Suruhanjaya Tenaga
Energy Commission

MALAYSIA ENERGY STATISTICS HANDBOOK 2020

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PREFACE

The Energy Commission was established on 1st May 2001, under the Energy Commission Act 2001 and it became fully operational in January 2002. Our core function is to regulate electricity and piped gas supply in Peninsular Malaysia and Sabah, establishing a balance between the priorities of energy providers and the needs of consumers. Our commitment is to ensure reliable, safe and cost effective supply of electricity and piped gas to all consumers. On top of that, we are also the hub for energy data and the focal point for matters related to energy data in Malaysia.

The Malaysia Energy Statistics Handbook is a pocket sized guide that displays the national key energy data. This handbook is published and distributed annually, to reflect the updates to our database. The information in this handbook is also available in the MEIH (Malaysia Energy Information Hub) website (https://meih.st.gov.my) as well as in the 'MyEnergyStats' mobile application.

This handbook comprises of 10 main sections, whereby each section contains graphs and charts for users to visualise the energy trend while providing an overview of the national energy supply and demand. This handbook displays data on the energy supply, transformation, consumption, prices, indicators and electricity and piped gas performance.

The information presented in this handbook is a supplement to the following publications:

I. National Energy Balance 2018
II. Performance and Statistical Information on Electricity Supply Industry in Malaysia 2019
III. Piped Gas Distribution Industry Statistics Malaysia 2019

Inquiries about figures and graphs in this handbook could be addressed to:

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Reserves of Crude Oil and Condensates

Unit: Billion Barrels

Year	Reserves of Crude Oil and Condensates			
	PENINSULAR MALAYSIA	SARAWAK	SABAH	TOTAL
1990	2.943	-	-	**2.943**
1991	3.045	-	-	**3.045**
1992	3.743	1.267	0.604	**5.614**
1993	4.279	1.205	0.631	**6.115**
1994	2.500	1.200	0.600	**4.300**
1995	2.455	1.067	0.590	**4.112**
1996	2.500	0.900	0.600	**4.000**
1997	2.700	0.680	0.470	**3.850**
1998	2.440	0.860	0.580	**3.880**
1999	2.080	0.830	0.510	**3.420**
2000	1.920	0.850	0.620	**3.390**
2001	1.920	0.850	0.620	**3.390**
2002	2.110	1.340	0.780	**4.230**
2003	2.040	1.300	1.210	**4.550**
2004	1.980	1.420	1.430	**4.830**
2005	1.770	1.560	1.970	**5.300**
2006	1.791	1.334	2.129	**5.254**
2007	1.452	0.889	1.975	**4.316**
2008	1.719	1.315	2.424	**5.458**
2009	1.781	1.388	2.348	**5.517**
2010	2.061	1.362	2.376	**5.799**
2011	2.374	1.492	1.992	**5.858**
2012	2.413	1.600	1.941	**5.954**
2013	2.335	1.592	1.923	**5.850**
2014	2.341	1.566	1.885	**5.792**
2015	2.205	1.693	2.009	**5.907**
2016	1.735	1.370	1.925	**5.030**
2017	1.669	1.290	1.767	**4.727**
2018	1.612	1.304	1.637	**4.553**

Source: PETRONAS

Reserves of Natural Gas

Unit: Trillion Standard Cubic Feet (TSCF)

Reserves of Natural Gas										
Year	PENINSULAR MALAYSIA			SABAH			SARAWAK			Grand Total
	Non-Associated	Associated	Total	Non-Associated	Associated	Total	Non-Associated	Associated	Total	
1990	21.350	6.080	**27.430**	1.320	1.030	**2.350**	23.840	3.310	**27.150**	56.930
1991	21.320	6.200	**27.520**	1.380	0.980	**2.360**	25.770	3.400	**29.170**	59.050
1992	22.500	6.700	**29.200**	1.800	1.100	**2.900**	31.900	3.800	**35.700**	67.800
1993	23.900	7.800	**31.700**	3.000	1.700	**4.700**	36.600	3.800	**40.400**	76.800
1994	26.600	7.900	**34.500**	2.900	1.200	**4.100**	37.900	4.200	**42.100**	80.700
1995	28.000	8.200	**36.200**	6.000	1.300	**7.300**	37.000	4.200	**41.200**	84.700
1996	28.300	8.300	**36.600**	4.900	1.200	**6.100**	33.200	4.300	**37.500**	80.200
1997	29.400	8.900	**38.300**	4.800	1.200	**6.000**	32.500	3.000	**35.500**	79.800
1998	27.700	8.900	**36.600**	4.900	1.200	**6.100**	40.600	3.700	**44.300**	87.000
1999	25.900	8.500	**34.400**	6.600	1.100	**7.700**	39.900	3.800	**43.700**	85.800
2000	25.300	8.400	**33.700**	6.700	1.300	**8.000**	37.400	3.400	**40.800**	82.500
2001	25.300	8.400	**33.700**	6.700	1.300	**8.000**	37.400	3.400	**40.800**	82.500
2002	24.900	8.400	**33.300**	6.800	1.200	**8.000**	42.600	3.400	**46.000**	87.300
2003	23.900	8.500	**32.400**	8.100	1.800	**9.900**	42.700	4.000	**46.700**	89.000
2004	21.740	9.520	**31.260**	7.750	1.880	**9.630**	42.750	3.380	**46.130**	87.020
2005	21.590	9.200	**30.790**	8.230	2.500	**10.730**	40.540	3.130	**43.670**	85.190
2006	23.170	9.650	**32.820**	8.210	2.750	**10.960**	41.240	2.930	**44.170**	87.950
2007	24.030	9.440	**33.469**	8.461	3.137	**11.598**	40.850	3.008	**43.858**	88.925
2008	24.190	9.269	**33.459**	9.132	3.584	**12.716**	38.974	2.861	**41.835**	88.010
2009	24.079	9.153	**33.232**	8.578	3.523	**12.101**	39.727	2.908	**42.635**	87.968
2010	25.139	9.280	**34.419**	8.681	3.787	**12.468**	39.187	2.513	**41.700**	88.587
2011	25.337	9.797	**35.134**	8.638	3.327	**11.965**	39.856	3.033	**42.889**	89.988
2012	26.144	9.594	**35.738**	9.801	3.502	**13.303**	39.901	3.180	**43.081**	92.122
2013	25.649	9.325	**34.974**	9.454	3.764	**13.218**	46.798	3.330	**50.128**	98.320
2014	25.242	9.688	**34.930**	10.029	3.724	**13.753**	48.955	3.024	**51.979**	100.662
2015	24.022	8.471	**32.493**	11.884	3.149	**15.032**	50.034	2.853	**52.888**	100.413
2016	20.428	6.793	**27.221**	10.915	2.521	**13.436**	45.336	1.770	**47.105**	87.762
2017	19.327	6.333	**25.659**	11.060	1.487	**12.547**	43.184	1.508	**44.692**	82.897
2018	17.266	6.422	**23.688**	10.504	2.078	**12.582**	41.754	1.507	**43.261**	79.531

Source: PETRONAS

Reserves of Coal as of 31 December 2018

Unit : Million Tonnes

Location	Reserves			Coal Type
	Measured	Indicated	Inferred	
SARAWAK				
1. Abok & Silantek, Sri Aman	7.25	10.60	32.40	Coking Coal, Semi-Anthracite and Anthracite
2. Merit-Pila, Kapit	170.26	107.02	107.84	Sub-Bituminous
3. Bintulu	6.00	0.00	14.00	Bituminous (partly coking coal)
4. Mukah - Balingian	86.95	170.73	646.53	Lignite, Hydrous Lignite and Sub-Bituminous
5. Tutoh Area	5.58	34.66	162.33	Sub-Bituminous
Subtotal	**276.04**	**323.01**	**963.10**	-
SABAH				
1. Salimpopon	4.80	14.09	7.70	Sub-Bituminous
2. Labuan			8.90	Sub-Bituminous
3. Maliau			215.00	Bituminous
4. Malibau		17.90	25.00	
5. SW Malibau		23.23	-	
6. Pinangan West Middle Block		-	42.60	Bituminous
Subtotal	**4.80**	**55.22**	**299.20**	
SELANGOR				
1. Batu Arang			17.00	Sub-Bituminous
Subtotal	**0.00**	**0.00**	**17.00**	
Total	**280.84**	**378.23**	**1,279.30**	
Grand Total		**1,938.37**		

Source: Department of Mineral and Geosciences Malaysia

Installed Capacity as of 31 December 2019

Unit: MW

		Hydro	Natural Gas	Coal	Diesel/ MFO	Biomass	Solar	Biogas	Others	Total
PENINSULAR MALAYSIA	TNB	2,556.5	2,230.0	0.0	0.0	0.0	0.0	0.0	0.0	**4,786.5**
	IPPs	20.0	9,040.4	12,180.0	0.0	0.0	0.0	0.0	0.0	**21,240.4**
	Co-Generation	0.0	945.9	0.0	0.0	12.4	0.0	1.9	79.0	**1,039.2**
	Self-Generation	2.1	20.9	0.0	39.4	100.6	8.1	0.4	0.0	**171.5**
	FiT	63.8	0.0	0.0	0.0	44.9	288.1	93.2	0.0	**489.9**
	LSS	0.0	0.0	0.0	0.0	0.0	614.9	0.0	0.0	**614.9**
	NEM	0.0	0.0	0.0	0.0	0.0	37.5	0.0	0.0	**37.5**
	Subtotal	**2,642.4**	**12,237.3**	**12,180.0**	**39.4**	**157.9**	**948.6**	**95.4**	**79.0**	**28,379.9**
SABAH	SESB	83.1	112.0	0.0	220.9	0.0	23.2	0.0	0.0	**439.2**
	IPPs	0.0	1,012.6	0.0	64.4	0.0	0.0	0.0	0.0	**1,077.0**
	Co-Generation	0.0	65.0	0.0	0.0	116.2	0.0	0.0	0.0	**181.2**
	Self-Generation	0.0	3.9	0.0	137.3	79.0	0.0	42.5	0.0	**262.7**
	FiT	6.5	0.0	0.0	0.0	25.8	34.4	9.6	0.0	**76.3**
	LSS	0.0	0.0	0.0	0.0	0.0	50.0	0.0	0.0	**50.0**
	NEM**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
	Subtotal	**89.6**	**1,193.5**	**0.0**	**422.6**	**221.0**	**107.6**	**52.1**	**0.0**	**2,086.4**
SARAWAK	SEB	3,458.1	583.6	1,103.9	97.5	0.0	0.1	0.0	0.0	**5,243.3**
	Co-Generation	0.0	389.0	0.0	0.0	0.0	0.0	0.0	0.0	**389.0**
	Self-Generation	0.0	0.0	0.0	17.0	61.7	0.0	0.5	5.1	**84.3**
	Subtotal	**3,458.1**	**972.6**	**1,103.9**	**114.5**	**61.7**	**0.1**	**0.5**	**5.1**	**5,716.6**
	Total	**6,190.1**	**14,403.4**	**13,283.9**	**576.5**	**440.6**	**1,056.3**	**148.0**	**84.1**	**36,182.8**
	Share (%)	**17.1%**	**39.8%**	**36.7%**	**1.6%**	**1.2%**	**2.9%**	**0.4%**	**0.2%**	**100.0%**

Source: Energy Commission, Power Utilities, IPPs, SEDA Malaysia and Ministry of Utilities Sarawak
Notes: 1) Data exclude plants that are not in operation
*2) **There is a capacity of 0.03 MW solar under NEM scheme in Sabah*

Available Capacity as of 31 December 2019

Unit: MW

		Hydro	Natural Gas	Coal	Diesel/ MFO	Biomass/ Biogas	Solar	Total
PENINSULAR MALAYSIA	TNB	2,536.1	2,231.0	0.0	0.0	0.0	0.0	**4,767.1**
	IPPs	0.0	8,769.0	12,066.0	0.0	0.0	0.0	**20,835.0**
	LSS	0.0	0.0	0.0	0.0	0.0	72.9	**72.9**
	Subtotal	**2,536.1**	**11,000.0**	**12,066.0**	**0.0**	**0.0**	**72.9**	**25,675.0**
SABAH	SESB	74.9	103.4	0.0	149.7	0.0	0.0	**328.0**
	IPPs	0.0	865.0	0.0	0.0	0.0	0.0	**865.0**
	FiT	6.5	0.0	0.0	0.0	28.2	0.0	**34.7**
	LSS	0.0	0.0	0.0	0.0	0.0	7.5	**7.5**
	Subtotal	**81.4**	**968.4**	**0.0**	**149.7**	**28.2**	**7.5**	**1,235.2**
SARAWAK	SEB	3,444.1	571.5	1,001.0	91.8	0.0	0.1	**5,108.5**
	Subtotal	**3,444.1**	**571.5**	**1,001.0**	**91.8**	**0.0**	**0.1**	**5,108.5**
	Total	**6,061.6**	**12,539.9**	**13,067.0**	**241.5**	**28.2**	**80.5**	**32,018.7**

Source: Energy Commission, Power Utilities and IPPs
Notes: 1. Available Capacity for Peninsular Malaysia is based on Tested Annual Available Capacity (TAAC)
2. Available Capacity for Sabah is based on Dependable Capacity

Key Economic and Energy Data

	2018				
	Q1	Q2	Q3	Q4	Total
GDP at current prices (RM million) *	346,708	353,821	367,778	379,145	**1,447,451**
GDP at 2015 prices (RM million) *	326,800	332,254	345,329	357,432	**1,362,815**
GNI at current prices (RM million) *	338,406	343,128	353,729	367,106	**1,402,369**
Population ('000 people) **	32,292	32,382	32,432	32,482	**32,382**
Primary Energy Supply (ktoe)	24,273	24,698	25,246	25,656	**99,873**
Final Energy Consumption (ktoe)	16,409	15,649	16,003	16,597	**64,658**
Electricity Consumption (ktoe)	3,176	3,323	3,355	3,300	**13,153**
Electricity Consumption (GWh)	36,912	38,615	38,987	38,352	**152,866**
Per Capita					
GDP at Current Prices (RM) *	42,496	43,705	45,360	46,690	**44,699**
Primary Energy Supply (toe)	0.752	0.763	0.777	0.788	**3.084**
Final Energy Consumption (toe)	0.508	0.483	0.493	0.510	**1.997**
Electricity Consumption (kWh)	1,143	1,192	1,202	1,181	**4,721**
Energy Intensity					
Primary Energy Intensity (toe/GDP at 2015 prices (RM million))	74.27	74.11	73.11	71.78	**73.28**
Final Energy Intensity (toe/GDP at 2015 prices (RM million))	50.2	47.0	46.3	46.4	**47.4**
Electricity Intensity (toe/GDP at 2015 prices (RM million))	9.7	10.0	9.7	9.2	**9.7**
Electricity Intensity (GWh/GDP at 2015 prices (RM million))	0.113	0.116	0.113	0.107	**0.112**

*Notes: 1) *Quarterly data is from the Department of Statistics Malaysia*
*: 2) **Mid-year population data is from the Department of Statistics Malaysia*

Key Economic and Energy Data by Region

PENINSULAR MALAYSIA	2010	2011	2012	2013	2014	2015	2016	2017	2018
GDP at Current Prices (RM million) *	684,057	751,734	806,569	849,891	925,232	975,581	1,038,585	1,131,564	**1,193,179**
GDP at 2015 Prices (RM million) *	744,624	784,737	833,245	873,486	928,517	975,581	1,020,869	1,079,978	**1,137,741**
Population ('000 people) **	22,753	23,099	23,417	23,868	24,281	24,669	24,995	25,303	**25,593**
Final Energy Consumption (ktoe)	35,593	35,968	36,683	41,859	42,470	43,011	45,872	46,520	**47,446**
Electricity Consumption (ktoe)	8,145	8,427	8,791	9,108	9,315	9,531	10,026	10,004	**10,378**
Electricity Consumption (GWh)	94,666	97,939	102,174	105,861	108,259	110,770	116,529	116,272	**120,617**
Per Capita									
GDP at Current Prices (RM) *	30,064	32,544	34,444	35,608	38,105	39,547	41,551	44,721	**46,621**
Final Energy Consumption (toe)	1.564	1.557	1.567	1.754	1.749	1.744	1.835	1.839	**1.854**
Electricity Consumption (kWh)	4,161	4,240	4,363	4,435	4,459	4,490	4,662	4,595	**4,713**
Energy Intensity									
Final Energy Intensity (toe/ GDP at 2015 prices (RM million))	47.8	45.8	44.0	47.9	45.7	44.1	44.9	43.1	**41.7**
Electricity Intensity (toe/ GDP at 2015 prices (RM million))	10.9	10.7	10.6	10.4	10.0	9.8	9.8	9.3	**9.1**
Electricity Intensity (GWh/ GDP at 2015 prices (RM million))	0.127	0.125	0.123	0.121	0.117	0.114	0.114	0.108	**0.106**

*Notes: 1) *GDP data by State is from the Department of Statistics Malaysia*
*2) *GDP for Peninsular Malaysia includes Supra State (Supra State covers production activities that beyond the centre of predominant economic interest for any state)*
*3) *GDP data by State from 2010 until 2014 were estimated by the Energy Commission*
*4) **Mid-year population data is from the Department of Statistics Malaysia*

SABAH	2010	2011	2012	2013	2014	2015	2016	2017	2018
GDP at Current Prices (RM million) *	62,043	70,269	71,958	72,981	78,258	79,775	86,924	101,953	**108,212**
GDP at 2015 prices (RM million) *	64,926	66,693	69,014	71,531	75,093	79,775	83,930	90,598	**92,284**
Population ('000 people) **	3,348	3,435	3,523	3,703	3,764	3,816	3,900	3,954	**3,997**
Final Energy Consumption (ktoe)	2,758	3,466	4,671	4,097	4,128	3,845	5,015	9,512	**6,598**
Electricity Consumption (ktoe)	355	368	425	439	423	499	487	477	**484**
Electricity Consumption (GWh)	4,127	4,275	4,943	5,097	4,919	5,805	5,665	5,545	**5,630**
Per Capita									
GDP at Current Prices (RM) *	18,530	20,457	20,424	19,709	20,793	20,908	22,291	25,788	**27,071**
Final Energy Consumption (toe)	0.824	1.009	1.326	1.106	1.097	1.008	1.286	2.406	**1.651**
Electricity Consumption (kWh)	1,233	1,245	1,403	1,377	1,307	1,521	1,453	1,402	**1,408**
Energy Intensity									
Final Energy Intensity (toe/ GDP at 2015 prices (RM million))	18,530	20,457	20,424	19,709	20,793	20,908	22,291	25,788	**27,071**
Electricity Intensity (toe/ GDP at 2015 prices (RM million))	0.824	1.009	1.326	1.106	1.097	1.008	1.286	2.406	**1.651**
Electricity Intensity (GWh/ GDP at 2015 prices (RM million))	1,233	1,245	1,403	1,377	1,307	1,521	1,453	1,402	**1,408**

*Notes: 1) *GDP data by State is from the Department of Statistics Malaysia*
*2) *GDP for Sabah includes WP Labuan*
*3) *GDP data by State from 2010- 2014 were estimated by the Energy Commission*
*4) **Mid-year population data is from the Department of Statistics Malaysia*

SARAWAK	2010	2011	2012	2013	2014	2015	2016	2017	2018
GDP at Current Prices (RM million) *	88,935	104,840	108,833	112,650	121,323	121,585	124,189	138,793	**146,060**
GDP at 2015 prices (RM million) *	99,653	106,023	107,524	112,186	117,070	121,585	124,513	130,193	**132,789**
Population ('000 people) **	2,487	2,528	2,570	2,643	2,664	2,702	2,739	2,766	**2,792**
Final Energy Consumption (ktoe)	3,125	4,086	5,358	5,628	5,612	4,951	6,331	6,458	**10,614**
Electricity Consumption (ktoe)	493	445	795	1,043	1,304	1,344	1,878	2,126	**2,290**
Electricity Consumption (GWh)	5,730	5,172	9,237	12,118	15,152	15,624	21,831	24,703	**26,618**
Per Capita									
GDP at Current Prices (RM) *	40,068	41,941	41,843	42,455	43,945	45,007	45,464	47,064	**47,566**
Final Energy Consumption (toe)	1.256	1.616	2.085	2.130	2.106	1.833	2.312	2.335	**3.802**
Electricity Consumption (kWh)	2,304	2,046	3,594	4,586	5,688	5,784	7,971	8,930	**9,535**
Energy Intensity									
Final Energy Intensity (toe/ GDP at 2015 prices (RM million))	31.4	38.5	49.8	50.2	47.9	40.7	50.8	49.6	**79.9**
Electricity Intensity (toe/ GDP at 2015 prices (RM million))	4.9	4.2	7.4	9.3	11.1	11.1	15.1	16.3	**17.2**
Electricity Intensity (GWh/ GDP at 2015 prices (RM million))	0.057	0.049	0.086	0.108	0.129	0.129	0.175	0.190	**0.200**

*Notes: 1) *GDP data by State is from the Department of Statistics Malaysia*
*2) *GDP data by State from 2010 until 2014 were estimated by the Energy Commission*
*3) **Mid-year population data is from the Department of Statistics Malaysia*

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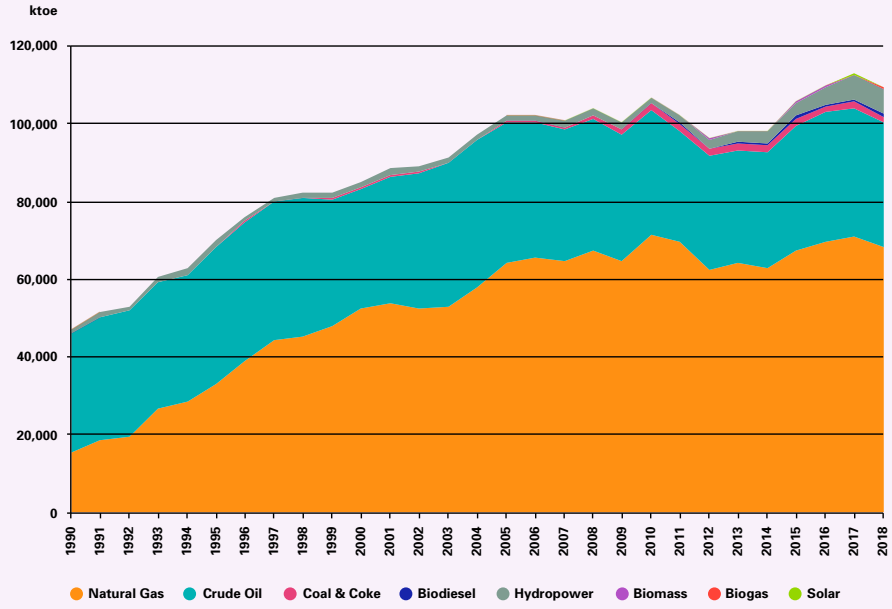
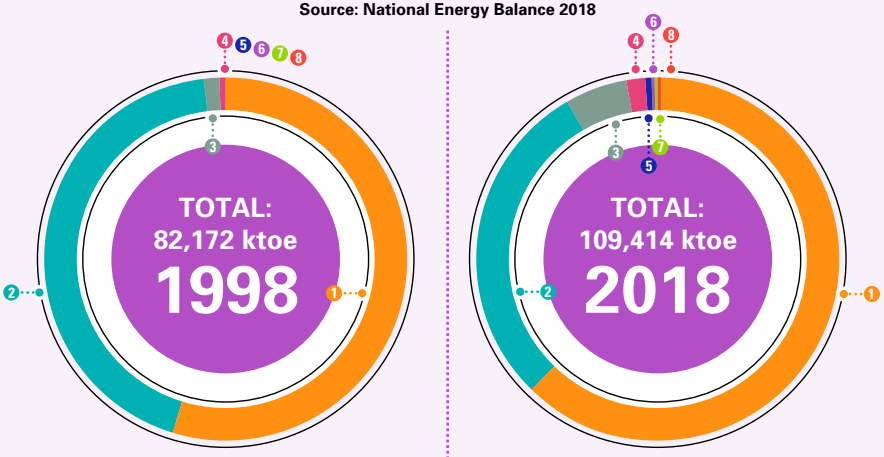
Primary Production by Fuel Type



Source: National Energy Balance 2018

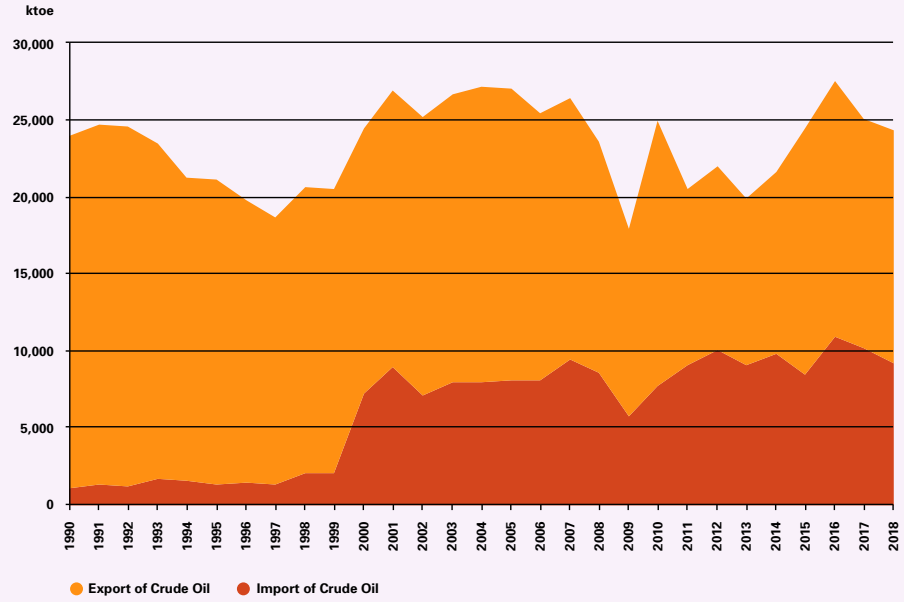


1 Natural Gas 54.8%	5 Biodiesel 0.0%	1 Natural Gas 62.4%	5 Biodiesel 0.6%
2 Crude Oil 43.5%	6 Biomass 0.0%	2 Crude Oil 29.2%	6 Biomass 0.2%
3 Hydropower 1.4%	7 Solar 0.0%	3 Hydropower 5.7%	7 Solar 0.2%
4 Coal & Coke 0.3%	8 Biogas 0.0%	4 Coal & Coke 1.5%	8 Biogas 0.2%

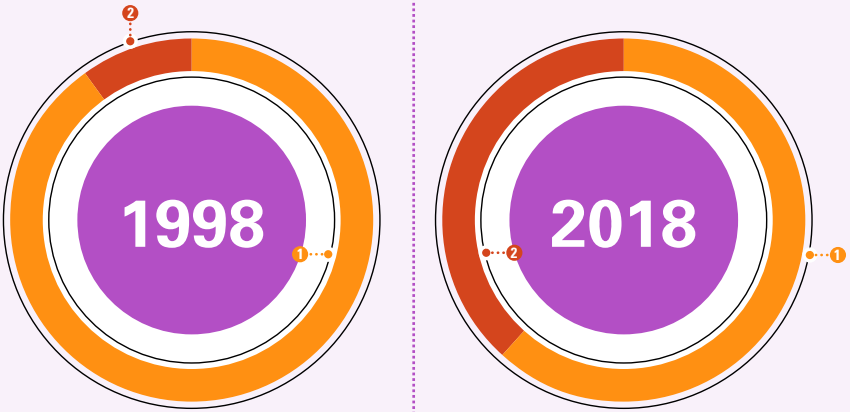
Unit: ktoe

Year	Primary Production by Fuel Type								
	Natural Gas	Crude Oil	Coal & Coke	Biodiesel	Hydropower	Biomass	Biogas	Solar	Total
1990	15,487	30,629	70	0	915	0	0	0	**47,101**
1991	18,390	31,843	126	0	1,053	0	0	0	**51,412**
1992	19,644	32,264	53	0	997	0	0	0	**52,958**
1993	26,898	32,218	264	0	1,262	0	0	0	**60,642**
1994	28,335	32,798	89	0	1,652	0	0	0	**62,874**
1995	33,268	35,090	85	0	1,540	0	0	0	**69,983**
1996	39,031	35,744	153	0	1,243	0	0	0	**76,171**
1997	44,318	35,600	153	0	790	0	0	0	**80,861**
1998	45,054	35,784	221	0	1,113	0	0	0	**82,172**
1999	47,746	32,835	174	0	1,668	0	0	0	**82,423**
2000	52,432	30,839	242	0	1,612	0	0	0	**85,125**
2001	53,659	32,851	344	0	1,687	0	0	0	**88,541**
2002	52,465	34,838	223	0	1,329	0	0	0	**88,855**
2003	53,010	37,026	107	0	1,056	0	0	0	**91,199**
2004	57,768	38,041	241	0	1,329	0	0	0	**97,379**
2005	64,337	36,127	430	0	1,313	0	0	0	**102,207**
2006	65,752	34,386	569	0	1,568	0	0	0	**102,275**
2007	64,559	33,967	576	0	1,517	0	0	0	**100,619**
2008	67,191	34,195	791	0	1,964	0	0	0	**104,141**
2009	64,661	32,747	1,348	0	1,627	0	0	0	**100,383**
2010	71,543	32,163	1,511	0	1,577	0	0	0	**106,794**
2011	69,849	28,325	1,838	176	1,850	0	0	0	**102,038**
2012	62,580	29,115	1,860	253	2,150	183	4	11	**96,156**
2013	64,406	28,576	1,824	480	2,688	297	6	38	**98,315**
2014	63,091	29,545	1,694	612	3,038	181	12	63	**98,236**
2015	67,209	32,440	1,614	684	3,582	189	18	75	**105,811**
2016	69,673	33,234	1,522	509	4,501	198	21	90	**109,747**
2017	71,140	32,807	1,884	467	6,240	194	41	93	**112,867**
2018	68,253	31,996	1,672	703	6,230	241	147	172	**109,414**

Import and Export of Crude Oil



Source: National Energy Balance 2018



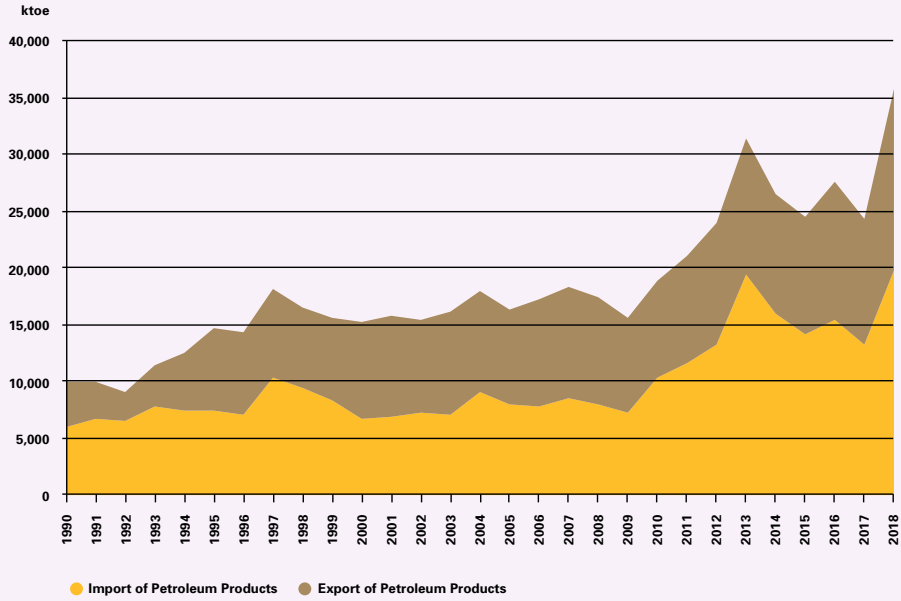
1 Export of Crude Oil 90.2%
2 Import of Crude Oil 9.8%

1 Export of Crude Oil 61.9%
2 Import of Crude Oil 38.1%

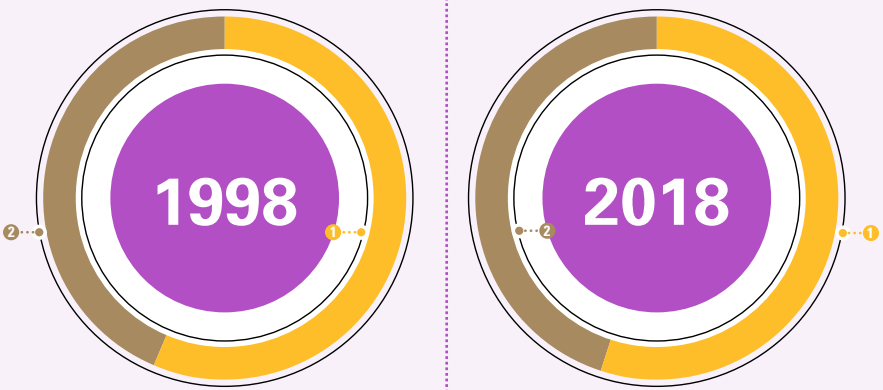
Unit: ktoe

Year	Import and Export of Crude Oil	
	Import of Crude Oil	Export of Crude Oil
1990	1,047	22,949
1991	1,244	23,444
1992	1,159	23,374
1993	1,703	21,766
1994	1,566	19,726
1995	1,315	19,833
1996	1,446	18,315
1997	1,300	17,322
1998	2,014	18,640
1999	2,081	18,355
2000	7,218	17,254
2001	8,890	18,018
2002	7,083	18,100
2003	7,921	18,747
2004	7,953	19,245
2005	8,031	18,994
2006	8,048	17,389
2007	9,453	16,962
2008	8,519	15,001
2009	5,718	12,235
2010	7,760	17,125
2011	9,104	11,404
2012	9,995	11,988
2013	9,101	10,785
2014	9,780	11,831
2015	8,379	16,075
2016	10,854	16,605
2017	10,135	14,958
2018	9,239	15,012

Import and Export of Petroleum Products



Source: National Energy Balance 2018



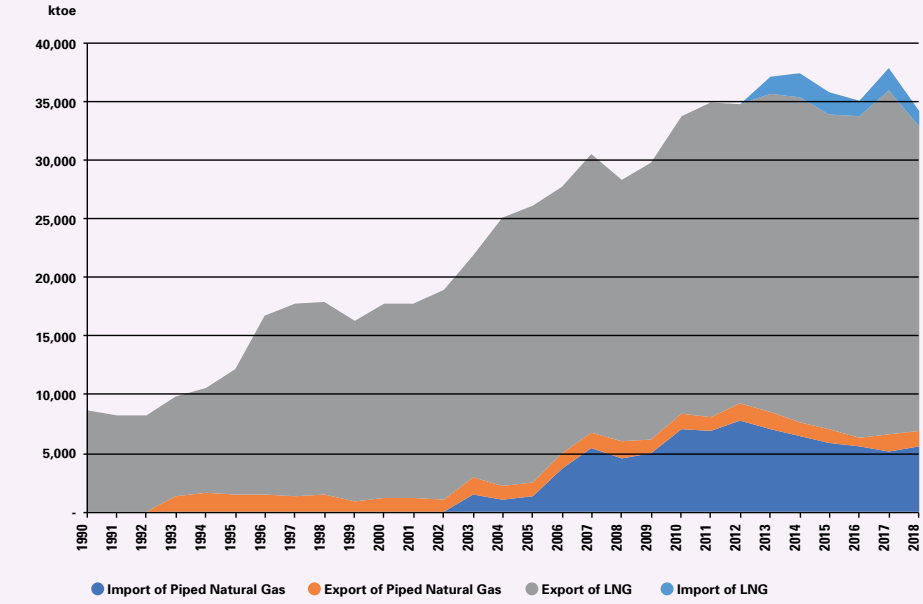
1 Import of Petroleum Products 56.5%
2 Export of Petroleum Products 43.5%

1 Import of Petroleum Products 55.2%
2 Export of Petroleum Products 44.8%

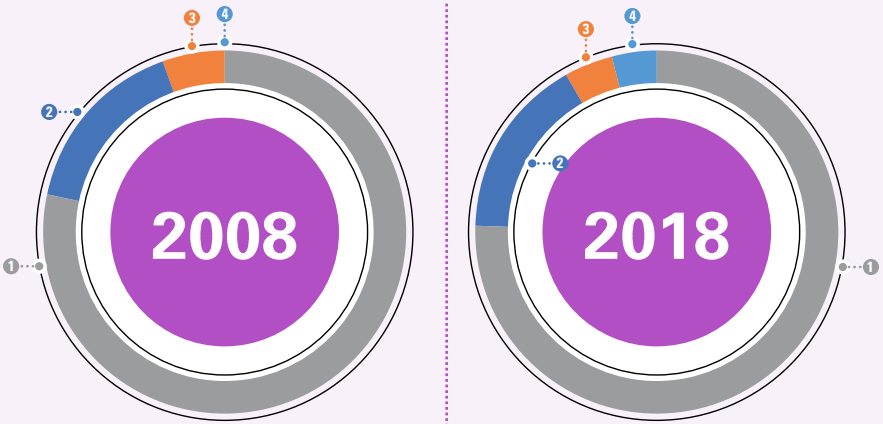
Unit: ktoe

Year	Import and Export of Petroleum Products	
	Import of Petroleum Products	Export of Petroleum Products
1990	6,031	3,913
1991	6,728	3,272
1992	6,499	2,513
1993	7,835	3,507
1994	7,492	5,094
1995	7,411	7,261
1996	7,095	7,317
1997	10,331	7,840
1998	9,360	7,194
1999	8,357	7,161
2000	6,619	8,533
2001	6,881	8,900
2002	7,220	8,158
2003	7,116	8,972
2004	8,980	8,912
2005	7,961	8,435
2006	7,734	9,535
2007	8,452	9,780
2008	7,918	9,527
2009	7,243	8,419
2010	10,359	8,431
2011	11,579	9,421
2012	13,243	10,785
2013	19,383	11,983
2014	16,009	10,399
2015	14,219	10,219
2016	15,342	12,214
2017	13,252	11,063
2018	19,763	16,028

Import and Export of Piped Natural Gas and Liquefied Natural Gas (LNG)



Source: National Energy Balance 2018

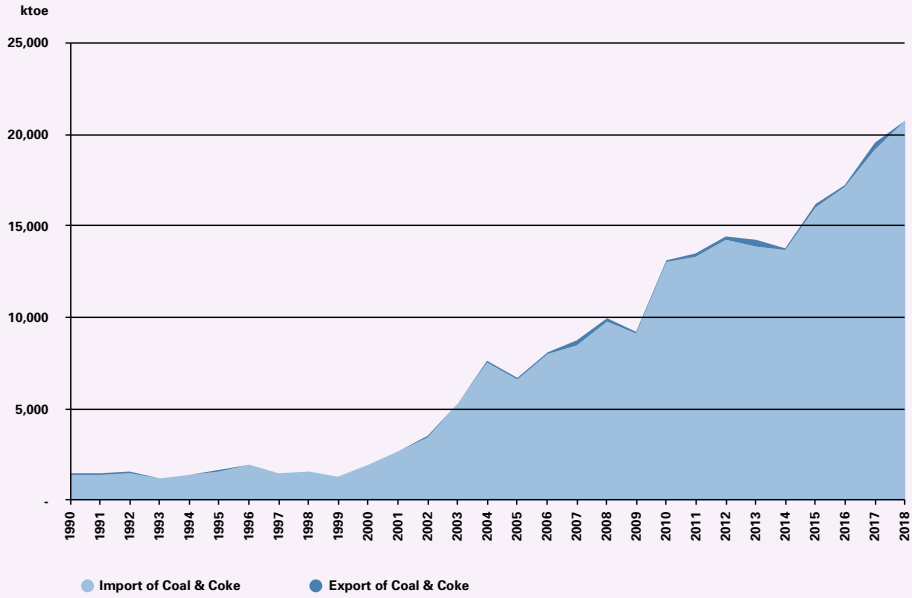


2008	2018
1 Export of LNG 78.5%	1 Export of LNG 75.6%
2 Import of Piped Natural Gas 16.1%	2 Import of Piped Natural Gas 16.3%
3 Export of Piped Natural Gas 5.4%	3 Export of Piped Natural Gas 4.1%
4 Import of LNG 0.0%	4 Import of LNG 4.0%

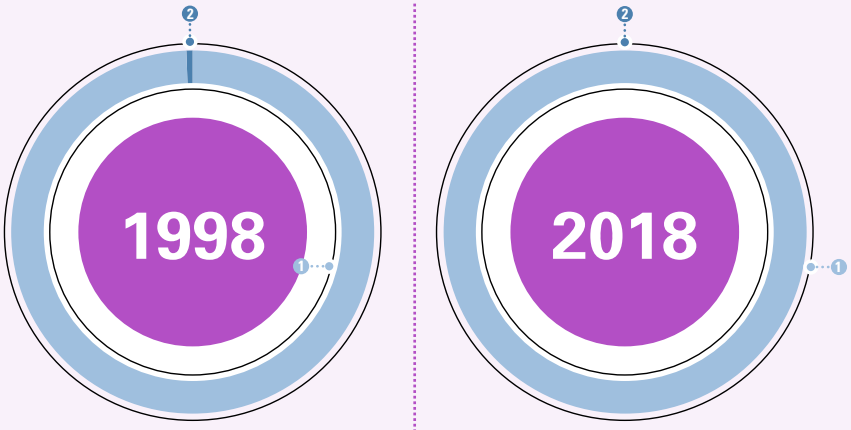
Unit: ktoe

Year	Import and Export of Piped Natural Gas and Liquefied Natural Gas (LNG)			
	Import of Piped Natural Gas	Export of Piped Natural Gas	Export of LNG	Import of LNG
1990	-	-	8,686	-
1991	-	-	8,278	-
1992	-	1	8,262	-
1993	-	1,258	8,654	-
1994	-	1,589	8,938	-
1995	-	1,474	10,790	-
1996	-	1,474	15,251	-
1997	-	1,340	16,396	-
1998	-	1,444	16,429	-
1999	-	860	15,445	-
2000	-	1,198	16,633	-
2001	-	1,178	16,636	-
2002	-	1,098	17,803	-
2003	1,501	1,402	18,965	-
2004	999	1,143	22,944	-
2005	1,340	1,134	23,707	-
2006	3,676	1,257	22,874	-
2007	5,435	1,295	23,777	-
2008	4,565	1,524	22,277	-
2009	5,055	1,166	23,606	-
2010	7,013	1,340	25,487	-
2011	6,979	1,147	26,856	-
2012	7,866	1,368	25,547	-
2013	7,098	1,497	27,089	1,450
2014	6,472	1,129	27,835	2,019
2015	5,941	1,062	27,018	1,873
2016	5,557	841	27,457	1,275
2017	5,183	1,452	29,428	1,815
2018	5,573	1,473	25,920	1,383

Import and Export of Coal and Coke



Source: National Energy Balance 2018



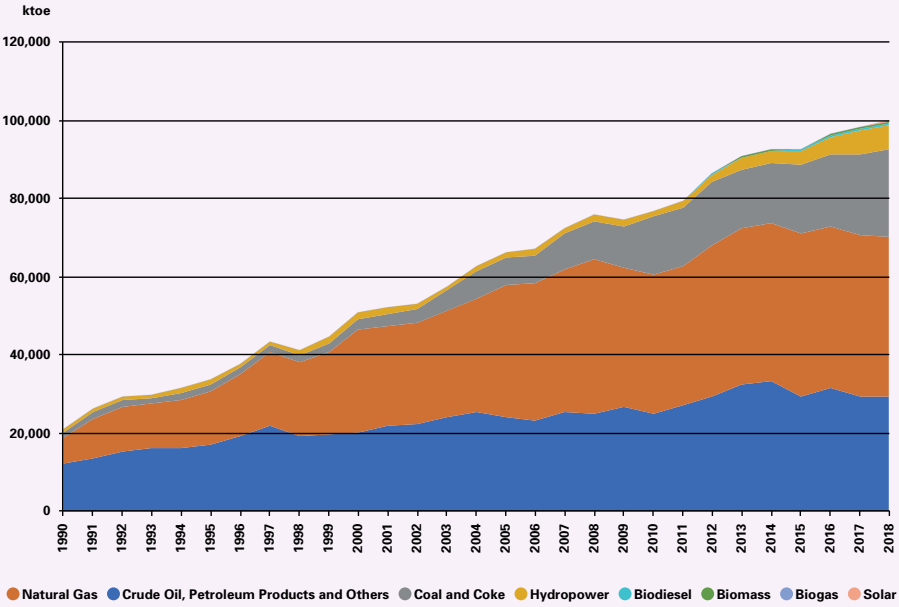
1 Import of Coal & Coke 99.5%
2 Export of Coal & Coke 0.5%

1 Import of Coal & Coke 100.0%
2 Export of Coal & Coke 0.0%

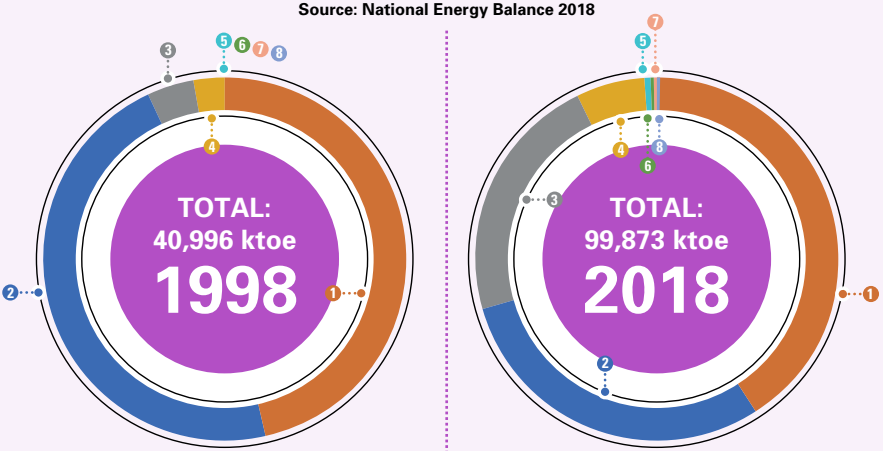
Unit: ktoe

Year	Import and Export of Coal and Coke	
	Import of Coal and Coke	Export of Coal and Coke
1990	1,424	28
1991	1,407	66
1992	1,485	60
1993	1,158	70
1994	1,351	40
1995	1,588	50
1996	1,938	15
1997	1,446	9
1998	1,529	7
1999	1,321	8
2000	1,943	19
2001	2,665	34
2002	3,442	37
2003	5,268	36
2004	7,498	85
2005	6,612	44
2006	7,988	71
2007	8,425	273
2008	9,725	206
2009	9,126	119
2010	13,073	62
2011	13,330	141
2012	14,221	233
2013	13,909	326
2014	13,704	114
2015	16,051	156
2016	17,171	15
2017	19,181	382
2018	20,743	0

Total Primary Energy Supply by Fuel Type



Source: National Energy Balance 2018

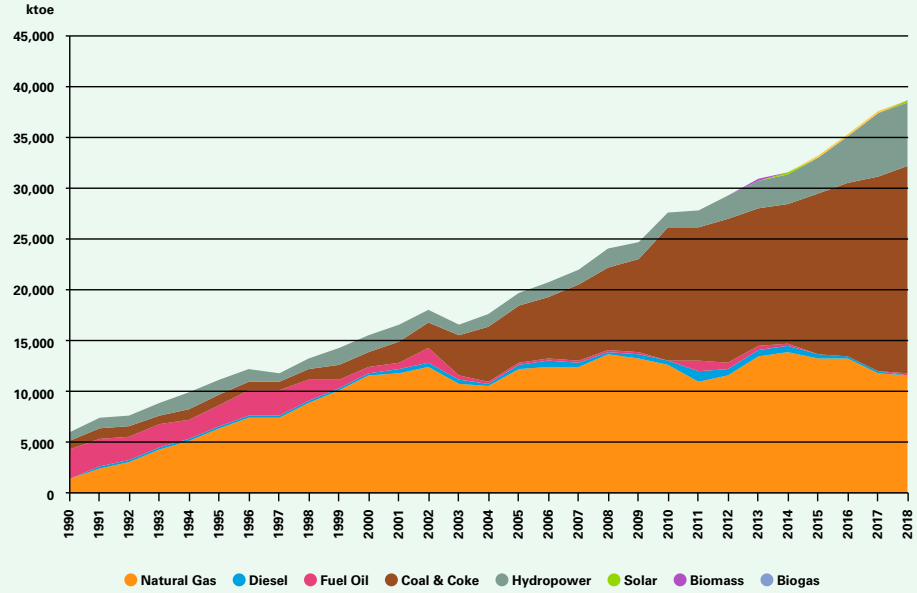


1998		2018	
1 Natural Gas 46.6%	5 Biodiesel 0.0%	1 Natural Gas 41.0%	5 Biodiesel 0.4%
2 Crude Oil, Petroleum Products and Others 46.5%	6 Biomass 0.0%	2 Crude Oil, Petroleum Products and Others 29.5%	6 Biomass 0.2%
3 Coal and Coke 4.2%	7 Solar 0.0%	3 Coal and Coke 22.3%	7 Solar 0.2%
4 Hydropower 2.7%	8 Biogas 0.0%	4 Hydropower 6.2%	8 Biogas 0.2%

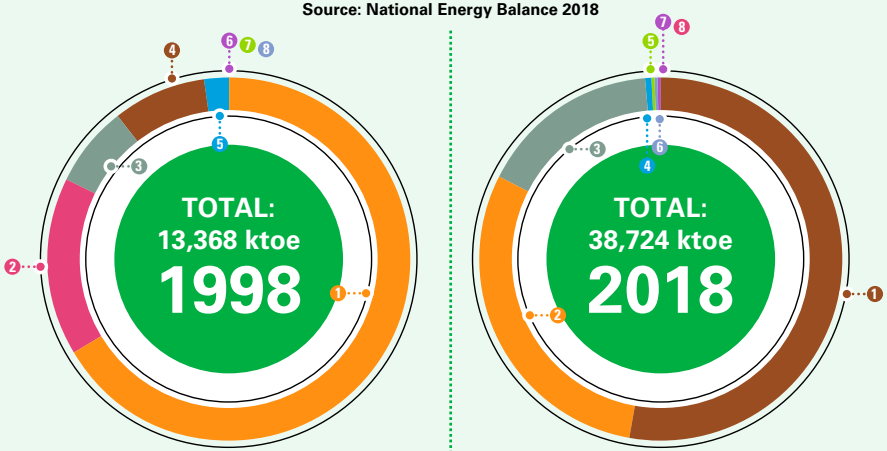
Unit: ktoe

Year	Total Primary Energy Supply by Fuel Type								
	Crude Oil, Petroleum Products and Others	Natural Gas	Coal & Coke	Hydropower	Biodiesel	Biomass	Biogas	Solar	Total
1990	11,928	6,801	1,326	915	0	0	0	0	**20,970**
1991	13,606	10,112	1,564	1,053	0	0	0	0	**26,335**
1992	15,273	11,381	1,640	997	0	0	0	0	**29,291**
1993	15,951	11,360	1,352	1,262	0	0	0	0	**29,925**
1994	16,055	12,392	1,563	1,652	0	0	0	0	**31,662**
1995	16,767	13,960	1,612	1,540	0	0	0	0	**33,879**
1996	19,353	15,567	1,677	1,243	0	0	0	0	**37,840**
1997	21,720	19,041	1,622	790	0	0	0	0	**43,173**
1998	19,051	19,101	1,731	1,113	0	0	0	0	**40,996**
1999	19,450	21,476	1,940	1,668	0	0	0	0	**44,534**
2000	20,242	26,370	2,486	1,612	0	0	0	0	**50,710**
2001	21,673	25,649	2,970	1,687	0	0	0	0	**51,979**
2002	22,124	26,101	3,642	1,329	0	0	0	0	**53,196**
2003	23,936	27,257	5,316	1,056	0	0	0	0	**57,565**
2004	25,253	29,145	7,109	1,329	0	0	0	0	**62,836**
2005	24,096	33,913	6,889	1,313	0	0	0	0	**66,211**
2006	23,240	34,917	7,299	1,567	0	0	0	0	**67,023**
2007	25,381	36,639	8,848	1,522	0	0	0	0	**72,390**
2008	24,996	39,289	9,782	1,964	0	0	0	0	**76,031**
2009	26,482	35,851	10,623	1,627	0	0	0	0	**74,583**
2010	25,008	35,447	14,777	1,577	0	0	0	0	**76,809**
2011	26,903	35,740	14,772	1,850	24	0	0	0	**79,289**
2012	29,502	38,647	15,882	2,150	115	183	4	11	**86,494**
2013	32,474	39,973	15,067	2,688	188	297	6	38	**90,731**
2014	33,422	40,113	15,357	3,038	300	181	12	63	**92,486**
2015	29,165	41,853	17,406	3,582	389	189	18	75	**92,677**
2016	31,327	41,257	18,744	4,501	389	198	21	90	**96,525**
2017	29,379	41,201	20,771	6,240	379	194	41	93	**98,298**
2018	29,429	40,939	22,280	6,230	436	241	147	172	**99,873**

Fuel Input to Power Stations



Source: National Energy Balance 2018

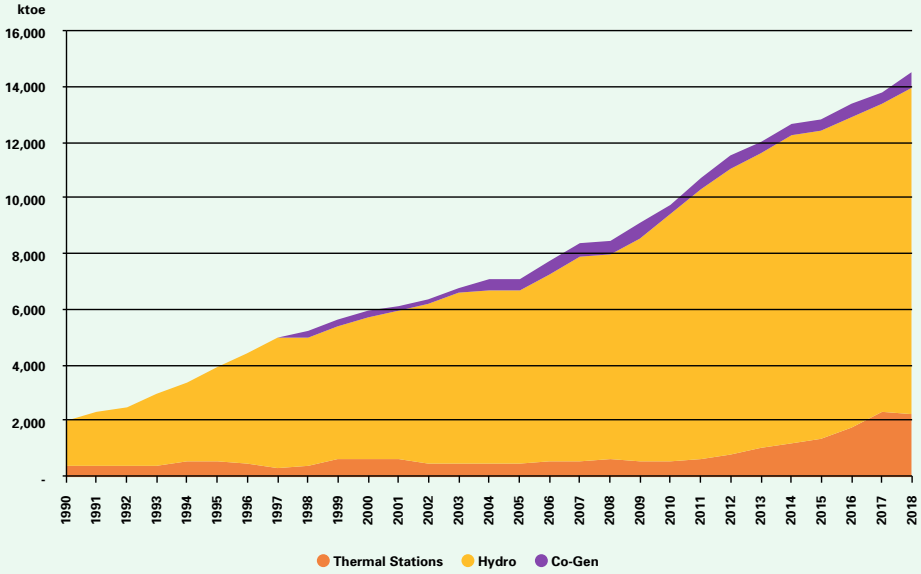


1 Natural Gas 66.5%	5 Diesel 2.1%	1 Coal & Coke 52.9%	5 Solar 0.4%
2 Fuel Oil 15.9%	6 Biomass 0.0%	2 Natural Gas 29.8%	6 Biogas 0.2%
3 Hydropower 8.3%	7 Solar 0.0%	3 Hydropower 16.1%	7 Biomass 0.1%
4 Coal & Coke 7.2%	8 Biogas 0.0%	4 Diesel 0.5%	8 Fuel Oil 0.0%

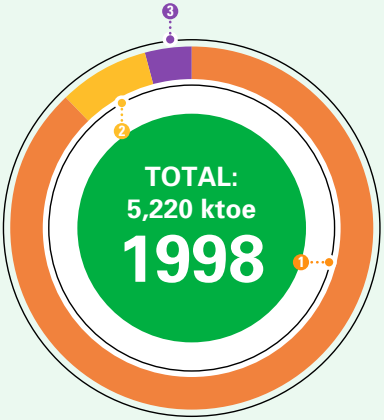
Unit: ktoe

Year	Fuel Input to Power Stations								
	Natural Gas	Diesel	Fuel Oil	Coal & Coke	Hydropower	Solar	Biomass	Biogas	Total
1990	1,361	116	2,873	813	915	0	0	0	**6,078**
1991	2,533	164	2,687	963	1,053	0	0	0	**7,400**
1992	3,144	160	2,352	968	997	0	0	0	**7,621**
1993	4,374	87	2,388	884	1,262	0	0	0	**8,995**
1994	5,119	249	1,957	925	1,652	0	0	0	**9,902**
1995	6,414	265	2,073	957	1,540	0	0	0	**11,249**
1996	7,489	284	2,354	950	1,243	0	0	0	**12,320**
1997	7,531	185	2,482	882	790	0	0	0	**11,870**
1998	8,886	275	2,130	964	1,113	0	0	0	**13,368**
1999	10,162	172	950	1,332	1,668	0	0	0	**14,284**
2000	11,580	191	592	1,495	1,612	0	0	0	**15,470**
2001	11,922	278	730	1,994	1,687	0	0	0	**16,611**
2002	12,424	476	1,363	2,556	1,329	0	0	0	**18,148**
2003	10,893	340	289	4,104	1,056	0	0	0	**16,682**
2004	10,545	272	274	5,327	1,329	0	0	0	**17,747**
2005	12,271	298	275	5,541	1,313	0	0	0	**19,698**
2006	12,524	617	171	5,964	1,567	0	0	0	**20,843**
2007	12,549	314	199	7,486	1,522	0	0	0	**22,070**
2008	13,651	299	181	8,069	1,964	0	0	0	**24,164**
2009	13,390	384	205	9,010	1,627	0	0	0	**24,616**
2010	12,628	415	125	12,951	1,577	0	0	0	**27,696**
2011	10,977	981	1,103	13,013	1,850	0	0	0	**27,924**
2012	11,533	811	550	14,138	2,150	11	65	4	**29,262**
2013	13,520	623	392	13,527	2,688	38	164	6	**30,958**
2014	13,860	622	269	13,648	3,038	63	96	12	**31,608**
2015	13,378	279	101	15,627	3,582	75	74	17	**33,133**
2016	13,260	167	157	16,959	4,501	90	57	18	**35,209**
2017	11,872	147	99	18,967	6,240	93	52	40	**37,510**
2018	11,542	187	17	20,472	6,230	155	57	64	**38,724**

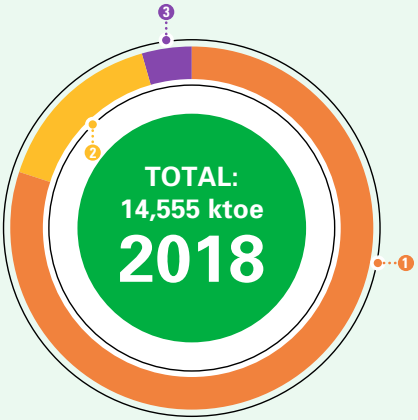
Electricity Generation by Plant Type



Source: National Energy Balance 2018



1 Thermal Stations 88.0%
2 Hydro 8.0%
3 Co-Gen 4.0%

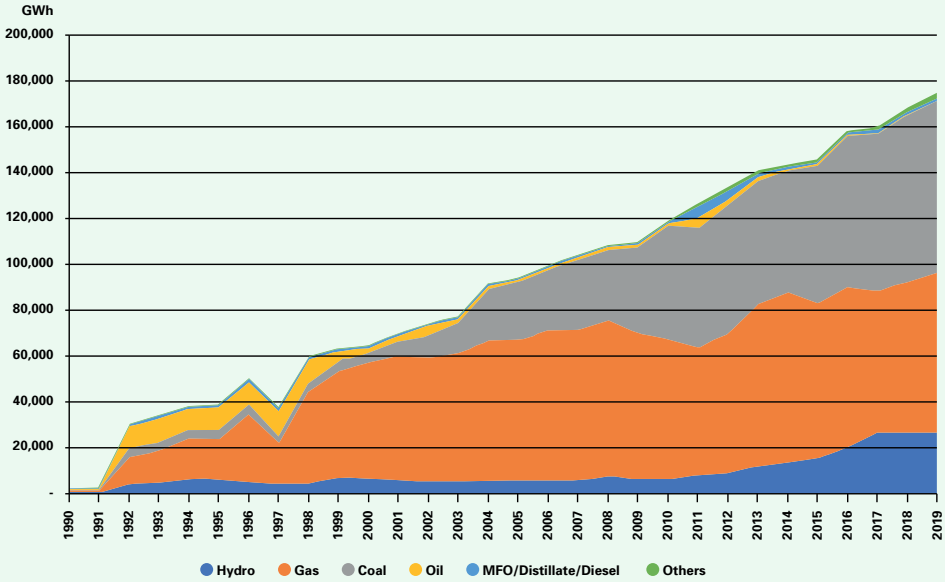


1 Thermal Stations 80.2%
2 Hydro 15.6%
3 Co-Gen 4.2%

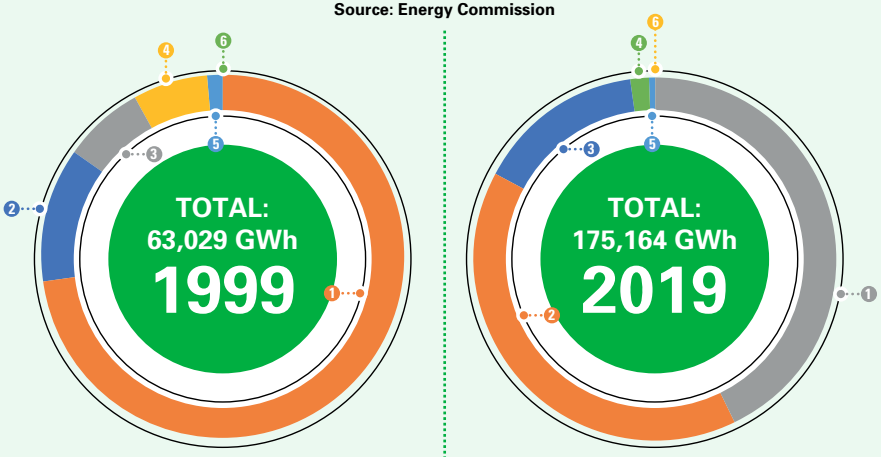
Unit: ktoe

Year	Electricity Generation by Plant Type			
	Hydro	Thermal Stations	Co-Gen	Total
1990	343	1,636	-	**1,979**
1991	379	1,904	-	**2,283**
1992	375	2,146	-	**2,521**
1993	419	2,568	-	**2,987**
1994	561	2,801	-	**3,362**
1995	535	3,374	-	**3,909**
1996	446	3,975	-	**4,421**
1997	333	4,644	-	**4,977**
1998	417	4,596	207	**5,220**
1999	647	4,762	200	**5,609**
2000	599	5,132	224	**5,955**
2001	607	5,333	172	**6,112**
2002	456	5,771	157	**6,384**
2003	435	6,134	179	**6,748**
2004	501	6,215	359	**7,075**
2005	446	6,259	403	**7,108**
2006	554	6,687	499	**7,740**
2007	558	7,366	461	**8,385**
2008	642	7,321	460	**8,423**
2009	574	7,957	560	**9,091**
2010	540	8,864	387	**9,791**
2011	656	9,648	442	**10,746**
2012	779	10,253	530	**11,562**
2013	1,003	10,627	424	**12,054**
2014	1,152	11,075	402	**12,629**
2015	1,346	11,047	430	**12,823**
2016	1,723	11,170	535	**13,428**
2017	2,309	11,066	445	**13,820**
2018	2,265	11,674	616	**14,555**

Electricity Generation Mix



Source: Energy Commission

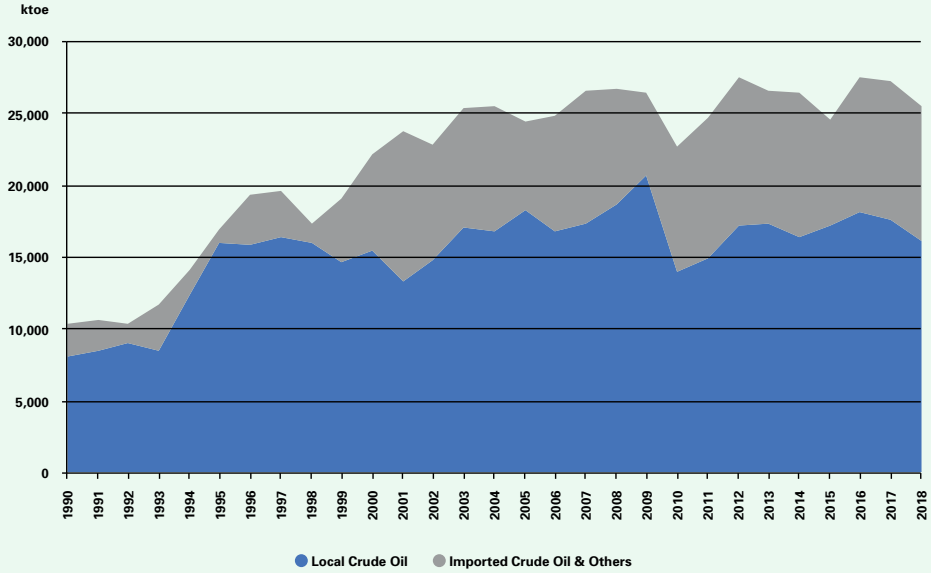


1999		2019	
1 Gas 72.9%	4 Oil 6.7%	1 Coal 42.8%	4 Others 1.7%
2 Hydro 12.0%	5 Diesel 1.2%	2 Gas 40.2%	5 Diesel 0.5%
3 Coal 7.2%	6 Others 0.0%	3 Hydro 14.8%	6 Oil 0.0%

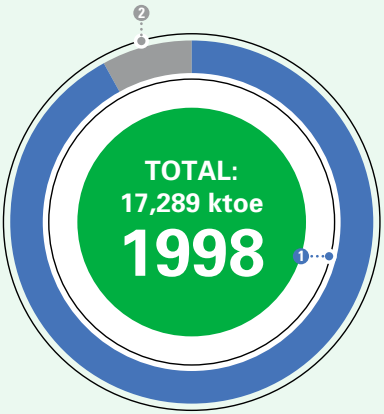
Unit: GWh

Year	Electricity Generation Mix						
	Hydro	Gas	Coal	Oil	Distillate/Diesel	Others	Total
1990	518	623	-	367	585	-	**2,093**
1991	762	525	-	379	612	-	**2,278**
1992	4,286	11,398	3,837	9,724	862	-	**30,107**
1993	4,853	13,905	3,880	9,820	865	-	**33,323**
1994	6,483	17,491	4,081	8,756	988	-	**37,799**
1995	6,184	17,726	3,974	9,687	1,249	-	**38,820**
1996	5,184	29,641	4,177	9,510	1,584	189	**50,285**
1997	4,134	18,387	2,460	10,784	1,300	-	**37,065**
1998	4,457	40,223	3,655	10,339	971	-	**59,645**
1999	7,552	45,988	4,522	4,220	747	-	**63,029**
2000	6,994	50,314	4,038	2,383	552	-	**64,281**
2001	6,066	54,066	6,238	2,531	831	-	**69,732**
2002	5,415	53,979	9,559	4,465	746	-	**74,164**
2003	5,090	56,478	13,435	1,221	976	-	**77,200**
2004	5,573	61,363	22,627	1,130	729	-	**91,422**
2005	6,007	61,396	25,231	1,048	348	-	**94,030**
2006	6,323	64,768	26,626	1,265	643	50	**99,675**
2007	5,957	65,568	30,856	1,091	677	63	**104,212**
2008	7,807	67,779	31,029	1,048	601	66	**108,330**
2009	6,890	63,370	37,644	1,041	685	132	**109,762**
2010	6,361	61,342	49,401	933	726	170	**118,933**
2011	8,056	55,732	52,302	4,295	5,108	1,576	**127,069**
2012	9,251	60,992	55,615	2,279	4,344	1,596	**134,077**
2013	11,799	71,174	53,663	1,571	1,741	1,318	**141,266**
2014	13,540	74,466	53,693	376	756	995	**143,826**
2015	15,524	67,900	60,129	595	877	1,196	**146,221**
2016	20,357	69,871	66,246	423	719	1,056	**158,672**
2017	26,716	62,131	68,866	-	1,695	1,316	**160,724**
2018	27,125	66,116	72,897	-	1,695	1,695	**169,529**
2019	25,906	71,173	74,955	-	949	3,003	**175,986**

Input of Crude Oil in Refineries

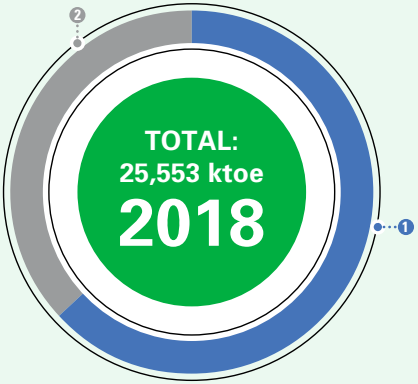


Source: National Energy Balance 2018



1 Local Crude Oil 92.2%

2 Imported Crude Oil & Others 7.8%



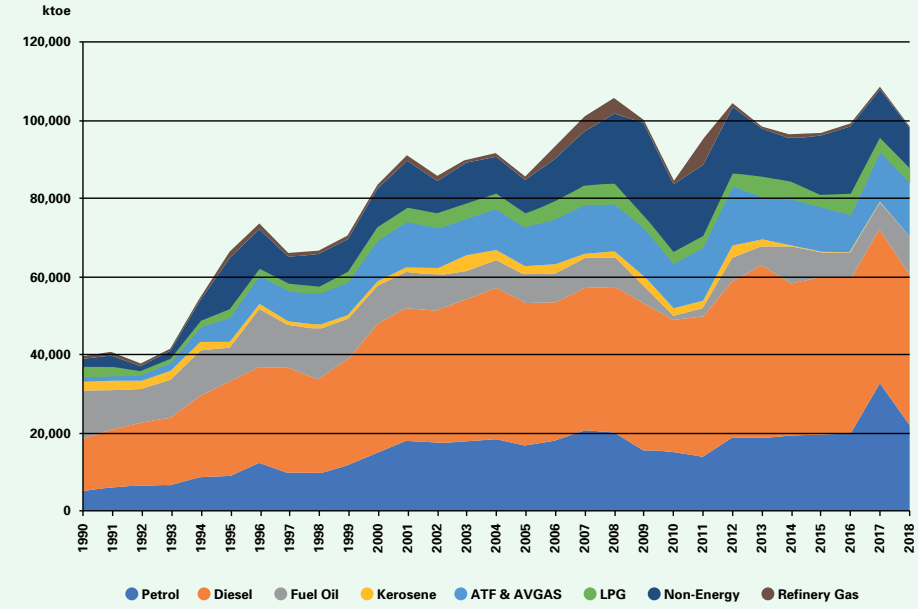
1 Local Crude Oil 63.2%

2 Imported Crude Oil & Others 36.8%

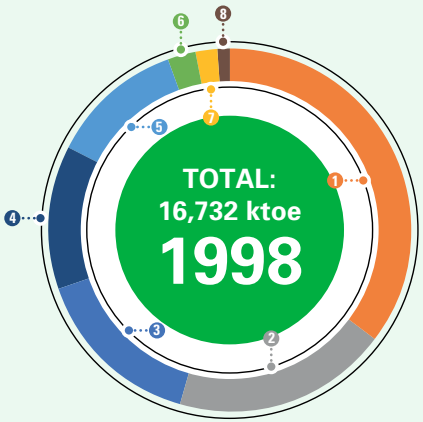
Unit: ktoe

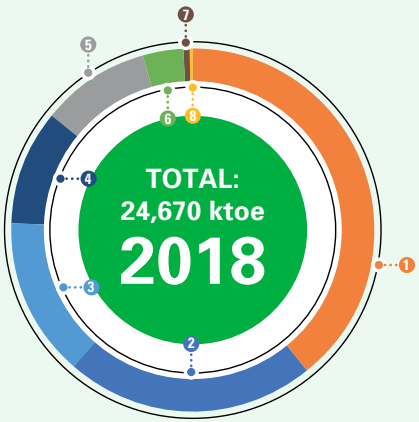
Year	Input of Crude Oil in Refineries		
	Local Crude Oil	Imported Crude Oil & Others	Total
1990	8,072	2,342	**10,414**
1991	8,476	2,113	**10,589**
1992	9,016	1,409	**10,425**
1993	8,502	3,195	**11,697**
1994	12,326	1,853	**14,179**
1995	15,991	969	**16,960**
1996	15,879	3,501	**19,380**
1997	16,382	3,224	**19,606**
1998	15,942	1,347	**17,289**
1999	14,595	4,437	**19,032**
2000	15,421	6,743	**22,164**
2001	13,299	10,546	**23,845**
2002	14,838	8,032	**22,870**
2003	17,127	8,322	**25,449**
2004	16,810	8,764	**25,574**
2005	18,216	6,271	**24,487**
2006	16,797	8,113	**24,910**
2007	17,320	9,251	**26,571**
2008	18,638	8,138	**26,776**
2009	20,685	5,812	**26,497**
2010	14,003	8,706	**22,709**
2011	14,874	9,904	**24,778**
2012	17,213	10,347	**27,560**
2013	17,365	9,289	**26,654**
2014	16,351	10,066	**26,417**
2015	17,249	7,327	**24,576**
2016	18,170	9,353	**27,523**
2017	17,647	9,605	**27,252**
2018	16,144	9,409	**25,553**

Production of Petroleum Products from Refineries



Source: National Energy Balance 2018



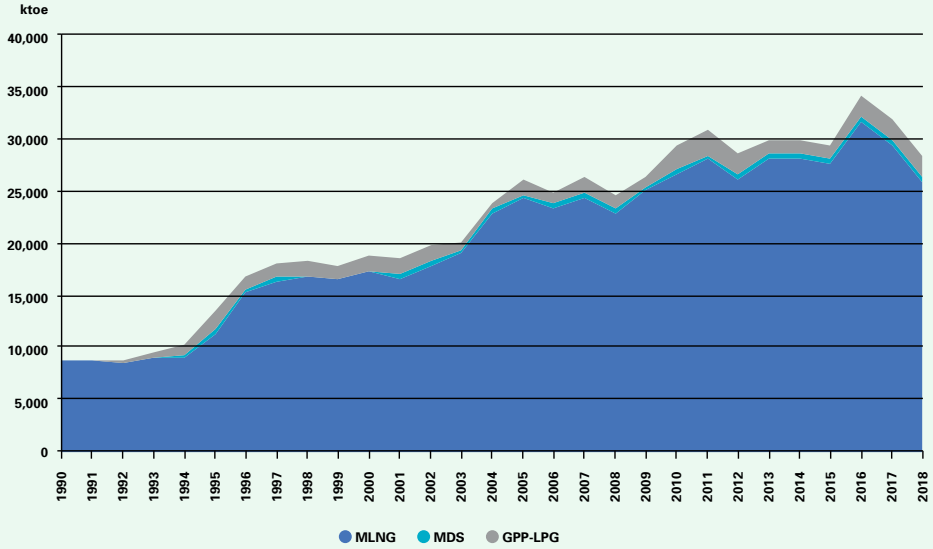


1998		2018	
1 Diesel 35.4%	5 ATF & AVGAS 11.9%	1 Diesel 39.2%	5 Fuel Oil 9.9%
2 Fuel Oil 19.3%	6 LPG 2.7%	2 Petrol 22.4%	6 LPG 3.6%
3 Petrol 15.2%	7 Kerosene 1.7%	3 ATF & AVGAS 14.0%	7 Refinery Gas 0.5%
4 Non-Energy 12.7%	8 Refinery Gas 1.1%	4 Non-Energy 10.3%	8 Kerosene 0.1%

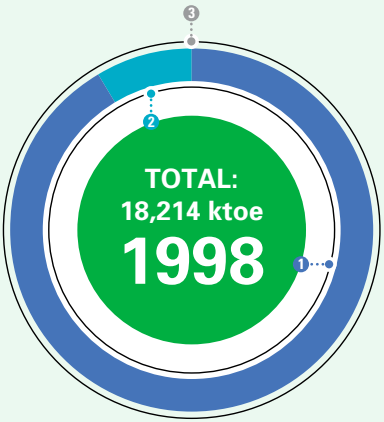
Unit: ktoe

Year	Production of Petroleum Products from Refineries								
	Petrol	Diesel	Fuel Oil	Kerosene	ATF & AVGAS	LPG	Non-Energy	Refinery Gas	Total
1990	1,347	3,350	3,106	491	360	613	561	151	**9,979**
1991	1,611	3,681	2,547	526	390	548	772	168	**10,243**
1992	1,724	4,048	2,110	541	412	200	324	143	**9,502**
1993	1,816	4,249	2,375	576	517	244	600	106	**10,483**
1994	2,316	5,108	2,887	563	980	319	1,468	162	**13,803**
1995	2,320	6,011	2,212	360	1,587	431	3,380	385	**16,686**
1996	3,134	6,174	3,696	292	1,899	371	2,554	331	**18,451**
1997	2,491	6,744	2,716	265	2,000	371	1,783	203	**16,573**
1998	2,545	5,926	3,233	285	1,985	449	2,117	192	**16,732**
1999	3,056	6,712	2,603	210	2,140	617	2,159	230	**17,727**
2000	3,893	8,059	2,532	239	2,660	838	2,492	241	**20,954**
2001	4,623	8,462	2,269	283	2,954	875	3,020	331	**22,817**
2002	4,460	8,401	2,332	414	2,570	897	2,127	294	**21,495**
2003	4,584	9,062	1,763	983	2,367	932	2,623	262	**22,576**
2004	4,724	9,611	1,813	591	2,693	897	2,455	215	**22,999**
2005	4,245	9,161	1,777	521	2,553	822	2,157	202	**21,438**
2006	4,607	8,752	1,933	537	2,938	1,118	2,750	849	**23,484**
2007	5,285	9,033	1,990	234	3,138	1,228	3,461	938	**25,307**
2008	5,066	9,364	1,994	245	3,139	1,208	4,475	991	**26,482**
2009	4,052	9,415	1,144	565	3,085	732	5,905	195	**25,093**
2010	3,873	8,369	327	483	2,891	697	4,357	209	**21,206**
2011	3,599	8,925	571	419	3,457	665	4,572	1,659	**23,867**
2012	4,708	10,033	1,608	654	3,918	702	4,318	197	**26,138**
2013	4,702	11,063	1,286	387	2,750	1,252	3,089	195	**24,724**
2014	4,918	9,725	2,340	100	2,916	1,102	2,826	192	**24,119**
2015	5,031	9,890	1,692	6	2,841	780	3,869	172	**24,281**
2016	5,044	9,988	1,479	4	2,548	1,285	4,339	201	**24,888**
2017	8,253	9,877	1,725	10	3,255	832	3,100	174	**27,226**
2018	5,524	9,665	2,432	18	3,451	900	2,550	130	**24,670**

Conversion in Gas Plants



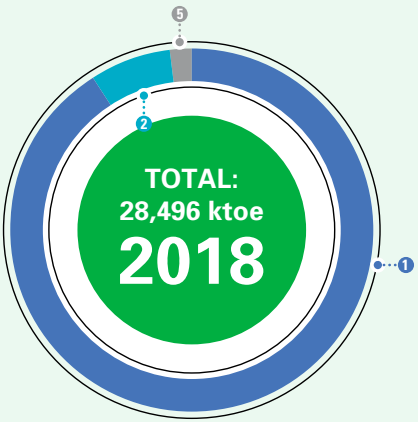
Source: National Energy Balance 2018



1 MLNG 91.6%

2 GPP-LPG 8.4%

3 MDS 0.0%



1 MLNG 91.1%

2 GPP-LPG 7.1%

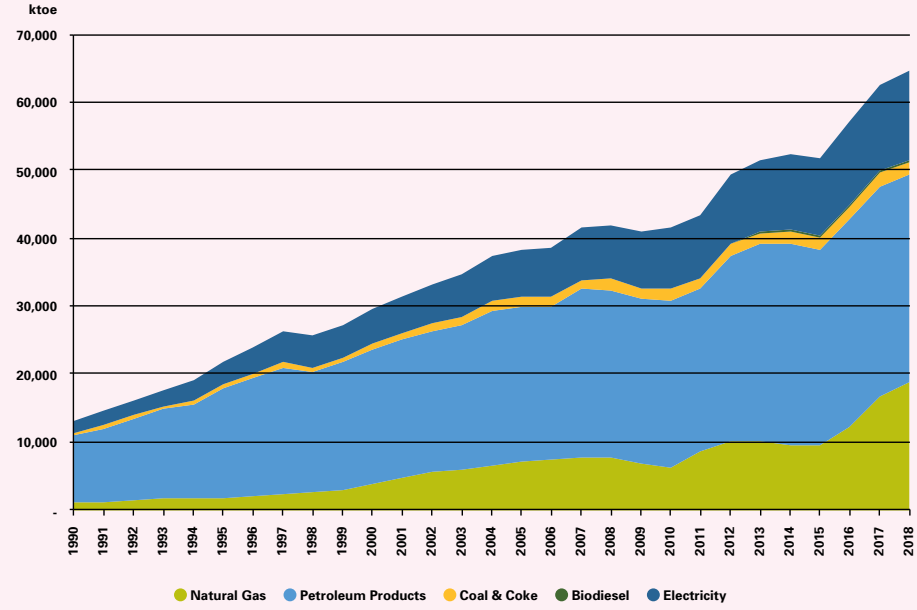
3 MDS 1.8%

Unit: ktoe

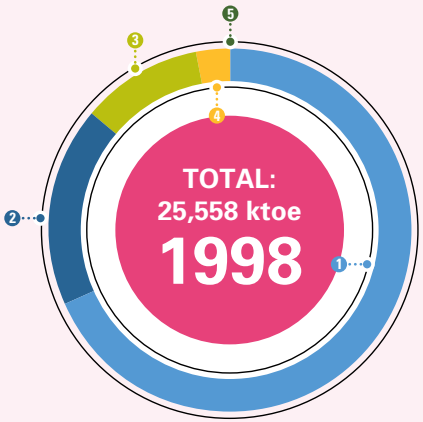
Year	Input:	Conversion in Gas Plants		
	Natural Gas	MLNG	MDS	GPP-LPG
1990	**9,797**	8,761	N.A.	N.A.
1991	**11,715**	8,749	N.A.	N.A.
1992	**11,681**	8,425	N.A.	392
1993	**13,005**	9,019	39	529
1994	**14,634**	9,087	238	948
1995	**17,088**	11,244	421	1,900
1996	**20,822**	15,251	344	1,212
1997	**24,945**	16,396	389	1,258
1998	**23,138**	16,688	N.A.	1,526
1999	**24,116**	16,417	N.A.	1,472
2000	**26,093**	17,231	164	1,482
2001	**25,703**	16,636	513	1,310
2002	**25,571**	17,803	445	1,504
2003	**27,940**	18,965	443	790
2004	**33,176**	22,944	513	520
2005	**36,447**	24,254	460	1,319
2006	**35,378**	23,450	464	1,036
2007	**38,141**	24,355	417	1,483
2008	**38,193**	22,793	481	1,362
2009	**37,098**	25,004	426	1,012
2010	**40,246**	26,601	454	2,299
2011	**40,737**	28,130	359	2,434
2012	**40,042**	26,231	486	2,035
2013	**39,678**	28,209	478	1,174
2014	**39,193**	28,213	420	1,250
2015	**40,773**	27,722	423	1,155
2016	**39,665**	31,658	573	1,997
2017	**38,296**	29,468	509	1,961
2018	**32,980**	25,973	501	2,022

Notes: 1) N.A.: Not Applicable
2) Middle Distillate Synthesis (MDS) commenced pre-commercialisation operation in 2000
3) MLNG plant produced LPG in 2003

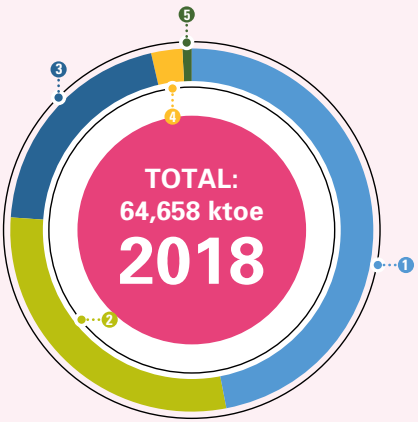
Final Energy Consumption by Fuel Type



Source: National Energy Balance 2018



1 Petroleum Products 68.4%
2 Electricity 17.9%
3 Natural Gas 10.7%
4 Coal & Coke 3.0%
5 Biodiesel 0.0%

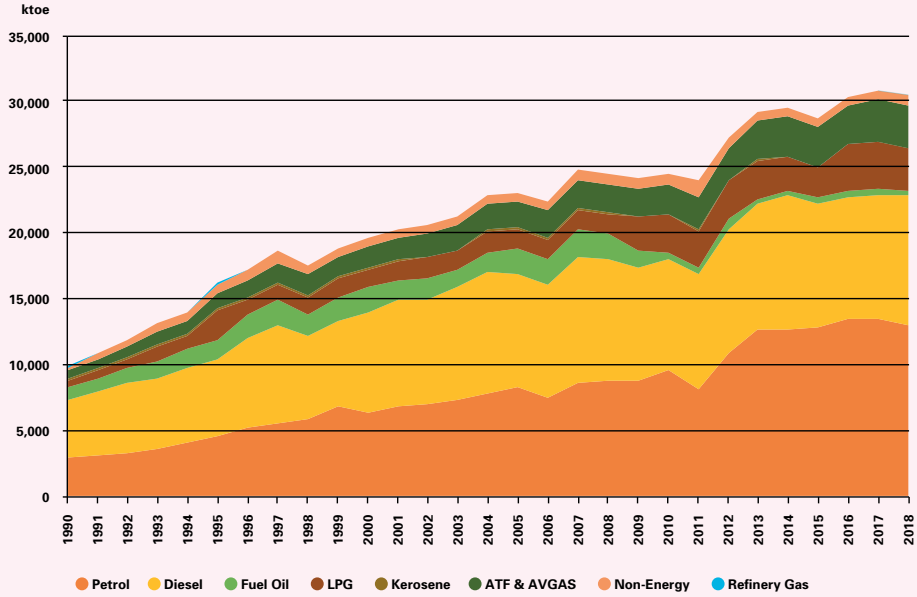


1 Petroleum Products 47.0%
2 Natural Gas 29.2%
3 Electricity 20.3%
4 Coal & Coke 2.8%
5 Biodiesel 0.7%

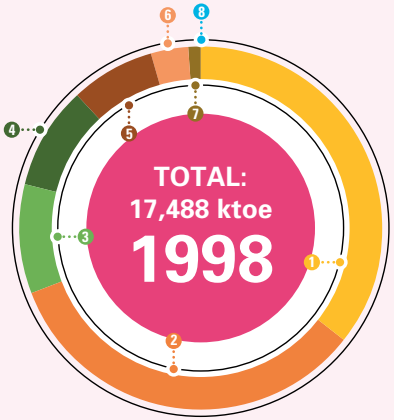
Unit: ktoe

Year	Final Energy Consumption by Fuel Type					
	Natural Gas	Petroleum Products	Coal & Coke	Biodiesel	Electricity	Total
1990	1,069	9,825	513	-	1,715	**13,122**
1991	1,099	10,914	599	-	1,925	**14,537**
1992	1,344	11,927	672	-	2,218	**16,161**
1993	1,701	13,076	487	-	2,450	**17,714**
1994	1,660	13,894	598	-	2,932	**19,084**
1995	1,654	16,142	712	-	3,375	**21,883**
1996	2,079	17,203	727	-	3,777	**23,786**
1997	2,465	18,578	740	-	4,384	**26,167**
1998	2,726	17,488	767	-	4,577	**25,558**
1999	3,023	18,782	608	-	4,815	**27,228**
2000	3,863	19,582	991	-	5,263	**29,699**
2001	4,620	20,323	977	-	5,594	**31,514**
2002	5,643	20,638	1,086	-	5,922	**33,289**
2003	5,886	21,175	1,212	-	6,313	**34,586**
2004	6,490	22,886	1,305	-	6,642	**37,323**
2005	6,981	23,012	1,348	-	6,944	**38,285**
2006	7,562	22,398	1,335	-	7,272	**38,567**
2007	7,709	24,852	1,362	-	7,683	**41,606**
2008	7,818	24,451	1,713	-	7,986	**41,968**
2009	6,802	24,145	1,613	-	8,286	**40,846**
2010	6,254	24,403	1,826	-	8,993	**41,476**
2011	8,515	23,922	1,759	24	9,236	**43,456**
2012	10,206	27,215	1,744	115	10,011	**49,291**
2013	10,076	29,190	1,539	188	10,590	**51,583**
2014	9,641	29,517	1,709	300	11,042	**52,209**
2015	9,566	28,699	1,778	389	11,397	**51,829**
2016	12,304	30,348	1,785	389	12,394	**57,219**
2017	16,838	30,862	1,804	379	12,607	**62,489**
2018	18,851	30,409	1,808	436	13,153	**64,658**

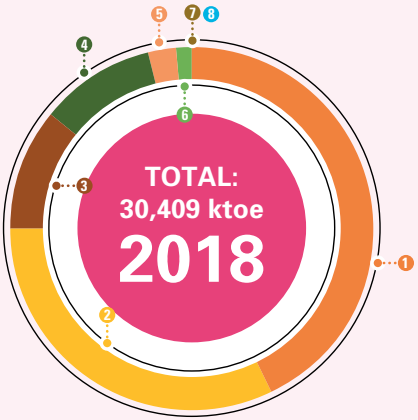
Final Energy Consumption for Petroleum Products



Source: National Energy Balance 2018



1 Diesel 35.8%
2 Petrol 33.5%
3 Fuel Oil 9.6%
4 ATF & AVGAS 9.3%
5 LPG 7.4%
6 Non-Energy 3.5%
7 Kerosene 0.9%
8 Refinery Gas 0.0%

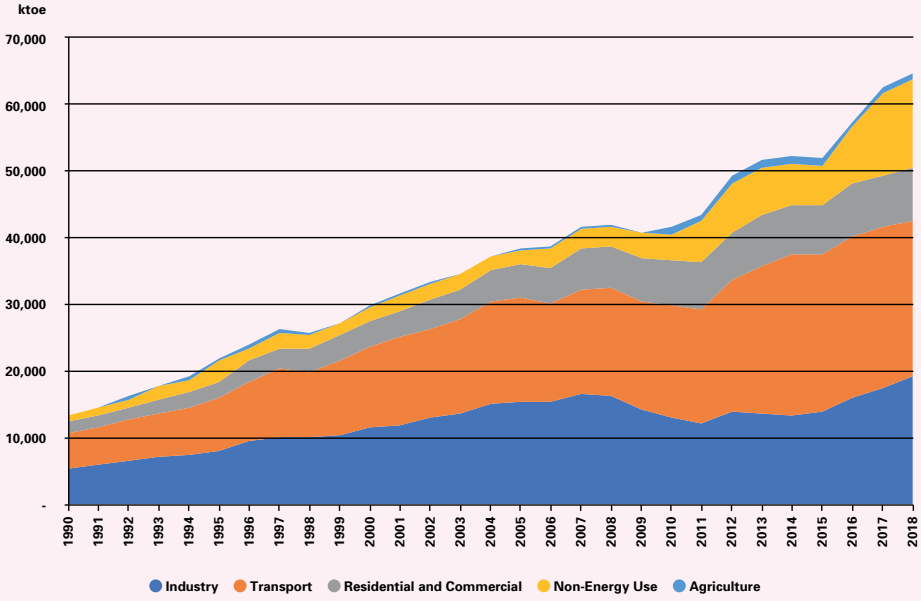


1 Petrol 42.9%
2 Diesel 32.1%
3 LPG 10.9%
4 ATF & AVGAS 10.3%
5 Non-Energy 2.6%
6 Fuel Oil 1.2%
7 Kerosene 0.0%
8 Refinery Gas 0.0%

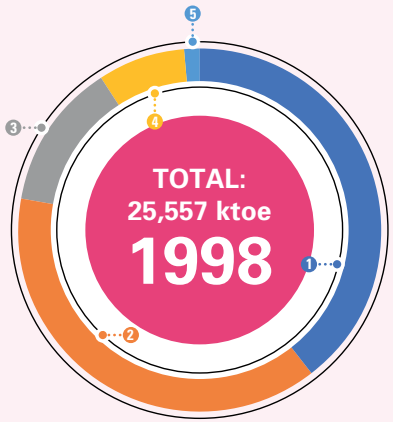
Unit: ktoe

Year	Final Energy Consumption for Petroleum Products								
	Petrol	Diesel	Fuel Oil	LPG	Kerosene	ATF & AVGAS	Non-Energy	Refinery Gas	Total
1990	2,901	4,421	883	548	203	628	229	10	**9,823**
1991	3,135	4,873	945	612	180	690	467	12	**10,914**
1992	3,326	5,291	1,088	733	160	764	565	0	**11,927**
1993	3,666	5,339	1,293	1,119	149	875	625	10	**13,076**
1994	4,139	5,643	1,392	926	152	978	654	10	**13,894**
1995	4,548	5,810	1,506	2,215	177	1,160	718	8	**16,142**
1996	5,205	6,735	1,770	1,215	197	1,335	742	4	**17,203**
1997	5,586	7,314	1,978	1,245	169	1,439	843	4	**18,578**
1998	5,854	6,252	1,678	1,301	165	1,619	615	4	**17,488**
1999	6,793	6,506	1,792	1,523	162	1,424	579	3	**18,782**
2000	6,387	7,627	1,875	1,362	131	1,574	622	3	**19,581**
2001	6,827	8,116	1,497	1,392	99	1,762	626	4	**20,323**
2002	6,948	8,042	1,589	1,542	92	1,785	633	6	**20,637**
2003	7,360	8,539	1,256	1,437	93	1,852	632	7	**21,176**
2004	7,839	9,262	1,463	1,542	86	2,056	626	11	**22,885**
2005	8,211	8,672	1,953	1,510	81	2,010	564	10	**23,011**
2006	7,517	8,540	1,901	1,520	79	2,152	672	12	**22,393**
2007	8,600	9,512	2,202	1,474	76	2,155	823	9	**24,851**
2008	8,842	9,167	1,963	1,475	75	2,112	818	0	**24,452**
2009	8,766	8,634	1,291	2,506	30	2,120	799	0	**24,146**
2010	9,560	8,388	478	2,920	19	2,380	657	0	**24,402**
2011	8,155	8,712	414	2,892	19	2,553	1,178	0	**23,923**
2012	10,843	9,410	768	2,892	38	2,521	743	0	**27,215**
2013	12,656	9,568	329	2,946	31	2,998	662	0	**29,190**
2014	12,705	10,161	246	2,632	23	3,158	592	0	**29,517**
2015	12,804	9,377	498	2,261	4	3,134	621	0	**28,699**
2016	13,411	9,254	513	3,497	5	3,019	650	0	**30,349**
2017	13,437	9,388	579	3,514	5	3,220	719	0	**30,862**
2018	13,041	9,756	387	3,309	6	3,121	789	0	**30,409**

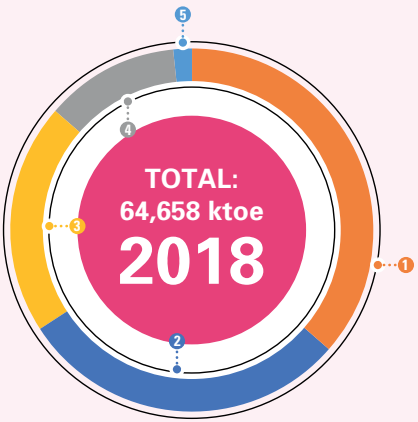
Final Energy Consumption by Sector



Source: National Energy Balance 2018



1 Industry 39.6%
2 Transport 38.3%
3 Residential and Commercial 13.0%
4 Non-Energy Use 7.9%
5 Agriculture 1.2%



1 Transport 36.4%
2 Industry 29.5%
3 Non-Energy Use 20.5%
4 Residential and Commercial 12.0%
5 Agriculture 1.6%

Unit: ktoe

Year	Final Energy Consumption by Sector					
	Industry	Transport	Residential and Commercial	Non-Energy Use	Agriculture	Total
1990	5,300	5,386	1,622	838	-	**13,146**
1991	5,809	5,806	1,721	1,071	130	**14,537**
1992	6,455	6,226	1,867	1,222	391	**16,161**
1993	7,012	6,558	2,055	2,027	62	**17,714**
1994	7,283	7,262	2,300	1,817	422	**19,084**
1995	8,060	7,827	2,556	2,994	446	**21,883**
1996	9,443	8,951	3,162	1,744	486	**23,786**
1997	10,106	10,201	3,072	2,298	490	**26,167**
1998	10,121	9,793	3,313	2,023	307	**25,557**
1999	10,277	11,393	3,653	1,799	106	**27,228**
2000	11,406	12,071	3,868	2,250	104	**29,699**
2001	11,852	13,137	4,048	2,378	98	**31,513**
2002	12,854	13,442	4,387	2,511	96	**33,290**
2003	13,472	14,271	4,399	2,345	98	**34,585**
2004	14,914	15,385	4,754	2,183	87	**37,323**
2005	15,492	15,384	5,134	2,173	101	**38,284**
2006	15,248	14,819	5,424	2,819	258	**38,567**
2007	16,454	15,717	6,197	2,957	281	**41,606**
2008	16,205	16,395	6,205	2,876	287	**41,968**
2009	14,312	16,119	6,336	3,868	211	**40,846**
2010	12,928	16,828	6,951	3,696	1,074	**41,477**
2011	12,100	17,070	6,993	6,377	916	**43,456**
2012	13,919	19,757	7,065	7,497	1,053	**49,291**
2013	13,496	22,357	7,403	7,277	1,051	**51,584**
2014	13,162	24,327	7,458	6,217	1,045	**52,209**
2015	13,989	23,435	7,559	5,928	895	**51,806**
2016	16,019	24,004	8,049	8,729	415	**57,218**
2017	17,463	24,039	7,796	12,517	674	**62,489**
2018	19,046	23,555	7,774	13,262	1,021	**64,658**

Energy Balance Table in 2018

Commercial Energy Balance for Malaysia 2018 (Kilo Tonnes of Oil Equivalent)

ENERGY SOURCE	NATURAL GAS	LNG	CRUDE OIL (1/)	OTHERS (2/)	TOTAL PETROLEUM PRODUCTS	PETROLEUM			
						PETROL	DIESEL	FUEL OIL	LPG
PRIMARY SUPPLY									
1. Primary Production	68,253	0	31,996	0	**0**	0	0	0	0
2. Gas Flaring, Reinjection & Use	-6,944	0	0	0	**0**	0	0	0	0
3. Imports	5,573	1,383	9,239	38	**19,764**	10,643	6,857	102	535
4. Exports	-1,407	-25,920	-15,012	-1	**-16,029**	-3,090	-7,240	-1,364	-456
5. Bunkers	0	0	0	0	**-419**	0	-100	-319	0
6. Stock Change	0	0	-450	0	**469**	9	814	-521	111
7. Statistical Discrepancy	0	0	-38	0	**0**	0	0	0	0
8. Primary Supply	**65,476**	**-24,537**	**25,735**	**36**	**3,786**	**7,563**	**332**	**-2,102**	**190**
TRANSFORMATION									
9. Gas Plants									
9.1 MLNG	-31,105	25,920	0	0	**53**	0	0	0	53
9.2 MDS	-1,103	0	0	0	**501**	0	125	0	0
9.3 GPP-LPG (3&4/)	-2,154	0	0	0	**2,022**	0	0	0	2,022
9.4 RGT	1,383	-1,383	0	0	**0**	0	0	0	0
Subtotal	**-32,980**	**24,537**	**0**	**0**	**2,576**	**0**	**125**	**0**	**2,075**
10. Refineries	0	0	-27,252	-63	**27,226**	8,253	9,877	1,725	832
11. Power Stations & Self-Generation									
11.1 Hydro Stations	0	0	0	0	**0**	0	0	0	0
11.2 Thermal Stations	-11,542	0	0	0	**-204**	0	-187	-17	0
11.3 Self-Generation (5/)	-1,274	0	0	0	**-154**	0	-154	0	0
Subtotal	**-12,816**	**0**	**0**	**0**	**-358**	**0**	**-341**	**-17**	**0**
12. Losses & Own Use	-830	0	-182	0	**-607**	0	0	-16	0
13. Statistical Discrepancy	0	0	0	0	**343**	-46	-24	90	144
14. Secondary Supply	**-46,625**	**24,537**	**-25,735**	**-36**	**26,623**	**5,479**	**9,424**	**2,489**	**3,119**
FINAL USE									
15. Residential	1	0	0	0	**789**	0	0	0	785
16. Commercial	24	0	0	0	**448**	0	70	35	343
17. Industry	8,255	0	0	0	**2,436**	130	1,799	347	159
18. Transport	121	0	0	0	**22,957**	12,843	6,993	0	0
19. Agriculture	0	0	0	0	**299**	0	294	5	0
20. Fishery	0	0	0	0	**669**	68	601	0	0
21. Non-Energy Use	10,451	0	0	0	**2,811**	0	0	0	2,022
22. Total Final Use	**18,851**	**0**	**0**	**0**	**30,409**	**13,041**	**9,756**	**387**	**3,309**
ELECTRICITY OUTPUT									
Main Activity Producer									
Gross Electricity Generation - GWh	58,416	0	0	0	**392**	0	354	38	0
Autoproducer									
Gross Electricity Generation - GWh	5,637	0	0	0	**537**	0	537	0	0

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

Note : Total may not necessarily add up due to rounding

Unit: ktoe

PRODUCTS											
KEROSENE	ATF & AV GAS	NON-ENERGY	REFINERY GAS	COAL & COKE	HYDRO POWER	SOLAR	BIOMASS	BIOGAS	BIODIESEL	ELECTRICITY	TOTAL
0	0	0	0	1,672	6,230	172	241	147	703	0	**109,414**
0	0	0	0	0	0	0	0	0	0	0	**-6,944**
0	533	1,093	0	20,743	0	0	0	0	0	2	**56,741**
-51	-827	-3,000	0	0	0	0	0	0	-408	-130	**-58,906**
0	0	0	0	0	0	0	0	0	0	0	**-419**
-8	1	63	0	214	0	0	0	0	140	0	**374**
0	0	0	0	-349	0	0	0	0	0	0	**-387**
-60	**-293**	**-1,844**	**0**	**22,280**	**6,230**	**172**	**241**	**147**	**436**	**-128**	**99,873**
0	0	0	0	0	0	0	0	0	0	0	**-5,132**
53	0	323	0	0	0	0	0	0	0	0	**-602**
0	0	0	0	0	0	0	0	0	0	0	**-132**
0	0	0	0	0	0	0	0	0	0	0	**0**
53	**0**	**323**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	-5,867
18	3,451	2,550	130	0	0	0	0	0	0	0	**-920**
0	0	0	0	0	-6,230	0	0	0	0	2,265	**-3,964**
0	0	0	0	-20,472	0	-155	-57	-64	0	11,674	**-20,820**
0	0	0	0	0	0	-17	-184	-82	0	616	**-1,096**
0	**0**	**0**	**0**	**-20,472**	**-6,230**	**-172**	**-241**	**-147**	**0**	**14,555**	-25,880
0	0	-461	-130	0	0	0	0	0	0	-1,214	**-2,832**
-6	-37	221	0	0	0	0	0	0	0	-60	**283**
65	**3,414**	**2,633**	**0**	**-20,472**	**-6,230**	**-172**	**-241**	**-147**	**0**	**13,281**	**-35,215**
4	0	0	0	0	0	0	0	0	0	2,553	**3,343**
0	0	0	0	0	0	0	0	0	0	3,958	**4,431**
2	0	0	0	1,808	0	0	0	0	0	6,547	**19,046**
0	3,121	0	0	0	0	0	0	0	436	41	**23,555**
0	0	0	0	0	0	0	0	0	0	53	**352**
0	0	0	0	0	0	0	0	0	0	0	**669**
0	0	789	0	0	0	0	0	0	0	0	**13,262**
6	**3,121**	**789**	**0**	**1,808**	**0**	**0**	**0**	**0**	**436**	**13,153**	**64,658**
0	0	0	0	77,286	26,325	573	198	224	0	0	**163,415**
0	0	0	0	0	0	59	642	287	0	0	**7,163**

Energy Flow Chart 2018

Unit: ktoe

PRIMARY SUPPLY

PRIMARY SUPPLY* (99,874)

Natural Gas	40,939	41.0%
Crude Oil	25,735	25.8%
Coal and Coke	22,280	22.3%
Hydropower	6,230	6.2%
Petroleum Products & Others	3,694	3.7%
Renewables	996	1.0%
Total	99,874	100.0%

PRIMARY PRODUCTION (109,414)

Natural Gas	68,253	62.4%
Crude Oil	31,996	29.2%
Hydropower	6,230	5.7%
Coal and Coke	1,672	1.5%
Renewables	1,263	1.2%
Total	109,414	100.0%

IMPORTS (56,741)

Coal and Coke	20,743	36.5%
Petroleum Products	19,764	34.8%
Crude Oil & Others	9,278	16.4%
Natural Gas & LNG	6,956	12.3%
Total	56,741	100.0%

EXPORTS (58,907)

LNG	25,920	44.0%
Petroleum Products	16,029	27.2%
Crude Oil & Others	15,143	25.7%
Natural Gas	1,407	2.4%
Renewables	408	0.7%
Coal and Coke	-	0.0%
Total	58,907	100.0%

TRANSFORMATION

GAS PLANT INPUT

- LNG **31,105**
- GPP-LPG **2,154**
- MDS **1,103**

OIL REFINERIES INPUT

- LOCAL **16,144**
- IMPORT **9,409**

POWER STATIONS & SELF GENERATION INPUT

- COAL AND COKE **20,472**
- NATURAL GAS **12,816**
- HYDRO **6,230**
- RENEWABLES **560**
- DIESEL **341**
- FUEL OIL **17**

Note *: Primary Supply = Primary Production - Flaring + Imports - Exports - Bunkers (+-) Stock Change (+-) Statistical Discrepancy

FINAL USE

- LNG **25,920**
- LPG **2,022**
- NON-ENERGY **323**
- DIESEL **125**
- KEROSENE **53**
- LPG (FROM LNG) **53**

GAS PLANT OUTPUT

- DIESEL **9,665**
- PETROL **5,524**
- ATF & AV GAS **3,451**
- NON-ENERGY **2,550**
- FUEL OIL **2,432**
- LPG **900**
- REFINERY GAS **130**
- KEROSENE **18**

OIL REFINERIES OUTPUT

- THERMAL **11,674**
- HYDRO **2,265**
- SELF-GENERATION **616**

POWER STATIONS & SELF GENERATION OUTPUT

FINAL USE BY SECTOR (64,658)

Transport	23,555	36.4%
Industry	19,046	29.5%
Non-Energy Use	13,262	20.5%
Commercial	4,431	6.9%
Residential	3,343	5.2%
Fishery	669	1.0%
Agriculture	352	0.5%
Total	64,658	100.0%

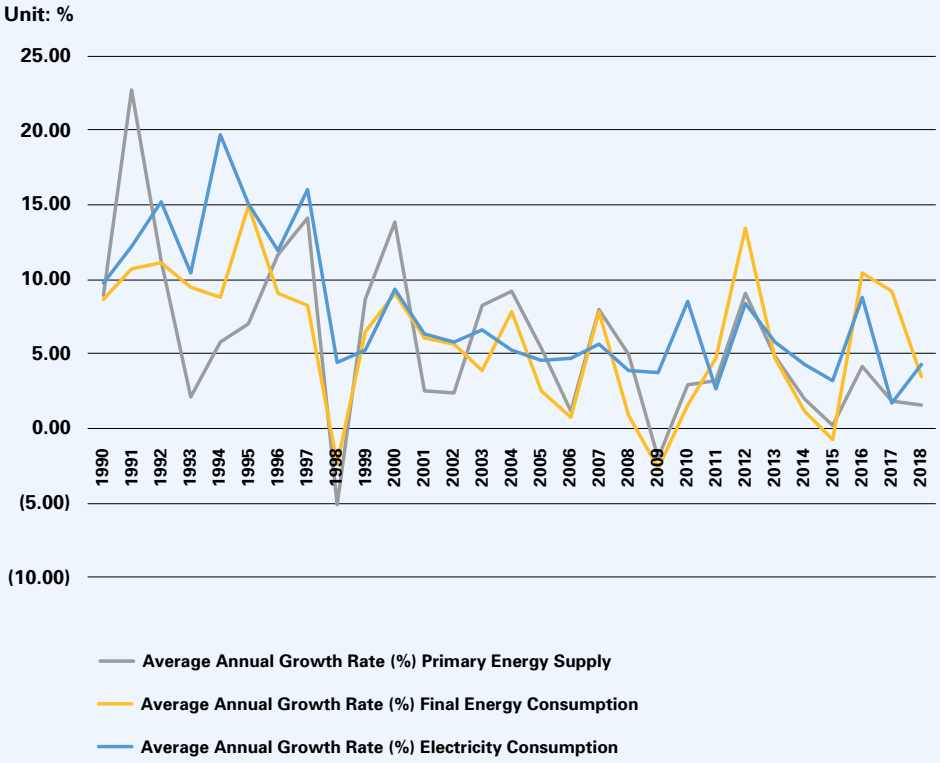
FINAL USE BY FUEL (64,658)

Petroleum Products	30,845	47.7%
Natural Gas	18,851	29.2%
Electricity	13,153	20.3%
Coal and Coke	1,808	2.8%
Total	64,658	100.0%

Average Annual Growth Rate (%)

Unit: Percentage (%)

Year	Average Annual Growth Rate		
	Primary Energy Supply	Final Energy Consumption	Electricity Consumption
1990	8.90	8.70	9.70
1991	22.65	10.78	12.24
1992	11.22	11.14	15.22
1993	2.16	9.53	10.46
1994	5.80	8.79	19.67
1995	7.00	14.92	15.11
1996	11.69	9.10	11.91
1997	14.09	8.21	16.07
1998	(5.04)	(2.33)	4.40
1999	8.63	6.53	5.20
2000	13.87	9.08	9.30
2001	2.50	6.11	6.29
2002	2.34	5.63	5.86
2003	8.21	3.90	6.60
2004	9.16	7.91	5.21
2005	5.37	2.58	4.55
2006	1.22	0.74	4.72
2007	8.01	7.88	5.65
2008	5.03	0.87	3.94
2009	(1.91)	(2.68)	3.76
2010	2.98	1.54	8.53
2011	3.23	4.77	2.69
2012	9.09	13.43	8.40
2013	4.90	4.65	5.78
2014	1.94	1.21	4.27
2015	0.21	(0.77)	3.22
2016	4.15	10.45	8.74
2017	1.84	9.21	1.72
2018	1.60	3.47	4.33


Unit: %
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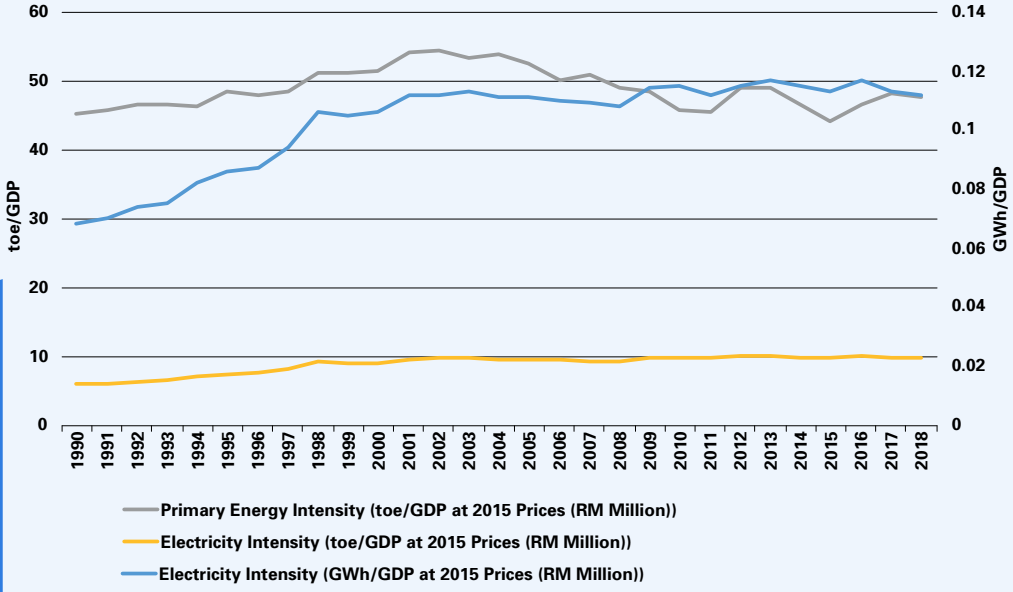
2018
Average Annual Growth Rate (%) Primary Energy Supply
Average Annual Growth Rate (%) Final Energy Consumption
Average Annual Growth Rate (%) Electricity Consumption

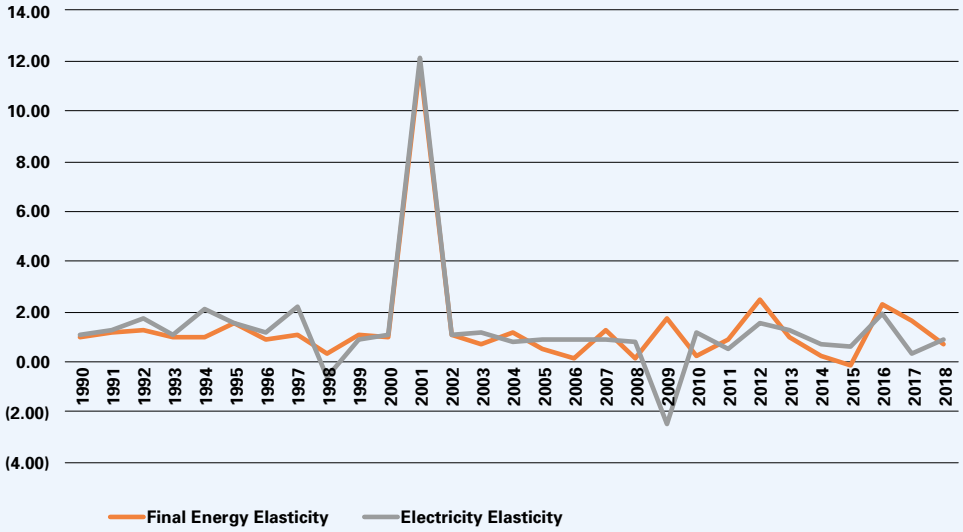
Year	Per Capita		
	Primary Energy Supply (toe)	Final Energy Consumption (toe)	Electricity Consumption (kWh)
1990	1.19	0.73	1,101
1991	1.42	0.79	1,206
1992	1.54	0.85	1,352
1993	1.53	0.90	1,453
1994	1.57	0.96	1,692
1995	1.64	1.07	1,897
1996	1.78	1.14	2,068
1997	1.98	1.20	2,341
1998	1.84	1.14	2,382
1999	1.94	1.19	2,443
2000	2.16	1.26	2,603
2001	2.16	1.31	2,706
2002	2.17	1.36	2,804
2003	2.30	1.38	2,930
2004	2.46	1.46	3,022
2005	2.54	1.47	3,099
2006	2.52	1.45	3,183
2007	2.68	1.54	3,300
2008	2.76	1.52	3,367
2009	2.66	1.45	3,429
2010	2.69	1.45	3,656
2011	2.73	1.50	3,693
2012	2.93	1.67	3,943
2013	3.00	1.71	4,074
2014	3.01	1.70	4,179
2015	2.97	1.66	4,248
2016	3.05	1.81	4,553
2017	3.07	1.95	4,576
2018	3.08	2.00	4,721

Year	Energy Intensity		
	Final Energy Intensity (toe/GDP at 2015 Prices (RM Million))	Electricity Intensity (toe/GDP at 2015 Prices (RM Million))	Electricity Intensity (GWh/GDP at 2015 Prices (RM Million))
1990	45.10	5.884	0.068
1991	45.61	6.029	0.070
1992	46.56	6.380	0.074
1993	46.40	6.413	0.075
1994	46.23	7.027	0.082
1995	48.37	7.365	0.086
1996	47.97	7.493	0.087
1997	48.37	8.103	0.094
1998	50.99	9.132	0.106
1999	51.19	9.052	0.105
2000	51.29	9.089	0.106
2001	54.14	9.611	0.112
2002	54.27	9.654	0.112
2003	53.29	9.728	0.113
2004	53.86	9.585	0.111
2005	52.45	9.513	0.111
2006	50.04	9.436	0.110
2007	50.79	9.378	0.109
2008	48.87	9.299	0.108
2009	48.29	9.796	0.114
2010	45.65	9.897	0.115
2011	45.42	9.653	0.112
2012	48.85	9.921	0.115
2013	48.83	10.024	0.117
2014	46.62	9.860	0.115
2015	44.04	9.684	0.113
2016	46.55	10.082	0.117
2017	48.07	9.698	0.113
2018	47.49	9.660	0.112

Energy Intensity



Energy Elasticity



Notes: 1. Final Energy Elasticity = Ratio between growths of energy consumption with economic growth
2. Electricity Elasticity = Ratio between electricity consumption with economic growth

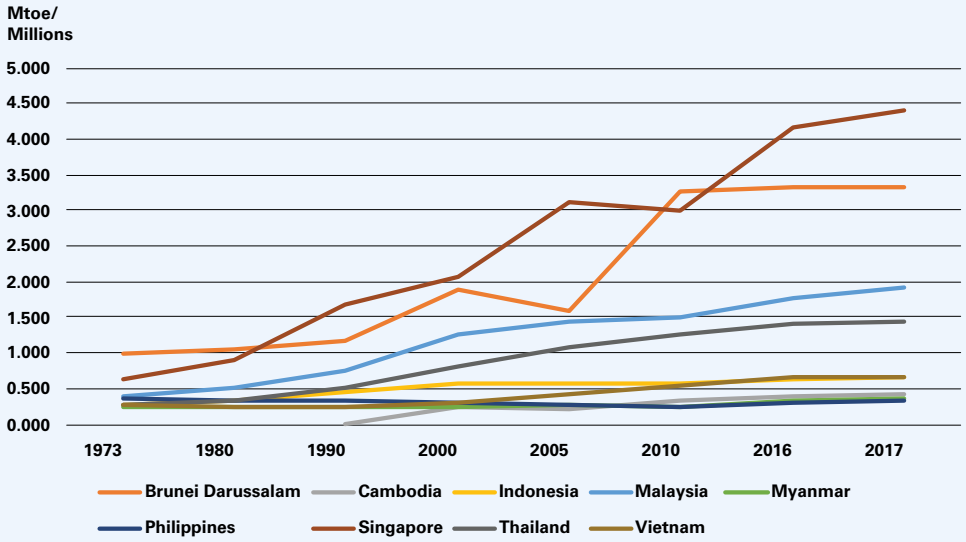
Year	Energy Elasticity	
	Final Energy	Electricity
1990	0.97	1.08
1991	1.13	1.28
1992	1.25	1.71
1993	0.96	1.06
1994	0.95	2.14
1995	1.52	1.54
1996	0.91	1.19
1997	1.12	2.19
1998	0.32	(0.60)
1999	1.06	0.85
2000	1.02	1.05
2001	11.81	12.15
2002	1.04	1.09
2003	0.67	1.14
2004	1.17	0.77
2005	0.48	0.85
2006	0.13	0.85
2007	1.25	0.90
2008	0.18	0.82
2009	1.77	(2.48)
2010	0.21	1.15
2011	0.90	0.51
2012	2.45	1.54
2013	0.99	1.23
2014	0.20	0.71
2015	(0.14)	0.63
2016	2.34	1.96
2017	1.60	0.30
2018	0.73	0.91

Final Energy Consumption per Capita in ASEAN

Unit: Mtoe/Millions

Economy	1973	1980	1990	2000	2005	2010	2016	2017
Brunei Darussalam	1.000	1.050	1.167	1.900	1.575	3.275	3.325	**3.325**
Cambodia	N/A	N/A	N/A	0.242	0.216	0.319	0.403	**0.414**
Indonesia	0.275	0.337	0.441	0.568	0.584	0.583	0.632	**0.658**
Malaysia	0.390	0.501	0.745	1.255	1.451	1.485	1.767	**1.917**
Myanmar	0.253	0.250	0.232	0.249	0.266	0.256	0.324	**0.371**
Philippines	0.368	0.344	0.317	0.307	0.264	0.253	0.306	**0.318**
Singapore	0.636	0.888	1.670	2.078	3.130	2.994	4.179	**4.405**
Thailand	0.271	0.320	0.510	0.803	1.069	1.263	1.410	**1.434**
Vietnam	0.282	0.240	0.235	0.312	0.417	0.547	0.649	**0.671**

Source: Energy Balances of Non-OECD Countries, 2019 Edition, International Energy Agency (IEA)

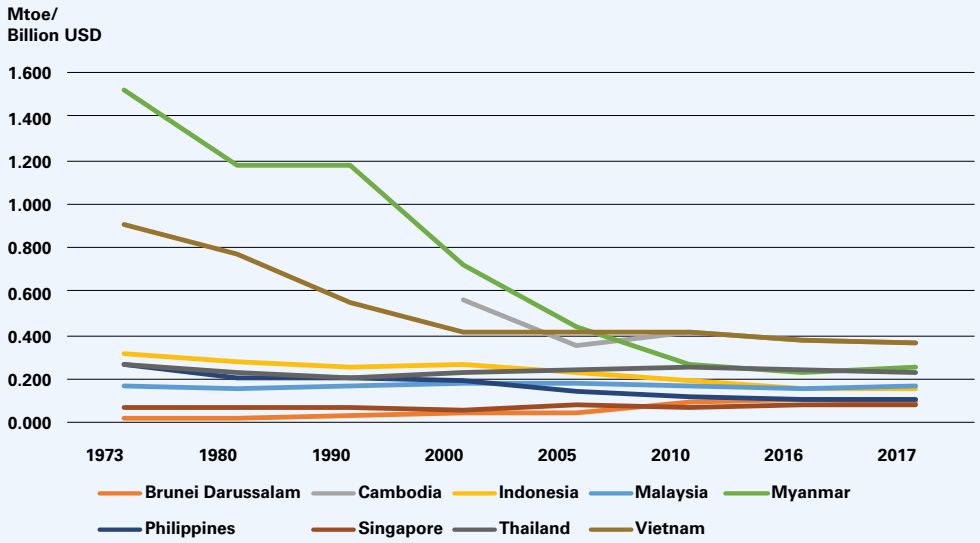


Final Energy Intensity in ASEAN

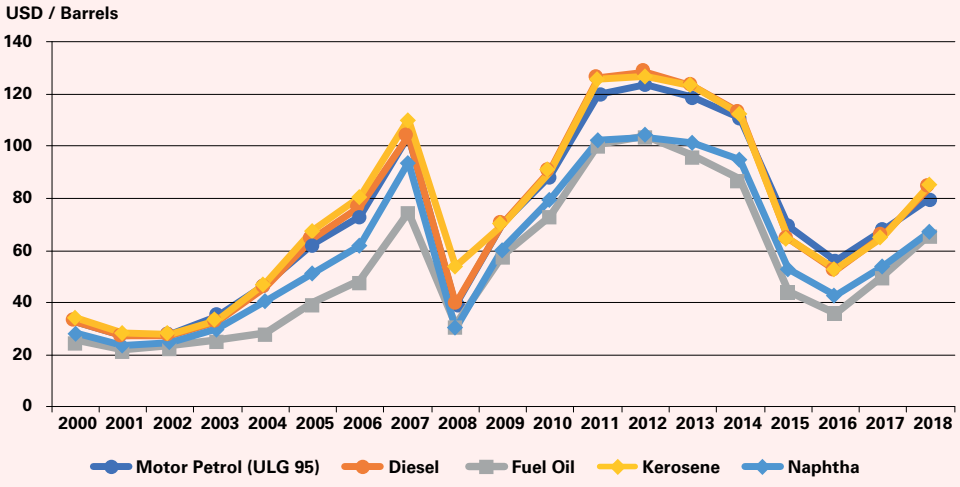
Unit: Mtoe/Billion USD 2010

Economy	1973	1980	1990	2000	2005	2010	2016	2017
Brunei Darussalam	0.015	0.018	0.036	0.048	0.047	0.096	0.100	**0.099**
Cambodia	N/A	N/A	N/A	0.567	0.354	0.407	0.374	**0.364**
Indonesia	0.311	0.274	0.258	0.265	0.232	0.187	0.159	**0.159**
Malaysia	0.163	0.151	0.164	0.179	0.182	0.164	0.160	**0.166**
Myanmar	1.523	1.177	1.175	0.717	0.440	0.260	0.230	**0.249**
Philippines	0.263	0.204	0.208	0.191	0.145	0.119	0.111	**0.110**
Singapore	0.073	0.066	0.074	0.062	0.079	0.065	0.078	**0.080**
Thailand	0.263	0.228	0.204	0.232	0.246	0.249	0.239	**0.234**
Vietnam	0.905	0.773	0.544	0.411	0.412	0.417	0.374	**0.365**

Source: Energy Balances of Non-OECD Countries, 2019 Edition, International Energy Agency (IEA)



Ex-Singapore Prices of Major Petroleum Products

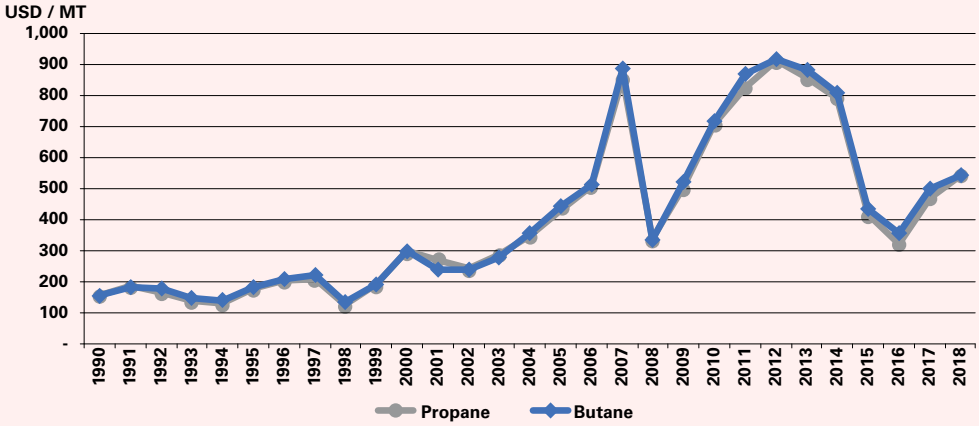


Unit: USD/Barrels

Year	Motor Petrol (ULG 95)	Diesel	Fuel Oil	Kerosene	Naphtha
2000	32.64	32.48	25.82	34.27	28.32
2001	27.43	27.32	21.78	28.32	23.75
2002	28.04	27.55	23.63	28.08	24.93
2003	34.69	32.46	25.72	33.25	30.14
2004	47.23	45.92	28.15	47.69	40.82
2005	62.38	64.35	40.32	67.99	51.04
2006	73.20	76.93	48.84	80.72	62.13
2007	104.05	103.74	74.60	110.50	93.98
2008	39.25	39.32	31.40	53.90	29.90
2009	70.38	70.42	58.12	70.14	60.96
2010	88.41	90.35	72.85	90.18	79.24
2011	119.79	126.28	100.68	125.71	102.49
2012	123.42	128.10	103.92	126.79	103.57
2013	119.00	123.27	96.35	122.85	100.99
2014	110.97	112.69	87.31	112.50	94.90
2015	69.17	64.47	44.52	64.69	52.62
2016	56.26	52.24	35.62	53.00	42.65
2017	67.99	65.65	49.99	65.27	53.79
2018	80.23	84.33	65.98	85.04	67.29

Source: Platts

Annual Liquefied Petroleum Gas (LPG) Contract Prices – Arab Gulf

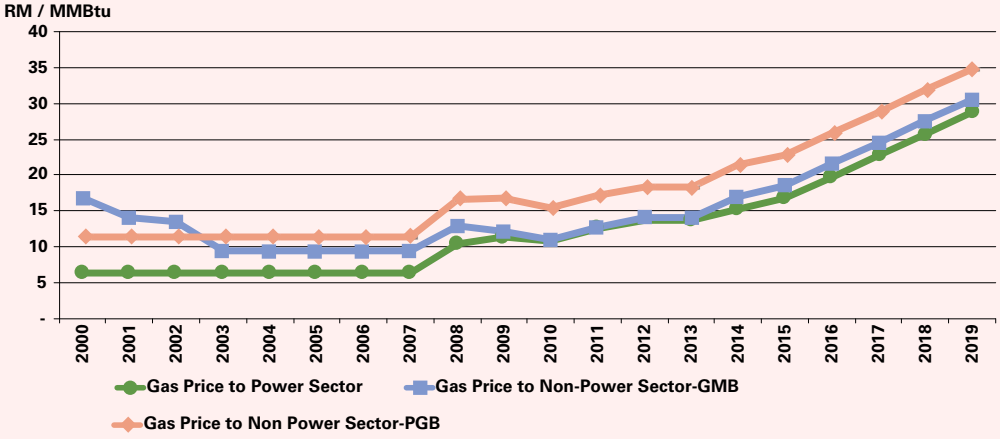


Unit: USD/MT

Year	Propane	Butane
1990	155.96	156.13
1991	186.89	182.19
1992	167.13	179.95
1993	140.02	147.67
1994	129.13	140.90
1995	178.62	183.82
1996	204.42	207.21
1997	210.35	222.21
1998	126.50	134.55
1999	191.07	190.84
2000	299.29	299.46
2001	269.29	239.43
2002	244.58	238.48
2003	288.84	278.46
2004	348.61	355.33
2005	430.79	442.89
2006	510.27	514.00
2007	858.00	887.50
2008	340.00	335.00
2009	504.37	521.43
2010	708.01	716.81
2011	828.03	871.12
2012	914.12	917.45
2013	856.79	884.14
2014	790.70	810.58
2015	416.75	436.57
2016	323.67	356.17
2017	467.56	502.06
2018	544.24	541.65

Source: Platts

Natural Gas Prices in Malaysia

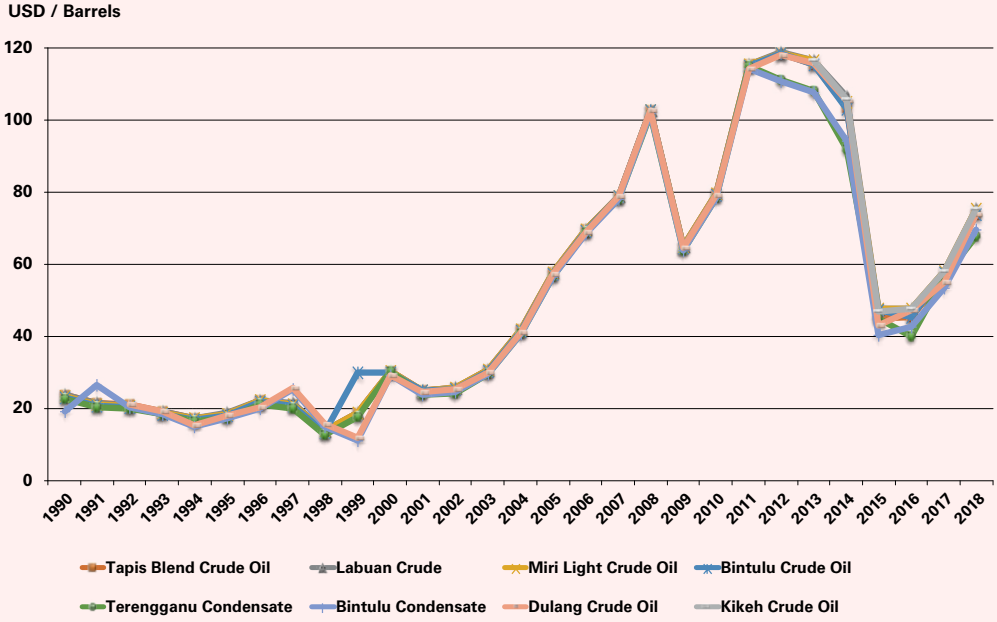


Unit: RM/MMBtu

Year	Gas Price to Power Sector	Gas Price to Non-Power Sector-GMB	Gas Price to Non Power Sector-PGB
2000	6.40	16.72	11.32
2001	6.40	14.10	11.32
2002	6.40	13.40	11.32
2003	6.40	9.40	11.32
2004	6.40	9.40	11.32
2005	6.40	9.40	11.32
2006	6.40	9.40	11.32
2007	6.40	9.40	11.32
2008	10.36	12.98	16.55
2009	11.30	12.21	16.77
2010	10.70	11.05	15.35
2011	12.45	12.80	17.10
2012	13.70	14.05	18.35
2013	13.70	14.05	18.35
2014	15.20	Jan-Apr 14.05	Jan-Apr 18.35
		May-Oct 15.55	May-Oct 19.85
		Nov-Dec 17.05	Nov-Dec 21.35
2015	Jan-Jun 15.20	Jan-Jun 17.05	Jan-Jun 21.35
	Jul-Dec 16.70	Jul-Dec 18.55	Jul-Dec 22.85
2016	Jan-Jun 18.20	Jan-Jun 20.55	Jan-Jun 24.35
	Jul-Dec 19.70	Jul-Dec 21.55	Jul-Dec 25.85
2017	Jan-Jun 21.20	Jan-Jun 23.05	Jan-Jun 27.35
	Jul-Dec 22.70	Jul-Dec 24.55	Jul-Dec 28.85
2018	Jan-Jun 24.20	Jan-Jun 26.05	Jan-Jun 30.35
	Jul-Dec 25.70	Jul-Dec 27.55	Jul-Dec 31.85
2019	Jan-Jun 27.20	Jan-Jun 29.05	Jan-Jun 33.35
	Jul-Dec 28.70	Jul-Dec 30.55	Jul-Dec 34.85

Source: Energy Commission

Official Selling Prices of Malaysian Crude Oil



Official Selling Prices of Malaysian Crude Oil

Unit: USD / Barrel

Year	Tapis Blend Crude Oil	Labuan Crude	Miri Light Crude Oil	Bintulu Crude Oil	Terengganu Condensate	Bintulu Condensate	Dulang Crude Oil	Kikeh Crude Oil
1990	23.86	23.76	23.56	23.06	22.76	19.10	-	-
1991	21.47	21.37	21.17	20.67	20.37	26.35	-	-
1992	20.98	20.88	20.68	20.18	19.88	20.20	21.15	-
1993	19.11	19.11	18.91	18.46	18.26	18.25	19.20	-
1994	17.30	17.40	17.20	16.90	16.45	15.00	15.40	-
1995	18.53	18.63	18.43	18.06	17.33	17.36	18.16	-
1996	22.28	22.38	22.18	21.89	21.08	19.79	20.30	-
1997	21.18	21.33	21.28	20.78	19.98	25.13	25.66	-
1998	13.81	13.84	13.83	13.48	12.61	14.80	15.57	-
1999	18.95	18.95	18.95	29.95	17.76	11.14	11.84	-
2000	30.25	30.25	30.25	29.95	30.29	29.09	29.18	-
2001	25.06	25.06	25.06	24.78	23.86	23.96	24.68	-
2002	25.52	25.52	25.52	25.22	24.32	24.42	25.23	-
2003	30.60	30.60	30.60	30.33	29.40	29.50	29.99	-
2004	41.84	41.84	41.84	41.54	40.64	40.74	41.17	-
2005	57.71	57.71	57.71	57.43	56.51	56.61	57.41	-
2006	69.56	69.56	69.56	69.28	68.66	68.45	68.96	-
2007	78.96	78.96	78.96	78.66	77.91	77.92	78.59	-
2008	102.79	102.79	102.79	102.49	101.59	101.69	102.49	-
2009	64.97	64.97	64.97	64.67	63.77	63.87	64.67	-
2010	79.51	79.51	79.51	79.21	78.31	78.41	79.21	-
2011	115.33	115.33	115.33	115.03	115.03	114.13	114.23	-
2012	118.22	118.66	118.56	118.36	110.92	110.62	118.16	-
2013	115.30	116.60	116.30	115.40	108.00	107.70	115.70	116.60
2014	103.26	106.41	104.89	103.13	91.82	93.99	105.46	105.66
2015	45.12	47.73	47.63	47.35	44.94	40.28	42.98	46.96
2016	45.43	47.63	47.63	45.13	39.76	42.56	47.23	47.63
2017	56.30	57.90	57.90	57.50	56.30	53.57	54.97	57.90
2018	73.84	75.24	75.24	73.84	67.71	69.41	73.84	75.24

Source: Petronas

Average Selling Prices of TNB

Unit: sen/kWh

Year	Domestic	Commercial	Industry	Mining	Public Lighting	Agriculture	Green Tariff	Average
2011	27.97	39.10	29.77	20.21	20.87	38.48	-	**32.48**
2012	28.93	40.98	30.89	20.81	21.53	39.64	-	**33.83**
2013	29.15	40.76	31.00	20.55	21.55	39.35	-	**33.87**
2014	32.28	47.10	35.88	23.99	25.06	45.29	-	**38.86**
2015	32.67	47.68	36.56	25.00	25.49	45.86	-	**39.45**
2016	33.21	46.76	37.13	25.34	25.57	45.78	-	**39.55**
2017	32.87	47.16	36.97	25.07	25.53	45.54	-	**39.53**
2018	33.09	47.28	37.30	24.61	25.57	45.69	-	**39.68**
2019	33.74	47.20	37.62	24.07	25.13	45.98	**8.00**	**39.89**

Average Selling Prices of SESB

Unit: sen/kWh

Year	Domestic	Commercial	Industry	Public Lighting	Average
2011	23.83	29.27	22.43	24.99	**26.20**
2012	25.10	31.41	24.68	18.66	**29.10**
2013	25.30	33.59	28.81	18.75	**29.10**
2014	29.32	39.25	32.90	23.31	**32.60**
2015	29.14	37.63	30.80	25.54	**32.60**
2016	28.86	38.21	31.36	23.09	**33.41**
2017	28.39	38.26	31.09	23.27	**33.30**
2018	29.11	39.19	31.36	24.61	**34.00**
2019	29.60	39.38	31.58	25.14	**34.31**

Average Selling Prices of SEB

Unit: sen/kWh

Year	Domestic	Commercial	Industry	Public Lighting	Average
2011	31.20	31.20	24.70	47.10	**29.40**
2012	31.20	32.00	24.90	47.00	**29.70**
2013	31.30	32.00	25.10	47.10	**29.90**
2014	31.30	32.00	25.10	47.10	**29.80**
2015	28.25	31.72	24.48	n/a	**28.50**
2016	28.30	30.53	24.15	47.12	**28.20**
2017	28.21	30.54	23.86	47.18	**28.04**
2018	28.27	30.50	23.69	47.17	**27.96**
2019	28.47	30.65	24.16	47.20	**28.22**

Number of Customers of TNB, SESB and SEB, 2013 – 2019

		Domestic	Commercial	Industry	Public Lighting	Mining	Others (Including Agriculture)	Free Units	TOTAL
2013	TNB	6,503,417	1,334,856	27,954	61,121	27	1,494	-	**7,928,869**
	SESB	422,964	79,188	2,937	5,128	-	-	-	**510,217**
	SEB	483,106	82,160	985	7,669	-	-	-	**573,920**
	TOTAL	**7,409,487**	**1,496,204**	**31,876**	**73,918**	**27**	**1,494**	**0**	**9,013,006**
2014	TNB	6,710,032	1,404,501	24,852	63,340	29	1,574	-	**8,204,328**
	SESB	442,516	82,472	2,906	5,349	-	-	-	**533,243**
	SEB	498,601	85,188	984	8,152	-	-	-	**592,925**
	TOTAL	**7,651,149**	**1,572,161**	**28,742**	**76,841**	**29**	**1,574**	**0**	**9,330,496**
2015	TNB	6,920,122	1,475,306	27,672	65,888	28	1,627	-	**8,490,643**
	SESB	460,321	85,581	2,756	5,596	-	-	-	**554,254**
	SEB	533,153	92,067	1,025	11,185	-	-	-	**637,430**
	TOTAL	**7,896,527**	**1,649,184**	**31,432**	**80,423**	**28**	**1,627**	**0**	**9,659,221**
2016	TNB	6,989,968	1,464,815	27,556	67,808	34	1,808	2,529	**8,554,518**
	SESB	478,049	90,510	1,545	5,906	-	-	-	**576,010**
	SEB	536,466	91,454	1,022	9,457	-	4	-	**638,403**
	TOTAL	**8,004,483**	**1,646,684**	**30,114**	**83,171**	**34**	**1,812**	**2,529**	**9,768,827**
2017	TNB	7,181,846	1,510,341	28,867	70,402	38	2,112	2,559	**8,796,165**
	SESB	491,809	93,738	1,550	6,061	-	-	-	**593,158**
	SEB	554,467	93,627	1,051	10,040	-	4	-	**659,189**
	TOTAL	**8,228,122**	**1,697,706**	**31,468**	**86,503**	**38**	**2,116**	**2,559**	**10,048,512**
2018	TNB	7,378,425	1,553,607	29,749	72,554	45	2,228	2,589	**9,039,197**
	SESB	505,239	96,167	1,589	6,129				**609,124**
	SEB	568,712	96,416	1,066	10,491		4		**676,689**
	TOTAL	**8,452,376**	**1,746,190**	**32,404**	**89,174**	**45**	**2,232**	**2,589**	**10,325,010**
2019	TNB	7,553,229	1,575,198	30,520	75,463	53	2,326	2,622	**9,239,411**
	SESB	519,308	98,479	15,987	6,335	-	-	-	**640,109**
	SEB	583,613	99,774	1,059	11,146	-	4	-	**695,596**
	TOTAL	**8,656,150**	**1,773,451**	**47,566**	**92,944**	**53**	**2,330**	**2,622**	**10,575,116**

Transmission System Capacity of TNB, SESB and SEB, 2016 – 2019

	2016			2017			2018			2019		
	TNB	SESB	SEB	TNB	SESB	SEB	TNB	SESB	SEB	TNB	SESB	SEB
TRANSMISSION SYSTEM LINES/CABLES (km)												
500kV	784	-	-	784	-	754	1,628	-	753	1,886	-	753
275 kV	9,518	598	1,331	9,637	598	2,761.49	9,047	598.1	2,810.3	9,597	598.1	3,068.38
132 kV	12,175	2,075.5	388	12,420	2,075	826.34	12,407	2,180.34	840.44	12,482	2,217.33	916.24
66 kV	-	119	-	-	119	-	-	110.1	-	-	102.80	-
TRANSMISSION SUBSTATIONS												
Number	427	42	30	439	44	33	443	45	37	457	46	42
Capacity (MVA)	104,780	4,995	7,239.60	109,210	4,984	8,809.10	115,120	5,049	10,246	121,590	5,489	10,726

Note: TNB data for 2017 and above is data after data cleansing exercise.

Distribution System Capacity of TNB, SESB and SEB, 2016 – 2019

	2016			2017			2018			2019		
	TNB	SESB	SEB	TNB	SESB	SEB	TNB	SESB	SEB	TNB	SESB	SEB
DISTRIBUTION SYSTEM LINES/CABLES (km)												
Overhead Lines[a,b,c]	532,403	9,394	24,681	339,793	9,847.71	11,997.74	352,565	9,465.12	26,236	366,568	10,048	26,850
Underground Cables[a,b,c]	697,159	2,272	8,122	305,464	662.4	5,174.89	307,474	1,109.05	8,769	316,439	1,616.16	9,098
DISTRIBUTION SUBSTATIONS												
Number	74,417	7,382	12,522	79,450	7,382	13,076	81,327	7,957	13,824	83,467	8,597	13,544
Capacity (MVA)	131,465	5,969	8,735	111,842	5,969	9,061	114,089	5,440.58	9,600	117,436	6,091	5,940

Notes: [a] *= Only 11kV and 33 kV for SESB's overhead lines and underground cables*
[b] *= SESB data is financial year data*
[c] *= For TNB overhead lines and underground cable, 2014-2016: Route length, 2017: Circuit length*
[d] *= Data obtained from TNB Integrated Annual Report 2016*

Performance Highlights of TNB, SESB and SEB, 2016 – 2019

	2016			2017			2018			2019		
	TNB	SESB	SEB	TNB	SESB	SEB	TNB	SESB	SEB	TNB	SESB	SEB
Maximum Demand (MW)	17,788	945	3,040	17,790	938	3,302	18,338	955	3,504	18,566	1,001	3,777
Total Units Generated (GWh)	24,046	875	10,144	22,239	919	25,580	17,827	1,033	27,177	16,735	1,125	29,456
Total Units Sold (GWh)	110,199	5,188	19,943	110,567	5,173	22,557	113,469	5,345	24,316	116,525	5,576	25,492
Sales Revenue of Electricity (RM million)	43,583	1,734	4,140	43,703	1,723	4,707	45,029	1,830	5,266	46,487	1,913	5,585
Installed Capacity (MW)	6,107	331[a]	2,262[b]	5,066	319[a]	4,641	5,066	328[a]	4,641	4,766	328[a]	5,204
Total Number of Employees[c]	28,807	3,282	4,468	27,990	3,260	4,713	28,371	3,179	4,841	28,825	3,180	5,207
Sales Revenue Per Employee (RM million)	1.51	0.53	0.93	1.56	0.53	1.00	1.59	0.58	1.09	1.61	0.60	1.07
Unit Sold Per Employee (GWh)	3.83	1.58	4.77	3.95	1.59	4.79	4.00	1.68	5.33	4.04	1.75	5.20
Installed Capacity Per Employee (MW)	0.21	0.10	0.51	0.18	0.10	0.48	0.18	0.10	0.96	0.17	0.10	1.00
Total Purchased Units (GWh)	97,839	5,152	12,158	99,899	5,063	13,077	108,912	5,382	-	112,899	5,597	-
Total Units Exported (GWh)	0.74[d]	-	684	4.81[d]	-	1,119.00	0.08	-	1,509	0.26	-	1,697.00
Total Units Imported (GWh)	30.00[d]	-	-	7.41[d]	-	-	19.98	-	-	40.58	-	-

Notes: [a] = *Dependable capacity*
[b] = *Installed Capacity for SEB excludes IPPs in Sarawak*
[c] = *TNB employees excluding TNB wholly owned subsidiaries and TNB majority owned subsidiaries*
[d] = *Data source: Single Buyer*

Revenue, Asset Size, Employment and Annual Investment of TNB and SESB, 2010 – 2019

		Revenue (RM Billion)	Asset Size (RM Billion)	Employment	Annual Investment (RM Billion)
TNB	2010	28.4	60.0	25,571	3.8
	2011	30.2	60.5	26,732	4.6
	2012	33.3	62.5	28,105	4.9
	2013	34.8	69.1	29,269	5.6
	2014	39.8	71.0	30,065	6.5
	2015	40.3	73.1	29,602	7.7
	2016	41.3	74.9	28,807	6.6
	2017	44.2	75.8	27,990	6.1
	2018	47.1	83.9	28,371	7.5
	2019	47.2	71.3	28,825	7.6
SESB	2010	1.1	2.6	2,617	0.3
	2011	1.1	4.0	2,614	0.3
	2012	1.4	4.0	2,675	0.3
	2013	1.5	3.9	2,759	0.3
	2014	1.7	5.7	2,975	0.2
	2015	1.9	6.3	3,092	0.3
	2016	2.1	6.4	3,282	0.4
	2017	2.2	6.9	3,264	0.4
	2018	2.1	7.1	3,179	0.3
	2019	2.3	5.0	3,180	0.4

Source: TNB, SESB

Number of Electricity Supply Interruptions, 2010 – 2019

	Peninsular Malaysia	Sabah	Sarawak
2010	101,126	24,173	8,003
2011	83,347	25,334	7,759
2012	75,271	26,841	7,881
2013	79,372	24,849	7,994
2014	70,629	22,739	9,496
2015	63,920	19,585	6,158
2016	58,175	20,105	7,550
2017	60,058	18,611	6,089
2018	64,198	18,053	5,772
2019	69,621	20,534	6,728

Performance of Distribution System in Peninsular Malaysia, 2013 – 2019

Year	2013	2014	2015	2016	2017	2018	2019
Electricity Supply Interruptions per 1,000 Customers							
Scheduled Interruptions	0.09	0.17	0.17	0.16	0.06	0.05	0.04
Unscheduled Interruptions	9.92	8.47	7.25	6.68	7.01	7.51	7.73
SAIDI, SAIFI & CAIDI							
SAIDI (Minutes/ Customer/Year) by Voltage Level	60.35	56.65	51.49	49.29	54.49	48.22	48.13
SAIFI (Number of Interruptions/ Customer/Year) by Voltage Level	0.87	0.92	0.83	0.90	0.93	0.86	0.83
CAIDI (Minutes/ Interrupted Customer/Year) by Voltage Level	69.37	61.58	62.04	54.77	58.59	56.07	57.99

System Average Interruption Duration Index (SAIDI) by State in Peninsular Malaysia, 2013 – 2019

Unit: Minutes/Customer/Year

State	2013	2014	2015	2016	2017	2018	2019
Johor	70.84	57.98	58.98	49.39	56.04	41.73	41.91
Kedah	74.38	84.34	57.42	60.82	82.51	73.30	65.76
Kelantan	69.61	56.23	56.18	67.90	59.34	49.91	39.33
Melaka	38.11	45.27	42.48	38.04	42.62	18.59	21.99
Negeri Sembilan	69.96	53.79	56.86	51.03	35.56	57.37	37.58
Pahang	63.70	68.94	62.61	57.22	51.30	46.01	60.84
Perak	78.95	69.04	51.64	46.23	52.83	43.89	43.25
Perlis	36.79	38.94	34.09	35.98	144.10	56.67	61.72
Pulau Pinang	68.89	50.40	54.49	51.05	58.12	78.66	89.34
Selangor	54.42	55.84	50.74	54.67	52.34	64.77	61.55
Terengganu	44.64	43.33	41.46	39.65	42.82	36.67	30.70
WP Kuala Lumpur	35.85	32.96	32.36	32.39	41.01	28.59	26.68
WP Putrajaya/Cyberjaya	0.99	0.17	0.63	0.13	0.55	0.73	0.04
PENINSULAR MALAYSIA	**60.35**	**56.65**	**51.49**	**49.29**	**54.49**	**48.22**	**48.13**

System Average Interruption Frequency Index (SAIFI) by State in Peninsular Malaysia, 2013 – 2019

Unit: Number of Interruptions/Customer/Year

State	2013	2014	2015	2016	2017	2018	2019
Johor	0.94	0.83	0.70	0.70	0.55	0.63	0.75
Kedah	1.11	1.65	1.20	1.40	1.19	1.26	1.22
Kelantan	1.26	1.21	1.25	1.45	1.53	1.47	1.02
Melaka	0.56	0.71	0.58	0.64	0.55	0.28	0.44
Negeri Sembilan	0.73	0.78	0.77	0.78	0.44	0.77	0.51
Pahang	1.42	1.49	1.44	1.56	1.39	0.65	0.82
Perak	1.10	1.08	0.80	0.94	0.71	1.41	1.48
Perlis	0.47	0.43	0.46	0.57	2.32	0.79	1.02
Pulau Pinang	1.00	0.81	0.83	0.82	0.69	1.68	1.37
Selangor	0.76	0.74	0.74	0.84	0.60	0.94	0.76
Terengganu	1.03	1.05	0.87	1.01	1.10	1.00	0.93
WP Kuala Lumpur	0.37	0.67	0.48	0.57	0.61	0.46	0.43
WP Putrajaya/Cyberjaya	0.01	0.08	0.01	0.15	0.00	0.09	0.00
PENINSULAR MALAYSIA	**0.87**	**0.92**	**0.83**	**0.90**	**0.93**	**0.86**	**0.83**

Customer Average Interruption Duration Index (CAIDI) by State in Peninsular Malaysia, 2013 – 2019

Unit: Minutes/Interrupted Customer/Year

State	2013	2014	2015	2016	2017	2018	2019
Johor	75.36	69.86	84.26	70.56	101.89	66.24	55.88
Kedah	67.01	51.12	47.85	43.44	69.33	58.17	53.90
Kelantan	55.25	46.47	44.94	46.83	38.78	33.95	38.56
Melaka	68.05	63.76	73.24	59.44	77.50	66.39	49.98
Negeri Sembilan	95.84	68.96	73.84	65.42	80.81	74.51	73.69
Pahang	44.86	46.27	43.48	36.68	36.91	31.13	74.20
Perak	71.77	63.93	64.55	49.18	74.41	71.73	29.23
Perlis	78.28	90.56	74.11	63.12	62.11	46.82	60.51
Pulau Pinang	68.89	62.22	65.65	62.26	84.23	70.78	65.21
Selangor	71.61	75.46	68.57	65.08	87.23	68.90	80.99
Terengganu	43.34	41.27	47.66	39.26	42.39	36.67	33.01
WP Kuala Lumpur	96.89	49.19	67.42	56.82	67.23	62.15	62.05
WP Putrajaya/Cyberjaya	99.00	2.13	63.00	0.87	0.00	8.11	0.00
PENINSULAR MALAYSIA	**69.37**	**61.58**	**62.04**	**54.77**	**58.59**	**56.07**	**57.99**

Performance of Distribution System in Sabah, 2013 – 2019

Year	2013	2014	2015	2016	2017	2018	2019
Electricity Supply Interruptions per 1,000 Customers							
Scheduled Interruptions	3.70	2.11	1.81	2.34	3.46	4.94	3.19
Unscheduled Interruptions	45.90	39.84	33.32	32.15	28.85	24.69	17.35
SAIDI, SAIFI & CAIDI							
SAIDI (Minutes/Customer/Year)	423.99	777.26	379.26	311.01	240.90	267.87	205.31
SAIFI (Number of Interruptions/ Customer/Year)	12.25	13.44	9.63	8.60	6.61	8.61	10.83
CAIDI (Minutes/Interrupted Customer/Year)	34.61	57.83	39.38	36.16	36.44	31.11	29.26

Performance of Distribution System in Sarawak, 2013 – 2019

Year	2013	2014	2015	2016	2017	2018	2019
SAIDI (Minutes/Customer/Year)	168	189	143	119	111	95.81	83.42
SAIFI (Number of Interruptions/ Customer/Year)	2.08	2.00	1.69	1.46	1.28	1.20	1.07
CAIDI (Minutes/Interrupted Customer/Year)	80.77	94.50	84.62	81.51	86.72	79.63	78.29

Number of Natural Gas Customers of Gas Malaysia Berhad (GMB) and Sabah Energy Corporation (SEC) by Sector, 2010 – 2019

		Domestic	Commercial	Industry	Total
2010	GMB	10,433	489	686	**11,608**
	SEC	-	-	11	**11**
2011	GMB	10,541	536	704	**11,781**
	SEC	-	-	12	**12**
2012	GMB	11,932	565	709	**13,206**
	SEC	-	-	12	**12**
2013	GMB	12,455	630	740	**13,825**
	SEC	-	-	18	**18**
2014	GMB	12,568	799	771	**14,138**
	SEC	-	-	20	**20**
2015	GMB	12,571	862	795	**14,228**
	SEC	-	-	22	**22**
2016	GMB	12,339	935	819	**14,093**
	SEC	-	-	23	**23**
2017	GMB	12,818	1,017	853	**14,688**
	SEC	-	2	21	**23**
2018	GMB	12,683	1,014	879	**14,576**
	SEC	-	-	24	**24**
2019	GMB	12,620	1,056	933	**14,609**
	SEC	-	2	23	**25**

Natural Gas Consumption by Sector of GMB and SEC (mmBtu), 2010 – 2019

Unit: mmBtu

		Domestic	Commercial	Industry	Total
2010	GMB	19,838	1,006,564	116,579,760	**117,606,162**
	SEC	-	-	62,236	**62,236**
2011	GMB	20,073	1,021,176	123,587,690	**124,628,939**
	SEC	-	-	66,795	**66,795**
2012	GMB	24,546	990,892	126,364,815	**127,380,253**
	SEC	-	-	74,684	**74,684**
2013	GMB	36,627	961,562	137,246,099	**138,244,288**
	SEC	-	-	93,582	**93,582**
2014	GMB	37,616	992,935	146,311,939	**147,342,490**
	SEC	-	-	233,723	**233,723**
2015	GMB	28,710	1,021,607	157,720,218	**158,770,535**
	SEC	-	-	294,387	**294,387**
2016	GMB	24,738	1,007,563	162,451,003	**163,483,304**
	SEC	-	-	284,156	**284,156**
2017	GMB	25,850	1,045,193	182,502,651	**183,573,694**
	SEC	-	41,557	274,759	**316,316**
2018	GMB	26,100	1,017,938	192,474,505	**193,518,543**
	SEC	-	-	322,911	**322,911**
2019	GMB	26,488	996,089	199,848,019	**200,870,596**
	SEC	-	27,041	426,637	**453,678**

Natural Gas Pipe Length (km), 2009 – 2019

Unit: km

	Peninsular Malaysia		Sabah	
	Polyethylene Pipe	Stainless Steel Pipe	Polyethylene Pipe	Stainless Steel Pipe
2009	508.20	1,097.76	6.56	1.30
2010	534.16	1,174.28	6.56	1.30
2011	551.58	1,239.89	6.56	1.30
2012	556.36	1,261.69	6.72	1.30
2013	558.42	1,330.12	6.72	1.30
2014	563.60	1,429.64	6.72	1.30
2015	567.04	1,472.70	6.78	1.30
2016	571.00	1,543.00	6.78	1.30
2017	577.00	1,594.00	6.78	1.30
2018	426.00	1,680.00	6.78	1.30
2019	586.00	1,810.00	6.81	4.00

Performance Highlights of GMB and SEC, 2013 – 2019

		Demand (mmBtu)	Sales of Gas (RM'000)	Total Number of Employees	Revenue Per Employee (RM'000)	Unit Sold Per Employee (mmBtu)
2013	GMB	138,244,288	2,288,465	385	5,944	359,076
	SEC	93,582	2,702	63	43	1,485
2014	GMB	147,342,490	2,745,024	402	6,828	366,524
	SEC	233,723	7,316	74	99	3,158
2015	GMB	158,770,535	3,594,520	451	7,970	352,041
	SEC	294,387	9,789	74	132	3,978
2016	GMB	163,483,304	3,973,843	430	9,241	380,194
	SEC	284,124	9,872	80	123	3,552
2017	GMB	183,573,694	5,260,870	487	10,803	376,948
	SEC	274,759	11,424	83	138	3,310
2018	GMB	191,791,567	6,178,725	504	12,368	380,539
	SEC	322,911	1,437	79	32	4,077
2019	GMB	200,870,594	6,838,254	530	12,902	379,001
	SEC	455,797	12,371	83	149	5,492

Number of Supply Interruptions in Peninsular Malaysia and Sabah, 2009 – 2019

Year	GMB	SEC
2009	150	0
2010	114	0
2011	124	0
2012	97	0
2013	79	0
2014	78	0
2015	22	0
2016	14	0
2017	16	0
2018	29	0
2019	13	0

Gas Supply Interruptions per 1,000 Customers, 2009 – 2019

Year	Peninsular Malaysia	Sabah
2009	3.75	0.00
2010	3.19	0.00
2011	3.14	0.00
2012	2.21	0.00
2013	1.95	0.00
2014	2.48	0.00
2015	1.55	0.00
2016	0.99	0.00
2017	3.64	0.00
2018	4.40	0.00
2019	2.10	0.00

SAIDI, SAIFI, CAIDI, 2008 – 2019

	SAIDI (Minutes/Customer/Year)		SAIFI (Disruptions/Customer/Year)		CAIDI (Minute/Disruption)	
	Peninsular Malaysia	Sabah	Peninsular Malaysia	Sabah	Peninsular Malaysia	Sabah
2008	0.0470	0.0000	0.0007	0.0000	64.1300	0.0000
2009	0.2489	0.0000	0.0046	0.0000	54.4100	0.0000
2010	0.6299	0.0000	0.0037	0.0000	169.2700	0.0000
2011	0.3630	0.0000	0.0039	0.0000	90.9600	0.0000
2012	0.7489	0.0000	0.0029	0.0000	260.9000	0.0000
2013	0.1480	0.0000	0.0022	0.0000	66.8300	0.0000
2014	0.1492	0.0000	0.0021	0.0000	70.7100	0.0000
2015	0.0874	0.0000	0.0016	0.0000	54.0500	0.0000
2016	0.5812	0.0000	0.0010	0.0000	575.2300	0.0000
2017	0.1067	0.0000	0.0025	0.0000	42.5100	0.0000
2018	0.3060	0.0000	0.0008	0.0000	404.8200	0.0000
2019	0.1780	0.0000	0.0007	0.0000	259.5600	0.0000

Industrial Sales Volume by Industry Grouping of GMB (mmBtu), 2012 – 2019

Unit: mmBtu

	2012	2013	2014	2015	2016	2017	2018	2019
Non-Metallic Industry	12,322,733	12,643,979	13,494,149	12,479,020	12,270,125	12,832,894	12,078,564	11,587,487
Basic Metal Industry	11,318,185	11,119,585	10,874,986	10,765,579	10,730,111	11,000,633	11,204,076	10,837,963
Electrical & Electronic	200,274	1,984,425	2,027,958	1,873,005	14,325,025	1,599,008	1,549,292	1,420,666
Machinery & Equipment	243,448	259,167	246,215	251,223	10,856,212	221,487	202,071	209,868
Rubber products	32,875,665	37,581,300	41,489,234	50,052,506	31,258,184	58,843,709	62,873,516	64,100,057
Food, Beverages & Tobacco	34,421,384	37,763,632	40,743,034	42,438,744	32,817,174	45,147,561	46,222,536	42,918,313
Fabricated Metal Products	3,749,109	4,480,214	4,621,397	4,742,804	3,742,369	3,808,343	3,772,298	3,420,951
Chemical Products	9,467,377	10,410,346	11,333,511	11,858,331	10,845,667	16,350,120	19,757,457	25,354,291
Glass Products	7,793,642	8,299,467	8,119,994	6,821,966	18,996,952	13,656,240	16,285,351	21,031,904
Others	12,173,028	12,706,395	14,212,054	16,437,040	16,609,184	19,042,655	18,529,344	18,966,519
Total	**124,564,845**	**137,248,510**	**147,162,532**	**157,720,218**	**162,451,003**	**169,669,756**	**192,474,505**	**199,848,019**

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/ conversions 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)	Shows the input of any energy product (negative sign) for the purpose of converting it to one or more secondary products (positive sign).
Losses and own use (12)	Refers to losses of electrical energy and natural gas which occur outside the utilities and plants (i.e. distribution losses) and the consumption of energy by utilities and plants for operating their installation (i.e. electricity for operating auxiliary equipment and petroleum products used in the crude distillation process respectively). It does not, however, include conversion loss that is accounted for in the 'total' column.

Secondary supply (14)	Refers to the supply of energy from the transformation process and after deducting the energy sector's own use and losses, including power station use.
Residential and commercial (15 & 16)	Not only refers to energy used within households and commercial establishments but includes government buildings and institutions.
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 ON ELECTRICITY

Reserve Margin	Total capacity margin is defined as the amount of installed generation available over and above system peak load **Reserve Margin = Installed Capacity – Peak Demand / 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.
Average Selling Price	Formula to calculate the Average Selling Price is as below; **Average Selling Price = Revenue by Customer Categories / Unit Sold by Customer Categories**

NOTES ON COAL

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

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 cubic metre

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.
Liquefied Natural Gas (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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