Suruhanjaya Tenaga
Energy Commission

NATIONAL ENERGY BALANCE
2012

PUBLISHED BY:

SURUHANJAYA TENAGA (ENERGY COMMISSION)
No. 12, Jalan Tun Hussein, Precinct 2, 62100 Putrajaya, Malaysia
Tel • +603 8870 8500
Fax • +603 8888 8637
Toll Free Number • 1 800 2222 78 (ST)

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

ISSN NO.: 0128 – 6323
ST(P)01/03/2014

PRINTED IN MALAYSIA

TABLE OF CONTENTS

LIST OF STATISTICAL TABLE AND FIGURE

KEY ECONOMIC AND ENERGY DATA

OIL

NATURAL GAS

COAL

ELECTRICITY

KEY ENERGY STATISTICS

LIST OF NOTES

PREFACE

The Malaysian economy performed better than expected in 2012, with a higher growth of 5.6 percent (2011: 5.1 percent). The strong growth was supported by robust domestic consumption, which cushioned the negative impact of weak external economic environment. In line with the strong economic growth, energy supply and demand in 2012 experienced higher growth rates.

The total primary energy supply showed a growth of 5.9 percent from the previous year, attributed mainly to the higher production of crude oil. On the demand side, total final energy consumption recorded a higher growth of 7.5 percent. This was the highest growth experienced since 2007 when a growth of 7.9 percent was recorded. Overall, all sectors experienced energy consumption growth, particularly the non-energy sector which rose by 17.5 percent and the industry sector by 15.0 percent. The transport and industry sectors were the largest consumers of energy, consuming 36.8 percent and 29.8 percent, respectively.

As at end 2012, Malaysia's installed electricity generation capacity was at 29,143 MW of which 83.4 percent or 24,309 MW was in Peninsular Malaysia, 9.9 percent (2,871 MW) in Sarawak and remaining 6.7 percent (1,963 MW) in Sabah. Coal's share of the country's fuel mix increased slightly from 46.6 percent in 2011 to 48.3 percent in 2012. This was followed by natural gas at 39.4 percent, hydro 7.3 percent, diesel 2.8 percent, fuel oil 1.9 percent and renewable 0.2 percent.

Final energy intensity increased by 1.8 percent, attributed mainly to the industry sector which experienced a 10.9 percent increase in energy intensity. This increase in industry sector energy intensity indicates that Malaysia's economic growth has been driven mostly by energy intensive industries. Similarly, electricity consumption grew at a much higher rate of 8.4 percent in 2012, when compared with that in the previous year of only 2.7 percent. The higher growth rate in electricity consumption in comparison to GDP growth rate has resulted in a higher electricity intensity of 0.155 GWh/RM million GDP and electricity elasticity of 1.49.

The above national energy statistics of the NEB report illustrates the importance of access to accurate and timely energy statistics in order for us to have sound national energy policies. It will enable us to assess the effectiveness of current energy management policies and programmes as well as initiate new policy initiatives that are better able to surmount the complex energy challenges of our country.

Lastly, I wish to thank all parties who have contributed in the publication of this NEB 2012. I hope that readers find the data and information in the report to be relevant and beneficial for your activities.

Thank you.

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

INTRODUCTION

This National Energy Balance (NEB) 2012 publication is the third edition prepared and published by the Energy Commission (Suruhanjaya Tenaga - ST). The report presents statistics on energy supply, transformation and final consumption for Malaysia for the period from 1990 to 2012. ST has taken steps to ensure that the data and statistics presented in the report are accurate, reliable and meet the expectations of all stakeholders.

In our effort to improve the comprehensiveness of the report, we have also included, for the first time, data on renewable energy (RE) such as biomass, biogas, solar and mini hydro in the energy balance presentation. For a start, RE in the power and transport sectors will be covered as commercial RE activities were mostly confined in these two sectors. The data were collected through collaboration with the Sustainable Energy Development Authority (SEDA). It is hoped that with the availability of such data, better planning and monitoring can be done by relevant stakeholders to ensure that our national targets for RE are achieved.

The fishery sector has also been included in this publication. Energy usage for fishing activity was taken from the Fishery Development Authority of Malaysia.

ST is in the process of conducting a survey on energy consumption in the manufacturing sector. This will enable us to analyse and report in more detail the status of energy consumption according to manufacturing sub-subsectors. Initially, the survey will cover Peninsular Malaysia. The production of the NEB report is very much dependent on the data that are provided by the various NEB data providers in the country. Currently, there are about 70 data providers contributing to the NEB publication. These are key organisations who are involved in the production, transformation, supply and use of energy, including relevant government agencies, oil and gas companies, power utilities, independent power producers and manufacturers of cement, iron and steel.

The Malaysia Energy Information Hub (MEIH), was launched by the Minister of Energy, Green Technology and Water on 28th February 2012. Since then, all NEB data providers have started submitting their data through the MEIH. We hope this will expedite data collection process and eliminate or at least, minimise data error. We are also encouraged by the good feedbacks from local and international users of MEIH.

On behalf of ST, I wish to express our utmost appreciation and thanks to all data providers for your invaluable data contributions all these years, making possible the publication of the NEB 2012 report.

Last but not least, I wish to express our gratitude and thanks to the Honourable Minister and the Secretary General of the Ministry of Energy, Green Technology and Water for their continuing support and guidance. Thank you also to all others, who in one way or another, have contributed towards the production of this NEB 2012 report.

Thank you.

Tan Sri Datuk Dr. Ahmad Tajuddin Bin Ali
Chairman of Energy Commission
Malaysia

DATA COMPILATION

The first stage in compiling the overall balance was 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 minimize 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 were 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 summary, the flow of energy is represented by the following equations:-

PRIMARY ENERGY SUPPLY = **Production + Imports - Exports - Bunkers +/- Stock Change**

ENERGY CONSUMPTION

= Gross inland consumption
= Final energy consumption
+ Consumption of the energy transformation sector
+ Distribution losses
+ Non-energy consumption

EXECUTIVE SUMMARY

ENERGY/ ECONOMY OVERVIEW

higher economy growth in 2012

5.6%

The Malaysian economy performed better than expected in 2012, with a higher growth of 5.6 percent (2011: 5.1 percent). The strong growth was supported by resilient domestic consumption, which cushioned the negative impact of the weak external environment. Domestic consumption recorded its highest rate of expansion for the decade, supported by stronger consumption and investment spending.

Strong growth of energy supply and demand was recorded in 2012 for Malaysia. Total primary energy supply and final energy consumption recorded a growth of 5.9 percent and 7.5 percent respectively when compared with that of the previous year. The higher growth rate of final energy consumption compared to previous year indicates that our economic activities were highly related to high energy consumption based industry.

PRIMARY ENERGY SUPPLY

In 2012, the total primary energy supply increased by 5.9 percent compared to 3.2 percent during the previous year. The growth was motivated by higher production of crude oil 29,115 ktoe, an increase of 2.8 percent from 28,325 ktoe in 2011. The growth was mainly driven by the production of Gumusut-Kakap field, Malaysia's second deepwater development, which achieved first oil production on 18th November 2012. The full development system will enable the crude production from Gumusut-Kakap to reach 120,000 barrel per day (bpd) at its peak performance. However, in 2012, natural gas production dropped to 62,581 ktoe compared to previous year at 69,849 ktoe. This was due to lower production from Peninsular Malaysia and Sarawak gas fields. In order to fulfil local demand, Malaysia imported natural gas through pipeline from Thailand and Indonesia. Our import of natural gas increased in 2012 by 12.7 percent to settle at 7,866 ktoe. The production of coal and coke steadily increased in 2012 by 1.2 percent to settle at 1,860 ktoe. Our local coal and coke were mainly produced from Mukah – Balingian area in Sarawak. This area alone produced about 78 percent of the total production of coal and coke in Malaysia. In Peninsular Malaysia the power sector gets the supply of coal and coke from importation from Indonesia, South Africa and Australia. Total import of coal and coke in 2012 increased by 6.7 percent to register at 14,220 ktoe. The total production of hydropower in Malaysia posted a positive trend with an increase of 16.2 percent to register at 2,149 ktoe compared to the previous year at 1,850 ktoe.

In terms of total share, crude oil and petroleum products shares reduced slightly from 34.0 percent in 2011 to 32.5 percent in 2012. The share of natural gas increased to 46.0 percent from 45.1 percent during the same period. The share of coal and coke has increased from 18.6 percent to 18.9 percent, compared to the previous year. Hydro has also increased from 2.3 percent to 2.6 percent in 2012.

As of 1st January 2012, Malaysia's crude oil reserves stood at 5.954 billion barrels compared to 5.858 billion barrels in the previous year. This increase was due mainly from Peninsular Malaysia and Sarawak totalling 4.013 billion barrels compared to that in the previous year at 3.866 billion barrels. Meanwhile, as of 1st January 2012, Malaysia's natural gas reserves increased to 92.122 trillion standard cubic feet (tscf), from the 2011 level of 89.988 tscf. PETRONAS has made two gas discoveries in the Kasawari and NC8SW fields in Block SK316 offshore Sarawak via exploration wells Kasawari-1 and NC8SW-1. Preliminary assessments carried out in early February 2012 indicate that gas-in-place for the Kasawari field is over five tscf with estimated recoverable hydrocarbon resource of just over three tscf, making it one of the largest non-associated gas fields in Malaysia. The well-test conducted produced 29 million standard cubic feet per day (MMscfd) of gas.

ENERGY TRANSFORMATION

Exported LNG:

62%
to Japan

17%
to Korea

12%
to Taiwan

9%
to China

LNG & MDS

Since the commencement of the PETRONAS's third LNG plant (MLNG) in Bintulu in March 2003, conversion of natural gas to Liquefied Natural Gas (LNG) has continuously increased. However, in year 2012, the LNG produced was less by about 6.8 percent from the previous year at 26,003 ktoe due to lower production of total natural gas in the country. In 2012, about 62 percent of total LNG exported was shipped to Japan, 17 percent to Korea, 12 percent to Taiwan and the remaining 9 percent to China. The total petroleum products produced from Middle Distillate Synthesis (MDS) plant recorded an increase of 35.4 percent to settle at 486 ktoe. Out of this total, 67 percent was non-energy products, 26 percent diesel and 8 percent kerosene.

OIL REFINERY

Malaysia's total refinery capacity currently is 492 kilobarrels per day (kbpd), not including the condensates splitter capacity of 74.3 kbpd. In 2012, the total refinery output had increased by 9.1 percent to register at 26,047 ktoe (2011: 23,867 ktoe). Diesel registered the highest share (38.5 percent), followed by petrol (17.7 percent), non-energy (16.6 percent), ATF and AV GAS (15.0 percent), fuel oil (6.2 percent), LPG (2.7 percent) kerosene (2.5 percent) and refinery gas (0.8 percent).

GPP-LPG

Liquefied Petroleum Gas (LPG) production from LNG had increased to 228 ktoe in order to meet local consumption of LPG especially from residential and commercial sectors. However, LPG production from Gas Processing Plant (GPP) was decreased affected by marginally declining natural gas production. The LPG production from GPP-LPG plants dropped from 2,434 ktoe in 2011 to 2,036 ktoe in 2012.

Energy input in power stations has increased slightly by

4.8%
in 2012 to

29,252 ktoe

ELECTRICITY

Malaysia's total installed capacity as of the end of 2012 was 29,143 MW, an increase of 1.4 percent from 28,749 MW in 2011. This was attributed to the additional capacity of 300 MW of the major hydro of Bakun project in Sarawak. This made the total capacity of Bakun major hydro to be 1,200 MW. Electricity gross generation registered 134,375 GWh, an increase of 8.7 percent from the previous year (2011: 123,561 GWh). On the other hand, the electricity consumption was 116,353 GWh, an increase of 8.4 percent from the previous year (2011: 107,330 GWh). The peak demand for Peninsular Malaysia was recorded at 15,826 MW in the second quarter of the year (Q2 2012), Sarawak at 1,161 MW (in Q3 2012) and Sabah at 828 MW (Q2 2012). The calculated reserve margin for Peninsular Malaysia in 2012 was 33.0 percent and 95.0 percent for Sarawak and Sabah at 19.6 percent.

The total energy input in power stations has increased slightly by 4.8 percent in 2012 to 29,252 ktoe. Coal and coke continued to remain the main fuel source for electricity generation, with a share of 48.3 percent of total fuel inputs, followed by natural gas at 39.4 percent, hydropower at 7.4 percent, diesel and fuel oil at 4.7 percent, while renewables was at 0.2 percent.

Electricity consumption by the residential sector increased by 7.7 percent to register at 2,126 ktoe (24,709 GWh) compared to the previous year. The increment was due to the increasing number of customers recorded from residential sector from all major utilities. Data from all utilities showed that the number of customers from residential sector had increased by 2.7 percent or an addition of 193,453 households from the 2011 level. Consumption of electricity in the commercial sector also increased to reach 3,325 ktoe (38,645 GWh). The continued expansion in hypermarkets and retail outlets coupled with the extension of tourism activities and Malaysia mega sale events helped boost retail spending. The electricity consumption in the industrial sector recorded an increase of 11.5 percent (2011: 1.7 percent) to register at 4,510 ktoe (52,414 GWh). The higher increase rate of electricity demand in industry sector

compared to the previous year was in line with GDP growth rate in the construction sector. The construction GDP in 2012 increased by 18.1 percent compared to 4.7 percent in the previous year. The electricity consumption from the transport sector, increased from 18 ktoe (214 GWh) in 2011 to 21 ktoe (241 GWh). This was due to the higher number of passengers in 2012. Overall, the total electricity consumption recorded a growth of 8.4 percent compared to the previous year to register at 10,011 ktoe (116,353 GWh).

FINAL ENERGY CONSUMPTION

petrol

36.2%

and diesel

35.5%

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

The final energy consumption in 2012 expanded, at a much higher pace by 7.5 percent to settle at 46,711 ktoe compared to 4.8 percent in 2011. The share in energy demand was highest for the transport sector at 36.8 percent, followed by the industrial sector at 29.8 percent, 16.0 percent from the non-energy sector, the residential and commercial sectors at 15.1 percent and 2.3 percent from the agriculture sector. All sectors showed an upward trend with double digits growth from non-energy use, industrial and agriculture sectors. In addition, the commencement and progress of several infrastructure projects, including those under the Economic Transformation Programme (ETP) such as the MY Rapid Transit, had also provided significant positive spill over effects to activities in the domestic manufacturing and services sectors. Reflecting these developments, the construction sector registered a robust growth in 2012.

The industrial GDP for Malaysia in 2012 registered a slightly higher growth of 5.6 percent compared to the year at 5.1 percent. Malaysia's industrial energy intensity for 2012 was 68 toe/RM Million, an increase of 11.0 percent from the previous year due to higher growth of final energy consumption compared to the growth of GDP.

Analysis of total final energy consumption by type of fuels showed that petroleum products constituted about 53.0 percent of total energy demand, followed by natural gas at 21.8 percent, 21.4 percent for electricity and 3.7 percent for coal and coke. All others fuel types showed an upward trend compared to the previous year except for coal and coke. Final consumption of coal and coke decreased 0.8 percent compared to previous year to register at 1,744 ktoe. Final consumption of natural gas increased by 19.8 percent in 2012 to 10,206 ktoe due to the increase in demand from the non-energy use and industrial sectors. Final consumption for natural gas in non-energy use sector increased by 36.6 percent due high consumption for petrochemical industry in the country.

In 2012, the total final energy consumption for petroleum products increased by 3.4 percent with the major increase coming from kerosene and fuel oil. Final consumption for kerosene increase by 100.1 percent while final consumption for fuel oil increase by 85.5 percent. In terms of share, petrol (36.2 percent) and diesel (35.5 percent) continued to be the largest contributors to the total consumption for petroleum products. This was followed by LPG (11.7 percent), ATF and AV GAS (10.2 percent), fuel oil (3.1 percent), non-energy (3.0 percent) and kerosene (0.2 percent).

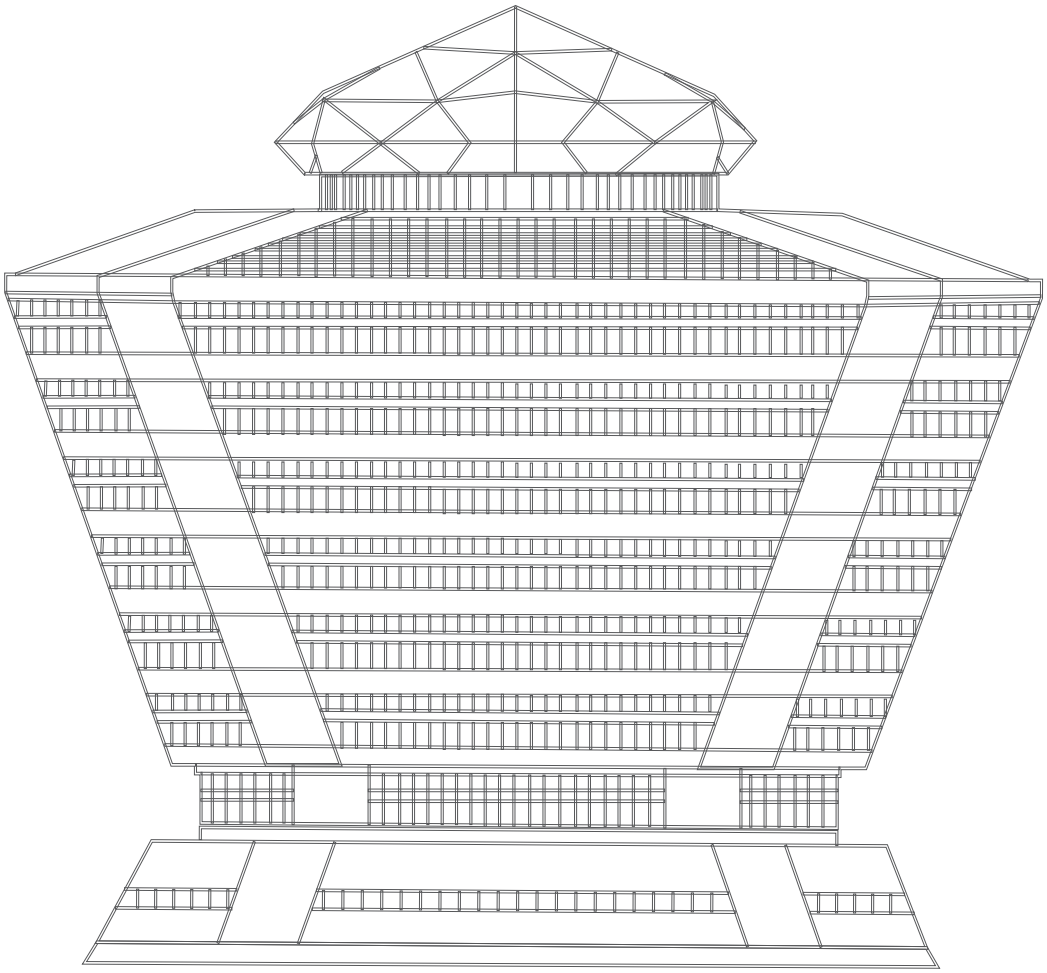
OUTLOOK IN 2013

steady growth path with an expansion of

5 - 6%

The Malaysian economy is expected to remain on a steady growth path with an expansion of 5-6 percent in 2013. Economic activity will be anchored by the continued resilience of domestic demand and supported by a gradual improvement in the external sector. In the manufacturing sector, investment will be driven by the domestic-oriented and primary related manufacturing clusters. Investment in the construction-related cluster, especially in steel and cement, will be driven by the demand from strong construction activity, while the expansion of firms in the consumer-related clusters, such as food and beverages and motor vehicles, will be underpinned by the steady growth of domestic consumption.

To enhance the oil and gas activities in the country, Malaysia will build its first regasification terminal (RGT) in Melaka, an additional LNG train capacity in Bintulu as well as the Refinery and Petrochemical Integrated Development (RAPID) Project in Johor by Q1 of 2014. Several other major projects are at the execution stage. These include the Sabah Ammonia Urea Project (SAMUR), Sabah Oil-Gas Terminal (SOGT). The SAMUR project is expected to spur the growth of Sipitang and its surrounding area, promoting economic spin-offs for Sabah. Construction work is currently ongoing with completion targeted for 2015.



KEY ECONOMIC AND ENERGY DATA

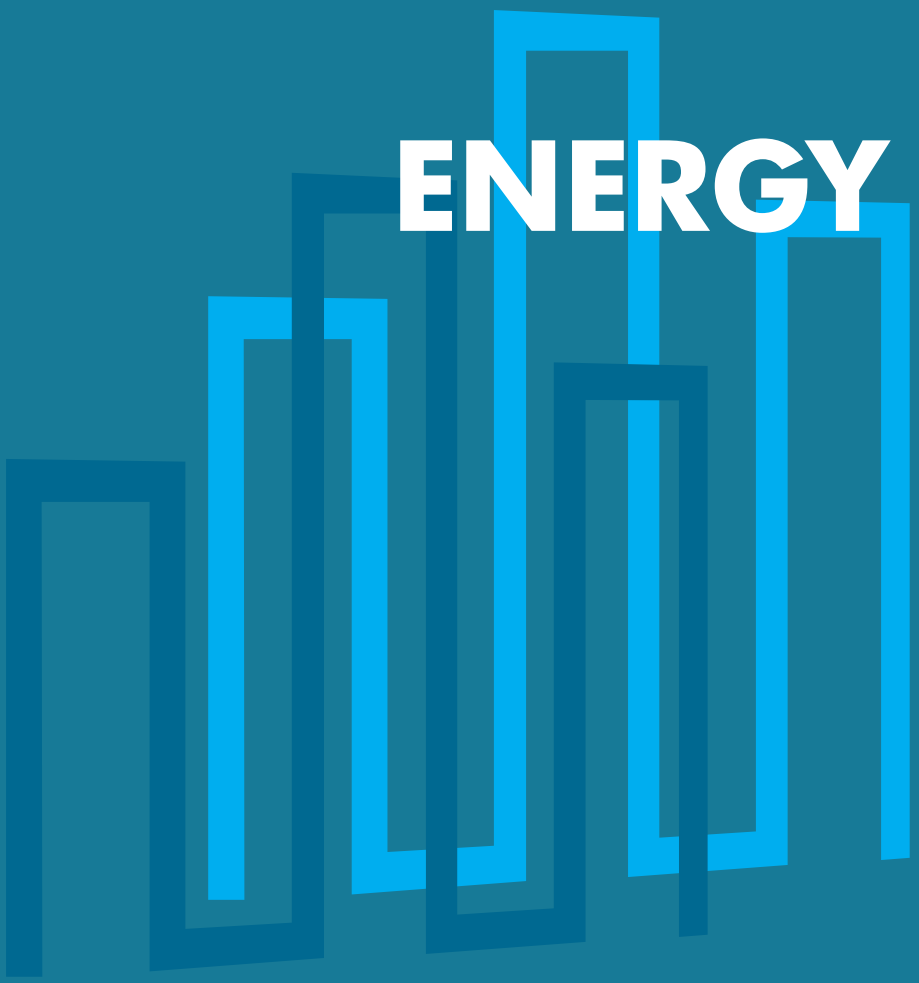


TABLE 1: KEY ECONOMIC AND ENERGY DATA

	2012				
	Q1	Q2	Q3	Q4	TOTAL
GDP at 2005 prices (RM million)*	179,402	184,763	190,915	196,391	**751,471**
GDP at current prices (RM million)*	226,961	233,197	237,604	243,475	**941,237**
GNI at 2005 prices (RM million)*	165,360	166,293	176,434	185,028	**693,115**
GNI at current prices (RM million)*	218,300	220,396	228,658	237,859	**905,213**
Population ('000 people)**	29,244	29,337	29,431	29,526	**29,337**
Primary Energy Supply (ktoe)	20,746	21,316	20,743	21,133	**83,938**
Final Energy Consumption (ktoe)	11,197	11,650	12,000	11,864	**46,711**
Electricity Consumption (ktoe)	2,393	2,546	2,543	2,530	**10,011**
Electricity Consumption (GWh)	27,812	29,590	29,552	29,399	**116,353**
Per Capita					
GDP (at 2005 prices, RM million)*	6,135	6,298	6,487	6,651	**25,615**
Primary Energy Supply (toe)	0.709	0.727	0.705	0.716	**2.861**
Final Energy Consumption (toe)	0.383	0.397	0.408	0.402	**1.592**
Electricity Consumption (kWh)	951	1,009	1,004	996	**3,966**
Energy Intensity					
Primary Energy Supply (toe/GDP at 2005 prices (RM million))	115.6	115.4	108.6	107.6	**111.7**
Final Energy Consumption (toe/GDP at 2005 prices (RM million))	62.4	63.1	62.9	60.4	**62.2**
Electricity Consumption (toe/GDP at 2005 prices (RM million))	13.3	13.8	13.3	12.9	**13.3**
Electricity Consumption (GWh/GDP at 2005 prices (RM million))	0.155	0.160	0.155	0.150	**0.155**

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

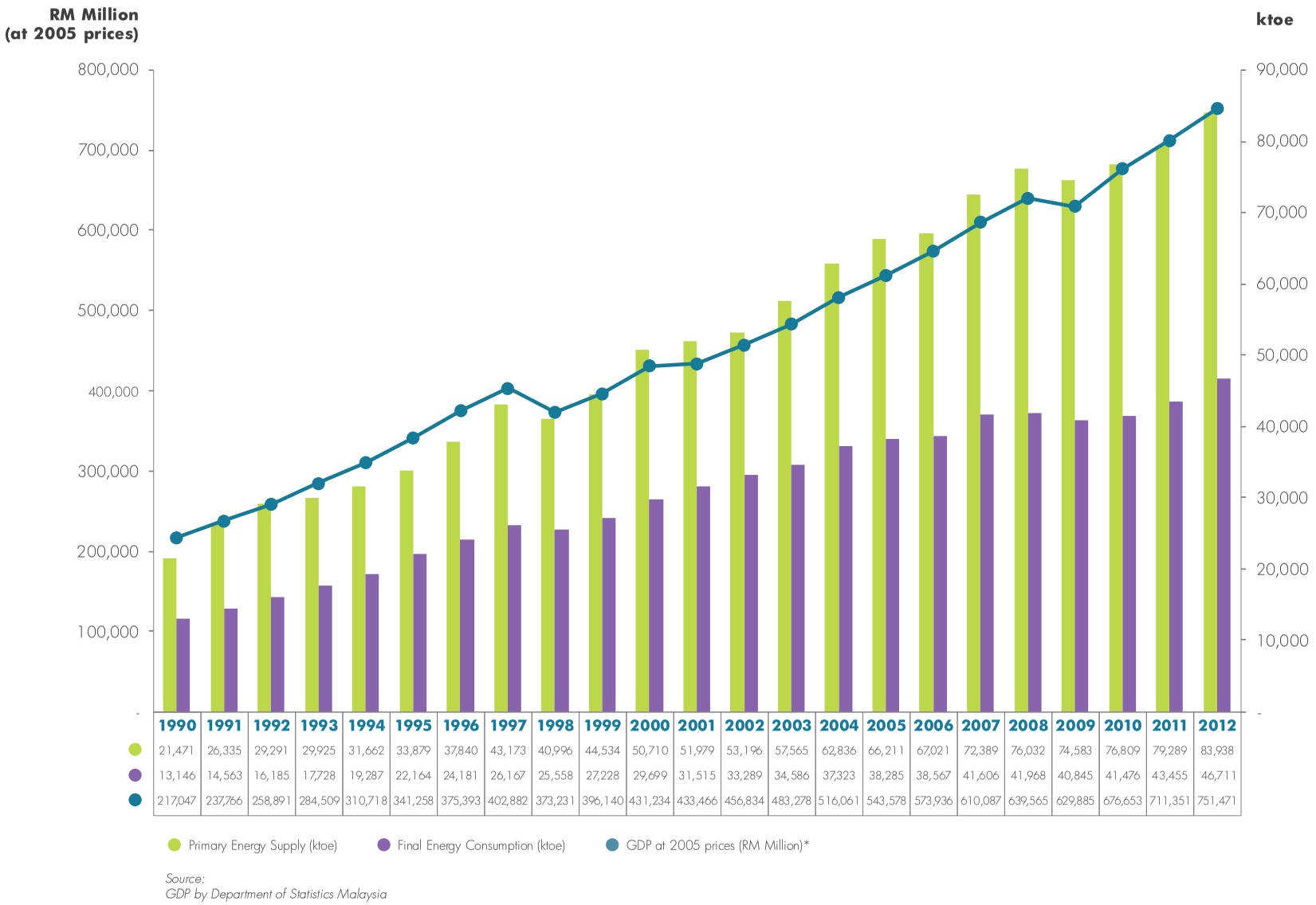
PENINSULAR MALAYSIA	2005	2006	2007	2008	2009	2010	2011	2012
GDP at 2005 prices (RM million)*	453,451	479,450	509,486	534,981	524,726	567,605	597,866	635,163
Population ('000 people)**	21,075	21,370	21,662	21,951	22,241	22,656	23,132	23,429
Final Energy Demand (ktoe)	32,195	34,390	37,921	38,530	34,521	35,593	35,968	36,683
Electricity Consumption (ktoe)	6,366	6,669	7,030	7,307	7,567	8,145	8,427	8,791
Electricity Consumption (GWh)	73,987	77,504	81,710	84,924	87,950	94,666	97,939	102,174
Per Capita								
GDP at 2005 prices (RM million)*	21,516	22,436	23,520	24,371	23,593	25,053	25,846	27,110
Final Energy Consumption (toe)	1.528	1.609	1.751	1.755	1.552	1.571	1.555	1.566
Electricity Consumption (kWh)	3,511	3,627	3,772	3,869	3,955	4,178	4,234	4,361
Energy Intensity								
Final Energy Consumption (toe/GDP at 2005 prices (RM million))	71.0	71.7	74.4	72.0	65.8	62.7	60.2	57.8
Electricity Consumption (toe/GDP at 2005 prices (RM million))	14.0	13.9	13.8	13.7	14.4	14.4	14.1	13.8
Electricity Consumption (GWh/GDP at 2005 prices (RM million))	0.163	0.162	0.160	0.159	0.168	0.167	0.164	0.161

SABAH	2005	2006	2007	2008	2009	2010	2011	2012
GDP at 2005 prices (RM million)*	32,427	34,221	35,318	39,114	40,986	42,101	42,664	44,434
Population ('000 people)**	3,076	3,099	3,125	3,154	3,184	3,207	3,316	3,359
Final Energy Consumption (ktoe)	2,806	2,587	2,879	3,068	3,046	2,758	3,466	4,671
Electricity Consumption (ktoe)	238	255	285	299	329	355	368	425
Electricity Consumption (GWh)	2,766	2,969	3,317	3,474	3,818	4,127	4,275	4,943
Per Capita								
GDP at 2005 prices (RM million)*	10,543	11,043	11,301	12,401	12,873	13,129	12,865	13,228
Final Energy Consumption (toe)	0.912	0.835	0.921	0.973	0.957	0.860	1.045	1.390
Electricity Consumption (kWh)	899	958	1,061	1,102	1,199	1,287	1,289	1,471
Energy Intensity								
Final Energy Consumption (toe/GDP at 2005 prices (RM million))	86.5	75.6	81.5	78.4	74.3	65.5	81.2	105.1
Electricity Consumption (toe/GDP at 2005 prices (RM million))	7.3	7.5	8.1	7.6	8.0	8.4	8.6	9.6
Electricity Consumption (GWh/GDP at 2005 prices (RM million))	0.085	0.087	0.094	0.089	0.093	0.098	0.100	0.111

SARAWAK	2005	2006	2007	2008	2009	2010	2011	2012
GDP at 2005 prices (RM million)*	57,700	60,265	65,283	65,470	64,173	66,947	70,821	71,874
Population ('000 people)**	2,327	2,363	2,399	2,435	2,471	2,507	2,516	2,549
Final Energy Consumption (ktoe)	3,274	3,330	3,461	3,302	3,277	3,125	4,086	5,358
Electricity Consumption (ktoe)	339	348	368	380	391	493	445	795
Electricity Consumption (GWh)	3,940	4,045	4,277	4,416	4,544	5,730	5,172	9,237
Per Capita								
GDP at 2005 prices (RM million)*	24,801	25,507	27,213	26,887	25,972	26,709	28,146	28,202
Final Energy Consumption (toe)	1.407	1.409	1.443	1.356	1.326	1.247	1.624	2.102
Electricity Consumption (kWh)	1,694	1,712	1,783	1,814	1,839	2,286	2,055	3,624
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
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
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

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

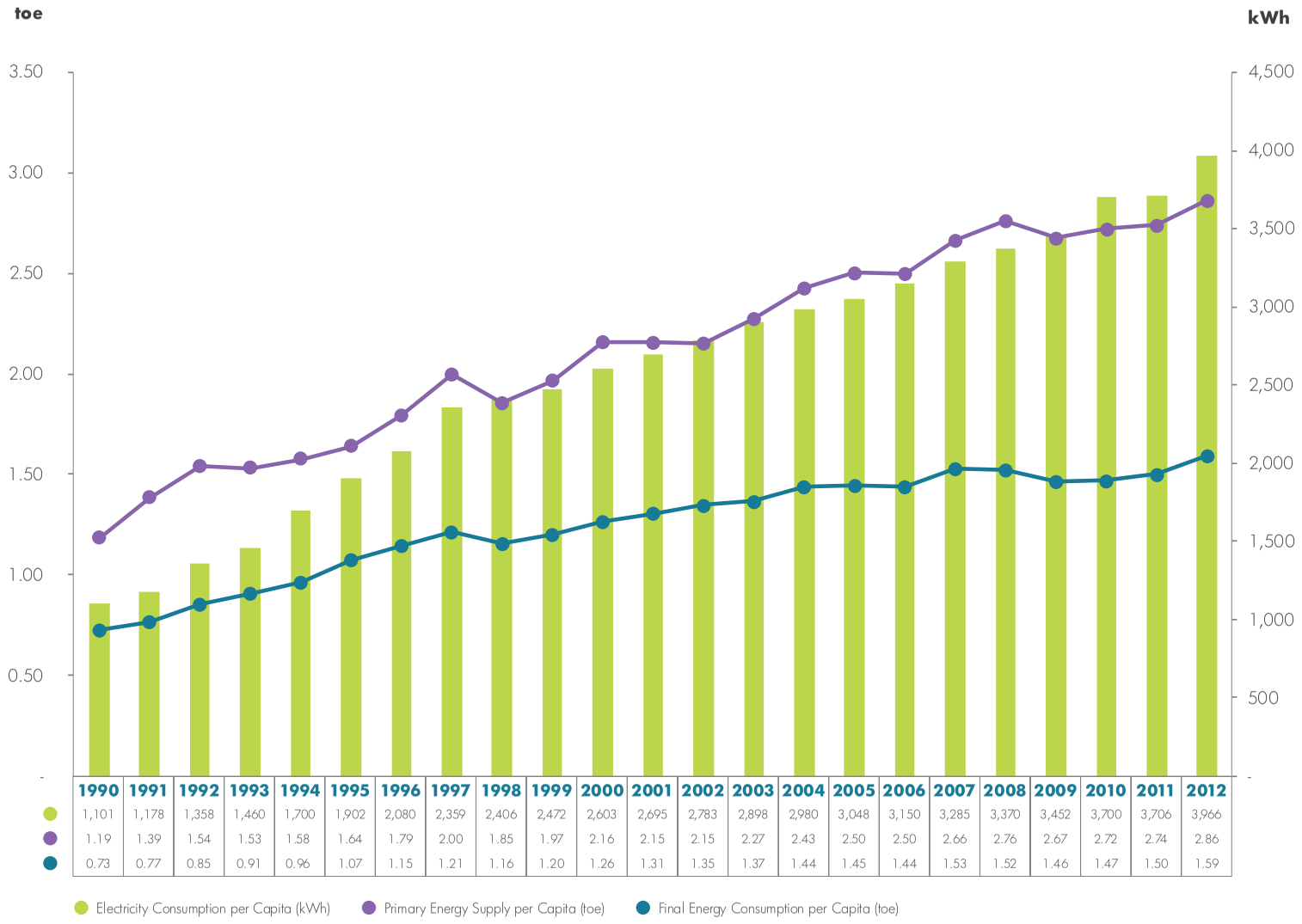
FIGURE 1: TRENDS IN GDP, PRIMARY ENERGY SUPPLY AND FINAL ENERGY CONSUMPTION



	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
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
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
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	711,351	751,471

Source:
GDP by Department of Statistics Malaysia

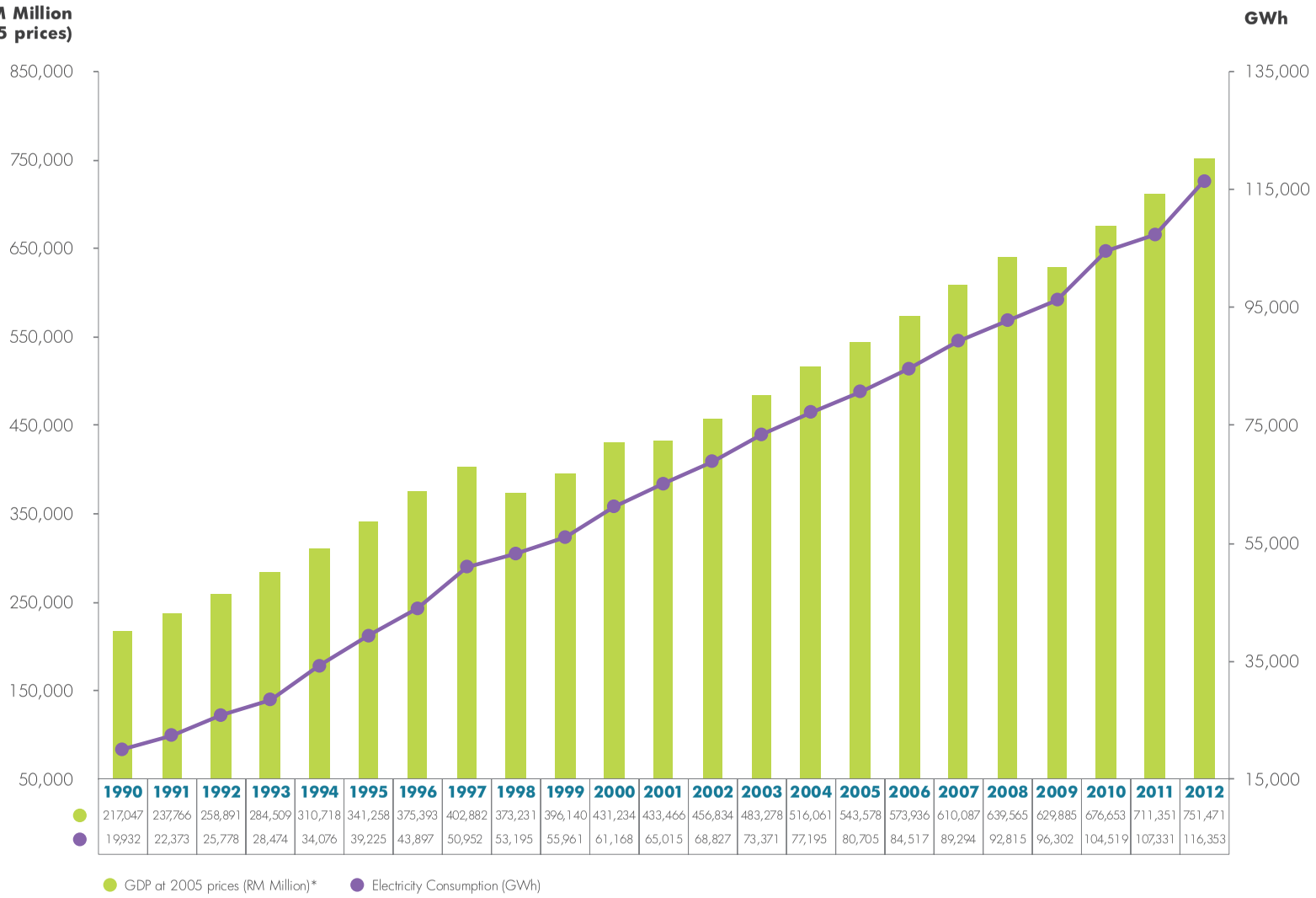
FIGURE 2: PRIMARY ENERGY SUPPLY, ELECTRICITY CONSUMPTION AND FINAL ENERGY CONSUMPTION PER CAPITA



	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
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
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	2.86
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	1.59

Source:
Population by Department of Statistics Malaysia

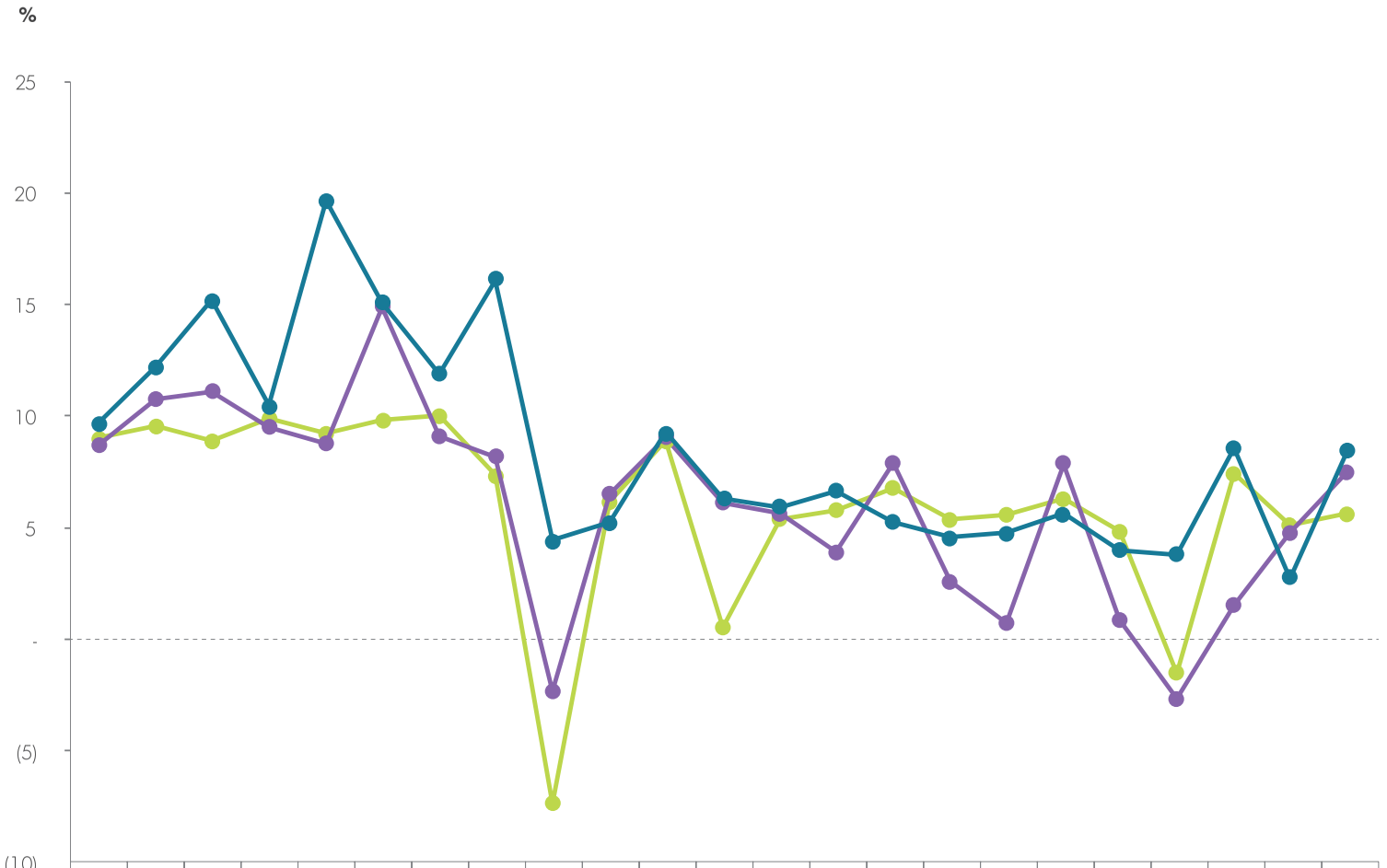
FIGURE 3: TRENDS IN GDP AND ELECTRICITY CONSUMPTION



	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
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	711,351	751,471
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	116,353

Source:
GDP by Department of Statistics Malaysia

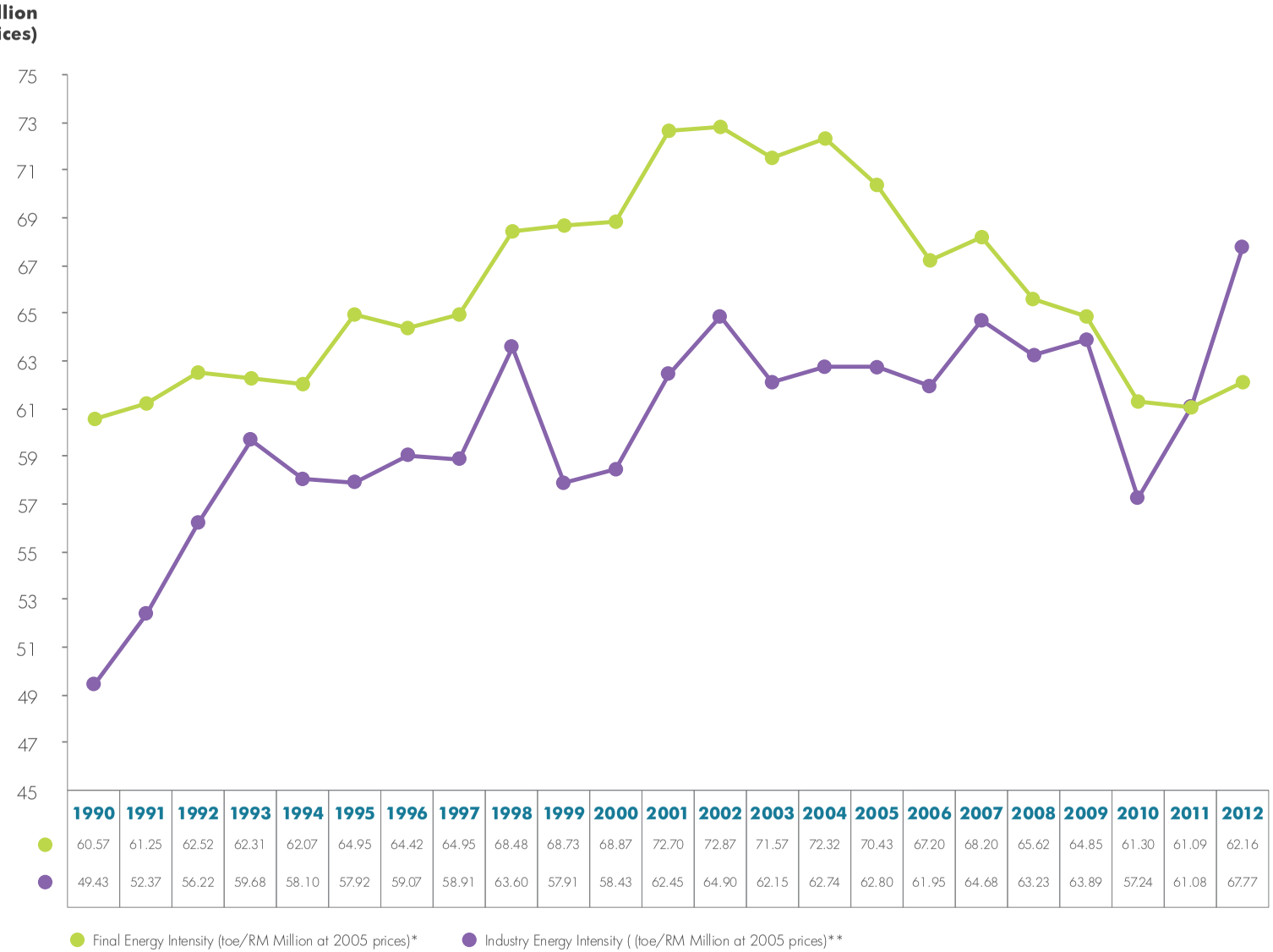
FIGURE 4: ANNUAL GROWTH RATES OF GDP, FINAL ENERGY CONSUMPTION AND ELECTRICITY CONSUMPTION



	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
GDP at 2005 prices	9.00	9.55	8.88	9.90	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	5.13	5.64
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	7.49
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	8.41

Source:
GDP by Department of Statistics Malaysia

FIGURE 5: FINAL ENERGY INTENSITY

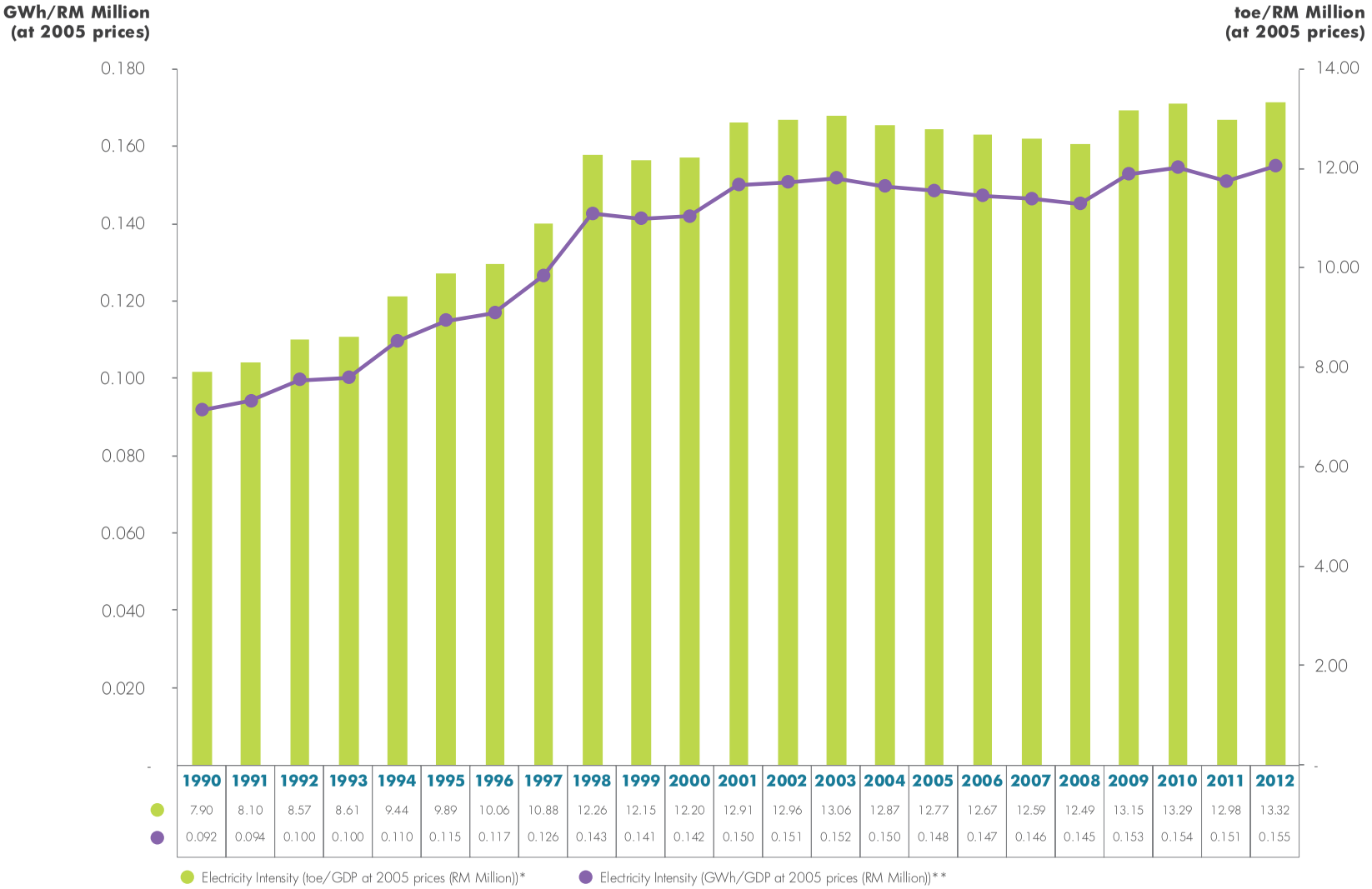


	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Final Energy Intensity (toe/RM Million at 2005 prices)*	60.57	61.25	62.52	62.31	62.07	64.95	64.42	64.95	68.48	68.73	68.87	72.70	72.87	71.57	72.32	70.43	67.20	68.20	65.62	64.85	61.30	61.09	62.16
Industry Energy Intensity ((toe/RM Million at 2005 prices)**	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	61.08	67.77

Source:
GDP by Department of Statistics Malaysia

Note:
Intensity = Quantity of energy required per unit output or activity
(*) : Final Energy Consumption/GDP at 2005 prices
(**): Industry Energy Consumption/Industry GDP at 2005 prices

FIGURE 6: ELECTRICITY INTENSITY

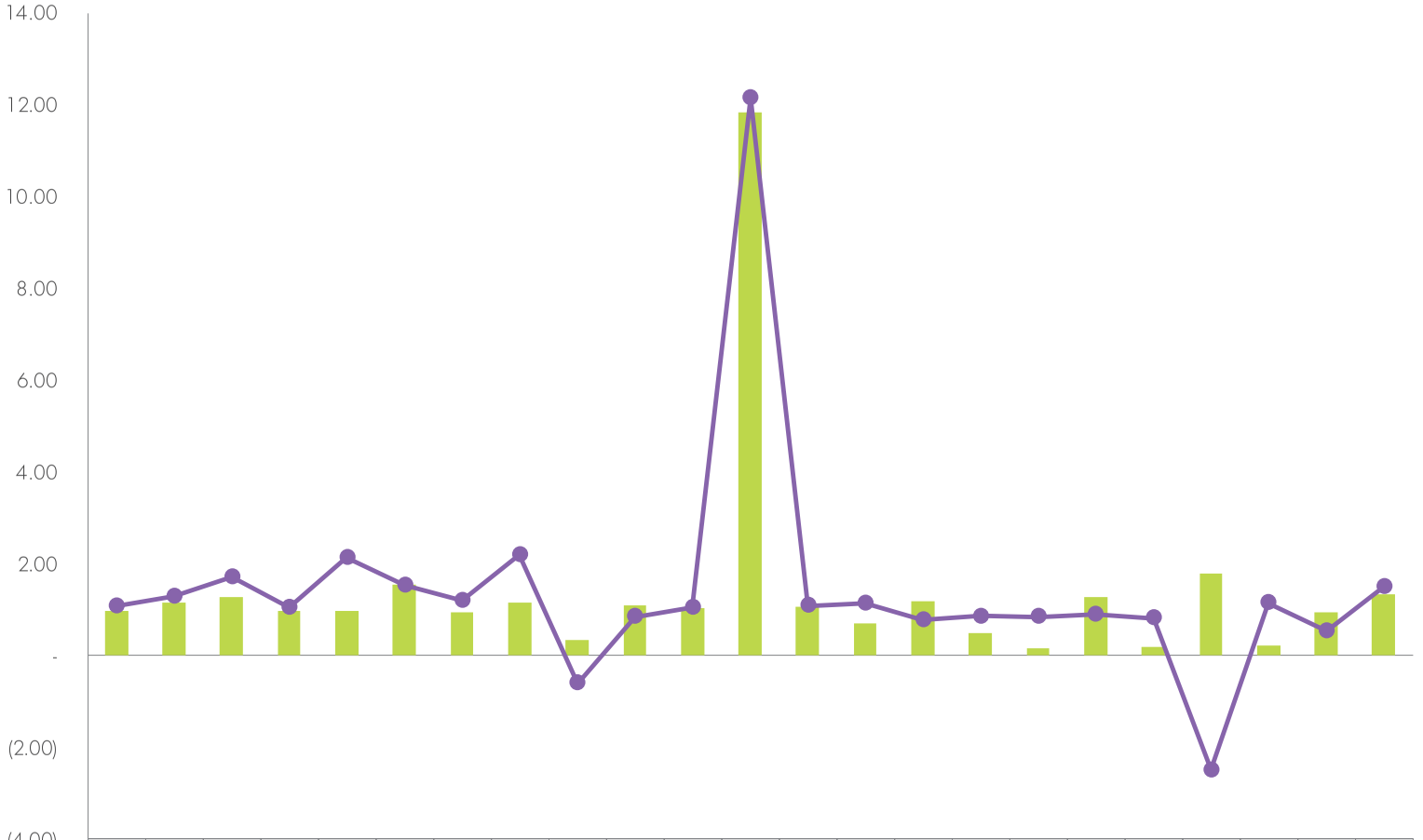


	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Electricity Intensity (toe/GDP at 2005 prices (RM Million))*	7.90	8.10	8.57	8.61	9.44	9.89	10.06	10.88	12.26	12.15	12.20	12.91	12.96	13.06	12.87	12.77	12.67	12.59	12.49	13.15	13.29	12.98	13.32
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

Source:
i) GDP by Department of Statistics Malaysia
ii) TNB, SESB, SEB and IPPs

Note:
Intensity = Quantity of energy required per unit output or activity
(*) : Electricity Intensity (toe/RM Million GDP at 2005 prices)
(**): 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
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	0.93	1.33
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

Note:

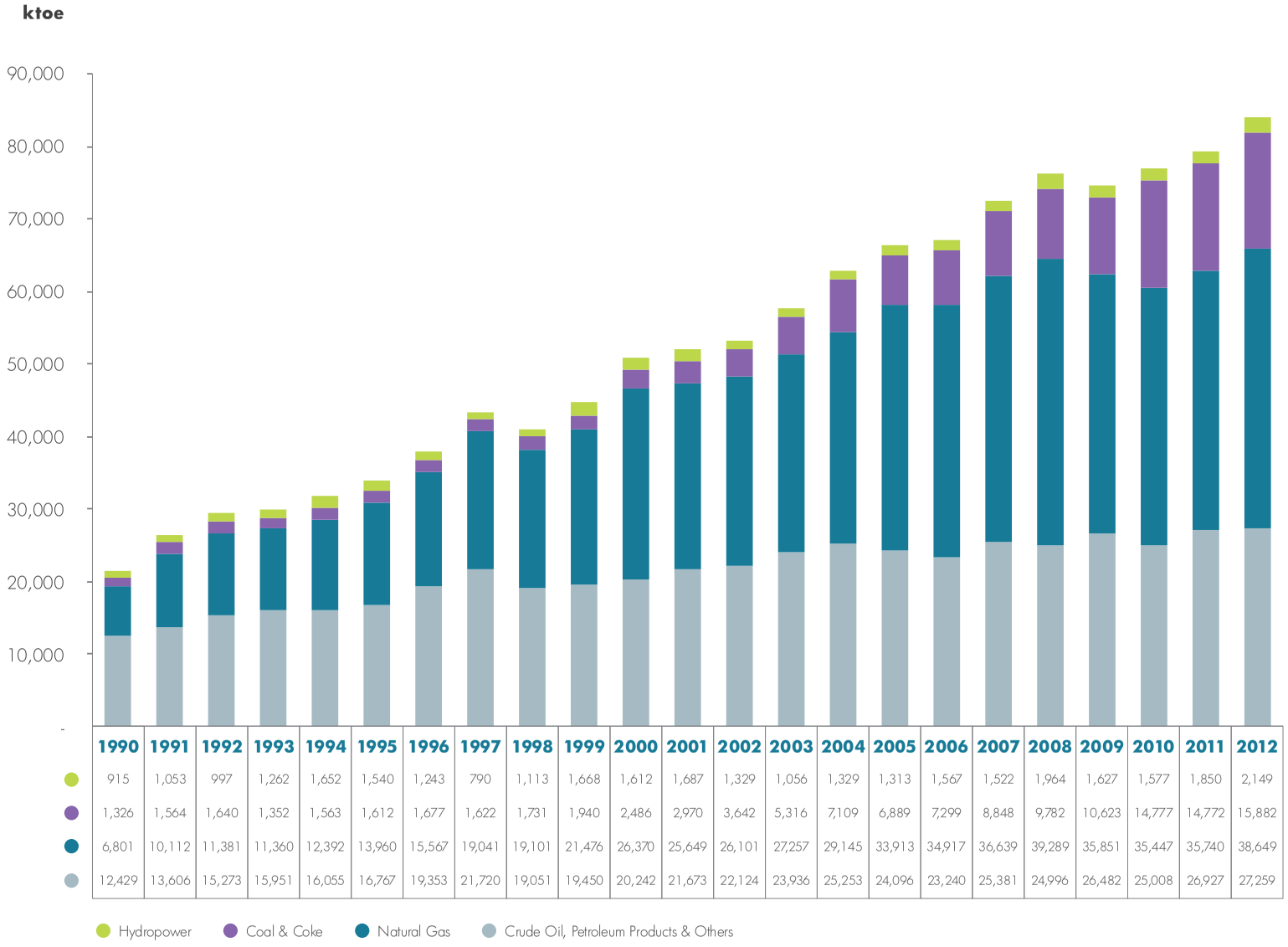
1) Final Energy Elasticity = Ratio between growths of energy consumption with economic growth

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

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

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

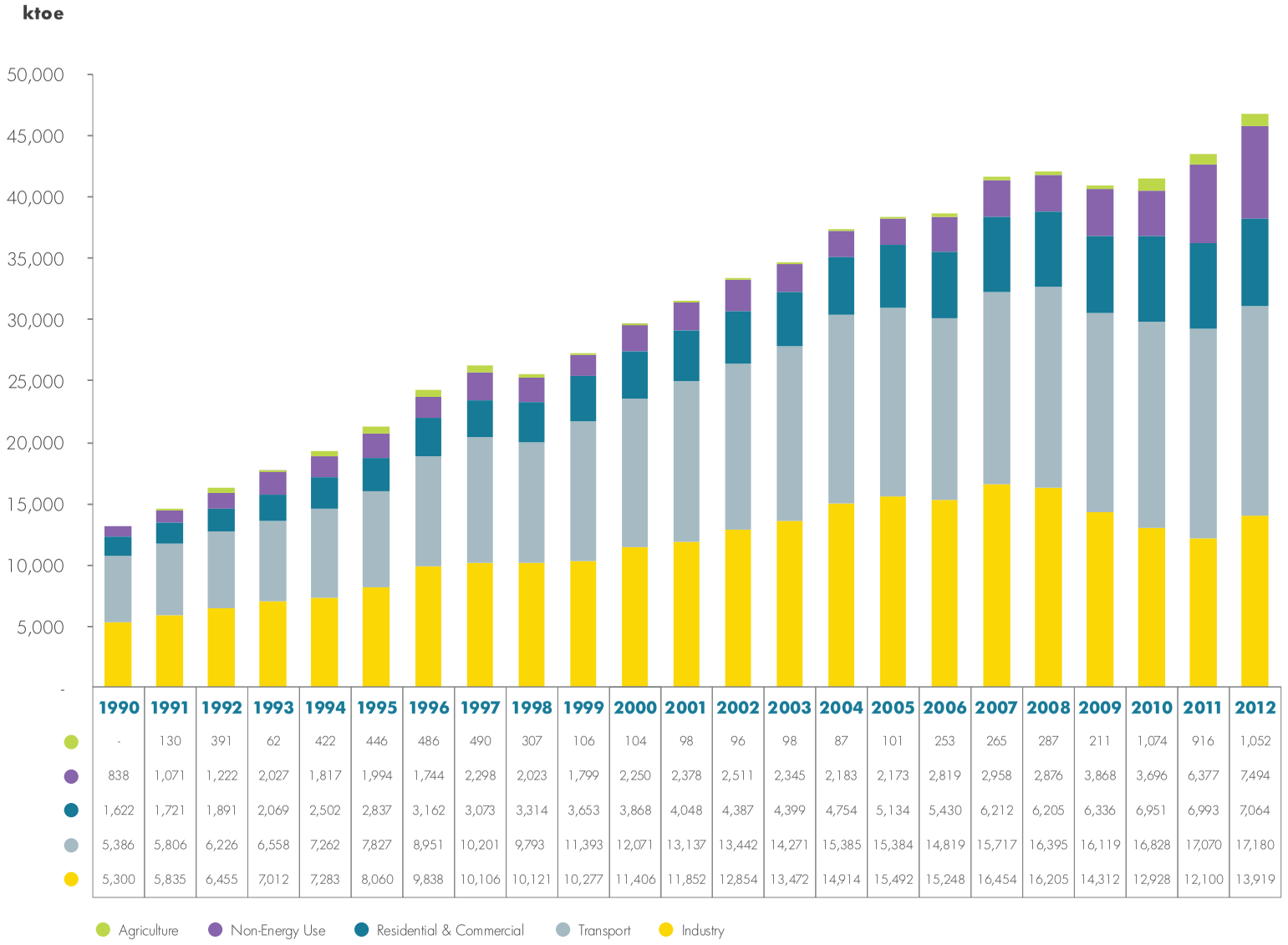
FIGURE 8: PRIMARY ENERGY SUPPLY



	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
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	2,149
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
Natural 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	38,649
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	27,259

Source:
Oil and gas companies, Power Utilities, IPPs, cement, iron & steel manufacturers

FIGURE 9: FINAL ENERGY CONSUMPTION BY SECTORS

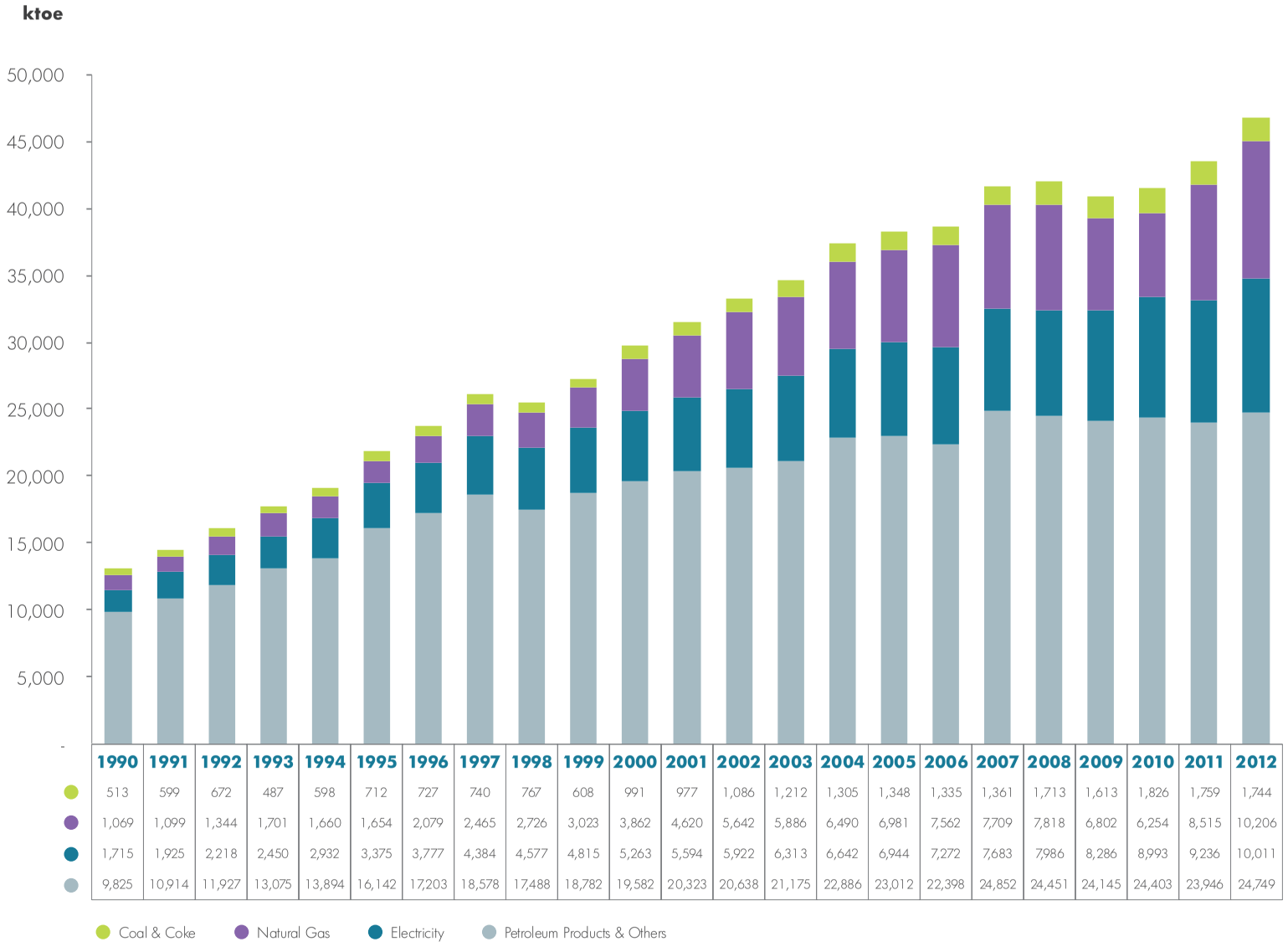


	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Agriculture	-	130	391	62	422	446	486	490	307	106	104	98	96	98	87	101	253	265	287	211	1,074	916	1,052
Non-Energy Use	838	1,071	1,222	2,027	1,817	1,994	1,744	2,298	2,023	1,799	2,250	2,378	2,511	2,345	2,183	2,173	2,819	2,958	2,876	3,868	3,696	6,377	7,494
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	7,064
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	17,180
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

Agriculture · Non-Energy Use · Residential & Commercial · Transport · Industry

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

FIGURE 10: FINAL ENERGY CONSUMPTION BY TYPE OF FUELS

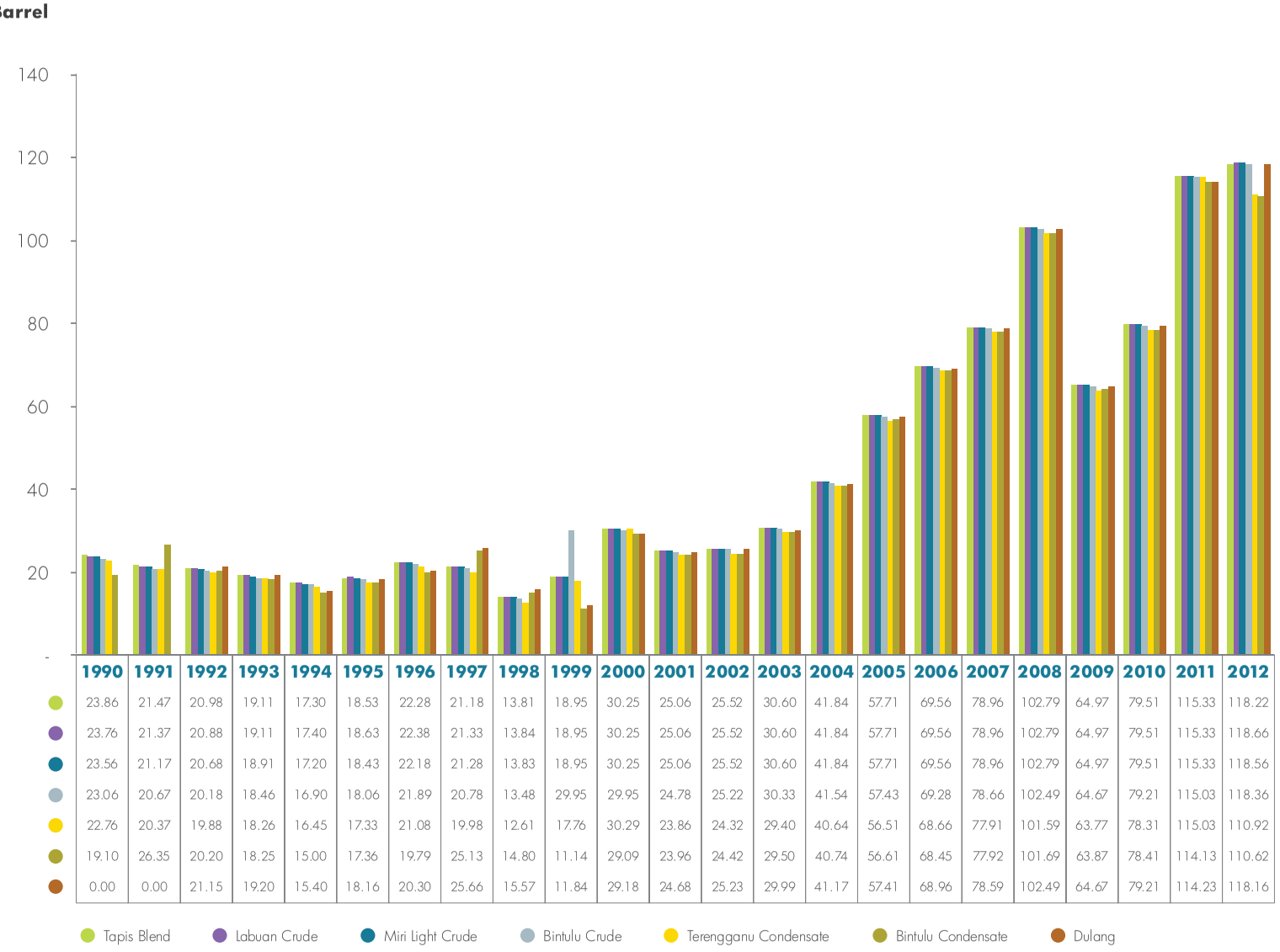


	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Coal & Coke	513	599	672	487	598	712	727	740	767	608	991	977	1,086	1,212	1,305	1,348	1,335	1,361	1,713	1,613	1,826	1,759	1,744
Natural Gas	1,069	1,099	1,344	1,701	1,660	1,654	2,079	2,465	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
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
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	24,749

Coal & Coke Natural Gas Electricity Petroleum Products & Others

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

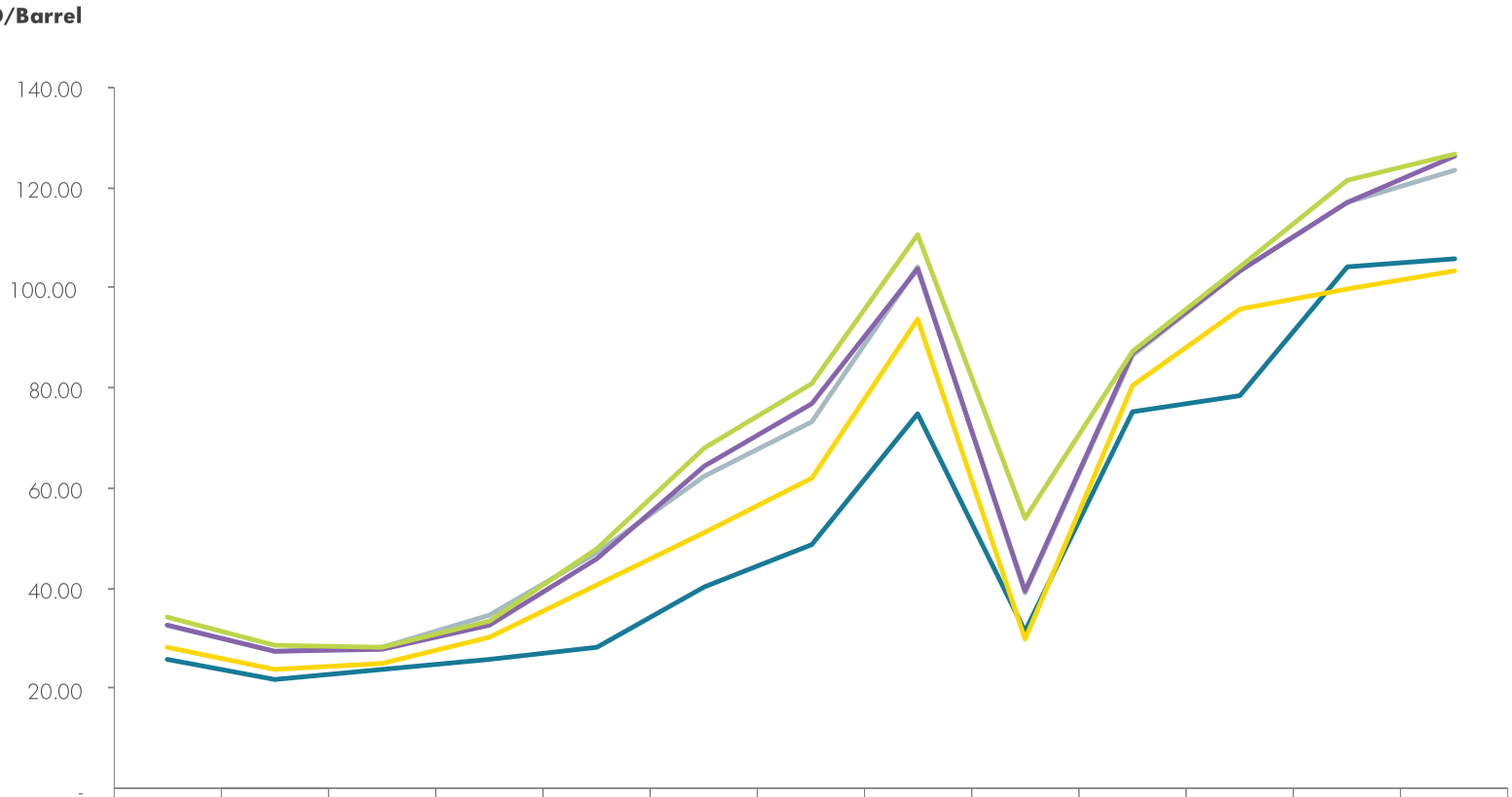
FIGURE 11: OFFICIAL SELLING PRICES OF MALAYSIAN CRUDE OIL



	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
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
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
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
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
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
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
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

Source:
PETRONAS

FIGURE 12: EX-SINGAPORE PRICES OF MAJOR PETROLEUM PRODUCTS



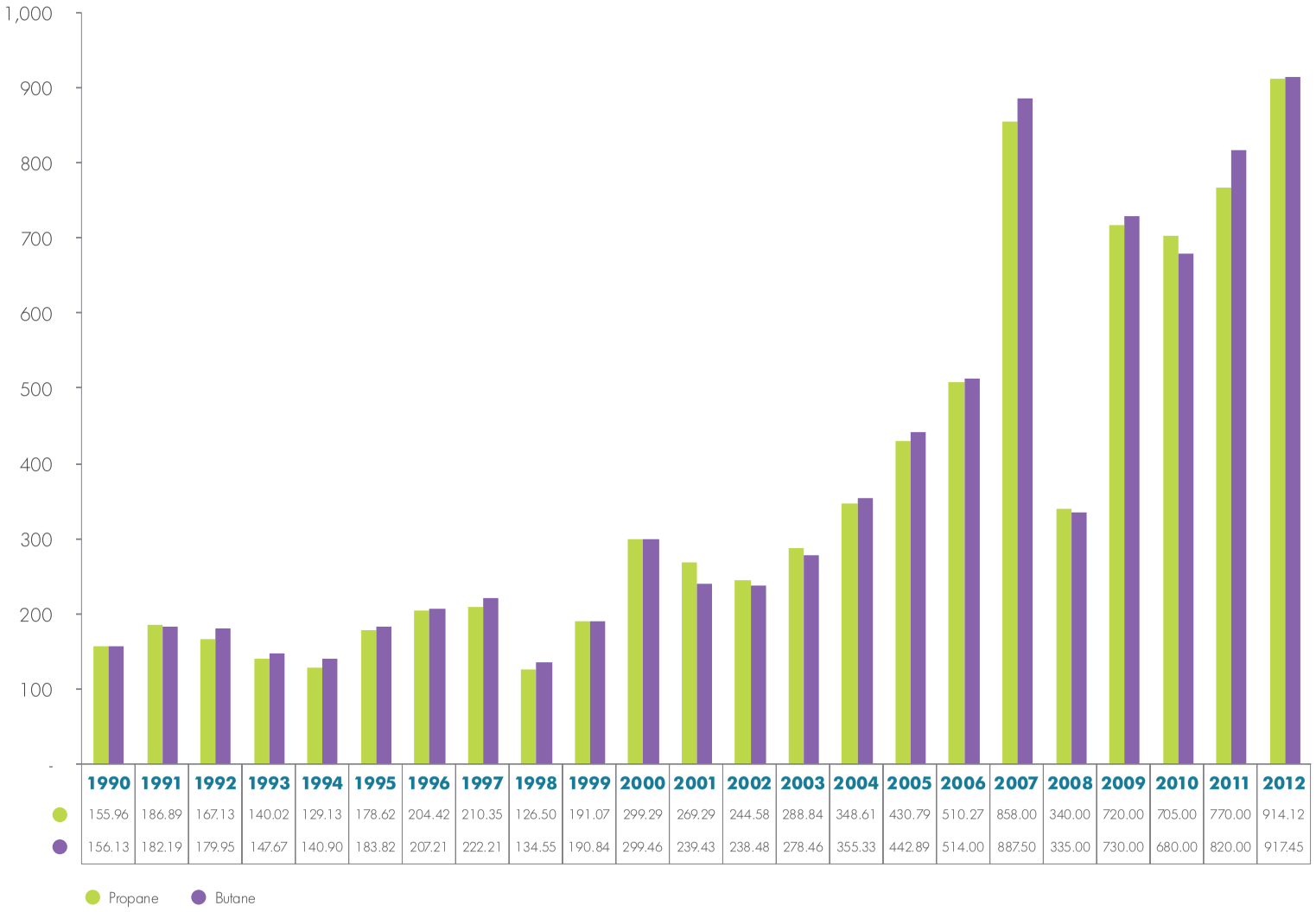
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Motor Petrol (ULG 95)	32.64	27.43	28.04	34.69	47.23	62.38	73.20	104.05	39.25	86.55	103.15	117.00	123.42
Diesel	32.48	27.32	27.55	32.46	45.92	64.35	76.93	103.74	39.32	86.60	103.17	117.10	126.15
Fuel Oil	25.82	21.78	23.63	25.72	28.15	40.32	48.84	74.60	31.40	75.30	78.40	104.10	105.72
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
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

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



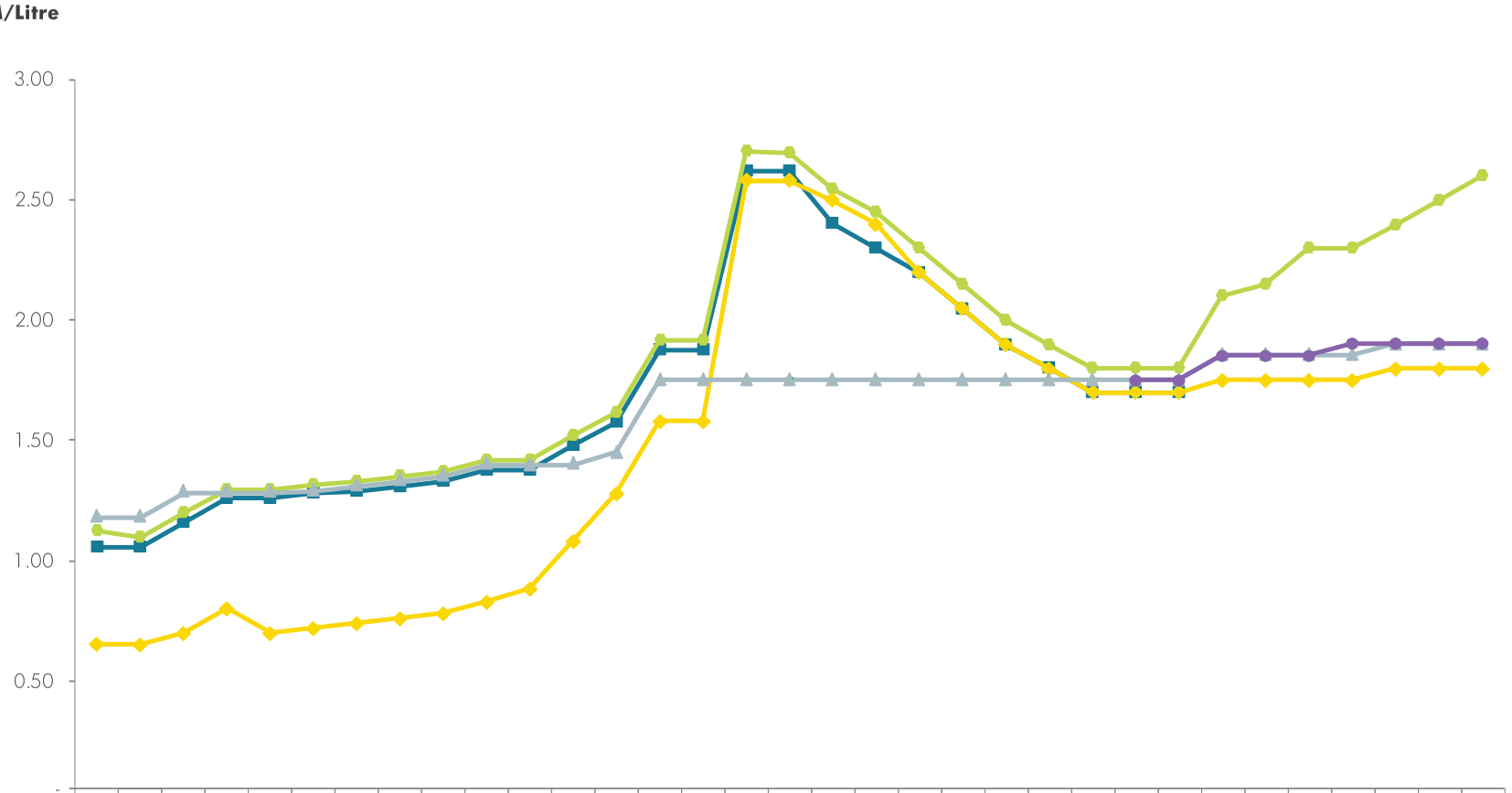
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Propane	155.96	186.89	167.13	140.02	129.13	178.62	204.42	210.35	126.50	191.07	299.29	269.29	244.58	288.84	348.61	430.79	510.27	858.00	340.00	720.00	705.00	770.00	914.12
Butane	156.13	182.19	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

Propane Butane

Source:
Platts

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

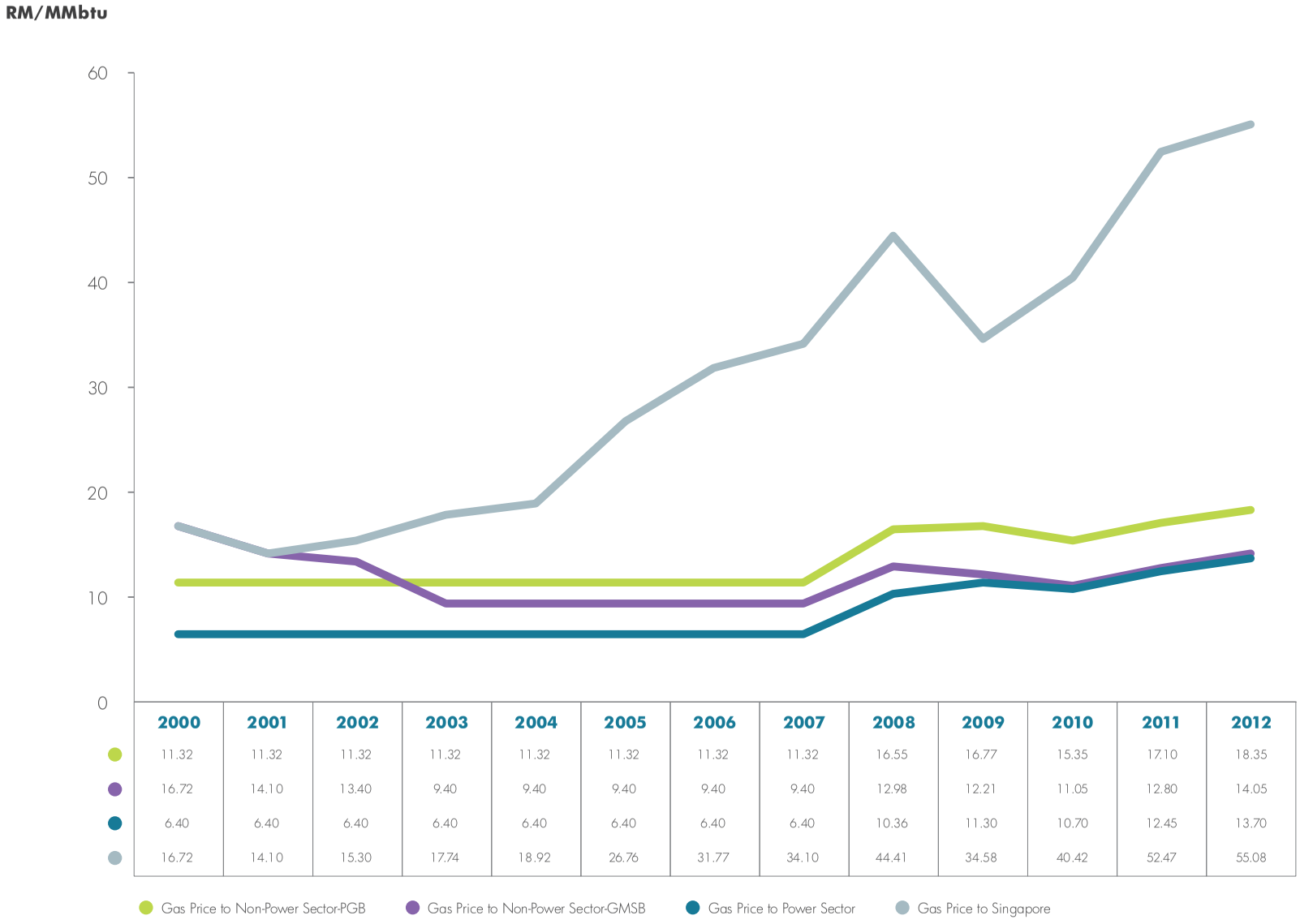
FIGURE 14: RETAIL FUEL PRICES IN MALAYSIA



	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
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
RON95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.75	1.75	1.85	1.85	1.85	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
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

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

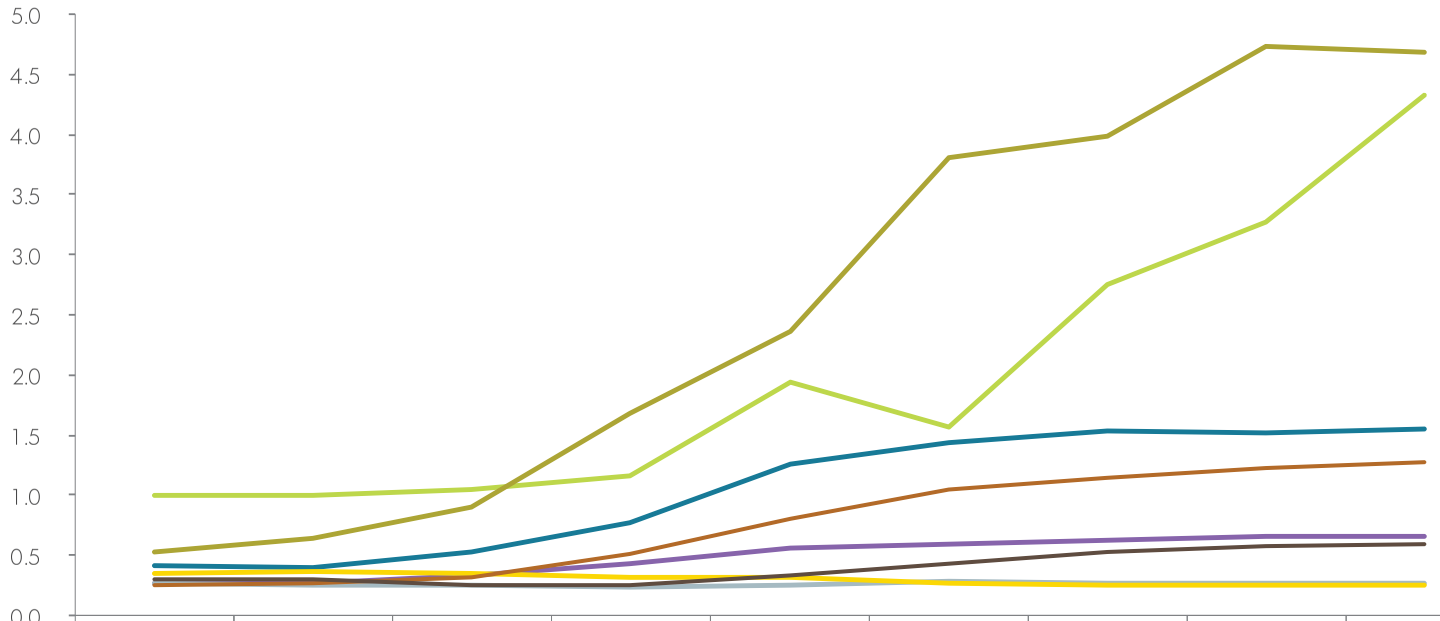
FIGURE 15: AVERAGE ANNUAL NATURAL GAS PRICE IN MALAYSIA



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
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
Gas Price to Non-Power Sector-GMSB	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
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
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

FIGURE 16: FINAL ENERGY CONSUMPTION PER CAPITA IN ASEAN

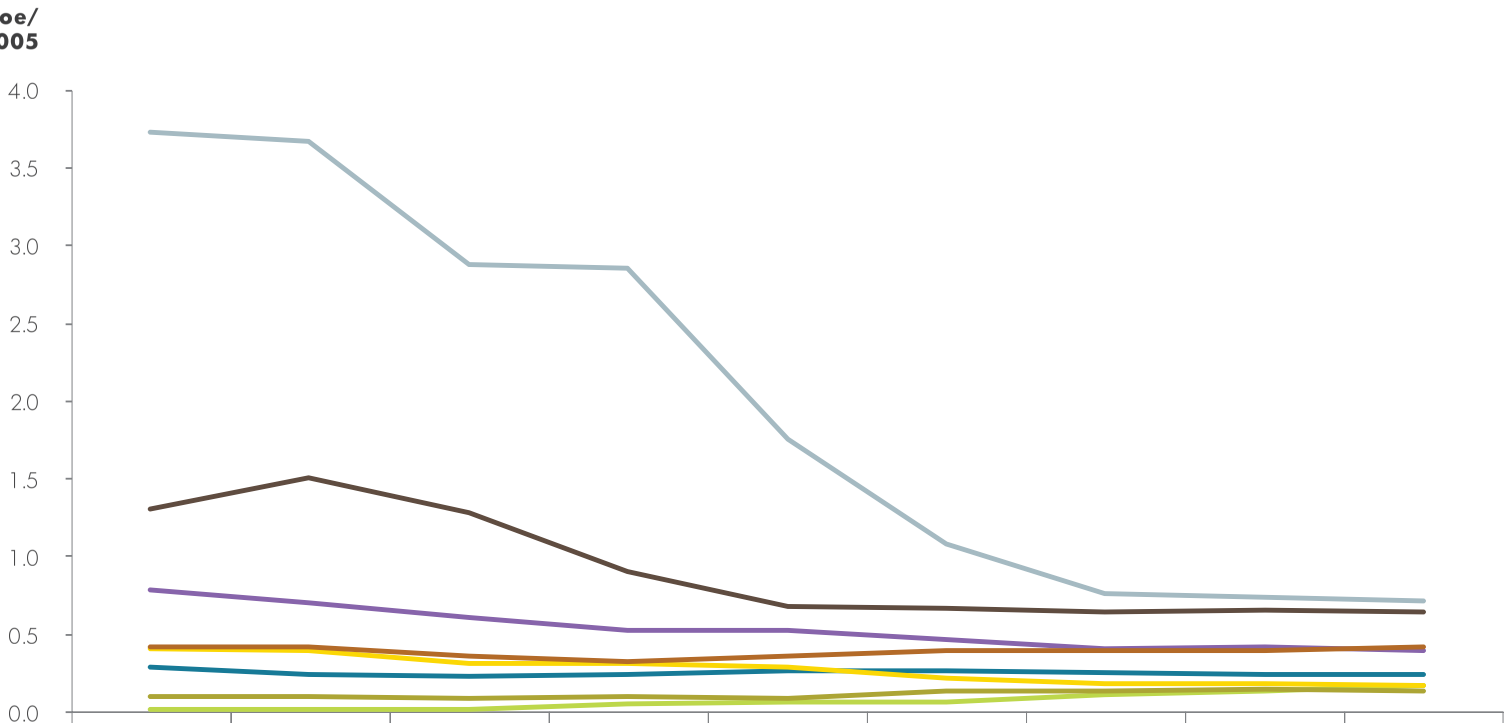
Mtoe/RM Million



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

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

FIGURE 17: FINAL ENERGY INTENSITY IN ASEAN



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

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

OIL

TABLE 3: PRODUCTION AND RESERVES OF OIL AS OF 1ST JANUARY 2012

	RESERVES (BILLION BARRELS)			PRODUCTION (THOUSAND BARRELS PER DAY)		
REGION	**CRUDE OIL**	**CONDENSATES**	**TOTAL**	**CRUDE OIL**	**CONDENSATES**	**TOTAL**
Peninsular Malaysia	2.043	0.370	2.413	218.8	43.6	262.4
Sabah	1.835	0.106	1.941	140.8	-	140.8
Sarawak	1.081	0.519	1.600	111.7	69.9	181.6
TOTAL	**4.959**	**0.995**	**5.954**	**471.3**	**113.5**	**584.8**

Source:
PETRONAS

TABLE 4: REFINERY LICENSED CAPACITY, 2012

	LOCATION	**START-UP DATE**	**THOUSAND BARRELS/DAY**
SHELL Refining Co. (FOM) Bhd	Port Dickson, Negeri Sembilan	1963	155
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**

Source:
PETRON, PETRONAS & SHELL

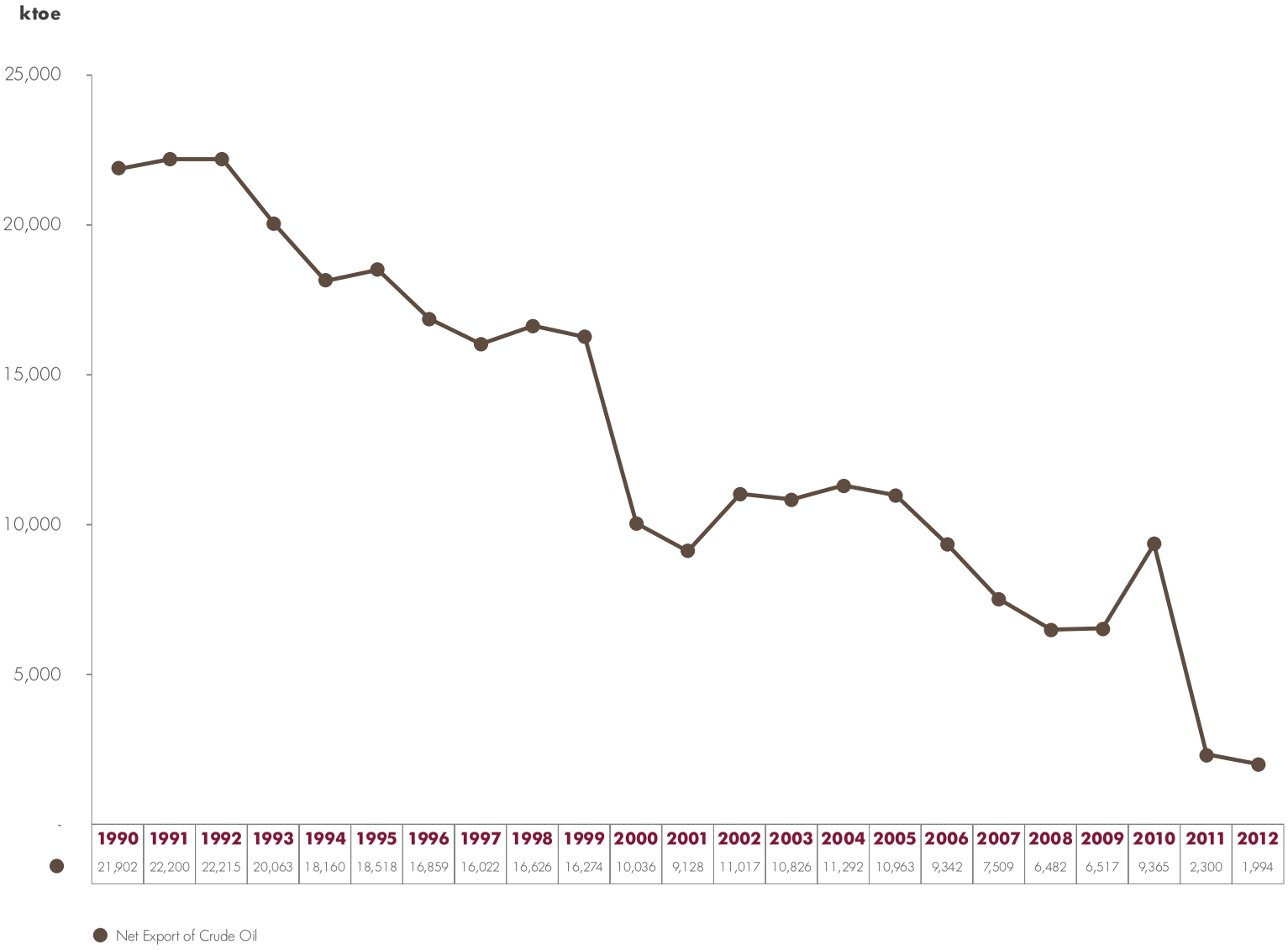
Note
(*): Excludes condensate splitter of 74,300 bpd

TABLE 5: BREAKDOWN ON SALES OF PETROLEUM PRODUCTS IN THOUSAND BARRELS, 2012

PETROLEUM PRODUCTS	**PENINSULAR MALAYSIA**	**SABAH**	**SARAWAK**	**TOTAL**
Petrol	77,118	5,478	6,282	**88,879**
Diesel	46,909	10,942	12,802	**70,653**
Fuel Oil	3,913	235	962	**5,110**
Kerosene	124	71	76	**272**
LPG	13,033	1,223	1,208	**15,464**
ATF & AV GAS	18,713	432	168	**19,313**
Non Energy	2,854	367	578	**3,799**
TOTAL	**162,665**	**18,748**	**22,075**	**203,489**

Source:
Oil companies

FIGURE 18: NET EXPORT OF CRUDE OIL

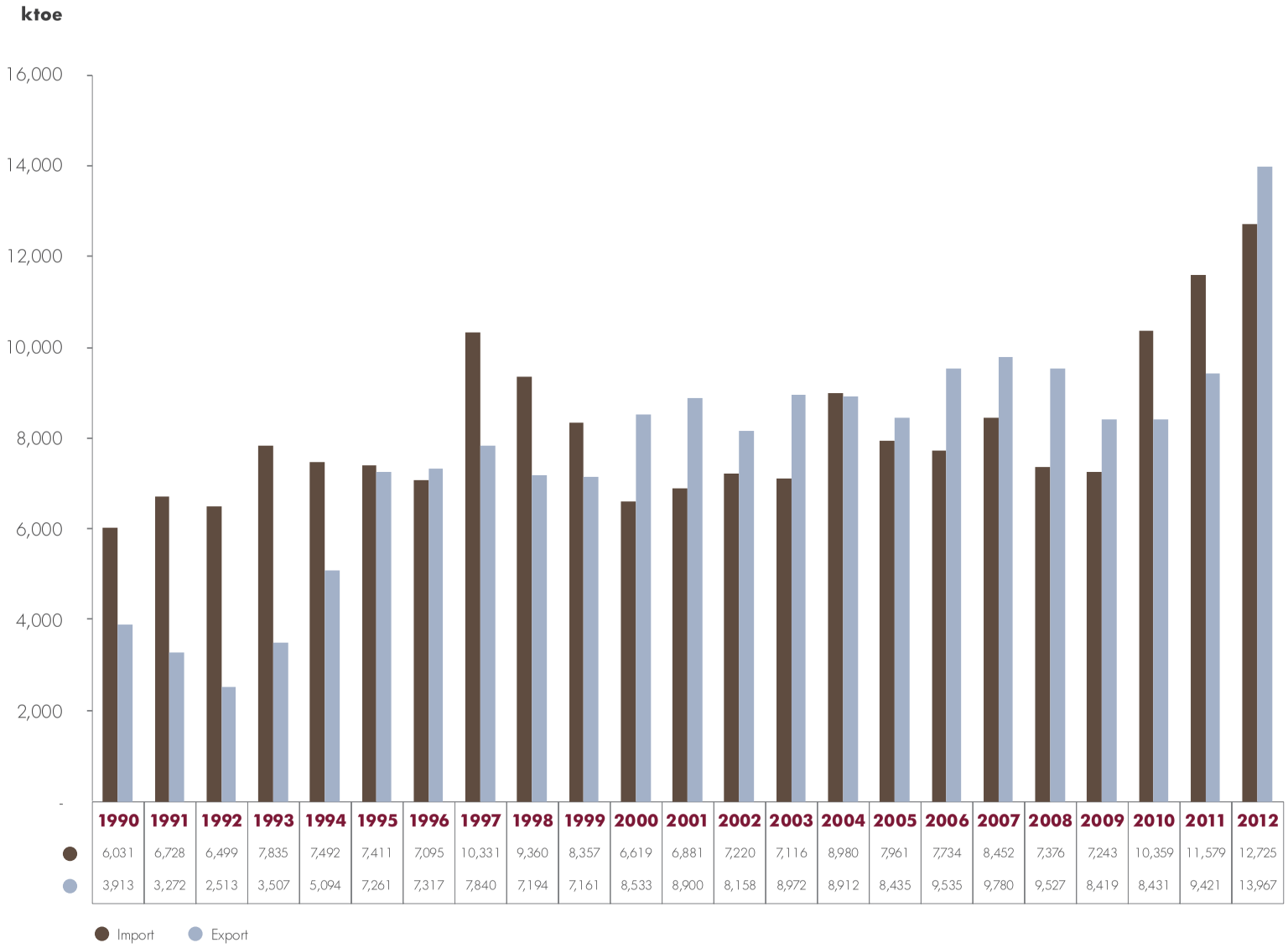


	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
●	21,902	22,200	22,215	20,063	18,160	18,518	16,859	16,022	16,626	16,274	10,036	9,128	11,017	10,826	11,292	10,963	9,342	7,509	6,482	6,517	9,365	2,300	1,994

● Net Export of Crude Oil

Source:
Department of Statistics Malaysia & Oil Companies

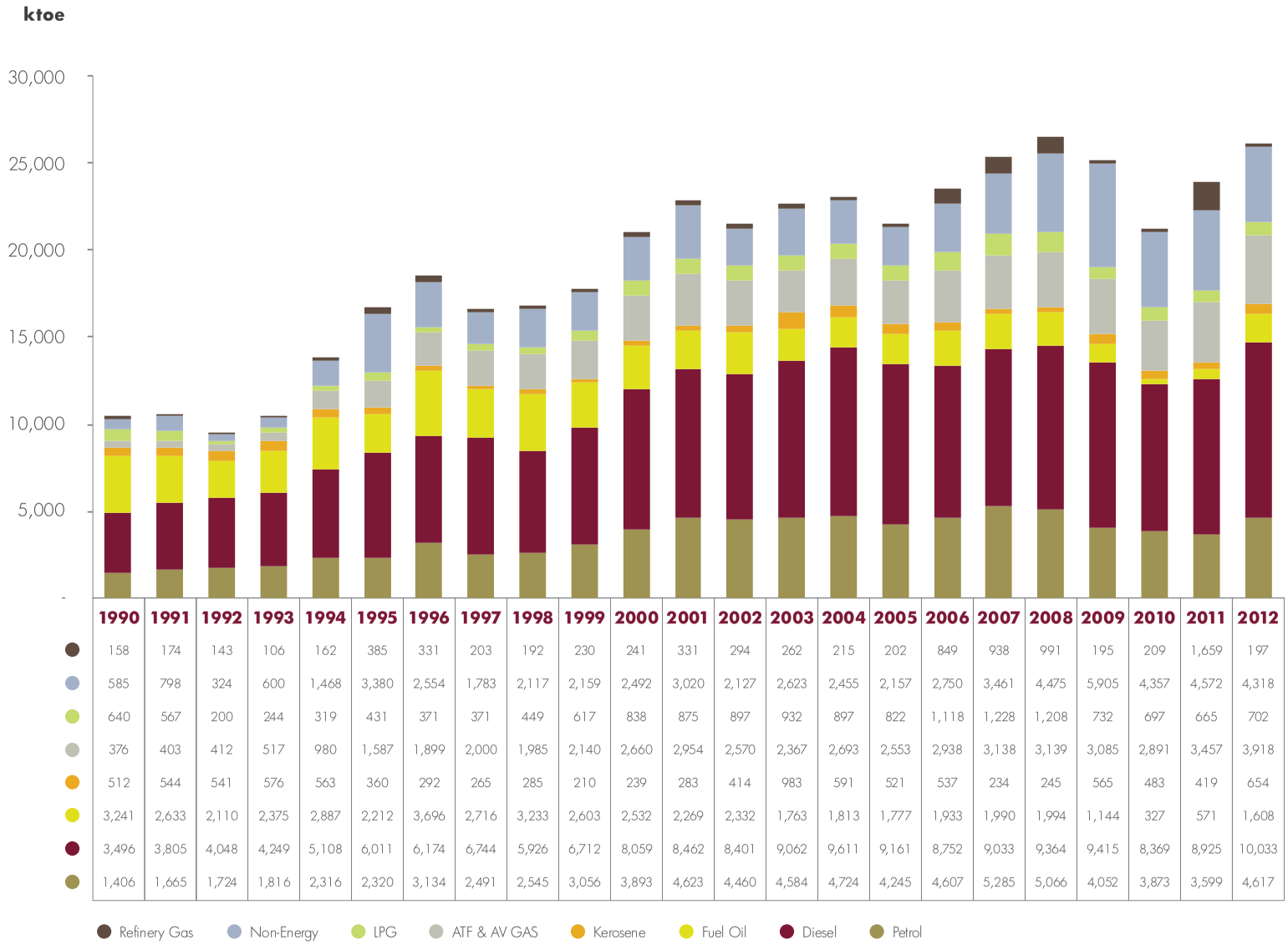
FIGURE 19: EXPORT AND IMPORT OF PETROLEUM PRODUCTS



	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Import	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
Export	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

Source:
Department of Statistics Malaysia & Oil Companies

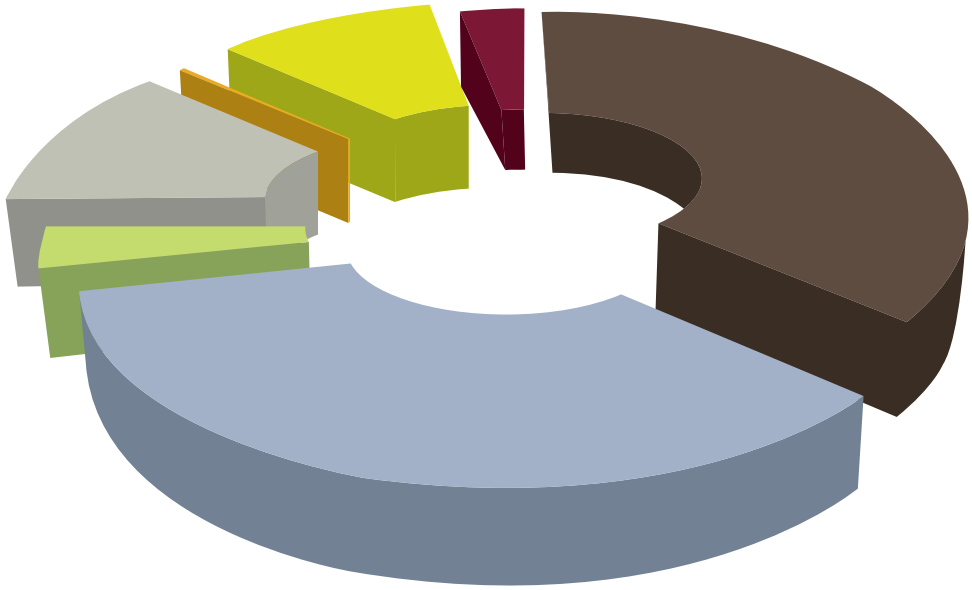
FIGURE 20: PRODUCTION OF PETROLEUM PRODUCTS FROM REFINERIES



	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
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
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
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
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
Kerosene	512	544	541	576	563	360	292	265	285	210	239	283	414	983	591	521	537	234	245	565	483	419	654
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
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
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

Source:
Oil Companies

FIGURE 21: FINAL CONSUMPTION FOR PETROLEUM PRODUCTS



TOTAL: 24,635 ktoe

PETROL **36.2%**

DIESEL **35.6%**

FUEL OIL **3.1%**

LPG **11.7%**

KEROSENE **0.2%**

ATF & AV GAS **10.2%**

NON-ENERGY **3.0%**

Source:
Oil Companies

NATURAL GAS

TABLE 6: RESERVES AND PRODUCTION OF NATURAL GAS AS OF 1ST JANUARY 2012

REGION	RESERVES			PRODUCTION
	TRILLION STANDARD CUBIC FEET (TSCF)			MILLION STANDARD CUBIC FEET PER DAY (MMSCFD)
	ASSOCIATED	NON-ASSOCIATED	TOTAL	
Peninsular Malaysia	9.594	26.144	35.738	2,119.62
Sabah	3.502	9.801	13.303	436.16
Sarawak	3.180	39.901	43.081	3,965.25
TOTAL	**16.276**	**75.846**	**92.122**	**6,521.04**

Source:
PETRONAS

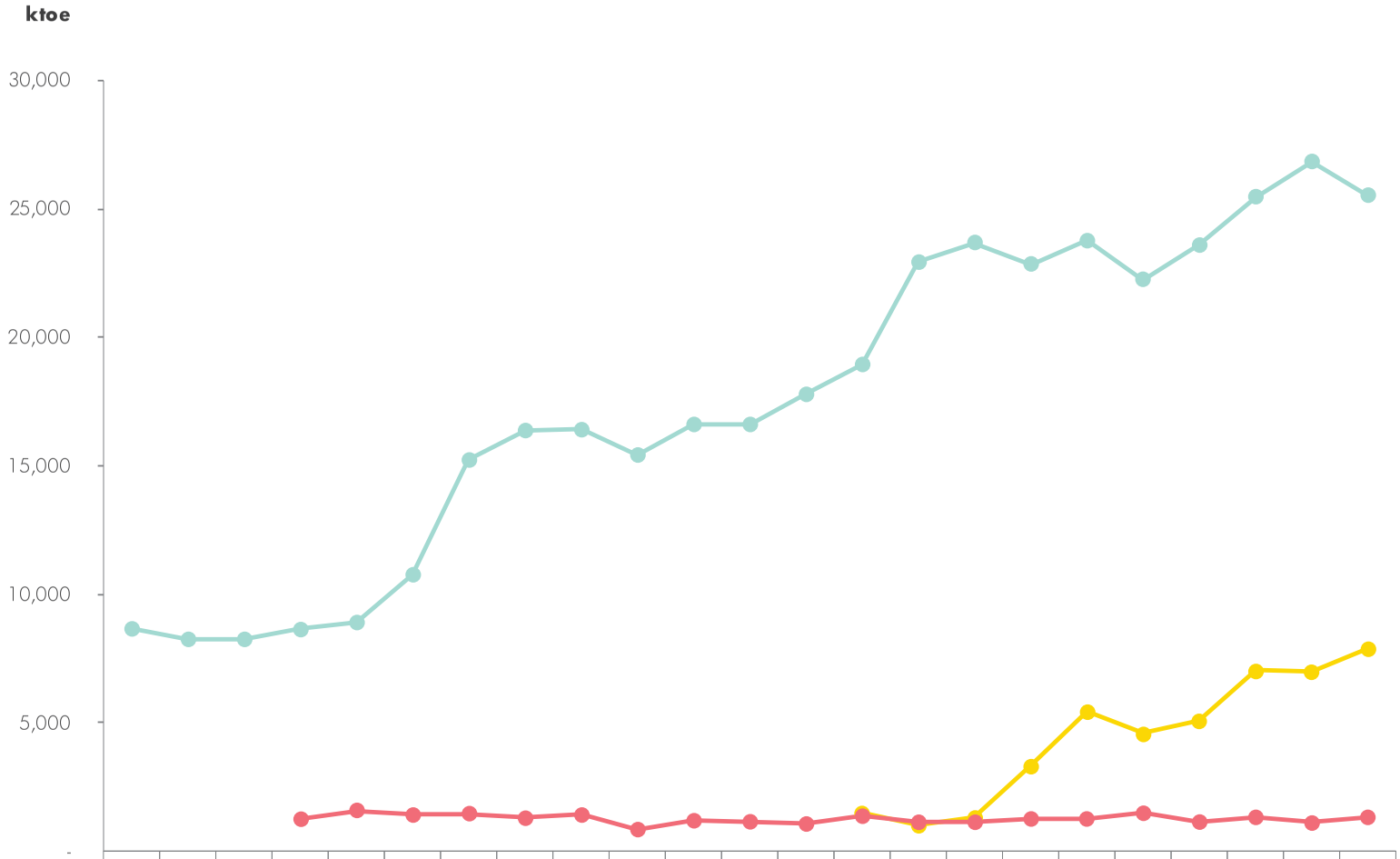
Notes (*):
Refers to the amount of gas produced/generated from associated fields
1 cubic feet = 0.028317 cubic metre
Associated Gas: Natural gas produced in association with oil
Non-Associated Gas: Natural gas produced from a gas reservoir not associated with oil

TABLE 7: CONSUMPTION OF NATURAL GAS IN MMSCF, 2012

SECTORS	PENINSULAR MALAYSIA	SABAH	SARAWAK	MALAYSIA
Residential	21	-	-	21
Commercial	858	-	-	858
Industry	167,023	5,813	877	173,713
Non-Energy	72,440	68,097	59,545	200,082
Transport	11,129	-	-	11,129
Power Stations	442,400	31,534	26,664	500,598
TOTAL	**693,871**	**105,444**	**87,086**	**886,401**

Source:
Power Utilities, IPPs, PETRONAS & gas distribution companies

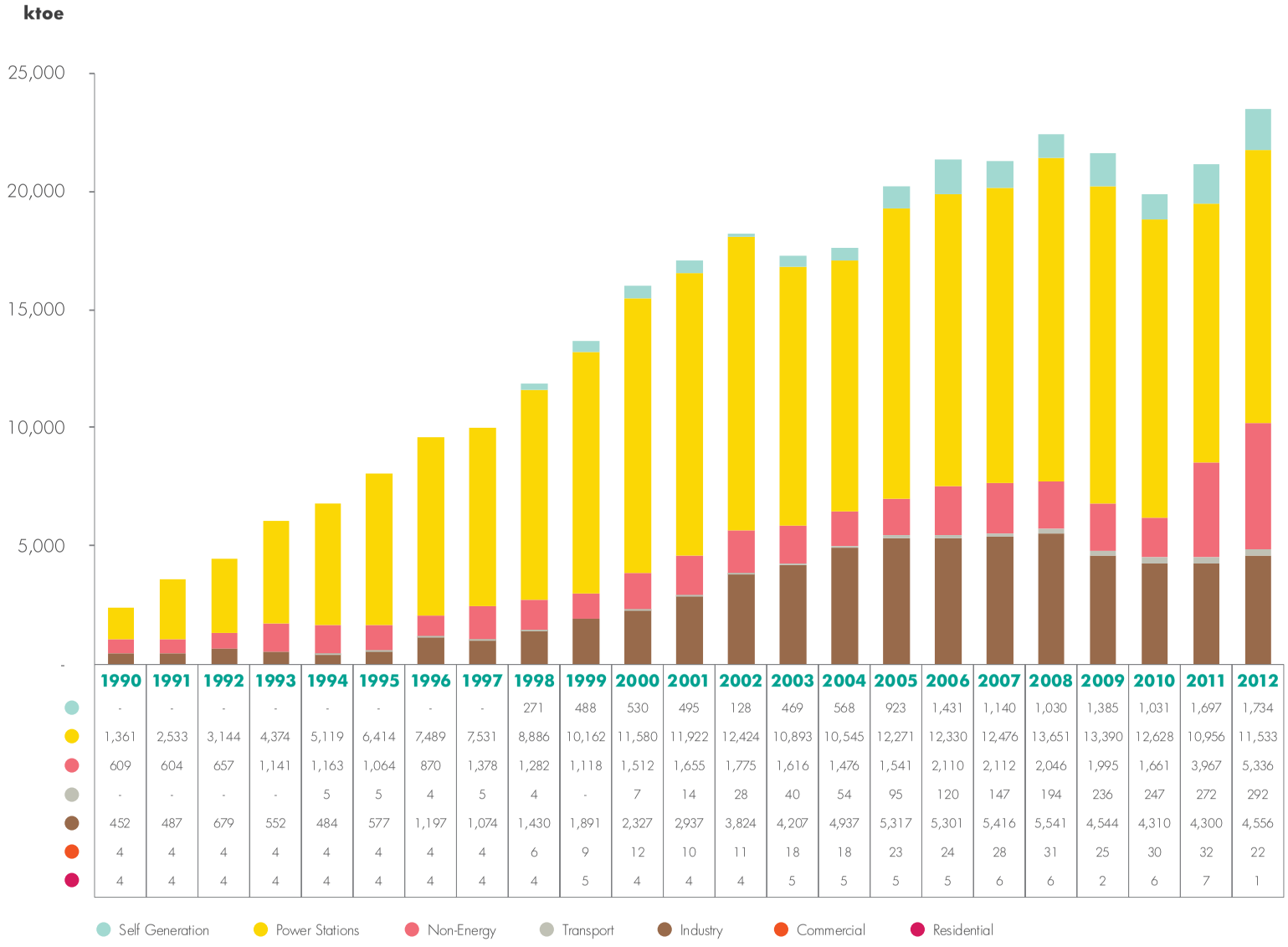
FIGURE 22: EXPORT AND IMPORT OF NATURAL GAS AND LNG



	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
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
Import Natural Gas	-	-	-	-	-	-	-	-	-	-	-	-	-	1,501	999	1,340	3,313	5,435	4,565	5,055	7,013	6,979	7,866
Export Natural Gas	-	-	1	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

Source:
Department of Statistics Malaysia, Gas Companies & Others

FIGURE 23: NATURAL GAS CONSUMPTION BY SECTORS

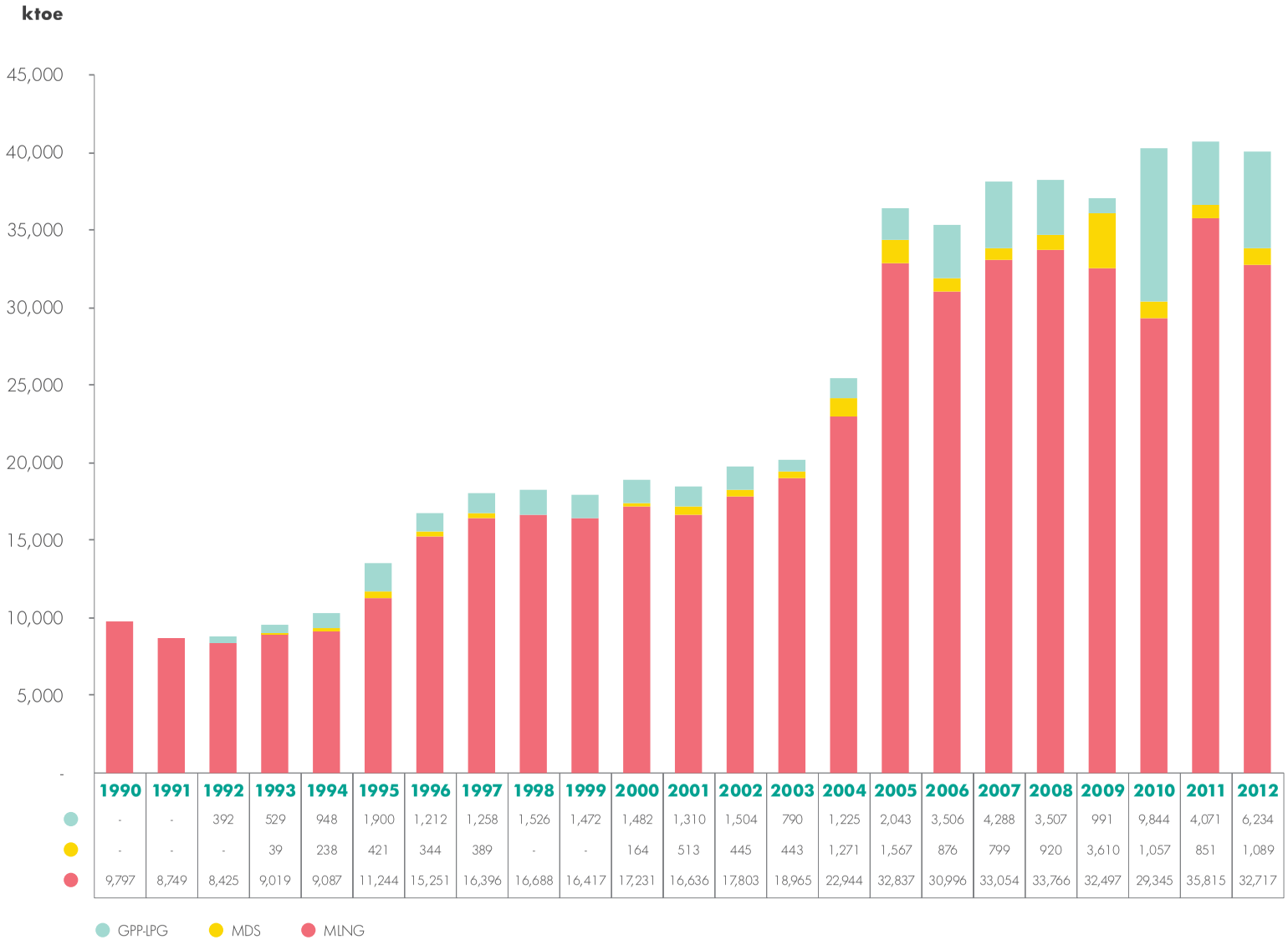


	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Self Generation	-	-	-	-	-	-	-	-	271	488	530	495	128	469	568	923	1,431	1,140	1,030	1,385	1,031	1,697	1,734
Power Stations	1,361	2,533	3,144	4,374	5,119	6,414	7,489	7,531	8,886	10,162	11,580	11,922	12,424	10,893	10,545	12,271	12,330	12,476	13,651	13,390	12,628	10,956	11,533
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
Transport	-	-	-	-	5	5	4	5	4	-	7	14	28	40	54	95	120	147	194	236	247	272	292
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
Commercial	4	4	4	4	4	4	4	4	6	9	12	10	11	18	18	23	24	28	31	25	30	32	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

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
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
MDS	-	-	-	39	238	421	344	389	-	-	164	513	445	443	1,271	1,567	876	799	920	3,610	1,057	851	1,089
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

Source:
Oil and gas companies

Note:
MDS commenced pre-commercialization operation in year 2000

THIS PAGE IS INTENTIONALLY LEFT BLANK


COAL

TABLE 8: PRODUCTION AND RESERVES OF COAL AS OF 31ST DECEMBER 2012

LOCATION	RESERVES (MILLION TONNES)			COAL TYPE	PRODUCTION (METRIC TONNES)
	MEASURED	INDICATED	INFERRED		
SARAWAK					
1. Abok & Silantek, Sri Aman	7.25	10.60	32.40	Coking Coal, Semi-Anthracite and Anthracite	33,975
2. Merit-Pila, Kapit	170.26	107.02	107.84	Sub-Bituminous	600,959
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	2,316,103
5. Tutoh Area	5.58	34.66	162.33	Sub-Bituminous	
SUBTOTAL	**276.04**	**323.01**	**963.10**		**2,951,037**
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**		**2,951,037**

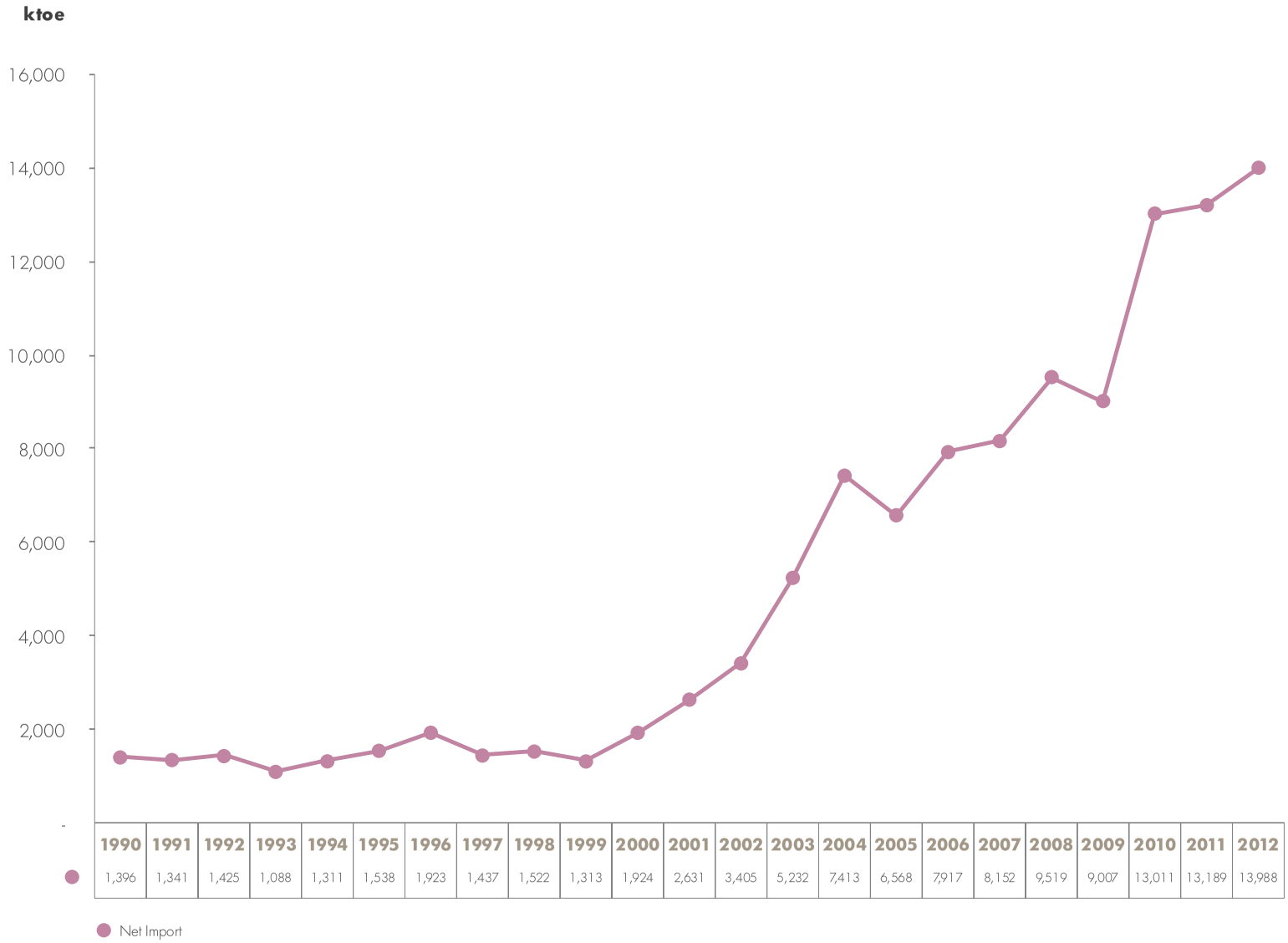
Source:
Department of Mineral & Geosciences Malaysia

TABLE 9: CONSUMPTION OF COAL IN METRIC TONNES, 2012

SECTORS	PENINSULAR MALAYSIA	SABAH	SARAWAK	MALAYSIA
Industry	2,585,569	-	157,506	2,743,075
Power Stations	20,388,022	-	2,038,016	22,426,038
TOTAL	**22,973,591**	-	**2,195,522**	**25,169,113**

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

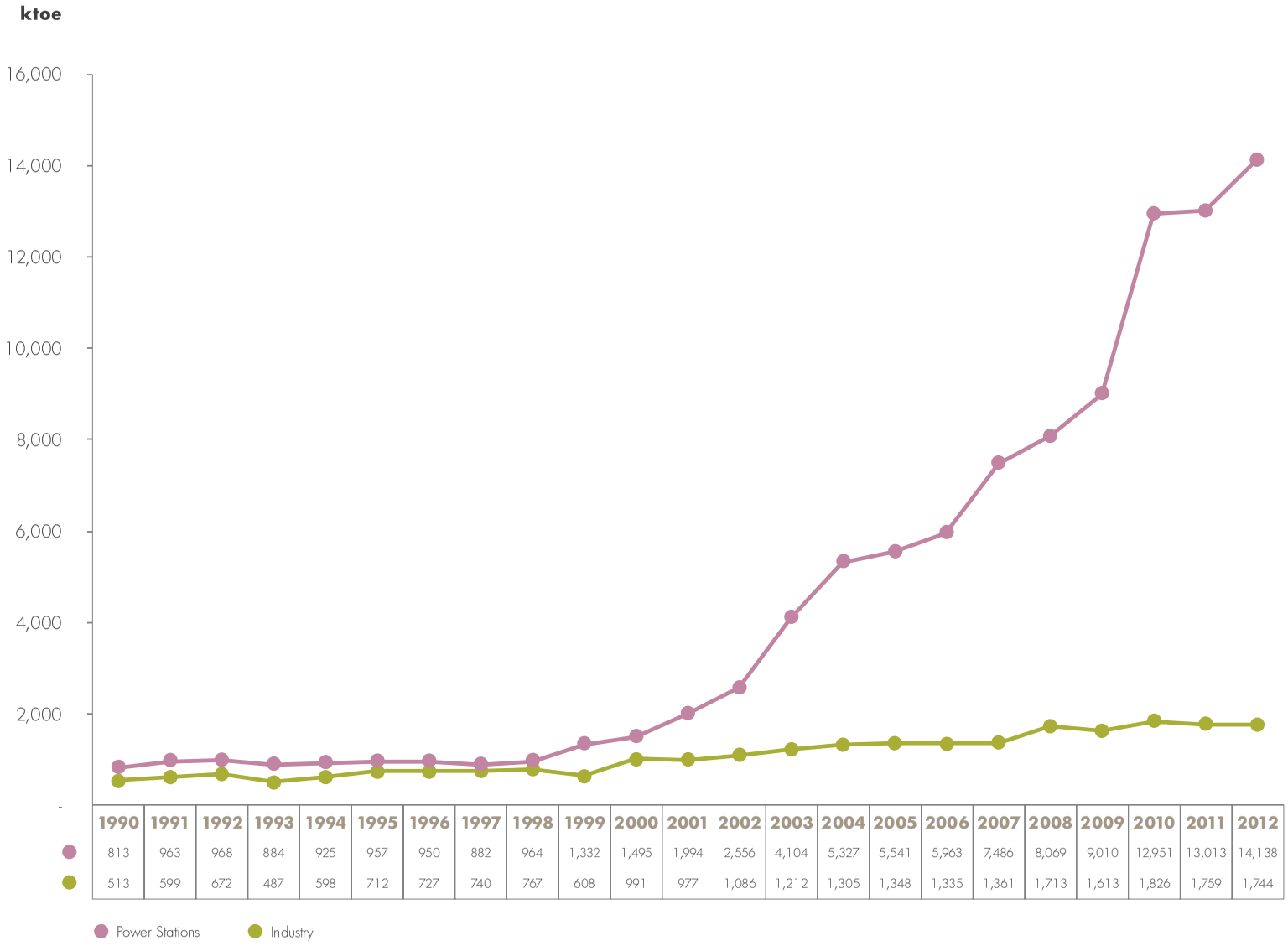
FIGURE 25: NET IMPORT OF COAL



1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
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

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

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
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
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

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

ELECTRICITY

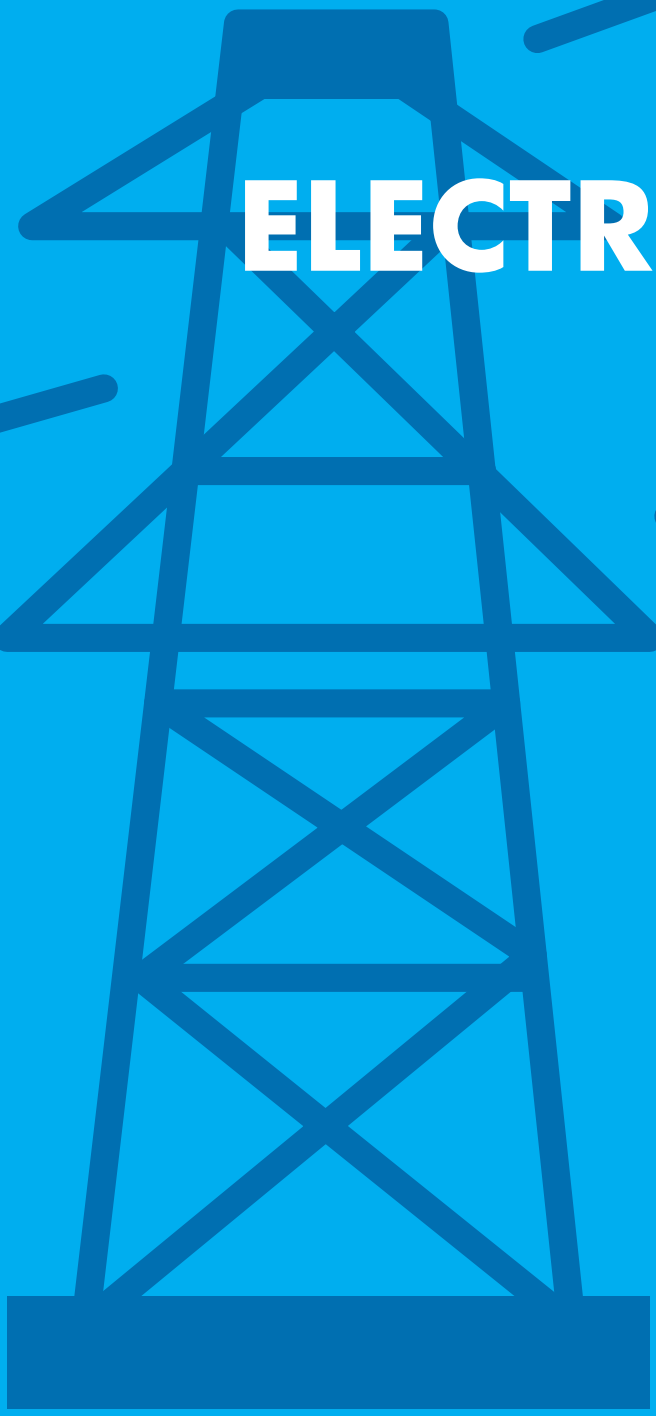


TABLE 10: INSTALLED CAPACITY AS OF 31ST DECEMBER 2012 IN MW

		HYDRO	NATURAL GAS	COAL	FUEL OIL	DIESEL	BIOMASS	OTHERS	TOTAL
PENINSULAR MALAYSIA	TNB	1,911	5,075	-	-	-	-	-	**6,986**
	IPPs	20	8,069	7,200	-	-	-	-	**15,289**
	Co-Generation	-	834	-	35	7	105	25	**1,006**
	Self-Generation	-	31	-	-	577	370	1	**979**
	SREP / FiT	9	-	-	-	-	30	11	**50**
	SUBTOTAL	**1,940**	**14,009**	**7,200**	**35**	**584**	**504**	**36**	**24,309**
SABAH	SESB	69	105	-	-	244	-	-	**417**
	IPPs	-	494	-	144	-	-	-	**638**
	Co-Generation	-	42	-	-	60	111	-	**212**
	Self-Generation	-	-	-	-	526	123	11	**660**
	SREP / FiT	7	-	-	-	-	30	-	**37**
	SUBTOTAL	**76**	**640**	**-**	**144**	**829**	**264**	**11**	**1,963**
SARAWAK	SEB	101	608	480	-	163	-	-	**1,352**
	IPPs	1,200	-	-	-	-	-	-	**1,200**
	Co-Generation	-	289	-	-	-	-	1	**290**
	Self-Generation	-	-	-	-	13	16	-	**29**
	SUBTOTAL	**1,301**	**897**	**480**	**-**	**176**	**16**	**1**	**2,871**
	TOTAL	**3,317**	**15,546**	**7,680**	**179**	**1,589**	**784**	**49**	**29,143**

Source: Energy Commission and Ministry of Public Utilities Sarawak

Note :
1. *Installed Capacity for Peninsular Malaysia based on Licensed Capacity*
2. *Installed Capacity for Sabah based on Dependable Capacity due to 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*
3. *IPPs for Peninsular Malaysia including Nur Generation and Musteq Hydro*

FIGURE 27: SHARE OF INSTALLED CAPACITY AS OF 31ST DECEMBER 2012

Total: 29,143 MW

NATURAL GAS **53.3%**

COAL **26.3%**

FUEL OIL **0.6%**

DIESEL **5.5%**

BIOMASS **2.7%**

HYDRO **11.4%**

OTHERS **0.2%**

Source:
Power Utilities & IPPs

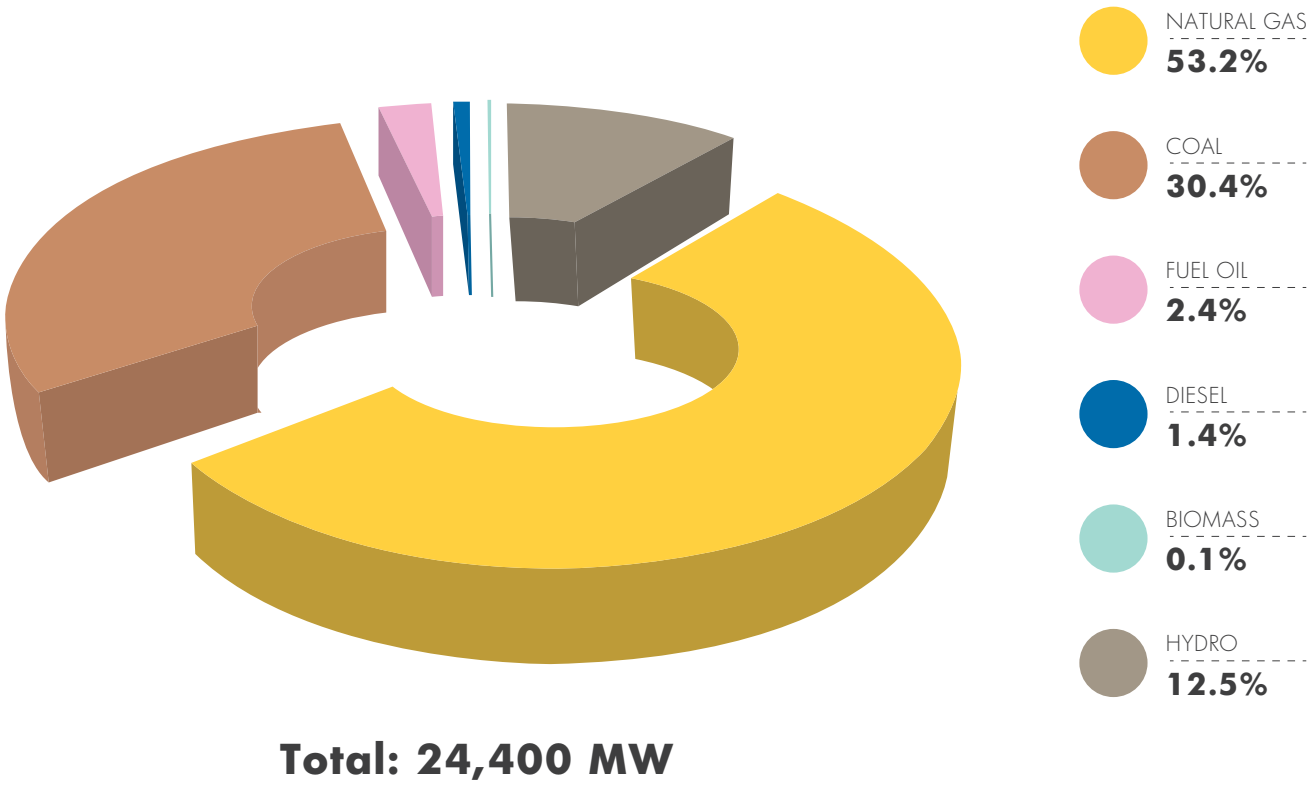
TABLE 11: AVAILABLE CAPACITY AS OF 31ST DECEMBER 2012 IN MW

		HYDRO	NATURAL GAS	COAL	FUEL OIL	DIESEL	BIOMASS	TOTAL
PENINSULAR MALAYSIA	TNB	1,882	4,684	-	-	-	-	6,566
	IPPs		7,087	6,955	436	-	-	14,478
	SUBTOTAL	1,882	11,771	6,955	436	-	-	21,044
SABAH*	SESB	69	105	-	-	244	-	417
	IPPs	7	494	-	144	-	30	674
	SUBTOTAL	76	599	-	144	244	30	1,091
SARAWAK	SEB	86	608	470	-	101	-	1,265
	IPPs	1,000	-	-	-	-	-	1,000
	SUBTOTAL	1,086	608	470	-	101	-	2,265
	GRAND TOTAL	3,043	12,977	7,425	580	345	30	24,400

Source:
Power Utilities & IPPs

Note
(*) : Dependable Capacity

FIGURE 28: SHARE OF AVAILABLE CAPACITY AS OF 31ST DECEMBER 2012



Source:
Power Utilities & IPPs

TABLE 12: INSTALLED CAPACITY OF MAJOR HYDRO POWER STATIONS, 2012

STATION	INSTALLED CAPACITY (MW)	TOTAL (MW)
PENINSULAR MALAYSIA		
TERENGGANU		
1. Stesen Janakuasa Sultan Mahmud Kenyir	4 x 100	400.0
PERAK		
1. Stesen Janakuasa Temenggor	4 x 87	348.0
2. Stesen Janakuasa Bersia	3 x 24	72.0
3. Stesen Janakuasa Kenering	3 x 40	120.0
4. Chenderoh	3 x 10.7 + 1 x 8.4	40.5
5. Sg. Piah Hulu	2 x 7.3	14.6
6. Sg. Piah Hilir	2 x 27	54.0
PAHANG		
1. Stesen Janakuasa Sultan Yussuf, Jor	4 x 25	100.0
2. Stesen Janakuasa Sultan Idris II, Woh	3 x 50	150.0
3. Cameron Highland Scheme*		11.9
KELANTAN		
1. Pergau	4 x 150	600.0
2. Kenerong Upper	2 x 6	12.0
3. Kenerong Lower	2 x 4	8.0
SUBTOTAL		**1,931.0**
SABAH		
1.Tenom Pangi	3 x 22.0	66.0
SUBTOTAL		**66.0**
SARAWAK		
1.Batang Ai	4 x 27.0	108.0
2.Bakun		750.0
SUBTOTAL		**844.0**
TOTAL		**2,841.0**

Source:
TNB, SESB & SEB

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

TABLE 13: INSTALLED CAPACITY OF MINI HYDRO POWER STATIONS, 2012

STATION		TOTAL (MW)
KEDAH		
1. Sg Tawar Besar		0.540
2. Sg Mempelam		0.397
3. Sg Mahang		0.483
PERAK		
1. Sg Tebing Tinggi		0.178
2. Sg Asap		0.110
3. Sg Kinjang		0.349
4. Sg Bil		0.258
PAHANG		
1. Sg Sempam G2		0.450
2. Sg Pertang		0.492
3. Sg Perdak		0.364
KELANTAN		
1. Sg Renyok G1		0.800
2. Sg Renyok G2		0.800
3. Sg Sok		0.588
4. Sg Rek		0.270
TERENGGANU		
1. Sg Brang		0.422
	SUBTOTAL	**6.501**
SABAH		
1. Carabau (Ranau)		2.000
2. Melangkap (Kota Belud)		1.000
3. Sayap (Kota Belud)		1.000
4. Bombalai (Tawau)		1.100
5. Merotai (Tawau)		1.100
6. Kiau (Kota Belud)		0.375
7. Naradau (Ranau)		1.760
	SUBTOTAL	**8.335**
SARAWAK		
1. Sg Pasir		0.760
2. Penindin		0.352
3. Sebako		0.333
4. Lundu		0.352
5. Kalamuku 1		0.500
6. Kalamuku 2		0.500
7. Sg Keijin		0.500
8. Sg Kota 1		2.000
9. Sg Kota 2		2.000
	SUBTOTAL	**7.297**
	TOTAL	**22.133**

Source:
TNB, SESB & SEB

TABLE 14: TRANSMISSION NETWORK IN CIRCUIT – KILOMETRES, 2012

UTILITY	500 KV	275 KV	132 KV	66 KV
TNB	1,295	8,449	11,640	-
SESB	-	492	1,772	123
SEB	-	1,026	386	-

Source:
TNB, SESB & SEB

TABLE 15: DISTRIBUTION NETWORK IN CIRCUIT – KILOMETRES, 2012

UTILITY	OVERHEAD LINES	UNDERGROUND CABLES
TNB	495,925	423,758
SESB	8,525	1,136
SEB	21,030	6,680

Source:
TNB, SESB & SEB

TABLE 16: BREAKDOWN ON ELECTRICITY (GROSS GENERATION, CONSUMPTION, AVAILABLE CAPACITY, PEAK DEMAND AND RESERVE MARGIN) FOR MALAYSIA, 2012

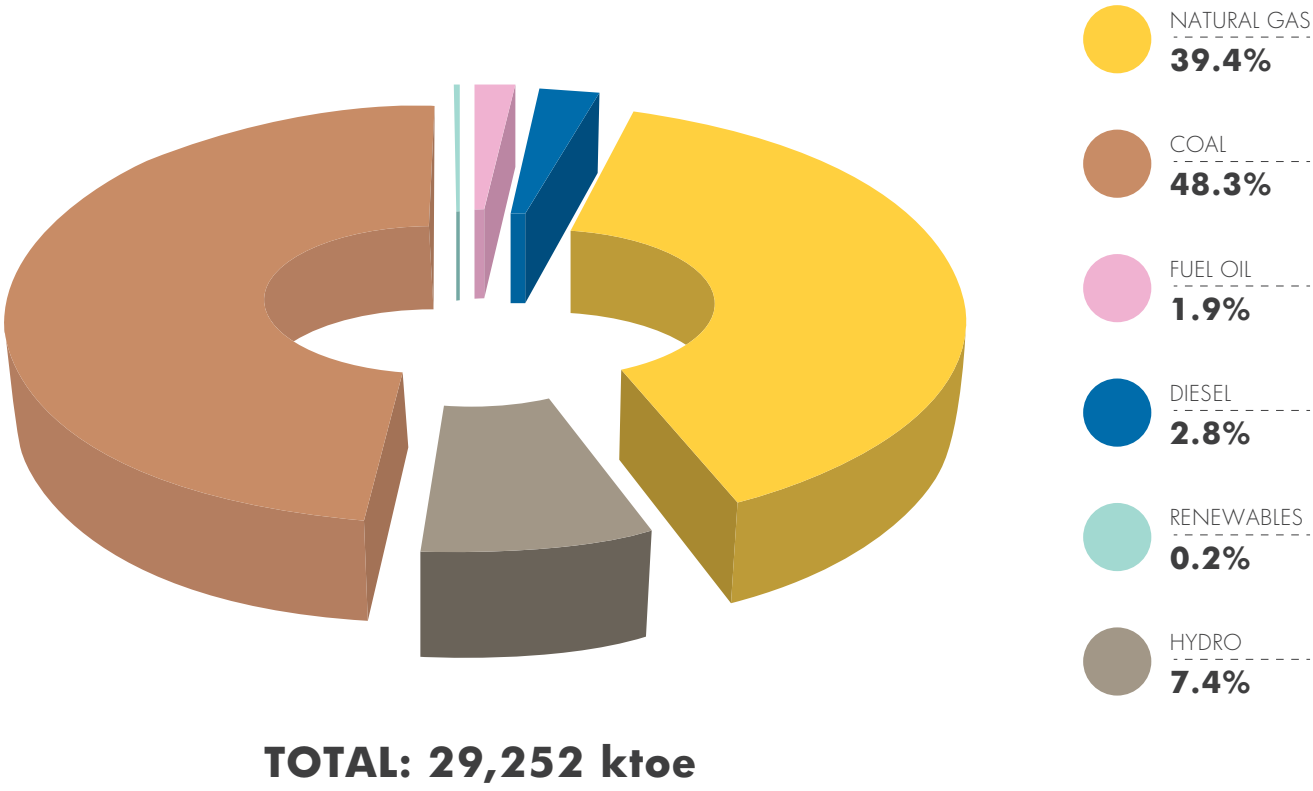
REGION	ELECTRICITY GROSS GENERATION		ELECTRICITY CONSUMPTION		AVAILABLE CAPACITY**	PEAK DEMAND	RESERVE MARGIN
	GWh	%	GWh	%	MW	MW	%
PENINSULAR MALAYSIA	117,797	87.7	102,174	87.8	21,044	15,826	33.0
SARAWAK	10,824	8.0	9,237	7.9	2,265	1,161	95.1
SABAH*	5,754	4.3	4,943	4.3	1,091	828	31.8
TOTAL	**134,375**	**100.0**	**116,354**	**100.0**	**24,400**		

Source:
TNB, IPPs, SESB & 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), while Available Capacity for Sabah was based on Dependable Capacity

FIGURE 29: SHARE OF ENERGY INPUT IN POWER STATIONS, 2012



TOTAL: 29,252 ktoe

Source:
Power Utilities & IPPs

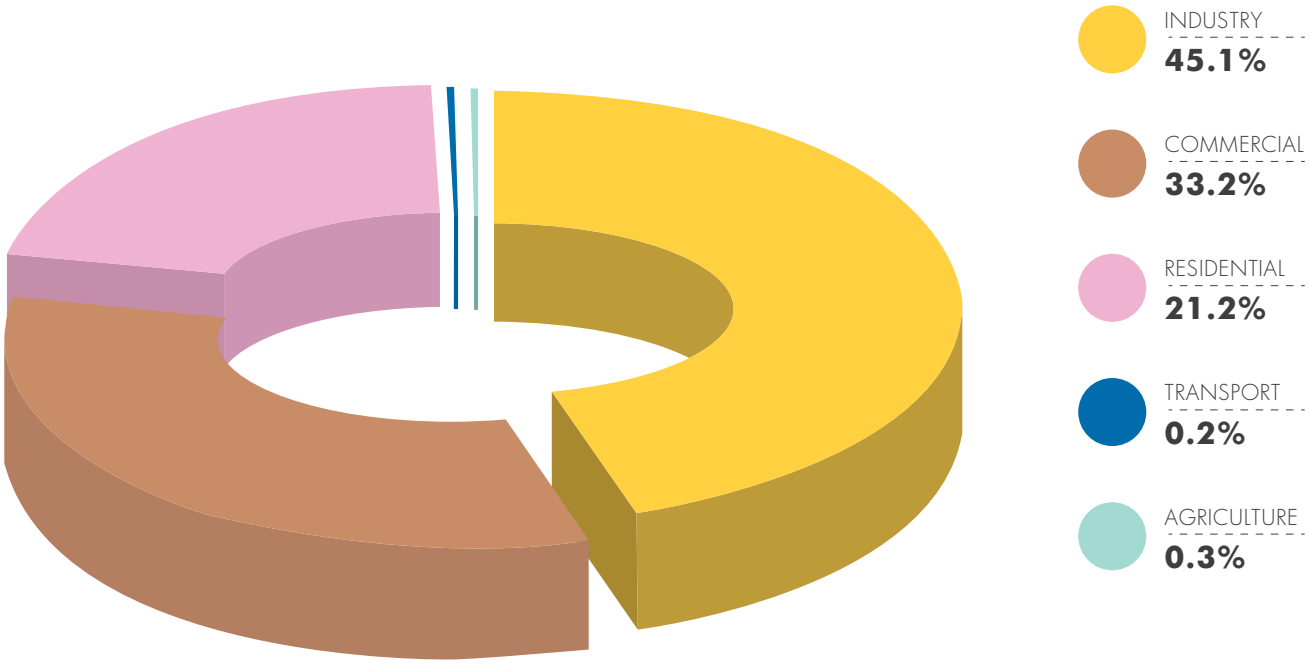
Note:
Figures exclude fuel consumption for self-generation plants

TABLE 17: ELECTRICITY CONSUMPTION BY SECTORS IN GWh, 2012

REGION	INDUSTRY	COMMERCIAL	RESIDENTIAL	TRANSPORT	AGRICULTURE	TOTAL
	GWh	GWh	GWh	GWh	GWh	GWh
PENINSULAR MALAYSIA	45,357	34,696	21,536	241	344	102,174
SHARE (%)	44%	34%	21%	0%	0%	100%
SARAWAK	5,554	2,026	1,657	-	-	9,237
SHARE (%)	60%	22%	18%	0%	0%	100%
SABAH	1,504	1,923	1,516	-	-	4,943
SHARE (%)	30%	39%	31%	0%	0%	100%
TOTAL	52,414	38,645	24,709	241	344	116,353
SHARE (%)	45%	33%	21%	0%	0%	100%

Source:
Power Utilities, IPPs & Self-Generators

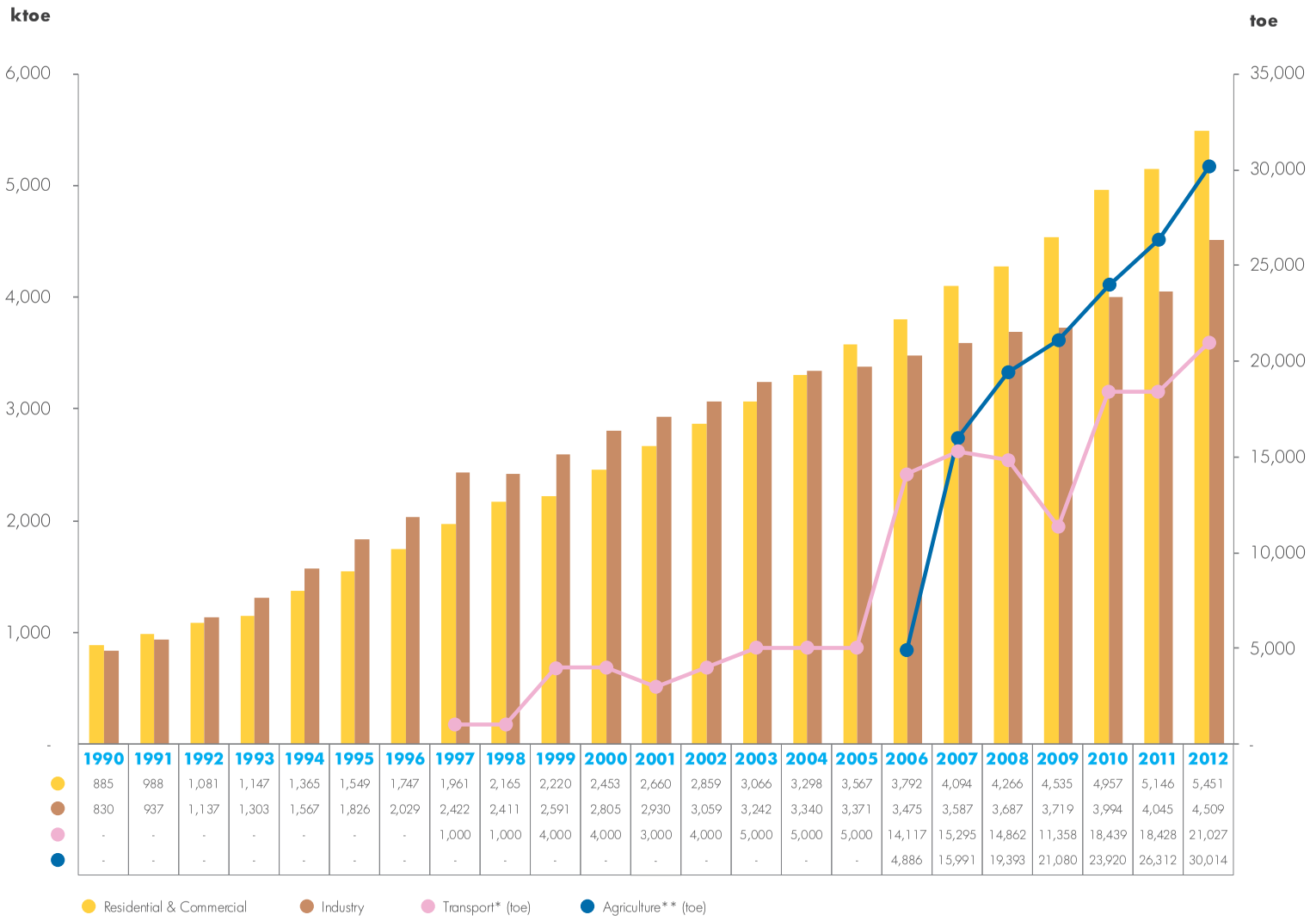
FIGURE 30: SHARE OF ELECTRICITY CONSUMPTION BY SECTORS, 2012



TOTAL: 116,353 GWh

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
Residential & Commercial	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
Industry	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
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
Agriculture** (toe)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4,886	15,991	19,393	21,080	23,920	26,312	30,014

Residential & Commercial | Industry | Transport* (toe) | Agriculture** (toe)

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, 2012

REGION	TYPE OF PRIME MOVER	INSTALLED CAPACITY (MW)	UNIT GENERATED (MWh)
PENINSULAR MALAYSIA	Mini Hydro - FiT	9.20	48,319
	Mini Hydro - IPP	20.00	103,467
	Mini Hydro - Cameron Highlands Scheme	11.90	36,488
	Mini Hydro - TNB	10.48	10,865
	Solar - Non-FiT	1.23	704
	Solar - FiT	31.56	47,024
	Land Fill Gas	3.20	16,552
	Palm Oil Mill Effluent (POME)	3.25	8,749
	Municipal Solid Waste (MSW)	8.90	16,885
	Palm Oil Waste	19.50	35,146
	SUBTOTAL	**119.22**	**324,198**
SABAH	Palm Oil Waste	49.20	241,198
	Mini Hydro-SESB	8.30	27,226
	Mini Hydro - Others	6.50	23,286
	SUBTOTAL	**64.00**	**291,710**
SARAWAK	Mini Hydro -SEB	1.80	7,259
	Solar	0.02	15
	SUBTOTAL	**1.82**	**7,274**
	GRAND TOTAL	**185.04**	**623,182**

Source :
Energy Commission, 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

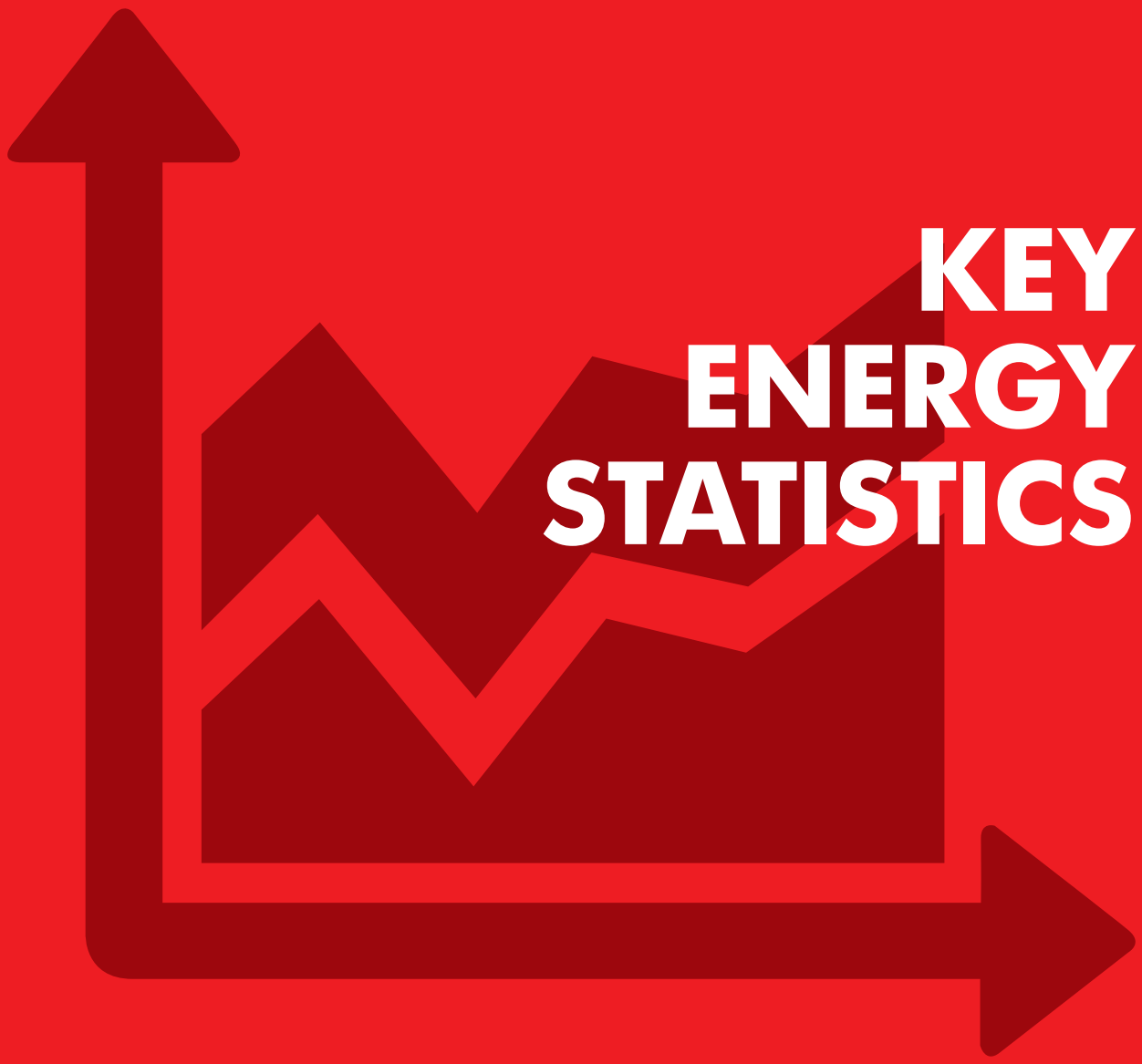
TABLE 19: ELECTRICITY GENERATION AND INSTALLED CAPACITY OF RENEWABLE ENERGY BY PRIVATE LICENSEE BY REGION, 2012

REGION	TYPE OF PRIME MOVER	INSTALLED CAPACITY (MW)	UNIT GENERATED (MWh)
PENINSULAR MALAYSIA	Agriculture Waste - Co-Gen	109.10	67,661
	Palm Oil Waste	354.24	526,198
	Agriculture Waste	7.29	26,423
	Wood Waste	7.07	4,644
	SUBTOTAL	**477.70**	**624,927**
SABAH	Agriculture Waste - Co-Gen	6.50	11
	Empty Fruit Bunch (EFB) - Co-Gen	7.50	20,839
	Wood Waste - Co-Gen	79.50	320,667
	Palm Oil Waste	115.31	218,896
	Wood Waste	7.13	42,376
	SUBTOTAL	**215.94**	**602,790**
SARAWAK	Mini Hydro	5.50	8,686
	Palm Oil Waste	4.90	19,153
	Wood/Sawmill Dust	11.00	39,948
	SUBTOTAL	**21.40**	**67,787**
	GRAND TOTAL	**715.05**	**1,295,503**

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

Note :
Private Licensee is the licensee that generates electricity for its own use only

THIS PAGE IS INTENTIONALLY LEFT BLANK



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	28,054	(795)	38,649	15,882	2,149	83,939	5.9	32.5	46.0	18.9	2.6

Crude Oil and Petroleum Products & Others
Natural Gas (Sales Gas)
Coal and Coke
Hydropower

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

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

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

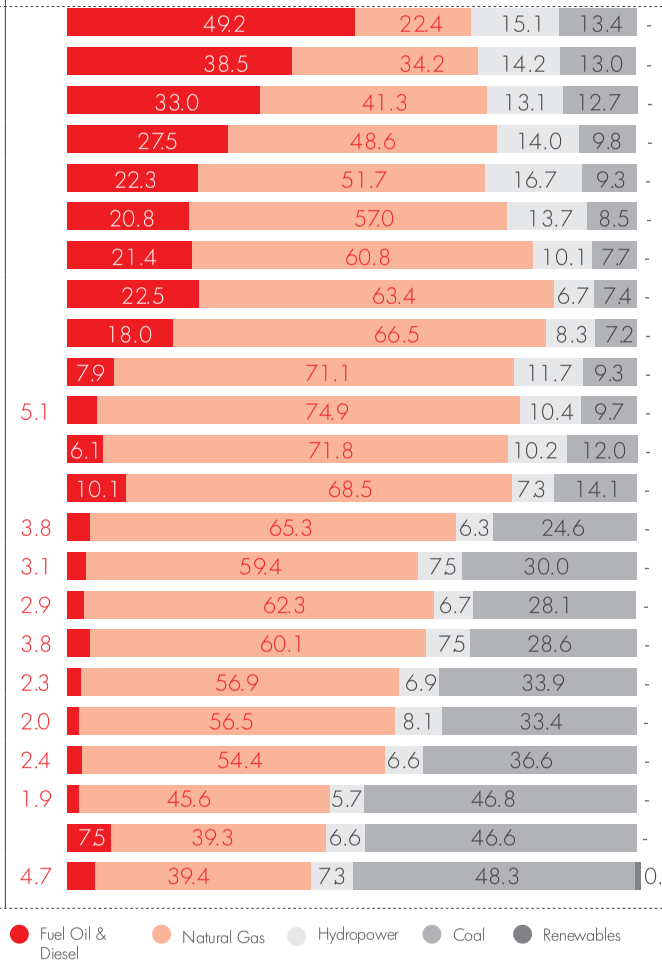
TABLE 23: CONVERSION IN REFINERIES IN KTOE

	INPUT		TOTAL INPUT	OUTPUT								TOTAL OUTPUT
	LOCAL CRUDE OIL	IMPORTED CRUDE OIL & OTHERS		PETROL	DIESEL	FUEL OIL	KEROSENE	ATF & AV GAS	LPG	NON-ENERGY	REFINERY GAS	
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

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

	INPUT:								OUTPUT:
	FUEL OIL	DIESEL	NATURAL GAS	HYDRO POWER*	COAL	RENEWABLES	TOTAL INPUT	ANNUAL GROWTH RATE (%)	TOTAL ELECTRICITY GENERATED
1990	2,873	116	1,361	915	813	-	6,078	21.2	1,979
1991	2,687	164	2,533	1,053	963	-	7,400	21.8	2,283
1992	2,352	160	3,144	997	968	-	7,621	3.0	2,521
1993	2,388	87	4,374	1,262	884	-	8,995	18.0	2,987
1994	1,957	249	5,119	1,652	925	-	9,902	10.1	3,362
1995	2,073	265	6,414	1,540	957	-	11,249	13.6	3,909
1996	2,354	284	7,489	1,243	950	-	12,320	9.5	4,421
1997	2,482	185	7,531	790	882	-	11,870	(3.7)	4,977
1998	2,130	275	8,886	1,113	964	-	13,368	12.6	5,013
1999	950	172	10,162	1,668	1,332	-	14,284	6.9	5,409
2000	592	191	11,580	1,612	1,495	-	15,470	8.3	5,731
2001	730	278	11,922	1,687	1,994	-	16,611	7.4	5,940
2002	1,363	476	12,424	1,329	2,556	-	18,148	9.3	6,191
2003	289	340	10,893	1,056	4,104	-	16,682	(8.1)	6,568
2004	274	272	10,545	1,329	5,327	-	17,747	6.4	6,716
2005	275	298	12,271	1,313	5,541	-	19,698	11.0	6,706
2006	171	617	12,524	1,567	5,964	-	20,843	5.8	7,240
2007	199	314	12,549	1,522	7,486	-	22,070	5.9	8,385
2008	181	299	13,651	1,964	8,069	-	24,164	9.5	8,422
2009	205	384	13,390	1,627	9,010	-	24,616	1.9	8,531
2010	125	415	12,628	1,577	12,951	-	27,696	12.5	9,404
2011	1,103	981	10,977	1,850	13,013	-	27,924	0.8	10,193
2012	550	811	11,533	2,149	14,138	71	29,252	4.8	11,032

INPUT SHARE (%)



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

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	308,071	57
2011	12,100	17,070	6,993	6,377	916	43,456	4.8	19,393	316,336	61
2012	13,919	17,180	7,064	7,494	1,052	46,709	7.5	22,465	331,493	68

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	24,749	10,011	*5,336*	*4,870*	10,206	1,744	46,710	41,375	4.6

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	8,757	8,919	768	2,891	38	2,522	739	24,635

TABLE 28: SELECTED ENERGY AND ECONOMIC INDICATORS (1990-2012)

							AVERAGE ANNUAL GROWTH (%)				PER CAPITA				ENERGY INTENSITY				ENERGY ELASTICITY	
	GDP AT 2005 PRICES (RM MILLION)*	POPULATION ('000 PEOPLE)*	PRIMARY ENERGY SUPPLY (KTOE)	FINAL ENERGY CONSUMPTION (KTOE)	ELECTRICITY CONSUMPTION (KTOE)	ELECTRICITY CONSUMPTION (GWh)	GDP AT 2005 PRICES	PRIMARY ENERGY SUPPLY	FINAL ENERGY CONSUMPTION	ELECTRICITY CONSUMPTION	GDP AT 2005 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
1990	217,047	18,102	21,471	13,146	1,715	19,932	9.00	8.90	8.70	9.70	11,990	1.19	0.73	1,101	98.92	60.57	7.90	0.092	0.97	1.08
1991	237,766	18,986	26,335	14,563	1,925	22,373	9.55	22.65	10.78	12.24	12,523	1.39	0.77	1,178	110.76	61.25	8.10	0.094	1.13	1.28
1992	258,891	18,985	29,291	16,185	2,218	25,778	8.88	11.22	11.14	15.22	13,637	1.54	0.85	1,358	113.14	62.52	8.57	0.100	1.25	1.71
1993	284,509	19,503	29,925	17,728	2,450	28,474	9.90	2.16	9.53	10.46	14,588	1.53	0.91	1,460	105.18	62.31	8.61	0.100	0.96	1.06
1994	310,718	20,049	31,662	19,287	2,932	34,076	9.21	5.80	8.79	19.67	15,498	1.58	0.96	1,700	101.90	62.07	9.44	0.110	0.95	2.14
1995	341,258	20,624	33,879	22,164	3,375	39,225	9.83	7.00	14.92	15.11	16,547	1.64	1.07	1,902	99.28	64.95	9.89	0.115	1.52	1.54
1996	375,393	21,101	37,840	24,181	3,777	43,897	10.00	11.69	9.10	11.91	17,790	1.79	1.15	2,080	100.80	64.42	10.06	0.117	0.91	1.19
1997	402,882	21,595	43,173	26,167	4,384	50,952	7.32	14.09	8.21	16.07	18,656	2.00	1.21	2,359	107.16	64.95	10.88	0.126	1.12	2.19
1998	373,231	22,107	40,996	25,558	4,577	53,195	(7.36)	(5.04)	(2.33)	4.40	16,883	1.85	1.16	2,406	109.84	68.48	12.26	0.143	0.32	(0.60)
1999	396,140	22,636	44,534	27,228	4,815	55,961	6.14	8.63	6.53	5.20	17,500	1.97	1.20	2,472	112.42	68.73	12.15	0.141	1.06	0.85
2000	431,234	23,495	50,710	29,699	5,263	61,168	8.86	13.87	9.08	9.30	18,354	2.16	1.26	2,603	117.59	68.87	12.20	0.142	1.02	1.05
2001	433,466	24,123	51,979	31,515	5,594	65,015	0.52	2.50	6.11	6.29	17,969	2.15	1.31	2,695	119.91	72.70	12.91	0.150	11.81	12.15
2002	456,834	24,727	53,196	33,289	5,922	68,827	5.39	2.34	5.63	5.86	18,475	2.15	1.35	2,783	116.44	72.87	12.96	0.151	1.04	1.09
2003	483,278	25,320	57,565	34,586	6,313	73,371	5.79	8.21	3.90	6.60	19,087	2.27	1.37	2,898	119.11	71.57	13.06	0.152	0.67	1.14
2004	516,061	25,905	62,836	37,323	6,642	77,195	6.78	9.16	7.91	5.21	19,921	2.43	1.44	2,980	121.76	72.32	12.87	0.150	1.17	0.77
2005	543,578	26,477	66,211	38,285	6,944	80,705	5.33	5.37	2.58	4.55	20,530	2.50	1.45	3,048	121.81	70.43	12.77	0.148	0.48	0.85
2006	573,936	26,832	67,021	38,567	7,272	84,517	5.58	5.37	0.74	4.72	21,390	2.50	1.44	3,150	116.77	67.20	12.67	0.147	0.13	0.85
2007	610,087	27,186	72,389	41,606	7,683	89,294	6.30	8.01	7.88	5.65	22,441	2.66	1.53	3,285	118.65	68.20	12.59	0.146	1.25	0.90
2008	639,565	27,541	76,032	41,968	7,986	92,815	4.83	5.03	0.87	3.94	23,222	2.76	1.52	3,370	118.88	65.62	12.49	0.145	0.18	0.82
2009	629,885	27,895	74,583	40,845	8,286	96,302	(1.51)	(1.91)	(2.68)	3.76	22,581	2.67	1.46	3,452	118.41	64.85	13.15	0.153	1.77	(2.48)
2010	676,653	28,251	76,809	41,476	8,993	104,519	7.42	2.98	1.54	8.53	23,951	2.72	1.47	3,700	113.51	61.30	13.29	0.154	0.21	1.15
2011	711,351	28,964	79,289	43,455	9,235	107,331	5.13	3.23	4.77	2.69	24,560	2.74	1.50	3,706	111.46	61.09	12.98	0.151	0.93	0.52
2012	751,471	29,337	83,938	46,711	10,011	116,353	5.64	5.86	7.49	8.41	25,615	2.86	1.59	3,966	111.70	62.16	13.32	0.155	1.33	1.49

Source

(*): Monthly Statistical Bulletin, Bank Negara Malaysia (GDP at 2005 Prices (RM Million) for 1990 until 2004 by Energy Commission)

TABLE 29: ENERGY BALANCE TABLE IN 2012 (KTOE)

COMMERCIAL ENERGY BALANCE FOR MALAYSIA 2012
(THOUSAND TONNES OF OIL EQUIVALENT)

ENERGY SOURCE	NATURAL GAS	LNG	CRUDE OIL (1/)	OTHERS (2/)	TOTAL PETROLEUM PRODUCTS	PETROLEUM PRODUCTS								COAL & COKE	HYDRO POWER	SOLAR	BIOMASS	BIOGAS	BIODIESEL	ELECTRICITY	TOTAL
						PETROL	DIESEL	FUEL OIL	LPG	KEROSENE	ATF & AV GAS	NON-ENERGY	REFINERY GAS								
PRIMARY SUPPLY																					
1. Primary Production	62,581	0	29,115	0	0	0	0	0	0	0	0	0	0	1,860	2,149	0	183	4	253	0	96,145
2. Gas Flaring, Reinjection & Use	-4,884	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-4,884
3. Imports	7,866	0	9,995	8	12,725	5,918	3,504	794	448	5	346	1,710	0	14,220	0	0	0	0	0	9	44,823
4. Exports	-1,368	-25,547	-11,988	-98	-13,966	-2,078	-5,308	-1,017	-435	-703	-1,008	-3,418	0	-232	0	0	0	0	-30	-1	-53,230
5. Bunkers	0	0	0	0	-56	0	-3	-54	0	0	0	-0	0	0	0	0	0	0	0	0	-56
6. Stock Change	0	0	967	0	282	175	1,506	-0	-10	1	-767	-623	0	-52	0	0	0	0	-108	0	1,088
7. Statistical Discrepancy	0	0	-36	0	0	0	0	0	0	0	0	0	0	88	0	0	0	0	0	0	51
8. Primary Supply	**64,195**	**25,547**	**28,054**	**-90**	**-1,015**	**4,015**	**-302**	**-279**	**4**	**-696**	**-1,429**	**-2,331**	**0**	**15,882**	**2,149**	**0**	**183**	**4**	**115**	**7**	**83,938**
TRANSFORMATION																					
9. Gas Plants																					
9.1 MLNG	-32,717	26,003	0	0	228	0	0	0	228	0	0	0	0	0	0	0	0	0	0	0	-6,487
9.2 MDS	-1,089	0	0	0	486	0	126	0	0	37	0	324	0	0	0	0	0	0	0	0	-603
9.3 GPP-LPG (3&4/)	-6,234	0	0	0	2,036	0	0	0	2,035	0	0	0	0	0	0	0	0	0	0	0	-4,200
SUBTOTAL	**-40,041**	**26,003**	**0**	**0**	**2,750**	**0**	**126**	**0**	**2,263**	**37**	**0**	**324**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**-11,289**
10. Refineries	0	0	-27,560	90	26,047	4,617	10,033	1,608	702	654	3,918	4,318	197	0	0	0	0	0	0	0	-1,422
11. Power Stations & Self-Generation																					
11.1 Hydro Stations	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-2,149	0	0	0	0	779	-1,370
11.2 Thermal Stations	-11,533	0	0	0	-1,361	0	-811	-550	0	0	0	0	0	-14,138	0	-1	-64	-4	0	10,253	-16,848
11.3 Self-Generation (5/)	-1,734	0	0	0	-25	0	-25	0	0	0	0	0	0	0	0	0	-119	0	0	530	-1,348
SUBTOTAL	**-13,267**	**0**	**0**	**0**	**-1,385**	**0**	**-836**	**-550**	**0**	**0**	**0**	**0**	**0**	**-14,138**	**-2,149**	**-1**	**-183**	**-4**	**0**	**11,562**	**-19,567**
12. Losses & Own Use	-678	-457	-494	0	-1,753	0	0	-18	0	0	0	-1,537	-197	0	0	0	0	0	0	-993	-4,376
13. Statistical Discrepancy	-0	0	0	0	-8	285	-265	7	-76	43	33	-34	0	0	0	1	-0	-0	0	-565	-572
14. Secondary Supply	**-53,988**	**25,547**	**-28,054**	**90**	**25,649**	**4,903**	**9,059**	**1,047**	**2,888**	**733**	**3,949**	**3,017**	**0**	**-14,138**	**-2,149**	**-0**	**-138**	**-3**	**0**	**10,003**	**-37,131**
FINAL USE																					
15. Residential	0	0	0	0	715	0	0	0	703	11	0	0	0	0	0	0	0	0	0	2,126	2,841
16. Commercial	23	0	0	0	876	0	225	20	631	0	0	0	0	0	0	0	0	0	0	3,325	4,223
17. Industry	4,557	0	0	0	3,109	216	1,991	737	138	26	0	0	0	1,744	0	0	0	0	0	4,510	13,919
18. Transport	292	0	0	0	16,751	8,617	5,610	5	0	0	2,522	0	0	0	0	0	0	0	115	21	17,180
19. Agriculture	0	0	0	0	7	0	0	7	0	0	0	0	0	0	0	0	0	0	0	30	36
20. Fishery	0	0	0	0	1,016	86	930	0	0	0	0	0	0	0	0	0	0	0	0	0	1,016
21. Non-Energy Use	5,336	0	0	0	2,159	0	0	0	1,420	0	0	739	0	0	0	0	0	0	0	0	7,494
22. Total Final Use	**10,206**	**0**	**0**	**0**	**24,635**	**8,919**	**8,757**	**768**	**2,891**	**38**	**2,522**	**739**	**0**	**1,744**	**0**	**0**	**0**	**0**	**115**	**10,011**	**46,711**
						ELECTRICITY OUTPUT															
Main Activity Producer																					
Gross Electricity Generation - GWh	57,166	0	0	0	5,907	0	3,154	2,752	0	0	0	0	0	55,788	9,056	7	279	17	0	0	128,220
Autoproducer																					
Gross Electricity Generation - GWh	5,533	0	0	0	108	0	108	0	0	0	0	0	0	0	0	0	513	0	0	0	6,154

1/ Crude production includes Condensates which comprise of 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 refinery 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 taken from the Energy Commission, Electricity Supply In Malaysia - Performance and Statistical Information 2012.

Note : Total may not necessarily add up due to rounding

TABLE 30: ENERGY BALANCE TABLE IN FIRST QUARTER (Q1) OF 2012 (KTOE)

COMMERCIAL ENERGY BALANCE FOR MALAYSIA Q1 2012
(THOUSAND TONNES OF OIL EQUIVALENT)

ENERGY SOURCE	NATURAL GAS	LNG	CRUDE OIL (1/)	OTHERS (2/)	TOTAL PETROLEUM PRODUCTS	PETROLEUM PRODUCTS								COAL & COKE	HYDRO POWER	SOLAR	BIOMASS	BIOGAS	BIODIESEL	ELECTRICITY	TOTAL
						PETROL	DIESEL	FUEL OIL	LPG	KEROSENE	ATF & AV GAS	NON-ENERGY	REFINERY GAS								
PRIMARY SUPPLY																					
1. Primary Production	17,085	0	7,602	0	0	0	0	0	0	0	0	0	0	535	584	0	47	1	66	0	25,920
2. Gas Flaring, Reinjection & Use	-1,752	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1,752
3. Imports	1,944	0	2,827	8	2,626	1,476	525	94	106	1	77	347	0	3,447	0	0	0	0	0	0	10,852
4. Exports	-309	-7,115	-3,354	-17	-3,378	-459	-1,270	-91	-147	-176	-289	-946	0	-65	0	0	0	0	-17	-1	-14,256
5. Bunkers	0	0	0	0	-14	0	-1	-13	0	0	0	-0	0	0	0	0	0	0	0	0	-14
6. Stock Change	0	0	-290	0	63	-3	460	0	-3	-10	-201	-180	0	88	0	0	0	0	-24	0	-163
7. Statistical Discrepancy	0	0	189	0	0	0	0	0	0	0	0	0	0	-31	0	0	0	0	0	0	159
8. Primary Supply	**16,968**	**-7,115**	**6,975**	**-9**	**-703**	**1,014**	**-286**	**-11**	**-44**	**-184**	**-413**	**-780**	**0**	**3,974**	**584**	**0**	**47**	**1**	**25**	**-1**	**20,746**
TRANSFORMATION																					
9. Gas Plants																					
9.1 MLNG	-9,374	7,198	0	0	63	0	0	0	63	0	0	0	0	0	0	0	0	0	0	0	-2,113
9.2 MDS	-226	0	0	0	111	0	23	0	0	9	0	79	0	0	0	0	0	0	0	0	-115
9.3 GPP-LPG (3&4/)	-1,445	0	0	0	526	0	0	0	526	0	0	0	0	0	0	0	0	0	0	0	-919
SUBTOTAL	**-11,046**	**7,198**	**0**	**0**	**700**	**0**	**23**	**0**	**588**	**9**	**0**	**79**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**-3,148**
10. Refineries	0	0	-6,858	9	6,463	1,124	2,462	137	185	154	1,061	1,292	47	0	0	0	0	0	0	0	-385
11. Power Stations & Self-Generation																					
11.1 Hydro Stations	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-584	0	0	0	0	221	-363
11.2 Thermal Stations	-2,800	0	0	0	-105	0	-78	-27	0	0	0	0	0	-3,544	0	-0	-16	-1	0	2,441	-4,025
11.3 Self-Generation (5/)	443	0	0	0	-6	0	-6	0	0	0	0	0	0	0	0	0	-31	0	0	134	-347
SUBTOTAL	**-3,243**	**0**	**0**	**0**	**-111**	**0**	**-85**	**-27**	**0**	**0**	**0**	**0**	**0**	**-3,544**	**-584**	**-0**	**-47**	**-1**	**0**	**2,796**	**-4,736**
12. Losses & Own Use	-183	-83	-117	0	-422	0	0	-4	0	0	0	-371	-47	0	0	0	0	0	0	-237	-1,043
13. Statistical Discrepancy	-0	0	0	0	-71	131	-103	10	0	25	-47	88	0	0	0	0	0	0	0	-166	-236
14. Secondary Supply	**-14,472**	**7,115**	**-6,975**	**9**	**6,557**	**1,256**	**2,298**	**117**	**773**	**187**	**1,014**	**913**	**0**	**-3,544**	**-584**	**-0**	**-47**	**-1**	**0**	**2,393**	**-9,500**
FINAL USE																					
15. Residential	0	0	0	0	182	0	0	0	180	2	0	0	0	0	0	0	0	0	0	507	688
16. Commercial	6	0	0	0	213	0	57	1	156	0	0	0	0	0	0	0	0	0	0	798	1,017
17. Industry	1,074	0	0	0	620	55	428	101	34	1	0	0	0	430	0	0	0	0	0	1,076	3,200
18. Transport	72	0	0	0	4,094	2,195	1,297	2	0	0	601	0	0	0	0	0	0	0	25	5	4,196
19. Agriculture	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	7	9
20. Fishery	0	0	0	0	249	20	229	0	0	0	0	0	0	0	0	0	0	0	0	0	249
21. Non-Energy Use	1,344	0	0	0	493	0	0	0	360	0	0	133	0	0	0	0	0	0	0	0	1,836
22. Total Final Use	**2,495**	**0**	**0**	**0**	**5,854**	**2,270**	**2,012**	**106**	**729**	**3**	**601**	**133**	**0**	**430**	**0**	**0**	**0**	**0**	**25**	**2,393**	**11,197**
ELECTRICITY OUTPUT																					
Main Activity Producer																					
Gross Electricity Generation - GWh	14,174	0	0	0	426	0	258	168	0	0	0	0	0	13,698	2,567	2	70	4	0	0	30,941
Autoproducer																					
Gross Electricity Generation - GWh	1,385	0	0	0	27	0	27	0	0	0	0	0	0	0	0	0	131	0	0	0	1,544

1/ Crude production includes Condensates which comprise of 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 refinery 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 taken from the Energy Commission, Electricity Supply In Malaysia - Performance and Statistical Information 2012.

Note : Total may not necessarily add up due to rounding

TABLE 31: ENERGY BALANCE TABLE IN SECOND QUARTER (Q2) OF 2012 (KTOE)

COMMERCIAL ENERGY BALANCE FOR MALAYSIA Q2 2012
(THOUSAND TONNES OF OIL EQUIVALENT)

ENERGY SOURCE	NATURAL GAS	LNG	CRUDE OIL (1/)	OTHERS (2/)	TOTAL PETROLEUM PRODUCTS	PETROLEUM PRODUCTS								COAL & COKE	HYDRO POWER	SOLAR	BIOMASS	BIOGAS	BIODIESEL	ELECTRICITY	TOTAL
						PETROL	DIESEL	FUEL OIL	LPG	KEROSENE	ATF & AV GAS	NON-ENERGY	REFINERY GAS								
PRIMARY SUPPLY																					
1. Primary Production	14,913	0	6,896	0	0	0	0	0	0	0	0	0	0	457	686	0	43	1	55	0	23,051
2. Gas Flaring, Reinjection & Use	-1,300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1,300
3. Imports	1,834	0	3,012	0	2,421	1,019	837	282	101	1	99	82	0	3,634	0	0	0	0	0	0	10,902
4. Exports	-323	-5,703	-3,037	0	-2,579	-6	-1,372	-127	-121	-176	-199	-579	0	-39	0	0	0	0	-2	0	-11,683
5. Bunkers	0	0	0	0	-10	0	-1	-10	0	0	0	-0	0	0	0	0	0	0	0	0	-10
6. Stock Change	0	0	213	0	240	58	541	-0	-1	8	-188	-178	0	-48	0	0	0	0	-24	0	381
7. Statistical Discrepancy	0	0	-92	0	0	0	0	0	0	0	0	0	0	67	0	0	0	0	0	0	-25
8. Primary Supply	**15,124**	**-5,703**	**6,993**	**0**	**73**	**1,070**	**5**	**144**	**-20**	**-166**	**-288**	**-674**	**0**	**4,071**	**686**	**0**	**43**	**1**	**29**	**0**	**21,316**
TRANSFORMATION																					
9. Gas Plants																					
9.1 MLNG	-7,737	5,912	0	0	56	0	0	0	56	0	0	0	0	0	0	0	0	0	0	0	-1,770
9.2 MDS	-310	0	0	0	130	0	28	0	0	10	0	93	0	0	0	0	0	0	0	0	-180
9.3 GPP-LPG (3&4/)	-1,189	0	0	0	518	0	0	0	518	0	0	0	0	0	0	0	0	0	0	0	-672
SUBTOTAL	**-9,236**	**5,912**	**0**	**0**	**704**	**0**	**28**	**0**	**574**	**10**	**0**	**93**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**-2,621**
10. Refineries	0	0	-6,889	0	6,425	1,138	2,503	324	181	170	931	1,134	45	0	0	0	0	0	0	0	-463
11. Power Stations & Self-Generation																					
11.1 Hydro Stations	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-686	0	0	0	0	225	-461
11.2 Thermal Stations	-2,781	0	0	0	-481	0	-253	-228	0	0	0	0	0	3,632	0	0	-15	-1	0	2,621	-4,290
11.3 Self-Generation (5/)	-411	0	0	0	-6	0	-6	0	0	0	0	0	0	0	0	0	-28	0	0	130	-315
SUBTOTAL	**-3,192**	**0**	**0**	**0**	**-487**	**0**	**-259**	**-228**	**0**	**0**	**0**	**0**	**0**	**-3,632**	**-686**	**0**	**-43**	**-1**	**0**	**2,976**	**-5,066**
12. Losses & Own Use	-173	-209	-104	0	-457	0	0	-5	0	0	0	-407	-45	0	0	0	0	0	0	-309	-1,253
13. Statistical Discrepancy	-0	0	0	0	-144	12	-92	-34	-28	7	-10	3	0	0	0	0	0	-0	0	-120	-264
14. Secondary Supply	**-12,602**	**5,703**	**-6,993**	**0**	**6,041**	**1,150**	**2,180**	**56**	**726**	**186**	**920**	**822**	**0**	**-3,632**	**-686**	**0**	**-43**	**-1**	**0**	**2,546**	**-9,666**
FINAL USE																					
15. Residential	0	0	0	0	174	0	0	0	170	3	0	0	0	0	0	0	0	0	0	540	714
16. Commercial	6	0	0	0	209	0	48	5	156	0	0	0	0	0	0	0	0	0	0	847	1,061
17. Industry	1,110	0	0	0	770	64	461	193	35	17	0	0	0	439	0	0	0	0	0	1,146	3,465
18. Transport	77	0	0	0	4,207	2,135	1,438	1	0	0	633	0	0	0	0	0	0	0	29	5	4,318
19. Agriculture	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	8	9
20. Fishery	0	0	0	0	260	22	238	0	0	0	0	0	0	0	0	0	0	0	0	0	260
21. Non-Energy Use	1,329	0	0	0	493	0	0	0	345	0	0	148	0	0	0	0	0	0	0	0	1,823
22. Total Final Use	**2,521**	**0**	**0**	**0**	**6,114**	**2,221**	**2,185**	**200**	**706**	**21**	**633**	**148**	**0**	**439**	**0**	**0**	**0**	**0**	**29**	**2,546**	**11,650**
ELECTRICITY OUTPUT																					
Main Activity Producer																					
Gross Electricity Generation - GWh	14,174	0	0	0	426	0	258	168	0	0	0	0	0	13,698	2,567	2	70	4	0	0	30,941
Autoproducer																					
Gross Electricity Generation - GWh	1,385	0	0	0	27	0	27	0	0	0	0	0	0	0	0	0	131	0	0	0	1,544

1/ Crude production includes Condensates which comprise of 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 refinery 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 taken from the Energy Commission, Electricity Supply In Malaysia - Performance and Statistical Information 2012.

Note : Total may not necessarily add up due to rounding

TABLE 32: ENERGY BALANCE TABLE IN THIRD QUARTER (Q3) OF 2012 (KTOE)

COMMERCIAL ENERGY BALANCE FOR MALAYSIA Q3 2012
(THOUSAND TONNES OF OIL EQUIVALENT)

ENERGY SOURCE	NATURAL GAS	LNG	CRUDE OIL (1/)	OTHERS (2/)	TOTAL PETROLEUM PRODUCTS	PETROLEUM PRODUCTS								COAL & COKE	HYDRO POWER	SOLAR	BIOMASS	BIOGAS	BIODIESEL	ELECTRICITY	TOTAL
						PETROL	DIESEL	FUEL OIL	LPG	KEROSENE	ATF & AV GAS	NON-ENERGY	REFINERY GAS								
PRIMARY SUPPLY																					
1. Primary Production	14,579	0	6,951	0	0	0	0	0	0	0	0	0	0	463	396	0	45	1	58	0	22,492
2. Gas Flaring, Reinjection & Use	-1,008	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1,008
3. Imports	2,058	0	2,032	0	3,821	1,657	1,180	209	124	1	60	589	0	3,007	0	0	0	0	0	0	10,918
4. Exports	-348	-5,656	-2,610	-31	-3,274	-714	-858	-400	-88	-176	-221	-817	0	-58	0	0	0	0	-2	-0	-11,979
5. Bunkers	0	0	0	0	-11	0	-1	-11	0	0	0	-0	0	0	0	0	0	0	0	0	-11
6. Stock Change	0	0	393	0	-309	56	-27	0	-2	2	-193	-145	0	234	0	0	0	0	-26	0	292
7. Statistical Discrepancy	0	0	-37	0	0	0	0	0	0	0	0	0	0	76	0	0	0	0	0	0	39
8. Primary Supply	**15,280**	**-5,656**	**6,729**	**-31**	**227**	**999**	**294**	**-202**	**35**	**-173**	**-354**	**-373**	**0**	**3,722**	**396**	**0**	**45**	**1**	**30**	**-0**	**20,743**
TRANSFORMATION																					
9. Gas Plants																					
9.1 MLNG	-6,383	5,730	0	0	55	0	0	0	55	0	0	0	0	0	0	0	0	0	0	0	-598
9.2 MDS	-284	0	0	0	124	0	37	0	0	10	0	78	0	0	0	0	0	0	0	0	-160
9.3 GPP-LPG (3&4/)	-2,489	0	0	0	502	0	0	0	502	0	0	0	0	0	0	0	0	0	0	0	-1,988
SUBTOTAL	**-9,157**	**5,730**	**0**	**0**	**680**	**0**	**37**	**0**	**556**	**10**	**0**	**78**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**-2,746**
10. Refineries	0	0	-6,598	31	6,389	1,168	2,409	590	158	171	926	914	53	0	0	0	0	0	0	0	-178
11. Power Stations & Self-Generation																					
11.1 Hydro Stations	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-396	0	0	0	0	155	-241
11.2 Thermal Stations	-3,016	0	0	0	-370	0	-201	-169	0	0	0	0	0	-3,280	0	0	-16	-1	0	2,592	-4,091
11.3 Self-Generation (5/)	-442	0	0	0	-6	0	-6	0	0	0	0	0	0	0	0	0	-29	0	0	130	-347
SUBTOTAL	**-3,458**	**0**	**0**	**0**	**-376**	**0**	**-207**	**-169**	**0**	**0**	**0**	**0**	**0**	**-3,280**	**-396**	**-0**	**-45**	**-1**	**0**	**2,877**	**-4,679**
12. Losses & Own Use	-162	-74	-132	0	-446	0	0	-4	0	0	0	-389	-53	0	0	0	0	0	0	-203	-1,017
13. Statistical Discrepancy	-0	-0	0	0	9	70	-89	10	-27	-0	55	-9	0	0	0	0	-0	0	0	-131	-122
14. Secondary Supply	**-12,778**	**5,656**	**-6,729**	**31**	**6,257**	**1,238**	**2,149**	**427**	**687**	**180**	**982**	**594**	**0**	**-3,280**	**-396**	**0**	**0**	**0**	**0**	**2,543**	**-8,696**
FINAL USE																					
15. Residential	0	0	0	0	180	0	0	0	177	3	0	0	0	0	0	0	0	0	0	552	732
16. Commercial	5	0	0	0	221	0	55	10	156	0	0	0	0	0	0	0	0	0	0	847	1,073
17. Industry	1,192	0	0	0	859	48	558	213	35	5	0	0	0	442	0	0	0	0	0	1,131	3,624
18. Transport	71	0	0	0	4,394	2,167	1,598	1	0	0	628	0	0	0	0	0	0	0	30	6	4,500
19. Agriculture	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	8	9
20. Fishery	0	0	0	0	255	22	233	0	0	0	0	0	0	0	0	0	0	0	0	0	255
21. Non-Energy Use	1,234	0	0	0	574	0	0	0	353	0	0	221	0	0	0	0	0	0	0	0	1,809
22. Total Final Use	**2,502**	**0**	**0**	**0**	**6,484**	**2,237**	**2,443**	**225**	**722**	**8**	**628**	**221**	**0**	**442**	**0**	**0**	**0**	**0**	**30**	**2,543**	**12,000**
ELECTRICITY OUTPUT																					
Main Activity Producer																					
Gross Electricity Generation - GWh	15,021	0	0	0	1,557	0	765	791	0	0	0	0	0	13,474	1,796	2	70	4	0	0	31,923
Autoproducer																					
Gross Electricity Generation - GWh	1,363	0	0	0	28	0	28	0	0	0	0	0	0	0	0	0	124	0	0	0	1,515

1/ Crude production includes Condensates which comprise of 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 refinery 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 taken from the Energy Commission, Electricity Supply In Malaysia - Performance and Statistical Information 2012.

Note : Total may not necessarily add up due to rounding

TABLE 33: ENERGY BALANCE TABLE IN FOURTH QUARTER (Q4) OF 2012 (KTOE)

COMMERCIAL ENERGY BALANCE FOR MALAYSIA Q4 2012
(THOUSAND TONNES OF OIL EQUIVALENT)

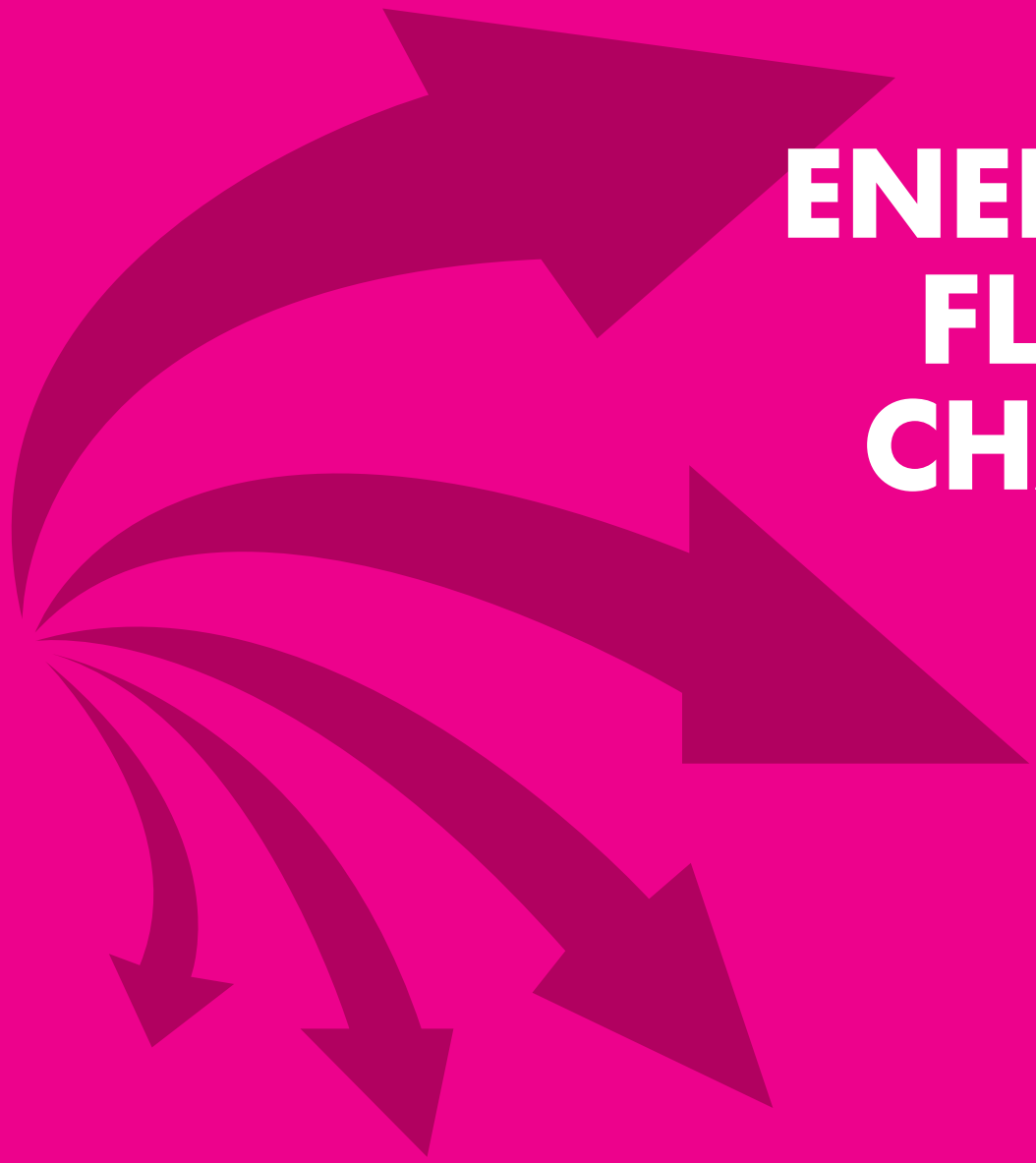
ENERGY SOURCE	NATURAL GAS	LNG	CRUDE OIL (1/)	OTHERS (2/)	TOTAL PETROLEUM PRODUCTS	PETROLEUM PRODUCTS								COAL & COKE	HYDRO POWER	SOLAR	BIOMASS	BIOGAS	BIODIESEL	ELECTRICITY	TOTAL
						PETROL	DIESEL	FUEL OIL	LPG	KEROSENE	ATF & AV GAS	NON-ENERGY	REFINERY GAS								
PRIMARY SUPPLY																					
1. Primary Production	16,004	0	7,666	0	0	0	0	0	0	0	0	0	0	405	483	0	48	1	74	0	24,682
2. Gas Flaring, Reinjection & Use	-824	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-824
3. Imports	2,030	0	2,124	0	3,857	1,766	962	209	116	1	110	692	0	4,132	0	0	0	0	0	9	12,151
4. Exports	-387	-7,073	-2,987	-50	-4,735	-898	-1,808	-400	-79	-176	-299	-1,076	0	-70	0	0	0	0	-9	-0	-15,312
5. Bunkers	0	0	0	0	-20	0	-1	-20	0	0	0	-0	0	0	0	0	0	0	0	0	-20
6. Stock Change	0	0	651	0	288	64	532	0	-4	1	-185	-120	0	-326	0	0	0	0	-35	0	578
7. Statistical Discrepancy	0	0	-96	0	0	0	0	0	0	0	0	0	0	-26	0	0	0	0	0	0	-122
8. Primary Supply	**16,823**	**-7,073**	**7,357**	**-50**	**-612**	**932**	**-315**	**-210**	**33**	**-173**	**-374**	**-505**	**0**	**4,115**	**483**	**0**	**48**	**1**	**31**	**8**	**21,133**
TRANSFORMATION																					
9. Gas Plants																					
9.1 MLNG	-9,223	7,163	0	0	55	0	0	0	55	0	0	0	0	0	0	0	0	0	0	0	-2,005
9.2 MDS	-268	0	0	0	121	0	39	0	0	8	0	74	0	0	0	0	0	0	0	0	-148
9.3 GPP-LPG (3&4/)	-1,111	0	0	0	490	0	0	0	490	0	0	0	0	0	0	0	0	0	0	0	-621
SUBTOTAL	**-10,603**	**7,163**	**0**	**0**	**665**	**0**	**39**	**0**	**545**	**8**	**0**	**74**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**-2,774**
10. Refineries	0	0	-7,216	50	6,770	1,188	2,659	557	178	0	999	977	52	0	0	0	0	0	0	0	-396
11. Power Stations & Self-Generation																					
11.1 Hydro Stations	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-483	0	0	0	0	178	-305
11.2 Thermal Stations	-2,936	0	0	0	-405	0	-279	-126	0	0	0	0	0	-3,682	0	-0	-16	-1	0	2,599	-4,442
11.3 Self-Generation (5/)	-438	0	0	0	-6	0	-6	0	0	0	0	0	0	0	0	0	-31	0	0	136	-339
SUBTOTAL	**-3,373**	**0**	**0**	**0**	**-411**	**0**	**-285**	**-126**	**0**	**0**	**0**	**0**	**0**	**-3,682**	**-483**	**-0**	**-48**	**-1**	**0**	**2,913**	**-5,086**
12. Losses & Own Use	-160	-91	-141	0	-428	0	0	-5	0	0	0	-370	-52	0	0	0	0	0	0	-244	-1,063
13. Statistical Discrepancy	0	0	0	0	198	72	19	21	-21	12	34	61	0	0	0	0	-0	0	0	-148	50
14. Secondary Supply	**-14,136**	**7,073**	**-7,357**	**50**	**6,795**	**1,260**	**2,432**	**447**	**701**	**179**	**1,034**	**742**	**0**	**-3,682**	**-483**	**-0**	**-48**	**-1**	**0**	**2,521**	**-9,269**
FINAL USE																					
15. Residential	0	0	0	0	179	0	0	0	176	3	0	0	0	0	0	0	0	0	0	528	707
16. Commercial	6	0	0	0	233	0	66	4	163	0	0	0	0	0	0	0	0	0	0	833	1,072
17. Industry	1,181	0	0	0	860	49	544	229	34	3	0	0	0	433	0	0	0	0	0	1,156	3,630
18. Transport	72	0	0	0	4,058	2,121	1,276	1	0	0	660	0	0	0	0	0	0	0	31	6	4,166
19. Agriculture	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	7	9
20. Fishery	0	0	0	0	252	22	230	0	0	0	0	0	0	0	0	0	0	0	0	0	252
21. Non-Energy Use	1,428	0	0	0	598	0	0	0	361	0	0	237	0	0	0	0	0	0	0	0	2,027
22. Total Final Use	**2,687**	**0**	**0**	**0**	**6,183**	**2,191**	**2,117**	**237**	**735**	**6**	**660**	**237**	**0**	**433**	**0**	**0**	**0**	**0**	**31**	**2,530**	**11,864**
						ELECTRICITY OUTPUT															
Main Activity Producer																					
Gross Electricity Generation - GWh	14,448	0	0	0	1,726	0	1,051	675	0	0	0	0	0	13,955	2,071	2	70	4	0	0	32,277
Autoproducer																					
Gross Electricity Generation - GWh	1,419	0	0	0	26	0	26	0	0	0	0	0	0	0	0	0	132	0	0	0	1,578

1/ Crude production includes Condensates which comprise of 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 refinery 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 taken from the Energy Commission, Electricity Supply In Malaysia - Performance and Statistical Information 2012.

Note : Total may not necessarily add up due to rounding

THIS PAGE IS INTENTIONALLY LEFT BLANK

THIS PAGE IS INTENTIONALLY LEFT BLANK



ENERGY FLOW CHART

PRIMARY ENERGY SUPPLY

- Oil **32.1%**
- Natural Gas **46.0%**
- Coal **18.9%**
- Hydro **2.9%**
- Renewables **0.4%**

TOTAL : 83,938 ktoe

ENERGY TRANSFORMATION

OIL REFINERY **26,047** ktoe

MDS **486** ktoe

MLNG **26,003** ktoe

POWER PLANTS **11,562** ktoe

GPP-LPG **2,036** ktoe

FINAL ENERGY CONSUMPTION

BY SECTORS

- Transportation 36.8%
- Industry 29.8%
- Residential 6.1%
- Commercial 9.0%
- Agriculture 2.3%
- Non-Energy 16.0%

TOTAL : 46,711 ktoe

BY FUELS

- Oil 53.0%
- Natural Gas 21.8%
- Electricity 21.4%
- Coal & Coke 3.7%

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** = $\frac{\text{Installed Capacity – Peak Consumption}}{\text{Peak Consumption}}$
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.

NOTE

NOTE

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)**

Printed On Recyclable Environmental Friendly Paper