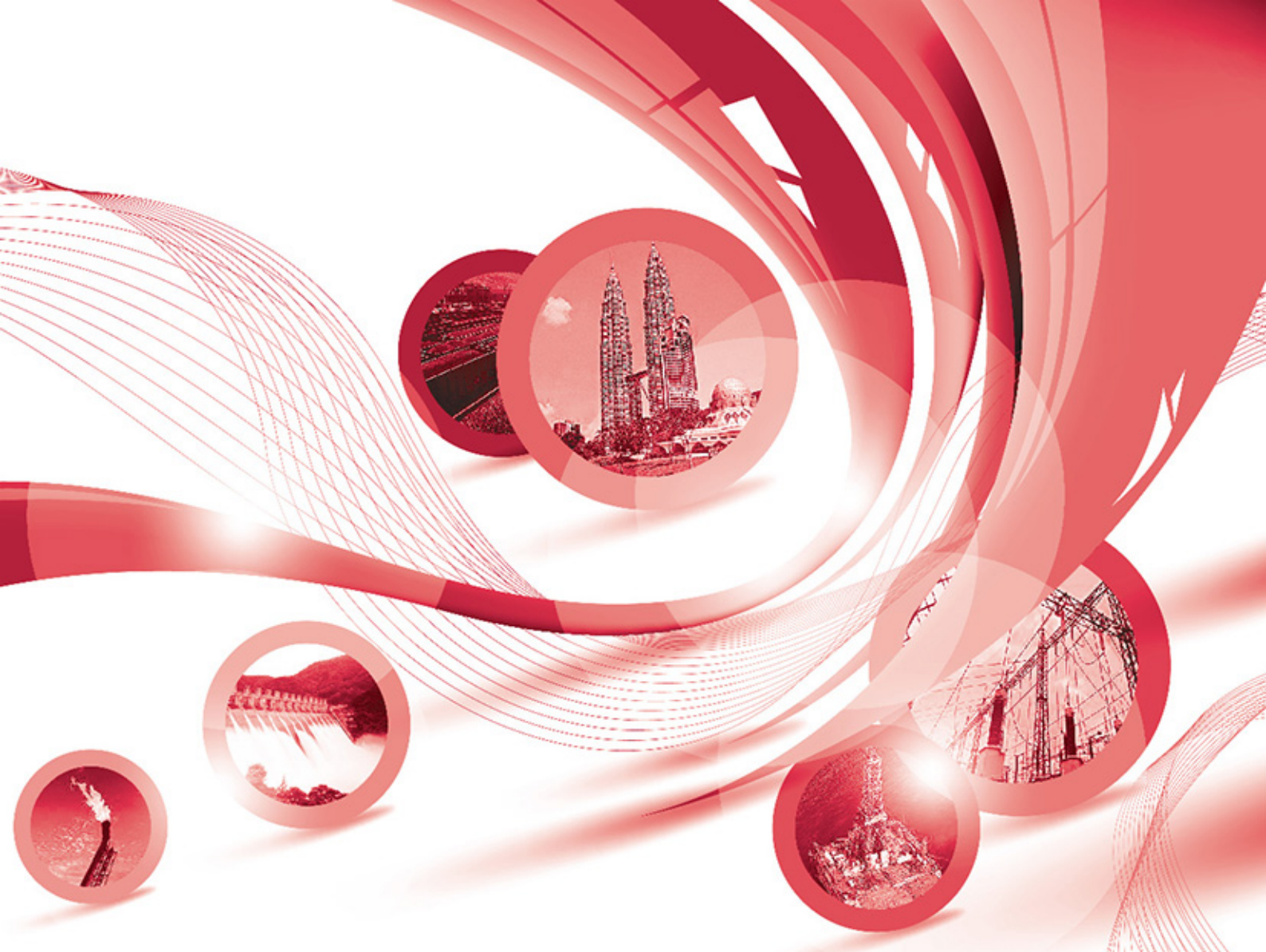
NATIONAL ENERGY BALANCE 2010

KeTTHA
KEMENTERIAN TENAGA, TEKNOLOGI HIJAU DAN AIR
Ministry of Energy, Green Technology and Water

Suruhanjaya Tenaga
Energy Commission

Excellence • Reliability • Sense of Fairness and Fairplay



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PREFACE

In conclusion, this National Energy Balance (NEB) report has provided us with a broad range of data and indicators on the status of energy supply and use in Malaysia.

After the economic downturn in 2009, the Malaysian economy recovered strongly with a GDP growth rate of 7.2 percent in 2010. In line with our economic recovery, commercial energy supply also increased by 11.1 percent from 65,692 ktoe in 2009 to 72,951 ktoe in 2010. Natural gas was the major contributor to the increase, constituting 43.3 percent of the total commercial energy supply.

On the demand side, final energy demand increased moderately by 1.5 percent, from 40,845 ktoe in 2009 to 41,476 ktoe in 2010. The increase in final energy demand was mainly attributed to the transportation sector which consumed about 40.6 percent of the total demand, with increase in the demand for motor petrol.

Natural gas maintained its highest share of energy input for electricity generation, at about 53.0 percent of the total input of 32,068 ktoe. This, however, is a decrease from 2009, as the share of coal for power generation increased to 40.4 percent in 2010. Hydro contributed about 4.9 percent; a slight decrease from the share in 2009 of about 6.6 percent. The share of fuel oil and diesel oil remained small, at about 1.7 percent, which was a slight decrease in comparison to the previous year's share of about 2.4 percent.

I am happy to note that the country's industrial energy intensity has reduced by 10.2 percent, from 78 toe/RM million in 2009 to 70 toe/RM million in 2010. At the same time, our final energy intensity has also improved from 78 toe/RM million in 2009 to 74 toe/RM million, equivalent to a reduction of 5.1 percent.

In conclusion, this National Energy Balance (NEB) report has provided us with a broad range of data and indicators on the status of energy supply and use in Malaysia. I sincerely hope that this source of reference on the country's energy situation will be useful to not only those who are actively involved in energy research and planning, but also to all of us in industry, government and NGOs as well as the public who are one way or another affected by developments in the energy industry in their daily work and activities.

The publication of this important report would not have been possible without the collaborative efforts from many key agencies. Therefore, I would like to record my utmost appreciation to all relevant government agencies, power utilities, independent power producers, oil companies, coal producers, cement and iron and steel manufacturers, and others, for their continuing support all these years in providing the much needed energy data and information. I sincerely hope that such strong support will continue in the years to come.

Thank you.

Y.B DATO' SRI PETER CHIN FAH KUI
Minister of Energy, Green Technology and Water
Malaysia

INTRODUCTION

Program such as workshops and dialogue sessions have been consistently conducted to identify and resolve issues pertaining to gathering of energy data and statistics.

The National Energy Balance (NEB) report is an extension of Suruhanjaya Tenaga / Energy Commission's (ST) role from regulator of electricity and gas supplies to the main reference point for energy data in Malaysia. A complete statistical publication for energy supply and demand of the nation, it is based upon an energy balance format using similar energy units for all reported data.

NEB covers three major areas, namely the Energy Supply, Transformation and Final Usage - Including natural gas, crude oil, petroleum products, coal and coke, electricity, hydropower and renewable energy.

With this extended role, ST has formed various cooperation arrangements, to supply monthly, quarterly and annual energy data to the relevant agencies such as the International Energy Agency (IEA), International Energy Forum Secretariat (IEFS), The Institute of Energy Economics, Japan (IEEJ), Asia Pacific Economic Cooperation (APEC) and ASEAN Centre for Energy (ACE). This cooperation demonstrates ST's commitment in providing accurate information while providing an opportunity to further enhance the Commission's capacity and expertise in related areas.

Acknowledging the importance of accurate, reliable and up-to-date to the policy makers, stakeholders and the energy sector, ST is continually poised to work towards strengthening relationships with data providers. Program such as workshops and dialogue sessions have been consistently conducted to identify and resolve issues pertaining to gathering of energy data and statistics.

To this end, Malaysian Energy Information Hub (MEIH), a portal undertaken and managed by the Commission, carries the primary objective of establishing a comprehensive national energy database to support the dissemination and distribution of energy statistics in Malaysia to local and international stakeholders and the general public.

MEIH also aims to help strengthen the Commission's role in responding to enquiries and requests from the public and private sectors regarding the country's energy data. The Hub collects data and information relevant to the energy planning and energy pricing which are then deposited in the energy database system for easy reference.

It will also perform analysis for energy supply mix, efficiency of electricity generation, refining efficiency, overall energy transformation efficiency and energy intensity which could contribute to farther policy making purposes to strengthen the Commission's position in regulating the energy sector.

Finally, I wish to thank the Ministry of Energy, Green Technology & Water and all data providers for your support in the preparation of the NEB report.

Thank you.

TAN SRI DATUK DR. AHMAD TAJUDDIN BIN ALI
Chairman, 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 demand 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:-

Energy supply = Production + Imports - Exports - Bunkers +/- Stock change

Energy demand

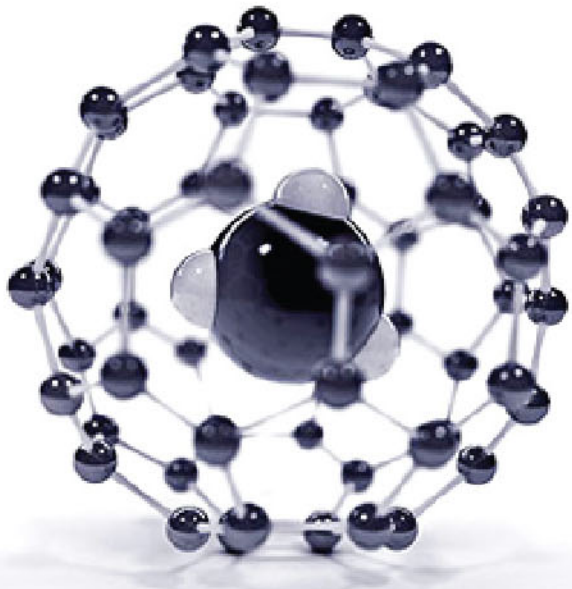
= Gross inland consumption

= Final energy consumption

+ Consumption of the energy transformation sector

+ Distribution losses

+ Non-energy consumption



EXECUTIVE SUMMARY

ENERGY OVERVIEW

After the downturn in 2009, the Malaysian economy experienced a strong growth of 7.2 percent in 2010. All economic sectors registered strong performances in 2010, in line with robust domestic demand and the rebound in exports. In particular, the manufacturing sector recovered firmly, with the electronics and electrical products cluster and domestic-oriented industries registering double-digit growth rates. Buoyed by the economy recovery, the energy supply in Malaysia also showed a positive growth. Production of natural gas in 2010 experienced an expansion from the previous year. The supply growth was attributed to the moderate growth in total energy demand in 2010. After falling in 2009, total energy demand in 2010 recorded an increase. The expansion was led by better economic conditions and measures taken up by the Government to stimulate the economic growth.

As a result of the double-digit growth of GDP in the services sector, the energy demand in the commercial sector also experienced higher growth in 2010 compared to the other sectors. The growth in GDP is not always experienced by the energy sector as well. As for the industrial sector, the GDP from manufacturing recorded an increase, but the energy demand in the industrial sector registered a negative growth. This may be due to the energy efficiency measures that were implemented by the industrial players which managed to reduce their energy demand.

PRIMARY SUPPLY OF COMMERCIAL ENERGY

Malaysia primary energy supply registered at 76,809 ktoe, an expansion of 3.0 percent from the previous year. This was driven mainly by the higher supply availability in the country of petroleum products, natural gas as well as coal and coke. A big increase of 43.7 percent of petroleum products in 2010 was one of the major contributors to that increase. Furthermore, the local demand for coal and coke from the power sector, had led to the higher imports of coal and coke in 2010. The import of coal and coke experienced an expansion of 43.3 percent in 2010 compared to 2009.

Total crude oil and condensates production registered a small decrease of 1.8 percent from that of 2009 to 32,163 ktoe or 638.3 thousand barrels per day in 2010. This was driven by the lower production of crude oil and condensates in Peninsular Malaysia and Sabah by 6.6 percent and 5.9 percent respectively. The primary supply of natural gas which stood at 60,934 ktoe in 2010, is an increase of 2.5 percent from the 2009 level of 59,457 ktoe. The expansion was mainly due to higher production of natural gas in 2010. In 2010, natural gas production increased by 10.6 percent to settle at 71,543 ktoe. The primary supply of coal and coke in the country recorded an increase of 39.1 percent in 2010 from the 2009 level of 14,777 ktoe. The increase in the imports of coal and coke to meet local demand especially from the power sector was the major contributor to the increase. In 2010, the primary supply of hydropower energy recorded a decrease of 3.0 percent to 1,577 ktoe.

As of 1st January 2010, Malaysia's crude oil reserves stood at 5.799 billion barrels compared to 5.517 billion barrels in the previous year. This increase was mainly due to the upward revision of oil reserves in existing fields, through Enhanced Oil Recovery (EOR) projects at the Dulang and Samarang fields, as well as additions from new discoveries from Siakap North, Kawang and Tukau Timur fields. Meanwhile, as of 1st January 2010, Malaysia's natural gas reserves stood at 88.587 trillion standard cubic feet (Tscf), higher by 0.7 percent from the 2009 level of 87.968 Tscf.

SECONDARY SUPPLY OF COMMERCIAL ENERGY

The total production of the oil refineries in 2010 was 22,487 ktoe, a decrease of 14.8 percent compared to the previous year (2009: 26,386 ktoe). This was due to the planned shutdown of the subsidiary, Malaysian Refining Company Sdn. Bhd. (MRC), for a plant revamp and turnaround exercise. Of the total supply, diesel took up the highest share (39.5 percent), followed by Non-Energy (20.5 percent), Motor Petrol (18.3 percent), ATF and AV Gas (13.6 percent), LPG (3.3 percent), Kerosene (2.3 percent), Fuel Oil (1.5 percent) and Refinery Gas (1.0 percent). Malaysia's total refinery capacity currently is 492 thousand barrels per day, excluding the condensates splitter capacity of 74.3 thousand barrels per day.

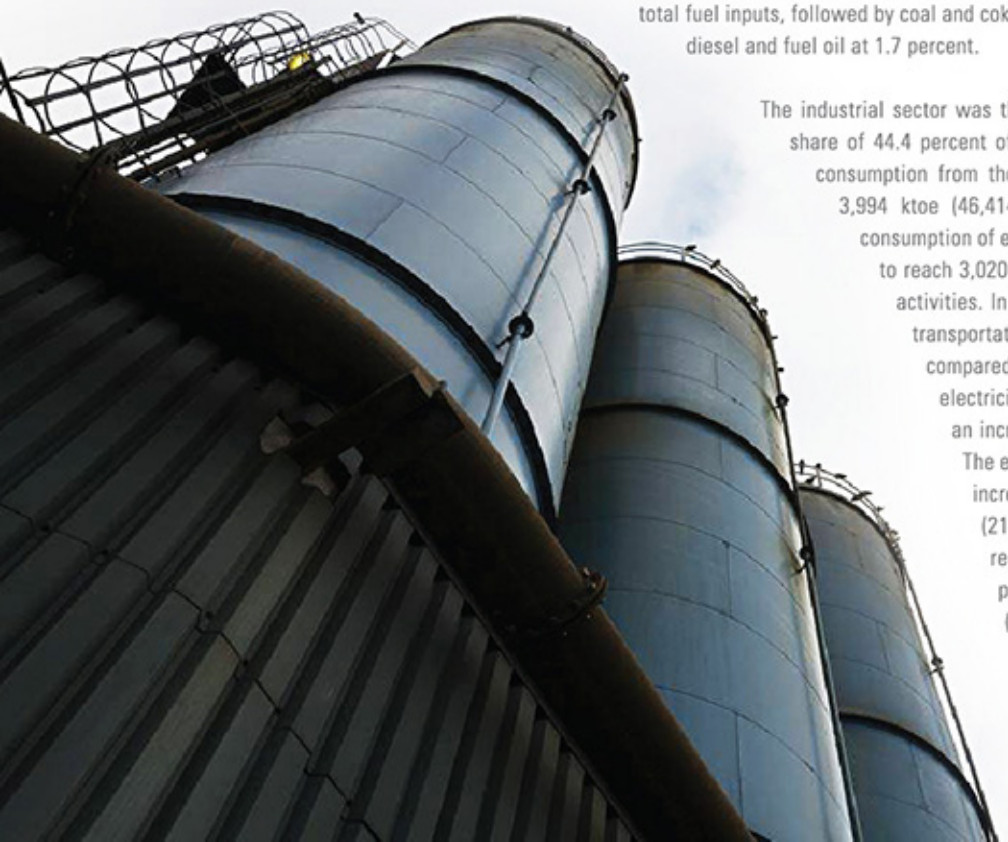
EXECUTIVE SUMMARY

Liquefied Petroleum Gas (LPG) production from LNG decreased to 451 ktoe due to higher exports of LNG. The LPG production from the Gas Processing Plant (GPP) recorded a more than double expansion to 2,299 ktoe in 2010 compared to the previous year's level of 1,012 ktoe. The Middle Distillate Synthesis (MDS) plant output also showed an upward trend of 6.6 percent growth to settle at 454 ktoe compared to the previous year's level of 426 ktoe. The petroleum products from MDS plant consisted of 68.7 percent Non-energy products, 21.6 percent Diesel and 9.7 percent Kerosene.

ELECTRICITY

Malaysia's total installed electricity generation capacity as of 2010 was 24,361 MW. Peninsular Malaysia had about 89.7 percent of the total followed by Sarawak at 5.5 percent and Sabah at 4.8 percent. An additional 10.9 MW of Renewable Energy (RE) generation capacities under the Small Renewable Energy Programme (SREP) were recorded in 2010 in Peninsular Malaysia. The sources of RE were from Landfill Gas, Municipal Waste and Palm Oil Mill Effluent (POME). Gross electricity generation registered 108,175 GWh, an increase of 2.3 percent from the previous year (2009: 105,706 GWh). The electricity consumption was 104,521 GWh, an increase of 8.5 percent from the previous year (2009: 96,307 GWh). The peak demand for Peninsular Malaysia of 15,072 MW was recorded in the second quarter of the year (2Q 2010), while in Sarawak it was at 1,090 MW (in 4Q 2010) and in Sabah it was at 780 MW (3Q 2010). The calculated reserve margin for Peninsular Malaysia was 45.0 percent, 22.8 percent for Sarawak and 49.4 percent for Sabah.

The total energy or fuel input to power stations increased by 30.3 percent in 2010 to 32,068 ktoe. Natural gas continued as the main fuel source for electricity generation, with a share of 53.0 percent of the total fuel inputs, followed by coal and coke at 40.4 percent, hydropower at 4.9 percent and diesel and fuel oil at 1.7 percent.



The industrial sector was the main user of electricity in Malaysia with its share of 44.4 percent of the total consumption in 2010. The electricity consumption from the industrial sector increased by 7.4 percent to 3,994 ktoe (46,414 GWh) compared to the previous year. The consumption of electricity in the commercial sector also increased to reach 3,020 ktoe (35,107 GWh). This was driven by tourism activities. In 2010, the total number of passengers using air transportation recorded an increase of 12.4 percent, compared to an increase of only 7.6 percent in 2009. The electricity consumption in the residential sector recorded an increase of 8.1 percent to 1,937 ktoe (22,511 GWh). The electricity consumption by the rail transport sector increased from 12 ktoe (139 GWh) in 2009 to 18 ktoe (214 GWh) in 2010. The total electricity consumption recorded a growth of 8.5 percent compared to the previous year's consumption of 8,993 ktoe (104,521 GWh).

EXECUTIVE SUMMARY

FINAL DEMAND OF COMMERCIAL ENERGY

After having declined in 2009, the final energy demand in 2010 expanded marginally by 1.5 percent to 41,476 ktoe compared to 40,845 ktoe in 2009. The expansion was mainly due to the higher energy demand in the transport and commercial sectors. However, the total energy demand in the industrial sector declined by 9.7 percent. This was driven mainly by the lower demand of natural gas from the industrial sector. In 2010, the transport sector became the leading consumer of energy with its share of 40.6 percent and a growth rate of 4.4 percent compared to the previous year. The residential and commercial sector constituted about 16.8 percent of the share in 2010 with a growth rate of 9.7 percent. The total demand in non-energy use in 2010 was 3,696 ktoe, equivalent to 8.9 percent of the total energy demand. The agriculture sector was the smallest consumer of energy with a share of 2.6 percent at 1,074 ktoe.

The industrial GDP of Malaysia in 2010 registered a positive growth of 7.1 percent compared to the previous year after experiencing a contraction in 2009, especially in the manufacturing industry. Malaysia's industrial energy intensity for 2010 was 70 toe/RM million, a decrease of 10.5 percent from the previous year's intensity. This means that the final energy demand slowed down in comparison to the GDP growth.

Total energy demand by type of fuels show that petroleum products constituted about 58.8 percent of total energy demand, followed by electricity at 21.7 percent, natural gas at 15.1 percent and coal and coke at 4.7 percent. All sectors experienced demand expansion in 2010 except for the industrial sector. Natural gas demand decreased by 8.0 percent in 2010 to 6,254 ktoe due to the lower demand from industrial and non-energy sectors. The demand for coal and coke expanded by 13.2 percent, with growth contributed mainly by the construction industries. The coal and coke final demand was up at 1,826 ktoe in 2010 from 2009 level of 1,613 ktoe.

FINAL DEMAND FOR PETROLEUM PRODUCTS

Total final energy demand for petroleum products in 2010 expanded by 1.1 percent with the major increase coming from the LPG and ATF & AV Gas. Total demand for LPG showed an upward trend especially in the non-energy sector, as their consumption of propane and butane increased. Demand for Aviation Turbine Fuel (ATF) and Aviation Gas (AV Gas) showed an increase, of 12.3 percent, compared to the previous year at 2,380 ktoe. In terms of share, motor petrol (39.2 percent) and diesel (34.4 percent) continued to be the largest contributors to the total demand for petroleum products. This was followed by LPG (12.0 percent), ATF and AV Gas (9.7 percent), non-energy (2.7 percent), fuel oil (1.9 percent), and kerosene (0.1 percent).

OUTLOOK IN 2011

Following the strong GDP performance in 2010, the Malaysian economy is projected to grow at 5 to 6 percent in 2011, driven mainly by continued expansion in the domestic demand. The services and manufacturing sectors are expected to expand, albeit at a more moderate pace given the high statistical base of 2010. Total primary energy supply is expected to expand, reflecting higher natural gas production with the opening of two new gas fields in offshore Terengganu and Sarawak. However, crude oil production is expected to decline further due to scheduled maintenance and the implementation of the Reservoir Management Plan to sustain long-term production. As all economic sectors are expected to expand in 2011, the energy demand for the country will be expected to experience a similar trend. Total energy demand in the industrial sector is expected to increase as new infrastructure projects scheduled to be implemented under the Economic Transformation Programme (ETP) will provide the impetus for the sector.

Key Economic and Energy Data

Table 1: Key Economic and Energy Data

	2010				
	1Q	2Q	3Q	4Q	**TOTAL**
GDP at 2000 prices (RM Million) *	133,912	138,972	142,134	144,535	**559,554**
GDP at current prices (RM Million) *	182,787	186,345	193,410	203,422	**765,965**
GNI at 2000 prices (RM Million) *	121,355	126,082	133,586	135,811	**516,833**
GNI at current prices (RM Million) *	173,034	177,066	189,898	199,453	**739,451**
Population ('000 people) **	28,162	28,251	28,327	28,403	**28,251**
Primary Energy Supply (ktoe)	19,354	18,847	19,685	18,923	**76,809**
Final Energy Demand (ktoe)	9,708	10,681	10,630	10,456	**41,475**
Electricity Demand (ktoe)	2,153	2,334	2,285	2,221	**8,993**
Electricity Demand (GWh)	25,023	27,126	26,557	25,813	**104,519**
Per Capita					
GDP at 2000 prices (RM Million)	4,755	4,919	5,018	5,089	**19,807**
Primary Energy Supply (toe)	0.700	0.678	0.710	0.681	**2.772**
Final Energy Demand (toe)	0.345	0.378	0.375	0.368	**1.468**
Electricity Demand (GWh)	889	960	938	909	**3,700**
Energy Intensity					
Primary Energy Supply (toe/GDP at 2000 prices (RM Million))	144.5	135.6	138.5	130.9	**137.3**
Final Energy Demand (toe/GDP at 2000 prices (RM Million))	72.5	76.9	74.8	72.3	**74.1**
Electricity Demand (toe/GDP at 2000 prices (RM Million))	16.1	16.8	16.1	15.4	**16.1**
Electricity Demand (GWh/GDP at 2000 prices (RM Million))	0.187	0.195	0.187	0.179	**0.187**

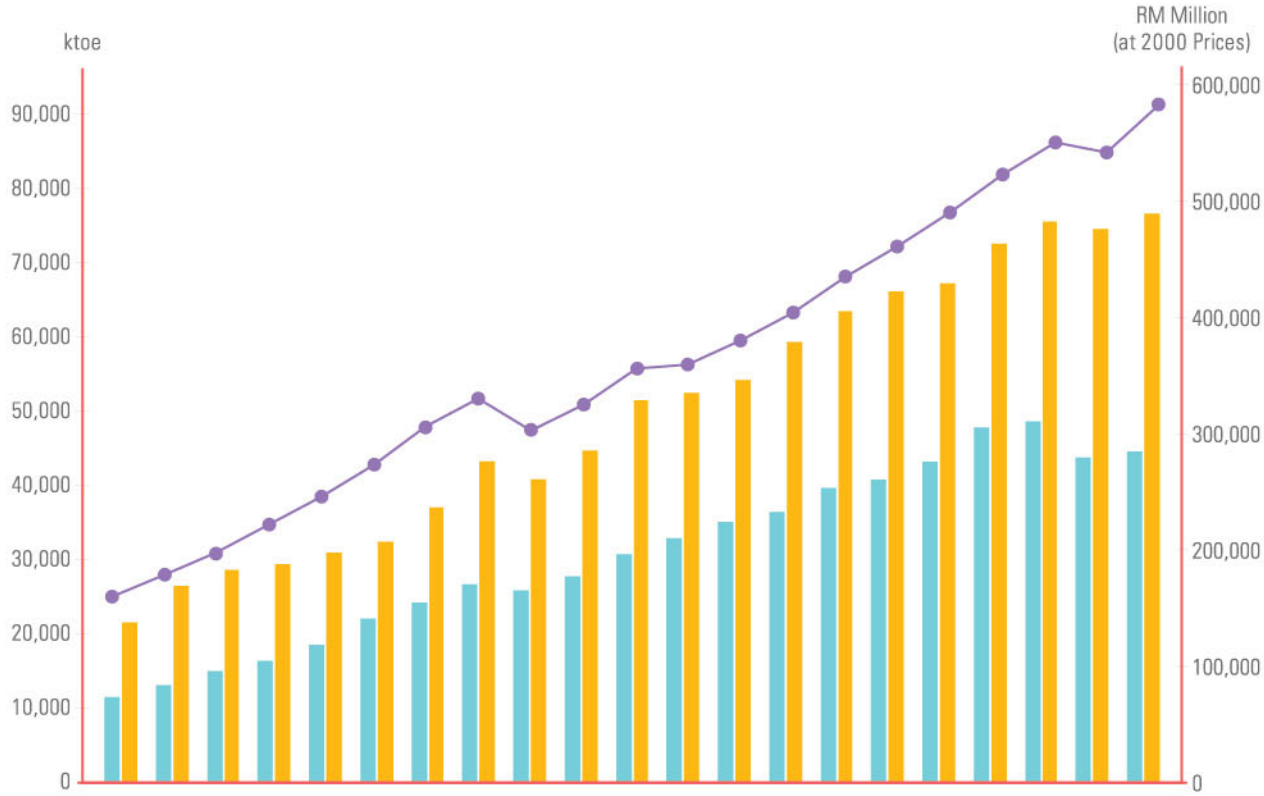
Note (*) : Quarterly data from Department of Statistics Malaysia
(**) : Mid-year population from Department of Statistics Malaysia

Table 2 : Key Economic and Energy Data by Region

Peninsular Malaysia	2005	2006	2007	2008	2009	2010
GDP at 2000 prices (RM Million) *	380,087	403,214	429,731	451,653	442,558	477,183
Population ('000 People) **	21,075	21,370	21,662	21,951	22,241	22,656
Final Energy Demand (ktoe)	32,195	34,390	37,921	38,530	34,521	35,593
Electricity Demand (ktoe)	6,366	6,669	7,030	7,307	7,567	8,145
Electricity Demand (GWh)	73,987	77,504	81,710	84,924	87,950	94,666
Per Capita						
GDP at 2000 prices (RM Million)	18,035	18,868	19,838	20,575	19,899	21,062
Final Energy Demand (toe)	1.528	1.609	1.751	1.755	1.552	1.571
Electricity Demand (kWh)	3,511	3,627	3,772	3,869	3,955	4,178
Energy Intensity						
Final Energy Demand (toe/GDP at 2000 prices (RM Million))	84.7	85.3	88.2	85.3	78.0	74.6
Electricity Demand (toe/GDP at 2000 prices (RM Million))	16.7	16.5	16.4	16.2	17.1	17.1
Electricity Demand (GWh/GDP at 2000 prices (RM Million))	0.195	0.192	0.190	0.188	0.199	0.198
Sabah	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
GDP at 2000 prices (RM Million) *	25,285	26,562	27,691	29,712	30,841	31,567
Population ('000 People) **	3,076	3,099	3,125	3,154	3,184	3,207
Final Energy Demand (ktoe)	2,806	2,587	2,879	3,068	3,046	2,758
Electricity Demand (ktoe)	238	255	285	299	329	355
Electricity Demand (GWh)	2,766	2,969	3,317	3,474	3,818	4,127
Per Capita						
GDP at 2000 prices (RM Million)	8,221	8,571	8,860	9,420	9,687	9,844
Final Energy Demand (toe)	0.912	0.835	0.921	0.973	0.957	0.860
Electricity Demand (kWh)	899	958	1,061	1,102	1,199	1,287
Energy Intensity						
Final Energy Demand (toe/GDP at 2000 prices (RM Million))	111.0	97.4	104.0	103.3	98.8	87.4
Electricity Demand (toe/GDP at 2000 prices (RM Million))	9.4	9.6	10.3	10.1	10.7	11.2
Electricity Demand (GWh/GDP at 2000 prices (RM Million))	0.109	0.112	0.120	0.117	0.124	0.131
Sarawak	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
GDP at 2000 prices (RM Million) *	43,878	45,750	48,919	49,318	48,602	50,804
Population ('000 People) **	2,327	2,363	2,399	2,435	2,471	2,471
Final Energy Demand (ktoe)	3,274	3,330	3,461	3,302	3,277	3,125
Electricity Demand (ktoe)	339	348	368	380	391	493
Electricity Demand (GWh)	3,940	4,045	4,277	4,416	4,544	5,730
Per Capita						
GDP at 2000 prices (RM Million)	18,860	19,363	20,391	20,254	19,671	20,559
Final Energy Demand (toe)	1.407	1.409	1.443	1.356	1.326	1.265
Electricity Demand (kWh)	1,694	1,712	1,783	1,814	1,839	2,319
Energy Intensity						
Final Energy Demand (toe/GDP at 2000 prices (RM Million))	74.6	72.8	70.7	67.0	67.4	61.5
Electricity Demand (toe/GDP at 2000 prices (RM Million))	7.7	7.6	7.5	7.7	8.0	9.7
Electricity Demand (GWh/GDP at 2000 prices (RM Million))	0.090	0.088	0.087	0.090	0.094	0.113

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

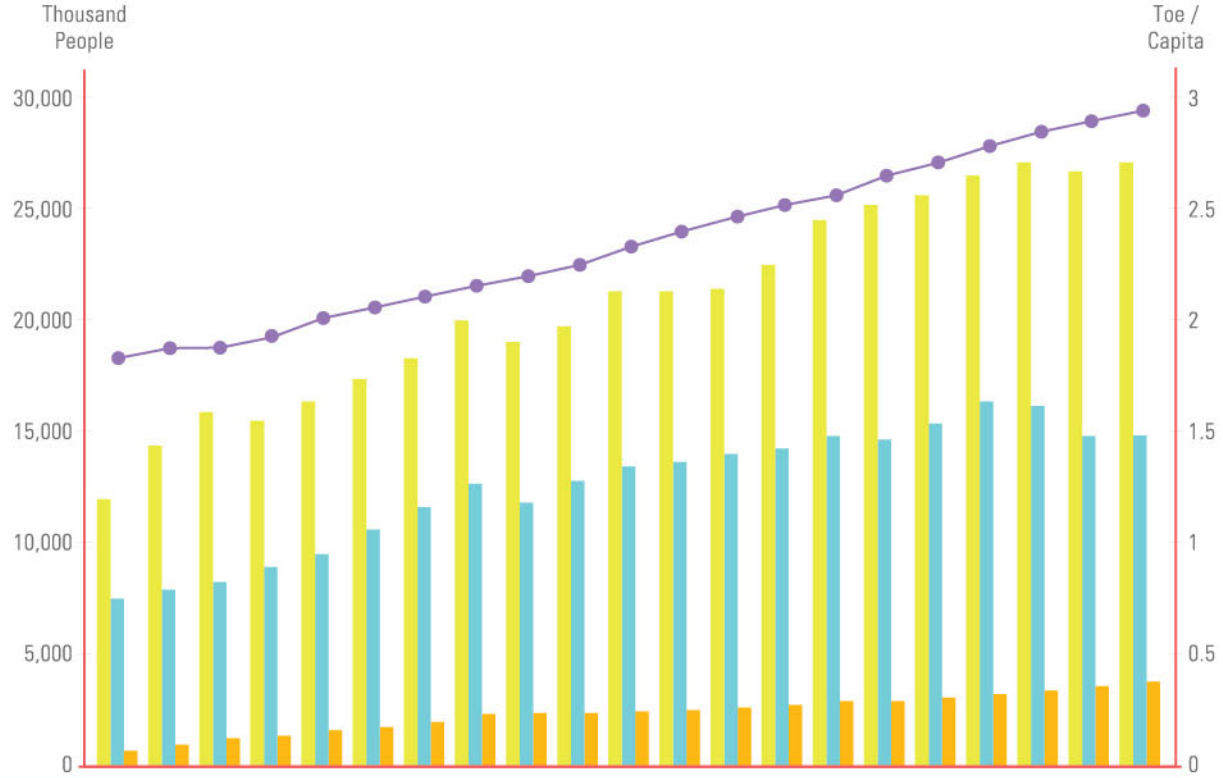
Figure 1 : Trends in GDP, Primary Energy Supply and Final Energy Demand



YEAR	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Final Energy Demand (Ktoe)	13,217	14,560	16,185	17,468	19,287	22,164	24,167	26,168	25,558	27,228	29,699	31,515	33,290	34,586	37,323	38,285	40,323	44,268	44,901	40,845	41,476
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	62,358	66,188	67,878	72,384	75,490	74,582	76,809
GDP	179,383	196,506	213,966	235,137	256,798	282,039	310,251	332,970	308,465	327,397	356,401	358,246	377,559	399,414	426,508	449,250	475,526	506,341	530,683	522,001	559,554

Source : i) Department of Statistics Malaysia
ii) National Energy Balance 2009, Ministry of Energy, Green Technology and Water

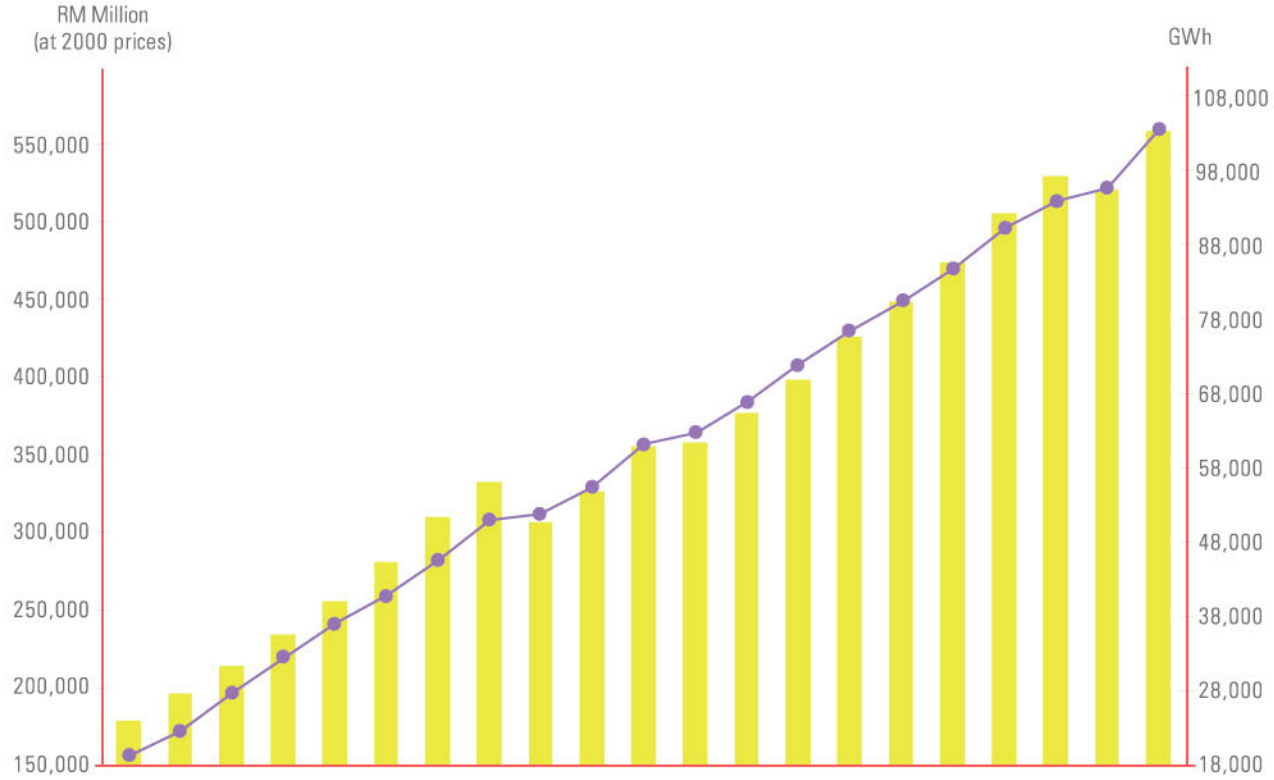
Figure 2 : Trend of Primary Energy Supply, Electricity Demand and Final Energy Demand Per Capita



YEAR	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Primary Energy Supply Per Capita	1.19	1.39	1.54	1.53	1.58	1.64	1.79	2.00	1.85	1.97	2.17	2.17	2.18	2.3	2.44	2.51	2.55	2.66	2.72	2.67	2.72
Final Energy Demand Per Capita	0.73	0.77	0.85	0.9	0.96	1.07	1.15	1.21	1.16	1.20	1.27	1.32	1.36	1.36	1.46	1.45	1.51	1.63	1.62	1.46	1.47
Electricity Demand Per Capita	0.09	0.10	0.12	0.13	0.15	0.16	0.18	0.20	0.21	0.21	0.22	0.23	0.24	0.25	0.26	0.26	0.27	0.28	0.29	0.30	0.32
Population (Thousand People)	18,102	18,986	18,985	19,503	20,049	20,624	21,101	21,595	22,107	22,636	23,495	24,013	24,527	25,048	25,581	26,128	26,832	27,186	27,541	27,895	28,251

Source : i) Department of Statistics Malaysia
ii) National Energy Balance 2009, Ministry of Energy, Green Technology and Water

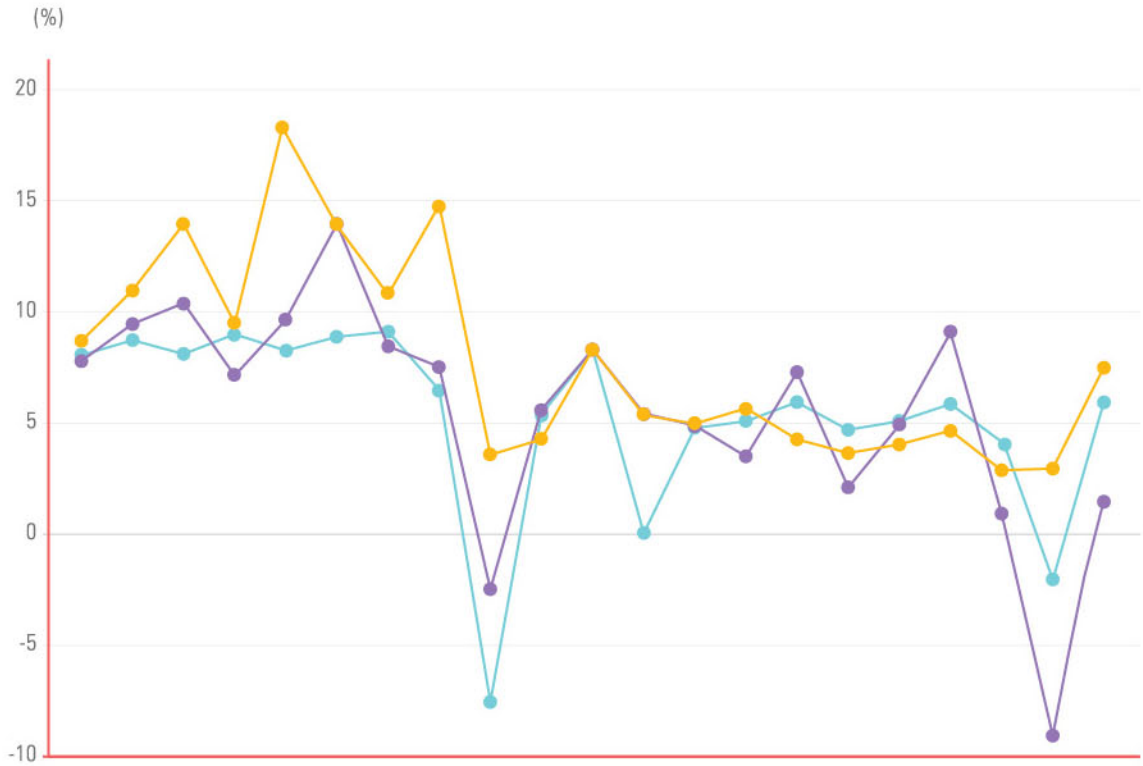
Figure 3 : Trends in GDP and Electricity Comsumption



YEAR	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
GDP (RM Million)	179,383	196,506	213,966	235,137	256,798	282,039	310,251	332,970	308,465	327,397	356,401	358,246	377,559	399,414	426,508	449,250	475,526	506,341	530,683	522,001	559,554
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	77,206	80,705	84,575	89,294	92,815	96,313	104,519

Source : i) Department of Statistics Malaysia
ii) National Energy Balance 2009, Ministry of Energy, Green Technology and Water

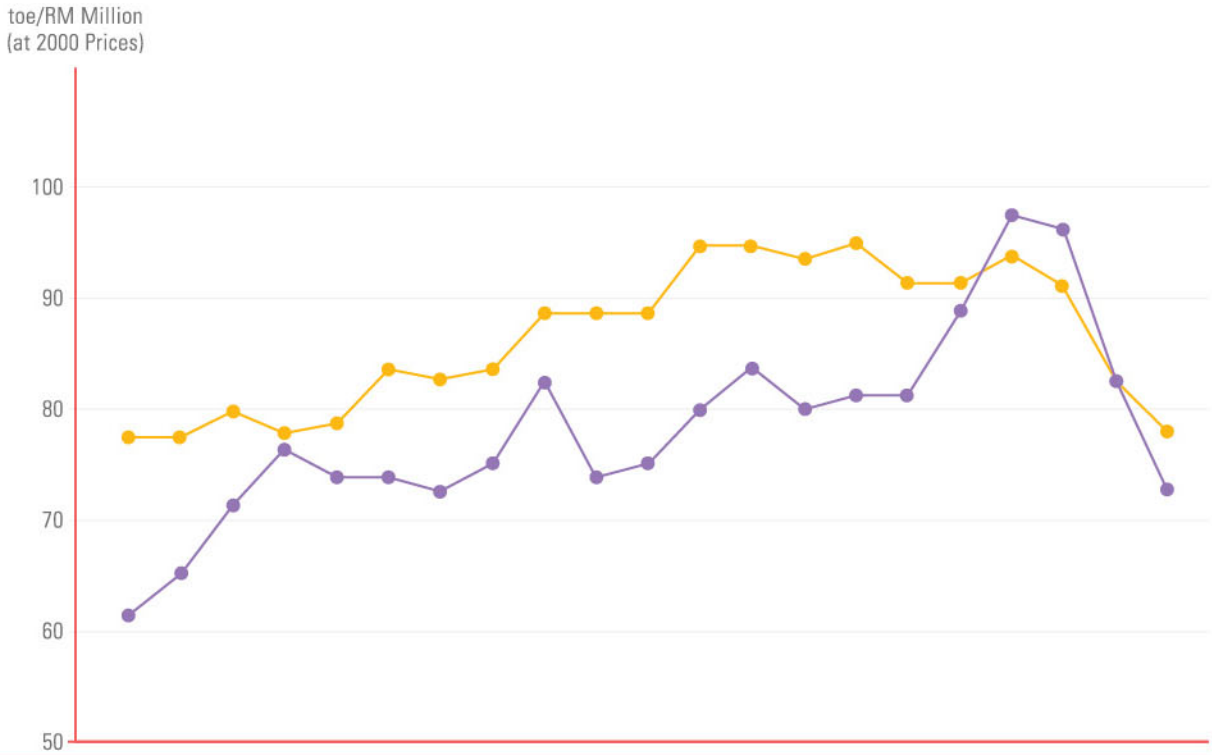
Figure 4 : Annual Growth Rates of GDP, Final Energy Demand and Electricity Demand



YEAR	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
GDP	9.0	9.5	8.9	9.9	9.2	9.8	10.0	7.3	(7.4)	6.1	8.9	0.5	5.4	5.8	6.8	5.3	5.8	6.5	4.8	(1.6)	7.2
Final Energy Demand	8.7	10.2	11.2	7.9	10.4	14.9	9.0	8.3	(2.3)	6.5	9.1	6.1	5.6	3.9	7.9	2.6	5.3	9.8	1.4	(9.0)	1.5
Electricity Demand	9.7	12.2	15.2	10.5	19.7	15.1	11.9	16.1	4.4	5.2	9.3	6.3	5.9	6.6	5.2	4.5	4.8	5.6	3.7	3.8	8.5

Source : i) Department of Statistics Malaysia
ii) National Energy Balance 2009, Ministry of Energy, Green Technology and Water

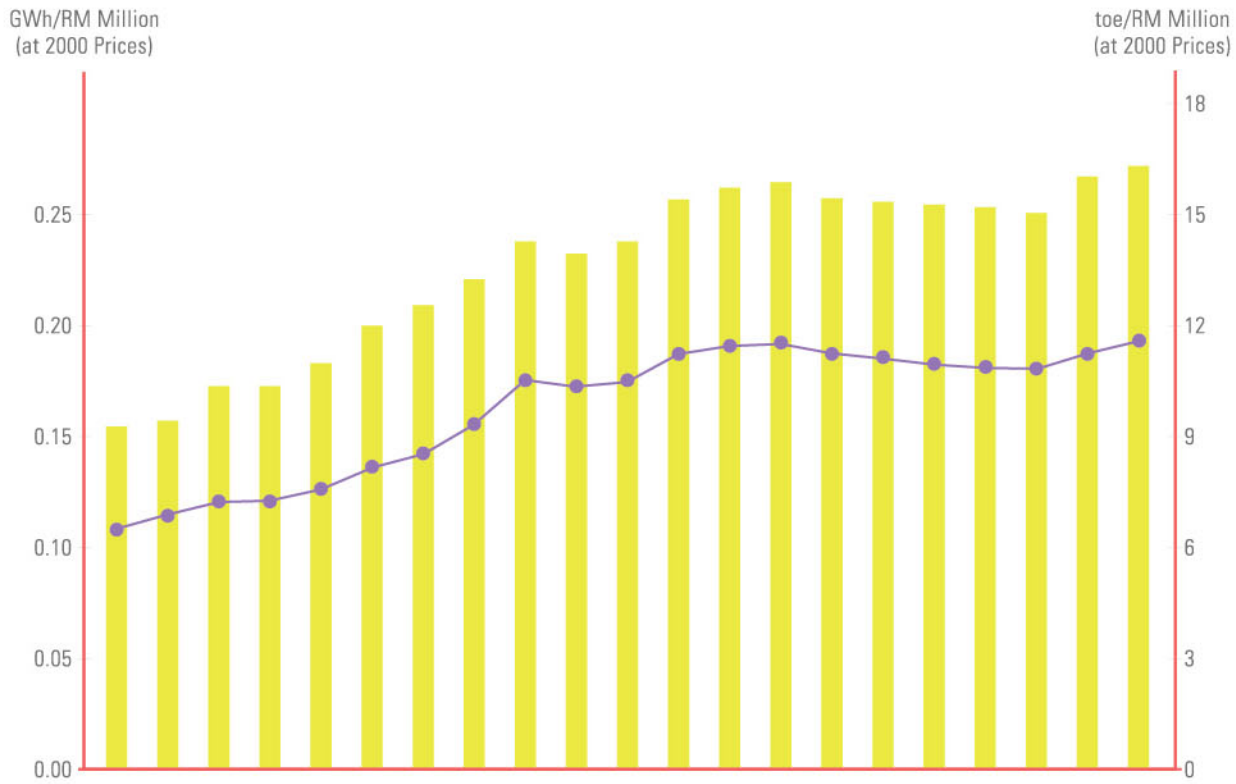
Figure 5 : Final Energy Intensity



YEAR	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Final Energy Intensity*	74	74	76	74	75	79	78	79	83	83	83	88	88	87	88	85	85	87	85	78	74
Industrial Energy Intensity**	61	64	69	73	71	71	70	72	78	71	72	76	79	76	77	77	83	90	89	78	70

Note : Intensity = Quantity of energy required per unit output or activity
(*) : Final Energy Demand/GDP at 2000 prices
(**) : Industrial Energy Demand/Industrial GDP at 2000 prices
Source : i) Department of Statistics Malaysia
ii) National Energy Balance 2009, Ministry of Energy, Green Technology and Water

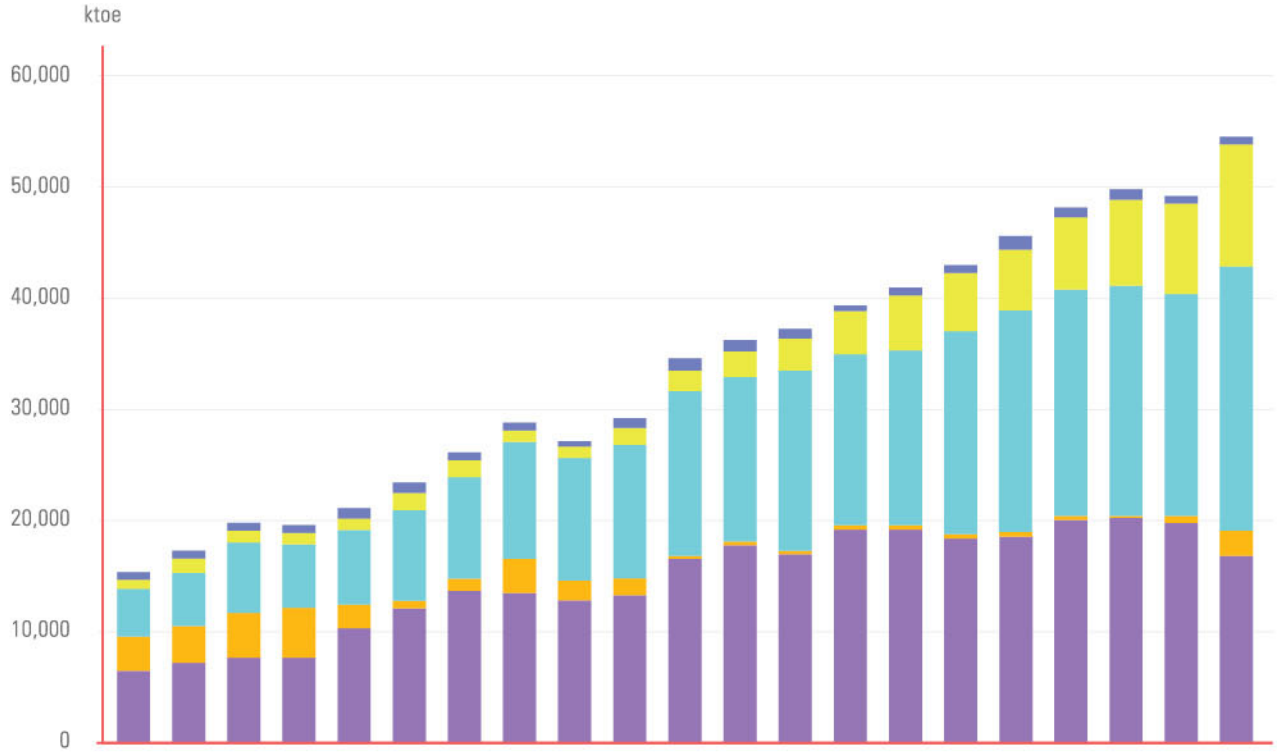
Figure 6 : Electricity Intensity



YEAR	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
toe/GDP**	9.6	9.8	10.4	10.4	11.4	12.0	12.2	13.2	14.8	14.7	14.8	15.6	15.7	15.8	15.6	15.5	15.3	15.2	15.0	15.9	16.1
GWh/GDP*	0.111	0.114	0.121	0.121	0.133	0.139	0.141	0.153	0.172	0.171	0.172	0.181	0.182	0.184	0.181	0.18	0.178	0.176	0.175	0.184	0.187

Note : Intensity = Quantity of energy required per unit output or activity
(*) : Electricity Demand (GWh)/GDP at 2000 prices
(**) : Electricity Demand (toe/GDP) at 2000 prices
Source : i) Department of Statistics Malaysia
i) TNB, SESB, SEB and IPPs
iii) National Energy Balance 2009, Ministry of Energy, Green Technology and Water

Figure 7 : Commercial Energy Supply

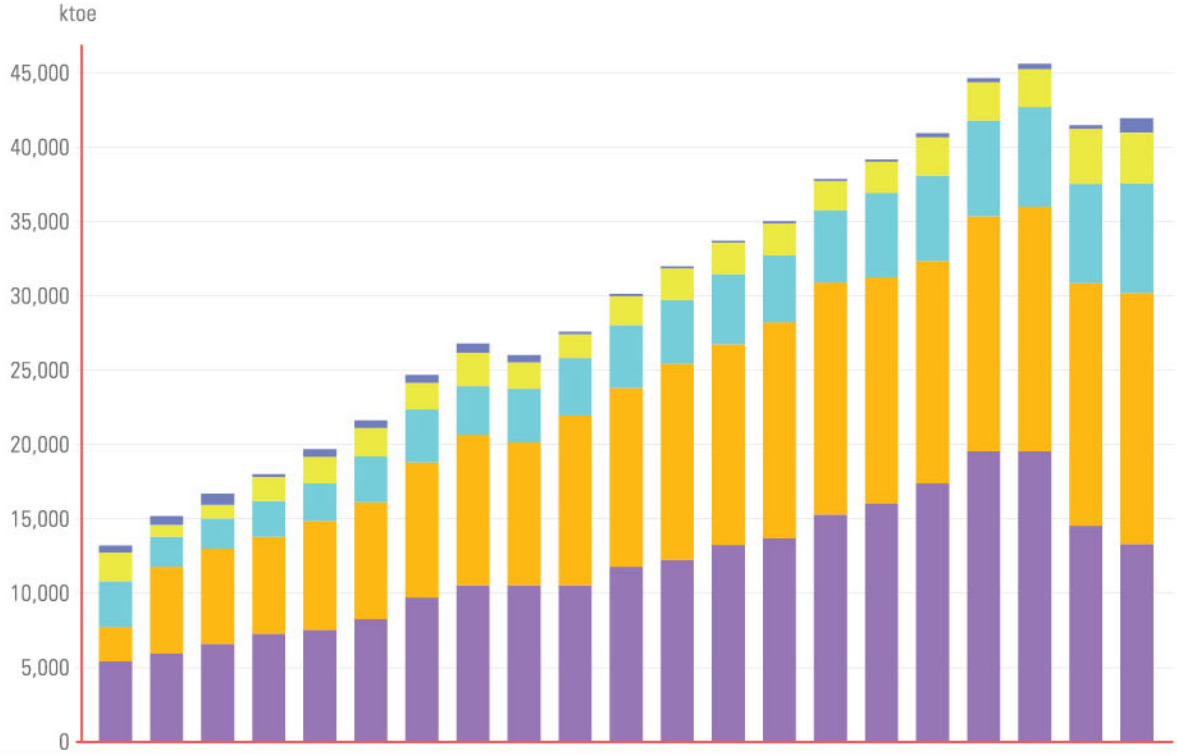


YEAR	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Hydropower	915	1,053	997	1,262	1,652	1,540	1,243	790	1,113	1,668	1,560	1,687	1,329	1,056	1,329	1,313	1,568	1,510	1,964	1,627	1,577
Coal And Coke	1,326	1,564	1,640	1,352	1,563	1,612	1,677	1,622	1,731	1,940	2,486	2,970	3,642	5,316	6,631	6,889	7,299	8,848	9,782	10,623	14,777
Natural Gas*	5,690	6,675	8,545	7,729	8,977	11,064	12,339	14,108	14,549	15,893	20,194	20,032	21,802	20,878	21,409	24,783	26,704	27,362	27,800	26,960	31,589
Petroleum Products & Other	3,651	4,165	5,100	5,814	2,446	610	1,099	3,802	1,920	1,807	(1,431)	(1,917)	(521)	(1,391)	(37)	(75)	(1,474)	(995)	(2,282)	96	2,521
Crude Oil	8,783	9,443	10,175	10,135	13,605	16,159	18,255	17,916	17,133	17,643	21,673	23,590	22,647	25,344	25,335	24,339	24,909	26,571	26,776	26,386	22,487

Note (*) : Net natural gas supply after subtracting exports, flared gas and re-injection and LNG production

Source : National Energy Balance 2009, Ministry of Energy, Green Technology and Water, Oil and gas companies, power utilities, IPPs and cement, iron and steel manufacturers

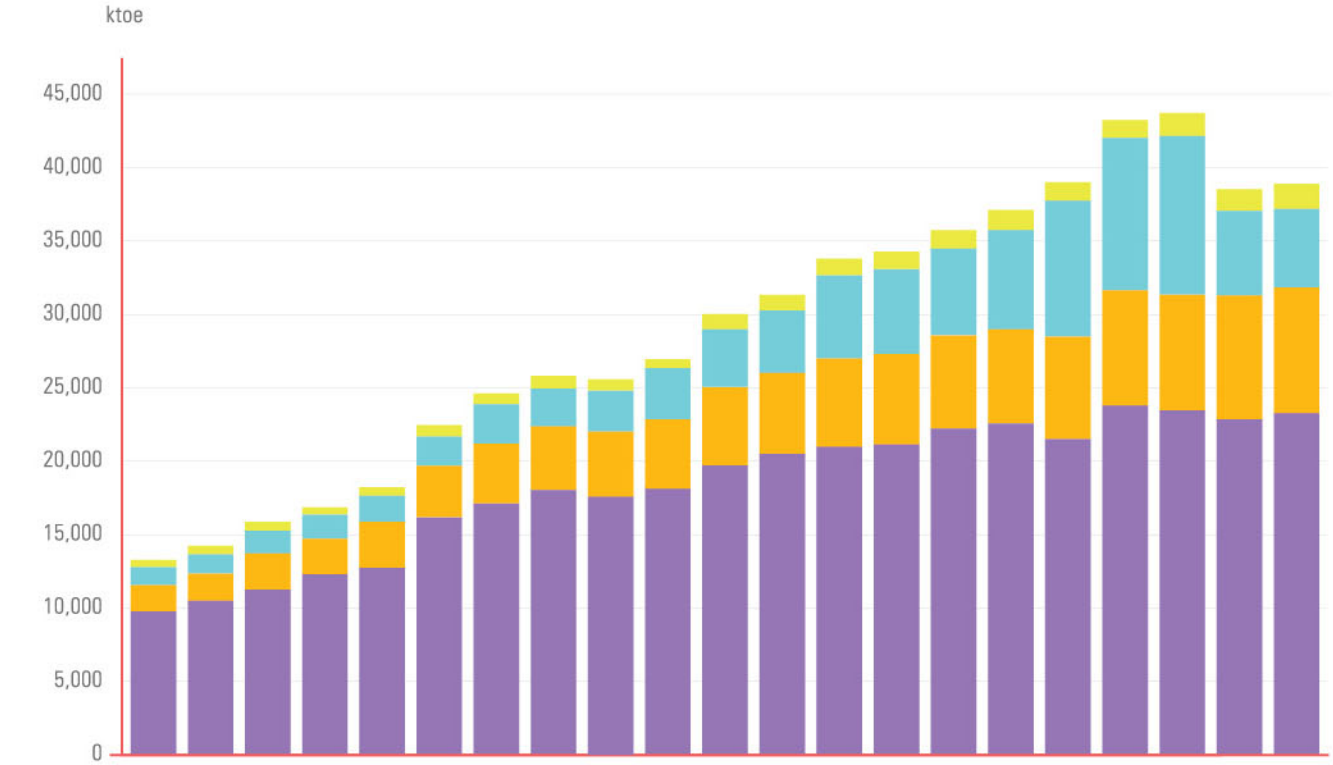
Figure 8 : Final Energy Use by Sectors



YEAR	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Agriculture	0	127	391	62	422	446	472	490	307	106	104	98	96	98	87	101	258	281	287	211	1,074**
Non-energy Use	908	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	2,809	2,958	2,876	3,868	3,696
Residential And Commercial*	1,646	1,747	1,891	2,069	2,502	2,837	3,557	3,073	3,314	3,653	3,868	4,048	4,387	4,399	4,754	5,134	5,430	6,196	6,205	6,337	6,951
Transport	5,387	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	14,825	15,717	16,395	16,119	16,828
Industrial	5,276	5,809	6,455	7,012	7,283	8,060	9,433	10,106	10,121	10,277	11,406	11,852	12,854	13,472	14,914	15,492	17,002	19,116	19,138	14,312	12,928

Note (*) : Estimated data for Residential and Commercial from 1990 until 1996
(**) : Including demand from fisheries
Source : i) Oil and gas companies, TNB, SESB, SEB, IPPs, cement, iron and steel manufacturers
ii) National Energy Balance 2009, Ministry of Energy, Green Technology and Water

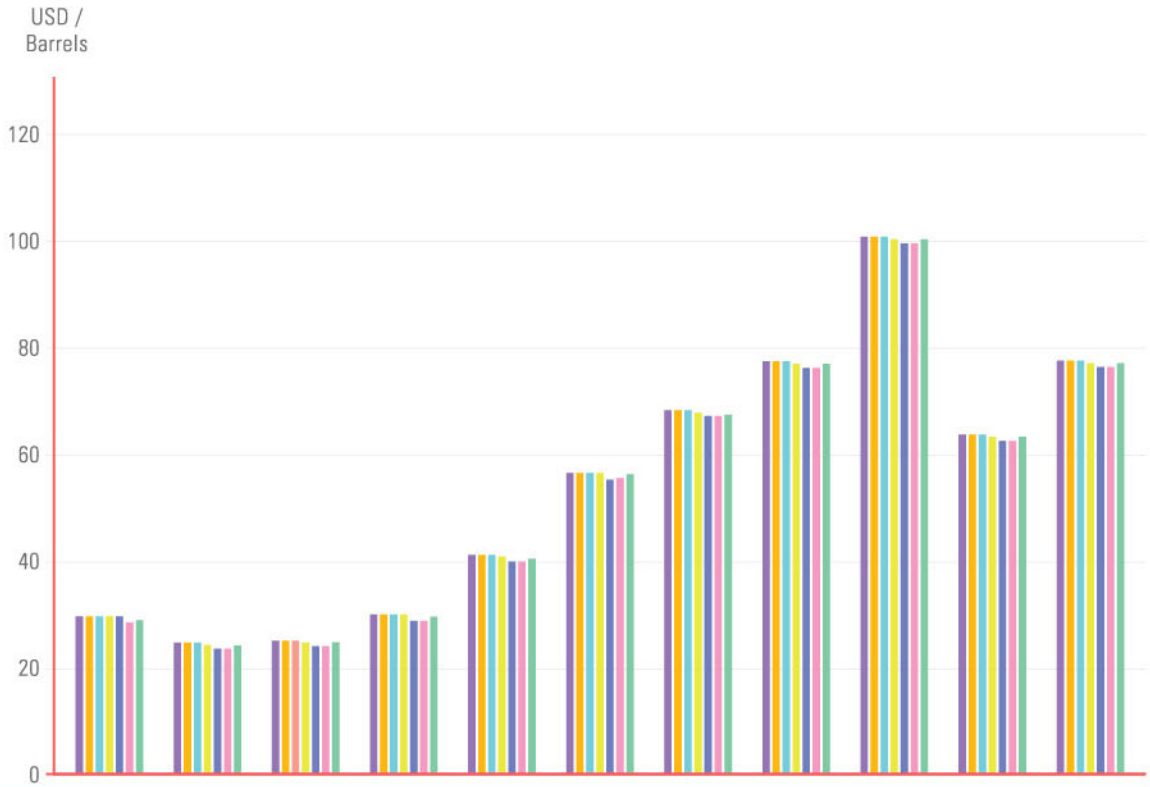
Figure 9 : Final Use of Energy by Type of Fuels



YEAR	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
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
Natural Gas	1,093	1,125	1,368	1,716	1,858	1,935	2,474	2,465	2,726	3,023	3,863	4,639	5,643	5,886	6,490	6,981	9,317	10,370	10,751	6,800	6,254
Electricity	1,715	1,925	2,218	2,405	2,932	3,375	3,777	4,384	4,577	4,815	5,263	5,594	5,922	6,313	6,642	6,944	7,277	7,684	7,986	8,286	8,993
Petroleum Product	9,896	10,911	11,927	13,075	13,893	16,142	17,189	18,578	17,488	18,782	19,582	20,323	20,638	21,175	22,886	23,012	22,394	24,853	24,451	24,145	24,403

Source : i) Oil and gas companies, TNB, SESB, SEB, IPPs, cement, iron and steel manufacturers
ii) National Energy Balance 2009, Ministry of Energy, Green Technology and Water

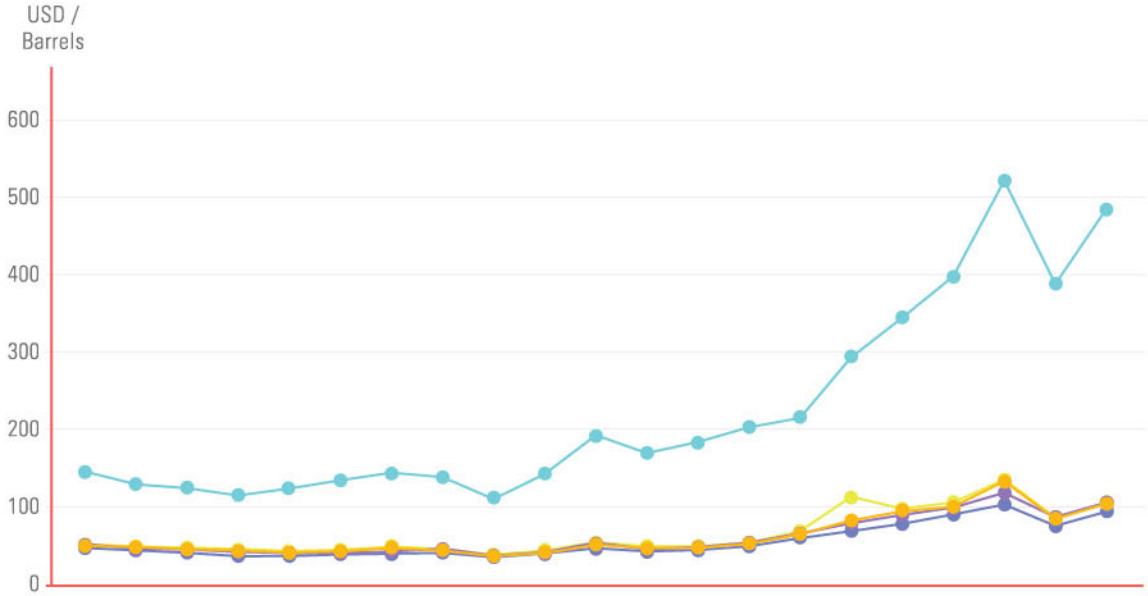
Figure 10 : Official Selling Prices of Malaysian Crude Oil



YEAR	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Tapis Blend	30.25	25.06	25.52	30.60	41.84	57.71	69.56	78.96	102.7	64.97	79.51
Labuan Crude	30.25	25.06	25.52	30.60	41.84	57.71	69.56	78.96	102.7	64.97	79.51
Miri Light Crude	30.25	25.06	25.52	30.60	41.84	57.71	69.56	78.96	102.7	64.97	79.51
Bintulu Crude	29.95	24.78	25.22	30.33	41.54	57.43	69.28	78.66	102.4	64.67	79.21
Terengganu Condensate	30.29	23.86	24.32	29.40	40.64	56.51	68.66	77.91	101.5	63.77	78.31
Bintulu Condensate	29.09	23.96	24.42	29.50	40.74	56.61	68.45	77.92	101.6	63.87	78.41
Dulang	29.18	24.68	25.23	29.99	41.17	57.41	68.96	78.59	102.4	64.67	79.21

Source : Petronas Website

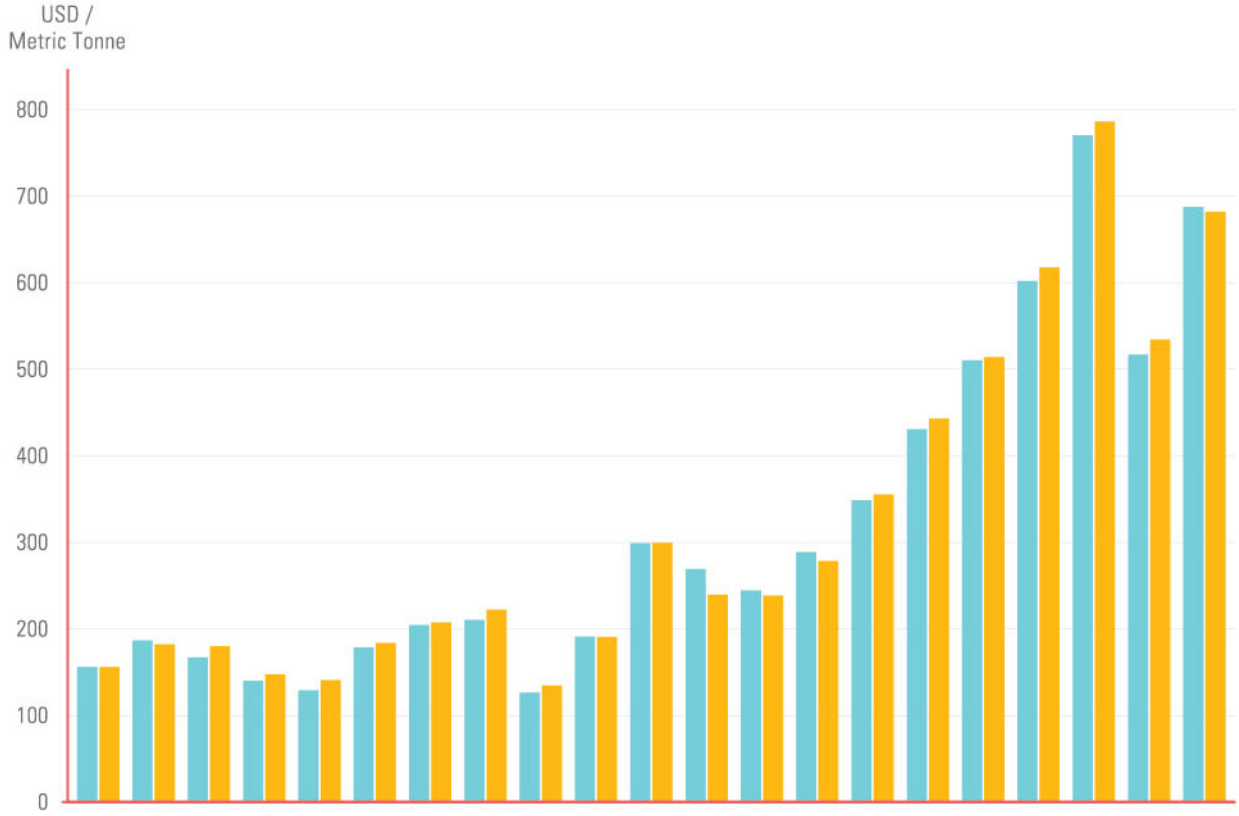
Figure 11 : Market Prices of Major Petroleum Products



YEAR	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Motor Petrol (ULG 95)	32.48	28.64	26.77	23.94	21.15	22.18	23.59	24.51	17.00	21.31	32.57	27.46	28.05	34.65	47.29	62.59	73.49	83.09	103.1	70.64	88.55
Diesel	29.38	28.14	25.24	23.95	20.88	21.66	27.04	24.22	15.42	19.20	32.46	27.29	27.50	32.36	45.55	64.37	76.81	85.14	119.8	69.18	89.66
Fuel Oil	109.3	91.20	87.00	76.15	84.83	96.54	108.7	102.8	69.05	101.5	158.9	133.8	148.5	169.5	183.7	265.2	317.5	377.4	513.8	372.6	470.4
Kerosene	32.77	28.23	25.60	24.39	21.71	22.73	28.32	24.87	16.31	21.48	34.40	28.34	28.08	32.90	47.35	97.93	80.59	86.95	121.7	70.23	90.27
Naphtha	28.88	24.97	21.05	17.28	16.34	17.58	20.30	22.23	14.88	19.56	28.49	23.94	25.14	25.14	40.71	51.49	61.86	75.05	89.16	60.90	79.19

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

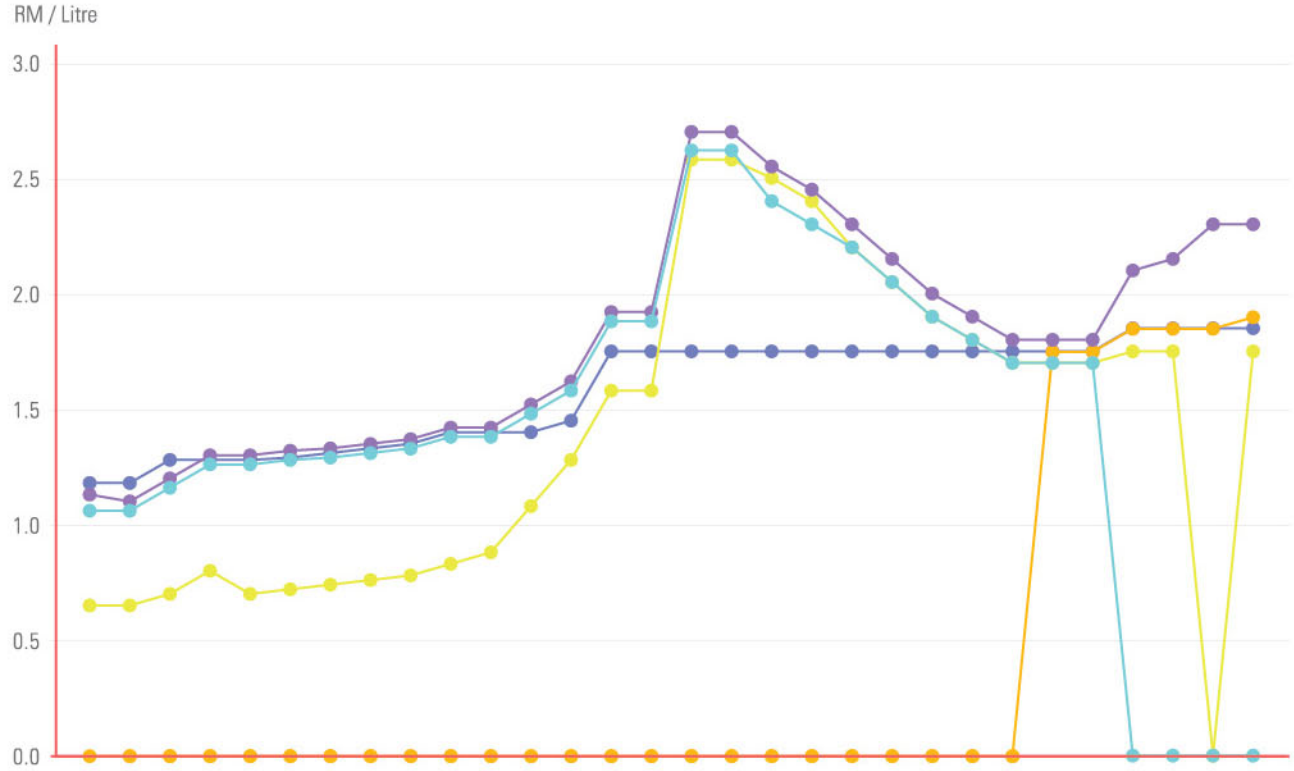
Figure 12 : Yearly Liquefied Petroleum Gas (LPG) Contract Prices - Arab Gulf



YEAR	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Propane	155.9	186.8	167.1	140.0	129.1	178.6	204.4	210.3	126.5	191.0	299.2	269.2	244.5	288.8	348.6	430.7	510.2	602.0	770.3	516.9	687.6
Butane	156.1	182.1	179.9	147.6	140.9	183.8	207.2	222.2	134.5	190.8	299.4	239.4	238.4	278.4	355.3	442.8	514.0	617.7	786.2	534.4	682.0

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

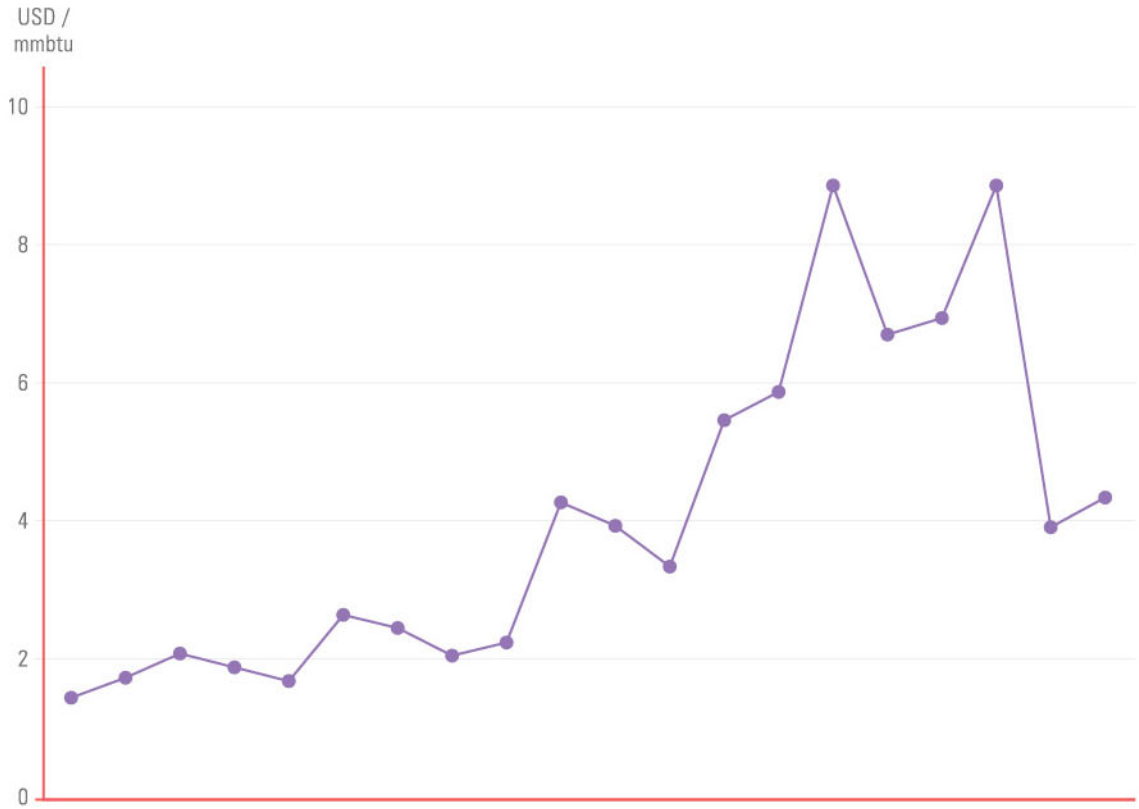
Figure 13 : Retail Fuel Price in Malaysia



YEAR	1 Jan 91	1 Jan 94	1 Oct 00	20 Oct 01	16 Nov 01	1 May 02	1 Nov 02	1 Mar 03	1 May 04	1 Oct 04	1 Mar 05	5 May 05	31 Jul 05	28 Feb 06	16 Apr 08	5 Jun 08	6 Jun 08	23 Aug 08	25 Sep 08	15 Oct 08	1 Nov 08	18 Nov 08	3 Dec 08	16 Dec 09	12 May 09	1 Sep 09	16 Jul 10	2 Nov 10	1 Dec 10	4 Dec 10
RON97	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
RON95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.75	1.75	1.85	1.85	1.85	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
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

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

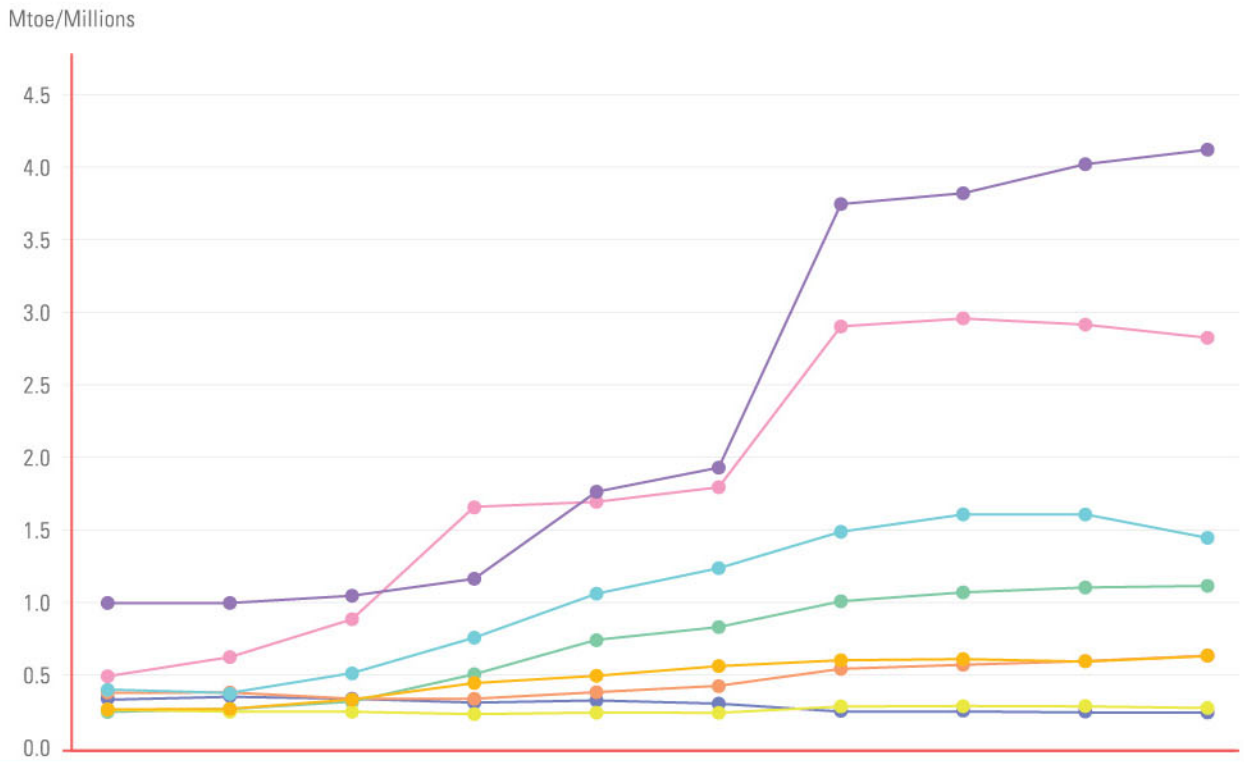
Figure 14 : Market Prices of Natural Gas



YEAR	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Market Prices of Natural Gas -Henry Hub	1.47	1.76	2.11	1.91	1.71	2.67	2.48	2.08	2.27	4.30	3.96	3.37	5.49	5.90	8.89	6.73	6.97	8.89	3.94	4.37

Source : Bloomberg

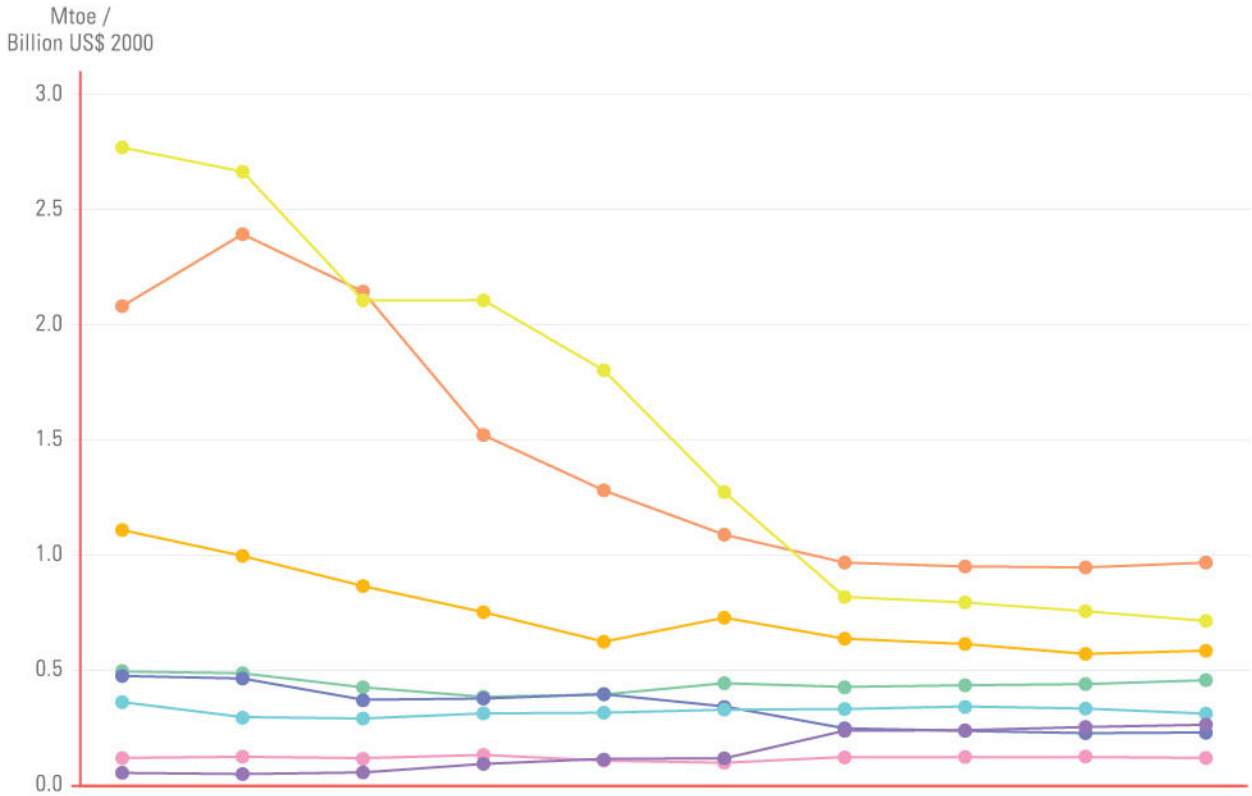
Figure 15 : Energy Per Capita in ASEAN



YEAR	1971	1973	1980	1990	1995	2000	2006	2007	2008	2009
Brunei	1.000	1.000	1.050	1.167	1.767	1.933	3.750	3.825	4.025	4.125
Indonesia	0.266	0.270	0.335	0.448	0.498	0.565	0.605	0.613	0.596	0.634
Malaysia	0.403	0.380	0.517	0.761	1.064	1.240	1.491	1.610	1.611	1.449
Myanmar	0.264	0.251	0.250	0.234	0.244	0.243	0.286	0.290	0.287	0.276
Philippines	0.339	0.359	0.346	0.319	0.334	0.312	0.257	0.258	0.251	0.251
Singapore	0.495	0.627	0.888	1.663	1.697	1.798	2.907	2.961	2.919	2.828
Thailand	0.249	0.269	0.320	0.509	0.746	0.834	1.012	1.073	1.107	1.118
Vietnam	0.381	0.383	0.340	0.340	0.385	0.429	0.546	0.574	0.599	0.637

Source : Energy Balances of Non-OECD Countries (2008-2009), 2011 Edition, International Energy Agency (IEA)

Figure 16 : Energy Intensity in ASEAN



YEAR	1971	1973	1980	1990	1995	2000	2006	2007	2008	2009
Brunei	0.034	0.029	0.036	0.073	0.095	0.097	0.217	0.219	0.233	0.243
Indonesia	1.087	0.975	0.844	0.731	0.603	0.707	0.616	0.593	0.550	0.564
Malaysia	0.341	0.276	0.270	0.292	0.295	0.308	0.311	0.322	0.313	0.291
Myanmar	2.746	2.641	2.083	2.084	1.780	1.252	0.797	0.773	0.735	0.693
Philippines	0.452	0.441	0.349	0.354	0.373	0.320	0.225	0.214	0.204	0.207
Singapore	0.099	0.104	0.098	0.112	0.087	0.078	0.103	0.102	0.103	0.099
Thailand	0.474	0.466	0.405	0.364	0.374	0.423	0.407	0.414	0.419	0.436
Vietnam	2.058	2.370	2.121	1.499	1.259	1.067	0.946	0.929	0.925	0.946

Source : Energy Balances of Non-OECD Countries (2008-2009), 2011 Edition, International Energy Agency (IEA)

Oil

Table 3 : Production and Reserves of Oil as of 1st January 2010

Region	Reserves (billion barrels)			Production (thousand barrels per day)		
	Crude Oil	Condensates	Total	Crude Oil	Condensates	Total
Peninsular Malaysia	1.752	0.309	2.061	235.6	44.7	280.3
Sabah	2.256	0.120	2.376	164.3	-	164.3
Sarawak	0.855	0.507	1.362	121.3	72.4	193.7
Total	**4.863**	**0.936**	**5.799**	**521.2**	**117.1**	**638.3**

Source : PETRONAS

Table 4 : Refinery Licensed Capacity

	Location	Start up date	Thousand barrels/day
SHELL Refining Co. (FOM) Bhd	Port Dickson, Negeri Sembilan	1963	155
ESSO Malaysia Bhd	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**

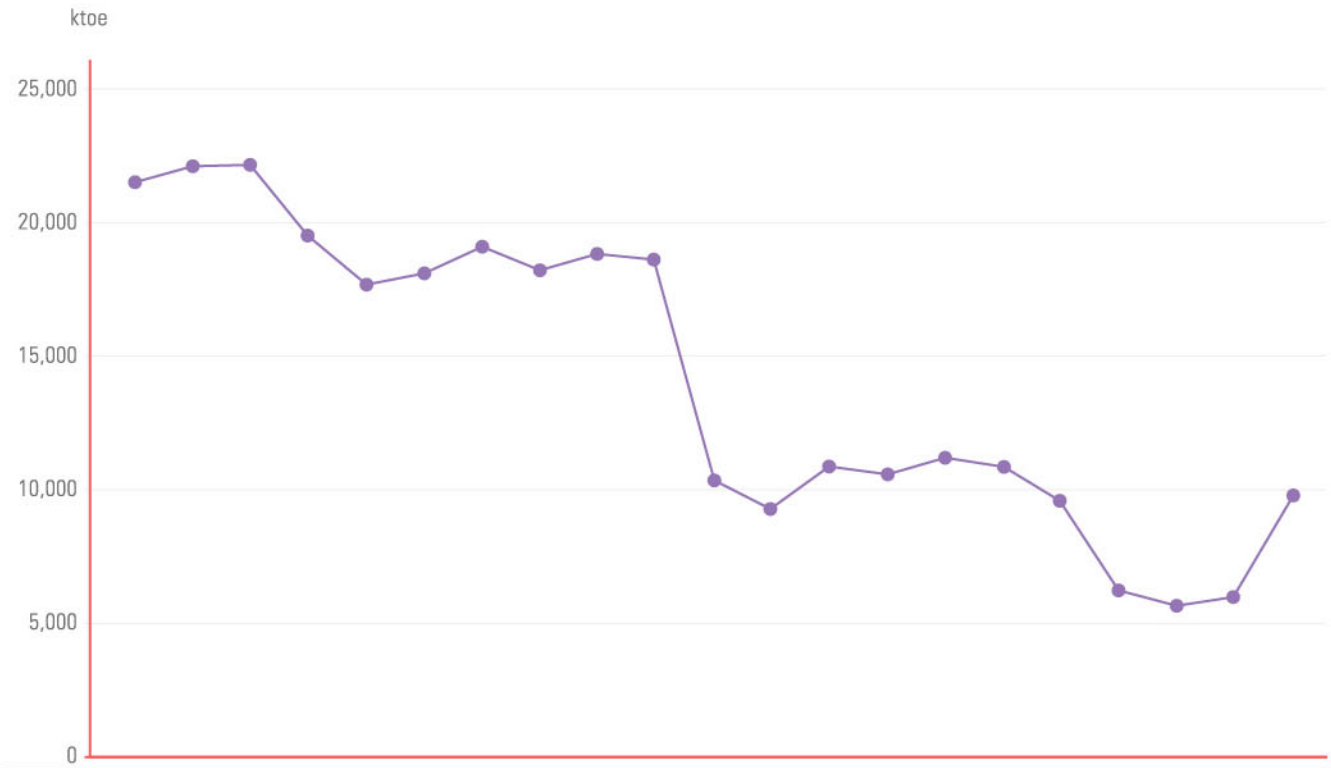
Note (*) : Excludes condensate splitter of 74,300 bpd
Source : ESSO, PETRONAS & SHELL

Table 5 : Breakdown on Sales of Petroleum Products in Thousand Barrels

Petroleum Products	Peninsular Malaysia	Sabah	Sarawak	TOTAL
Motor Petrol	73,389	3,949	4,193	**81,531**
Diesel	44,117	8,915	8,920	**61,952**
Fuel Oil	2,474	628	75	**3,177**
Kerosene	118	11	19	**148**
LPG	28,508	1,139	1,296	**30,943**
ATF & AV Gas	16,874	894	553	**18,321**
Non Energy	6,781	388	661	**7,830**
Total	**172,261**	**15,924**	**15,717**	**203,902**

Source : Oil companies

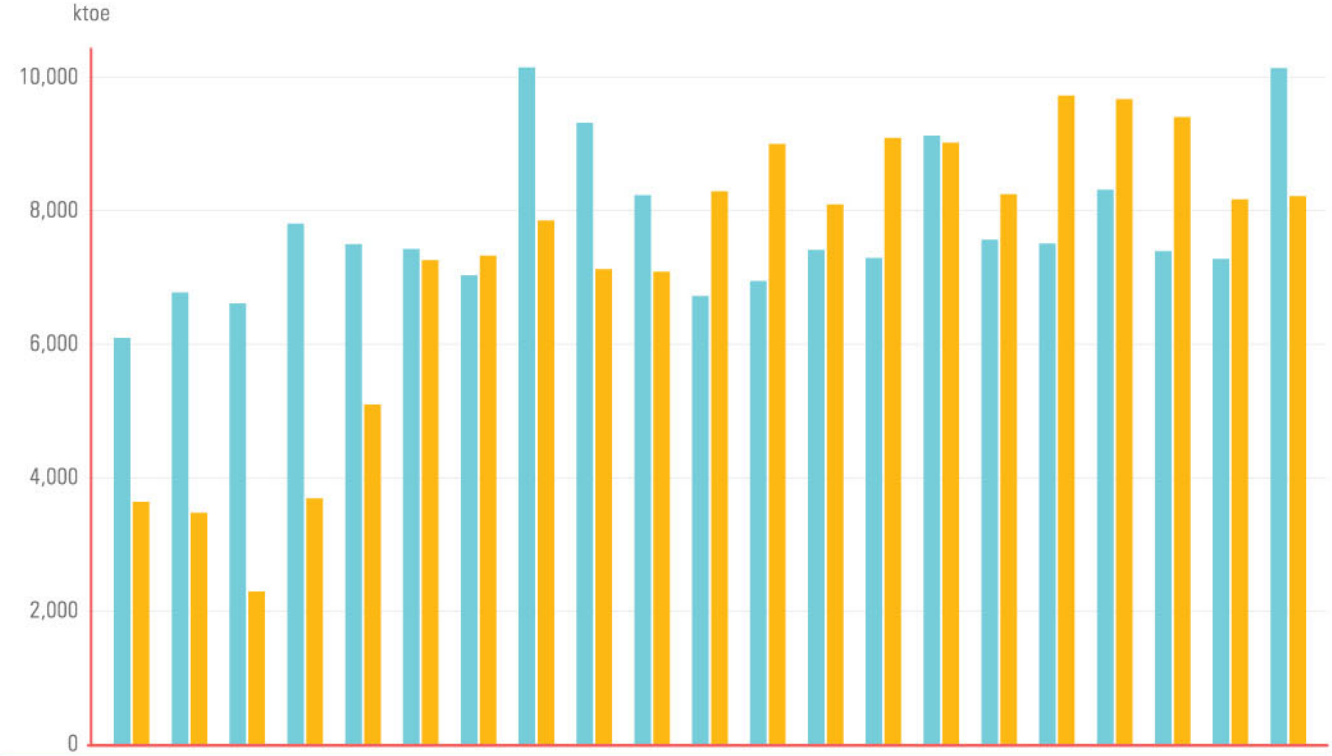
Figure 17 : Net Export of Crude Oil



YEAR	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Net Export	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	9,214	6,804	6,482	6,517	9,365

Source : Department of Statistics Malaysia and oil companies

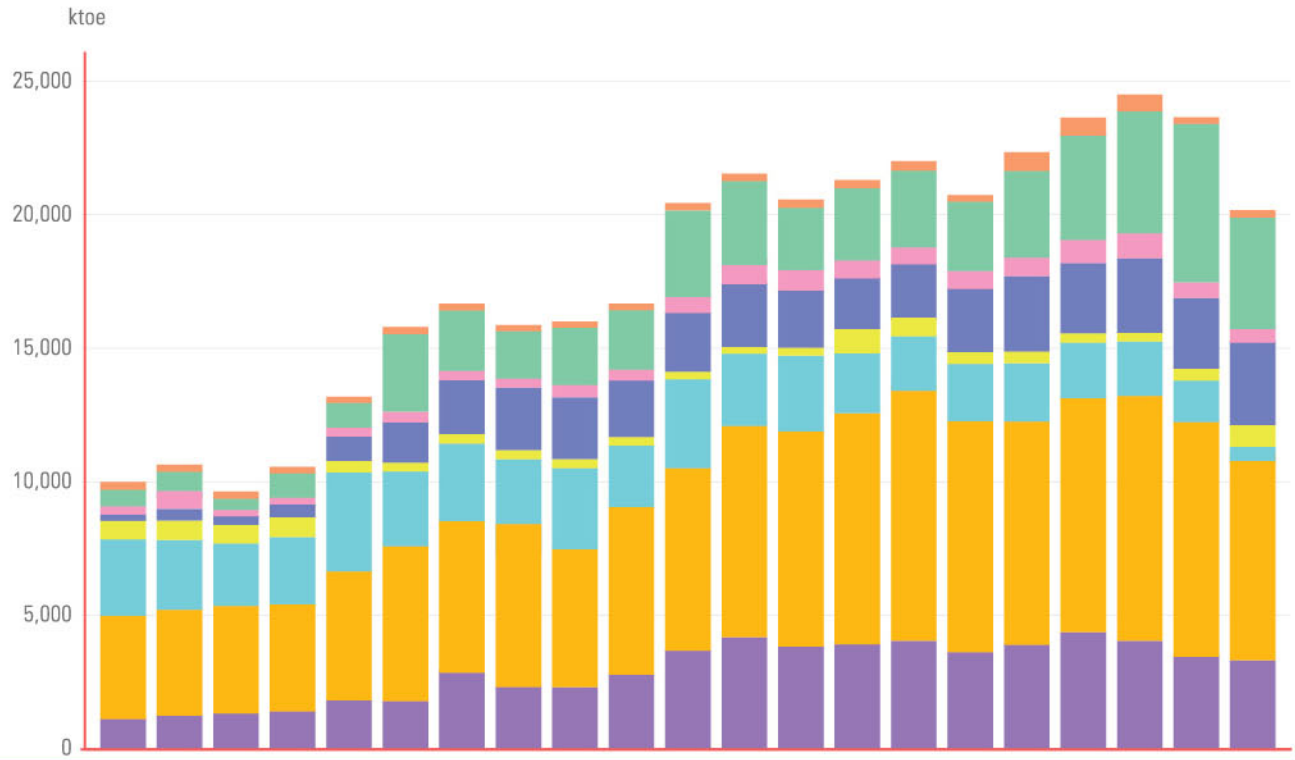
Figure 18 : Export and Import of Petroleum Products



YEAR	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Import	6,031	6,728	6,499	7,835	7,492	7,411	7,095	10,331	9,359	8,357	6,619	6,881	7,221	7,116	8,980	7,961	7,744	8,452	7,376	7,243	10,359
Export	3,413	3,272	2,513	3,507	5,094	7,261	7,317	7,840	7,195	7,161	8,533	8,900	8,157	8,972	8,912	8,435	9,874	9,781	9,527	8,420	8,429

Source : Department of Statistics Malaysia and oil companies

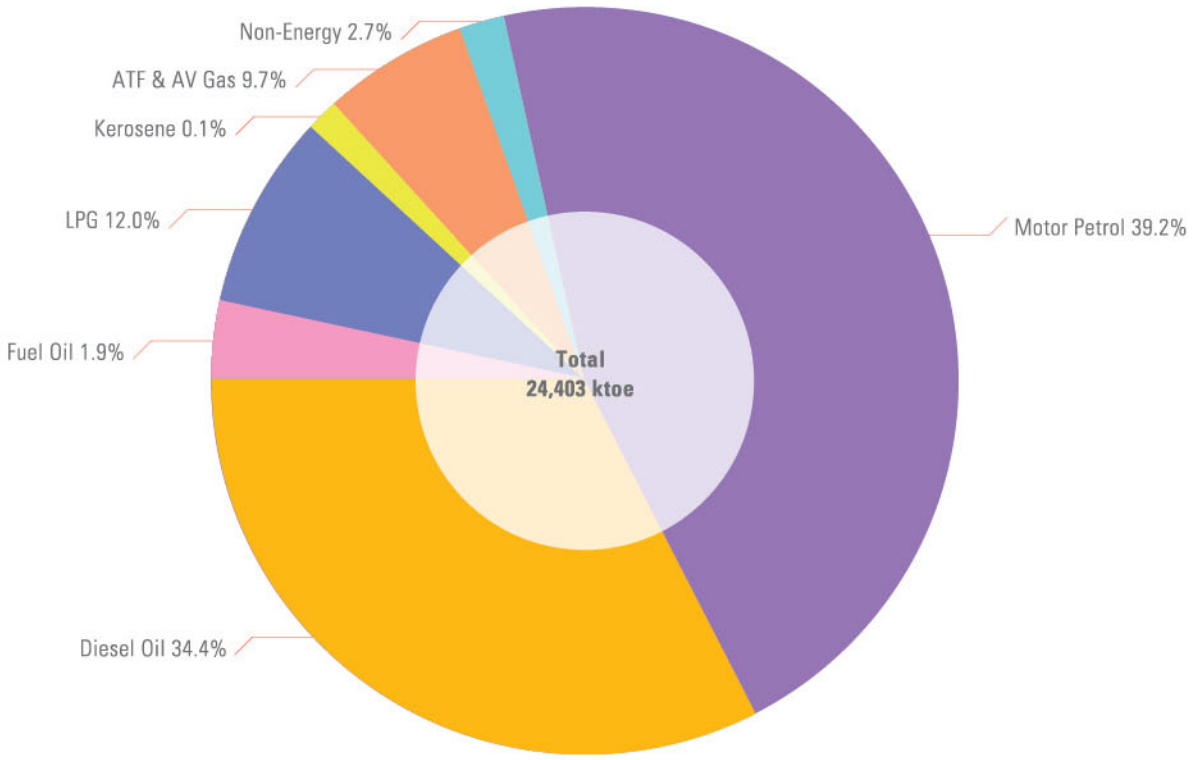
Figure 19 : Conversion in Refineries



YEAR	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Refinery Gas	158	174	143	106	162	385	331	203	192	230	241	331	294	262	215	202	849	938	991	195	209
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
LPG	256	567	200	244	319	431	371	371	449	617	838	875	897	932	897	822	1,118	1,228	1,208	732	697
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
Kerosene	512	544	541	576	563	360	292	365	285	210	239	283	414	983	591	521	537	234	245	565	483
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
Diesel Oil	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
Motor 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

Source : Oil companies

Figure 20 : Final Consumption for Petroleum Products



Source : Oil companies

Natural Gas

Table 6 : Reserves and Production of Natural Gas as of 1st January 2010

Region	Reserves			Production
	Trillion standard cubic feet (Tscf)			Million standard cubic feet per day (MMscf/d)
	Associated	Non-Associated	Total	
Peninsular Malaysia	9.280	25.139	34.419	2,748
Sabah	3.787	8.681	12.468	448
Sarawak	2.513	39.187	41.700	4,280
Total	**15.580**	**73.007**	**88.587**	**7,476**

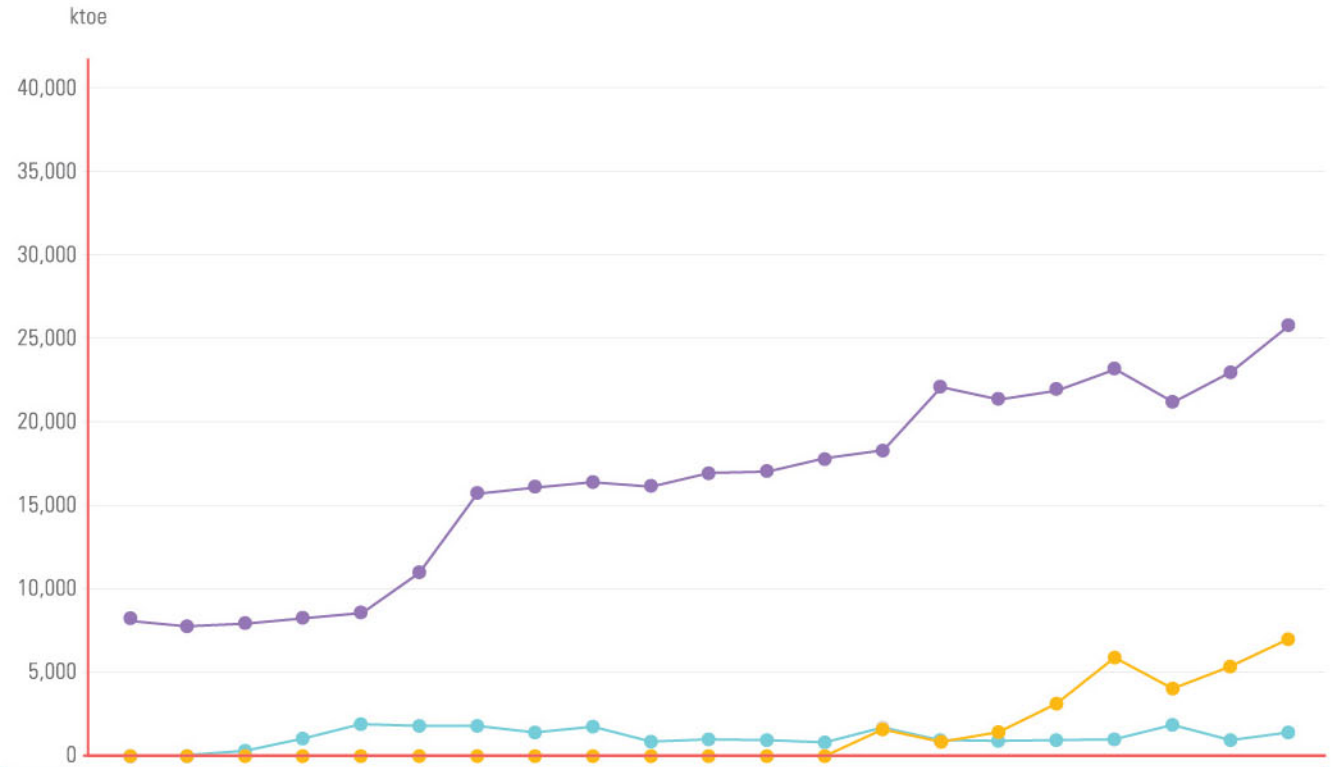
Notes (*) : Refers to the amount of gas produced/generated from associated fields
1 cubic feet = 0.028317 cubic metre
Associated Gas: Natural gas produced in association with oil
Non-Associated Gas: Natural gas produced from a gas reservoir not associated with oil
Source : PETRONAS

Table 7 : Consumption of Natural Gas in MMscf

Sectors	Peninsular Malaysia	Sabah	Sarawak	Malaysia
Residential	17	-	211	228
Commercial	871	-	274	1,145
Industry	156,072	6,928	1,377	164,377
Non-energy	36,304	7,594	19,139	63,037
Transport	9,409	-	-	9,409
Power Stations	624,004	27,145	36,543	687,692
Total	**826,677**	**41,667**	**57,544**	**925,888**

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

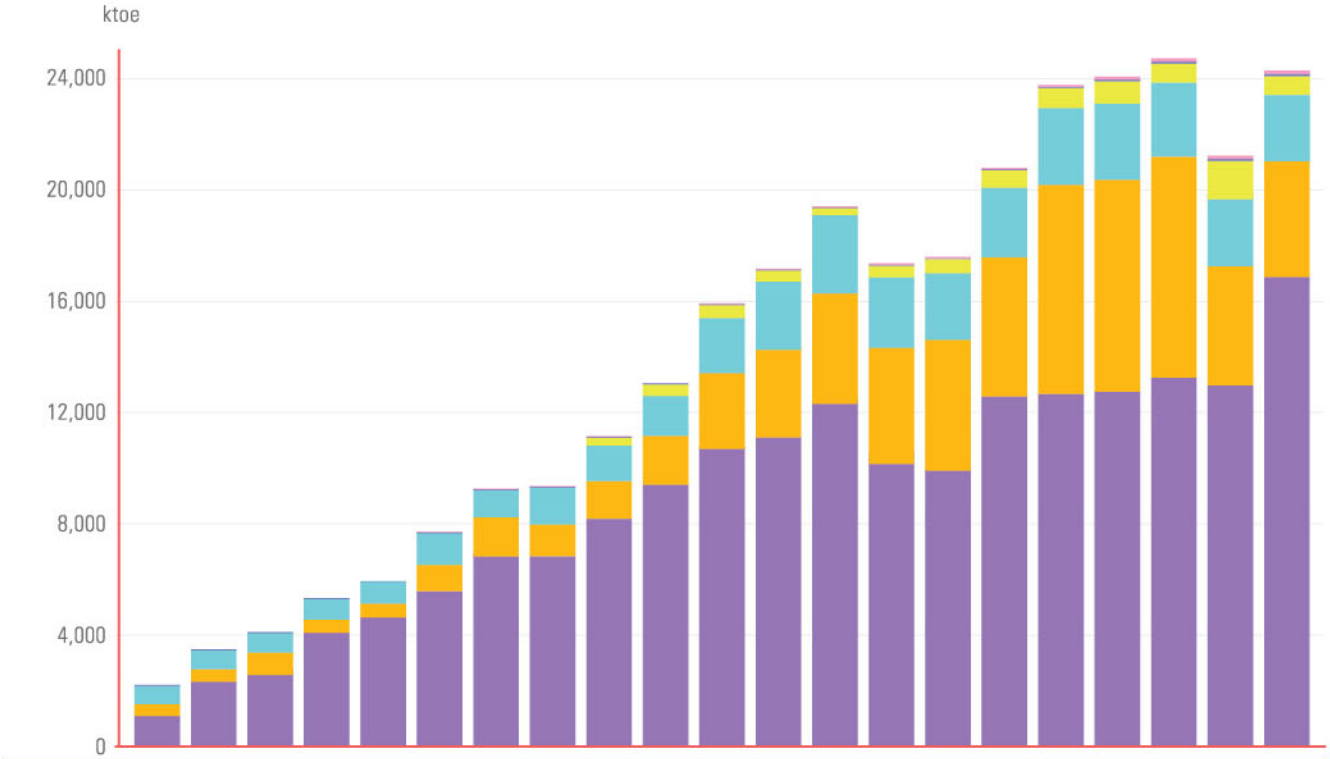
Figure 21 : Export & Import of Natural Gas and LNG



YEAR	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Export LNG	8,686	8,278	8,262	8,654	8,928	10,790	15,251	16,396	16,429	15,445	16,633	16,636	17,803	18,965	22,944	22,299	22,874	23,777	22,277	23,606	25,487
Import	0	0	0	0	0	0	0	0	0	0	0	0	0	1,501	999	1,340	3,313	5,435	4,565	5,055	7,013
Export	0	0	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

Source : Department of Statistics Malaysia and oil companies and others

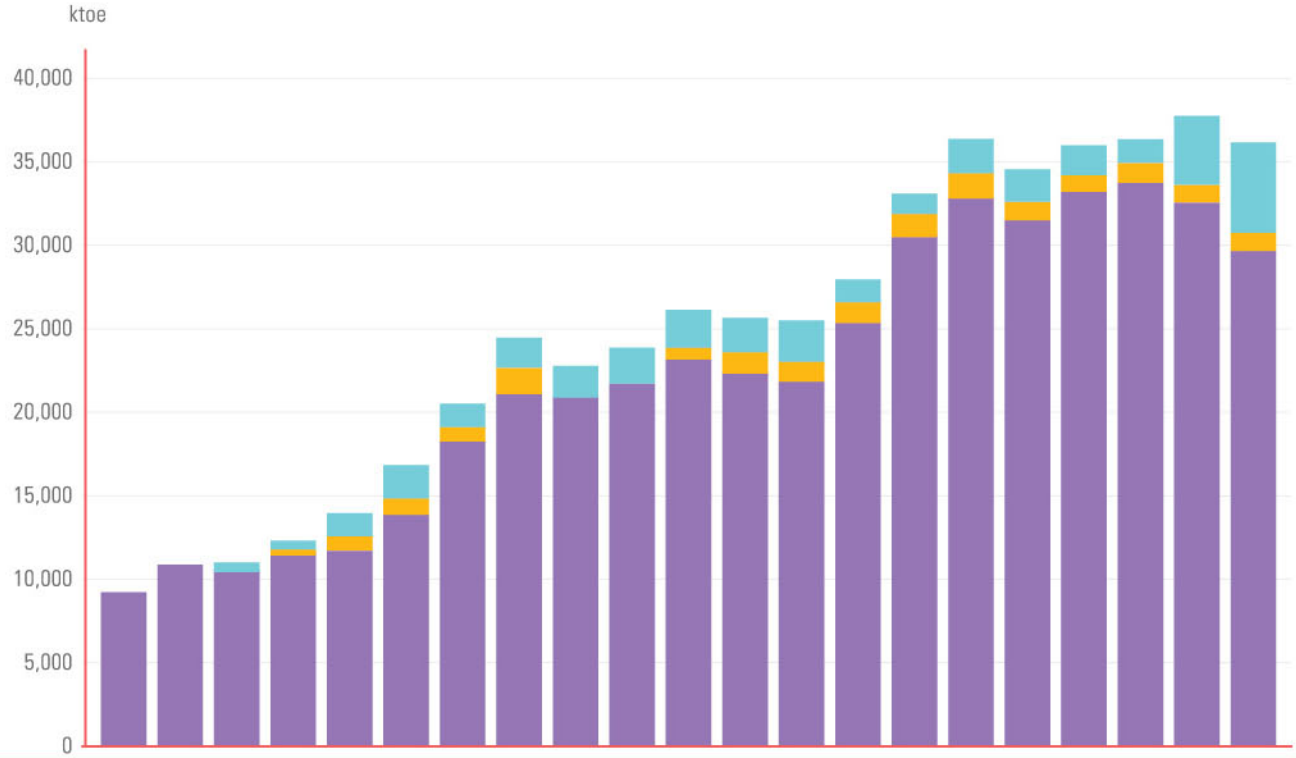
Figure 22 : Natural Gas Consumption by Sectors



YEAR	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Transport	0	0	0	0	5	5	4	4	4	0	7	14	28	40	54	95	120	147	194	236	247
Resid. & Comm.	8	8	8	8	8	8	8	8	10	14	16	15	15	23	23	28	29	34	37	27	36
Self-Generation	0	0	0	0	0	0	0	0	271	488	530	495	128	469	568	923	1,431	1,140	1,030	1,385	1,031
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
Industrial	476	513	703	567	687	858	1,592	1,074	1,430	1,891	2,327	2,937	3,824	4,207	4,937	5,317	7,059	8,078	8,474	4,544	4,310
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	17,000

Source : PETRONAS, Gas Companies, Malaysian Energy Commission, power utilities, IPPs and self-generation plants

Figure 23 : Conversion in Gas Plants



YEAR	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
GPP-LPG	na	na	583	529	1,580	2,060	1,596	1,822	1,898	2,116	2,237	2,044	2,282	1,412	1,225	2,043	2,009	1,974	1,448	3,610	5,471
MDS*	na	na	na	191	552	798	747	1,794	na	na	451	1,407	1,188	1,184	1,271	1,567	820	799	920	991	1,057
LNG	8,761	11,715	11,098	12,285	12,502	14,230	18,479	21,329	21,240	22,000	23,405	22,253	22,102	25,344	30,680	32,837	31,946	33,054	33,766	32,497	29,345

Note ** : MDS commenced pre-commercialization operation in year 2000*
Source *: Oil and gas companies*

Coal

Table 8 : Production and Reserves of Coal as of 31st December 2010

Location	Coal Type	Reserves (Million Tonnes)			Production
		Measured	Indicated	Inferred	(Metric Tonnes)
Sarawak					
1.Abok & Silantek, Sri Aman	Coking coal, Semi-Anthracite & Anthracite	7.25	10.60	32.40	126,919
2. Merit-Pila, Kapit	Sub-Bituminous	170.26	107.02	107.84	466,840
3. Bintulu	Bitumen (partly Coking)	6.00	-	14.00	-
4. Mukah - Balingian	Lignite & Sub-Bituminous	86.95	170.73	646.53	1,792,237
5. Tutoh Area	Sub-Bituminous	5.58	34.66	162.33	-
Sub-total		**276.04**	**323.01**	**963.10**	**2,385,996**
Sabah					
1. Salimpopon	Sub-Bituminous	4.80	14.09	7.70	-
2. Labuan	Sub-Bituminous	-	-	8.90	-
3. Maliau	Bitumen	-	-	215.00	-
4. Malibau		-	17.90	25.00	-
5. SW Malibau		-	23.23	-	-
6. Pinangan West Middle Block	Bitumen	-	-	42.60	-
Sub-total		**4.80**	**55.22**	**299.20**	**-**
Selangor					
1. Batu Arang	Sub-Bituminous	-	-	17.00	-
Sub-total		**-**	**-**	**17.00**	**-**
Total		**280.84**	**378.23**	**1,279.30**	**-**
Grand Total				**1,938.37**	**2,385,996**

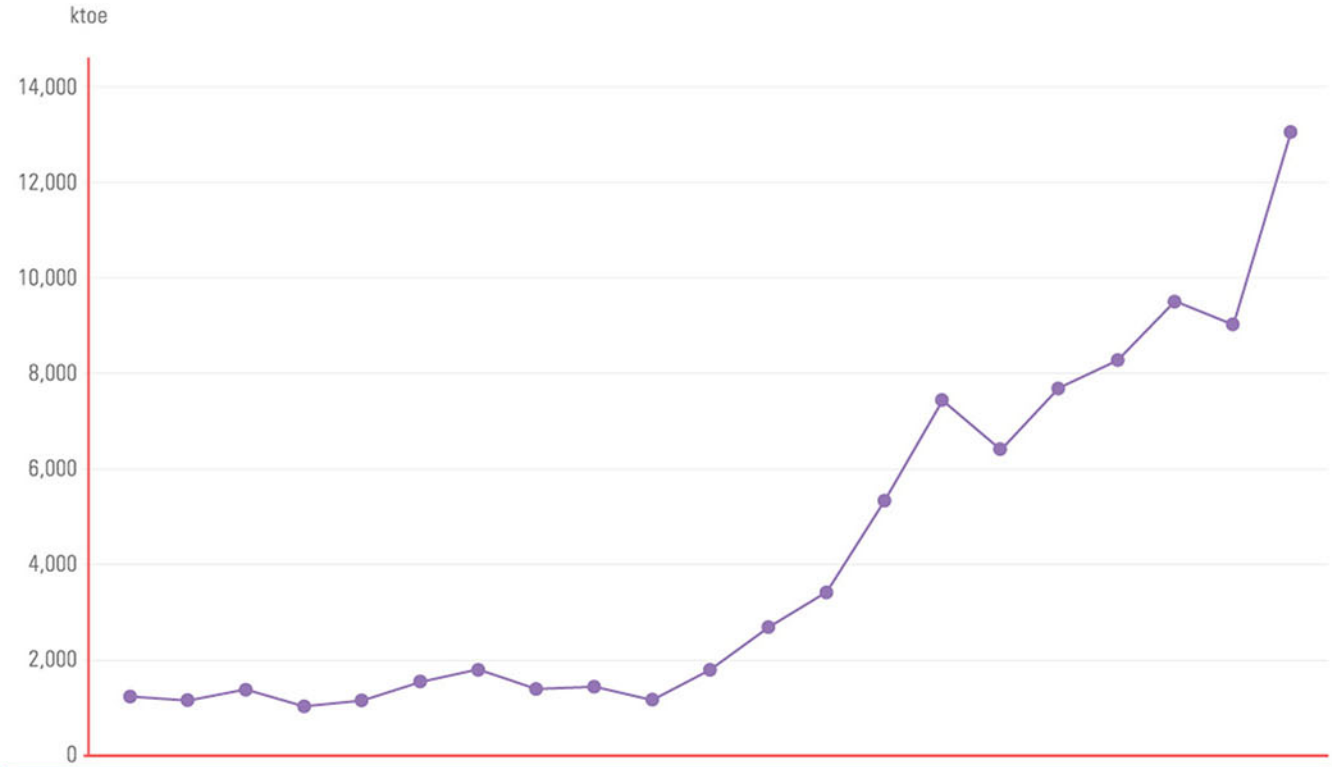
Source : Department of Mineral & Geosciences Malaysia

Table 9 : Consumption of Coal in metric tonnes

Sectors	Peninsular Malaysia	Sabah	Sarawak	Malaysia
Industry	2,700,459	-	398,213	3,098,672
Power Stations	18,482,339	-	2,018,688	20,501,027
Total	**21,182,798**	**-**	**2,416,901**	**23,599,699**

Source : TNB and cement, iron and steel manufacturers

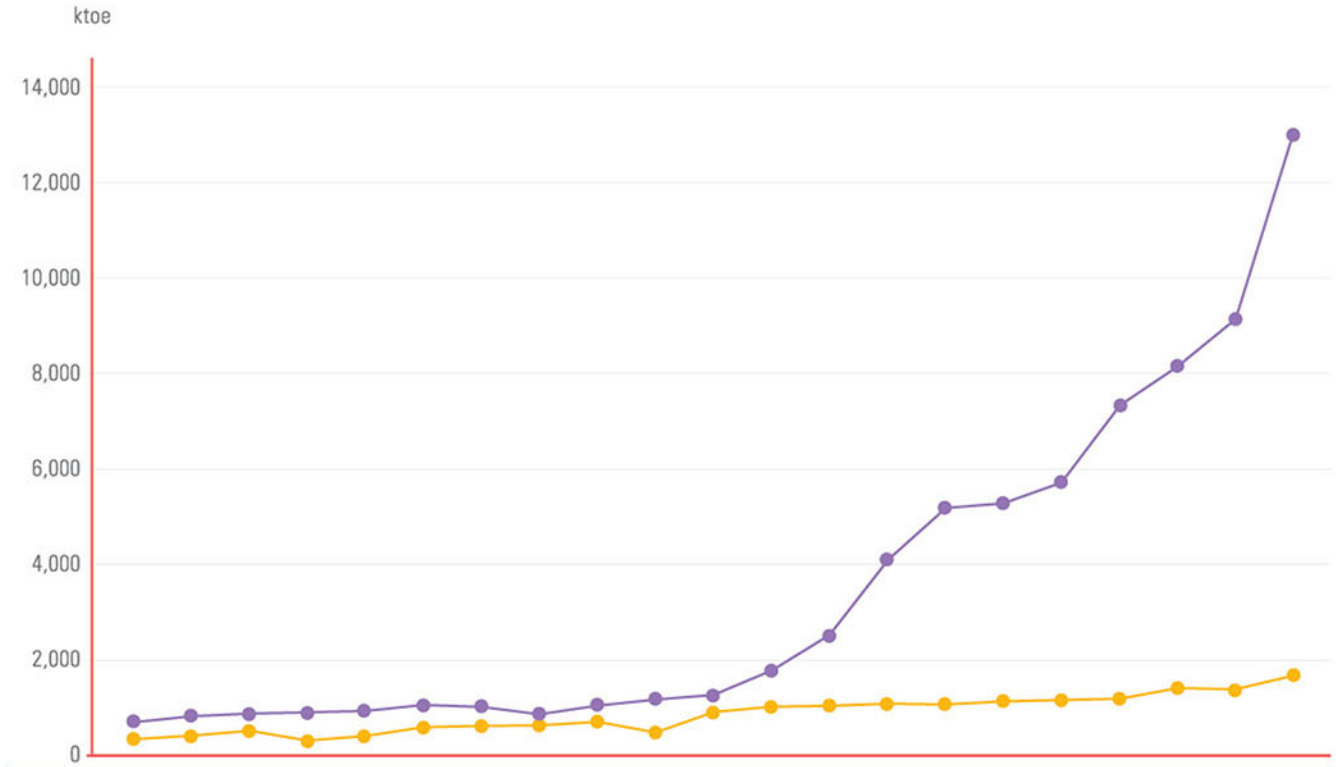
Figure 24 : Net Import of Coal



YEAR	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Net Import	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	6,751	8,152	9,519	9,007	13,011

Source : Department of Statistics Malaysia, TNB, cement, iron and steel manufacturers

Figure 25 : Coal Consumption by Sectors



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

Source : TNB, cement and iron and steel manufacturers

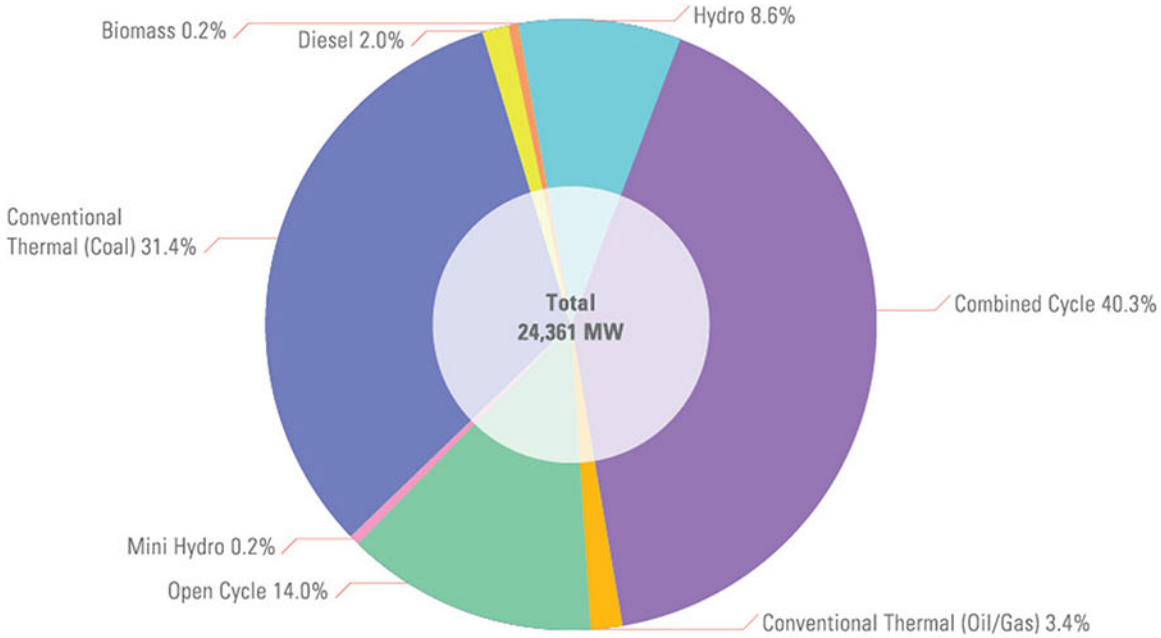
Electricity

Table 10 : Installed Capacity as of 31st December 2010 in MW

	TNB	SESCo	SESB	IPPs			Total	%
				PM	SWK	SAB		
Steam								
Coal	0	0	0	7,170	480	0	**7,650**	*31.4*
Gas	240	0	0	600	0	0	**840**	*3.4*
Oil	0	0	0	0	0	0	**0**	*0.0*
Hydro	1,899	94	66	0	0	0	**2,059**	*8.5*
Mini Hydro	12	8	8	18	0	2	**48**	*0.2*
Diesel/LFO	0	83	158	0	0	224	**465**	*1.9*
Rural Diesel	0	11	4	0	0	0	**15**	*0.1*
Combined-cycle	3,456	0	112	5,917	337	0	**9,822**	*40.3*
Open Cycle								
Diesel/Oil	68	64	90	0	0	0	**222**	*0.9*
Gas	1,365	271	0	1,090	0	464	**3,190**	*13.1*
Biomass	0	0	0	13	0	37	**50**	*0.2*
Total	**7,040**	**531**	**438**	**14,808**	**817**	**727**	**24,361**	***100.0***
Percentage % (share)	*28.9*	*2.2*	*1.8*	*60.8*	*3.4*	*3.0*	***100.0***	

Source : Power utilities and IPPs
Note (*) : Including Cameron Highland Scheme (Odak, Habu, Kg. Raja, Kg. Terla and R. Falls)

Figure 26 : Installed Capacity as of 31st December 2010



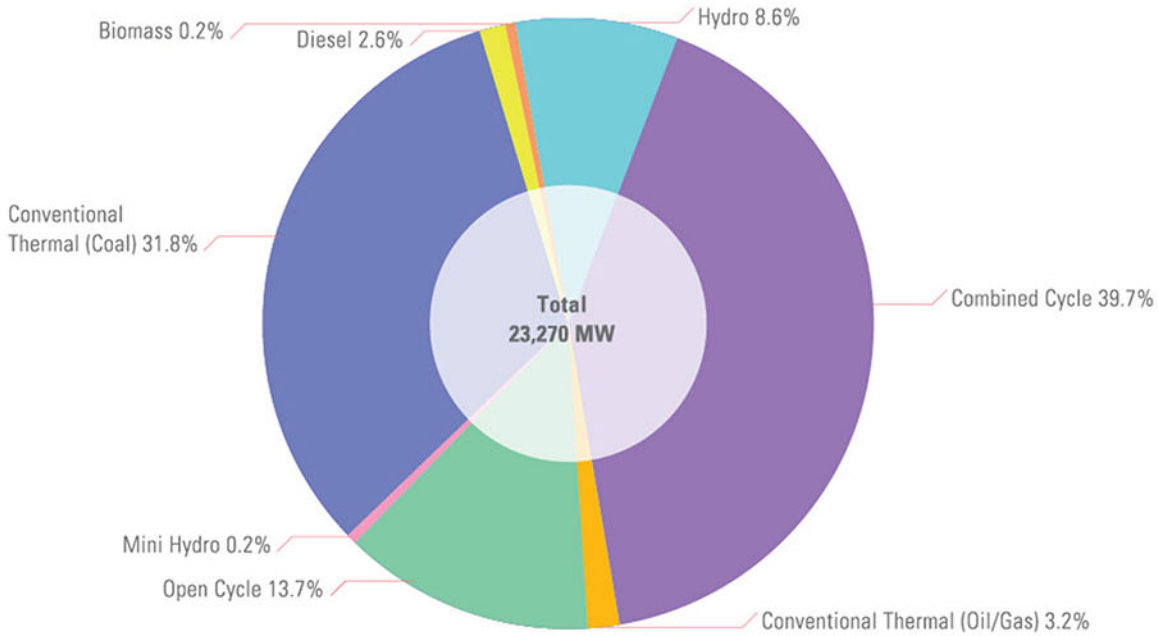
Source : Power utilities and IPPs

Table 11 : Available Capacity as of 31st December 2010 in MW

	TNB	SESCo	SESB	IPPs			Total	%
				PM	SWK	SAB		
Steam								
Coal	0	0	0	6,932	470	0	**7,402**	*31.8*
Gas	184	0	0	556	0	0	**740**	*3.2*
Oil	0	0	0	0	0	0	**0**	*0.0*
Hydro	1,860	91	44	0	0	0	**1,995**	*8.6*
Mini Hydro	12	3	7	18	0	2	**42**	*0.2*
Diesel/LFO	0	68	116	0	0	420	**604**	*2.6*
Rural Diesel	0	0	3	0	0	0	**3**	*0.0*
Combined-cycle	3,245	0	101	5,892	0	0	**9,238**	*39.7*
Open Cycle								
Diesel/Oil	64	40	79	0	0	0	**183**	*0.8*
Gas	1,272	266	0	1,060	210	212	**3,020**	*13.0*
Biomass	0	0	0	13	0	30	**43**	*0.2*
Total	**6,637**	**468**	**350**	**14,471**	**680**	**664**	**23,270**	***100.0***
Percentage % (share)	*28.5*	*2.0*	*1.5*	*62.2*	*2.9*	*2.9*	***100.0***	

Source : Power utilities and IPPs
Note (*) : Including Cameron Highland Scheme (Odak, Habu, Kg. Raja, Kg. Terla and R. Falls)
(**) : Dependable Capacity

Figure 27 : Malaysia Available Capacity as of 31st December 2010



Source : Power utilities and IPPs

Table 12 : Installed Capacity of Major Hydro Power Stations

Station	Installed Capacity (MW)	Total (MW)
Peninsular Malaysia		
1. Terengganu		
Stesen Janakuasa Sultan Mahmud Kenyir	4 x 100	400.0
2. Perak		
Stesen Janakuasa Temenggor	4 x 87	348.0
Stesen Janakuasa Bersia	3 x 24	72.0
Stesen Janakuasa Kenering	3 x 40	120.0
Chenderoh	3 x 10.7 + 1 x 8.4	40.5
Sg. Piah Hulu	2 x 7.3	14.6
Sg. Piah Hilir	2 x 27	54.0
3. Pahang		
Stesen Janakuasa Sultan Yussuf, Jor	4 x 25	100.0
Stesen Janakuasa Sultan Idris II, Woh	3 x 50	150.0
Cameron Highland Scheme*		11.9
4. Kelantan		
Pergau	4 x 150	600.0
Kenerong Upper	2 x 6	12.0
Kenerong Lower	2 x 4	8.0
Sub-Total		**1,931.0**
Sabah		
Tenom Pangi	3 x 22.0	66.0
Sub-Total		**66.0**
Sarawak		
Batang Ai	4 x 23.5	94.0
Sub-Total		**94.0**
Total		**2,091.0**

Source : TNB, SESB and SEB
Note (*) : Cameron Highland Scheme includes Odak, Habu, Kg. Raja, Kg. Terla and R. Falls stations

Table 13 : Installed Capacity of Mini Hydro Power Stations

Station	Total (MW)
1. Kedah	
Sg Tawar Besar	0.540
Sg Mempelam	0.397
Sg Mahang	0.483
2. Perak	
Sg Tebing Tinggi	0.178
Sg Asap	0.110
Sg Kinjang	0.349
Sg Bil	0.258
3. Pahang	
Sg Sempam G2	0.450
Sg Pertang	0.492
Sg Perdak	0.364
4. Kelantan	
Sg Renyok G1	0.800
Sg Renyok G2	0.800
Sg Sok	0.588
Sg Rek	0.270
5. Terengganu	
Sg Brang	0.422
Sub-Total	**6.501**
6. Sabah	
Carabau (Ranau)	2.000
Melangkap (Kota Belud)	1.000
Sayap (Kota Belud)	1.000
Bombalai (Tawau)	1.100
Merotai (Tawau)	1.100
Kiau (Kota Belud)	0.375
Naradau (Ranau)	1.760
Sub-Total	**8.335**
7. Sarawak	
Sg Pasir	0.760
Penindin	0.352
Sebako	0.333
Lundu	0.352
Kalamuku 1	0.500
Kalamuku 2	0.500
Sg Keijin	0.500
Sg Kota 1	2.000
Sg Kota 2	2.000
Sub-Total	**7.297**
Total	**22.133**

Source : TNB, SESB and SEB

Table 14 : Transmission Network in Circuit - kilometres

Utility	500 KV	275 KV	132 KV	66 KV
TNB	1,094	9,657.2	11,415.4	0.9
SESB	-	492.0	1,721.0	123.0
SEB	-	765.0	225.0	-

Source : TNB, SESB and SEB

Table 15 : Distribution Network in circuit - kilometres

Utility	Overhead Lines	Underground Cables
TNB	475,972	376,226
SESB	7,490	1,418
SEB	19,803	6,087

Source : TNB, SESB and SEB

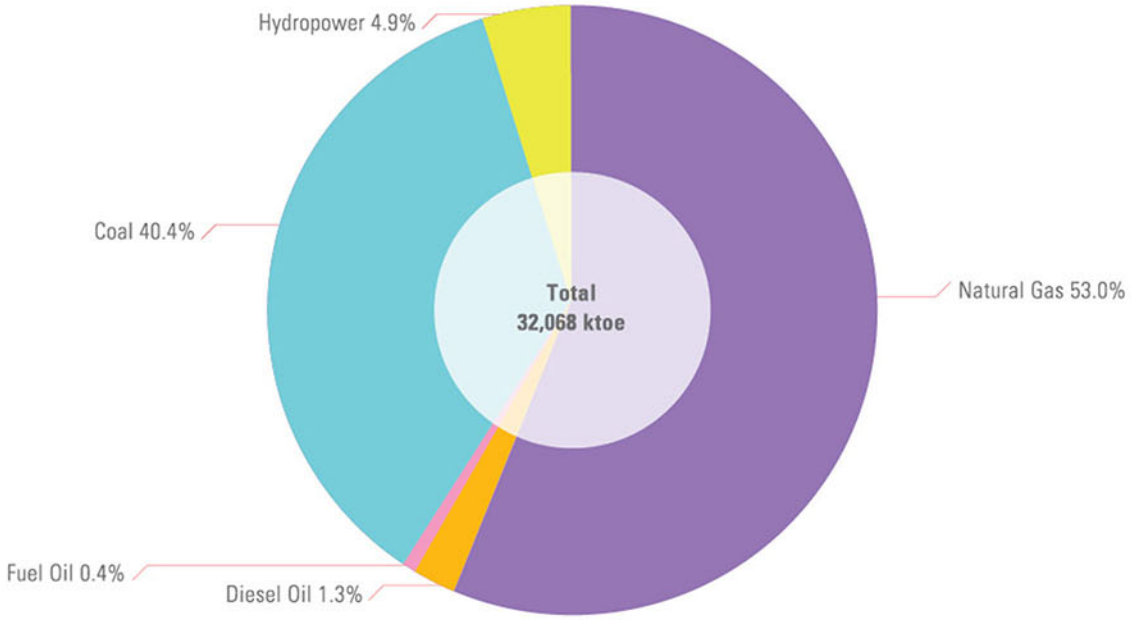
Table 16 : Breakdown on Electricity (Gross Generation, Consumption, Installed Capacity, Peak Demand and Reserve Margin) for Malaysia

Region	Electricity Gross Generation		Electricity Consumption		Installed Capacity	Peak Demand	Reserve Margin
	GWh	%	GWh	%	MW	MW	%
Peninsular Malaysia	96,495	89.2	94,666	90.6	21,848	15,072	45.0
Sarawak	7,347	6.8	5,728	5.5	1,348	1,090	23.7
Grid	*7,173*	*6.6*	*5,592*	*5.4*	*1,298*	*1,059*	*22.6*
Non-Grid	*174*	*0.2*	*136*	*0.1*	*50*	*31*	*61.3*
Sabah	4,332	4.0	4,127	3.9	1,165	780	49.4
*Sabah Grid**	*4,332*	*4.0*	*4,127*	*3.9*	*1,165*	*780*	*49.4*
Total	**108,175**	**100.0**	**104,521**	**100.0**	**24,361**		

Source : TNB and IPPs, SESB and SEB

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

Figure 28 : Energy Input in Power Stations



Note : Figures exclude fuel consumption for self-generation plants
Source : Power utilities and IPPs

Table 17: Electricity Consumption by Sectors in GWh

Region	Industry		Commercial		Residential		Transport		Agriculture		Total
	GWh	%	GWh	%	GWh	%	GWh	%	GWh	%	GWh
Peninsular Malaysia	42,643	91.9	31,766	90.5	19,765	87.8	214	100.0	278.0	100.0	94,666
Sarawak	2,593	5.6	1,735	4.9	1,399	6.2	-	-	-	-	5,728
Sabah	1,178	2.5	1,602	4.6	1,347	6.0	-	-	-	-	4,127
Total	**46,414**	**100.0**	**35,103**	**100.0**	**22,511**	**100.0**	**214**	**100.0**	**278**	**100.0**	**104,521**

Figure 29 : Electricity Consumption by Sectors

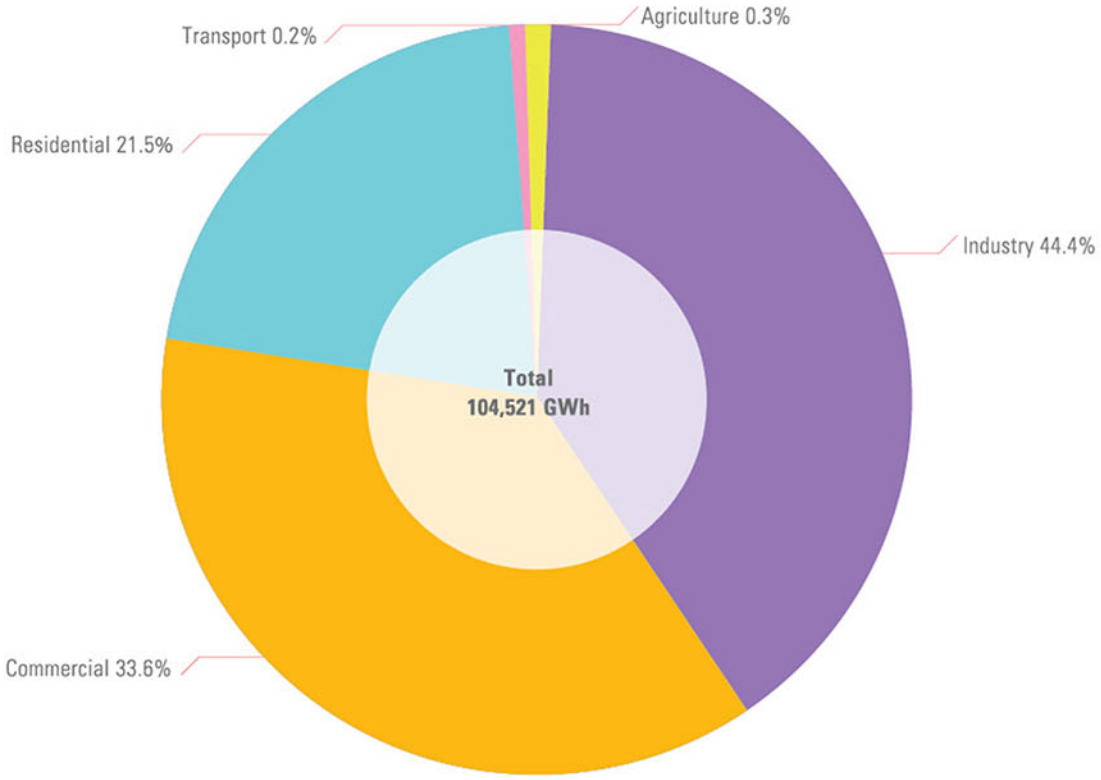
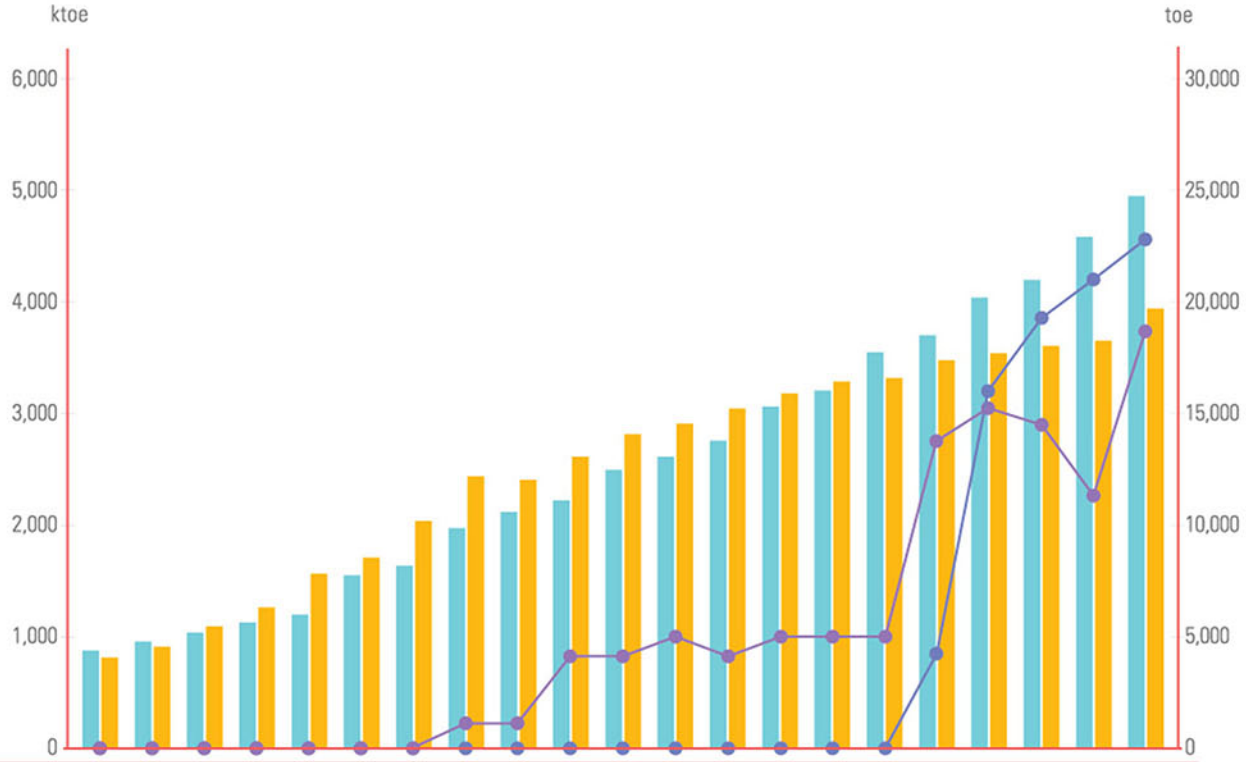


Figure 30 : Electricity Consumption by Sectors



YEAR	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Resid. & Comm.(ktoe)	885	988	1,081	1,147	1,365	1,549	1,747	1,961	2,165	2,220	2,453	2,660	2,859	3,066	3,298	3,567	3,792	4,065	4,268	4,536	4,957
Industrial (ktoe)	830	937	1,137	1,303	1,567	1,826	2,029	2,422	2,411	2,591	2,805	2,930	3,059	3,242	3,340	3,371	3,475	3,587	3,687	3,719	3,994
Transport* (toe)	0	0	0	0	0	0	0	1,000	1,000	4,000	4,000	5,000	4,000	5,000	5,000	5,000	14,117	15,295	14,862	11,358	18,439
Agriculture** (toe)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4,886	15,991	19,393	21,080	23,920

Source : Malaysian Energy Commission, Sarawak Chief Electricity Inspectorate, TNB, SEB, SESB and Co-Generators

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 was under the Commercial Tariff

Table 18 : Electricity Generation and Installed Capacity of Renewable Energy by Public Licensee by Region in 2010

Region	Type of Prime Mover	Installed Capacity (MW)	Unit Generated (MWh)
Peninsular Malaysia	Land Fill Gas	2.0	949
	Mini Hidro-ST	6.4	33,195
	Mini Hidro-TNB	8.9	14,056
	Solar	0.8	666
	POME	2.0	1,436
	Municipal Waste-ST	8.9	4,587
	Mini Hydro-IPP	20.0	101
	Sub-Total	**49.0**	**54,990**
Sabah	Palm Shell & EFB	10.2	32,983
	Wood Waste	10.0	306
	Mini Hydro-ST	2.0	2,100
	Palm Oil Waste	37.0	214,359
	Mini Hydro-SESB	8.0	23,104
	Sub-Total	**67.2**	**272,852**
Sarawak	Mini Hydro-SEB	2.0	6,374
	Solar	0.0	15
	Sub-Total	**2.0**	**6,389**
	Grand Total	**118.2**	**334,230**

Source : TNB, Energy Commission, Kementerian Kemudahan Awam Sarawak

Table 19 : Electricity Generation and Installed Capacity of Renewable Energy by Private Licensee by Region in 2010

Region	Type of Prime Mover	Installed Capacity (MW)	Unit Generated (MWh)
Peninsular Malaysia	Agricultural Waste	90.0	55,269
	Wood Dust	12.5	548
	Paddy Husk	0.5	2,189
	Palm Oil Waste	318.8	451,766
	Others	15.9	508
	Sub-Total	**437.7**	**510,280**
Sabah	Palm Oil Waste	115.2	221,649
	Wood Waste	64.1	289,698
	EFB/Palm Shell	7.5	19,640
	Agricultural Waste	6.5	11,103
	Sub-Total	**193.3**	**542,090**
Sarawak	Palm Oil Waste	7.4	10,129
	Wood / Sawmill Dust	11.0	26,309
	Mini Hydro-SEB	6.0	10,816
	Sub-Total	**24.4**	**47,254**
	Grand Total	**655.4**	**1,081,624**

Source : TNB, Energy Commission, Kementerian Kemudahan Awam Sarawak

Key Energy Statistics 1990-2010

Table 20 : Commercial Energy Supply in ktoe

YEAR	Crude Oil	Petroleum Product & Others	Natural Gas*	Coal and Coke	Hydro power	Total	Annual Growth Rate (%)	Share (%)			
								Crude Oil & Petroleum Products & Others	Natural Gas	Coal and Coke	Hydro power
1990	8,783	3,651	5,690	1,326	915	20,365	3.3	61.1	27.9	6.5	4.5
1991	9,443	4,165	6,675	1,564	1,053	22,900	12.4	59.4	29.1	6.8	4.6
1992	10,175	5,100	8,545	1,640	997	26,457	15.5	57.7	32.3	6.2	3.8
1993	10,135	5,814	7,729	1,352	1,262	26,292	(0.6)	60.7	29.4	5.1	4.8
1994	13,605	2,446	8,977	1,563	1,652	28,243	7.4	56.8	31.8	5.5	5.8
1995	16,159	610	11,064	1,612	1,540	30,985	9.7	54.1	35.7	5.2	5.0
1996	18,255	1,099	12,339	1,677	1,243	34,613	11.7	55.9	35.6	4.8	3.6
1997	17,916	3,802	14,108	1,622	790	38,238	10.5	56.8	36.9	4.2	2.1
1998	17,133	1,920	14,549	1,731	1,113	36,446	(4.7)	52.3	39.9	4.7	3.1
1999	17,643	1,807	15,893	1,940	1,668	38,951	6.9	49.9	40.8	5.0	4.3
2000	21,673	(1,431)	20,194	2,486	1,560	44,482	14.2	45.5	45.4	5.6	3.5
2001	23,590	(1,917)	20,032	2,970	1,687	46,362	4.2	46.7	43.2	6.4	3.6
2002	22,647	(521)	21,802	3,642	1,329	48,899	5.5	45.2	44.6	7.4	2.7
2003	25,344	(1,391)	20,878	5,316	1,056	51,203	4.7	46.8	40.8	10.4	2.1
2004	25,335	(37)	21,409	6,631	1,329	54,667	6.8	46.3	39.2	12.1	2.4
2005	24,339	(75)	24,783	6,889	1,313	57,249	4.7	42.4	43.3	12.0	2.3
2006	24,909	(1,474)	26,704	7,299	1,568	59,006	3.1	39.7	45.3	12.4	2.7
2007	26,571	(995)	27,362	8,848	1,510	63,296	7.3	40.4	43.2	14.0	2.4
2008	26,776	(2,282)	27,800	9,782	1,964	64,040	1.2	38.2	43.4	15.3	3.1
2009	26,386	96	26,960	10,623	1,627	65,692	2.6	40.3	41.0	16.2	2.5
2010	22,487	2,521	31,589	14,777	1,577	72,951	11.0	34.3	43.3	20.3	2.4

Note (*) : Net natural gas supply after subtracting exports, flared gas and re-injection and LNG production

Table 21 : Net Import and Export of Energy in ktoe

YEAR	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	ngl	(1,914)	1,924
2001	9,128	16,636	1,163	ngl	(2,019)	2,631
2002	11,017	17,803	1,098	ngl	(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	9,214	22,874	(2,056)	200	(2,130)	6,751
2007	6,804	23,777	(4,140)	195	(1,329)	8,357
2008	6,482	22,277	(3,041)	41	(2,151)	9,519
2009	6,517	23,606	(3,889)	8	(1,177)	9,007
2010	9,365	25,487	(4,183)	13	1,930	13,011

Note : ((-)) means negative value

Table 22 : Conversions in Gas Plants in ktoe

YEAR	Input	Output		
	Natural Gas	LNG	GPP - LPG	MDS
1990	9,797	8,761	na	na
1991	11,715	8,749	na	na
1992	11,681	8,425	392	na
1993	13,005	9,019	529	39
1994	14,634	9,087	948	238
1995	17,088	11,244	1,900	421
1996	20,822	15,251	1,212	344
1997	24,945	16,396	1,258	389
1998	23,138	16,688	1,526	na
1999	24,116	16,417	1,472	na
2000	26,093	17,231	1,482	164
2001	25,703	16,636	1,310	513
2002	25,571	17,803	1,504	445
2003	27,940	18,965	790	443
2004	33,176	22,944	1,225	1,271
2005	36,447	32,837	2,043	1,567
2006	34,775	31,946	2,009	820
2007	35,827	33,054	1,974	799
2008	36,135	33,766	1,448	920
2009	37,098	32,497	991	3,610
2010	35,873	29,345	5,471	1,058

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

Table 23 : Conversion in Refineries in ktoe

YEAR	Input		Total Input	Output								Total Output
	Local Crude Oil	Imported Crude Oil & Other		Motor Petrol	Diesel Oil	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	256	585	158	10,030
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	1,535	17,917	2,491	6,744	2,716	365	2,000	371	1,783	203	16,673
1998	15,942	1,190	17,132	2,545	5,926	3,233	285	1,985	449	2,117	192	16,732
1999	14,595	3,048	17,643	3,056	6,712	2,603	210	2,140	617	2,159	230	17,727
2000	15,421	6.252	21,673	3,893	8,059	2,532	239	2,660	838	2,492	241	20,954
2001	13,299	10,290	23,589	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	8,254	25,381	4,584	9,062	1,763	983	2,367	932	2,623	262	22,576
2004	16,810	8,524	25,334	4,724	9,611	1,813	591	2,693	897	2,455	215	22,999
2005	18,216	6,123	24,339	4,245	9,161	1,777	521	2,553	822	2,157	202	21,438
2006	16,797	8,112	24,909	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	5,701	26,386	4,052	9,415	1,144	565	3,085	732	5,905	195	25,093
2010	14,003	8,484	22,487	3,874	8,370	327	483	2,892	697	4,357	210	21,210

Table 24 : Conversion in Power Stations (exclude co-generation & private licensed plants) in ktoe

YEAR	Input					Total Input	Annual Growth Rate (%)	Input Share (%)				Output
	Fuel Oil	Diesel Oil	Natural Gas	Hydro Power*	Coal & Coke			Fuel and Diesel Oil	Natural Gas	Hydro Power*	Coal & Coke	Total Electricity Generated
1990	2,873	116	1,361	915	813	6,078		49.2	22.4	15.1	13.4	1,979
1991	2,687	164	2,533	1,053	963	7,400	21.8	38.5	34.2	14.2	13.0	2,283
1992	2,352	160	3,144	997	968	7,621	3.0	33.0	41.3	13.1	12.7	2,521
1993	2,388	87	4,374	1,262	884	8,995	18.0	27.5	48.6	14.0	9.8	2,987
1994	1,957	249	5,119	1,652	925	9,902	10.1	22.3	51.7	16.7	9.3	3,362
1995	2,073	265	6,414	1,540	957	11,249	13.6	20.8	57.0	13.7	8.5	3,909
1996	2,354	284	7,489	1,243	950	12,320	9.5	21.4	60.8	10.1	7.7	4,421
1997	2,482	185	7,531	790	882	11,870	(3.7)	22.5	63.4	6.7	7.4	4,977
1998	2,130	275	8,886	1,116	964	13,371	12.6	18.0	66.5	8.3	7.2	5,013
1999	950	172	10,162	1,668	1,332	14,284	6.8	7.9	71.1	11.7	9.3	5,609
2000	592	191	11,580	1,612	1,495	15,470	8.3	5.1	74.9	10.4	9.7	5,263
2001	730	278	11,922	1,687	1,994	16,611	7.4	6.1	71.8	10.2	12.0	6,112
2002	1,363	476	12,424	1,329	2,556	18,148	9.3	10.1	68.5	7.3	14.1	6,384
2003	289	340	10,893	1,056	4,104	16,682	(8.1)	3.8	65.3	6.3	24.6	6,747
2004	274	272	10,545	1,329	5,327	17,747	6.4	3.1	59.4	7.5	30.0	7,075
2005	275	298	12,271	1,313	5,541	19,698	11.0	2.9	62.3	6.7	28.1	7,296
2006	170	618	12,330	1,568	5,963	20,649	4.8	3.8	59.7	7.6	28.9	7,724
2007	199	314	12,476	1,517	7,486	21,992	6.5	2.3	56.7	6.9	34.0	8,385
2008	181	299	13,651	1,964	8,069	24,164	9.9	2.0	56.5	8.1	33.4	8,422
2009	205	384	13,390	1,627	9,010	24,616	1.9	2.4	54.4	6.6	36.6	9,091
2010	125	415	17,000	1,577	12,951	32,068	30.3	1.7	53.0	4.9	40.4	9,791

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

Table 25 : Final Energy Use by Sectors in ktoe

YEAR	Industrial	Transport	Residential and Commercial	Non-Energy Use	Agriculture	Total	Annual Growth Rate %	Industrial Including Agriculture & Non-Energy	Industrial GDP*	Industrial Energy Intensity (to /RM Million at 2000 Prices)
1990	5,276	5,387	1,646	908	-	13,217	8.7	6,184	101,364	61
1991	5,809	5,806	1,747	1,071	127	14,560	10.2	7,007	109,673	64
1992	6,455	6,226	1,891	1,222	391	16,185	11.2	8,068	117,148	69
1993	7,012	6,558	2,069	2,027	62	17,728	9.5	9,101	124,496	73
1994	7,283	7,262	2,502	1,817	422	19,286	8.8	9,522	133,788	71
1995	8,060	7,827	2,837	1,994	446	21,164	9.7	10,500	147,986	71
1996	9,433	8,951	3,557	1,744	472	24,157	14.1	11,649	166,781	70
1997	10,106	10,201	3,073	2,298	490	26,168	8.3	12,894	178,674	72
1998	10,121	9,793	3,314	2,023	307	25,558	(2.3)	12,451	159,824	78
1999	10,277	11,393	3,653	1,799	106	27,228	6.5	12,182	171,715	71
2000	11,406	12,071	3,868	2,250	104	29,699	9.1	13,760	192,233	72
2001	11,852	13,137	4,048	2,378	98	31,513	6.1	14,328	187,302	76
2002	12,854	13,442	4,387	2,511	96	33,290	5.6	15,461	194,483	79
2003	13,472	14,271	4,399	2,345	98	34,585	3.9	15,915	209,046	76
2004	14,914	15,385	4,754	2,183	87	37,323	7.9	17,184	223,586	77
2005	15,492	15,384	5,134	2,173	101	38,284	2.6	17,766	230,932	77
2006	17,002	14,825	5,430	2,809	258	40,324	5.3	20,069	241,524	83
2007	19,116	15,717	6,196	2,958	281	44,268	9.8	22,355	248,022	90
2008	19,138	16,395	6,205	2,876	287	44,901	1.4	22,301	251,099	89
2009	14,312	16,119	6,336	3,868	211	40,846	(9.0)	18,391	235,405	78
2010	12,928	16,828	7,397	3,651	1,074	41,477	1.5	17,698	253,046	70

Note (*) : Defined as total GDP for Agiculture, forestry and Fishing, Mining and Quarrying. Manufacturing and Contruction.

Table 26 : Final Use of Commercial Energy by Type of Fuels in ktoe

YEAR	Petroleum Products	Electricity	*Gas for Non-Energy*	*Gas for Heating*	Natural Gas	Coal and Coke	Total	Total (exel. Non-energy)	Annual Growth Rate (%)
1990	9,896	1,715	*609*	*484*	1,093	513	13,217	12,608	8.2
1991	10,911	1,925	*604*	*521*	1,125	599	14,560	13,956	10.7
1992	11,927	2,218	*657*	*711*	1,368	672	16,185	15,528	11.3
1993	13,075	2,405	*1,141*	*575*	1,716	487	17,683	16,542	6.5
1994	13,893	2,932	*1,163*	*695*	1,858	598	19,281	18,118	9.5
1995	16,142*	3,375	*1,064*	*871*	1,935	712	22,164	21,100	16.5
1996	17,189	3,777	*870*	*1,604*	2,474	727	24,167	23,297	10.4
1997	18,578	4,384	*1,391*	*1,074*	2,465	740	26,167	24,776	6.3
1998	17,488	4,577	*1,282*	*1,444*	2,726	767	25,558	24,276	(2.0)
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*	*2,351*	3,863	991	29,699	28,187	8.0
2001	20,323	5,594	*1,684*	*2,955*	4,639	977	31,533	29,849	5.9
2002	20,638	5,922	*1,775*	*3,868*	5,643	1,086	33,289	31,514	5.6
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	22,394	7,277	*2,110*	*7,212*	9,322	1,335	40,328	38,218	4.0
2007	24,853	7,684	*2,112*	*8,274*	10,386	1,361	44,284	42,172	10.3
2008	24,451	7,986	*2,046*	*8,705*	10,751	1,713	44,901	42,855	1.6
2009	24,145	8,286	*1,995*	*4,805*	6,800	1,613	40,844	38,849	(9.3)
2010	24,403	8,993	*1,661*	*4,593*	6,254	1,826	41,476	39,815	2.5

Note (*) : Petroleum Products for 1995 include 1,212 ktoe of butane and propane from GPP (16,142 ktoe vs 14,930 ktoe previously). This amount is deducted from natural gas non-energy use reported earlier (1,064 ktoe vs 2,276 ktoe previously).

Table 27 : Final Demand for Petroleum Product in ktoe

YEAR	Diesel	Motor 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	1,756	1,215	197	1,335	746	17,189
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	626	20,319
2002	8,041	6,947	1,589	1,542	92	1,785	639	20,635
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

Table 28 : Selected Energy and Economic Indicators (1990 - 2010)

YEAR	GDP at 2000 Prices (RM million)*	Population ('000 people)*	Primary Energy Supply (ktoe)	Final Energy Demand (ktoe)	Electricity Demand (ktoe)	Electricity Demand (GWh)	Average Annual Growth (%)				Per Capita				Energy Intensity			
							GDP at 2000 Prices	Primary Energy Supply	Final Energy Demand	Electricity Demand	GDP at 2000 Prices (RM)	Primary Energy Supply (toe)	Final Energy Demand (toe)	Electricity Demand (kWh)	Primary Energy Supply (toe/GDP at 2000 Prices (RM million))	Final Energy Demand (toe/GDP at 2000 Prices (RM million))	Electricity Demand (toe/GDP at 2000 Prices (RM million))	Electricity Demand (GWh/GDP at 2000 Prices (RM million))
1990	179,383	18,102	21,471	13,217	1,715	19,932	9.00	8.90	8.70	9.70	9,910	1.19	0.73	1,101	120	74	9.6	0.111
1991	196,506	18,986	26,335	14,560	1,925	22,373	9.55	22.65	10.16	12.24	10,350	1.39	0.77	1,178	134	74	9.8	0.114
1992	213,966	18,985	29,291	16,185	2,218	25,778	8.89	11.22	11.16	15.22	11,270	1.54	0.85	1,358	137	76	10.4	0.120
1993	235,137	19,503	29,925	17,468	2,450	28,474	9.89	2.16	7.93	10.46	12,056	1.53	0.90	1,460	127	74	10.4	0.121
1994	256,798	20,049	31,662	19,287	2,932	34,076	9.21	5.80	10.41	19.67	12,809	1.58	0.96	1,700	123	75	11.4	0.133
1995	282,039	20,624	33,879	22,164	3,375	39,225	9.83	7.00	14.92	15.11	13,675	1.64	1.07	1,902	120	79	12.0	0.139
1996	310,251	21,101	37,840	24,167	3,777	43,897	10.00	11.69	9.04	11.91	14,703	1.79	1.15	2,080	122	78	12.2	0.141
1997	332,970	21,595	43,173	26,168	4,384	50,952	7.32	14.09	8.28	16.07	15,419	2.00	1.21	2,359	130	79	13.2	0.153
1998	308,465	22,107	40,996	25,558	4,577	53,195	(7.36)	(5.04)	(2.33)	4.40	13,953	1.85	1.16	2,406	133	83	14.8	0.172
1999	327,397	22,636	44,534	27,228	4,815	55,961	6.14	8.63	6.53	5.20	14,464	1.97	1.20	2,472	136	83	14.7	0.171
2000	356,401	23,495	50,710	29,699	5,263	61,168	8.86	13.87	9.08	9.30	15,169	2.16	1.26	2,603	142	83	14.8	0.172
2001	358,246	24,123	51,979	31,515	5,594	65,015	0.52	2.50	6.11	6.29	14,851	2.15	1.31	2,695	145	88	15.6	0.181
2002	377,559	24,727	53,196	33,290	5,922	68,827	5.39	2.34	5.63	5.86	15,269	2.15	1.35	2,783	141	88	15.7	0.182
2003	399,414	25,320	57,565	34,586	6,313	73,371	5.79	8.21	3.89	6.60	15,775	2.27	1.37	2,898	144	87	15.8	0.184
2004	426,508	25,905	62,358	37,323	6,643	77,206	6.78	8.33	7.91	5.23	16,464	2.41	1.44	2,980	146	88	15.6	0.181
2005	449,250	26,477	66,188	38,285	6,944	80,705	5.33	6.14	2.58	4.53	16,968	2.50	1.45	3,048	147	85	15.5	0.180
2006	475,526	26,832	67,878	40,323	7,277	84,575	5.85	2.55	5.32	4.80	17,722	2.53	1.50	3,152	143	85	15.3	0.178
2007	506,341	27,186	72,384	44,268	7,683	89,294	6.48	6.64	9.78	5.58	18,625	2.66	1.63	3,285	143	87	15.2	0.176
2008	530,683	27,541	75,490	44,901	7,986	92,815	4.81	4.30	1.43	3.94	19,269	2.74	1.63	3,370	142	85	15.0	0.175
2009	522,001	27,895	74,582	40,845	8,286	96,302	(1.64)	(1.20)	(9.03)	3.76	18,713	2.67	1.46	3,452	143	78	15.9	0.184
2010	559,554	28,251	76,809	41,476	8,993	104,519	7.19	2.99	1.54	8.53	19,807	2.72	1.47	3,700	137	74	16.1	0.187

Source (*) : Monthly Statistical Bulletin, Central Bank of Malaysia (GDP at 2000 Prices (RM Million) for 1990 until 1999 by Energy Commission)

Table 29 : Commercial Energy Balance in 2010 (kilo tonnes of oil equivalent)

Commercial Energy Balance for Malaysia 2010 (Thousand Tonnes of Oil Equivalent)																	
						Petroleum Products											
Energy Source	Natural Gas	LNG	Crude Oil (1/)	Others (2/)	Total Petroleum Products	Motor Petrol	Diesel	Fuel Oil	LPG	Kerosene	ATF & AV Gas	Non Energy	Refinery Gas	Coal & Coke	Hydro Power	Electricity	Total
PRIMARY SUPPLY																	
1. Primary Production	71,543	0	32,163	0	0	0	0	0	0	0	0	0	0	1,511	1,577	0	106,794
2. Gas Flaring Reinjection & Use	-14,793	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-14,793
3. Imports	5,523	0	7,760	356	10,359	4,314	3,234	1,188	460	153	402	608	0	13,073	0	0	37,070
4. Exports	-1,340	-25,487	-17,125	-133	-8,429	-11	-2,493	-946	-728	-447	-728	-3,078	0	-62	0	-13	-52,589
5. Bunkers	0	0	0	0	-59	0	-33	-23	0	0	0	-4	0	0	0	0	-59
6. Stock Change	0	0	-337	0	441	1,109	-90	-33	-289	-1	-216	-39	0	79	0	0	182
7. Statistical Discrepancy	0	0	28	0	0	0	0	0	0	0	0	0	0	176	0	0	204
8. Primary Supply	**60,934**	**-25,487**	**22,487**	**222**	**2,312**	**5,413**	**618**	**187**	**-557**	**-294**	**-542**	**-2,513**	**0**	**14,777**	**1,577**	**-13**	**76,809**
TRANSFORMATION																	
9. Gas Plants																	
9.1 LNG	-29,345	26,150	0	0	451	0	0	0	451	0	0	0	0	0	0	0	-2,744
9.2 MDS	-1,057	0	0	0	454	0	98	0	0	44	0	312	0	0	0	0	-603
9.3 GPP LPG (3&4/)	-5,471	0	0	0	2,299	0	0	0	2,299	0	0	0	0	0	0	0	-3,172
Subtotal	**-35,873**	**26,150**	**0**	**0**	**3,204**	**0**	**98**	**0**	**2,750**	**44**	**0**	**312**	**0**	**0**	**0**	**0**	**-6,520**
10. Refineries	0	0	-22,487	-222	21,207	3,873	8,369	327	697	483	2,891	4,357	209	0	0	0	-1,503
11. Power Stations & Self-Generation																	
11.1 Hydro Stations	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1,577	540	-1,037
11.2 Thermal Stations	-17,000	0	0	0	-540	0	-415	-125	0	0	0	0	0	-12,951	0	8,864	-21,627
11.3 Self-Generation (5/)	-1,031	0	0	0	-201	0	-201	0	0	0	0	0	0	0	0	387	-845
Subtotal	**-18,031**	**0**	**0**	**0**	**-741**	**0**	**-616**	**-125**	**0**	**0**	**0**	**0**	**0**	**-12,951**	**-1,577**	**9,791**	**-23,509**
12. Losses & Own Use	-776	-663	0	0	-1,682	0	0	-16	0	0	0	-1,457	-209	0	0	-795	-3,917
13. Statistical Discrepancy	-1	0	0	0	105	275	-81	105	30	-213	31	-42	0	0	0	11	115
14. Secondary Supply	**-54,680**	**25,487**	**-22,487**	**-222**	**22,092**	**4,148**	**7,770**	**291**	**3,477**	**314**	**2,922**	**3,170**	**0**	**-12,951**	**-1,577**	**9,006**	**-35,333**
FINAL USE																	
15. Residential	6	0	0	0	712	0	0	0	699	13	0	0	0	0	0	1,937	2,655
16. Commercial	30	0	0	0	1,246	0	598	37	611	0	0	0	0	0	0	3,020	4,296
17. Industrial	4,310	0	0	0	2,798	84	2,057	419	232	6	0	0	0	1,826	0	3,994	12,928
18. Transport	247	0	0	0	16,562	9,476	4,694	12	0	0	2,380	0	0	0	0	18	16,828
19. Agriculture	0	0	0	0	1,050	0	1,039	10	0	0	0	0	0	0	0	24	1,074
20. Non-Energy Use	1,661	0	0	0	2,035	0	0	0	1,378	0	0	657	0	0	0	0	3,696
21. Total Final Use	**6,254**	**0**	**0**	**0**	**24,403**	**9,560**	**8,388**	**478**	**2,920**	**19**	**2,380**	**657**	**0**	**1,826**	**0**	**8,993**	**41,476**

1. Crude production include Condensates comprising Pentane and Heavier Hydrocarbons.
2. Others Refer to Non-Crude Energy Forms (consist of imported Light Diesel, Stop Reprocess, Crude Residuum & Middle East Residue) Which are Used as Refinary intake.
3. GPP-LPG Extracts Liquid Product i.e Condensates, Ethane, Butane, Propane from Natural Gas, Ethane is Not inscluded under LPG production.
4. Butane and Propane as MTBE Feedstock are Presented as Non-Energy use under LPG column. Ethane is Presented under natural Gas Column.
5. Estimated figures based from thr Energy Committe Electricity Supply Industry in Malaysia 2012.
Note : Total may not necessarily add up due to rounding.

Table 30 : Commercial Energy Balance in First Quarter (Q1) of 2010 (kilo tonnes of oil equivalent)

Commercial Energy Balance for Malaysia Quarter 1 2010
(Thousand Tonnes of Oil Equivalent)

Energy Source	Natural Gas	LNG	Crude Oil (1/)	Others (2/)	Total Petroleum Products	Petroleum Products: Motor Petrol	Diesel	Fuel Oil	LPG	Kerosene	ATF & AV Gas	Non Energy	Refinery Gas	Coal & Coke	Hydro Power	Electricity	Total
PRIMARY SUPPLY																	
1. Primary Production	18,269	0	8,172	0	0	0	0	0	0	0	0	0	0	349	395	0	27,184
2. Gas Flaring Reinjection & Use	-3,384	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-3,384
3. Imports	1,369	0	1,949	328	2,998	1,375	806	123	152	0	148	394	0	2,663	0	0	9,306
4. Exports	-320	-6,827	-4,827	0	-1,920	-11	-106	0	-128	-176	-176	-1,324	0	-24	0	-1	-13,919
5. Bunkers	0	0	0	0	-14	0	-8	-6	0	0	0	-1	0	0	0	0	-14
6. Stock Change	0	0	-24	0	136	166	219	39	-156	3	51	-186	0	32	0	0	144
7. Statistical Discrepancy	0	0	-63	0	0	0	0	0	0	0	0	0	0	100	0	0	37
8. Primary Supply	**15,933**	**-6,827**	**5,206**	**328**	**1,201**	**1,530**	**910**	**156**	**-131**	**-172**	**23**	**-1,116**	**0**	**3,120**	**395**	**-1**	**19,354**
TRANSFORMATION																	
9. Gas Plants																	
9.1 LNG	-7,991	6,992	0	0	129	0	0	0	129	0	0	0	0	0	0	0	-871
9.2 MDS	-265	0	0	0	107	0	25	0	0	10	0	71	0	0	0	0	-158
9.3 GPP LPG (3&4/)	-1,479	0	0	0	564	0	0	0	564	0	0	0	0	0	0	0	-915
Subtotal	**-9,735**	**6,992**	**0**	**0**	**800**	**0**	**25**	**0**	**693**	**10**	**0**	**71**	**0**	**0**	**0**	**0**	**-1,943**
10. Refineries	0	0	-5,206	-328	4,375	575	1,292	33	136	105	540	1,649	46	0	0	0	-1,160
11. Power Stations & Self-Generation																	
11.1 Hydro Stations	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-395	143	-253
11.2 Thermal Stations	-4,236	0	0	0	-151	0	-115	-36	0	0	0	0	0	-2,729	0	2,161	-4,955
11.3 Self-Generation (5/)	-254	0	0	0	-50	0	-50	0	0	0	0	0	0	0	0	105	-200
Subtotal	**-4,491**	**0**	**0**	**0**	**-201**	**0**	**-165**	**-36**	**0**	**0**	**0**	**0**	**0**	**-2,729**	**-395**	**2,409**	**-5,407**
12. Losses & Own Use	-192	-164	0	0	-443	0	0	0	0	0	0	-398	-46	0	0	-193	-992
13. Statistical Discrepancy	0	-0	0	0	-82	-67	3	-2	7	62	-8	-78	0	0	0	-62	-144
14. Secondary Supply	**-14,417**	**6,827**	**-5,206**	**-328**	**4,448**	**507**	**1,156**	**-5**	**836**	**177**	**532**	**1,244**	**0**	**-2,279**	**-395**	**2,155**	**-9,646**
FINAL USE																	
15. Residential	1	0	0	0	175	0	0	0	172	3	0	0	0	0	0	461	638
16. Commercial	7	0	0	0	292	0	120	24	149	0	0	0	0	0	0	714	1,014
17. Industrial	957	0	0	0	467	21	274	118	52	2	0	0	0	391	0	968	2,783
18. Transport	58	0	0	0	3,993	2,016	1,421	1	0	0	555	0	0	0	0	4	4,055
19. Agriculture	0	0	0	0	260	0	252	8	0	0	0	0	0	0	0	6	265
20. Non-Energy Use	492	0	0	0	461	0	0	0	333	0	0	128	0	0	0	0	953
21. Total Final Use	**1,516**	**0**	**0**	**0**	**5,648**	**2,038**	**2,066**	**151**	**705**	**5**	**555**	**128**	**0**	**391**	**0**	**2,153**	**9,708**

Table 31 : Commercial Energy Balance Second Quarter (Q2) of 2010 (kilo tonnes of oil equivalent)

Commercial Energy Balance for Malaysia Quarter 2 2010 (Thousand Tonnes of Oil Equivalent)																	
					Total	Petroleum Products											
Energy Source	Natural Gas	LNG	Crude Oil (1/)	Others (2/)	Petroleum Products	Motor Petrol	Diesel	Fuel Oil	LPG	Kerosene	ATF & AV Gas	Non Energy	Refinery Gas	Coal & Coke	Hydro Power	Electricity	Total
PRIMARY SUPPLY																	
1. Primary Production	17,238	0	7,956	0	0	0	0	0	0	0	0	0	0	341	293	0	25,829
2. Gas Flaring Reinjection & Use	-3,797	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-3,797
3. Imports	1,451	0	1,937	12	2,304	879	940	109	87	153	97	39	0	3,180	0	0	8,884
4. Exports	-296	-5,778	-4,442	-66	-2,398	0	-876	-34	-244	-260	-150	-835	0	-25	0	-3	-13,007
5. Bunkers	0	0	0	0	-14	0	-8	-6	0	0	0	-1	0	0	0	0	-14
6. Stock Change	0	0	-37	0	661	403	286	-77	-1	-3	-123	175	0	215	0	0	839
7. Statistical Discrepancy	0	0	142	0	0	0	0	0	0	0	0	0	0	-29	0	0	114
8. Primary Supply	**14,595**	**-5,778**	**5,557**	**-55**	**553**	**1,282**	**343**	**-7**	**-158**	**-110**	**-175**	**-621**	**0**	**3,683**	**293**	**-3**	**18,847**
TRANSFORMATION																	
9. Gas Plants																	
9.1 LNG	-6,459	5,943	0	0	115	0	0	0	115	0	0	0	0	0	0	0	-401
9.2 MDS	-270	0	0	0	120	0	26	0	0	12	0	82	0	0	0	0	-150
9.3 GPP LPG (3&4/)	-1,355	0	0	0	563	0	0	0	563	0	0	0	0	0	0	0	-792
Subtotal	**-8,084**	**5,943**	**0**	**0**	**797**	**0**	**26**	**0**	**678**	**12**	**0**	**82**	**0**	**0**	**0**	**0**	**-1,344**
10. Refineries	0	0	-5,557	55	5,375	1,039	2,063	114	182	112	737	1,075	54	0	0	0	-128
11. Power Stations & Self-Generation																	
11.1 Hydro Stations	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-293	102	-191
11.2 Thermal Stations	-4,478	0	0	0	-131	0	-115	-16	0	0	0	0	0	-3,272	0	2,319	-5,562
11.3 Self-Generation (5/)	-256	0	0	0	-50	0	-50	0	0	0	0	0	0	0	0	84	-222
Subtotal	**-4,734**	**0**	**0**	**0**	**-181**	**0**	**-165**	**-16**	**0**	**0**	**0**	**0**	**0**	**-3,272**	**-293**	**2,505**	**-5,976**
12. Losses & Own Use	-186	-165	0	0	-341	0	0	-6	0	0	0	-281	-54	0	0	-209	-901
13. Statistical Discrepancy	-0	0	0	0	142	238	-58	42	6	-9	7	-84	0	0	0	41	183
14. Secondary Supply	**-13,004**	**5,778**	**-5,557**	**55**	**5,792**	**1,276**	**1,865**	**134**	**866**	**115**	**744**	**792**	**0**	**-3,272**	**-293**	**2,336**	**-8,166**
FINAL USE																	
15. Residential	1	0	0	0	176	0	0	0	173	3	0	0	0	0	0	509	687
16. Commercial	7	0	0	0	355	0	199	5	151	0	0	0	0	0	0	780	1,143
17. Industrial	1,093	0	0	0	761	21	568	118	51	2	0	0	0	411	0	1,033	3,298
18. Transport	62	0	0	0	4,281	2,537	1,173	3	0	0	569	0	0	0	0	5	4,348
19. Agriculture	0	0	0	0	268	0	267	1	0	0	0	0	0	0	0	6	274
20. Non-Energy Use	427	0	0	0	503	0	0	0	333	0	0	170	0	0	0	0	930
21. Total Final Use	**1,591**	**0**	**0**	**0**	**6,345**	**2,559**	**2,208**	**126**	**708**	**5**	**569**	**170**	**0**	**411**	**0**	**2,334**	**10,681**

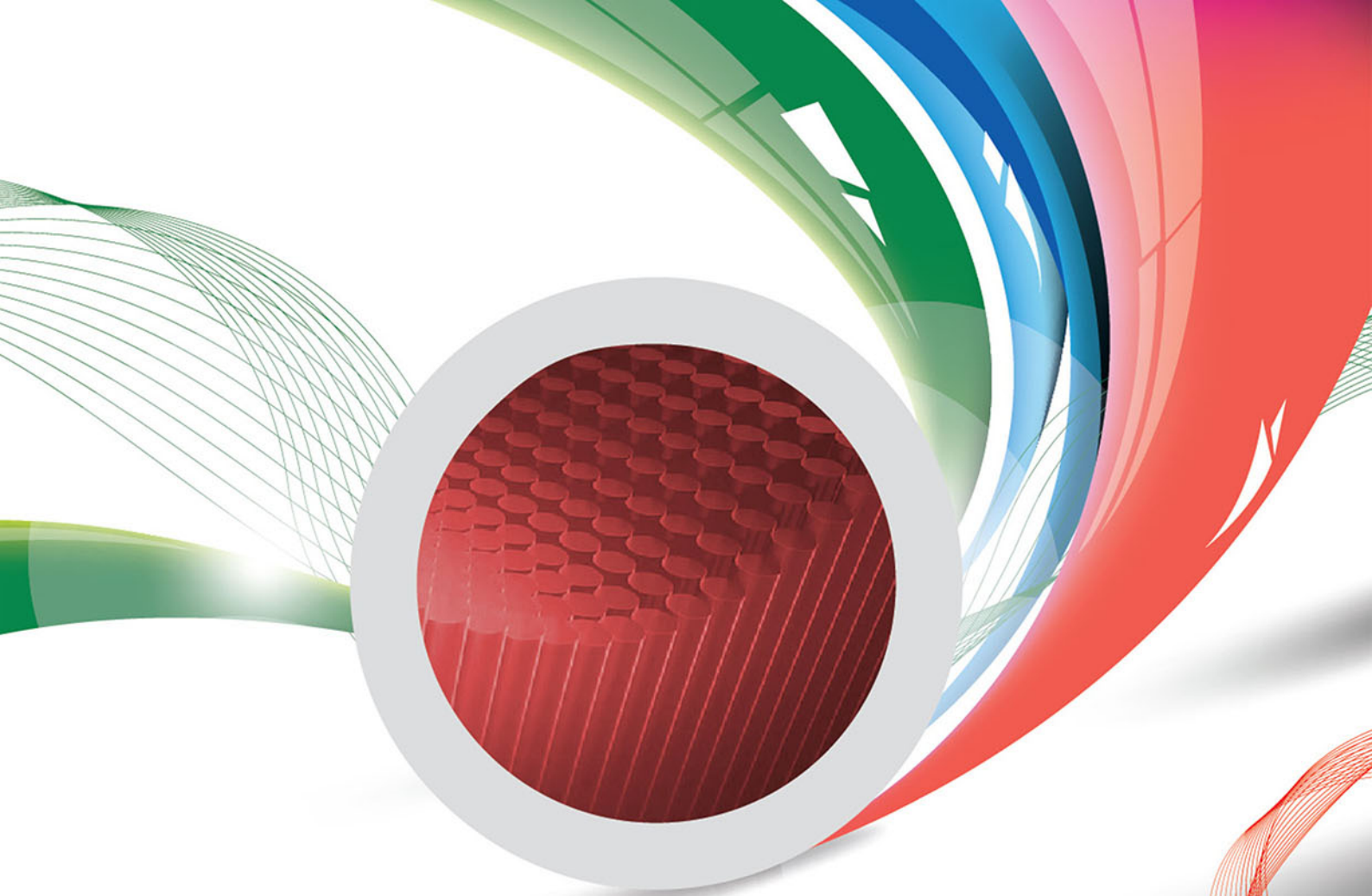
Table 32 : Commercial Energy Balance in Third Quarter (Q3) of 2010 (kilo tonnes of oil equivalent)

Commercial Energy Balance for Malaysia Quarter 3 2010
(Thousand Tonnes of Oil Equivalent)

Energy Source	Natural Gas	LNG	Crude Oil (1/)	Others (2/)	Total Petroleum Products	Petroleum Products								Coal & Coke	Hydro Power	Electricity	Total
						Motor Petrol	Diesel	Fuel Oil	LPG	Kerosene	ATF & AV Gas	Non Energy	Refinery Gas				
PRIMARY SUPPLY																	
1. Primary Production	18,099	0	8,254	0	0	0	0	0	0	0	0	0	0	406	427	0	27,182
2. Gas Flaring Reinjection & Use	-4,005	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-4,005
3. Imports	1,353	0	1,937	0	3,080	1,071	905	835	123	1	109	36	0	3,955	0	0	10,325
4. Exporta	-361	-6,196	-4,442	-22	-2,995	0	-1,059	-872	-170	-0	-181	-711	0	0	0	-6	-14,021
5. Bunkers	0	0	0	0	-13	0	-7	-6	0	0	0	-1	0	0	0	0	-13
6. Stock Change	0	0	-185	0	796	385	40	106	-47	2	-50	360	0	-475	0	0	136
7. Statistical Discrepancy	0	0	-78	0	0	0	0	0	0	0	0	0	0	155	0	0	77
8. Primary Supply	**15,087**	**-6,196**	**5,486**	**-22**	**869**	**1,457**	**-121**	**64**	**-94**	**3**	**-123**	**-317**	**0**	**4,040**	**427**	**-6**	**19,681**
TRANSFORMATION																	
9. Gas Plants																	
9.1 LNG	-7,085	6,367	0	0	100	0	0	0	100	0	0	0	0	0	0	0	-618
9.2 MDS	-267	0	0	0	107	0	24	0	0	11	0	72	0	0	0	0	-160
9.3 GPP LPG (3&4/)	-1,290	0	0	0	579	0	0	0	579	0	0	0	0	0	0	0	-711
Subtotal	**-8,642**	**6,367**	**0**	**0**	**785**	**0**	**24**	**0**	**678**	**11**	**0**	**72**	**0**	**0**	**0**	**0**	**-1,490**
10. Refineries	0	0	-5,486	22	5,345	1,137	2,330	79	179	128	730	709	53	0	0	0	-119
11. Power Sations & Self-Generation																	
11.1 Hydro Station LNG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-427	135	-292
11.2 Thermal Stations	-4,388	0	0	0	-120	0	-91	-30	0	0	0	0	0	-3,593	0	2,180	-5,922
11.3 Self-Generation (5/)	-258	0	0	0	-51	0	-51	0	0	0	0	0	0	0	0	100	-208
Subtotal	**-4,646**	**0**	**0**	**0**	**-171**	**0**	**-141**	**-30**	**0**	**0**	**0**	**0**	**0**	**-3,593**	**-427**	**2,416**	**-6,422**
12. Losses & Own Use	-205	-172	0	0	-457	0	0	-5	0	0	0	-399	-53	0	0	-200	-1,034
13. Statistical Discrepancy	-0	-0	0	0	-66	2	-12	-19	-2	-137	2	100	0	0	0	76	9
14. Secondary Supply	**-13,493**	**6,196**	**-5,486**	**22**	**5,436**	**1,139**	**2,200**	**26**	**855**	**2**	**732**	**482**	**0**	**-3,593**	**-427**	**2,291**	**-9,055**
FINAL USE																	
15. Residential	2	0	0	0	182	0	0	0	178	4	0	0	0	0	0	493	676
16. Commercial	8	0	0	0	291	0	142	4	145	0	0	0	0	0	0	774	1,072
17. Industrial	1,112	0	0	0	758	22	586	77	71	1	0	0	0	447	0	1,008	3,325
18. Transport	63	0	0	0	4,273	2,573	1,082	8	0	0	609	0	0	0	0	5	4,341
19. Agriculture	0	0	0	0	270	0	269	1	0	0	0	0	0	0	0	6	276
20. Non Energy Use	410	0	0	0	532	0	0	0	367	0	0	165	0	0	0	0	942
21. Total Final Use	**1,594**	**0**	**0**	**0**	**6,304**	**2,595**	**2,079**	**90**	**761**	**5**	**609**	**165**	**0**	**447**	**0**	**2,285**	**10,630**

Table 33 : Commercial Energy Balance in Fourth Quarter (Q4) of 2010 (kilo tonnes of oil equivalent)

Commercial Energy Balance for Malaysia Quarter 4 2010 (Thousand Tonnes of Oil Equivalent)																	
					Total	Petroleum Products											
Energy Source	Natural Gas	LNG	CRUDE OIL (1/)	OTHERS (2/)	Petroleum Products	Motor Petrol	Diesel	Fuel Oil	LPG	Kerosene	ATF & AV Gas	Non Energy	Refinery Gas	Coal & Coke	Hydro Power	Electricity	Total
PRIMARY SUPPLY																	
1. Primary Production	17,937	0	7,781	0	0	0	0	0	0	0	0	0	0	416	461	0	26,595
2. Gas Flaring Reinjection & Use	-3,606	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-3,606
3. Imports	1,351	0	1,937	16	1,977	989	583	121	98	0	48	140	0	3,274	0	0	8,555
4. Exporta	-363	-6,686	-3,415	-45	-1,116	0	-452	-40	-186	-11	-221	-207	0	-13	0	-3	-11,642
5. Bunkers	0	0	0	0	-19	0	-11	-6	0	0	0	-2	0	0	0	0	-19
6. Stock Change	0	0	-92	0	-1,153	155	-634	-102	-86	-4	-93	-388	0	307	0	0	-937
7. Statistical Discrepancy	0	0	27	0	0	0	0	0	0	0	0	0	0	-50	0	0	-23
8. Primary Supply	**15,319**	**-6,686**	**6,238**	**-29**	**-311**	**1,453**	**-514**	**-26**	**-174**	**-15**	**-267**	**-458**	**0**	**3,934**	**461**	**-3**	**18,923**
TRANSFORMATION																	
9. Gas Plants																	
9.1 LNG	7,810	6,848	0	0	108	0	0	0	108	0	0	0	0	0	0	0	-854
9.2 MDS	-256	0	0	0	120	0	23	0	0	11	0	86	0	0	0	0	-135
9.3 GPP LPG (3&4/)	-1,347	0	0	0	593	0	0	0	593	0	0	0	0	0	0	0	-754
Subtotal	**-9,413**	**6,848**	**0**	**0**	**821**	**0**	**23**	**0**	**701**	**11**	**0**	**86**	**0**	**0**	**0**	**0**	**-1,743**
10. Refineries	0	0	-6,238	29	6,112	1,123	2,685	101	200	138	885	924	57	0	0	0	-97
11. Power Sations & Self-Generation																	
11.1 Hydro Station LNG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-461	160	-301
11.2 Thermal Stations	-3,897	0	0	0	-138	0	-95	-42	0	0	0	0	0	-3,356	0	2,203	-5,188
11.3 Self-Generation (5/)	-263	0	0	0	-50	0	-50	0	0	0	0	0	0	0	0	98	-215
Subtotal	**-4,160**	**0**	**0**	**0**	**-187**	**0**	**-145**	**-42**	**0**	**0**	**0**	**0**	**0**	**-3,356**	**-461**	**2,461**	**-5,704**
12. Losses & Own Use	-193	-162	0	0	-441	2	0	-5	0	0	0	-379	-57	0	0	-193	-990
13. Statistical Discrepancy	-0	0	0	0	111	103	-14	83	19	-129	29	21	0	0	0	-44	67
14. Secondary Supply	**-13,766**	**6,686**	**-6,238**	**29**	**6,416**	**1,225**	**2,549**	**136**	**920**	**20**	**914**	**651**	**0**	**-3,356**	**-461**	**2,224**	**-8,467**
FINAL USE																	
15. Residential	2	0	0	0	179	0	0	0	176	3	0	0	0	0	0	474	654
16. Commercial	8	0	0	0	308	0	137	4	167	0	0	0	0	0	0	752	1,067
17. Industrial	1,148	0	0	0	812	20	628	106	57	1	0	0	0	577	0	984	3,522
18. Transport	63	0	0	0	4,015	2,349	1,019	0	0	0	648	0	0	0	0	5	4,083
19. Agriculture	0	0	0	0	252	0	251	1	0	0	0	0	0	0	0	6	259
20. Non Energy Use	331	0	0	0	539	0	0	0	346	0	0	193	0	0	0	0	871
21. Total Final Use	**1,552**	**0**	**0**	**0**	**6,106**	**2,369**	**2,035**	**111**	**746**	**4**	**648**	**193**	**0**	**577**	**0**	**2,221**	**10,456**



Energy Flow Chart 2010

2 NATIONAL 0 ENERGY 1 BALANCE 0

COMMERCIAL ENERGY FLOW, ANNUAL 2010

In kilo tonnes of Oil Equivalent (ktoe)

PRODUCTION

Natural Gas
71,543 (67.0%)

Crude Oil
32,163 (30.1%)

Coal & Coke
1,511 (1.4%)

Hydropower
1,577 (1.5%)

IMPORTS

Natural Gas
5,523 (14.9%)

Crude Oil
7,760 (20.9%)

Pet. Products & Others
10,715 (28.9%)

Coal & Coke
13,073 (35.3%)

CRUDE OIL

Crude Oil & Others
22,487

NATURAL GAS

LNG
30,836 (82.5%)

MDS
1,057 (2.8%)

GPP-LPG
5,471 (14.6%)

POWER GENERATION
(Including self generation)

Natural Gas
18,031 (54.1%)

Diesel
616 (1.8%)

Fuel Oil
125 (0.4%)

Coal & Coke
12,951 (38.9%)

Hydro Power
1,577 (4.7%)

FINAL CONSUMPTION

Industry
12,928 (31.2%)

Transportation
16,828 (40.6%)

Residential
2,655 (6.4%)

Commercial
4,296 (10.3%)

Non- Energy
3,696 (8.9%)

Agriculture
1,074 (2.6%)

PRIMARY ENERGY SUPPLY
76,809

TRANSFORMATION
36,823

FINAL CONSUMPTION
41,476

EXPORTS

Natural Gas
1,340 (2.5%)

LNG
25,487 (48.5%)

Crude Oil
17,125 (32.6%)

Pet. Products & Others
8,575 (16.3%)

Coal & Coke
62 (0.1%)

Electricity
13 (0.0%)

Total Bunkers
59

Total Stock Change
182

Total Statistical Discrepancy
204

Total Gas Flaring, Reinjection & Use
14,793

REFINERY OUTPUT:

Motor Petrol
3,873 (18.3%)

Diesel
8,369 (39.5%)

Fuel Oil
327 (1.5%)

LPG
697 (3.3%)

ATF & AV Gas
2,891 (13.6%)

Kerosene
483 (2.3%)

Non-Energy & Refinery Gas
4,566 (21.5%)

LNG PLANT

LNG
26,150 (98.3%)

LPG
451 (1.7%)

MDS PLANT

Kerosene
44 (9.7%)

Non-Energy
312 (68.7%)

Diesel
98 (21.6%)

GPP PLANT

LPG **2,299 (100%)**

POWER PRODUCTION

Hydro Stations
540 (5.5%)

Thermal Stations
8,864 (90.5%)

Self-Generations
387 (4.0%)

ENERGY CONSUMPTION

Pet. Products
24,403 (58.8%)

Electricity
8,993 (21.7%)

Natural Gas
6,254 (15.1%)

Coal & Coke
1,826(4.4%)

NOTES OF 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 "tonne oil equivalent" (1 toe= 41.84 Gigajoules) was chosen as the final unit for presentation in the Energy Balance.

COMMERCIAL 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, re-injected into the gas fields and use for production purpose.
Imports (3) and exports (4)	refer 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' stocks are taken into account. A negative sign indicates net increases while a positive sign indicates net decreases 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)	show 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.
Industrial (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, forestry and fishing.
Non-energy use (20)	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 feed stocks
Final use (21)	refer to the quantity of energy of all kinds delivered to the final user.

Note :

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 OF ELECTRICITY

Reserve Margin	Total capacity margin is defined as the amount of installed generation available over and above system peak load $\text{Reserve Margin} = \frac{\text{Installed Capacity} - \text{Peak Demand}}{\text{Peak Demand}}$
Peak Demand	The maximum power demand 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 OF 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.

CONVERSION COEFFICIENTS AND EQUIVALENCE

TJ/1000 Tonnes 1

Hard coal	29.3076	**Lignite/brown coal**	11.2834
Coke/oven coke	26.3768	**Peat**	9.5250
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 oil**	42.4960
Crude petroleum (domestic)	43.3000	**Residual fuel oil**	41.4996
Plant condensate	44.3131	**Naphtha**	44.1289
Aviation gasoline (Avgas)	43.9614	**White/industrial spirit**	43.2078
Liquefied petroleum gas (LPG)	45.5440	**Lubricants**	42.1401
Motor gasoline	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
Note :- 1 Unless otherwise indicated
2 Assuming 9.7 TJ/1000 cu m

CONVERSION COEFFICIENTS FOR CRUDE OIL AND PETROLEUM PRODUCTS

Barrels to tonne

Product	Barrels/tonne
Crude Oil - Import	7.33
- Local	7.60
Motor Gasoline	8.55
Diesel Oil	7.50
Fuel Oil	6.60
Kerosene	7.90
LPG	11.76
ATF	7.91
AV Gas	9.05
Non-energy	6.50

DEFINITION

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

Natural Gas	Is a mixture of gaseous hydrocarbons (mainly methane), which occurs in either gas fields or in association with crude oil in oil fields.
LNG	Is a natural gas that is liquefied for ocean transportation and export.
Crude oil	Is a natural product that is extracted from mineral deposits and consists essentially of many different non-aromatic hydrocarbons (paraffinic, cyclonic, etc.).
Aviation gasoline (Avgas)	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.
Motor gasoline (mogas)	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 from 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 oil (or gas oil)	Distillation falls within 200°C and 340°C. Diesel fuel for high-speed diesel engines (i.e. automotive) is 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 from 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 and sulphur. Coal in the energy balance 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 and Gas Supply Department of Energy Commission. Figures for 'fuel input' into power stations & co-generation plants were only available for Tenaga Nasional Berhad, SEB, SESB, IPPs as well as GDC Sdn. Bhd. Estimates were made using average conversion efficiency to obtain the fuel input into private installations.

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