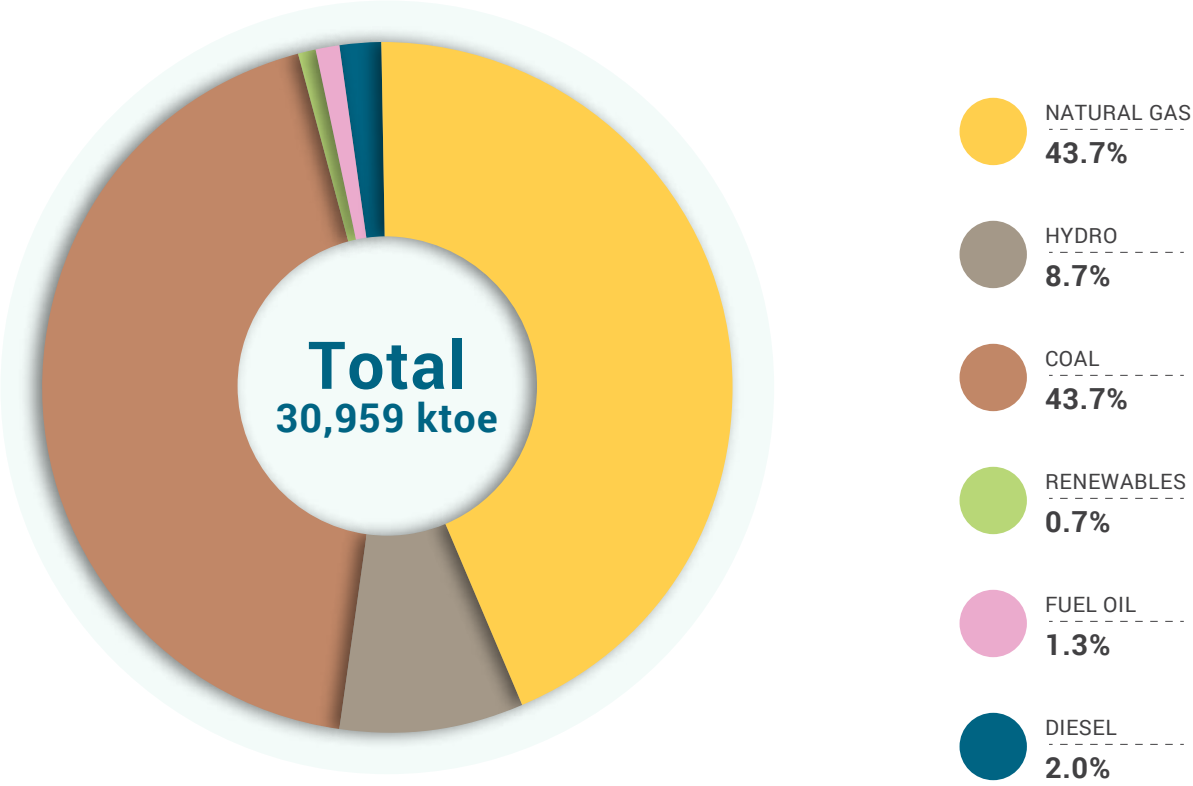
REGION	ELECTRICITY GROSS GENERATION		ELECTRICITY CONSUMPTION		AVAILABLE CAPACITY**	PEAK DEMAND	RESERVE MARGIN
	GWh	%	GWh	%	MW	MW	%
PENINSULAR MALAYSIA	120,893	84.2	105,861	86.0	21,753	16,562	31.3
SABAH*	7,433	5.2	5,097	4.1	1,172	874	34.1
SARAWAK	15,171	10.6	12,118	9.8	2,045	1,783	14.7
TOTAL	**143,497**	**100.0**	**123,076**	**100.0**	**24,970**		

Source:
TNB and IPPs, SESB and SEB

Note :
(*) Most diesel units in SESB are aged sets hence they are derated due to thermal limitations. However, during operational state, some generating units are not available due to maintenance outages as well as random breakdowns; the actual operation capacity available to system operation for dispatch was very limited.

(**) Available Capacity for Peninsular Malaysia was based on Tested Annual Available Capacity (TAAC), Available Capacity for Sabah was based on Dependable Capacity

FIGURE 29: SHARE OF ENERGY INPUT IN POWER STATIONS



Source:
Power Utilities & IPPs

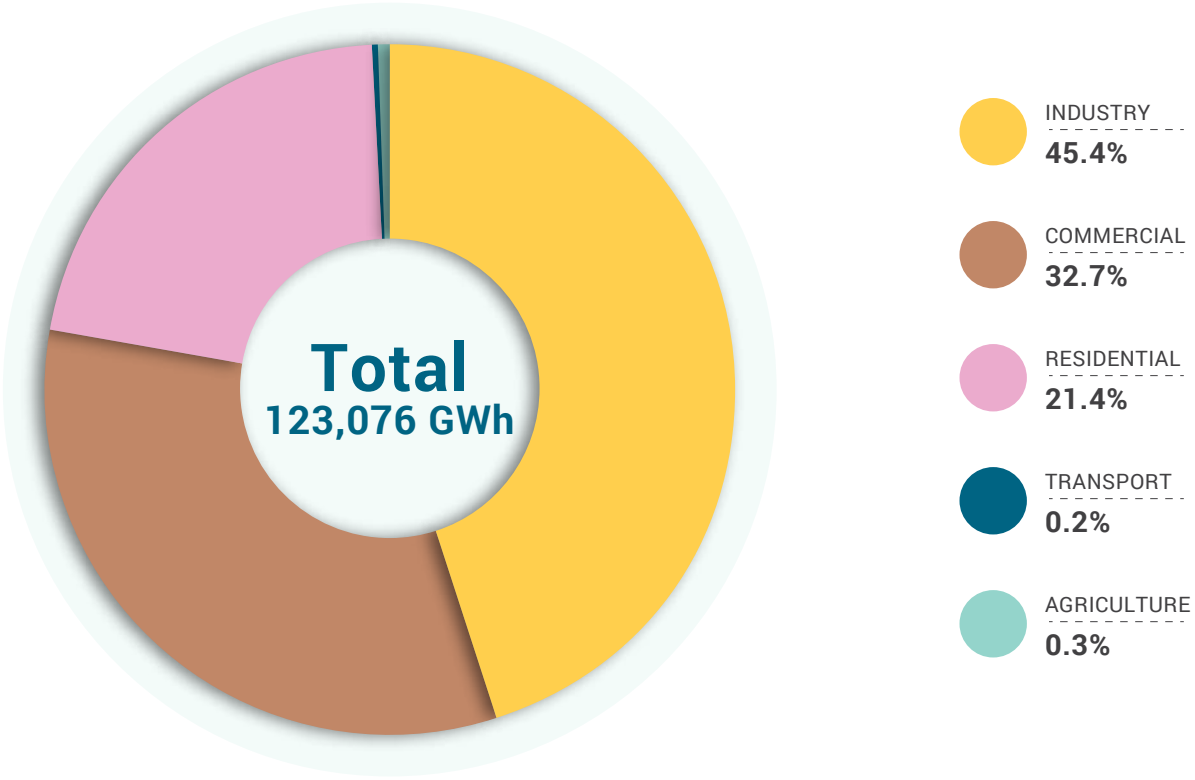
Note:
Figures exclude fuel consumption for self-generation plants

TABLE 17: ELECTRICITY CONSUMPTION BY SECTORS IN GWh

REGION	INDUSTRY		COMMERCIAL		RESIDENTIAL		TRANSPORT		AGRICULTURE		TOTAL
	GWh	%	GWh	%	GWh	%	GWh	%	GWh	%	GWh
PENINSULAR MALAYSIA	46,243	82.7	36,098	89.6	22,904	87.1	241	100.0	375	100.0	**105,861**
SABAH	1,489	2.7	2,018	5.0	1,590	6.0	-	-	-	-	**5,097**
SARAWAK	8,155	14.6	2,169	5.4	1,794	6.8	-	-	-	-	**12,118**
TOTAL	**55,886**	**100.0**	**40,286**	**100.0**	**26,288**	**100.0**	**241**	**100.0**	**375**	**100.0**	**123,076**

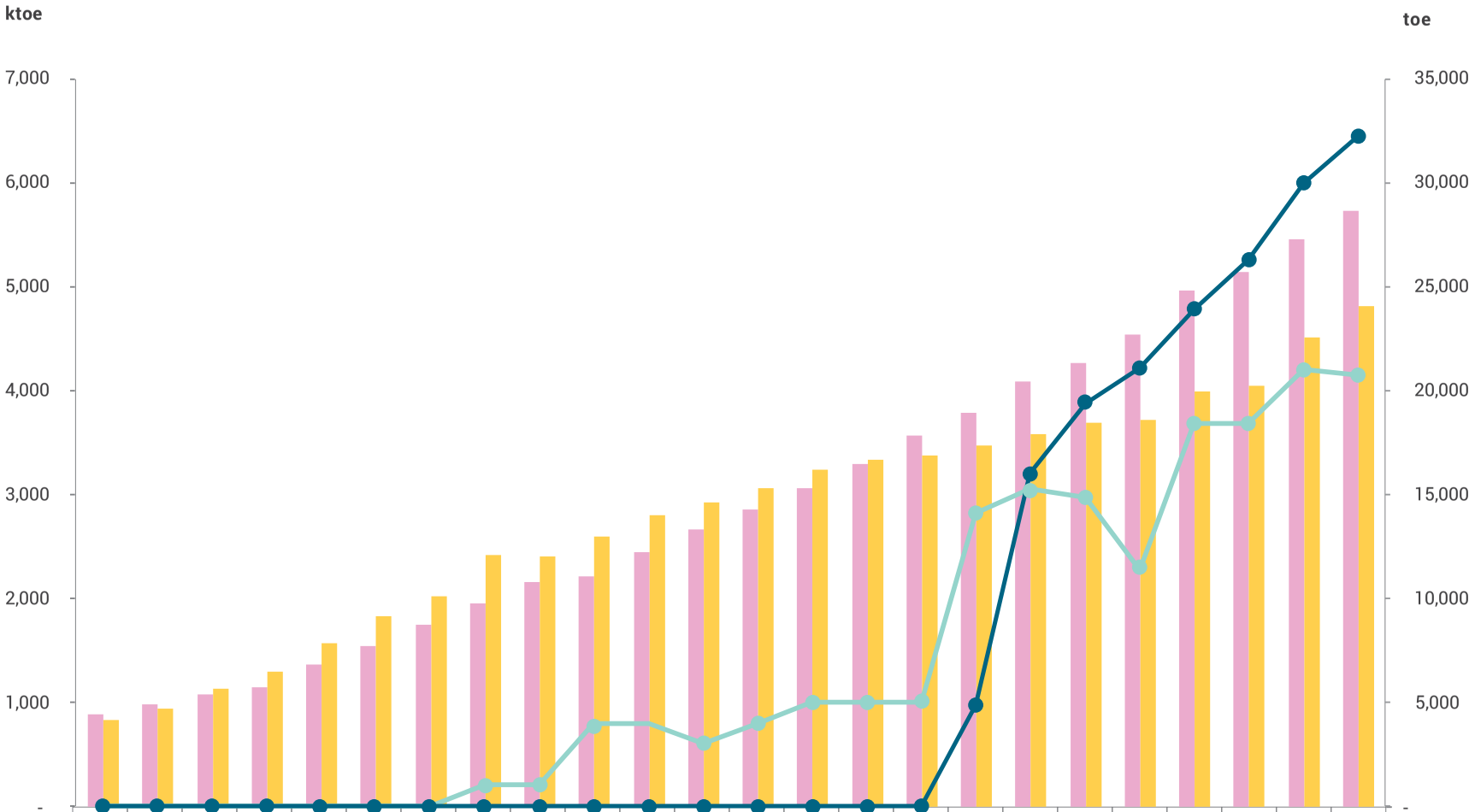
Source:
Power Utilities, IPPs & Self-Generators

FIGURE 30: SHARE OF ELECTRICITY CONSUMPTION BY SECTORS



Source:
Power Utilities, IPPs & Self-Generators

FIGURE 31: ELECTRICITY CONSUMPTION BY SECTORS



	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Residential & Commercial (ktoe)	885	988	1,081	1,147	1,365	1,549	1,747	1,961	2,165	2,220	2,453	2,660	2,859	3,066	3,298	3,567	3,792	4,094	4,266	4,535	4,957	5,146	5,451	5,728
Industry (ktoe)	830	937	1,137	1,303	1,567	1,826	2,029	2,422	2,411	2,591	2,805	2,930	3,059	3,242	3,340	3,371	3,475	3,587	3,687	3,719	3,994	4,045	4,509	4,818
Transport* (toe)	-	-	-	-	-	-	-	1,000	1,000	4,000	4,000	3,000	4,000	5,000	5,000	5,000	14,117	15,295	14,862	11,358	18,439	18,428	21,027	20,774
Agriculture** (toe)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4,886	15,991	19,393	21,080	23,920	26,312	30,014	32,240

Source:
TNB, SEB, SESB, Co-Generators & Land Public Transport Commission (SPAD)

Note:
(*) From 2006 until 2009 data were collected directly from train operators
(**) Effective from 1st June 2006, TNB has introduced Specific Agriculture Tariff; previously Agriculture Tariff was under the Commercial Tariff

TABLE 18: ELECTRICITY GENERATION AND INSTALLED CAPACITY OF RENEWABLE ENERGY BY PUBLIC LICENSEE BY REGION IN 2013

REGION	TYPE OF PRIME MOVER	INSTALLED CAPACITY (MW)	UNIT GENERATED (MWh)
PENINSULAR MALAYSIA	Mini Hydro - FiT	15.70	88,731
	Mini Hydro - IPP	20.00	59,203
	Mini Hydro - Cameron Highlands Scheme	11.90	30,649
	Mini Hydro - TNB	9.76	11,634
	Solar - Non-FiT	1.30	797
	Solar - FiT	73.30	43,063
	Biogas	8.60	23,321
	Biomass	10.40	19,702
	SUBTOTAL	**150.96**	**277,100**
SABAH	Mini Hydro-SESB	8.00	22,256
	Mini Hydro - Others	6.50	19,613
	Biomass	137.50	592,717
	SUBTOTAL	**152.00**	**634,586**
SARAWAK	Mini Hydro -SEB	7.30	11,850
	Solar	0.27	301
	SUBTOTAL	**7.57**	**12,151**
GRAND TOTAL		**310.53**	**923,836**

Source:
TNB, SESB, SEB and Ministry of Public Utilities Sarawak

Note:
Public Licensee is the licensee that generates electricity for its own use and for supply to others

TABLE 19: ELECTRICITY GENERATION AND INSTALLED CAPACITY OF RENEWABLE ENERGY BY PRIVATE LICENSEE BY REGION IN 2013

REGION	TYPE OF PRIME MOVER	INSTALLED CAPACITY (MW)	UNIT GENERATED (MWh)
PENINSULAR MALAYSIA	Biomass - Self-Gen	568.80	197,622
	SUBTOTAL	**568.80**	**197,622**
SABAH	Biomass - Co-Gen	94.00	306,560
	Biomass - Self-Gen	145.61	226,300
	SUBTOTAL	**239.61**	532,860
SARAWAK	Biomass	9.90	53,500
	SUBTOTAL	**9.90**	**53,500**
GRAND TOTAL		**818.30**	**783,982**

Source:
Energy Commission, TNB, SESB, SEB and Ministry of Public Utilities Sarawak

Note:
Private Licence is the licensee generates for his own use only

06.

KEY ENERGY STATISTICS

TABLE 20:PRIMARY ENERGY SUPPLY IN KTOE

	CRUDE OIL	PETROLEUM PRODUCTS & OTHERS	NATURAL GAS (SALES GAS)	COAL & COKE	HYDRO POWER	TOTAL	ANNUAL GROWTH RATE (%)	SHARE (%)
1990	8,783	3,646	6,801	1,326	915	21,471	8.9	57.9 31.7 6.2 4.3
1991	9,443	4,163	10,112	1,564	1,053	26,335	22.7	51.7 38.4 5.9 4.0
1992	10,175	5,098	11,381	1,640	997	29,291	11.2	52.1 38.9 5.6 3.4
1993	10,135	5,816	11,360	1,352	1,262	29,925	2.2	53.3 38.0 4.5 4.2
1994	13,605	2,450	12,392	1,563	1,652	31,662	5.8	50.7 39.1 4.9 5.2
1995	16,159	608	13,960	1,612	1,540	33,879	7.0	49.5 41.2 4.8 4.5
1996	18,255	1,098	15,567	1,677	1,243	37,840	11.7	51.1 41.1 4.4 3.3
1997	17,917	3,803	19,041	1,622	790	43,173	14.1	50.3 44.1 3.8 1.8
1998	17,132	1,919	19,101	1,731	1,113	40,996	(5.0)	46.5 46.6 4.2 2.7
1999	17,643	1,807	21,476	1,940	1,668	44,534	8.6	43.7 48.2 4.4 3.7
2000	21,673	(1,431)	26,370	2,486	1,612	50,710	13.9	39.9 52.0 4.9 3.2
2001	23,590	(1,917)	25,649	2,970	1,687	51,979	2.5	41.7 49.3 5.7 3.2
2002	22,647	(523)	26,101	3,642	1,329	53,196	2.3	41.6 49.1 6.8 2.5
2003	25,344	(1,408)	27,257	5,316	1,056	57,565	8.2	41.6 47.3 9.2 1.8
2004	25,335	(82)	29,145	7,109	1,329	62,836	9.2	40.2 46.4 11.3 2.1
2005	24,339	(243)	33,913	6,889	1,313	66,211	5.4	36.4 51.2 10.4 2.0
2006	24,910	(1,670)	34,917	7,299	1,567	67,023	1.2	34.7 52.1 10.9 2.3
2007	26,571	(1,190)	36,639	8,848	1,522	72,390	8.0	35.1 50.6 12.2 2.1
2008	26,776	(1,780)	39,289	9,782	1,964	76,031	5.0	32.9 51.7 12.9 2.6
2009	26,386	96	35,851	10,623	1,627	74,583	(1.9)	35.5 48.1 14.2 2.2
2010	22,487	2,521	35,447	14,777	1,577	76,809	3.0	32.6 46.1 19.2 2.1
2011	24,679	2,248	35,740	14,772	1,850	79,289	3.2	34.0 45.1 18.6 2.3
2012	28,053	1,762	38,647	15,882	2,150	86,494	9.1	34.5 44.7 18.4 2.5
2013	27,154	5,849	39,973	15,067	2,688	90,730	8.1	36.4 44.1 16.6 3.0

Crude Oil and Petroleum Products & Others
Natural Gas
Coal and Coke
Hydro power

TABLE 21: NET IMPORT AND EXPORT OF ENERGY IN KTOE

	NET EXPORT OF CRUDE OIL	NET EXPORT OF LNG	NET EXPORT OF NATURAL GAS	NET EXPORT OF ELECTRICITY	NET IMPORT OF PETROLEUM PRODUCTS	NET IMPORT OF COAL AND COKE
1990	21,902	8,686	-	5	2,618	1,396
1991	22,200	8,278	-	2	3,456	1,341
1992	22,215	8,262	1	2	3,986	1,425
1993	20,063	8,654	1,258	(2)	4,328	1,088
1994	18,160	8,928	1,589	(4)	2,398	1,311
1995	18,518	10,790	1,474	2	150	1,538
1996	16,859	15,251	1,474	1	778	1,923
1997	16,022	16,396	1,340	(1)	2,491	1,437
1998	16,626	16,429	1,444	(1)	2,164	1,522
1999	16,274	15,445	1,177	-	1,196	1,313
2000	10,036	16,633	1,198	-	(1,914)	1,924
2001	9,128	16,636	1,163	-	(2,019)	2,631
2002	11,017	17,803	1,098	3	(936)	3,405
2003	10,826	18,965	(99)	17	(1,856)	5,232
2004	11,292	22,944	144	45	68	7,413
2005	10,963	22,299	(206)	192	(474)	6,568
2006	9,342	22,873	(2,404)	200	(1,798)	7,917
2007	7,509	23,777	(4,140)	195	(1,329)	8,152
2008	6,482	22,277	(3,041)	41	(1,609)	9,519
2009	6,517	23,606	(3,889)	8	(1,177)	9,007
2010	9,365	26,857	(4,183)	(32)	1,930	13,011
2011	2,300	26,856	(5,832)	(31)	2,159	13,189
2012	1,994	25,547	(6,498)	(7)	(1,242)	13,988
2013	1,684	25,639	(5,602)	(16)	7,400	13,583

TABLE 22: CONVERSION IN GAS PLANTS IN KTOE

	INPUT	GAS PLANTS		
	NATURAL GAS	MLNG	GPP - LPG	MDS
1990	9,797	9,797	na	na
1991	8,749	8,749	na	na
1992	8,817	8,425	392	na
1993	9,587	9,019	529	39
1994	10,273	9,087	948	238
1995	13,565	11,244	1,900	421
1996	16,807	15,251	1,212	344
1997	18,043	16,396	1,258	389
1998	18,214	16,688	1,526	na
1999	17,889	16,417	1,472	na
2000	18,877	17,231	1,482	164
2001	18,459	16,636	1,310	513
2002	19,752	17,803	1,504	445
2003	20,198	18,965	790	443
2004	25,440	22,944	1,225	1,271
2005	36,447	32,837	2,043	1,567
2006	35,378	30,996	3,506	876
2007	38,141	33,054	4,288	799
2008	38,193	33,766	3,507	920
2009	37,098	32,497	991	3,610
2010	40,246	29,345	9,844	1,057
2011	40,737	35,815	4,071	851
2012	40,041	32,717	6,234	1,089
2013	39,678	35,474	3,231	973

Note:
na means not applicable
Middle Distillate Synthesis (MDS) commenced pre-commercialization operation in year 2000
MLNG plant produced LPG in the year 2003

TABLE 23: CONVERSION IN REFINERIES IN KTOE

	INPUT			OUTPUT								
	LOCAL CRUDE OIL	IMPORTED CRUDE OIL & OTHERS	TOTAL INPUT	PETROL	DIESEL	FUEL OIL	KEROSENE	ATF & AV GAS	LPG	NON-ENERGY	REFINERY GAS	TOTAL OUTPUT
1990	7,736	2,244	9,980	1,406	3,496	3,241	512	376	640	585	158	**10,414**
1991	8,199	2,044	10,243	1,665	3,805	2,633	544	403	567	798	174	**10,589**
1992	9,016	1,409	10,425	1,724	4,048	2,110	541	412	200	324	143	**9,502**
1993	8,502	3,195	11,697	1,816	4,249	2,375	576	517	244	600	106	**10,483**
1994	12,326	1,853	14,179	2,316	5,108	2,887	563	980	319	1,468	162	**13,803**
1995	15,991	969	16,960	2,320	6,011	2,212	360	1,587	431	3,380	385	**16,686**
1996	15,879	3,501	19,380	3,134	6,174	3,696	292	1,899	371	2,554	331	**18,451**
1997	16,382	3,224	19,606	2,491	6,744	2,716	265	2,000	371	1,783	203	**16,573**
1998	15,942	1,347	17,289	2,545	5,926	3,233	285	1,985	449	2,117	192	**16,732**
1999	14,595	4,437	19,032	3,056	6,712	2,603	210	2,140	617	2,159	230	**17,727**
2000	15,421	6,743	22,164	3,893	8,059	2,532	239	2,660	838	2,492	241	**20,954**
2001	13,299	10,546	23,845	4,623	8,462	2,269	283	2,954	875	3,020	331	**22,817**
2002	14,838	8,032	22,870	4,460	8,401	2,332	414	2,570	897	2,127	294	**21,495**
2003	17,127	8,322	25,449	4,584	9,062	1,763	983	2,367	932	2,623	262	**22,576**
2004	16,810	8,764	25,574	4,724	9,611	1,813	591	2,693	897	2,455	215	**22,999**
2005	18,216	6,271	24,487	4,245	9,161	1,777	521	2,553	822	2,157	202	**21,438**
2006	16,797	8,113	24,910	4,607	8,752	1,933	537	2,938	1,118	2,750	849	**23,484**
2007	17,320	9,251	26,571	5,285	9,033	1,990	234	3,138	1,228	3,461	938	**25,307**
2008	18,638	8,138	26,776	5,066	9,364	1,994	245	3,139	1,208	4,475	991	**26,482**
2009	20,685	5,812	26,497	4,052	9,415	1,144	565	3,085	732	5,905	195	**25,093**
2010	14,003	8,706	22,709	3,873	8,369	327	483	2,891	697	4,357	209	**21,206**
2011	14,874	9,904	24,777	3,599	8,925	571	419	3,457	665	4,572	1,659	**23,867**
2012	17,213	10,347	27,560	4,617	10,033	1,608	654	3,918	702	4,318	197	**26,047**
2013	17,365	9,289	26,654	4,702	11,063	1,286	387	2,750	1,252	3,089	195	**24,727**

TABLE 24: CONVERSION IN POWER STATIONS (EXCLUDE CO-GENERATION & PRIVATE LICENSED PLANTS) IN KTOE

	INPUT:						TOTAL INPUT	ANNUAL GROWTH RATE (%)	INPUT SHARE (%)						OUTPUT:
	FUEL OIL	DIESEL	NATURAL GAS	HYDRO POWER*	COAL	RENEWABLES									TOTAL ELECTRICITY GENERATED
1990	2,873	116	1,361	915	813	-	6,078	21.2		49.2	22.4	15.1	13.4	-	1,979
1991	2,687	164	2,533	1,053	963	-	7,400	21.8		38.5	34.2	14.2	13.0	-	2,283
1992	2,352	160	3,144	997	968	-	7,621	3.0		33.0	41.3	13.1	12.7	-	2,521
1993	2,388	87	4,374	1,262	884	-	8,995	18.0		27.5	48.6	14.0	9.8	-	2,987
1994	1,957	249	5,119	1,652	925	-	9,902	10.1		22.3	51.7	16.7	9.3	-	3,362
1995	2,073	265	6,414	1,540	957	-	11,249	13.6		20.8	57.0	13.7	8.5	-	3,909
1996	2,354	284	7,489	1,243	950	-	12,320	9.5		21.4	60.8	10.1	7.7	-	4,421
1997	2,482	185	7,531	790	882	-	11,870	(3.7)		22.5	63.4	6.7	7.4	-	4,977
1998	2,130	275	8,886	1,113	964	-	13,368	12.6		18.0	66.5	8.3	7.2	-	5,013
1999	950	172	10,162	1,668	1,332	-	14,284	6.9		7.9	71.1	11.7	9.3	-	5,409
2000	592	191	11,580	1,612	1,495	-	15,470	8.3		5.1	74.9	10.4	9.7	-	5,731
2001	730	278	11,922	1,687	1,994	-	16,611	7.4		6.1	71.8	10.2	12.0	-	5,940
2002	1,363	476	12,424	1,329	2,556	-	18,148	9.3		10.1	68.5	7.3	14.1	-	6,191
2003	289	340	10,893	1,056	4,104	-	16,682	(8.1)	3.8		65.3	6.3	24.6	-	6,568
2004	274	272	10,545	1,329	5,327	-	17,747	6.4	3.1		59.4	7.5	30.0	-	6,716
2005	275	298	12,271	1,313	5,541	-	19,698	11.0	2.9		62.3	6.7	28.1	-	6,706
2006	171	617	12,524	1,567	5,964	-	20,843	5.8	3.8		60.1	7.5	28.6	-	7,240
2007	199	314	12,549	1,522	7,486	-	22,070	5.9	2.3		56.9	6.9	33.9	-	8,385
2008	181	299	13,651	1,964	8,069	-	24,164	9.5	2.0		56.5	8.1	33.4	-	8,422
2009	205	384	13,390	1,627	9,010	-	24,616	1.9	2.4		54.4	6.6	36.6	-	8,531
2010	125	415	12,628	1,577	12,951	-	27,696	12.5	1.9		45.6	5.7	46.8	-	9,404
2011	1,103	981	10,977	1,850	13,013	-	27,924	0.8		7.5	39.3	6.6	46.6	-	10,193
2012	550	811	11,533	2,149	14,138	71	29,252	4.8		4.7	39.4	7.3	48.3	0.2	11,032
2013	392	623	13,520	2,688	13,527	208	30,959	5.8	3.3		43.7	8.7	43.7	0.7	11,630

Note:
(*) Figures calculated from average efficiency of thermal stations of respective year

Fuel & Diesel Oil · Natural Gas · Hydro power* · Coal & Coke · Renewables

TABLE 25: FINAL ENERGY CONSUMPTION BY SECTORS IN KTOE

	INDUSTRY	TRANSPORT	RESIDENTIAL AND COMMERCIAL	NON-ENERGY USE	AGRICULTURE	TOTAL	ANNUAL GROWTH RATE	INDUSTRY INCLUDING AGRICULTURE & NON-ENERGY	INDUSTRY GDP*	INDUSTRY ENERGY INTENSITY (TOE/RM MILLION AT 2005 PRICES)
1990	5,300	5,386	1,622	838	-	**13,146**	11.0	6,138	124,168	49
1991	5,835	5,806	1,721	1,071	130	**14,563**	10.8	7,036	134,346	52
1992	6,455	6,226	1,891	1,222	391	**16,185**	11.1	8,068	143,502	56
1993	7,012	6,558	2,069	2,027	62	**17,728**	9.5	9,101	152,503	60
1994	7,283	7,262	2,502	1,817	422	**19,286**	8.8	9,522	163,886	58
1995	8,060	7,827	2,837	1,994	446	**21,164**	9.7	10,500	181,278	58
1996	9,838	8,951	3,162	1,744	486	**24,181**	14.3	12,068	204,301	59
1997	10,106	10,201	3,073	2,298	490	**26,168**	8.2	12,894	218,870	59
1998	10,121	9,793	3,314	2,023	307	**25,558**	(2.3)	12,451	195,779	64
1999	10,277	11,393	3,653	1,799	106	**27,228**	6.5	12,182	210,345	58
2000	11,406	12,071	3,868	2,250	104	**29,699**	9.1	13,760	235,479	58
2001	11,852	13,137	4,048	2,378	98	**31,513**	6.1	14,328	229,439	62
2002	12,854	13,442	4,387	2,511	96	**33,290**	5.6	15,461	238,235	65
2003	13,472	14,271	4,399	2,345	98	**34,585**	3.9	15,915	256,074	62
2004	14,914	15,385	4,754	2,183	87	**37,323**	7.9	17,184	273,885	63
2005	15,492	15,384	5,134	2,173	101	**38,284**	2.6	17,766	282,884	63
2006	15,248	14,819	5,430	2,819	253	**38,569**	0.7	18,320	295,711	62
2007	16,454	15,717	6,212	2,958	265	**41,606**	7.9	19,677	304,216	65
2008	16,205	16,395	6,205	2,876	287	**41,968**	0.9	19,368	306,331	63
2009	14,312	16,119	6,336	3,868	211	**40,846**	(2.7)	18,391	287,869	64
2010	12,928	16,828	6,951	3,696	1,074	**41,477**	1.5	17,698	309,165	57
2011	12,100	17,070	6,993	6,377	916	**43,456**	4.8	19,393	317,558	61
2012	13,919	19,757	7,065	7,497	1,053	**49,291**	13.4	22,469	331,594	68
2013	13,496	22,357	7,403	7,277	1,051	**51,583**	4.7	21,824	342,566	64

Note:
(*) Defined as total GDP for Agriculture, Forestry and Fishing, Mining and Quarrying, Manufacturing and Construction

TABLE 26: FINAL ENERGY CONSUMPTION BY TYPE OF FUELS IN KTOE

	PETROLEUM PRODUCTS AND OTHERS	ELECTRICITY	*GAS FOR NON-ENERGY USE*	*GAS FOR ENERGY USE*	NATURAL GAS	COAL AND COKE	TOTAL	TOTAL (EXCL. NON-ENERGY USE)	ANNUAL GROWTH RATE (%)
1990	9,825	1,715	*609*	*460*	1,069	513	**13,122**	12,513	8.2
1991	10,914	1,925	*604*	*495*	1,099	599	**14,537**	13,933	11.3
1992	11,927	2,218	*657*	*687*	1,344	672	**16,161**	15,504	11.3
1993	13,075	2,450	*1,141*	*560*	1,701	487	**17,713**	16,572	6.9
1994	13,894	2,932	*1,163*	*497*	1,660	598	**19,084**	17,921	8.1
1995	16,142	3,375	*1,064*	*590*	1,654	712	**21,883**	20,819	16.2
1996	17,203	3,777	*870*	*1,209*	2,079	727	**23,786**	22,916	10.1
1997	18,578	4,384	*1,378*	*1,087*	2,465	740	**26,167**	24,789	8.2
1998	17,488	4,577	*1,282*	*1,444*	2,726	767	**25,558**	24,276	(2.1)
1999	18,782	4,815	*1,118*	*1,905*	3,023	608	**27,228**	26,110	7.6
2000	19,582	5,263	*1,512*	*2,350*	3,862	991	**29,698**	28,186	8.0
2001	20,323	5,594	*1,655*	*2,965*	4,620	977	**31,514**	29,859	5.9
2002	20,638	5,922	*1,775*	*3,867*	5,642	1,086	**33,288**	31,513	5.5
2003	21,175	6,313	*1,616*	*4,270*	5,886	1,212	**34,586**	32,970	4.6
2004	22,886	6,642	*1,476*	*5,014*	6,490	1,305	**37,323**	35,847	8.7
2005	23,012	6,944	*1,541*	*5,440*	6,981	1,348	**38,285**	36,744	2.5
2006	22,398	7,272	*2,120*	*5,442*	7,562	1,335	**38,567**	36,447	(0.8)
2007	24,852	7,683	*2,112*	*5,597*	7,709	1,361	**41,605**	39,493	8.4
2008	24,451	7,986	*2,046*	*5,772*	7,818	1,713	**41,968**	39,922	1.1
2009	24,145	8,286	*1,995*	*4,807*	6,802	1,613	**40,846**	38,851	(2.7)
2010	24,403	8,993	*1,661*	*4,593*	6,254	1,826	**41,476**	39,815	2.5
2011	23,946	9,236	*3,906*	*4,609*	8,515	1,759	**43,456**	39,550	(0.7)
2012	27,329	10,011	*5,336*	*4,870*	10,206	1,744	**49,290**	43,954	11.1
2013	29,379	10,590	*5,276*	*4,800*	10,076	1,539	**51,583**	46,308	5.4

TABLE 27: FINAL CONSUMPTION FOR PETROLEUM PRODUCTS IN KTOE

	DIESEL	PETROL	FUEL OIL	LPG	KEROSENE	ATF & AV GAS	NON-ENERGY & OTHERS	TOTAL
1990	4,421	2,901	883	548	203	628	239	**9,823**
1991	4,873	3,135	945	612	180	690	479	**10,914**
1992	5,291	3,326	1,088	733	160	764	565	**11,927**
1993	5,339	3,666	1,293	1,119	149	875	635	**13,076**
1994	5,643	4,139	1,392	926	152	978	664	**13,894**
1995	5,810	4,548	1,506	2,215	177	1,160	726	**16,142**
1996	6,735	5,205	1,770	1,215	197	1,335	746	**17,203**
1997	7,314	5,586	1,978	1,245	169	1,439	847	**18,578**
1998	6,252	5,854	1,678	1,301	165	1,619	619	**17,488**
1999	6,506	6,793	1,792	1,523	162	1,424	582	**18,782**
2000	7,627	6,387	1,875	1,362	131	1,574	625	**19,581**
2001	6,827	8,116	1,497	1,392	99	1,762	630	**20,323**
2002	8,042	6,948	1,589	1,542	92	1,785	639	**20,637**
2003	7,360	8,539	1,256	1,437	93	1,852	639	**21,176**
2004	9,262	7,839	1,463	1,542	86	2,056	637	**22,885**
2005	8,672	8,211	1,953	1,510	81	2,010	574	**23,011**
2006	8,540	7,517	1,901	1,520	79	2,152	684	**22,393**
2007	9,512	8,600	2,202	1,474	76	2,155	832	**24,851**
2008	9,167	8,842	1,963	1,475	75	2,112	818	**24,452**
2009	8,634	8,766	1,291	2,506	30	2,120	799	**24,146**
2010	8,388	9,560	478	2,920	19	2,380	657	**24,402**
2011	8,712	8,155	414	2,892	19	2,553	1,178	**23,923**
2012	9,410	10,843	768	2,892	38	2,521	743	**27,215**
2013	9,568	12,656	329	2,946	31	2,998	662	**29,191**

TABLE 28: SELECTED ENERGY AND ECONOMIC INDICATORS (1990-2013)

	GDP AT CURRENT PRICES (RM MILLION)*	GDP AT 2005 PRICES (RM MILLION)*	POPULATION ('000 PEOPLE)*	PRIMARY ENERGY SUPPLY (KTOE)	FINAL ENERGY CONSUMPTION (KTOE)	ELECTRICITY CONSUMPTION (KTOE)	ELECTRICITY CONSUMPTION (GWh)	AVERAGE ANNUAL GROWTH (%)		
								GDP AT 2005 PRICES	PRIMARY ENERGY SUPPLY	FINAL ENERGY CONSUMPTION
1990	128,658	217,047	18,102	21,471	13,146	1,715	19,932	9.00	8.90	8.70
1991	145,991	237,766	18,986	26,335	14,563	1,925	22,373	9.55	22.65	10.78
1992	162,800	258,891	18,985	29,291	16,185	2,218	25,778	8.89	11.22	11.14
1993	186,042	284,509	19,503	29,925	17,728	2,450	28,474	9.89	2.16	9.53
1994	211,181	310,718	20,049	31,662	19,287	2,932	34,076	9.21	5.80	8.79
1995	240,365	341,258	20,624	33,879	22,164	3,375	39,225	9.83	7.00	14.92
1996	274,138	375,393	21,101	37,840	24,181	3,777	43,897	10.00	11.69	9.10
1997	304,458	402,882	21,595	43,173	26,167	42,058	50,952	7.32	14.09	8.21
1998	306,022	373,233	22,107	40,996	25,558	4,577	53,195	(7.36)	(5.04)	(2.33)
1999	324,952	396,140	22,636	44,534	27,228	4,815	55,961	6.14	8.63	6.53
2000	370,817	431,234	23,495	50,710	29,699	5,263	61,168	8.86	13.87	9.08
2001	366,841	433,466	24,123	51,979	31,515	5,594	65,015	0.52	2.50	6.11
2002	398,714	456,834	24,727	53,196	33,289	5,922	68,827	5.39	2.34	5.63
2003	435,708	483,278	25,320	57,565	34,586	6,313	73,371	5.79	8.21	3.90
2004	493,223	516,061	25,905	62,836	37,323	6,642	77,195	6.78	9.16	7.91
2005	543,578	543,578	26,477	66,211	38,285	6,944	80,705	5.33	5.37	2.58
2006	596,784	573,936	26,832	67,021	38,567	7,272	84,517	5.58	1.22	0.74
2007	665,340	610,087	27,186	72,389	41,606	7,683	89,294	6.30	8.01	7.88
2008	769,949	639,565	27,541	76,032	41,968	7,986	92,815	4.83	5.03	0.87
2009	712,857	629,885	27,895	74,583	40,845	8,286	96,302	(1.51)	(1.91)	(2.68)
2010	797,327	676,653	28,251	76,809	41,476	8,993	104,519	7.42	2.98	1.54
2011	885,339	711,760	28,964	79,289	43,455	9,235	107,331	5.19	3.23	4.77
2012	941,949	751,934	29,337	86,495	49,291	10,011	116,350	5.64	9.09	13.43
2013	986,733	787,611	29,948	90,730	51,583	10,590	123,076	4.74	4.90	4.65

Source:
(*) GDP and Population data from Department of Statistics, Malaysia

PER CAPITA					ENERGY INTENSITY				ENERGY ELASTICITY	
ELECTRICITY CONSUMPTION	GDP AT CURRENT PRICES (RM)	PRIMARY ENERGY SUPPLY (TOE)	FINAL ENERGY CONSUMPTION (TOE)	ELECTRICITY CONSUMPTION (kWh)	PRIMARY ENERGY SUPPLY (TOE/ GDP AT 2005 PRICES (RM MILLION))	FINAL ENERGY CONSUMPTION (TOE GDP AT 2005 PRICES (RM MILLION))	ELECTRICITY CONSUMPTION (TOE/GDP AT 2005 PRICES (RM MILLION))	ELECTRICITY CONSUMPTION (GWH/GDP AT 2005 PRICES (RM MILLION))	FINAL ENERGY	ELECTRICITY
9.70	7,107	1.19	0.73	1,101	98.92	60.57	7.90	0.092	0.97	1.08
12.24	7,689	1.39	0.77	1,178	110.76	61.25	8.10	0.094	1.13	1.28
15.22	8,575	1.54	0.85	1,358	113.14	62.52	8.57	0.100	1.25	1.71
10.46	9,539	1.53	0.91	1,460	105.18	62.31	8.61	0.100	0.96	1.06
19.67	10,533	1.58	0.96	1,700	101.90	62.07	9.44	0.110	0.95	2.14
15.11	11,655	1.64	1.07	1,902	99.28	64.95	9.89	0.115	1.52	1.54
11.91	12,992	1.79	1.15	2,080	100.80	64.42	10.06	0.117	0.91	1.19
16.07	14,099	2.00	1.21	2,359	107.16	64.95	10.88	0.126	1.12	2.19
4.40	13,843	1.85	1.16	2,406	109.84	68.48	12.26	0.143	0.32	(0.60)
5.20	14,356	1.97	1.20	2,472	112.42	68.73	12.15	0.141	1.06	0.85
9.30	15,783	2.16	1.26	2,603	117.59	68.87	12.20	0.142	1.02	1.05
6.29	15,207	2.15	1.31	2,695	119.91	72.70	12.91	0.150	11.81	12.15
5.86	16,125	2.15	1.35	2,783	116.44	72.87	12.96	0.151	1.04	1.09
6.60	17,208	2.27	1.37	2,898	119.11	71.57	13.06	0.152	0.67	1.14
5.21	19,040	2.43	1.44	2,980	121.76	72.32	12.87	0.150	1.17	0.77
4.55	20,530	2.50	1.45	3,048	121.81	70.43	12.77	0.148	0.48	0.85
4.72	22,242	2.50	1.44	3,150	116.77	67.20	12.67	0.147	0.13	0.85
5.65	24,474	2.66	1.53	3,285	118.65	68.20	12.59	0.146	1.25	0.90
3.94	27,956	2.76	1.52	3,370	118.88	65.62	12.49	0.145	0.18	0.82
3.76	25,555	2.67	1.46	3,452	118.41	64.85	13.15	0.153	1.77	(2.48)
8.53	28,223	2.72	1.47	3,700	113.51	61.30	13.29	0.154	0.21	1.15
2.69	30,567	2.74	1.50	3,706	111.40	61.05	12.97	0.151	0.92	0.52
8.40	32,108	2.95	1.68	3,966	115.03	65.55	13.31	0.155	2.38	1.49
5.78	32,948	3.03	1.72	4,110	115.20	65.49	13.45	0.156	0.98	1.22

Note:
GDP at 2005 Prices (RM Million) for 1990 until 2004 was calculated by Energy Commission

TABLE 29: ENERGY BALANCE TABLE IN 2013 (KILO TONNES OF OIL EQUIVALENT)

COMMERCIAL ENERGY BALANCE FOR MALAYSIA 2013 (THOUSAND TONNES OF OIL EQUIVALENT)

ENERGY SOURCE	NATURAL GAS	LNG	CRUDE OIL (1/)	OTHERS (2/)	TOTAL PETROLEUM PRODUCTS	PETROLEUM PRODUCTS			
						PETROL	DIESEL	FUEL OIL	LPG
PRIMARY SUPPLY									
1. Primary Production	64,406	0	28,576	0	**0**	0	0	0	0
2. Gas Flaring, Reinjection & Use	-4,395	0	0	0	**0**	0	0	0	0
3. Imports	7,098	1,450	9,101	8	**19,383**	8,811	5,106	2,955	422
4. Exports	-1,497	-27,089	-10,785	-38	**-11,983**	-86	-5,318	-3,039	-340
5. Bunkers	0	0	0	0	**-349**	0	-2	-346	0
6. Stock Change	0	0	527	0	**-1,717**	-735	-850	-171	223
7. Statistical Discrepancy	0	0	-264	0	**0**	0	0	0	0
8. Primary Supply	**65,612**	**-25,639**	**27,154**	**-30**	**5,334**	**7,990**	**-1,064**	**-601**	**304**
TRANSFORMATION									
9. Gas Plants									
9.1 MLNG	-35,474	28,037	0	0	**172**	0	0	0	172
9.2 MDS	-973	0	0	0	**478**	0	133	0	0
9.3 GPP-LPG (3&4/)	-3,231	0	0	0	**1,174**	0	0	0	1,174
Subtotal	**-39,678**	**28,037**	**0**	**0**	**1,824**	**0**	**133**	**0**	**1,346**
10. Refineries	0	0	-26,654	30	**24,727**	4,702	11,063	1,286	1,252
11. Power Stations & Self-Generation									
11.1 Hydro Stations	0	0	0	0	**0**	0	0	0	0
11.2 Thermal Stations	-13,520	-1,450	0	0	**-1,016**	0	-623	-392	0
11.3 Self-Generation (5/)	-1,650	0	0	0	**-23**	0	-23	0	0
Subtotal	**-15,170**	**-1,450**	**0**	**0**	**-1,038**	**0**	**-646**	**-392**	**0**
12. Losses & Own Use	-688	-947	-500	0	**-1,617**	0	0	-17	0
13. Statistical Discrepancy	-1	-0	0	0	**-40**	-36	82	52	44
14. Secondary Supply	**-55,536**	**25,639**	**-27,154**	**30**	**23,857**	**4,666**	**10,633**	**930**	**2,643**
FINAL USE CONSUMPTION									
15. Residential	1	0	0	0	**736**	0	0	0	735
16. Commercial	22	0	0	0	**916**	0	217	5	693
17. Industrial	4,488	0	0	0	**2,660**	273	1,921	258	179
18. Transport	289	0	0	0	**21,858**	12,288	6,513	60	0
19. Agriculture	0	0	0	0	**6**	0	0	6	0
20. Fishery	0	0	0	0	**1,013**	95	918	0	0
21. Non-Energy Use	5,276	0	0	0	**2,001**	0	0	0	1,339
22. Total Final Use	**10,076**	**0**	**0**	**0**	**29,191**	**12,656**	**9,568**	**329**	**2,946**
									ELECTRICITY OUTPUT
Main Activity Producer									
Gross Electricity Generation - GWh	63,321	0	0	0	**5,255**	0	2,783	2,472	0
Autoproducer									
Gross Electricity Generation - GWh	4,440	0	0	0	**84**	0	84	0	0

1/ Crude production includes Condensates comprising Pentane and Heavier Hydrocarbons.
2/ Others Refer to Non-Crude Energy Forms (consist of Imported Light Diesel, Slop Reprocess, Crude Residuum & Middle East Residue) Which are Used as Refinary Intake.
3/ GPP-LPG Extracts Liquid Products i.e Condensates, Ethane, Butane, Propane from Natural Gas, Ethane is Not included under LPG production.
4/ Butane and Propane as MTBE Feedstocks are Presented as Non-Energy use under LPG column. Ethane is Presented under Natural Gas Column.
5/ Estimated figures based from the Energy Commission, Statistics of Electricity Supply Industry in Malaysia 2013.

Note : Total may not necessarily add up due to rounding

KEROSENE	ATF & AV GAS	NON-ENERGY	REFINERY GAS	COAL & COKE	HYDRO POWER	SOLAR	BIOMASS	BIOGAS	BIODIESEL	ELECTRICITY	TOTAL
0	0	0	0	1,824	2,688	38	297	6	480	0	**98,314**
0	0	0	0	0	0	0	0	0	0	0	**-4,395**
289	858	942	0	13,909	0	0	0	0	0	19	**50,968**
-538	-572	-2,090	0	-326	0	0	0	0	-178	-2	**-51,899**
0	0	-0	0	0	0	0	0	0	0	0	**-349**
-6	-20	-159	0	-107	0	0	0	0	-114	0	**-1,411**
0	0	0	0	-234	0	0	0	0	0	0	**-498**
-254	**267**	**-1,307**	**0**	**15,067**	**2,688**	**38**	**297**	**6**	**188**	**16**	**90,730**
0	0	0	0	0	0	0	0	0	0	0	**-7,265**
50	0	295	0	0	0	0	0	0	0	0	**-494**
0	0	0	0	0	0	0	0	0	0	0	**-2,057**
50	**0**	**295**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**-9,817**
387	2,750	3,089	195	0	0	0	0	0	0	0	**-1,897**
0	0	0	0	0	-2,688	0	0	0	0	1,003	**-1,685**
0	0	0	0	-13,527	0	-38	-164	-6	0	10,627	**-19,095**
0	0	0	0	0	0	0	-133	0	0	424	**-1,381**
0	**0**	**0**	**0**	**-13,527**	**-2,688**	**-38**	**-297**	**-6**	**0**	**12,054**	**-22,160**
0	0	-1,405	-195	0	0	0	0	0	0	-978	**-4,730**
-153	-19	-11	0	0	0	0	-0	-0	0	-502	**-542**
285	**2,731**	**1,969**	**0**	**-13,527**	**-2,688**	**-38**	**-297**	**-7**	**0**	**10,573**	**-39,148**
1	0	0	0	0	0	0	0	0	0	2,262	**2,999**
0	0	0	0	0	0	0	0	0	0	3,466	**4,404**
29	0	0	0	1,539	0	0	0	0	0	4,809	**13,496**
0	2,998	0	0	0	0	0	0	0	188	21	**22,357**
0	0	0	0	0	0	0	0	0	0	32	**38**
0	0	0	0	0	0	0	0	0	0	0	**1,013**
0	0	662	0	0	0	0	0	0	0	0	**7,277**
31	**2,998**	**662**	**0**	**1,539**	**0**	**0**	**0**	**0**	**188**	**10,590**	**51,583**
0	0	0	0	53,372	10,586	141	612	23	0	0	**133,311**
0	0	0	0	0	0	0	496	0	0	0	**5,020**

TABLE 30: ENERGY BALANCE TABLE IN FIRST QUARTER (Q1) OF 2013 (KILOTONNES OF OIL EQUIVALENT)

COMMERCIAL ENERGY BALANCE FOR MALAYSIA Q1 2013 (THOUSAND TONNES OF OIL EQUIVALENT)

ENERGY SOURCE	NATURAL GAS	LNG	CRUDE OIL (1/)	OTHERS (2/)	TOTAL PETROLEUM PRODUCTS	PETROLEUM PRODUCTS			
						PETROL	DIESEL	FUEL OIL	LPG
PRIMARY SUPPLY									
1. Primary Production	16,518	0	7,439	0	**0**	0	0	0	0
2. Gas Flaring, Reinjection & Use	-1,147	0	0	0	**0**	0	0	0	0
3. Imports	2,028	0	2,549	8	**4,460**	2,413	1,299	6	102
4. Exports	-502	-7,073	-3,260	-7	**-2,786**	0	-1,689	-16	-94
5. Bunkers	0	0	0	0	**-159**	0	-1	-158	0
6. Stock Change	0	0	-141	0	**-174**	-247	167	-91	4
7. Statistical Discrepancy	0	0	-203	0	**0**	0	0	0	0
8. Primary Supply	**16,897**	**-7,073**	**6,384**	**1**	**1,341**	**2,165**	**-224**	**-259**	**12**
TRANSFORMATION									
9. Gas Plants									
9.1 MLNG	-9,388	7,146	0	0	**34**	0	0	0	34
9.2 MDS	-262	0	0	0	**112**	0	33	0	0
9.3 GPP-LPG (3&4/)	-1,033	0	0	0	**313**	0	0	0	313
Subtotal	**-10,683**	**7,146**	**0**	**0**	**459**	**0**	**33**	**0**	**347**
10. Refineries	0	0	-6,259	-1	**5,983**	1,235	2,485	448	370
11. Power Stations & Self-Generation									
11.1 Hydro Stations	0	0	0	0	**0**	0	0	0	0
11.2 Thermal Stations	-2,927	0	0	0	**-270**	0	-148	-123	0
11.3 Self-Generation (5/)	-419	0	0	0	**-6**	0	-6	0	0
Subtotal	**-3,346**	**0**	**0**	**0**	**-276**	**0**	**-153**	**-123**	**0**
12. Losses & Own Use	-181	-72	-126	0	**-312**	0	0	-4	0
13. Statistical Discrepancy	-0	-0	0	0	**-148**	-164	81	-55	19
14. Secondary Supply	**-14,212**	**7,073**	**-6,384**	**-1**	**5,706**	**1,070**	**2,446**	**267**	**737**
FINAL USE CONSUMPTION									
15. Residential	0	0	0	0	**184**	0	0	0	184
16. Commercial	5	0	0	0	**213**	0	24	0	189
17. Industrial	1,165	0	0	0	**580**	103	446	7	16
18. Transport	73	0	0	0	**5,335**	3,112	1,533	0	0
19. Agriculture	0	0	0	0	**0**	0	0	0	0
20. Fishing	0	0	0	0	**240**	20	219	0	0
21. Non-Energy Use	1,442	0	0	0	**495**	0	0	0	360
22. Total Final Consumption	**2,685**	**0**	**0**	**0**	**7,047**	**3,236**	**2,222**	**7**	**749**
									ELECTRICITY OUTPUT
Main Activity Producer									
Gross Electricity Generation - GWh	14,682	0	0	0	**1,161**	0	592	569	0
Autoproducer									
Gross Electricity Generation - GWh	1,122	0	0	0	**21**	0	21	0	0

1/ Crude production includes Condensates comprising Pentane and Heavier Hydrocarbons.
2/ Others Refer to Non-Crude Energy Forms (consist of Imported Light Diesel, Slop Reprocess, Crude Residuum & Middle East Residue) Which are Used as Refinary Intake.
3/ GPP-LPG Extracts Liquid Products i.e Condensates, Ethane, Butane, Propane from Natural Gas, Ethane is Not included under LPG production.
4/ Butane and Propane as MTBE Feedstocks are Presented as Non-Energy use under LPG column. Ethane is Presented under Natural Gas Column.
5/ Estimated figures based from the Energy Commission, Statistics of Electricity Supply Industry in Malaysia 2013.

Note : Total may not necessarily add up due to rounding

KEROSENE	ATF & AV GAS	NON-ENERGY	REFINERY GAS	COAL & COKE	HYDRO POWER	SOLAR	BIOMASS	BIOGAS	BIODIESEL	ELECTRICITY	TOTAL
0	0	0	0	450	572	9	94	1	90	0	**25,174**
0	0	0	0	0	0	0	0	0	0	0	**-1,147**
145	220	276	0	3,395	0	0	0	0	0	0	**12,440**
-176	-128	-683	0	-71	0	0	0	0	-32	-0	**-13,731**
0	0	-0	0	0	0	0	0	0	0	0	**-159**
-8	35	-33	0	235	0	0	0	0	-23	0	**-102**
0	0	0	0	-96	0	0	0	0	0	0	**-299**
-39	**126**	**-440**	**0**	**3,914**	**572**	**9**	**94**	**1**	**36**	**-0**	**22,176**
0	0	0	0	0	0	0	0	0	0	0	**-2,208**
12	0	67	0	0	0	0	0	0	0	0	**-150**
0	0	0	0	0	0	0	0	0	0	0	**-720**
12	**0**	**67**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**-3,079**
103	532	760	49	0	0	0	0	0	0	0	**-277**
0	0	0	0	0	-572	0	0	0	0	213	**-359**
0	0	0	0	-3,559	0	-9	-41	-2	0	2,556	**-4,253**
0	0	0	0	0	0	0	-53	0	0	107	**-370**
0	**0**	**0**	**0**	**-3,559**	**-572**	**-9**	**-94**	**-2**	**0**	**2,876**	**-4,982**
0	0	-258	-49	0	0	0	0	0	0	-215	**-906**
-69	33	7	0	0	0	0	0	0	0	-129	**-277**
46	**565**	**575**	**0**	**-3,559**	**-572**	**-9**	**-94**	**-2**	**0**	**2,533**	**-9,522**
0	0	0	0	0	0	0	0	0	0	546	**730**
0	0	0	0	0	0	0	0	0	0	831	**1,050**
7	0	0	0	355	0	0	0	0	0	1,143	**3,243**
0	691	0	0	0	0	0	0	0	36	5	**5,449**
0	0	0	0	0	0	0	0	0	0	7	**7**
0	0	0	0	0	0	0	0	0	0	0	**240**
0	0	135	0	0	0	0	0	0	0	0	**1,936**
7	**691**	**135**	**0**	**355**	**0**	**0**	**0**	**0**	**36**	**2,532**	**12,655**
0	0	0	0	13,896	2,488	35	153	6	0	0	**32,422**
0	0	0	0	0	0	0	196	0	0	0	**1,338**

TABLE 31: ENERGY BALANCE TABLE IN SECOND QUARTER (Q2) OF 2013 (KILOTONNES OF OIL EQUIVALENT)

COMMERCIAL ENERGY BALANCE FOR MALAYSIA Q2 2013 (THOUSAND TONNES OF OIL EQUIVALENT)

ENERGY SOURCE	NATURAL GAS	LNG	CRUDE OIL (1/)	OTHERS (2/)	TOTAL PETROLEUM PRODUCTS	PETROLEUM PRODUCTS			
						PETROL	DIESEL	FUEL OIL	LPG
PRIMARY SUPPLY									
1. Primary Production	15,845	0	7,100	0	**0**	0	0	0	0
2. Gas Flaring, Reinjection & Use	-1,188	0	0	0	**0**	0	0	0	0
3. Imports	1,865	197	2,673	0	**4,295**	1,980	782	1,286	88
4. Exports	-371	-6,147	-3,987	-9	**-1,842**	0	-265	-799	-147
5. Bunkers	0	0	0	0	**-161**	0	-1	-160	0
6. Stock Change	0	0	1,034	0	**-707**	188	-809	-99	91
7. Statistical Discrepancy	0	0	187	0	**0**	0	0	0	0
8. Primary Supply	**16,150**	**-5,951**	**7,007**	**-9**	**1,585**	**2,167**	**-293**	**228**	**32**
TRANSFORMATION									
9. Gas Plants									
9.1 MLNG	-8,610	6,494	0	0	**29**	0	0	0	29
9.2 MDS	-289	0	0	0	**130**	0	36	0	0
9.3 GPP-LPG (3&4/)	-622	0	0	0	**254**	0	0	0	254
Subtotal	**-9,520**	**6,494**	**0**	**0**	**412**	**0**	**36**	**0**	**283**
10. Refineries	0	0	-6,858	9	**6,164**	999	3,034	85	421
11. Power Stations & Self-Generation									
11.1 Hydro Stations	0	0	0	0	**0**	0	0	0	0
11.2 Thermal Stations	-3,391	-197	0	0	**-414**	0	-247	-167	0
11.3 Self-Generation (5/)	-430	0	0	0	**-6**	0	-6	0	0
Subtotal	**-3,820**	**-197**	**0**	**0**	**-420**	**0**	**-253**	**-167**	**0**
12. Losses & Own Use	-177	-347	-149	0	**-419**	0	0	-4	0
13. Statistical Discrepancy	-0	0	0	0	**157**	-7	38	-42	4
14. Secondary Supply	**-13,518**	**5,951**	**-7,007**	**9**	**5,895**	**992**	**2,855**	**-128**	**707**
FINAL USE CONSUMPTION									
15. Residential	0	0	0	0	**179**	0	0	0	179
16. Commercial	5	0	0	0	**226**	0	65	5	156
17. Industrial	1,129	0	0	0	**651**	62	446	69	58
18. Transport	74	0	0	0	**5,646**	3,073	1,818	24	0
19. Agriculture	0	0	0	0	**2**	0	0	2	0
20. Fishing	0	0	0	0	**257**	24	233	0	0
21. Non-Energy Use	1,425	0	0	0	**519**	0	0	0	345
22. Total Final Consumption	**2,633**	**0**	**0**	**0**	**7,480**	**3,159**	**2,562**	**100**	**739**
									ELECTRICITY OUTPUT
Main Activity Producer									
Gross Electricity Generation - GWh	15,985	0	0	0	**1,784**	0	985	799	0
Autoproducer									
Gross Electricity Generation - GWh	1,072	0	0	0	**24**	0	24	0	0

1/ Crude production includes Condensates comprising Pentane and Heavier Hydrocarbons.
2/ Others Refer to Non-Crude Energy Forms (consist of Imported Light Diesel, Slop Reprocess, Crude Residuum & Middle East Residue) Which are Used as Refinary Intake.
3/ GPP-LPG Extracts Liquid Products i.e Condensates, Ethane, Butane, Propane from Natural Gas, Ethane is Not included under LPG production.
4/ Butane and Propane as MTBE Feedstocks are Presented as Non-Energy use under LPG column. Ethane is Presented under Natural Gas Column.
5/ Estimated figures based from the Energy Commission, Statistics of Electricity Supply Industry in Malaysia 2013.

Note : Total may not necessarily add up due to rounding

KEROSENE	ATF & AV GAS	NON-ENERGY	REFINERY GAS	COAL & COKE	HYDRO POWER	SOLAR	BIOMASS	BIOGAS	BIODIESEL	ELECTRICITY	TOTAL
0	0	0	0	475	683	9	67	2	124	0	**24,305**
0	0	0	0	0	0	0	0	0	0	0	**-1,188**
0	52	107	0	3,835	0	0	0	0	0	19	**12,883**
-176	-73	-383	0	-112	0	0	0	0	-50	-0	**-12,518**
0	0	-0	0	0	0	0	0	0	0	0	**-161**
1	-71	-8	0	-236	0	0	0	0	-34	0	**57**
0	0	0	0	-89	0	0	0	0	0	0	**97**
-175	**-92**	**-283**	**0**	**3,872**	**683**	**9**	**67**	**2**	**41**	**19**	**23,475**
0	0	0	0	0	0	0	0	0	0	0	**-2,086**
12	0	81	0	0	0	0	0	0	0	0	**-159**
0	0	0	0	0	0	0	0	0	0	0	**-368**
12	**0**	**81**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**-2,614**
93	785	701	47	0	0	0	0	0	0	0	**-684**
0	0	0	0	0	-683	0	0	0	0	255	**-428**
0	0	0	0	-3,508	0	-9	-41	-2	0	2,710	**-4,850**
0	0	0	0	0	0	0	-26	0	0	103	**-360**
0	**0**	**0**	**0**	**-3,508**	**-683**	**-9**	**-67**	**-2**	**0**	**3,068**	**-5,638**
0	0	-368	-47	0	0	0	0	0	0	-231	**-1,323**
85	37	43	0	0	0	0	0	-0	0	-144	**13**
190	**822**	**458**	**0**	**-3,508**	**-683**	**-9**	**-67**	**-2**	**0**	**2,693**	**-10,246**
0	0	0	0	0	0	0	0	0	0	574	**754**
0	0	0	0	0	0	0	0	0	0	887	**1,119**
16	0	0	0	364	0	0	0	0	0	1,236	**3,379**
0	731	0	0	0	0	0	0	0	41	5	**5,765**
0	0	0	0	0	0	0	0	0	0	8	**10**
0	0	0	0	0	0	0	0	0	0	0	**257**
0	0	174	0	0	0	0	0	0	0	0	**1,944**
16	**731**	**174**	**0**	**364**	**0**	**0**	**0**	**0**	**41**	**2,711**	**13,229**
0	0	0	0	13,763	2,980	35	153	6	0	0	**34,705**
0	0	0	0	0	0	0	99	0	0	0	**1,195**

TABLE 32: ENERGY BALANCE TABLE IN THIRD QUARTER (Q3) OF 2013 (KILOTONNES OF OIL EQUIVALENT)

COMMERCIAL ENERGY BALANCE FOR MALAYSIA Q3 2013 (THOUSAND TONNES OF OIL EQUIVALENT)

ENERGY SOURCE	NATURAL GAS	LNG	CRUDE OIL (1/)	OTHERS (2/)	TOTAL PETROLEUM PRODUCTS	PETROLEUM PRODUCTS			
						PETROL	DIESEL	FUEL OIL	LPG
PRIMARY SUPPLY									
1. Primary Production	15,609	0	6,909	0	**0**	0	0	0	0
2. Gas Flaring, Reinjection & Use	-1,184	0	0	0	**0**	0	0	0	0
3. Imports	1,532	692	1,946	0	**4,745**	2,406	940	766	115
4. Exports	-321	-6,697	-1,992	-11	**-2,466**	0	-731	-947	-55
5. Bunkers	0	0	0	0	**-15**	0	-1	-14	0
6. Stock Change	0	0	-104	0	**-546**	-241	-217	-21	39
7. Statistical Discrepancy	0	0	0	0	**0**	0	0	0	0
8. Primary Supply	**15,636**	**-6,005**	**6,759**	**-11**	**1,718**	**2,165**	**-8**	**-217**	**99**
TRANSFORMATION									
9. Gas Plants									
9.1 MLNG	-8,042	6,971	0	0	**55**	0	0	0	55
9.2 MDS	-159	0	0	0	**128**	0	34	0	0
9.3 GPP-LPG (3&4/)	-1,163	0	0	0	**304**	0	0	0	304
Subtotal	**-9,364**	**6,971**	**0**	**0**	**486**	**0**	**34**	**0**	**358**
10. Refineries	0	0	-6,657	11	**5,882**	975	2,593	304	290
11. Power Stations & Self-Generation									
11.1 Hydro Stations	0	0	0	0	**0**	0	0	0	0
11.2 Thermal Stations	-3,452	-692	0	0	**-152**	0	-118	-35	0
11.3 Self-Generation (5/)	-390	0	0	0	**-5**	0	-5	0	0
Subtotal	**-3,842**	**-692**	**0**	**0**	**-158**	**0**	**-123**	**-35**	**0**
12. Losses & Own Use	-166	-274	-102	0	**-442**	0	0	-4	0
13. Statistical Discrepancy	0	0	0	0	**-89**	59	-104	59	7
14. Secondary Supply	**-13,372**	**6,005**	**-6,759**	**11**	**5,680**	**1,033**	**2,400**	**324**	**654**
FINAL USE CONSUMPTION									
15. Residential	0	0	0	0	**184**	0	0	0	183
16. Commercial	5	0	0	0	**264**	0	102	0	162
17. Industrial	1,043	0	0	0	**719**	61	516	84	55
18. Transport	73	0	0	0	**5,440**	3,112	1,536	22	0
19. Agriculture	0	0	0	0	**2**	0	0	2	0
20. Fishing	0	0	0	0	**264**	25	238	0	0
21. Non-Energy Use	1,142	0	0	0	**525**	0	0	0	353
22. Total Final Consumption	**2,263**	**0**	**0**	**0**	**7,398**	**3,198**	**2,392**	**108**	**754**
									ELECTRICITY OUTPUT
Main Activity Producer									
Gross Electricity Generation - GWh	15,021	0	0	0	**1,557**	0	765	791	0
Autoproducer									
Gross Electricity Generation - GWh	1,111	0	0	0	**20**	0	20	0	0

1/ Crude production includes Condensates comprising Pentane and Heavier Hydrocarbons.
2/ Others Refer to Non-Crude Energy Forms (consist of Imported Light Diesel, Slop Reprocess, Crude Residuum & Middle East Residue) Which are Used as Refinary Intake.
3/ GPP-LPG Extracts Liquid Products i.e Condensates, Ethane, Butane, Propane from Natural Gas, Ethane is Not included under LPG production.
4/ Butane and Propane as MTBE Feedstocks are Presented as Non-Energy use under LPG column. Ethane is Presented under Natural Gas Column.
5/ Estimated figures based from the Energy Commission, Statistics of Electricity Supply Industry in Malaysia 2013.

Note : Total may not necessarily add up due to rounding

KEROSENE	ATF & AV GAS	NON-ENERGY	REFINERY GAS	COAL & COKE	HYDRO POWER	SOLAR	BIOMASS	BIOGAS	BIODIESEL	ELECTRICITY	TOTAL
0	0	0	0	432	633	9	66	2	129	0	**23,789**
0	0	0	0	0	0	0	0	0	0	0	**-1,184**
0	262	255	0	3,638	0	0	0	0	0	0	**12,553**
-11	-225	-496	0	-56	0	0	0	0	-56	-1	**-11,600**
0	0	-0	0	0	0	0	0	0	0	0	**-15**
-1	26	-132	0	-241	0	0	0	0	-19	0	**-910**
0	0	0	0	35	0	0	0	0	0	0	**35**
-12	**63**	**-373**	**0**	**3,808**	**633**	**9**	**66**	**2**	**54**	**-1**	**22,668**
0	0	0	0	0	0	0	0	0	0	0	**-1,017**
14	0	80	0	0	0	0	0	0	0	0	**-31**
0	0	0	0	0	0	0	0	0	0	0	**-860**
14	**0**	**80**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**-1,908**
95	707	870	49	0	0	0	0	0	0	0	**-764**
0	0	0	0	0	-633	0	0	0	0	249	**-384**
0	0	0	0	-3,409	0	-9	-40	-2	0	2,815	**-4,941**
0	0	0	0	0	0	0	-26	0	0	106	**-315**
0	**0**	**0**	**0**	**-3,409**	**-633**	**-9**	**-66**	**-2**	**0**	**3,170**	**-5,640**
0	0	-389	-49	0	0	0	0	0	0	-310	**-1,293**
-93	0	-16	0	0	0	0	-0	0	0	-186	**-275**
16	**707**	**544**	**0**	**-3,409**	**-633**	**-9**	**-66**	**-2**	**0**	**2,674**	**-9,880**
0	0	0	0	0	0	0	0	0	0	584	**768**
0	0	0	0	0	0	0	0	0	0	877	**1,147**
4	0	0	0	400	0	0	0	0	0	1,198	**3,360**
0	771	0	0	0	0	0	0	0	54	5	**5,572**
0	0	0	0	0	0	0	0	0	0	8	**11**
0	0	0	0	0	0	0	0	0	0	0	**264**
0	0	172	0	0	0	0	0	0	0	0	**1,667**
4	**771**	**172**	**0**	**400**	**0**	**0**	**0**	**0**	**54**	**2,673**	**12,788**
0	0	0	0	13,474	1,796	35	153	6	0	0	**32,041**
0	0	0	0	0	0	0	100	0	0	0	**1,231**

TABLE 33: ENERGY BALANCE TABLE IN FOURTH QUARTER (Q4) OF 2013 (KILOTONNES OF OIL EQUIVALENT)

COMMERCIAL ENERGY BALANCE FOR MALAYSIA Q4 2013 (THOUSAND TONNES OF OIL EQUIVALENT)

ENERGY SOURCE	NATURAL GAS	LNG	CRUDE OIL (1/)	OTHERS (2/)	TOTAL PETROLEUM PRODUCTS	PETROLEUM PRODUCTS			
						PETROL	DIESEL	FUEL OIL	LPG
PRIMARY SUPPLY									
1. Primary Production	16,434	0	7,128	0	**0**	0	0	0	0
2. Gas Flaring, Reinjection & Use	-876	0	0	0	**0**	0	0	0	0
3. Imports	1,674	561	1,933	0	**5,883**	2,012	2,085	897	116
4. Exports	-303	-7,172	-1,547	-11	**-4,889**	-86	-2,633	-1,276	-44
5. Bunkers	0	0	0	0	**-15**	0	-1	-14	0
6. Stock Change	0	0	-263	0	**-290**	-434	9	40	89
7. Statistical Discrepancy	0	0	-248	0	**0**	0	0	0	0
8. Primary Supply	**16,930**	**-6,611**	**7,005**	**-11**	**690**	**1,492**	**-539**	**-353**	**161**
TRANSFORMATION									
9. Gas Plants									
9.1 MLNG	-9,434	7,426	0	0	**55**	0	0	0	55
9.2 MDS	-263	0	0	0	**109**	0	30	0	0
9.3 GPP-LPG (3&4/)	-412	0	0	0	**304**	0	0	0	304
Subtotal	**-10,110**	**7,426**	**0**	**0**	**467**	**0**	**30**	**0**	**358**
10. Refineries	0	0	-6,881	11	**6,698**	1,494	2,951	450	172
11. Power Stations & Self-Generation									
11.1 Hydro Stations	0	0	0	0	**0**	0	0	0	0
11.2 Thermal Stations	-3,750	-561	0	0	**-180**	0	-112	-68	0
11.3 Self-Generation (5/)	-411	0	0	0	**-5**	0	-5	0	0
Subtotal	**-4,161**	**-561**	**0**	**0**	**-185**	**0**	**-117**	**-68**	**0**
12. Losses & Own Use	-164	-254	-124	0	**-445**	0	0	-5	0
13. Statistical Discrepancy	-0	-0	0	0	**40**	77	68	90	15
14. Secondary Supply	**-14,435**	**6,611**	**-7,005**	**11**	**6,576**	**1,571**	**2,932**	**467**	**545**
FINAL USE CONSUMPTION									
15. Residential	0	0	0	0	**190**	0	0	0	189
16. Commercial	6	0	0	0	**214**	0	27	0	186
17. Industrial	1,152	0	0	0	**709**	47	512	98	50
18. Transport	70	0	0	0	**5,438**	2,991	1,626	14	0
19. Agriculture	0	0	0	0	**1**	0	0	1	0
20. Fishing	0	0	0	0	**253**	25	228	0	0
21. Non-Energy Use	1,267	0	0	0	**462**	0	0	0	280
22. Total Final Use	**2,495**	**0**	**0**	**0**	**7,266**	**3,063**	**2,393**	**114**	**705**
									ELECTRICITY OUTPUT
Main Activity Producer									
Gross Electricity Generation - GWh	17,633	0	0	0	**754**	0	441	313	0
Autoproducer									
Gross Electricity Generation - GWh	1,135	0	0	0	**20**	0	20	0	0

1/ Crude production includes Condensates comprising Pentane and Heavier Hydrocarbons.
2/ Others Refer to Non-Crude Energy Forms (consist of Imported Light Diesel, Slop Reprocess, Crude Residuum & Middle East Residue) Which are Used as Refinary Intake.
3/ GPP-LPG Extracts Liquid Products i.e Condensates, Ethane, Butane, Propane from Natural Gas, Ethane is Not included under LPG production.
4/ Butane and Propane as MTBE Feedstocks are Presented as Non-Energy use under LPG column. Ethane is Presented under Natural Gas Column.
5/ Estimated figures based from the Energy Commission, Statistics of Electricity Supply Industry in Malaysia 2013.

Note : Total may not necessarily add up due to rounding

KEROSENE	ATF & AV GAS	NON-ENERGY	REFINERY GAS	COAL & COKE	HYDRO POWER	SOLAR	BIOMASS	BIOGAS	BIODIESEL	ELECTRICITY	TOTAL
0	0	0	0	467	800	10	70	2	136	0	**25,047**
0	0	0	0	0	0	0	0	0	0	0	**-876**
145	324	304	0	3,040	0	0	0	0	0	0	**13,092**
-176	-145	-528	0	-87	0	0	0	0	-40	-1	**-14,050**
0	0	-0	0	0	0	0	0	0	0	0	**-15**
2	-9	14	0	135	0	0	0	0	-39	0	**-456**
0	0	0	0	-83	0	0	0	0	0	0	**-331**
-29	**169**	**-210**	**0**	**3,472**	**800**	**10**	**70**	**2**	**57**	**-1**	**22,412**
0	0	0	0	0	0	0	0	0	0	0	**-1,954**
12	0	67	0	0	0	0	0	0	0	0	**-154**
0	0	0	0	0	0	0	0	0	0	0	**-109**
12	**0**	**67**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**-2,217**
96	726	758	50	0	0	0	0	0	0	0	**-172**
0	0	0	0	0	-800	0	0	0	0	286	**-514**
0	0	0	0	-3,051	0	-10	-42	-2	0	2,546	**-5,050**
0	0	0	0	0	0	0	-28	0	0	108	**-336**
0	**0**	**0**	**0**	**-3,051**	**-800**	**-10**	**-70**	**-2**	**0**	**2,940**	**-5,900**
0	0	-389	-50	0	0	0	0	0	0	-223	**-1,208**
-76	-89	-44	0	0	0	0	-0	0	0	-43	**-3**
33	**637**	**392**	**0**	**-3,051**	**-800**	**-10**	**-70**	**-2**	**0**	**2,674**	**-9,500**
0	0	0	0	0	0	0	0	0	0	557	**747**
0	0	0	0	0	0	0	0	0	0	870	**1,089**
3	0	0	0	421	0	0	0	0	0	1,232	**3,514**
0	806	0	0	0	0	0	0	0	57	5	**5,570**
0	0	0	0	0	0	0	0	0	0	8	**10**
0	0	0	0	0	0	0	0	0	0	0	**253**
0	0	181	0	0	0	0	0	0	0	0	**1,729**
4	**806**	**181**	**0**	**421**	**0**	**0**	**0**	**0**	**57**	**2,673**	**12,912**
0	0	0	0	12,239	3,323	35	153	6	0	0	**34,143**
0	0	0	0	0	0	0	101	0	0	0	**1,256**

07.

ENERGY FLOW
CHART

ENERGY FLOW CHART

PRIMARY ENERGY SUPPLY

- OIL 35.7%
- NATURAL GAS 44.1%
- COAL 16.6%
- HYDRO 3.0%
- RENEWABLES 0.6%

TOTAL : 90,730 ktoe

ENERGY TRANSFORMATION

OIL REFINERY **24,727** ktoe

MDS **478** ktoe

MLNG **28,037** ktoe

POWER PLANTS **12,054** ktoe

GPP-LPG **1,174** ktoe

FINAL ENERGY CONSUMPTION

FINAL USE BY SECTORS

RESIDENTIAL	COMMERCIAL	INDUSTRY	TRANSPORTATION
5.8% 2,999 ktoe	8.5% 4,404 ktoe	26.2% 13,496 ktoe	43.3% 22,357 ktoe

AGRICULTURE	FISHERY	NON-ENERGY
0.1% 38 ktoe	2.0% 1,013 ktoe	14.1% 7,277 ktoe

FINAL USE BY FUELS

NATURAL GAS	OIL
19.5% 10,076 ktoe	57.0% 29,379 ktoe

COAL & COKE	ELECTRICITY
3.0% 1,539 ktoe	20.5% 10,590 ktoe

TOTAL : 51,583 ktoe

08.

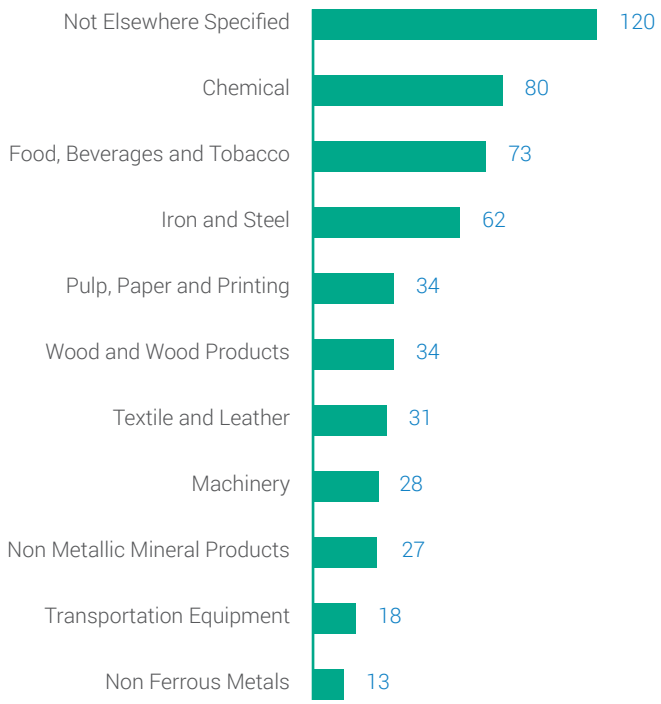
MANUFACTURING INDUSTRY IN **PENINSULAR MALAYSIA**

INTRODUCTION

conducted with **520** manufacturing companies in **Peninsular Malaysia**

A survey was conducted with 520 manufacturing companies in Peninsular Malaysia to understand the energy consumption pattern of manufacturing industry in Peninsular Malaysia. Monthly data of energy consumption was collected for the year 2010 to 2013 for eight types of energy; electricity, natural gas, petrol, diesel, fuel oil, LPG, kerosene and coal. Manufacturing industry sub-sectors included are; Iron and Steel, Chemical (including Petro-Chemical), Non Ferrous Metals, Non Metallic Mineral Products, Transportation Equipment, Machinery, Food, Beverages and Tobacco, Pulp, Paper and Printing, Wood and Wood Products, Textile and Leather and Not Elsewhere Specified (Industry). This is in accordance to the breakdown of the manufacturing sub-sectors by the International Energy Agency (IEA) and APEC format of classification of the industrial sector. The gathered data on energy consumption in the manufacturing industry will then be an input to the National Energy Balance (NEB).

Manufacturing Sub-Sectors



Location of Manufacturing Companies

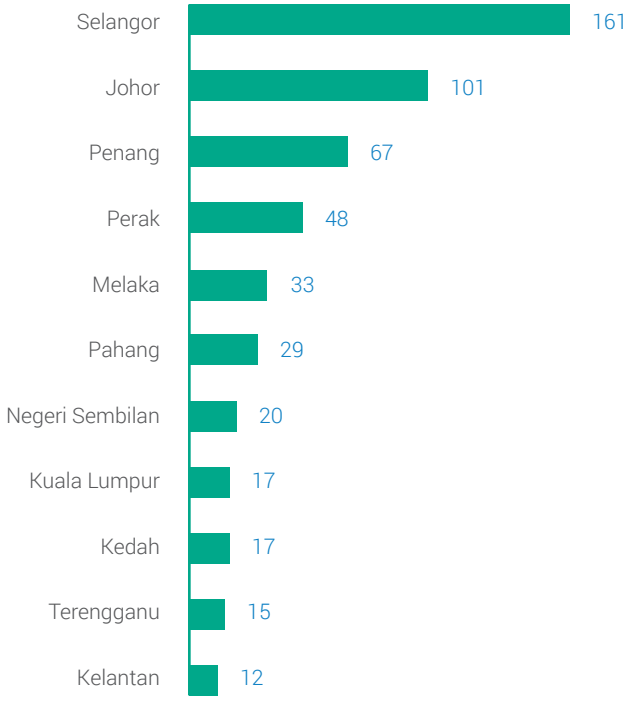


TABLE 34: FINAL ENERGY CONSUMPTION BY SUB-SECTORS IN MANUFACTURING SECTOR, 2010

Year: 2010 / Unit: ktoe	Natural Gas	Petrol	Diesel	Fuel Oil	LPG	Kerosene	Coal & Coke	Electricity	Total
Iron and Steel	1,463	-	363	59	143	-	-	558	**2,586**
Chemical	378	21	132	68	7	-	-	470	**1,077**
Non Ferrous Metals	20	-	-	-	-	-	-	277	**297**
Non Metallic Mineral Products	114	-	65	71	-	-	1,716	514	**2,480**
Transportation Equipment	29	-	407	-	1	5	-	241	**682**
Machinery	2	24	35	-	-	-	-	127	**188**
Food, Beverages and Tobacco	1,227	15	32	9	1	-	-	196	**1,481**
Pulp, Paper and Printing	192	7	154	-	-	-	-	504	**857**
Wood and Wood Products	40	3	61	89	-	-	-	234	**426**
Textile and Leather	132	4	206	7	2	-	-	255	**606**
Not Elsewhere Specified	50	3	8	24	60	-	-	292	**437**
Total	**3,646**	**76**	**1,465**	**326**	**214**	**5**	**1,716**	**3,669**	**11,117**

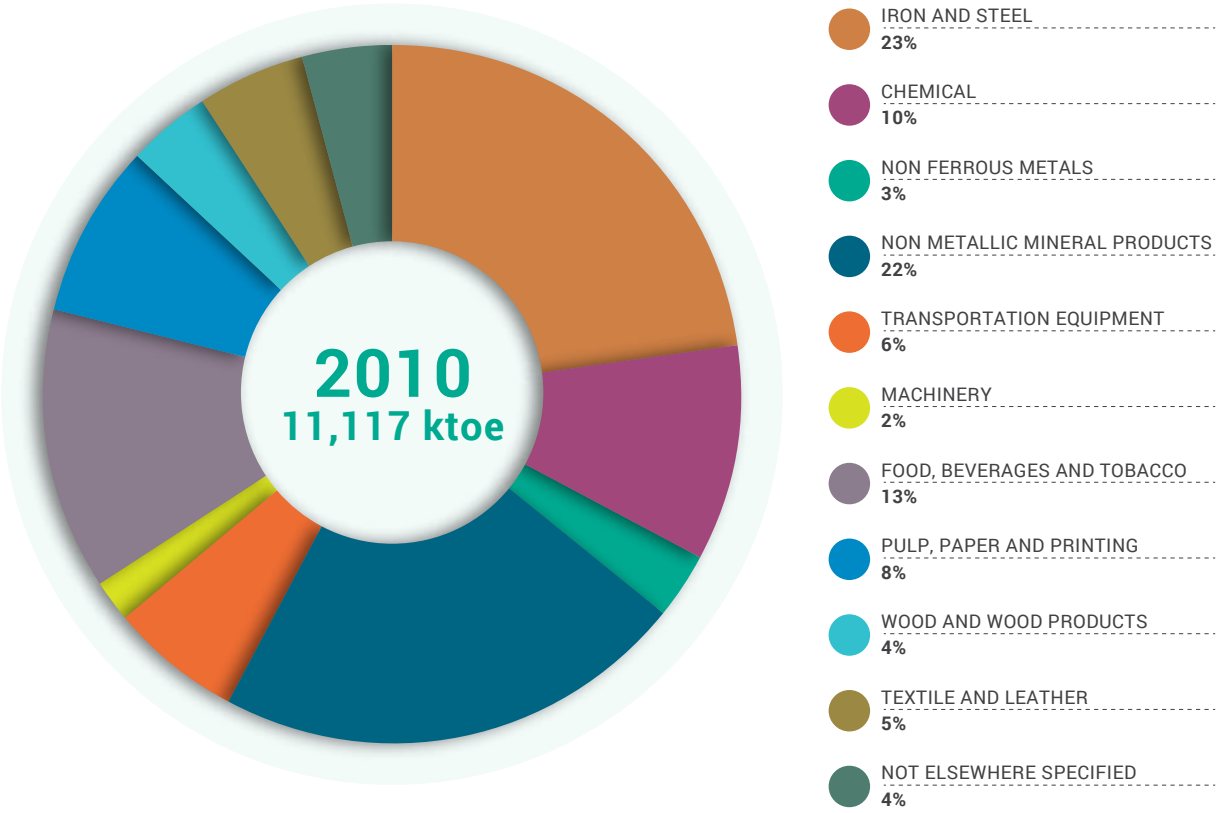


TABLE 35: FINAL ENERGY CONSUMPTION BY SUB-SECTORS IN MANUFACTURING SECTOR, 2011

Year: 2011 / Unit: ktoe	Natural Gas	Petrol	Diesel	Fuel Oil	LPG	Kerosene	Coal & Coke	Electricity	Total
Iron and Steel	1,673	-	230	34	121	-	-	559	**2,617**
Chemical	429	37	88	62	6	-	-	501	**1,125**
Non Ferrous Metals	57	-	-	-	-	-	-	296	**353**
Non Metallic Mineral Products	126	-	45	59	-	-	1,565	525	**2,320**
Transportation Equipment	45	-	296	-	2	8	-	243	**593**
Machinery	2	43	19	-	-	-	-	125	**188**
Food, Beverages and Tobacco	1,347	27	16	10	1	-	-	204	**1,605**
Pulp, Paper and Printing	150	13	61	-	-	-	-	539	**763**
Wood and Wood Products	56	6	40	74	-	-	-	215	**390**
Textile and Leather	151	8	91	6	1	-	-	275	**533**
Not Elsewhere Specified	62	8	5	20	69	-	-	311	**474**
Total	**4,099**	**141**	**890**	**264**	**200**	**8**	**1,565**	**3,794**	**10,961**

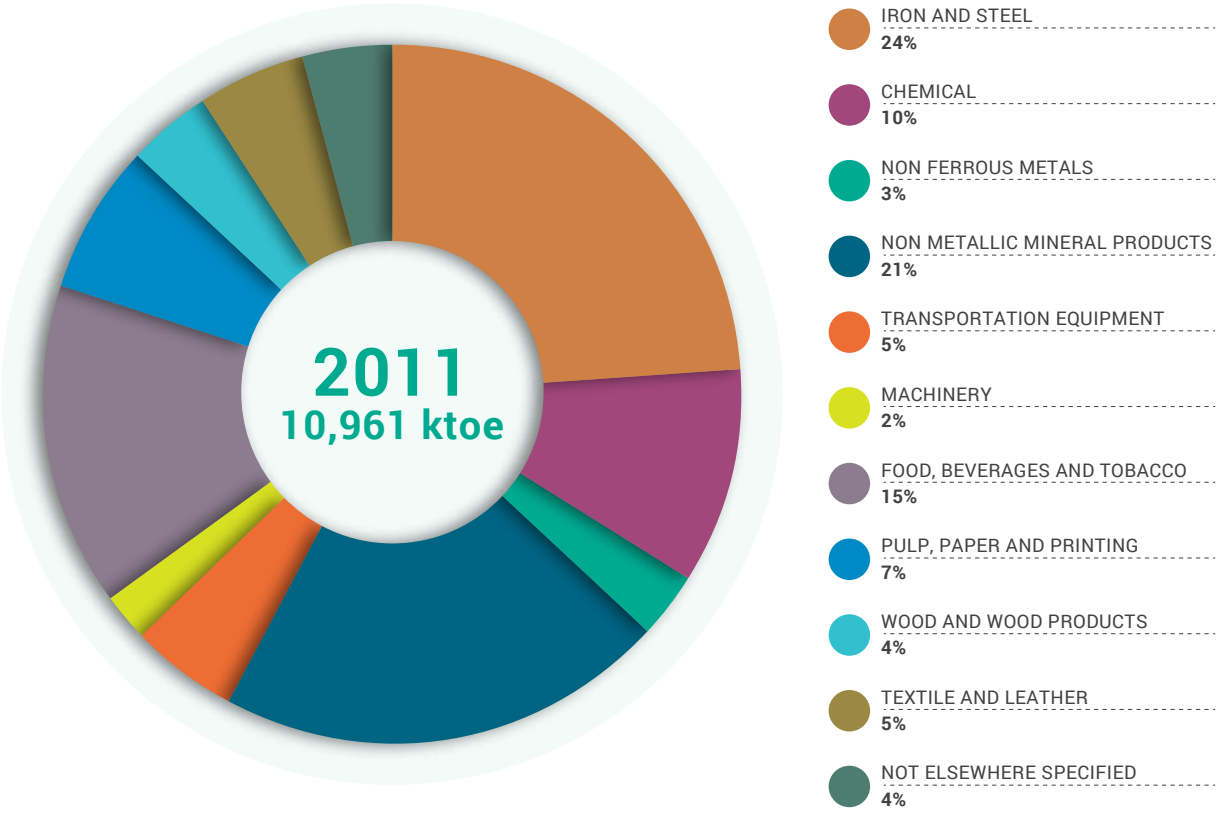


TABLE 36: FINAL ENERGY CONSUMPTION BY SUB-SECTORS IN MANUFACTURING SECTOR, 2012

Year: 2012 / Unit: ktoe	Natural Gas	Petrol	Diesel	Fuel Oil	LPG	Kerosene	Coal & Coke	Electricity	Total
Iron and Steel	1,724	-	337	50	84	-	-	576	**2,770**
Chemical	511	53	132	160	4	-	-	520	**1,380**
Non Ferrous Metals	107	-	-	-	-	-	-	294	**401**
Non Metallic Mineral Products	114	-	66	123	-	-	1,589	543	**2,435**
Transportation Equipment	51	-	461	-	1	12	-	267	**792**
Machinery	2	65	31	-	-	-	-	138	**236**
Food, Beverages and Tobacco	1,416	26	31	22	1	-	-	212	**1,708**
Pulp, Paper and Printing	191	20	113	-	-	-	-	546	**871**
Wood and Wood Products	56	8	43	154	-	-	-	220	**482**
Textile and Leather	141	10	99	13	1	-	-	265	**528**
Not Elsewhere Specified	64	6	10	42	26	-	-	322	**471**
Total	**4,379**	**188**	**1,322**	**564**	**117**	**12**	**1,589**	**3,903**	**12,073**

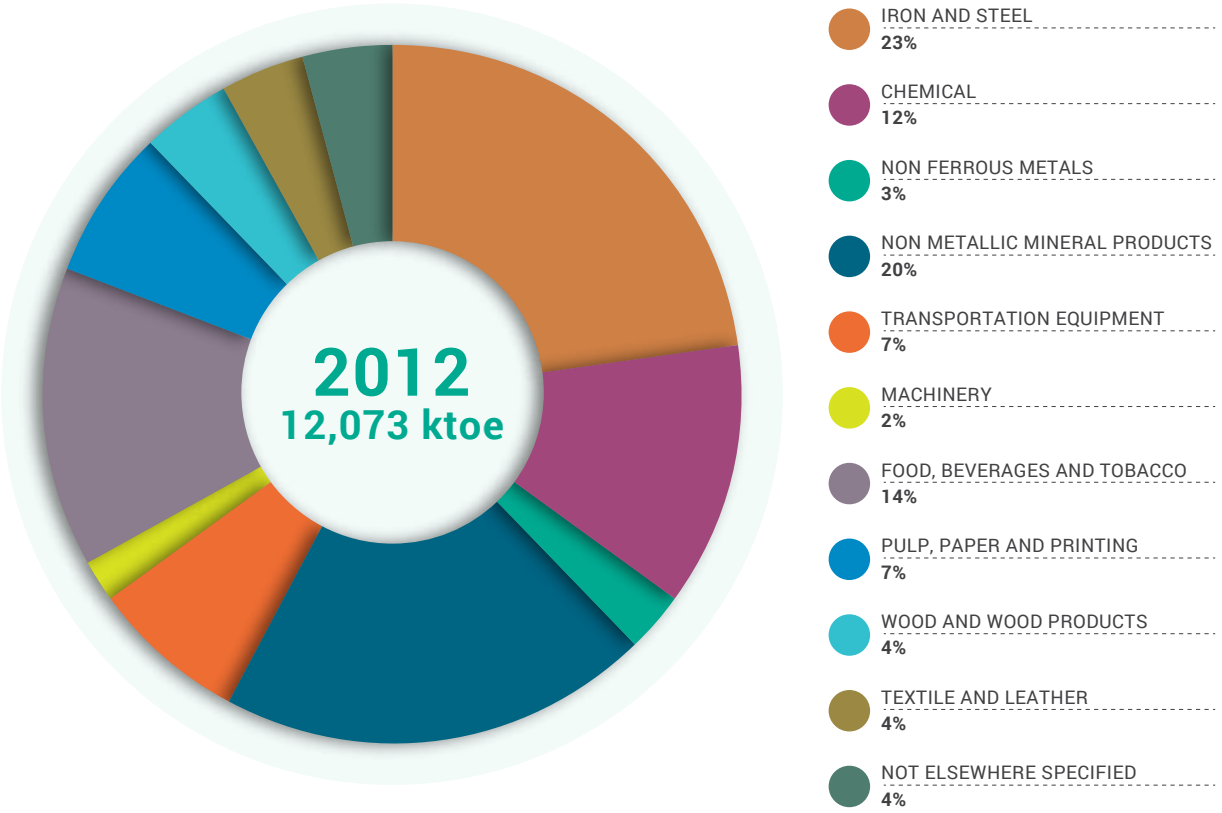
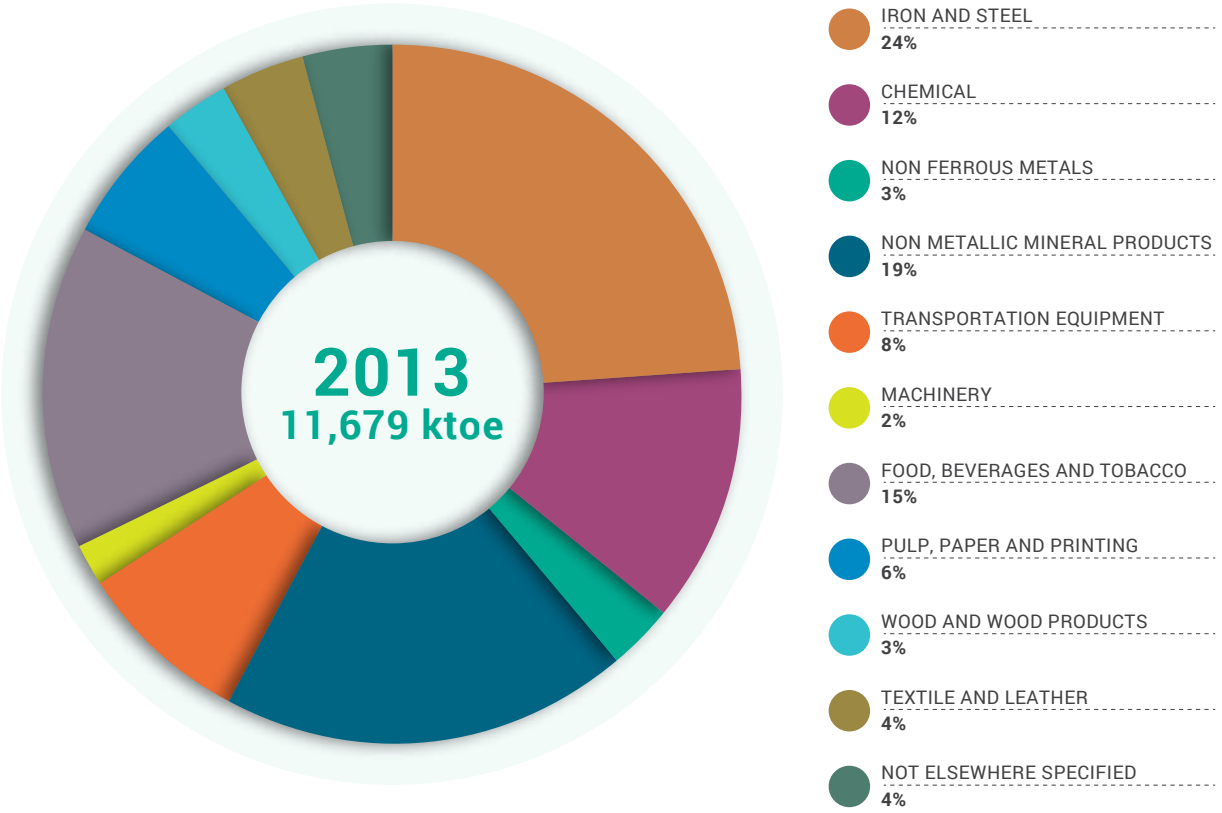


TABLE 37: FINAL ENERGY CONSUMPTION BY SUB-SECTORS IN MANUFACTURING SECTOR, 2013

Year: 2013 / Unit: ktoe	Natural Gas	Petrol	Diesel	Fuel Oil	LPG	Kerosene	Coal & Coke	Electricity	Total
Iron and Steel	1,702	-	402	22	107	-	-	612	**2,845**
Chemical	568	64	157	67	6	-	-	536	**1,397**
Non Ferrous Metals	74	-	-	-	-	-	-	303	**377**
Non Metallic Mineral Products	116	-	59	52	-	-	1,387	560	**2,173**
Transportation Equipment	55	-	528	-	1	13	-	271	**869**
Machinery	3	69	36	-	-	-	-	150	**258**
Food, Beverages and Tobacco	1,429	60	37	11	2	-	-	220	**1,758**
Pulp, Paper and Printing	128	21	90	-	-	-	-	443	**682**
Wood and Wood Products	17	7	49	29	-	-	-	280	**381**
Textile and Leather	143	12	41	6	1	-	-	270	**473**
Not Elsewhere Specified	61	8	15	18	30	-	-	335	**467**
Total	**4,296**	**240**	**1,414**	**204**	**145**	**13**	**1,387**	**3,979**	**11,679**



NOTES ON ENERGY BALANCE

The net calorific value (NCV) was chosen as the basis of calculations rather than the gross calorific value (GCV). The Joule was used as the rigorous accounting unit, while the "tonnes oil equivalent" (1 toe= 41.84 Gigajoules) was chosen as the final unit for presentation in the Energy Balance.

ENERGY BALANCE FORMAT

The rows of the Energy Balance tables contain the following items:

Primary Supply	refers to supply of energy that has not undergone the transformations / conversion process within the country.
Primary Production (1)	refers to the quantity of fuels extracted. Data for natural gas excludes the amount of reinjected and flared gas. Gross production of hydro is shown in conventional fuel equivalent input.
Gas Flaring, Reinjection & Use (2)	refers to the quantity of gas flared, reinjected into the gas fields and use for production purpose.
Imports (3) and Exports (4)	refers to the amount of primary and secondary energy obtained from, or supplied to other countries. In the energy balance format, imports always carry a positive and export a negative sign.
Bunkers (5)	refer to the amount of fuels delivered to ocean-going ships of all flags engaged in international traffic.
Stock Change (6)	refers to the difference between the amounts of fuel in stocks at the beginning and end of year and should ideally cover producers, importers and industrial consumers. At this stage, however, only oil companies' stock are taken into account. A negative sign indicates net increase while a positive sign indicates net decrease in stocks.
Total	under primary supply, 'total' is the addition of columns to obtain total availability. Under transformation, 'total' is the addition of columns to obtain transformation and conversion losses.
Gas Plants (9)	shows the input of natural gas into the LNG, MDS and GPP-LPG plants and their respective outputs.
Refineries (10), power stations and Co-generation & Private licensees (11)	shows the input of any energy product (negative sign) for the purpose of converting it to one or more secondary products (positive sign).
Losses and Own Use (12)	refers to losses of electrical energy and natural gas which occur outside the utilities and plants (i.e. distribution losses) and the consumption of energy by utilities and plants for operating their installation (i.e. electricity for operating auxiliary equipment and petroleum products used in the crude distillation process respectively). It does not, however, include conversion loss that is accounted for in the 'total' column.
Secondary Supply (14)	refers to the supply of energy from the transformation process and after deducting the energy sector's own use and losses, including power station use.
Residential and Commercial (15 & 16)	not only refers to energy used within households and commercial establishments but includes government buildings and institutions.
Industry (17)	is a very broad-based sector ranging from manufacturing to mining and construction. Diesel sales through distributors are assumed to be to industrial consumers.
Transport (18)	basically refers to all sales of motor gasoline and diesel from service stations and sales of aviation fuel. It also includes diesel and motor gasoline sold directly to government and military.
Agriculture (19)	covers agriculture and forestry.
Fishery (20)	may involve the capture of wild fish or raising fish through fish farming or aquaculture.
Non-Energy Use (21)	use of products resulting from the transformation process for non-energy purpose (i.e. bitumen/lubricants, asphalt/greases) and use of energy products (such as natural gas) as industrial feedstocks

Final use (22)	refers to the quantity of energy of all kinds delivered to the final user.
Main Activity Producer	plants that are either owned by public or private utilities but for which the main activity is to produce power
Autoproducer	plants which is not to produce power, their main activity is e.g industrial activity

I) Non-commercial energy such as firewood and other biomass fuels have been excluded in the energy balance until more reliable data are made available.

II) The output side of the final user's equipment of device i.e. useful energy will not be dealt with in the balance as it will involve assessing the efficiencies of end - use equipment operating under various different conditions.

NOTES ON ELECTRICITY

Reserve Margin	Total capacity margin is defined as the amount of installed generation available over and above system peak load **RESERVE MARGIN** = $\frac{\textbf{Installed Capacity – Peak Consumption}}{\textbf{Peak Consumption}}$
Peak Demand	The maximum power consumption registered by a customer or a group of customers or a system in a stated period of time such as a month or a year. The value may be the maximum instantaneous load or more usually, the average load over a designated interval of time, such as half an hour and is normally stated in kilowatts or megawatts.
Installed Capacity	Installed capacity is defined as the maximum possible capacity (nameplate rating) that can be provided by the plant.
Dependable Capacity	The maximum capacity, modified for ambient limitations for a specified period of time, such as a month or a season.
Available Capacity	Available capacity refers to the Latest Tested Net Capacity. It is the dependable capacity, modified for equipment limitation at any time.
Unit Generated (Gross Generation)	The total amount of electric energy produced by generating units and measured at the generating terminal in kilowatt-hours (kWh) or megawatt hours (MWh)
Unit Sent Out From Station(s) (Net Generation)	The amount of gross generation less the electrical energy consumed at the generating station(s) for station service or auxiliaries

NOTES ON COAL

Measured Resources	Refers to coal for which estimates of the rank and quantity have been computed to a high degree of geologic assurance, from sample analyses and measurements from closely spaced and geologically well known sample sites.
Indicated Resources	Refers to coal for which estimates of the rank, quality, and quantity have been computed to a moderate degree of geologic assurance, partly from sample analyses and measurements and partly from reasonable geologic projections.
Inferred Resources	Refers to coal of a low degree of geologic assurance in unexplored extensions of demonstrated resources for which estimates of the quality and size are based on geologic evidence and projection. Quantitative estimates are based on broad knowledge of the geologic character of the bed or region where few measurements or sampling points are available and on assumed continuation from demonstrated coal for which there is geologic evidence.

NOTES ON GDP

Definition	GDP is a measure of the total value of production of all resident producing units of a country in a specified period, before deducting allowances for consumption of fixed capital. A producing unit is considered as resident in a country if it maintains a centre of economic interest in the economic territory of that country. The economic territory of a country consists of the geographic territory administered by a government within which persons, goods and capital circulate freely. GDP can be measured in three but equivalent ways, namely, the sum of value added, the sum of final expenditures and the sum of incomes. In Malaysia, Department of Statistics Malaysia (DOSM) compiles annual GDP estimates using the sum of value added and sum of final expenditure approaches.
Measuring GDP	The sum of value added (or production) based GDP is the sum of the differences between the values of the gross output of resident producing units measured in producers' values and the values of their intermediate consumption measured in purchasers' values plus import duties. The difference between gross output and intermediate consumption is value added. This approach shows the contribution of individual economic activities to the total GDP. Income based estimates – summing up the incomes generated (i.e salaries and wages, gross operating surplus of enterprises and mixed income generated by households that engage in production) The sum of final expenditures (expenditure) approach is to sum up the expenditure values of the final users of goods and services measured in purchasers' values, less the c.i.f. values of the import of goods and services. It is calculated by estimating the values of private consumption expenditure, government consumption expenditure, gross fixed capital formation, change in stocks and exports of goods and services, less imports of goods and services. These are termed `final Consumption' or 'final expenditure' categories.

NOTES ON GNI

Definition	The Gross national income (GNI) consists of: the personal consumption expenditure, the gross private investment, the government consumption expenditures, the net income from assets abroad (net income receipts), and the gross exports of goods and services, after deducting two components: the gross imports of goods and services, and the indirect business taxes. The GNI is similar to the gross national product (GNP), except that in measuring the GNP one does not deduct the indirect business taxes.
Measuring GNI	As GNI is an add up of Net Income from abroad and the GDP, one can calculate the GNI by the following formula: **GNI = GDP + (FL – DL) + NCI** When FL and DL are respectively the foreign and domestic income from labor, and NCI the net capital inflow. For example, if a country A's nominal GDP is $20,000, the domestic income from labor $3,000 and the foreign income from labor $5,000, and the country received a $10,000 donation from another country's charity organization, the GNI of country A would be $32,000.

CONVERSION COEFFICIENTS AND EQUIVALENCE

COAL AND COKE (TJ/1000 TONNES)[1]

Hard Coal	29.3076	Lignite/Brown Coal	11.2834
Coke/Oven Coke	26.3768	Peat	9.525
Gas Coke	26.3768	Charcoal	28.8888
Brown Coal Coke	19.6361	Fuelwood [2]	13.4734
Pattern Fuel Briquettes	29.3076	Lignite Briquettes	19.6361

NATURAL GAS PRODUCTS (TJ/1000 TONNES)

Liquefied Natural Gas (LNG)	45.1923	Natural Gas	1TJ/ million scf 0.9479 mmbtu/GJ
Butane	50.393	Ethane	1,067.82 GJ/mscf
Propane	49.473	Methane	1,131.31 GJ/mscf

ELECTRICITY

Electricity	3.6 TJ/GWh

PETROLEUM PRODUCTS (TJ/1000 TONNES)

Crude Petroleum (imported)	42.6133	Gas Oil/Diesel	42.4960
Crude Petroleum (domestic)	43.3000	Residual Fuel Oil	41.4996
Plant Condensate	44.3131	Naphtha	44.1289
Aviation Gasoline (AV GAS)	43.9614	White/Industrial Spirit	43.2078
Liquefied Petroleum Gas (LPG)	45.5440	Lubricants	42.1401
Petrol	43.9614	Bitumen (Asphalt)	41.8000
Natural Gasoline	44.8992	Petroleum Waxes	43.3334
Aviation Turbine Fuel (ATF)	43.1994	Petroleum Coke	36.4000
Kerosene	43.1994	Other Petroleum Products	42.4960

1,000 Tonnes Oil Equivalent (toe) = 41.84 TJ

CRUDE OIL AND PETROLEUM PRODUCTS (BARRELS TO TONNES)

PRODUCT	BARRELS/TONNE
Crude Oil - Import	7.33
- Local	7.60
Petrol	8.55
Diesel	7.50
Fuel Oil	6.60
Kerosene	7.90
Liquefied Petroleum Gas (LPG)	11.76
Aviation Turbine Fuel (ATF)	7.91
Aviation Gasoline (AV GAS)	9.05
Non-Energy	6.50

Note: [1] Unless otherwise indicated [2] Assuming 9.7 TJ/1000 cubic metre

SOLID FUELS

FROM METRIC TONNE / INTO	GIGAJOULES	MILLION BTUS	GIGACALORIES	MEGAWATT HOURS	BARRELS OIL	TONNE COAL EQUIVALENT	TONNE OIL EQUIVALENT
	MULTIPLY BY						
Hard Coal	29.310	27.780	7.000	8.140	4.900	1.000	0.700
Lignite	*11.280*	10.700	2.700	3.130	2.500	0.385	0.270
Peat	9.530	9.030	2.280	2.650	2.300	0.325	0.228
Gas Coke	26.380	25.000	6.300	7.330	4.400	0.900	0.630
Oven Coke	26.380	25.000	6.300	7.330	4.400	0.900	0.630
Petroleum Coke	35.170	33.330	8.400	9.770	5.900	1.200	0.840
Charcoal	28.890	27.380	6.900	8.020	4.800	0.985	0.690
Fuelwood	12.600	11.940	3.010	3.500	2.100	0.430	0.301

LIQUID FUELS

FROM METRIC TONNE / INTO	GIGAJOULES	MILLION BTUS	GIGACALORIES	MEGAWATT HOURS	BARRELS OIL	TONNE COAL EQUIVALENT	TONNE OIL EQUIVALENT	LITRES
	MULTIPLY BY							
Crude Oil	42.620	40.390	10.180	11.840	7.320	1.454	1.018	1,164
Natural Gas Liquids	45.190	42.830	10.790	12.550	10.400	1.542	1.079	1,653
Liquefied Petroleum Gas (LPG)	45.550	43.170	10.880	12.650	11.650	1.554	1.088	1,852
Propane	45.590	43.210	10.890	12.670	12.340	1.556	1.089	1,962
Butane	44.800	42.460	10.700	12.440	10.850	1.529	1.070	1,726
Petrol	43.970	41.670	10.500	12.210	8.500	1.500	1.050	1,590
Aviation Gasoline (AV GAS)	43.970	41.670	10.500	12.210	8.620	1.500	1.050	1,370
Aviation Turbine Fuel (ATF)	43.210	40.950	10.320	12.000	7.770	1.474	1.032	1,235
Kerosene	43.210	40.950	10.320	12.000	7.770	1.474	1.032	1,235
Diesel	42.500	40.280	10.150	11.810	7.230	1.450	1.015	1,149
Residual Fuel Oil	41.510	39.340	9.910	11.530	6.620	1.416	0.991	1,053
Lubricants	42.140	39.940	10.070	11.700	6.990	1.438	1.007	1,111
Bitumen / Asphalt	41.800	39.620	9.980	11.610	6.050	1.426	0.998	962
Naphtha	44.130	41.830	10.540	12.260	8.740	1.506	1.054	1,389
Other Petroleum Products	42.500	40.280	10.150	11.800	6.910	1.450	1.015	1,099

GASEOUS FUELS

FROM METRIC TONNE / INTO	GIGAJOULES	MILLION BTUS	GIGACALORIES	MEGAWATT HOURS	BARRELS OIL	TONNE COAL EQUIVALENT	TONNE OIL EQUIVALENT
	MULTIPLY BY						
Natural Gas	39.020	36.980	9.320	10.840	6.500	1.331	0.932
Refinery Gas	*46.100*	43.700	11.000	12.800	7.690	1.571	1.100
Biogas	20.000	19.000	4.800	5.600	3.360	0.686	0.480
Methane	33.500	31.700	8.000	9.300	5.590	1.143	0.800
Ethane	59.500	56.300	14.200	16.500	9.920	2.029	1.420
Propane	85.800	81.300	20.500	23.800	14.330	2.929	2.050
Butane	111.800	106.000	26.700	31.000	18.600	3.814	2.670
Pentane	134.000	127.000	32.000	37.200	22.360	4.571	3.200

Note:
1 cubic metre = 35.31467 cubic feet

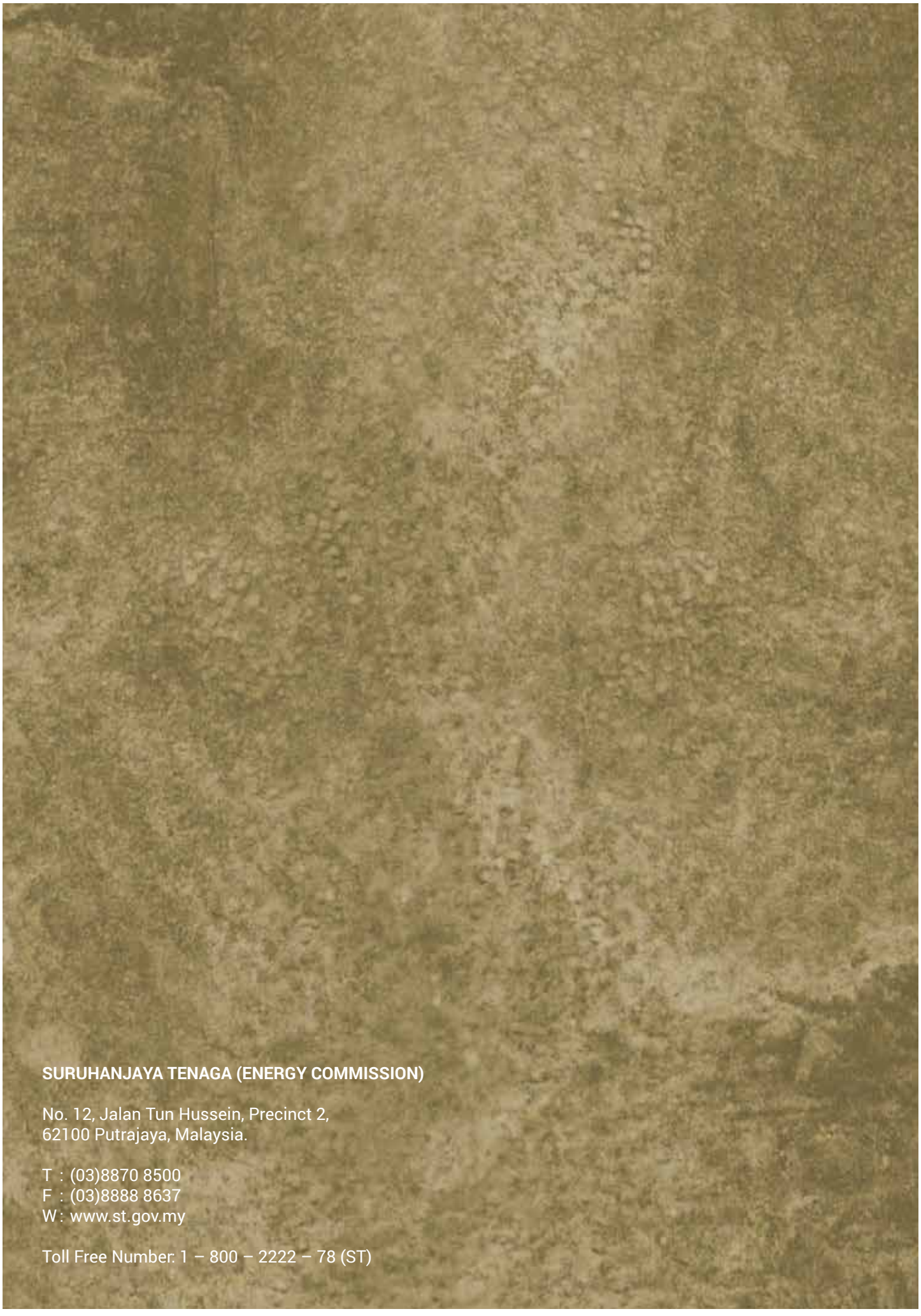
DEFINITION

The sources of energy covered in the Energy Balances are as below:

Natural Gas	Is a mixture of gaseous hydrocarbons (mainly methane), which occur in either gas fields or in association with crude oil in oil fields.
LNG	Is natural gas that is liquefied for ocean transportation and export
Crude Oil	Is natural product that is extracted from mineral deposits and consists essentially of many different non-aromatic hydrocarbons (paraffinic, cyclonic, etc.)
Aviation Gasoline (AV GAS)	Is a special blended grade of gasoline for use in aircraft engines of the piston type. Distillation range normally falls within 30°C and 200°C.
Liquefied Petroleum Gas (LPG)	Commercial LPG consists essentially of a mixture of propane and butane gases which are held in the liquid state by pressure or refrigeration.
Petrol	Petroleum distillate used as fuel in spark- ignition internal combustion engines. Distillation range is within 30°C and 250°C.
Aviation Turbine Fuel (ATF)	Fuel for use in aviation gas turbines mainly refined from kerosene. Distillation range within 150°C and 250°C.
Kerosene	Is a straight-run fraction from crude oil, with boiling range from150°C to 250°C. Its main uses are for domestic lighting and cooking.
Diesel (or Gas Oil)	Distillation falls within 200°C to 340°C. Diesel fuels for high-speed diesel engines (i.e. automotive) are more critical of fuel quality than diesel for stationary and marine diesel engines. Marine oil usually consists of a blend of diesel oil and some residual (asphaltic) material.
Fuel Oil	Heavy distillates, residues or blends of these, used as fuel for production of heat and power. Fuel oil production at the refinery is essentially a matter of selective blending of available components rather than of special processing. Fuel oil viscosities vary widely depending on the blend of distillates and residues.
Non-Energy Products	Refer mainly to naphtha bitumen and lubricants, which are obtained by the refinery process from petroleum but used for non-energy purposes. Naphtha is a refined or party refined light distillate, which is further, blended into motor gasoline or used as feed-stock in the chemical industry. Bitumen is a viscous liquid or solid, non-volatile and possesses waterproofing and adhesive properties. Lubricating oil is used for lubricating purposes and has distillation range within 380°C to 500°C.
Refinery Gas	The gas released during the distillation of crude oil and comprises methane, ethane, propane and butane. Most refinery gas is retained in the refinery and used as fuel in plant operations.
Coal and Coke	Solid fuels consisting essentially of carbon, hydrogen, oxygen sulphur. Coal in the energy balances is mainly bituminous coal (medium grade in terms of energy content) and some anthracite (high quality hard coal). Coke is obtained from coal by heating at high temperature in the absence of air.
Hydropower	Is the inferred primary energy available for electricity production and is shown in terms of conventional fossil fuel equivalent using the average thermal efficiency of conversion for the year, i.e. the hypothetical amount of fossil fuel, which would be needed to produce the same amount of electricity in existing thermal power plants.
Electricity Production	Production of electricity refers to production from public utilities as well as independent power producers (IPPs) and private installations & co-generation plants which obtain licenses from the Electricity Supply and Market Regulation Department. Figures for 'fuel input' into power stations & co-generation plants were only available for TNB, SEB, SESB, IPPs as well as GDC Sdn Bhd. Estimates were made using average conversion efficiency to obtain the fuel input into private installations.

Suruhanjaya Tenaga
Energy Commission

National Energy Balance 2013



SURUHANJAYA TENAGA (ENERGY COMMISSION)

No. 12, Jalan Tun Hussein, Precinct 2,
62100 Putrajaya, Malaysia.

T : (03)8870 8500
F : (03)8888 8637
W : www.st.gov.my

Toll Free Number: 1 – 800 – 2222 – 78 (ST)