COUNTRY REPORT

MALAYSIA

JUNE 2024

Socioeconomic Data of Malaysia

Citizen
29.8 million
(91.7%)
25.2 million
(91.8%)

Non-Citizen
2.7 million
(8.3%)
2.3 million
(8.2%)

POPULATION BY SEX

17.0 million

14.1 million

Sex Ratio:
110
106
Males per 100 females

15.5 million

13.4 million

Number of Household
8.2 million increased
from 6.4 million

Average Private Household Size 3.8
decreased from 4.2

2020 2010

POPULATION BY AGE GROUP

0 - 14 years	15-64 years	65+ years
7.8 million 24.0%	22.5 million 69.3%	2.2 million 6.8%
7.6 million 27.6%	18.5 million 67.3%	1.4 million 5.0%

CITIZEN BY ETHNIC GROUP

Bumiputera	Chinese	Indians	Others
69.4%	23.2%	6.7%	0.7%
67.4%	24.5%	7.3%	0.7%

Urban
75.1%
70.9%

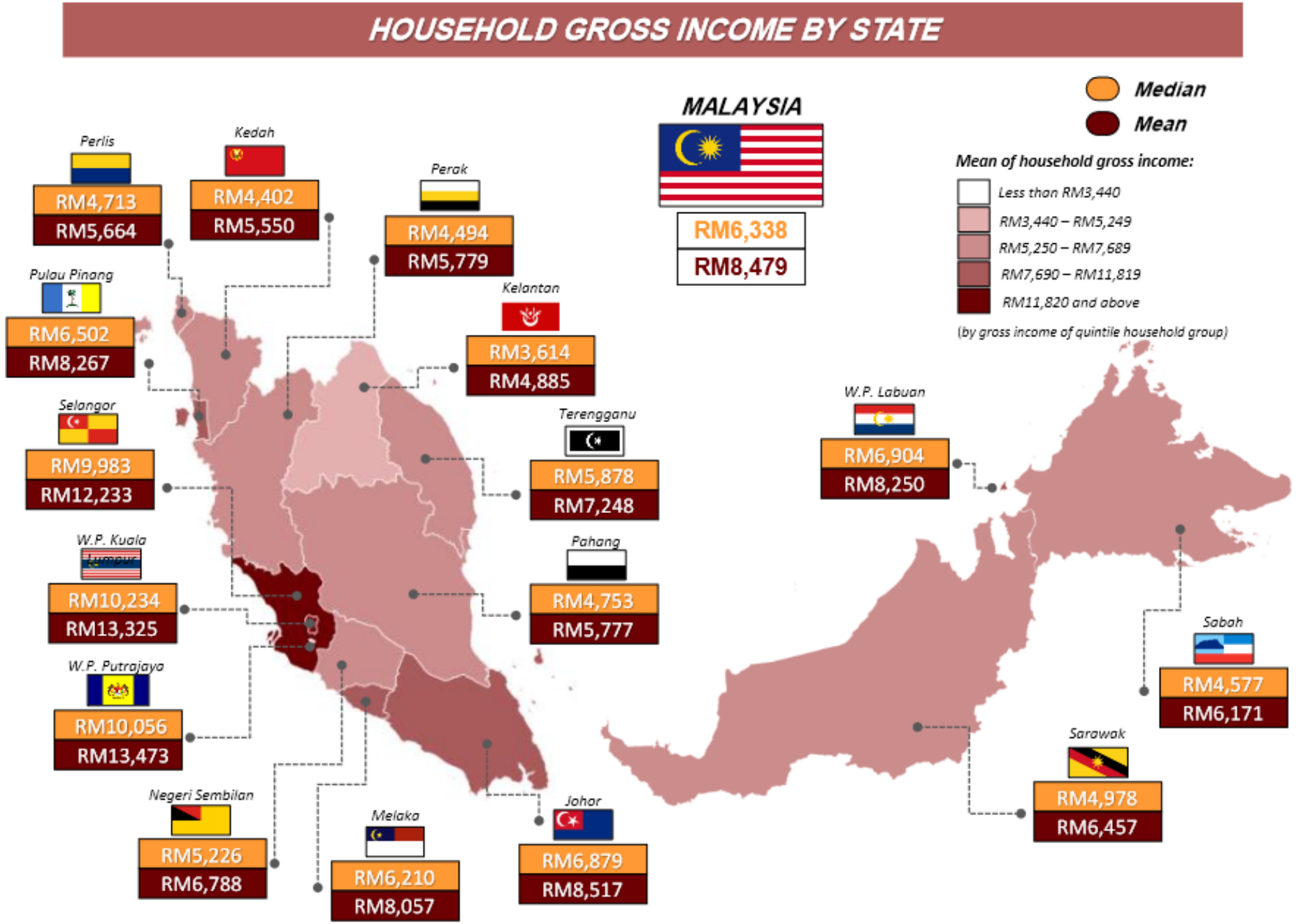
Rural
24.9%
29.1%

Average Monthly Household Income of Malaysian

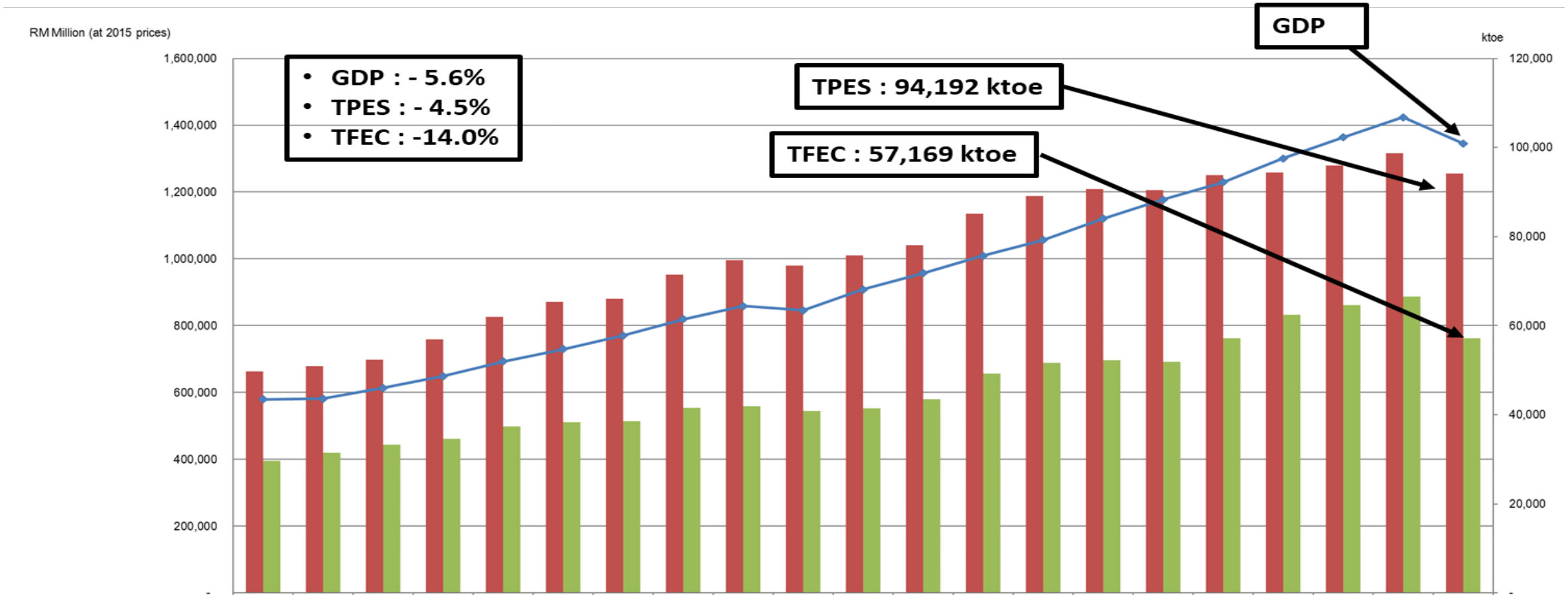
USD 1350
to
USD 1800

GDP Per Capita

USD 13,315
(estimated 2024)



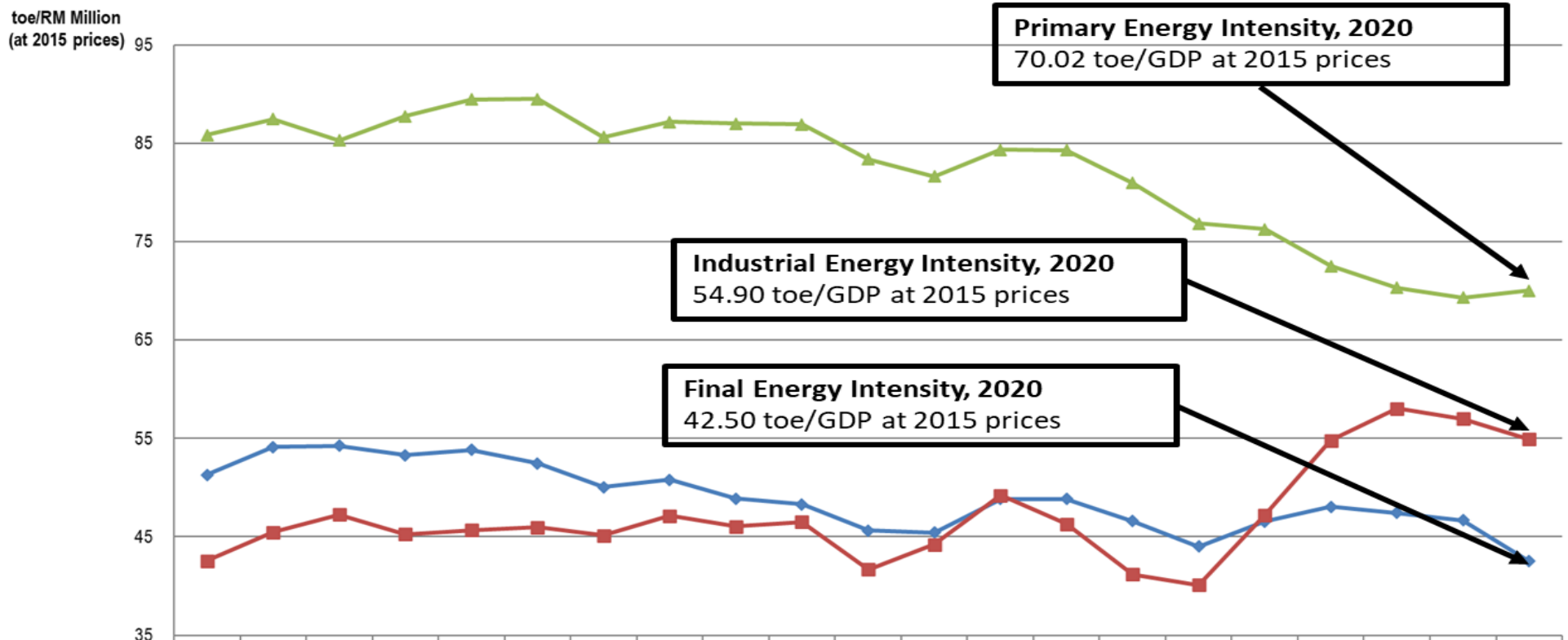
Trends in GDP, Primary Energy Supply and Final Energy Consumption, 2000-2020



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Primary Energy Supply (ktoe)	49,697	50,899	52,323	56,944	62,008	65,344	66,009	71,426	74,709	73,530	75,772	78,095	85,124	89,046	90,691	90,441	93,747	94,345	95,909	98,681	94,192
Final Energy Consumption (ktoe)	29,699	31,515	33,289	34,586	37,323	38,285	38,567	41,606	41,968	40,845	41,476	43,455	49,291	51,583	52,209	51,829	57,219	62,489	64,658	66,483	57,169
GDP at 2015 Prices (RM million)*	579,073	582,071	613,450	648,960	692,981	729,932	770,698	819,242	858,826	845,828	908,629	956,731	1,009,097	1,056,462	1,119,920	1,176,941	1,229,312	1,300,769	1,363,766	1,423,952	1,345,144

- Our energy supply and demand has yet to decouple from economic growth
- TPES, TFEC, GDP decline in 2020

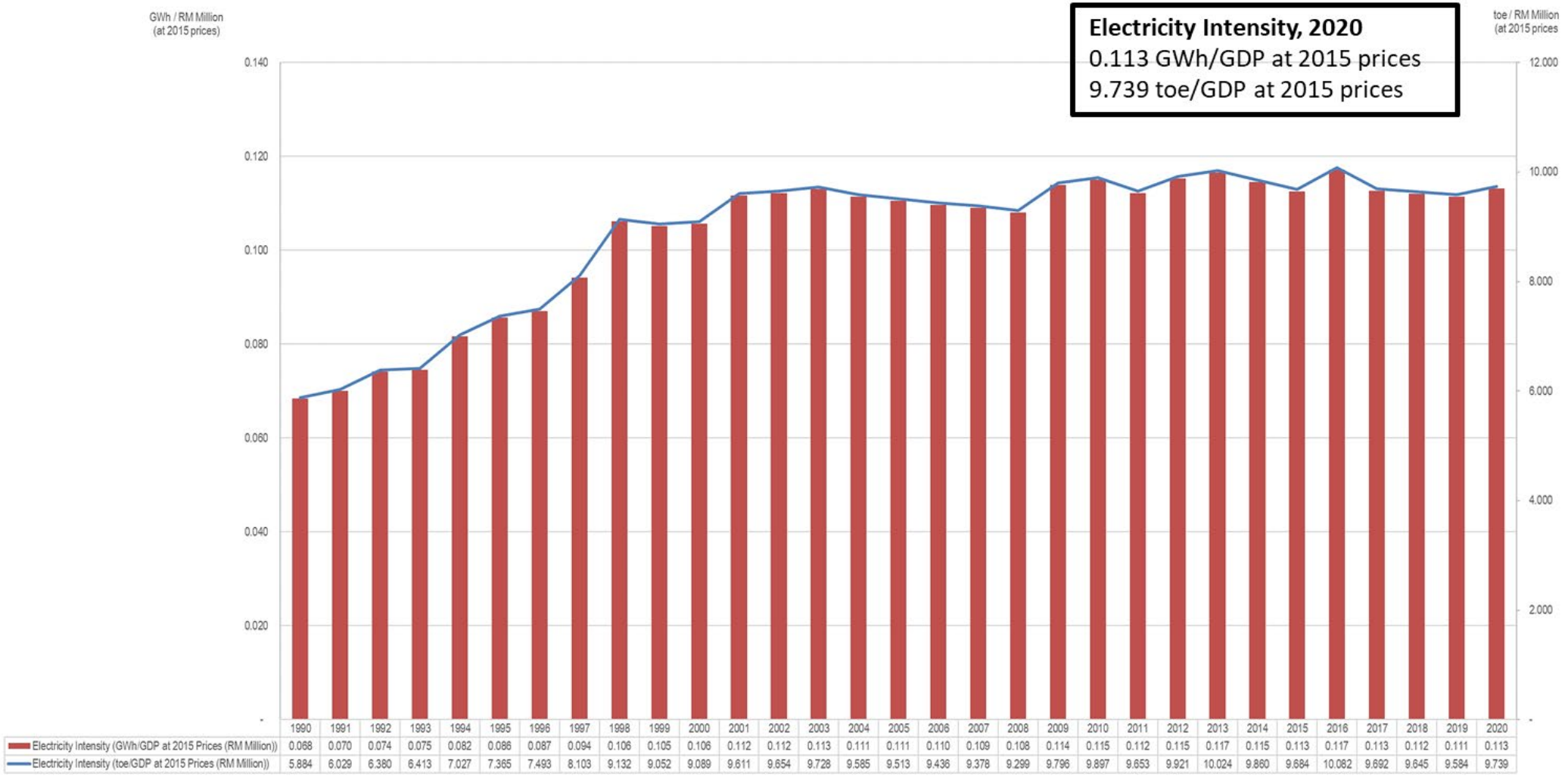
Primary and Final Energy Intensity, 2000-2020



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Final Energy Intensity (toe/RM Million at 2015 Prices)*	51.29	54.14	54.27	53.29	53.86	52.45	50.04	50.79	48.87	48.29	45.65	45.42	48.85	48.83	46.62	44.04	46.55	48.04	47.41	46.69	42.50
Industrial Energy Intensity (toe/RM Million at 2015 Prices)**	42.55	45.48	47.26	45.26	45.69	45.97	45.13	47.14	46.04	46.53	41.69	44.22	49.23	46.31	41.20	40.12	47.23	54.80	58.04	57.02	54.90
Primary Energy Supply (toe/GDP at 2015 Prices)***	85.82	87.44	85.29	87.75	89.48	89.52	85.65	87.19	86.99	86.93	83.39	81.63	84.36	84.29	80.98	76.84	76.26	72.53	70.33	69.30	70.02

- Primary Energy Intensity: +1.1%
- Final Energy Intensity : - 9.0%
- Industrial Energy Intensity : - 3.7%

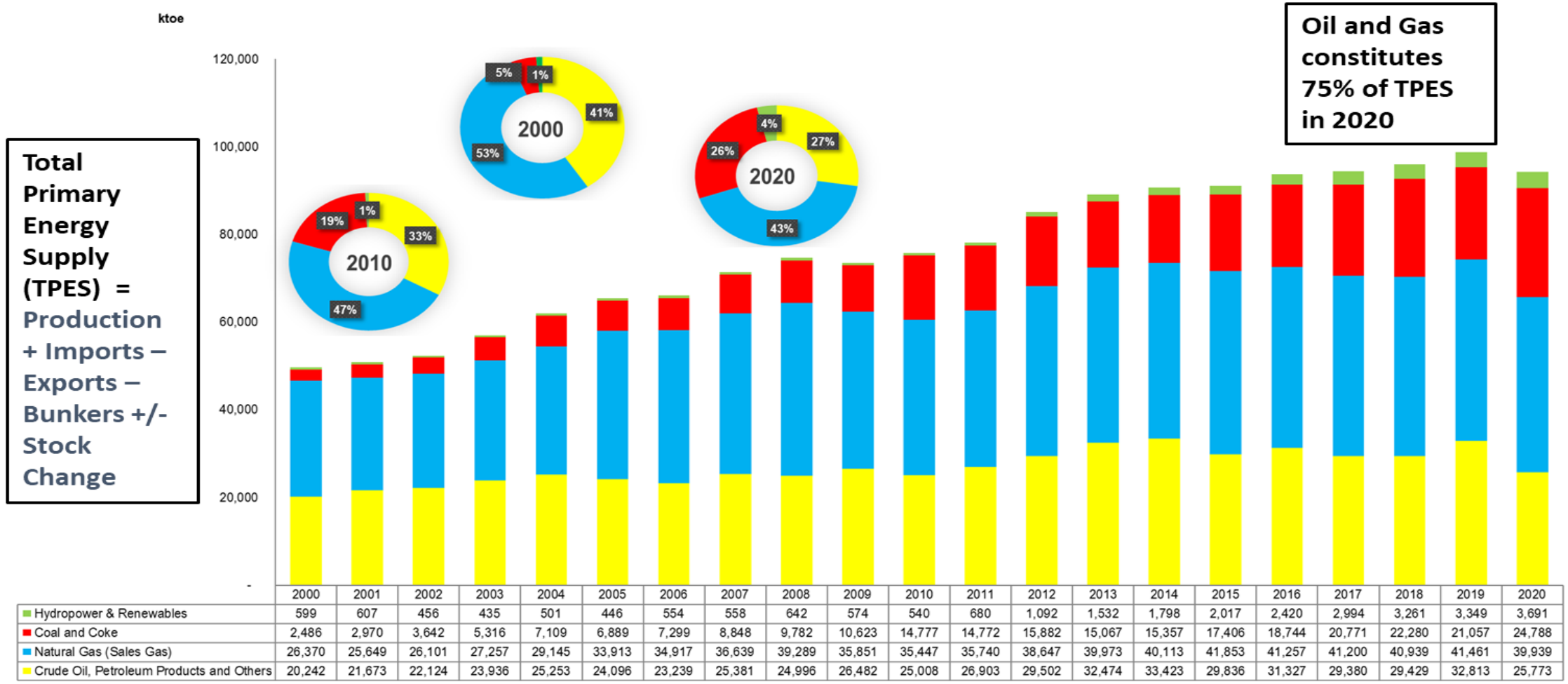
Electricity Intensity, 1990–2020



	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Electricity Intensity (GWh/GDP at 2015 Prices (RM Million))	0.068	0.070	0.074	0.075	0.082	0.086	0.087	0.094	0.106	0.105	0.106	0.112	0.112	0.113	0.111	0.111	0.110	0.109	0.108	0.114	0.115	0.112	0.115	0.117	0.115	0.113	0.117	0.113	0.112	0.111	0.113
Electricity Intensity (toe/GDP at 2015 Prices (RM Million))	5.884	6.029	6.380	6.413	7.027	7.365	7.493	8.103	9.132	9.052	9.089	9.611	9.654	9.728	9.585	9.513	9.436	9.378	9.299	9.796	9.897	9.653	9.921	10.024	9.860	9.684	10.082	9.692	9.645	9.584	9.739

- Electricity Intensity: + 1.6%

Primary Energy Supply, 2000–2020



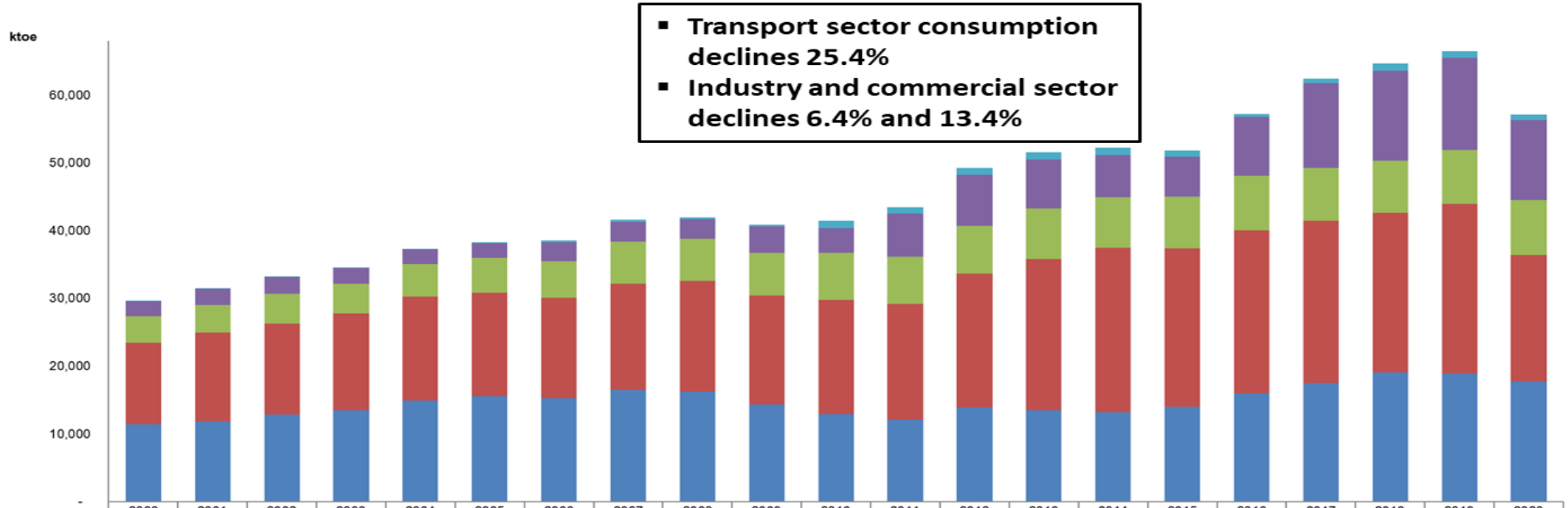
Total Primary Energy Supply (TPES) = Production + Imports – Exports – Bunkers +/- Stock Change

Oil and Gas constitutes 75% of TPES in 2020

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Hydropower & Renewables	599	607	456	435	501	446	554	558	642	574	540	680	1,092	1,532	1,798	2,017	2,420	2,994	3,261	3,349	3,691
Coal and Coke	2,486	2,970	3,642	5,316	7,109	6,889	7,299	8,848	9,782	10,623	14,777	14,772	15,882	15,067	15,357	17,406	18,744	20,771	22,280	21,057	24,788
Natural Gas (Sales Gas)	26,370	25,649	26,101	27,257	29,145	33,913	34,917	36,639	39,289	35,851	35,447	35,740	38,647	39,973	40,113	41,853	41,257	41,200	40,939	41,461	39,939
Crude Oil, Petroleum Products and Others	20,242	21,673	22,124	23,936	25,253	24,096	23,239	25,381	24,996	26,482	25,008	26,903	29,502	32,474	33,423	29,836	31,327	29,380	29,429	32,813	25,773

- TPES : -4.5%
- TPES share almost consistent with 2019
- Production is lesser, Total import is lesser, contributes to overall decline in TPES

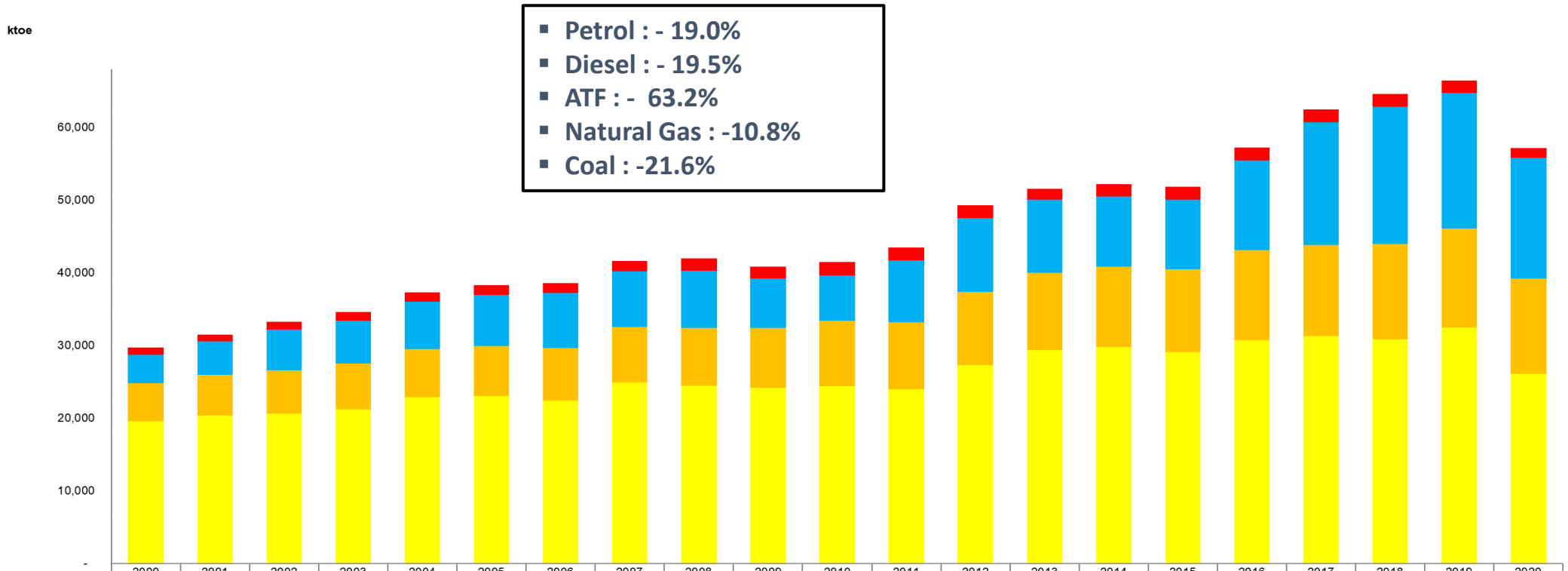
Final Energy Consumption by Sector, 2000–2020



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Agriculture	104	98	96	98	87	101	258	281	287	211	1,074	916	1,053	1,051	1,045	895	415	674	1,021	927	867
Non-Energy Use	2,250	2,378	2,511	2,345	2,183	2,173	2,819	2,957	2,876	3,868	3,696	6,377	7,497	7,277	6,217	5,928	8,729	12,517	13,262	13,631	11,805
Residential and Commercial	3,868	4,048	4,387	4,399	4,754	5,134	5,424	6,197	6,205	6,336	6,951	6,993	7,065	7,403	7,459	7,600	8,051	7,796	7,773	8,000	8,123
Transport*	12,071	13,137	13,442	14,271	15,385	15,293	14,819	15,717	16,395	16,119	16,828	17,070	19,757	22,357	24,327	23,435	24,004	24,039	23,555	25,004	18,660
Industrial	11,406	11,852	12,854	13,472	14,914	15,583	15,248	16,454	16,205	14,312	12,928	12,100	13,919	13,496	13,162	13,971	16,019	17,463	19,046	18,921	17,714

- TFEC : -14.0%
- Transport and Industry sector’s consumption are severely impacted by COVID-19 pandemic, causing decline.
- Only Residential sector showed positive growth, 22.3% increase

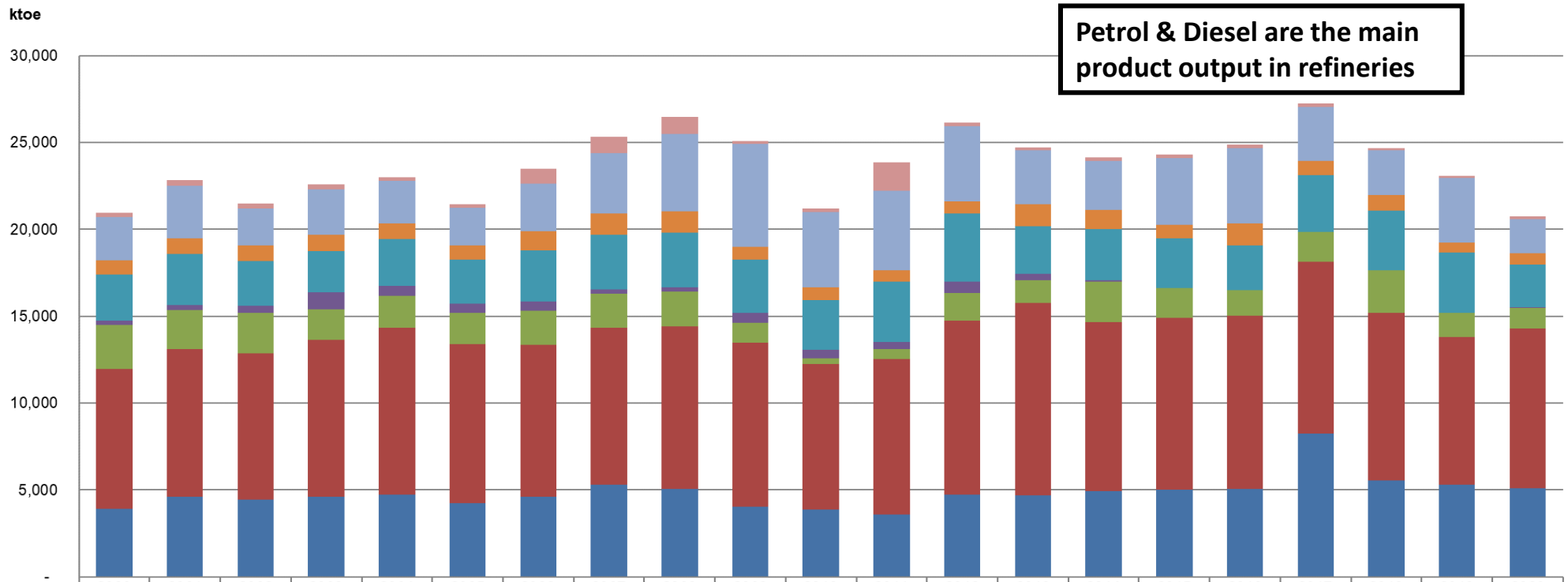
Final Energy Consumption by Fuel Type, 2000–2020



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Coal and Coke	991	977	1,086	1,212	1,305	1,348	1,335	1,362	1,713	1,613	1,826	1,759	1,744	1,539	1,709	1,778	1,785	1,804	1,808	1,706	1,338
Natural Gas	3,862	4,620	5,643	5,886	6,490	6,981	7,562	7,709	7,818	6,802	6,254	8,515	10,206	10,076	9,641	9,566	12,304	16,838	18,851	18,647	16,631
Electricity	5,263	5,594	5,922	6,313	6,642	6,944	7,272	7,683	7,986	8,286	8,993	9,236	10,011	10,590	11,042	11,397	12,394	12,607	13,153	13,647	13,100
Petroleum Products and Others	19,582	20,323	20,638	21,175	22,886	23,012	22,398	24,852	24,451	24,145	24,403	23,946	27,329	29,379	29,817	29,087	30,737	31,241	30,845	32,483	26,100

- Petrol, Diesel & ATF: Travel restrictions during lockdown period
- Natural Gas : lower demand from industry and non-energy sector
- Coal : Decreasing demand from cement manufacturers

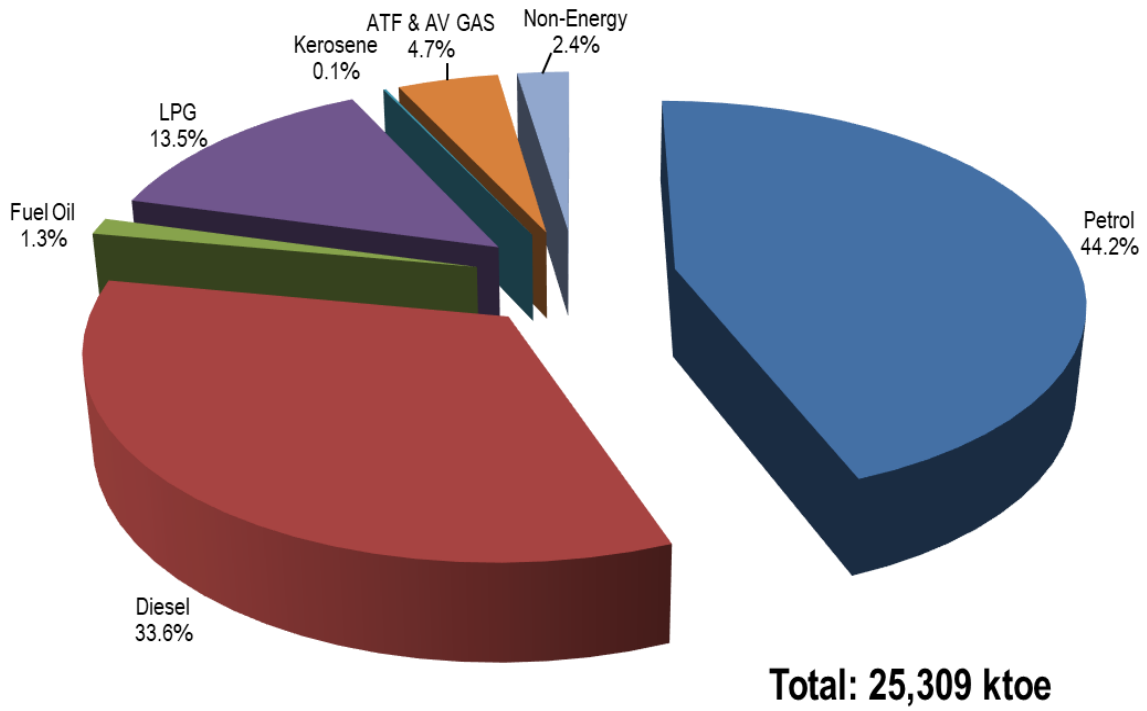
Production of Petroleum Products from Refineries



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Refinery Gas	241	331	294	262	215	202	849	938	991	195	209	1,659	197	195	192	172	201	174	130	147	156
Non-Energy	2,492	3,020	2,127	2,623	2,455	2,157	2,750	3,461	4,475	5,905	4,357	4,572	4,318	3,089	2,826	3,869	4,339	3,100	2,550	3,708	1,954
LPG	838	875	897	932	897	822	1,118	1,228	1,208	732	697	665	702	1,252	1,102	780	1,285	832	900	560	672
ATF & AV GAS	2,660	2,954	2,570	2,367	2,693	2,553	2,938	3,138	3,139	3,085	2,891	3,457	3,918	2,750	2,916	2,841	2,548	3,255	3,451	3,470	2,459
Kerosene	239	283	414	983	591	521	537	234	245	565	483	419	654	387	100	6	4	10	18	8	12
Fuel Oil	2,532	2,269	2,332	1,763	1,813	1,777	1,933	1,990	1,994	1,144	327	571	1,608	1,286	2,340	1,692	1,479	1,725	2,432	1,388	1,204
Diesel	8,059	8,462	8,401	9,062	9,611	9,161	8,752	9,033	9,364	9,415	8,369	8,925	10,033	11,063	9,725	9,890	9,988	9,877	9,665	8,484	9,199
Petrol	3,893	4,623	4,460	4,584	4,724	4,245	4,607	5,285	5,066	4,052	3,873	3,599	4,708	4,702	4,918	5,031	5,044	8,253	5,524	5,317	5,089

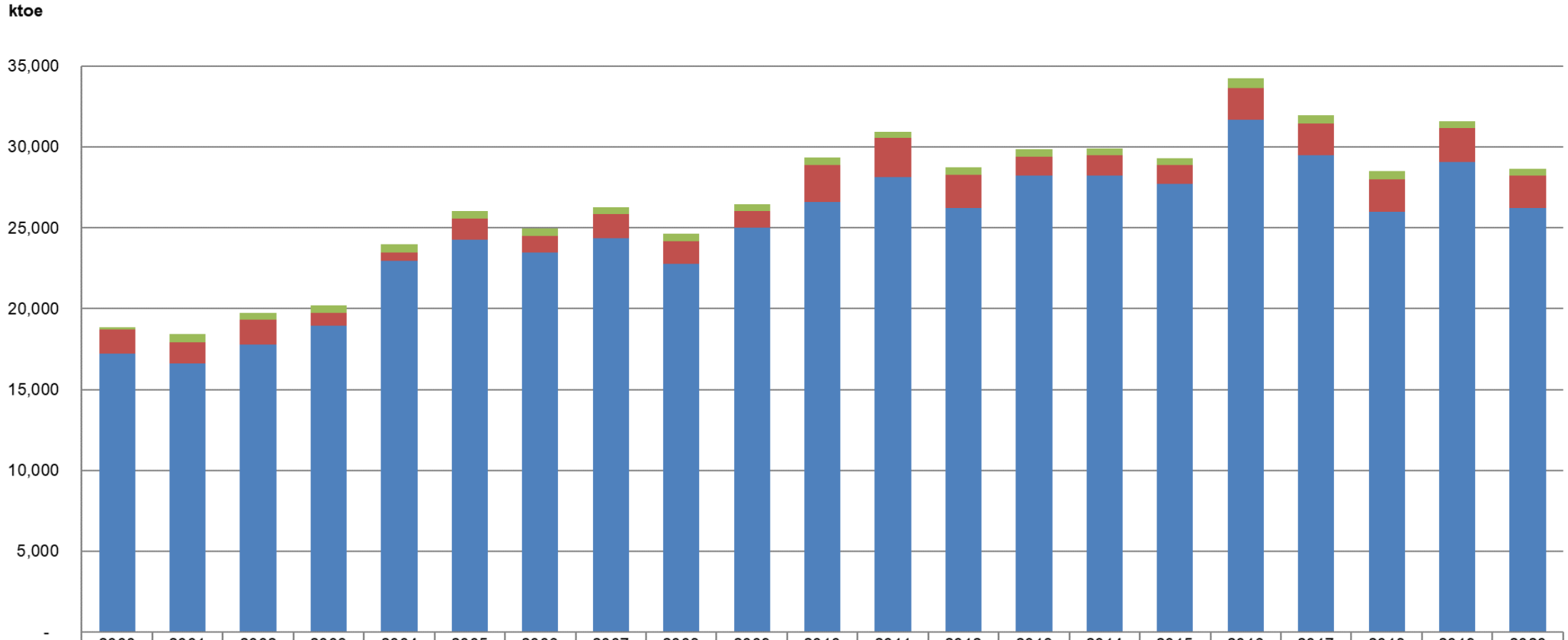
- Refineries Production: -10.1%
- Refinery Production is on declining trend from 2017 to 2020
- Non-Energy Products : - 47.3%
- ATF : - 29.1%

Final Consumption for Petroleum Products in 2020



- Petrol & Diesel are mostly consumed by road transport sector, small amount used in Industry (Manufacturing) sector.
- LPG is used for cooking in residential and commercial sectors.
- ATF & AVGas is fuel used in airplane for domestic and international flights.
- Non-Energy products eg: naphta, reformate, lubricants, etc

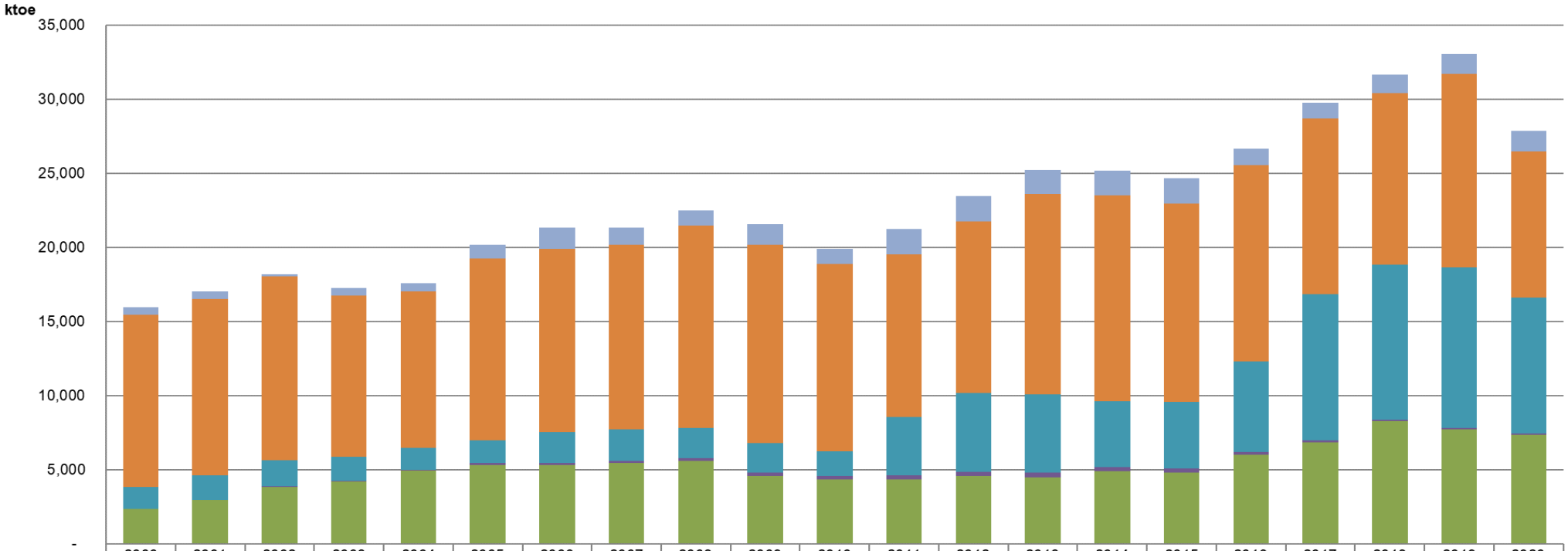
Conversion in Gas Plants, 2000-2020



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
MDS	164	513	445	443	513	460	464	417	481	426	454	359	486	478	420	423	573	509	501	425	441
GPP-LPG	1,482	1,310	1,504	790	520	1,319	1,036	1,483	1,362	1,012	2,299	2,434	2,035	1,174	1,250	1,155	1,997	1,961	2,022	2,107	1,998
LNG	17,231	16,636	17,803	18,965	22,944	24,254	23,450	24,355	22,793	25,004	26,601	28,130	26,231	28,209	28,213	27,722	31,658	29,468	25,973	29,074	26,206

- **LNG output reduce significantly by 9.9%, export of LNG reduce too from 29,044 ktoe to 26,155 ktoe**
- **Most of the LNG produced in Malaysia is exported to other countries like Japan, China, Korea, Taiwan and others.**

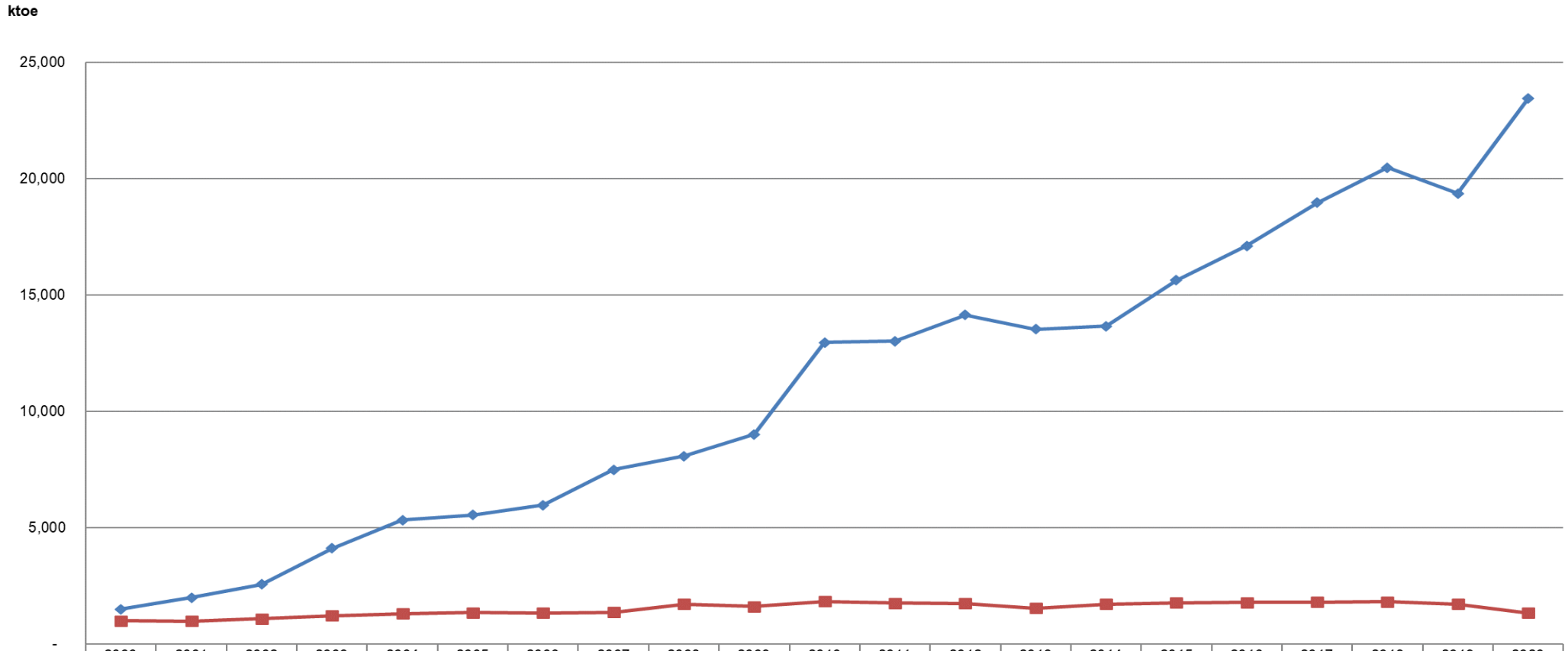
Natural Gas Consumption by Sector, 2000–2020



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Co-Generation	530	495	128	469	568	923	1,431	1,140	1,030	1,385	1,031	1,697	1,734	1,650	1,678	1,739	1,094	1,038	1,274	1,333	1,395
Power Stations	11,580	11,922	12,424	10,893	10,545	12,271	12,330	12,476	13,651	13,390	12,628	10,956	11,533	13,520	13,860	13,378	13,260	11,872	11,542	13,072	9,841
Non-Energy	1,512	1,655	1,775	1,616	1,476	1,541	2,110	2,112	2,046	1,995	1,661	3,967	5,336	5,276	4,472	4,470	6,083	9,837	10,451	10,819	9,193
Transport	7	14	28	40	54	95	120	147	194	236	247	272	292	289	276	264	208	148	121	98	65
Industrial	2,327	2,937	3,824	4,207	4,937	5,317	5,301	5,416	5,541	4,544	4,310	4,300	4,556	4,488	4,869	4,808	5,989	6,827	8,255	7,706	7,358
Commercial	12	10	11	18	18	23	24	28	31	25	30	32	22	22	22	24	24	25	24	23	14
Residential	4	4	4	5	5	5	5	6	6	2	6	7	1	1	1	1	1	1	1	1	1

- Power Stations: - 24.7%, due to lower demand of electricity in 2020
- Transport : - 33.7% (98 ktoe to 65 ktoe) Decline in NGV , consumers switching from regular taxis to e-hailing
- Industry: - 4.5% due to little to no activities during the lockdown period

Coal Consumption by Sector, 2000-2020



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Power Stations	1,495	1,994	2,556	4,104	5,327	5,541	5,964	7,486	8,069	9,010	12,951	13,013	14,138	13,527	13,648	15,627	17,101	18,967	20,472	19,351	23,451
Industry	991	977	1,086	1,212	1,305	1,348	1,335	1,362	1,713	1,613	1,826	1,759	1,744	1,539	1,709	1,778	1,785	1,804	1,808	1,706	1,338

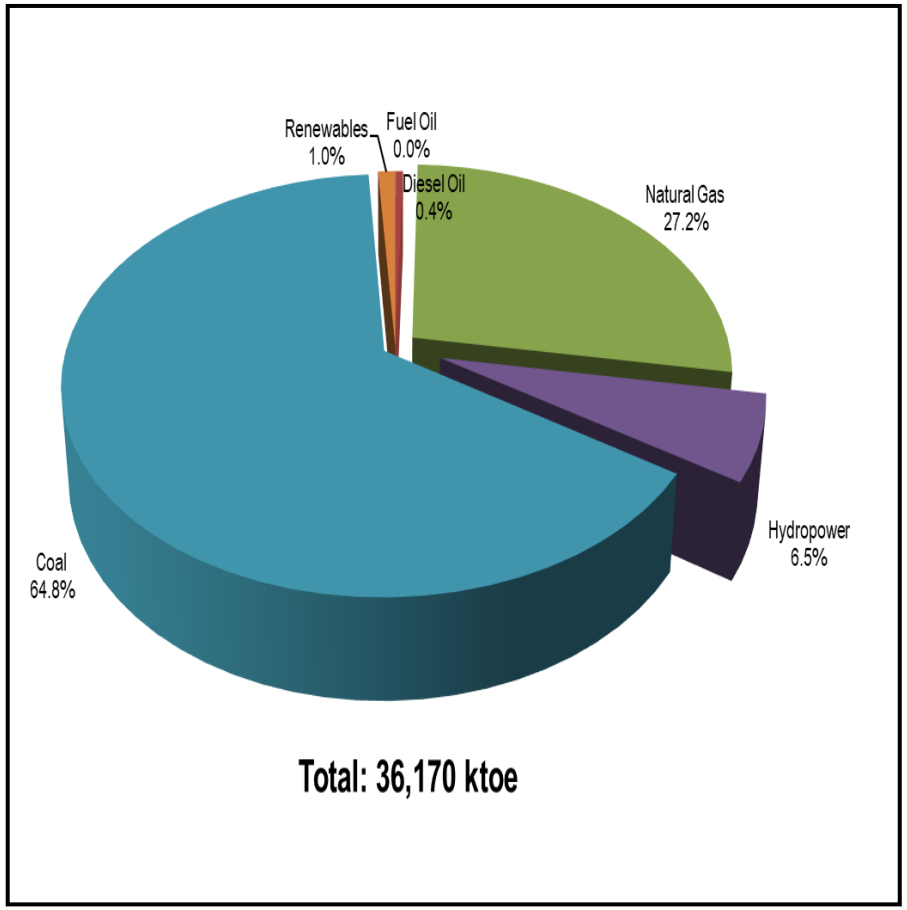
- Coal consumption into power stations increase 21.2%: Jimah East (Tuanku Muhriz) Power Station is fully operational since Dec 2019 and throughout 2020.
- Coal consumption in industry, particularly cement industry is on the declining trend : fuel switching

Gross Generation, Consumption, Available Capacity, Peak Demand and Reserve Margin, 2020

Region	Electricity Gross Generation		Electricity Consumption		Available Capacity**	Peak Demand	Reserve Margin
	GWh	%	GWh	%	MW	MW	%
Peninsular Malaysia	136,449	78.4	118,222	77.6	25,058	18,808	33.2
Sarawak	30,293	17.4	28,158	18.5	5,111	3,664	39.5
Sabah*	7,254	4.2	5,870	3.9	1,357	987	37.5
Total	173,997	100.0	152,250	100.0	31,624		

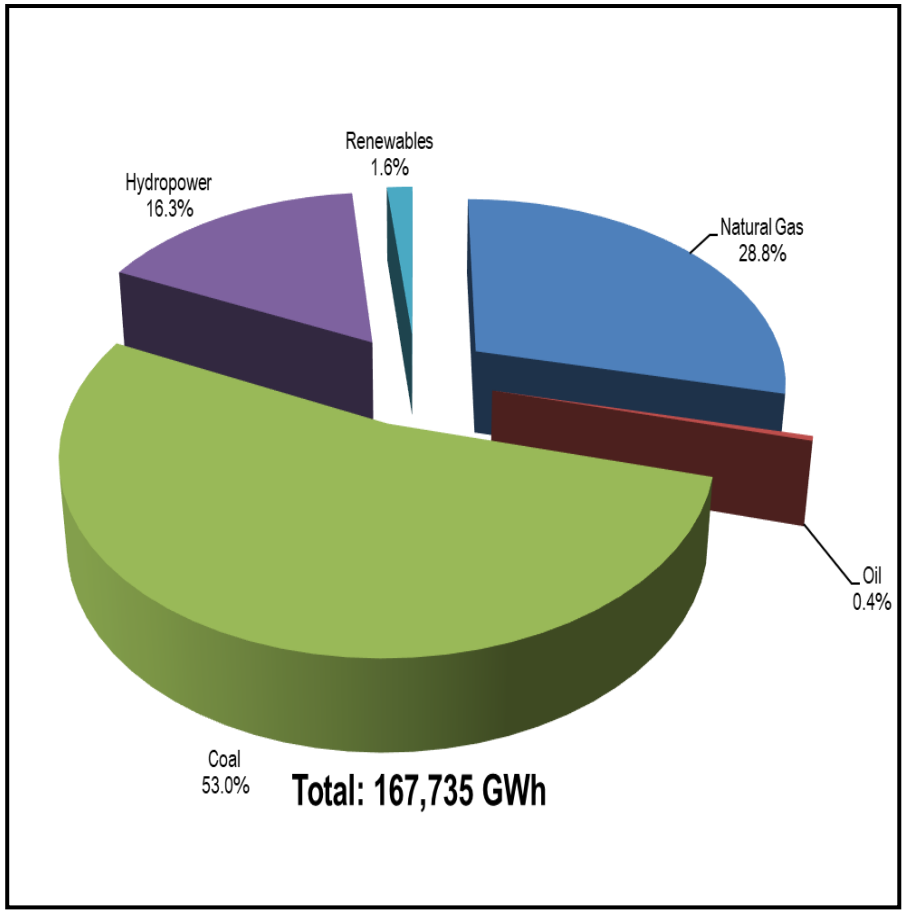
- Notes:
- (**): 1. Available Capacity for Peninsular Malaysia was based on Tested Annual Available Capacity (TAAC)
- 2. Available Capacity for Sabah is based on Dependable Capacity

Energy Input into Power Stations



Note: Figures exclude fuel consumption for self-generation plants

Electricity Generation Mix



Note: Figures exclude electricity generation for self-generation plants

Electricity Consumption, 2020

Region	Industry		Commercial		Residential		Transport		Agriculture		Total
	GWh	%	GWh	%	GWh	%	GWh	%	GWh	%	GWh
Peninsular Malaysia	49,987	67.2	35,698	88.3	31,459	86.7	390	100.0	687.7	100.0	118,222
Sarawak	22,847	30.7	2,581	6.4	2,730	7.5	-	-	-	-	28,158
Sabah	1,582	2.1	2,171	5.4	2,117	5.8	-	-	-	-	5,870
Total	74,416	100.0	40,451	100.0	36,306	100.0	390	100.0	688	100.0	152,250

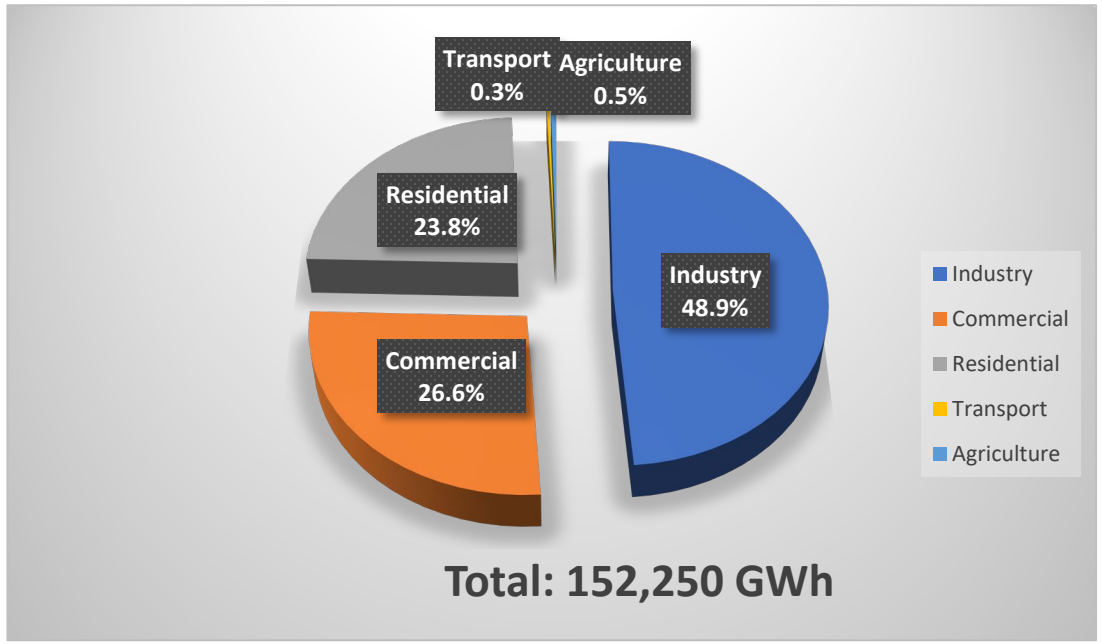
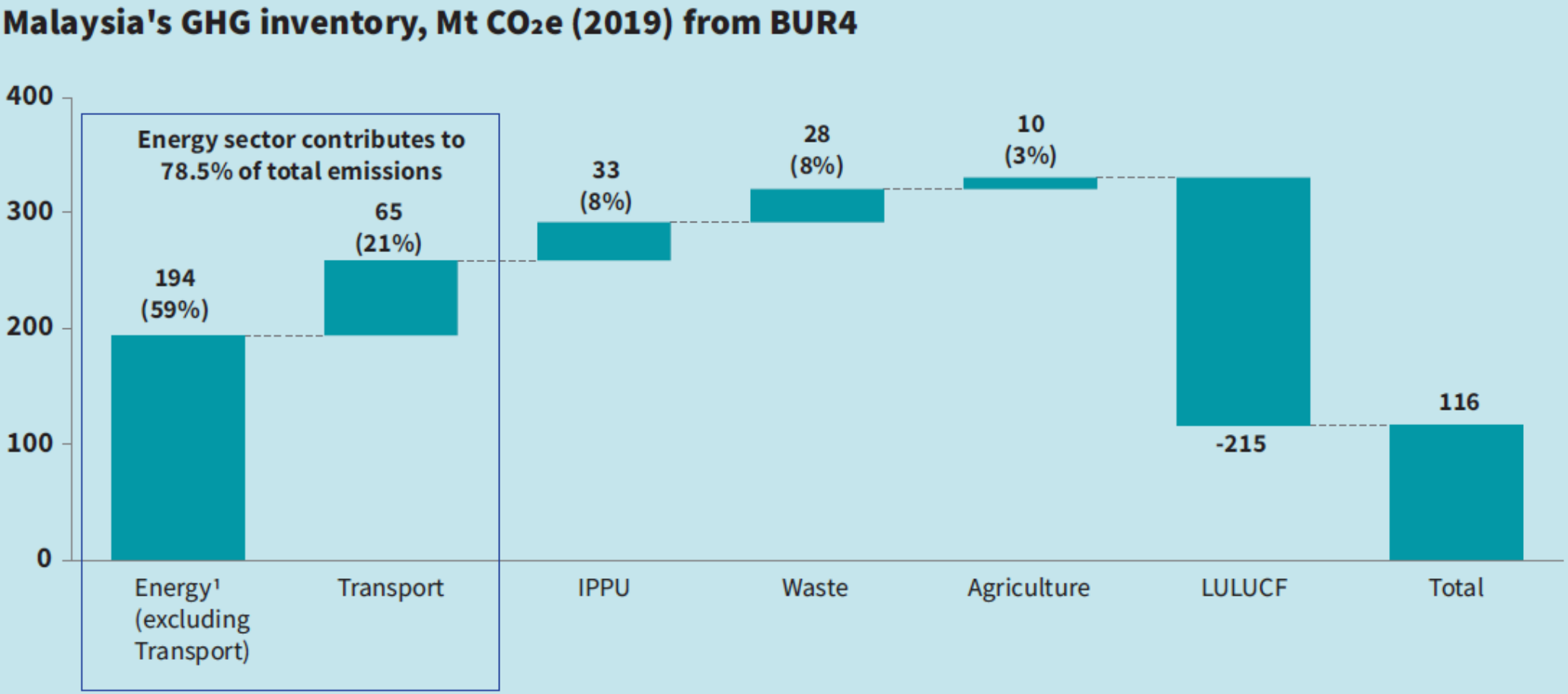


Exhibit 1: Malaysia's GHG Inventory in 2019



1 *Refers to emissions from energy industries, manufacturing industries and construction, other sectors and non-specified energy emissions, and fugitive emissions from fuels.*

Source: Malaysia's Fourth Biennial Update Report submitted to the UNFCCC (2022)

Energy Related Policy

Malaysia Twelfth Plan (RMKe-12)

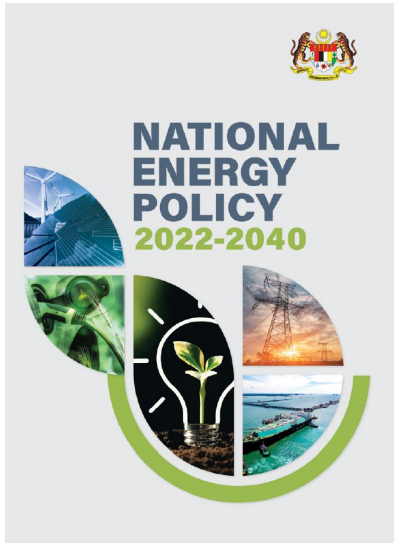
Chapter 8:

Advancing Green Growth for Sustainability and Resilience

Chapter 9:

Enhancing Energy Sustainability and Transforming the Water Sector

National Energy Policy, 2022 – 2040 (NEP)



The Low Carbon Country Aspiration 2040 (LCNA) outlines:

9 LCNA Selected Targets Major Energy Mix Targets Implementation through 4 Malaysian Plans 12th RM (2021-2025), 13th RM (2026-2030), 14th RM (2031-2035) and 15th RM (2036-2040)

Energy Related Plan / Report

Published

- Malaysia Renewable Energy Roadmap (MyRER)
- Malaysia Energy Transition Outlook (METO)
- National Low Carbon Cities Masterplan
- Green Technology Master Plan Malaysia 2017 – 2030
- Low Carbon Mobility Blueprint

In development

- Carbon Pricing Instrument (MOF)
- Long-term Low Development Strategy (PETRA)
- Nationally Determined Contribution (PETRA)
- National ESG Industry Framework (MITI)
- New Industrial Master Plan (MITI)
- Chemical Industry Roadmap (MITI)
- Hydrogen Economy and Technology Roadmap (MOSTI)
- Biomass Action Plan (KPK)

Senarai tidak terhad

Bottlenecks Faced in Formulating Energy Related Policy

1. How to find a balance point in Energy Trilemma?
2. How to change the mindset of people against the heavy subsidised energy supplies such as electricity and fuel?
3. How to meet the target of Net Zero 2025 without or minimised the negative impacts to the industries?

Program Expectation

To equip myself with enough of practical knowledge and data analytic skill in formulating the energy policy in future.

To understand the dynamic of Japanese officials when formulating the energy policy

Thank You