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HANDBOOK OF ENERGY & ECONOMIC STATISTICS OF INDONESIA

2019

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2019

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Preface

The update on the Handbook of Energy & Economy Statistics of Indonesia, is an effort of the Center for Data and Information Technology on Energy Mineral Resources (CDI-EMR) to provide accurate and reliable data and information on energy and economy joined into a book. Such energy and economic data and information are kept by various sources, at many locations, and generally in avariety of formats unready for energy analysis. In addition, the data and information are generally not provided with sufficient explanation or clarification. The standardization of energy and economic data is a critical problem. Currently, researchers at various institutions, do not have common terminology on energy economy. In some cases, disagreement may arise over a different use of terminology. This subsequently leads to inaccurate energy analysis.

The Current problem related to energy data in Indonesia is the unavailability of demand-side data. To date, energy data are actually derived from supply-side data. In other words, consumption data are assumed to be identical with sales data. Such assumption maybe quite accurate, provided there is no disparity between domestic and international energy prices. The disparity in energy prices will contribute to the misuse of energy. Thus, the sales data of an energy commodity cannot be regarded the same as the consumption data of the commodity. For that reason, this statistics handbook, presents the energy consumption data made by computations based on a number of energy parameters.

We hope the process to standardize the energy and economic data and information in the future will be continued as a part of updating the Handbook, The CDI-EMR will continue to coordinate with all relevant parties within the Ministry of Energy and Mineral Resources (MEMR) as well as with statistical units outside the MEMR.

We would like to appreciate all parties involved for their thorough work and patience in preparing this book. May God the Almighty always guides us in utilizing our energy resources wisely for the maximum benefit of the Indonesian people.

Jakarta, July 2020
Head of Center for Data and Information
Technology on Energy and Mineral Resources

Introduction

This Handbook of Energy and Economic Statistics of Indonesia contains the data on Indonesia's energy and economy from 2009 through 2019. This handbook covering estimated energy demand of every sector. The tables and annexes are arranged as follows:

A. Tables

The tables are shown in 6 Main Categories, as follows:

- Table 1 Energy and Economic Indicators
- Table 2 Indonesia's Energy Balance Table
- Table 3 Energy Supply and Demand
- Table 4 Energy Price
- Table 5 Energy Demand by Sector
- Table 6 Energy Supply by Energy Resources

B. Annexes

Annex 1. Methodology and Table Explanation, clarifying the methodologies adopted in preparing the tables data.

Annex 2. Glossary, containing important terms used in the tables and the respective units.

Annex 3. Conversion Factors, presenting the list of multiplication factors used to convert various original units of energy into BOE (Barrel Oil Equivalent).

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Indonesia's Concise Energy Profile 2019

A. SOCIO ECONOMY

Territorial Area :	8,300,000.00	km^2
Land Area[1] :	1,916,906.77	km^2
Population :	268,074.57	Thousand People
Household :	68,700.74	Thousand Households

GDP Nominal

Total Amount :	15,833.94	Trillion Rupiah
Per Capita :	59,065.44	Thousand Rupiah per Year

B. ENERGY PRODUCTION

Primary Energy Production

Crude Oil :	272,025.41	Thousand Barrels
Natural Gas (net) :	2,371.58	BSCF
Coal :	616,159.59	Thousand Tonnes
Hydro Power :	21,160.85	GWh
Geothermal :	14,100.73	GWh

[1]) Sources : Statistic Indonesia 2019

C.	**FINAL ENERGY CONSUMPTION**	**1,007.26**	**Million BOE**
	Energy Consumption by Type		
	Coal :	167.41	Million BOE
	Fuel :	458.33	Million BOE
	Gas :	94.62	Million BOE
	Electricity :	159.11	Million BOE
	Briquette :	0.03	Million BOE
	LPG :	66.20	Million BOE
	Biomass :	61.39	Million BOE
	Biogas :	0.17	Million BOE
	Energy Consumption by Sector (Excluded non energy use)	**1,007.26**	
	Industry :	389.45	Million BOE
	Transportation :	414.98	Million BOE
	Household :	147.11	Million BOE
	Commercial :	43.94	Million BOE
	Other Sectors :	11.78	Million BOE
	Non Energy :	25.55	Million BOE
D.	**ELECTRIFICATION RATIO 2019**	**98.89**	**%**

01

ENERGY & ECONOMIC INDICATORS

2019 Handbook of Energy & Economic Statistics of Indonesia

1.1 GDP and Energy Indicator

	Unit	2009	2010	2011	2012		2013	2014	2015	2016	2017	2018	2019
GDP at 2010 Constant Price[1]	Trillion Rupiahs	-	6,864	7,288	7,727		8,156	8,565	8,983	9,435	9,913	10,425	10,949
GDP Nominal[1]	Trillion Rupiahs	5,606	6,864	7,832	8,616		9,546	10,570	11,526	12,407	13,590	14,838	15,834
GDP Nominal per Capita[1]	Thousand Rupiahs	26,485	27,029	33,461	33,582		32,464	41,916	45,120	47,957	51,891	55,990	59,065
Population[1]	Thousand	234,757	238,519	241,991	245,425		248,818	252,165	255,462	258,705	261,891	265,015	268,075
Number of Households[1]	Thousand	60,446	61,384	62,246	63,097		63,938	64,767	65,582	66,385	67,173	67,945	68,701
Primary Energy Supply	Thousand BOE	1,009,276	1,075,175	1,204,636	1,242,479		1,221,019	1,241,900	1,209,659	1,366,007	1,335,037	1,464,680	1,559,295
Primary Energy Supply per Capita	BOE / capita	4.30	4.51	4.98	5.06		4.91	4.92	4.74	5.28	5.10	5.53	5.82
Final Energy Consumption	Thousand BOE	604,536	669,597	753,142	816,875		747,855	761,386	759,624	738,080	771,509	871,345	945,867
Final Energy Consumption per Capita	BOE / capita	2.58	2.81	3.11	3.33		3.01	3.02	2.97	2.85	2.95	3.29	3.53

	2009-2010	2010-2011	2011-2012	2012-2013		2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019
GDP at 2010 Constant Price[1]	-	6.17	6.03	5.56		5.01	4.88	5.03	5.07	5.17	5.02
GDP Nominal[1]	22.44	14.10	10.01	10.80		10.72	9.05	7.64	9.54	9.19	6.71
GDP Nominal per Capita[1]	8.66	16.27	4.91	9.29		9.25	7.64	6.29	8.20	7.90	5.49
Population[1]	1.60	1.46	1.42	1.38		1.35	1.31	1.27	1.23	1.19	1.15
Number of Households[1]	1.55	1.40	1.37	1.33		1.30	1.26	1.22	1.19	1.15	1.11
Primary Energy Supply	6.53	12.04	3.14	-1.73		1.16	-2.06	12.93	-2.27	9.71	6.46
Final Energy Consumption	10.76	12.48	8.46	-8.45		1.81	-0.23	-2.84	4.53	12.94	8.55
Final Energy Consumption per Capita	9.02	10.86	6.94	-9.70		0.46	-1.52	-4.05	3.26	11.61	7.31

Sources : 1) BPS, Statistics Indonesia
Note : Primary Energy Supply and Final Energy Consumption is excluded biomass

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1.2 Macro Economic

Year	GDP at 2010 Constant Prices					GDP at 2010 Constant Prices			GDP Nominal (Current Prices)	Index GDP Deflator
	GDP	Private Consumption	Government Consumption	Fixed Capital Formation		Stock Change	Export of Goods and Services	Import of Goods and Services		
	Billion Rupiahs	Billion Rupiahs	Billion Rupiahs	Billion Rupiahs		Billion Rupiahs	Billion Rupiahs	Billion Rupiahs	Billion Rupiahs	
2009[1])	-	-	-	-		-	-	-	5,606,203	-
2010	6,864,133	3,786,063	618,178	2,127,841		129,095	1,667,918	1,537,720	6,864,133	100
2011	7,287,635	3,977,289	652,292	2,316,359		118,207	1,914,268	1,768,822	7,831,726	107
2012	7,727,083	4,195,788	681,819	2,527,729		174,183	1,945,064	1,910,300	8,615,705	112
2013	8,156,498	4,423,417	727,812	2,654,375		124,454	2,026,114	1,945,867	9,546,134	117
2014	8,564,867	4,651,018	736,283	2,772,471		163,583	2,047,887	1,987,114	10,569,705	123
2015	8,982,517	4,881,631	775,427	2,911,356		112,848	2,004,467	1,862,939	11,526,333	128
2016	9,434,632	5,126,028	774,298	3,041,587		133,400	1,973,040	1,817,369	12,406,774	132
2017	9,912,928	5,379,629	790,756	3,228,763		126,884	2,146,565	1,964,819	13,589,826	137
2018	10,425,397	5,651,454	828,683	3,443,242		197,370	2,287,090	2,198,263	14,838,312	142
2019	10,949,244	5,936,400	855,597	3,596,364		129,954	2,267,120	2,029,280	15,833,943	145

Source : BPS, Statistics Indonesia
Note : 1) Data is not available for GDP at 2010 constant prices

1.3 Price Index

Year	Wholesale Price Index[1]			Consumer Price Index[2]	Coal Price Index for Power Plant[3]
	Export	Import	General		
2009	134.10	156.61	162.71	115.06	149.69
2010	137.80	160.90	170.59	125.17	134.23
2011	154.11	177.37	183.31	129.91	142.80
2012	163.15	189.17	192.69	135.49	152.53
2013	145.16	134.43	128.76	146.84	191.84
2014	138.73	137.37	132.44	111.53	205.32
2015	130.47	134.19	138.26	122.99	135.41
2016	133.31	128.10	149.16	126.71	124.94
2017	144.69	135.00	156.09	131.28	159.97
2018	162.29	147.35	164.60	135.39	156.79
2019	159.59	149.98	166.13	139.07	156.70

Source : BPS, Statistics Indonesia
Note : 1) Starting 2009 Wholesale Price Index using 2005 as base year (2005=100);
Starting November 2013 using 2010 as base year (2010=100).
2) Since June 2008, CPI has been based on a consumption pattern obtained from 2007 Cost of Living Survey in 66 cities (2007=100);
Since January 2014, CPI has been based on a consumption pattern obtained from 2012 Cost of Living Survey in 82 cities (2012=100).
3) Coal Price Index for Power Plant using 2008 as base year (2008=100) and the unit is (Rp/ton).

1.4 Population and Employment

Year	Population	Labor Force	Household	Unemployment	Unemployment Percentage (toward labor force)
	Thousand People	Thousand People	Thousand Household	Thousand People	(%)
2009	234,757	113,833	60,446	8,963	7.9
2010	238,519	116,528	61,384	8,320	7.1
2011	241,991	117,370	62,630	7,700	6.6
2012	245,425	118,053	63,097	7,245	6.1
2013	248,818	118,193	63,938	7,389	6.3
2014	252,165	121,873	64,767	7,245	5.9
2015	255,462	114,819	65,582	7,561	6.6
2016	258,705	118,412	66,385	7,032	5.9
2017	261,891	121,020	67,173	7,010	5.8
2018	265,015	127,070	67,945	6,870	5.4
2019	268,075	126,515	68,701	7,046	5.6

Source : BPS, Statistics Indonesia

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1.5 International Trade

Year	Balance of Trade		Balance of Payment		Balance of Payment		Exchange Rate Rupiah to US$	US$ Deflator[1)]
	Export	Import	Current Account		Capital and Financial Account	Overall Balance		
	Million US$		Million US$		Million US$			
2009	119,646	88,714	10,628		4,852	15,481	9,400	1.0962
2010	158,074	127,447	5,144		26,620	31,765	8,991	1.1066
2011	200,788	190,948	1,685		13,636	15,321	9,068	1.0331
2012	207,073	207,621	-24,418		-24,368	491	9,670	1.0517
2013	197,060	200,548	-29,115		22,010	-7,105	12,189	1.0673
2014	175,981	178,179	-4,159		5,087	928	12,440	1.0869
2015	150,366	142,695	-17,519		16,860	-659	13,795	1.1001
2016	145,186	135,653	-16,790		28,617	11,826	13,436	1.1142
2017	168,828	156,986	-16,196		28,732	12,536	13,548	1.0795
2018	180,215	188,711	-30,633		25,219	-5,414	14,481	1.1038
2019	167,497	170,727	-30,387		36,690	6,303	13,901	1.1235

Source : 1. BPS, Statistics Indonesia
2. Bank of Indonesia
Note : 1) Derived from World Economic Outlook Database, April 2019, IMF

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1.6 Share of Primary Energy Supply Mix

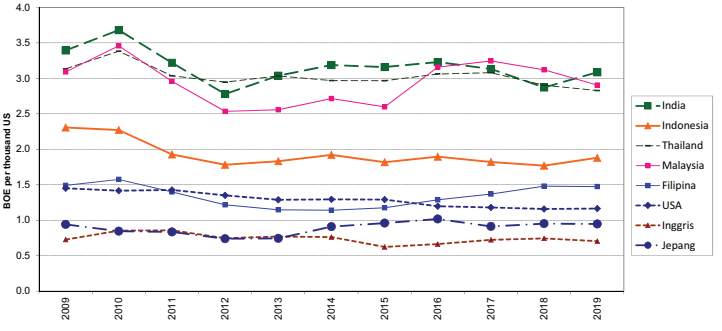
By Type (excluding Biomass)

(%)

Type of Energy	2009	2010	2011	2012	2013		2014	2015	2016	2017	2018	2019
Oil	47.35	43.24	46.77	47.43	48.13		47.06	42.12	44.90	41.42	38.71	35.03
Coal	23.43	26.24	27.74	27.77	24.79		25.76	30.14	27.84	30.53	33.00	37.28
Gas	24.87	25.11	21.73	20.88	22.12		21.85	22.77	21.12	21.39	19.68	18.51
New Renewable Energy	4.35	5.42	3.77	3.92	4.96		5.32	4.97	6.13	6.66	8.61	9.18
Hydropower	2.79	3.86	2.32	2.35	3.15		3.06	2.90	3.33	3.57	2.74	2.52
Geothermal	1.48	1.42	1.26	1.22	1.25		1.30	1.35	1.28	1.52	1.78	1.68
Solar	n.a	n.a	n.a	n.a	n.a		n.a	n.a	n.a	n.a	0.02	0.03
Wind	n.a	n.a	n.a	n.a	n.a		n.a	n.a	n.a	n.a	0.03	0.08
Other Renewables	n.a	n.a	n.a	n.a	n.a		n.a	n.a	n.a	n.a	2.08	1.92
Biofuel	0.08	0.13	0.19	0.35	0.56		0.96	0.71	1.51	1.57	1.93	2.95
Biogas	n.a	n.a	n.a	n.a	n.a		n.a	0.01	0.01	0.01	0.01	0.01

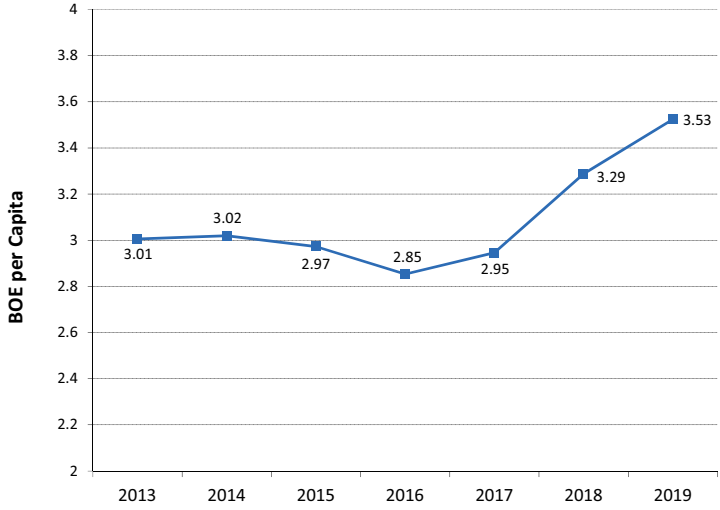
Note : Oil including crude oil, petroleum product and LPG
Coal including coal and briquette
Gas including natural gas and LNG
Solar PP including solar photovoltaic (PV), Solar-powered street lighting and solar-powered energy saving lamp
Other renewables is included biomass PP, biogas PP, waste PP, and hybrid PP
Biofuel : liquid biofuel (biodiesel)

1.7. Comparison of Primary Energy Intensity in Some Countries



Sources : BP Statistical Review of World Energy 2020 and World Economic Outlook Database April 2019, IMF
Note : GDP Primary Energy Consumption using US$ fix rate in year 2000

1.8. Intensity of Final Energy Consumption per Capita



02

ENERGY BALANCE TABLE

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Indonesia Energy Balance Table 2019

(Thousand BOE)

		Hydro Power	Geo-thermal	Solar PP & Solar PV	Wind PP	Other Re-newables	Solar-Powered Public Street Lighting & Energy Saving Lamp	Biomass		Coal	Bri-quette	Natural Gas	Crude Oil	Fuel	Biofuel	Biogas	LPG	Electric-ity	LNG	Total
1	**Primary Energy Supply**	**39,329**	**26,193**	462	**1,186**	**29,906**	**12**	**61,393**		**581,356**	**0**	**380,634**	**341,662**	**155,035**	**45,927**	**167**	**49,473**	**0**	**-92,048**	**1,620,688**
	a. Production	39,329	26,193	462	1,186	29,906	12	61,393		2,587,870	0	425,936	272,025	0	54,486	167	0	0	0	3,498,966
	b. Import	0	0	0	0	0	0	0		31,043	0	0	75,296	141,294	0	0	48,715	0	0	296,349
	c. Export	0	0	0	0	0	0	0		-1,908,901	0	-45,302	-25,716	-795	-8,559	0	-4	0	-92,048	-2,081,325
	d. Stock Change	0	0	0	0	0	0	0		-128,656	0	0	20,057	14,536	0	0	761	0	0	-93,302
2	**Energy Transformation**	**-39,329**	**-26,193**	-462	**-1,186**	**-29,906**	**-12**	**0**		**-413,945**	**28**	**-222,957**	**-334,963**	**304,150**	**-41,494**	**0**	**16,725**	**181,110**	**122,179**	**-486,255**
	a. Refinery	0	0	0	0	0	0	0		0	0	-7,349	-334,963	280,204	0	0	7,005	0	0	-55,102
	b. Gas Processing	0	0	0	0	0	0	0		0	0	-153,452	0	0	0	0	9,721	0	155,360	11,629
	c. LNG Regasification	0	0	0	0	0	0	0		0	0	31,607	0	0	0	0	0	0	-31,607	0
	d. Coal Processing Plant	0	0	0	0	0	0	0		-33	28	0	0	0	0	0	0	0	0	-5
	e. Biofuel Blending	0	0	0	0	0	0	0		0	0	0	0	41,494	-41,494	0	0	0	0	0
	f. Power Plant	-39,329	-26,193	-462	-1,186	-29,906	-12	0		-413,911	0	-93,764	0	-17,549	0	0	0	181,110	-1,574	-442,777
	- State Own Utility (PLN)	-18,347	-7,635	-24	0	0	0	0		-279,241	0	-77,488	0	-17,555	0	0	0	118,642	-1,574	-283,223
	- Independent Power Producer (Non-PLN)	-12,388	-18,558	-232	-1,181	-896	0	0		-134,670	0	-16,276	0	6	0	0	0	52,349	0	-131,845
	- Off Grid	-89	0	-206	-5	-29,010	-12	0		0	0	0	0	0	0	0	0	7,312	0	-22,010
	- IO	-8,506	0	0	0	0	0	0		0	0	0	0	0	0	0	0	2,807	0	-5,699
3	**Own Use and Losses**	**0**	**0**	**0**	**0**	**0**	**0**	**0**		**0**	**0**	**-45,733**	**-6,699**	**-857**	**0**	**0**	**0**	**-21,990**	**-30,131**	**-105,410**
	a. During Transformation	0	0	0	0	0	0	0		0	0	-7,349	-6,699	0	0	0	0	-6,616	0	-20,664
	b. Energy Use/ Own Use	0	0	0	0	0	0	0		0	0	-38,384	0	0	0	0	0	0	0	-38,384
	c. Transmission & Distribution	0	0	0	0	0	0	0		0	0	0	0	-857	0	0	0	-15,374	-30,131	-46,362
4	**Final Energy Supply**	**0**	**0**	**0**	**0**	**0**	**0**	**61,393**		**167,412**	**28**	**111,944**	**0**	**458,327**	**4,433**	**167**	**66,198**	**159,120**	**0**	**1,029,022**
5	**Statistics Discrepancy**	**0**	**0**	**0**	**0**	**0**	**0**	**0**		**0**	**0**	**-8,224**	**0**	**0**	4,433	0	**0**	**7**	**0**	**-3,784**
6	**Final Energy Consumption**	**0**	**0**	**0**	**0**	**0**	**0**	**61,393**		**167,412**	**28**	**94,621**	**0**	**458,327**	**0**	**167**	**66,198**	**159,113**	**0**	**1,007,260**
	a. Industry	0	0	0	0	0	0	42,862		167,412	28	94,160	0	26,685	0	0	959	57,342	0	389,449
	b. Transportation	0	0	0	0	0	0	0		0	0	198	0	414,598	0	0	0	185	0	414,981
	c. Household	0	0	0	0	0	0	17,211		0	0	232	0	2,871	0	167	63,481	63,149	0	147,110
	d. Commercial	0	0	0	0	0	0	1,320		0	0	31	0	2,391	0	0	1,758	38,438	0	43,937
	e. Other Sector	0	0	0	0	0	0	0		0	0	0	0	11,782	0	0	0	0	0	11,782
7	**Non Energy Use**	**0**	**0**	**0**	**0**	**0**	**0**	**0**		**0**	**0**	**25,546**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**25,546**

Note : Biofuel consists of Biodiesel while Biosolar is included in the Fuel category
Other Renewables is included Biomass PP, Biogas PP, Waste PP & Hybrid PP

03

ENERGY SUPPLY AND DEMAND

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3.1 Primary Energy Supply by Sources

(BOE)

Year	Coal	Crude Oil & Product	Natural Gas & Product	Hydro Power	Geother-mal	Solar PP & Solar PV		Wind	Other Re-newables[1)]	Solar-Powered Public Street Lighting & Energy Saving Lamp	Biomass	Biofuel	Biogas	Total
2009	236,439,000	477,929,923	251,035,250	28,126,827	14,973,198	n.a		n.a	n.a	n.a	109,029,170	771,965	n.a	1,118,305,332
2010	282,156,213	464,852,996	269,942,185	41,510,591	15,266,074	n.a		n.a	n.a	n.a	107,822,916	1,446,623	n.a	1,182,997,598
2011	334,142,760	563,378,573	261,708,332	27,957,823	15,119,152	n.a		n.a	n.a	n.a	105,354,823	2,328,869	n.a	1,309,991,890
2012	345,000,022	589,342,626	259,456,414	29,211,020	15,129,340	n.a		n.a	n.a	n.a	99,383,737	4,339,870	n.a	1,341,864,860
2013	302,694,000	587,652,963	270,134,751	38,494,094	15,245,038	n.a		n.a	n.a	n.a	95,374,094	6,798,481	n.a	1,316,395,279
2014	319,956,003	584,459,891	271,375,371	37,950,252	16,191,566	n.a		n.a	n.a	n.a	92,873,723	11,966,513	n.a	1,328,006,955
2015	364,619,216	509,485,005	275,465,640	35,040,466	16,337,878	n.a		n.a	n.a	n.a	84,768,404	8,590,374	120,162	1,294,427,144
2016	380,310,000	613,390,738	288,546,633	45,452,580	17,537,710	n.a		n.a	n.a	n.a	79,987,014	20,625,241	144,549	1,445,994,464
2017	407,526,000	552,942,024	285,604,946	47,599,892	20,259,621	n.a		n.a	n.a	n.a	75,005,394	20,947,287	157,140	1,410,042,305
2018	483,335,998	566,987,912	288,310,815	40,204,916	26,040,932	355,896		466,082	30,493,437	8,795	67,522,118	28,312,237	162,745	1,532,201,883
2019	581,356,407	546,169,969	288,586,414	39,329,376	26,193,174	461,856		1,185,873	29,906,203	12,217	61,392,721	45,927,085	166,591	1,620,687,886

Note : Changes in Biofuel Assumptions as Biodiesel (pure)

1) Other Renewables is included Biomass PP, Biogas PP, Waste PP & Hybrid PP

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3.2 Final Energy Consumption by Sector

3.2.1 Energy Consumption (included Biomass)

(BOE)

Sector	2009	2010	2011	2012	2013		2014	2015	2016	2017	2018	2019
Industrial	304,791,448	349,040,463	375,210,044	369,704,681	283,560,959		291,220,893	288,649,519	265,900,205	273,894,568	329,458,546	389,448,976
Households	143,915,035	144,699,597	145,569,638	147,629,368	149,215,259		152,605,345	149,099,799	149,406,672	149,183,314	151,215,954	147,109,968
Commercial	29,558,720	30,935,244	34,131,850	37,135,487	39,236,140		40,249,580	39,286,992	41,369,026	42,378,126	42,423,847	43,937,195
Transportation	209,968,398	230,345,870	277,512,762	329,520,051	341,409,711		342,781,960	345,525,210	341,243,475	363,776,479	399,668,131	414,981,271
Other	25,293,606	22,340,493	27,220,338	33,709,215	31,105,254		28,694,657	21,704,642	19,864,507	16,999,541	13,579,180	11,782,345
Final Energy Consumption	713,527,207	777,361,667	859,644,632	917,698,803	844,527,323		855,552,435	844,266,162	817,783,885	846,232,028	936,345,659	1,007,259,754
Non Energy Utilization	28,434,245	28,381,515	28,306,244	29,147,610	28,369,578		28,468,567	29,928,818	25,158,961	25,142,679	25,567,690	25,546,489

3.2.2 Commercial Energy Consumption (excluded Biomass)

(BOE)

Sector	2009	2010	2011	2012	2013		2014	2015	2016	2017	2018	2019
Industrial	260,270,375	305,723,179	331,486,317	326,972,929	239,162,167		246,033,257	243,821,080	221,922,967	229,554,461	286,282,562	346,586,623
Households	80,832,849	81,632,635	85,426,266	92,489,973	99,687,947		106,398,267	110,632,078	115,019,233	120,133,665	128,196,162	129,899,309
Commercial	28,171,174	29,554,636	32,758,145	35,768,650	37,876,138		38,896,378	37,940,555	40,029,321	41,045,120	41,097,507	42,617,486
Transportation	209,968,398	230,345,870	277,512,762	329,520,051	341,409,711		342,781,960	345,525,210	341,243,475	363,776,479	399,668,131	414,981,271
Other	25,293,606	22,340,493	27,220,338	33,709,215	31,105,254		28,694,657	21,704,642	19,864,507	16,999,541	16,100,231	11,782,345
Final Energy Consumption	604,536,402	669,596,813	754,403,828	818,460,818	749,241,218		762,804,518	759,623,565	738,079,504	771,509,266	871,344,592	945,867,033
Non Energy Utilization	28,434,245	28,381,515	28,306,244	29,147,610	28,369,578		28,468,567	29,928,818	25,158,961	25,142,679	25,567,690	25,546,489

Note : Final Energy Consumptions is excluded Non Energy Utilization

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3.3 Final Energy Consumption by Type

(Thousand BOE)

Year	Biomass	Coal[1)]	Natural Gas	Fuel	Bio Gasoil[2)]		Biogas	Briquette	LPG	Electricity	Total
2009	108,991	82,587	90,153	309,000	15,694		n.a	220	24,384	82,499	713,527
2010	107,765	137,489	87,023	294,249	27,939		n.a	123	32,067	90,707	777,362
2011	105,241	144,502	94,190	334,727	45,804		n.a	121	37,060	97,998	859,645
2012	99,238	123,022	97,512	389,030	59,227		n.a	130	42,883	106,656	917,699
2013	95,286	42,729	98,546	378,049	67,025		n.a	130	47,801	114,962	844,527
2014	92,748	55,064	97,417	363,713	72,868		n.a	58	51,942	121,743	855,552
2015	84,643	70,228	95,354	323,331	91,834		120	50	54,361	124,344	844,266
2016	79,704	63,504	77,434	329,094	78,760		145	107	56,626	132,411	817,784
2017	74,723	58,800	89,029	331,454	93,882		157	107	61,299	136,781	846,232
2018	67,522	100,506	95,646	320,740	130,276		163	36	64,471	156,985	936,346
2019	61,393	167,412	94,621	266,439	191,889		167	28	66,198	159,113	1,007,260

Note : Final Energy Consumptions is exclude Non Energy Utilization
1) There is an increase of smelter commissioning in 2018 and optimum operation of smelter in 2019
2) Bio Gasoil consumption is blending product of biodiesel

3.4 Share of Final Energy Consumption by Sector

(%)

Year	Industry	Household	Commercial	Transpor-tation	Other
2009	43.05	13.37	4.66	34.73	4.18
2010	45.66	12.19	4.41	34.40	3.34
2011	43.78	11.33	4.50	36.79	3.61
2012	39.95	11.30	4.37	40.26	4.12
2013	31.92	13.31	5.06	45.57	4.15
2014	32.25	13.95	5.10	44.94	3.76
2015	32.10	14.56	4.99	45.49	2.86
2016	30.07	15.58	5.42	46.23	2.69
2017	29.75	15.57	5.32	47.15	2.20
2018	32.86	14.71	4.72	45.87	1.85
2019	36.64	13.73	4.51	43.87	1.25

Note : Commercial Energy (excluded biomass)

3.5 Share of Final Energy Consumption by Type

(%)

Year	Coal	Natural Gas	Fuel	Biofuel	Biogas	LPG	Electricity
2009	13.70	14.91	51.11	2.60	n.a	4.03	13.65
2010	20.55	13.00	43.94	4.17	n.a	4.79	13.55
2011	19.17	12.49	44.37	6.07	n.a	4.91	12.99
2012	15.05	11.91	47.53	7.24	n.a	5.24	13.03
2013	5.72	13.15	50.46	8.95	n.a	6.38	15.34
2014	7.23	12.77	47.68	9.55	n.a	6.81	15.96
2015	9.25	12.55	42.56	12.09	0.02	7.16	16.37
2016	8.62	10.49	44.59	10.67	0.02	7.67	17.94
2017	7.64	11.54	42.96	12.17	0.02	7.95	17.73
2018	11.57	11.01	36.92	14.99	0.02	7.42	18.07
2019	17.70	10.00	28.17	20.29	0.02	7.00	16.82

Note : Exclude biomass

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ENERGY PRICES

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4.1 Crude Oil Price

(US$ per Barrel)

Crude Oil Type	2010	2011	2012	2013		2014	2015	2016	2017	2018	2019
SLC	81.44	113.63	115.59	108.15		98.63	49.39	40.98	51.98	68.20	63.10
Arjuna	78.91	112.47	111.75	104.23		94.82	48.54	39.35	51.20	67.65	63.42
Attaka	80.75	114.38	114.47	107.57		97.96	51.20	41.82	52.86	69.78	65.14
Cinta	77.02	110.50	114.07	106.51		96.83	48.22	40.00	50.59	66.65	61.79
Duri	75.07	107.57	112.31	104.44		94.67	47.60	37.63	49.47	65.76	64.75
Widuri	77.12	110.55	114.16	106.05		97.03	48.44	40.13	50.76	66.82	61.99
Belida	80.28	114.14	115.19	109.69		99.63	52.62	43.15	53.33	70.25	64.87
Senipah Condensate	78.76	109.02	108.97	106.48		98.25	52.92	43.44	53.31	69.57	59.89
Average [1)]	79.40	111.55	112.73	105.85		96.51	49.21	40.13	51.19	67.47	62.37

Sources : Oil and Gas Statistics - Directorate General of Oil and Gas
Note : 1) Arithmatic Average Indonesian Crude Oil Price from 56 type of crude

4.2 International Gas Price

(US$/MMBTU)

Year	LNG	Natural Gas			
	CIF on Japan	Average German Import Price	UK (Heren NBP Index)	USA (Henry Hub)	Canada (Alberta)
2009	9.06	8.52	4.85	3.89	3.38
2010	10.91	8.01	6.56	4.39	3.69
2011	14.73	10.61	9.03	4.01	3.47
2012	16.75	11.03	9.46	2.76	2.27
2013	16.17	10.72	10.63	3.71	2.93
2014	16.33	9.11	8.22	4.35	3.87
2015	10.31	6.61	6.53	2.60	2.01
2016	6.94	4.93	4.69	2.46	1.55
2017	8.10	5.62	5.80	2.96	1.60
2018	10.05	6.62	8.06	3.13	1.12
2019	9.94	5.25	4.47	2.53	1.27

Source : BP Statistical Review of World Energy, 2020

4.3 Average Price of LPG, LNG, and Coal FOB Export

Year	LPG	LNG	Coal[1)]
	US$/Thousand Tons	US$/MMBTU	US$/Ton
2009	545.49	6.95	70.70
2010	n.a	7.10	91.74
2011	n.a	10.40	118.40
2012	n.a	10.13	95.48
2013	n.a	9.63	82.92
2014	n.a	9.50	72.62
2015	n.a	6.57	60.13
2016	n.a	3.80	61.84
2017	n.a	5.50	85.92
2018	n.a	6.64	98.96
2019	n.a	5.68	77.89

Source : Directorate General of Oil and Gas and Bank Indonesia
Note : 1) Arithmatic average of Indonesian Coal Price Reference from Directorate General of Mineral and Coal

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4.4 Energy Price per Energy Unit[1])

Year	Gasoline (Ron 88)		Avtur[2)]		Kerosene			Gasoil CN 48		LPG (3 Kg)		LPG (12 Kg)[3)]		LPG (50 Kg)[3)]	
	Thousand Rp/BOE	US$/BOE	Thousand Rp/BOE	US$/BOE	Thousand Rp/BOE	US$/BOE		Thousand Rp/BOE	US$/ BOE	Thousand Rp/BOE	US$/ BOE	Thousand Rp/BOE	US$/ BOE	Thousand Rp/BOE	US$/ BOE
2009	775	82	949	101	422	45		695	74	499	53	686	73	860	91
2010	772	82	1,124	125	422	47		694	77	499	55	686	76	863	96
2011	772	85	1,455	161	422	47		694	76	499	55	686	76	863	95
2012	772	80	1,591	165	422	35		694	72	499	52	686	71	1,316	136
2013	954	78	1,694	139	422	35		775	64	499	41	747	61	1,569	129
2014	1,157	93	1,524	123	422	34		885	71	499	40	1,211	97	1,548	124
2015	1,238	90	1,562	113	422	31		1,052	76	499	36	1,440	104	1,428	104
2016	1,129	84	1,227	91	422	31		815	61	499	37	1,361	101	1,247	93
2017	1,110	82	1,418	105	422	31		794	59	499	37	1,410	104	1,461	108
2018	1,110	79	1,713	122	422	30		794	57	499	36	1,457	104	1,612	115
2019	1,110	80	1,664	120	422	30		794	57	499	36	1,457	105	1,612	116

Note : 1) At the official selling point
2) Revised data for 2017
3) Revised data for 2015-2018

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4.4 Energy Price per Energy Unit[1]) (continued)

Year	Coal		Electricity (Average)			Electricity (Average)			
			Household			Industry		Commercial	
	Thousand Rp/ BOE	US$/BOE	Thousand Rp/ BOE	US$/BOE		Thousand Rp/ BOE	US$/BOE	Thousand Rp/ BOE	US$/BOE
2009	171	18	961	102		1,051	112	1,453	155
2010	154	17	1,005	112		1,078	120	1,524	170
2011	163	18	1,008	111		1,135	125	1,551	171
2012	174	18	1,030	107		1,158	120	1,575	163
2013	219	18	1,129	93		1,299	107	1,822	149
2014	235	19	1,237	99		1,595	128	2,065	166
2015	155	11	1,365	99		1,864	135	2,095	152
2016	143	11	1,376	102		1,716	128	1,959	146
2017	183	14	1,723	127		1,776	131	2,032	150
2018	179	13	1,798	128		1,770	126	2,029	145
2019	179	13	1,793	129		1,796	129	2,053	148

Note : 1) At the official selling point

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ENERGY DEMAND BY SECTORS

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5.1.1 Energy Consumption in Industrial Sector

(in Original Unit)

Year	Biomass	Coal	Briquette	Gas	Fuel		Fuel				LPG	Electricity
					Kerosene	Gasoil CN 48	Biogasoil	IDO	Fuel Oil	Total Fuel		
	Thousand Ton			MMSCF	Kilo Liter		Kilo Liter				Thousand Ton	GWh
2009	19,375	19,664	62	654,428	273,095	4,969,575	n.a	106,861	3,575,286	8,924,817	69	46,204
2010	18,851	32,736	35	635,361	162,577	4,323,835	n.a	92,656	2,994,912	7,573,980	77	50,985
2011	19,028	34,405	34	666,195	113,409	5,686,105	n.a	107,511	3,134,555	9,041,580	73	54,725
2012	18,596	29,291	36	685,751	78,987	7,632,801	n.a	76,676	2,905,168	10,693,632	73	60,176
2013	19,321	10,174	36	689,312	72,018	7,217,679	n.a	66,244	1,672,420	9,028,360	81	64,381
2014	19,665	13,110	16	683,177	55,503	6,525,236	n.a	50,953	1,596,283	8,227,975	88	65,909
2015	19,508	16,721	14	687,560	43,950	4,570,091	n.a	44,423	1,395,820	6,054,284	92	64,079
2016	19,138	15,120	30	562,243	34,211	4,262,333	n.a	35,294	1,696,881	6,028,718	96	68,145
2017	19,296	14,000	30	627,499	35,067	3,839,186	n.a	82,275	1,761,804	5,718,331	104	72,238
2018	18,789	23,930	10	672,298	34,265	2,854,904	n.a	59,633	1,892,499	4,841,300	110	93,537
2019	18,653	39,860	8	666,518	32,328	333,792	2,053,730	62,200	1,521,869	4,003,918	113	93,544

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5.1.2 Energy Consumption in Industrial Sector

(in Energy Unit)

(Thousand BOE)

Year	Biomass	Coal	Briquette	Gas	Fuel			Fuel				LPG	Electric-ity	Total
					Kerosene	Gasoil CN 48		Biogasoil	IDO	Fuel Oil	Total Fuel			
2009	44,521	82,587	220	89,101	1,619	32,238		n.a	706	24,888	59,451	588	28,323	304,791
2010	43,317	137,489	123	85,729	964	28,049		n.a	612	20,848	50,473	655	31,254	349,040
2011	43,724	144,502	121	91,342	672	36,886		n.a	710	21,820	60,089	623	33,547	375,210
2012	42,732	123,022	130	94,013	468	49,515		n.a	507	20,223	70,713	621	36,888	369,705
2013	44,399	42,729	130	95,431	427	46,822		n.a	438	11,642	59,328	693	39,466	283,561
2014	45,188	55,064	58	94,230	329	42,330		n.a	337	11,112	54,108	753	40,402	291,221
2015	44,828	70,228	50	93,557	261	29,647		n.a	294	9,717	39,917	788	39,281	288,650
2016	43,977	63,504	107	75,820	203	27,650		n.a	233	11,812	39,899	821	41,773	265,900
2017	44,340	58,800	107	87,556	208	24,905		n.a	544	12,264	37,921	888	44,282	273,895
2018	43,176	100,506	36	95,177	203	18,520		n.a	394	13,174	32,291	934	57,338	329,459
2019	42,862	167,412	28	94,160	192	2,165		13,323	411	10,594	26,685	959	57,342	389,449

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5.1.3 Share of Energy Consumption in Industrial Sector

(%)

Year	Coal	Briquette	Gas	Fuel		Fuel				LPG	Electric-ity
				Kerosene		Gasoil CN 48	Biogasoil	IDO	Fuel Oil		
2009	31.73	0.08	34.23	0.62		12.39	n.a	0.27	9.56	0.23	10.88
2010	44.97	0.04	28.04	0.32		9.17	n.a	0.20	6.82	0.21	10.22
2011	43.59	0.04	27.94	0.20		11.13	n.a	0.21	6.58	0.19	10.12
2012	37.62	0.04	29.24	0.14		15.14	n.a	0.15	6.19	0.19	11.28
2013	17.87	0.05	40.48	0.18		19.58	n.a	0.18	4.87	0.29	16.50
2014	22.38	0.02	38.88	0.13		17.20	n.a	0.14	4.52	0.31	16.42
2015	28.80	0.02	38.37	0.11		12.16	n.a	0.12	3.99	0.32	16.11
2016	28.62	0.05	34.16	0.09		12.46	n.a	0.11	5.32	0.37	18.82
2017	25.61	0.05	38.14	0.09		10.85	n.a	0.24	5.34	0.39	19.29
2018	35.11	0.01	33.25	0.07		6.47	n.a	0.14	4.60	0.33	20.03
2019	48.30	0.01	27.17	0.06		0.62	3.84	0.12	3.06	0.28	16.54

5.2.1 Energy Consumption in Household Sector
(in Original Unit)

Year	Biomass	Gas	Kerosene	LPG	Biogas	Electricity
	Thousand Ton	MMSCF	Kilo Liter	Thousand Ton	Thousand m^3	GWh
2009	27,452	722	4,091,982	2,671	n.a	54,945
2010	27,445	751	2,436,009	3,564	n.a	59,825
2011	26,173	635	1,699,298	4,144	n.a	65,112
2012	23,996	748	1,183,526	4,824	n.a	72,133
2013	21,553	681	1,079,100	5,377	n.a	77,211
2014	20,108	636	831,641	5,843	n.a	84,086
2015	16,740	648	658,537	6,115	18,953	88,682
2016	14,965	761	512,604	6,370	22,800	93,635
2017	12,642	983	525,429	6,896	24,786	94,457
2018	10,018	1,131	513,411	7,252	25,670	102,712
2019	7,490	1,291	484,392	7,447	26,277	103,016

5.2.2 Energy Consumption in Household Sector

(in Energy Unit)

(Thousand BOE)

Year	Biomass	Gas	Kerosene	LPG	Biogas	Electricity	Total
2009	63,082	130	24,255	22,767	n.a	33,682	143,915
2010	63,067	135	14,439	30,386	n.a	36,673	144,700
2011	60,143	114	10,072	35,326	n.a	39,914	145,570
2012	55,139	134	7,015	41,123	n.a	44,217	147,629
2013	49,527	122	6,396	45,839	n.a	47,330	149,215
2014	46,207	114	4,929	49,810	n.a	51,545	152,605
2015	38,468	116	3,903	52,130	120	54,362	149,100
2016	34,387	137	3,038	54,302	145	57,398	149,407
2017	29,050	177	3,114	58,783	157	57,902	149,183
2018	23,020	203	3,043	61,824	163	62,963	151,216
2019	17,211	232	2,871	63,481	167	63,149	147,110

5.2.3 Share of Energy Consumption in Household Sector

(%)

Year	Gas	Kerosene	LPG	Biogas	Electricity
2009	0.16	30.01	28.17	n.a	41.67
2010	0.17	17.69	37.22	n.a	44.92
2011	0.13	11.79	41.35	n.a	46.72
2012	0.15	7.58	44.46	n.a	47.81
2013	0.12	6.42	45.98	n.a	47.48
2014	0.11	4.63	46.81	n.a	48.45
2015	0.11	3.53	47.12	0.11	49.14
2016	0.12	2.64	47.21	0.13	49.90
2017	0.15	2.59	48.93	0.13	48.20
2018	0.16	2.37	48.23	0.13	49.11
2019	0.18	2.21	48.87	0.13	48.61

5.3.1 Energy Consumption in Commercial Sector

(in Original Unit)

Year	Biomass	Gas	Fuel					LPG	Electricity
			Kerosene	Gasoil CN 48	Bio Gasoil	IDO	Total		
	Thousand Ton	MMSCF	Kilo Liter					Thousand Ton	GWh
2009	604	4,067	225,957	715,578	n.a	573	942,109	121	33,322
2010	601	5,364	134,515	622,597	n.a	497	757,609	120	37,073
2011	598	7,185	93,834	818,752	n.a	577	913,164	130	39,942
2012	595	9,050	65,354	1,099,061	n.a	411	1,164,826	134	41,574
2013	592	7,915	59,587	1,039,286	n.a	355	1,099,229	149	45,820
2014	589	8,057	45,923	939,580	n.a	273	985,777	162	48,452
2015	586	7,990	36,364	658,056	n.a	238	694,658	169	49,879
2016	583	7,084	28,306	613,741	n.a	189	642,236	176	54,002
2017	580	6,705	29,014	552,811	n.a	441	582,267	191	56,202
2018	577	181	28,350	411,083	n.a	320	439,753	201	59,570
2019	574	172	26,748	48,063	295,720	334	370,865	206	62,704

5.3.2 Energy Consumption in Commercial Sector

(in Energy Unit)

(Thousand BOE)

Year	Bio-mass	Gas	Fuel					LPG	Electri-city	Total
			Kero-sene	Gasoil CN 48	Bio Gasoil	IDO	Total-Fuel			
2009	1,388	730	1,339	4,642	n.a	4	5,985	1,029	20,426	29,559
2010	1,381	963	797	4,039	n.a	3	4,839	1,026	22,726	30,935
2011	1,374	1,290	556	5,311	n.a	4	5,871	1,112	24,485	34,132
2012	1,367	1,625	387	7,130	n.a	3	7,520	1,139	25,485	37,135
2013	1,360	1,422	353	6,742	n.a	2	7,098	1,269	28,088	39,236
2014	1,353	1,447	272	6,095	n.a	2	6,369	1,379	29,701	40,250
2015	1,346	1,435	216	4,269	n.a	2	4,486	1,444	30,576	39,287
2016	1,340	1,272	168	3,981	n.a	1	4,150	1,504	33,103	41,369
2017	1,333	1,204	172	3,586	n.a	3	3,761	1,628	34,452	42,378
2018	1,326	32	168	2,667	n.a	2	2,837	1,712	36,516	42,424
2019	1,320	31	159	312	1,918	2	2,391	1,758	38,438	43,937

5.3.3 Share of Energy Consumption in Commercial Sector

(%)

Year	Gas	Fuel				LPG	Electricity
		Kero-sene	Gasoil CN 48	Bio Gasoil	IDO		
2009	2.59	4.75	16.48	n.a	0.01	3.65	72.51
2010	3.26	2.70	13.67	n.a	0.01	3.47	76.89
2011	3.94	1.70	16.21	n.a	0.01	3.39	74.74
2012	4.54	1.08	19.93	n.a	0.01	3.18	71.25
2013	3.75	0.93	17.80	n.a	0.01	3.35	74.16
2014	3.72	0.70	15.67	n.a	0.00	3.55	76.36
2015	3.78	0.57	11.25	n.a	0.00	3.80	80.59
2016	3.18	0.42	9.95	n.a	0.00	3.76	82.70
2017	2.93	0.42	8.74	n.a	0.01	3.97	83.94
2018	0.08	0.41	6.49	n.a	0.01	4.17	88.85
2019	0.07	0.37	0.73	4.50	0.01	4.12	90.19

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5.4.1 Energy Consumption in Transportation Sector

(in Original Unit)

Year	Gas	Fuel							Fuel							Electricity
		Avgas	Avtur	Gasoline RON 88	Gasoline RON 92	Gasoline RON 95+98+100	Gasoline RON 90	Gasoil CN 51	Gasoil CN 53	Kerosene	Gasoil CN 48	Bio Gasoil	Fuel Oil	IDO	Total Fuel	
	MMSCF	Kilo Liter							Kilo Liter							GWh
2009	1,066	1,687	2,760,678	20,802,405	460,148	104,388	n.a	1,955	n.a	1,807	8,122,597	2,306,017	69,539	4,264	34,761,532	111
2010	1,088	2,231	3,527,382	22,391,362	670,364	113,812	n.a	4,434	n.a	1,075	7,067,157	4,306,887	58,251	3,697	38,146,652	89
2011	1,006	2,316	3,562,126	24,766,975	625,162	294,639	n.a	6,392	n.a	750	9,293,739	7,060,848	60,967	4,290	45,678,205	88
2012	856	2,606	3,898,832	27,612,171	666,461	149,424	n.a	12,297	n.a	522	12,475,546	9,130,039	56,505	3,059	54,007,463	108
2013	1,031	2,868	4,159,010	28,622,924	850,408	158,714	n.a	23,053	n.a	476	11,797,043	10,332,005	32,528	2,643	55,981,673	129
2014	1,152	1,499	4,229,094	28,822,039	1,062,920	154,888	n.a	33,305	n.a	367	10,665,269	11,232,729	31,048	2,033	56,235,192	155
2015	1,368	3,070	4,336,624	27,269,723	2,761,956	278,758	379,959	38,552	n.a	291	7,469,653	14,156,373	27,149	1,772	56,723,880	205
2016	1,140	3,172	4,875,486	21,033,867	4,780,929	366,168	5,805,228	105,889	136,311	226	6,966,634	12,141,027	33,004	1,408	56,249,349	223
2017	512	2,964	5,371,183	12,120,403	6,188,300	379,998	14,487,098	391,895	178,695	232	6,275,015	14,472,082	34,267	3,283	59,905,415	236
2018	1,302	3,808	5,717,729	10,434,089	5,643,055	385,977	17,706,790	666,191	199,901	227	4,666,240	20,082,381	36,809	2,379	65,545,577	274
2019	1,105	2,366	5,030,485	11,337,192	4,254,343	327,881	19,411,105	547,193	287,043	214	545,571	26,188,701	29,600	2,482	67,964,176	301

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5.4.2 Energy Consumption in Transportation Sector

(in Energy Unit)

(Thousand BOE)

Year	Gas	Fuel							Fuel							Electric-ity	Total
		Avgas	Avtur	Gasoline RON 88	Gasoline RON 92	Gasoline RON 95+98+100	Gasoline RON 90	Gasoil CN 51	Gasoil CN 53	Kerosene	Gasoil CN 48	Bio Gasoil	Fuel Oil	IDO	Total Fuel		
2009	191	9	16,262	121,226	2,682	608	n.a	13	n.a	11	52,692	14,959	484	28	209,709	68	209,968
2010	195	12	20,779	130,486	3,907	663	n.a	29	n.a	6	45,845	27,939	405	24	230,096	54	230,346
2011	181	13	20,983	144,330	3,643	1,717	n.a	41	n.a	4	60,289	45,804	424	28	277,278	54	277,513
2012	154	14	22,967	160,910	3,884	871	n.a	80	n.a	3	80,930	59,227	393	20	329,300	66	329,520
2013	185	16	24,499	166,800	4,956	925	n.a	150	n.a	3	76,529	67,025	226	17	341,146	79	341,410
2014	207	8	24,912	167,960	6,194	903	n.a	216	n.a	2	69,187	72,868	216	13	342,480	95	342,782
2015	246	17	25,546	158,914	16,095	1,624	2,214	250	n.a	2	48,456	91,834	189	12	345,154	126	345,525
2016	205	18	28,720	122,575	27,861	2,134	33,830	687	884	1	45,193	78,760	230	9	340,902	137	341,243
2017	92	16	31,640	70,632	36,062	2,214	84,424	2,542	1,159	1	40,707	93,882	239	22	363,540	144	363,776
2018	234	21	33,681	60,805	32,885	2,249	103,186	4,322	1,297	1	30,270	130,276	256	16	399,266	168	399,668
2019	198	13	29,633	66,067	24,792	1,911	113,118	3,550	1,862	1	3,539	169,889	206	16	414,598	185	414,981

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5.4.3 Share of Energy Consumption in Transportation Sector

(%)

Year	Gas	Fuel						Fuel								Electricity
		Avgas	Avtur	Gasoline RON 88	Gasoline RON 92	Gasoline RON 95+98+100	Gasoline RON 90	Gasoil CN 51	Gasoil CN 53	Kerosene	Gasoil CN 48	Bio Gasoil	Fuel Oil	IDO	Total Fuel	
2009	0.09	0.00	7.75	57.81	1.28	0.29	0.00	0.01	0.00	0.01	25.13	7.13	0.23	0.01	99.88	0.03
2010	0.08	0.01	9.03	56.71	1.70	0.29	0.00	0.01	0.00	0.00	19.92	12.14	0.18	0.01	99.89	0.02
2011	0.07	0.00	7.57	52.05	1.31	0.62	0.00	0.01	0.00	0.00	21.74	16.52	0.15	0.01	99.92	0.02
2012	0.05	0.00	6.97	48.86	1.18	0.26	0.00	0.02	0.00	0.00	24.58	17.99	0.12	0.01	99.93	0.02
2013	0.05	0.00	7.18	48.89	1.45	0.27	0.00	0.04	0.00	0.00	22.43	19.65	0.07	0.01	99.92	0.02
2014	0.06	0.00	7.27	49.04	1.81	0.26	0.00	0.06	0.00	0.00	20.20	21.28	0.06	0.00	99.91	0.03
2015	0.07	0.00	7.39	45.99	4.66	0.47	0.64	0.07	0.00	0.00	14.02	26.58	0.05	0.00	99.89	0.04
2016	0.06	0.01	8.42	35.92	8.16	0.63	9.91	0.20	0.26	0.00	13.24	23.08	0.07	0.00	99.90	0.04
2017	0.03	0.00	8.70	19.42	9.91	0.61	23.21	0.70	0.32	0.00	11.19	25.81	0.07	0.01	99.94	0.04
2018	0.06	0.01	8.43	15.21	8.23	0.56	25.82	1.08	0.32	0.00	7.57	32.60	0.06	0.00	99.90	0.04
2019	0.05	0.00	7.14	15.92	5.97	0.46	27.26	0.86	0.45	0.00	0.85	40.94	0.05	0.00	99.91	0.04

5.5.1 Energy Consumption in Others Sector

(in Original Unit)

(Kilo Liter)

Year	Mogas	Kero-sene	Gasoil CN 48	Bio Gasoil	IDO	Fuel Oil	Total Fuel
2009	638,725	186,978	2,521,190	n.a	15,961	574,968	3,937,821
2010	687,512	111,310	2,193,590	n.a	13,839	481,634	3,487,886
2011	760,454	77,647	2,884,703	n.a	16,058	504,091	4,242,954
2012	847,814	54,080	3,872,311	n.a	11,453	467,202	5,252,859
2013	878,849	49,308	3,661,709	n.a	9,894	268,954	4,868,714
2014	884,962	38,001	3,310,415	n.a	7,611	256,710	4,497,699
2015	837,299	30,091	2,318,512	n.a	6,635	224,472	3,417,019
2016	645,831	23,423	2,162,388	n.a	5,272	272,888	3,109,802
2017	372,149	24,009	1,947,715	n.a	12,289	283,329	2,639,491
2018	320,372	23,460	1,448,364	n.a	8,907	304,347	2,105,450
2019	348,101	22,134	169,341	1,041,908	9,290	244,743	1,835,518

5.5.2 Energy Consumption in Others Sector

(in Energy Unit)

(Thousand BOE)

Year	Mogas	Kero-sene	Gasoil CN 48	Bio Gasoil	IDO	Fuel Oil	Total Fuel
2009	3,722	1,108	16,355	n.a	105	4,002	25,294
2010	4,006	660	14,230	n.a	91	3,353	22,340
2011	4,432	460	18,713	n.a	106	3,509	27,220
2012	4,941	321	25,120	n.a	76	3,252	33,709
2013	5,121	292	23,754	n.a	65	1,872	31,105
2014	5,157	225	21,475	n.a	50	1,787	28,695
2015	4,879	178	15,040	n.a	44	1,563	21,705
2016	3,764	139	14,028	n.a	35	1,900	19,865
2017	2,169	142	12,635	n.a	81	1,972	17,000
2018	1,867	139	9,396	n.a	59	2,119	13,579
2019	2,029	131	1,099	6,759	61	1,704	11,782

5.5.3 Share of Energy Consumption in Others Sector

(%)

Year	Mogas	Kerosene	Gasoil CN 48	Bio Gasoil	IDO	Fuel Oil
2009	14.72	4.38	64.66	n.a	0.42	15.82
2010	17.93	2.95	63.70	n.a	0.41	15.01
2011	16.28	1.69	68.75	n.a	0.39	12.89
2012	14.66	0.95	74.52	n.a	0.22	9.65
2013	16.47	0.94	76.37	n.a	0.21	6.02
2014	17.97	0.78	74.84	n.a	0.18	6.23
2015	22.48	0.82	69.30	n.a	0.20	7.20
2016	18.95	0.70	70.62	n.a	0.18	9.56
2017	12.76	0.84	74.33	n.a	0.48	11.60
2018	13.75	1.02	69.19	n.a	0.43	15.60
2019	17.22	1.11	9.32	57.37	0.52	14.46

06

ENERGY SUPPLY BY ENERGY RESOURCES

6.1.1 Coal Resources and Reserves

as of December 2019

(Million Ton)

Province	Resources[1]					Verified Resources[2]	Reserves[1]	Verified Reserves[2]
	Hypothetic	Inferred	Indicated	Measured	Total			
Banten	5.47	32.92	17.18	5.99	61.55	12.69	0.23	0.23
Central Java	0.00	0.82	0.00	0.00	0.82	0.82	0.00	0.00
East Java	0.00	0.08	0.00	0.00	0.08	0.08	0.00	0.00
Aceh	0.00	326.68	465.57	346.90	1,139.16	1,071.00	553.00	546.15
North Sumatera	0.00	7.00	1.84	5.78	14.62	7.00	0.00	0.00
Riau	3.86	533.83	845.54	535.27	1,918.50	753.20	558.92	295.00
West Sumatera	1.19	152.40	85.46	270.31	509.36	271.54	110.27	44.64
Jambi	140.31	2,444.15	2,044.42	2,994.83	7,623.71	2,613.72	2,017.05	912.96
Bengkulu	0.00	205.51	227.83	195.55	628.90	68.79	155.11	25.46
South Sumatera	3,099.45	14,499.31	13,961.08	12,634.23	44,194.07	33,748.93	9,454.16	8,460.80
Lampung	0.00	122.95	19.95	9.00	151.90	106.95	0.00	0.00
West Kalimantan	2.26	375.69	6.85	3.70	388.50	371.01	0.00	0.00
Central Kalimantan	22.54	4,899.41	3,008.73	2,899.14	10,829.83	3,808.39	2,418.15	913.23
South Kalimantan	0.00	5,424.83	4,432.12	7,551.53	17,408.48	12,248.16	4,874.71	3,386.82
East Kalimantan	872.99	14,888.60	21,080.48	23,299.45	60,141.52	30,829.95	15,803.82	9,543.93
North Kalimantan	25.79	1,215.49	1,041.54	1,497.47	3,780.30	2,272.16	1,656.26	939.48
West Sulawesi	11.46	16.00	0.78	0.16	28.41	13.11	1.80	1.80
South Sulawesi	10.66	17.86	10.32	3.86	42.70	24.56	1.16	0.00
Southeast Sulawesi	0.52	1.98	0.00	0.00	2.50	2.50	0.00	0.00
Central Sulawesi	0.64	0.00	0.00	0.00	0.64	0.64	0.00	0.00
North Maluku	8.22	0.00	0.00	0.00	8.22	8.22	0.00	0.00
West Papua	93.66	32.82	0.00	0.00	126.48	95.57	0.00	0.00
Papua	7.20	2.16	0.00	0.00	9.36	9.36	0.00	0.00
TOTAL	**4,306.21**	**45,200.51**	**47,249.69**	**52,253.17**	**149,009.59**	**88,338,34**	**37,604.66**	**25,070.50**

Source : Geological Agency

Note : 1) Classification based on Indonesian National Standard 13-5014-1998/Amd-1 and reporting based on Indonesian National Standard 5015:2011

2) Verified by Competent Person Indonesia

6.1.2 Coal Supply

(Ton)

Year	Production[1)]	Export[2)]	Import[3)]
2009	256,181,000	198,366,000	68,804
2010	275,164,196	208,000,000	55,230
2011	353,270,937	272,671,351	42,449
2012	386,077,357	304,051,216	77,786
2013	474,371,369	356,357,973	609,875
2014	458,096,707	381,972,830	2,442,319
2015	461,566,080	365,849,610	3,031,677
2016	456,197,775	331,128,438	4,113,764
2017	461,248,184	286,936,795	4,723,755
2018	557,772,940	356,394,687	5,468,706
2019	616,159,594	454,500,164	7,391,172

Sources : 1. Directorate General of Mineral and Coal
2. Ministry of Trade and BPS for Import Coal

Note : 1) The type of coal produced in Indonesia are steam coal and coking coal
2) Revised data in 2017
3) Revised data in 2015-2017

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6.1.3 Indonesia Coal Export by Destination

(Thousand Ton)

Year	China	India	Japan	Korea	Taiwan	Hongkong	Malaysia		Philippines	Thailand	Spain	Others	Total
2009	27,266	20,784	25,262	18,362	17,238	9,664	8,499		4,439	7,468	4,500	54,886	198,366
2010	44,056	18,640	25,776	20,643	14,590	9,415	11,307		7,248	7,175	2,128	47,021	208,000
2011	50,347	30,976	26,073	18,900	16,517	10,660	12,407		6,828	7,391	4,077	88,495	272,671
2012	68,821	31,648	25,738	16,542	16,391	10,669	13,459		7,130	5,721	6,208	101,725	304,051
2013	49,859	41,834	21,709	13,635	14,399	4,990	9,066		7,609	5,253	796	187,207	356,358
2014	67,807	60,284	31,232	20,170	15,689	13,697	10,772		10,274	8,497	5,675	137,876	381,973
2015	41,898	79,111	23,252	14,111	10,643	7,263	7,719		11,816	9,380	3,846	156,810	365,850
2016	53,887	56,277	29,798	13,574	12,784	6,475	11,265		13,434	8,720	3,532	121,381	331,128
2017[1)]	51,201	46,241	22,177	17,284	10,230	5,715	13,651		10,443	5,379	2,437	102,178	286,937
2018	63,429	49,967	23,081	18,732	7,615	3,423	12,701		12,212	6,611	3,227	155,397	356,394
2019	144,415	116,949	27,679	29,743	21,140	7,502	24,188		26,846	17,286	1,175	37,577	454,500

Source : Directorate General of Mineral and Coal
Note : 1) Revised data

6.1.4 Domestic Coal Sales

(Ton)

Year	Total	Iron, Steel & Metal-lurgy[1)]	Power Plant	Cement, Textile, Fertilizer	Pulp & Paper	Briquette	Others[2)]
2009	56,295,000	256,605	36,570,000	6,900,000	1,170,000	61,463	11,336,932
2010	67,180,051	335,000	34,410,000	6,308,000	1,742,000	34,543	24,350,508
2011	79,557,800	166,034	45,118,519	5,873,144	1,249,328	33,939	28,366,165
2012	82,142,862	289,371	52,815,519	6,640,000	2,670,701	36,383	19,690,889
2013	72,070,000	300,000	61,860,000	7,190,000	1,460,000	36,383	1,223,617
2014	76,180,001	298,000	63,054,000	7,187,400	1,458,170	15,623	4,166,808
2015	86,814,099	399,000	70,080,000	7,180,000	4,310,000	13,174	4,831,925
2016	90,550,000	390,000	75,400,000	10,540,000	4,190,000	30,000	0
2017	97,030,000	300,000	83,000,000	9,802,000	3,898,000	30,000	0
2018	115,080,000	1,750,000	91,140,000	19,030,000	3,150,000	10,000	0
2019	138,418,192	10,064,750	98,550,260	22,515,239	3,304,980	7,969	3,974,994

Source : Directorate General of Mineral and Coal
Note : 1) in 2018 - 2019, there is acceleration for downstream mineral industry
2) in 2009 - 2015, others sales is included trader;
Since 2016, others sales is excluded trade;
In 2019 companies report the data through online reporting , particularly others sector which consist the plantation , forestry and uncategorized sales. There is estimation of uncategorized sales data into cement, textile & fertilizer also pulp & paper.

6.2.1 Oil Reserves

as of 1 January

(Billion Barrel)

Year	Commercial		Sub Commercial		
	Reserves		Contingent Resources		Unrecoverable[5)]
	Proven[2)]	Potential[3)]	Low Estimate[4)]	Best+High Estimate[4)]	
2009	4.30	3.70	-	-	-
2010	4.23	3.53	-	-	-
2011	4.04	3.69	-	-	-
2012	3.74	3.67	-	-	-
2013	3.69	3.86	-	-	-
2014	3.62	3.75	-	-	-
2015	3.60	3.70	-	-	-
2016	3.31	3.94	-	-	-
2017	3.17	4.36	-	-	-
2018	3.15	4.36	-	-	-
2019[1)]	2.48	1.29	0.33	0.38	3.03

Source : Directorate General of Oil and Gas
Note : 1) Based on new parameter of Petroleum Resources Management System 2018
(it was considered as an oil reserves, however part of oil reserves has not been developed, it has been categorized as contingent resources since 2019)
2) Proven reserves = P1
3) Potential reserves = P2 + P3
4) Contingent resources = low estimate (C1) + best estimate (C2) + high estmate (C3)
5) Needs further assessment

6.2.2 Refinery Capacity in 2019

(MBSD)

Refinery	Refinery Capacity
Tri Wahana Universal (TWU)	18.00
Dumai	177.00
Musi	127.30
Cilacap	348.00
Balikpapan	260.00
Balongan	125.00
Cepu	3.80
Kasim	10.00
Tuban (TPPI)	100.00
Total	**1,169.10**

Source : Directorate General of Oil and Gas

6.2.3 Crude Oil Supply and Demand

Year	Production	Export	Import	Oil Refinery Input	
	Thousand bbl	Thousand bbl	Thousand bbl	Crude (thousand bbl)	Thousand bpd
2009	346,313	132,223	120,119	320,766	905
2010	344,888	134,473	101,093	299,116	819
2011	329,265	135,572	96,862	321,002	879
2012	314,666	106,485	95,968	299,257	820
2013	300,830	104,791	118,334	300,134	822
2014	287,902	93,080	121,993	309,445	848
2015[1)]	286,814	115,017	136,666	271,372	743
2016[1)]	303,336	125,516	148,361	401,541	1,100
2017[1)]	292,374	102,678	141,616	323,142	885
2018[1)]	281,780	74,472	113,055	334,281	916
2019	272,025	25,716	75,296	334,963	918

Source : Directorate General of Oil and Gas
Note : 1) Revised data for production, export and oil refinery input

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6.2.4 Domestic Oil Fuels Sales

(Kilo Liter)

Fuel Types	2009	2010	2011	2012	2013		2014	2015[1)]	2016[1)]	2017[1)]	2018[1)]	2019
Avgas	1,687	2,231	2,316	2,606	2,868		1,499	3,070	3,172	2,964	3,808	2,366
Avtur	2,760,678	3,527,382	3,562,126	3,898,832	4,159,010		4,229,094	4,336,624	4,875,486	5,371,183	5,717,729	5,030,485
RON 88	21,441,130	23,078,874	25,527,429	28,459,985	29,501,773		29,707,002	28,107,022	21,679,698	12,492,553	10,754,461	11,685,293
Kerosene	4,779,818	2,845,486	1,984,939	1,382,469	1,260,490		971,434	769,233	598,769	613,750	599,712	565,815
Gasoil CN48[2)]	26,691,227	27,653,973	26,391,275	25,079,718	23,715,716		21,440,501	15,016,321	14,005,096	12,614,727	9,380,591	1,096,767
Bio Gasoil	2,306,017	4,306,887	7,060,848	9,130,039	10,332,005		11,232,729	14,156,373	13,747,237	16,078,292	20,717,619	30,045,699
Fuel Oil	4,480,563	4,316,705	3,904,580	3,428,875	1,973,903		1,884,040	1,647,441	2,002,773	2,079,400	2,233,655	1,796,213
Gasoline RON 95[3)]	104,388	113,812	294,639	149,424	158,714		154,888	278,758	366,168	379,998	385,977	327,881
Gasoline RON 92	460,148	670,364	625,162	666,461	850,408		1,062,920	2,761,956	4,780,929	6,188,300	5,643,055	4,254,343
Gasoline RON 90	n.a	n.a	n.a	n.a	n.a		n.a	379,959	5,805,228	14,487,098	17,706,790	19,411,105
Gasoil CN53	n.a	n.a	n.a	n.a	n.a		n.a	n.a	136,311	178,695	199,901	287,043
Gasoil CN51[4)]	1,955	4,434	6,392	12,297	23,053		33,305	38,552	105,889	391,895	666,191	547,193
IDO	145,192	167,733	133,589	91,600	79,137		60,870	53,069	42,163	98,288	71,239	74,306
Total Fuel	**63,298,849**	**66,687,881**	**69,493,296**	**72,302,305**	**72,057,077**		**70,778,283**	**67,548,378**	**68,148,919**	**70,977,143**	**74,080,729**	**75,124,508**

Sources : Directorate General of Oil and Gas
Note : 1) Revised data
2) In 2019, there is only relaxation of sales of pure Gasoil CN 48 to the Military Equipment, PT PLN and PT Freeport Indonesia
3) Addition of domestic sales of RON 98 since 2016
4) Source data from PT Pertamina (Persero) for 2008 to 2015

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6.2.5 Crude Oil Refinery Production

(Thousand Barrel)

Year	Gasoline RON 88	Avtur + JP5	Avgas	Kerosene	Gasoil CN48		IDO	Fuel Oil	Gasoline RON 95, RON 98, & RON 100	Gasoline RON 92	Gasoil CN 51 & CN 53	Total Fuel
2009	74,751	16,672	0	29,476	110,698		1,213	18,843	774	2,832	31	255,289
2010	66,820	15,710	7	18,985	107,351		1,377	21,515	668	3,301	15	235,748
2011	64,460	17,061	7	14,378	116,391		1,352	20,276	736	2,446	28	237,135
2012	67,684	19,050	0	10,808	123,483		1,135	15,047	514	2,487	122	240,330
2013	68,174	18,623	0	9,827	123,726		927	13,879	566	2,651	517	238,892
2014	70,829	19,938	0	7,332	129,502		1,107	12,243	545	3,629	382	245,508
2015[1)]	71,733	20,240	0	4,977	129,306		972	11,979	672	8,725	242	248,846
2016	68,878	22,794	0	6,459	123,818		969	18,309	592	24,432	503	266,753
2017[1)]	53,712	22,917	0	6,041	133,920		876	9,827	604	39,085	577	267,559
2018[1)]	56,313	26,255	0	5,958	139,783		714	12,034	779	36,877	1,870	280,584
2019	51,378	29,716	0	6,961	135,062		503	11,177	1,051	42,424	1,932	280,204

Source : Directorate General of Oil and Gas
Note : 1) Revised data

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6.2.5 Crude Oil Refinery Production (Continued)

(Thousand Barrel)

Year	Secondary Fuel				Non Fuel		Lubricant	LPG	HOMC	Total Production
	Naphtha	LOMC	LSWR	Total						
2009	23,820	63	31,691	55,510	15,642		2,772	8,119	7,498	344,831
2010	22,321	187	29,522	52,030	19,189		2,027	7,602	4,982	321,578
2011	28,613	0	24,021	52,634	27,499		3,065	9,143	11,908	341,384
2012	23,293	59	26,451	49,803	41,448		2,988	7,288	10,405	352,263
2013	23,793	0	24,487	48,281	21,726		2,697	6,635	6,564	324,795
2014	21,985	243	26,946	49,174	30,460		2,529	6,362	8,544	342,578
2015[1)]	13,089	3,131	24,713	40,933	27,175		0	8,084	4,498	329,536
2016[1)]	13,641	107	24,798	38,546	15,770		2,019	10,297	6,904	340,289
2017[1)]	18,165	1,223	26,565	45,593	22,470		2,457	10,062	8,254	356,755
2018[1)]	19,334	349	22,815	42,498	22,656		2,787	10,289	6,763	365,576
2019	18,782	0	26,162	44,944	23,093		2,332	9,936	6,269	366,779

Source : Directorate General of Oil and Gas
Note : 1) Revised data

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6.2.6 Import of Refined Products

(Thousand KL)

Year	Avtur	Avgas	Gasoline RON 88 & RON 90[2)]	Gasoline RON 95 & RON 98	Gasoline RON 92		DPK	HOMC	Gasoil	Fuel Oil	IDO	Total Fuel
2009	172	1	10,263	32	120		0	1,301	8,505	1,909	8	22,311
2010	577	0	12,283	48	381		0	1,535	10,637	549	7	26,017
2011	816	0	15,248	36	319		0	157	13,573	998	0	31,147
2012	708	2	17,621	36	213		0	525	12,455	420	0	31,980
2013	948	2	18,340	60	268		0	1,015	11,947	107	6	32,693
2014	981	0	18,829	64	619		0	1,093	11,475	174	7	33,242
2015[1)]	1,153	3	17,211	57	1,303		0	1,031	7,040	487	8	28,293
2016[1)]	1,119	2	12,879	140	3,783		66	33	4,861	585	31	23,500
2017[1)]	1,786	3	10,423	180	7,012		0	759	6,882	392	59	27,496
2018[1)]	1,518	4	9,229	277	9,295		15	447	6,499	893	47	28,225
2019	280	2	11,084	150	7,954		46	948	3,868	358	32	24,724

Source : Directorate General of Oil and Gas
Note : 1) Revised data for 2015-2018
2) Include Gasoline RON 90 since 2018

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6.2.7 Export of Refined Products

(Thousand Barrel)

Year	Gasoline RON 88	Avtur	Kerosene	Gasoil CN 48	Fuel Oil	Gasoline RON 92		Gasoline RON 95	Total Fuel	Naphtha	Lubricant	Other Product[1)]	Total
2009	130	424	427	759	304	0		0	2,044	3,182	0	31,849	37,075
2010	24	3	1,436	1,519	600	0		0	3,582	3,955	0	29,257	36,794
2011	80	9	2,701	113	0	0		7	2,909	1,316	65	26,108	30,399
2012	69	13	1,917	92	0	60		0	2,152	0	301	25,862	28,315
2013	0	9	1,632	0	4,319	84		13	6,057	1,092	0	19,693	26,843
2014	0	13	401	148	3,215	159		0	3,936	5,339	0	23,342	32,616
2015	0	15	589	0	1,3717	15		0	1,997	2,550	0	19,208	23,755
2016	0	15	0	1	2,167	9		0	2,192	0	0	10,666	12,858
2017	0	15	0	8	2,981	4		0	3,008	0	0	11,814	14,822
2018	0	16	0	4	2,011	0		0	2,031	0	0	12,047	14,078
2019	0	795	0	0	0	0		0	795	0	0	15,060	15,855

Source : Directorate General of Oil and Gas
Note : 1) Revised data for 2018

6.2.8 Indonesia Crude Oil Export by Destination

(Thousand Barrel)

Year	Japan	USA	Korea	Taiwan	Singapore	Others	Total
2009	25,783	5,264	19,394	2,160	11,649	67,974	132,223
2010	23,407	4,779	17,607	1,961	10,576	76,143	134,473
2011	39,913	5,729	19,546	1,889	12,661	33,613	113,352
2012	49,376	2,149	15,601	300	10,034	29,025	106,485
2013	43,042	5,872	10,096	3,257	11,108	31,415	104,791
2014	32,625	6,811	7,586	5,272	13,680	27,106	93,080
2015	26,634	13,648	8,481	5,244	15,567	45,444	115,017
2016	18,404	9,943	6,619	6,525	13,581	70,445	125,516
2017	11,901	11,986	7,466	7,543	12,371	51,410	102,678
2018	9,943	10,235	7,122	6,172	7,222	33,777	74,472
2019	160	0	1,765	675	895	22,221	25,716

Source : Directorate General of Oil and Gas

6.2.9 LPG Supply and Demand

(Ton)

Year	Production			Export[1)]	Import[2)]	Sales
	Gas Refinery	Oil Refinery	Total			
2009	1,430,671	694,547	2,125,218	88,463	917,171	2,922,080
2010	1,828,743	649,628	2,478,371	279	1,621,959	3,761,086
2011	1,580,598	704,842	2,285,439	76,566	1,991,774	4,347,465
2012	1,824,297	377,242	2,201,539	205	2,573,670	5,030,547
2013	1,447,055	563,935	2,010,990	286	3,299,808	5,607,430
2014	1,831,683	547,445	2,379,128	483	3,604,009	6,093,138
2015	1,631,599	675,808	2,307,407	408	4,237,499	6,376,990
2016	1,410,169	831,398	2,241,567	494	4,475,929	6,642,633
2017	1,162,575	865,366	2,027,941	372	5,461,934	7,190,871
2018	1,143,958	883,305	2,027,263	434	5,566,572	7,562,893
2019	1,140,297	821,697	1,961,994	457	5,714,693	7,765,541

Source : Directorate General of Oil and Gas
Note : 1) Revised data for 2015-2017
2) Revised data for 2015

6.3.1 Gas Reserves

as of January

(Billion Barel)

Year	Commercial		Sub Commercial		
	Reserves		Contingent Resources		Unrecoverable[5]
	Proven[2]	Potential[3]	Low Estimate[4]	Best+High Estimate[4]	
2009	107.34	52.29	-	-	-
2010	108.40	48.74	-	-	-
2011	104.71	48.18	-	-	-
2012	103.35	47.35	-	-	-
2013	101.54	48.85	-	-	-
2014	100.26	49.04	-	-	-
2015	97.99	53.34	-	-	-
2016	101.22	42.84	-	-	-
2017	100.37	42.35	-	-	-
2018	96.06	39.49	-	-	-
2019[1]	49.74	27.55	48.75	4.44	5.07

Source : Directorate General of Oil and Gas

Note : 1) Based on new parameter of Petroleum Resources Management System 2018
(it was considered as a gas reserves, however part of gas reserves has not been developed, it has been categorized as contingent resources since 2019)
2) Proven reserves = P1
3) Potential reserves = P2 + P3
4) Contingent resources = low estimate (C1) + best estimate (C2) + high estmate (C3)
5) Needs further assessment

6.3.2 Natural Gas Production

(MMSCF)

Year	Associated	Non Associated	Total
2009	467,570	2,593,326	3,060,897
2010	471,507	2,936,086	3,407,592
2011	472,552	2,783,827	3,256,379
2012	405,465	2,769,175	3,174,639
2013	352,561	2,768,277	3,120,838
2014	304,693	2,871,098	3,175,791
2015	376,669	2,739,473	3,116,142
2016	467,813	2,602,426	3,070,239
2017	497,079	2,466,105	2,963,184
2018	577,270	2,419,532	2,996,802
2019	451,133	2,358,535	2,809,668

Source : Directorate General of Oil and Gas

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6.3.3 Natural Gas and LNG Supply and Demand

Year	Natural Gas Production	Gas Lift & Reinjection	Own Use	Flare	Net Production of Natural Gas[1]	Utilization			Utilization					LNG Production	Export of LNG	LNG Domestic
						LNG Plant	LPG Plant		Refinery	City Gas[2]	Industry[3]	Electricity	Export by Pipeline Gas			
	(MMSCF)	(MMSCF)	(MMSCF)	(MMSCF)	(MMSCF)	(MMSCF)	(MMSCF)		(MMSCF)	(MMSCF)	(MMSCF)	(MMSCF)	(MMSCF)	(MMSCF)	(Thousand MMBTU)	(MMSCF)
2009	3,060,897	154,800	175,024	172,922	2,733,174	1,221,502	17,806		35,566	4,790	654,428	231,521	294,109	1,049,100	1,041,319	n.a
2010	3,407,592	174,844	205,378	184,893	3,047,855	1,427,917	20,866		34,038	6,115	635,361	269,003	333,993	1,272,862	1,210,843	n.a
2011	3,256,379	185,997	198,463	179,460	2,890,922	1,293,151	14,289		37,476	7,896	673,223	248,871	335,510	1,156,397	1,098,238	n.a
2012	3,174,639	191,886	189,384	230,353	2,752,401	1,019,569	28,141		39,782	9,896	694,580	289,424	358,325	958,537	949,441	37,091
2013	3,120,838	156,154	217,416	237,295	2,727,389	1,040,992	26,647		38,866	8,669	697,028	302,958	335,164	1,013,158	888,134	58,610
2014	3,175,791	176,267	219,652	311,614	2,687,910	978,978	29,757		41,992	8,702	691,078	319,491	342,669	957,179	834,243	76,989
2015	3,116,142	168,045	214,306	273,402	2,674,695	919,723	24,801		47,384	8,847	687,560	305,484	306,679	1,003,747	811,043	106,066
2016	3,070,239	170,421	202,571	262,773	2,637,045	913,303	24,805		105,138	8,701	562,243	337,055	282,741	1,064,671	747,697	151,329
2017	2,963,184	182,030	212,108	229,128	2,552,026	841,862	22,418		50,033	8,691	627,499	297,649	272,356	1,011,608	689,442	146,909
2018	2,996,802	163,226	222,365	270,762	2,562,814	968,994	29,842		42,322	3,065	672,298	263,534	261,180	1,003,194	696,340	147,894
2019	2,809,668	168,954	213,721	269,132	2,371,582	834,243	20,167		40,917	3,457	666,518	238,703	252,237	865,034	512,517	184,752

Source : Directorate General of Oil and Gas
Note : 1) Net production of natural gas is natural gas production minus gas lift & reinjection and flare
2) Since 2018, City Gas sales include small customer but exclude Commercial Industry
3) Since 2018, Industry include Commercial Industry

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6.3.4 City Gas Sales and Utilization

Year	Sales (Million M³)					Number of Customer				
	Household	Industry & Commercial	Transportation	Total		Household	Small Customer[1)]	Commercial Industry[2)]	Commercial[1)]	Total
2009	19	8,034	11	8,065		83,519	n.a	1,180	1,593	86,292
2010	20	8,431	29	8,481		85,326	n.a	1,216	1,592	88,134
2011	18	4,997	27	5,043		86,167	n.a	1,246	1,641	89,054
2012	21	5,212	23	5,256		87,437	n.a	1,253	1,674	90,364
2013	19	5,159	28	5,206		88,613	1,395	1,582	n.a	91,590
2014	18	5,302	31	5,351		92,858	1,405	1,786	n.a	96,049
2015	18	4,765	37	4,820		107,690	1,529	1,857	n.a	111,076
2016	22	4,638	31	4,690		127,246	1,652	1,929	n.a	130,827
2017	28	4,708	14	4,749		192,489	1,490	2,242	n.a	196,221
2018	32	4,939	35	5,006		218,583	1,470	2,290	n.a	222,343
2019	37	4,837	30	4,904		233,204	1,563	2,301	n.a	237,068

Source : PT. PGN (Persero)
Note : 1) Changing category of customer from Commercial to Small Customer since 2013
2) Changing names of Industry to Commercial Industry Since 2013

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6.4.1 Power Plant Installed Capacity

(MW)

Year	On Grid									On Grid							Total
	Hydro PP	Steam PP	Gas PP	Combined Cycle PP	Geothermal PP[1)]	Diesel PP[2)]	Gas Engine PP	Wind PP		Mycro Hydro PP	Mini Hydro PP	Solar PP	Coal Gasification PP	Waste PP	Biogas PP	Biomass PP	
2009	3,694.95	12,594.00	3,135.88	8,009.97	1,189.00	3,256.36	71.00	1.06		0.69	6.03	0.00	0.00	0.00	0.00	0.00	31,958.94
2010	3,719.69	12,981.50	3,821.57	7,590.32	1,189.00	4,569.89	92.84	0.34		0.69	13.53	0.19	0.00	0.00	0.00	0.00	33,979.56
2011	3,880.83	16,318.00	4,236.02	8,480.97	1,226.00	5,471.93	169.54	0.93		5.93	57.66	1.16	41.00	26.00	0.00	0.00	39,915.97
2012	4,078.24	19,714.00	4,343.82	9,461.11	1,336.00	5,973.58	198.74	0.93		6.71	61.46	4.09	41.00	26.00	0.00	0.00	45,245.67
2013	5,058.87	23,812.53	4,389.08	9,852.21	1,343.50	5,935.00	448.12	0.63		29.69	77.05	9.02	6.00	26.00	0.00	0.00	50,987.69
2014	5,059.06	25,104.23	4,310.50	10,146.11	1,403.50	6,206.99	610.74	1.12		30.46	139.87	9.02	6.00	36.00	0.00	0.00	53,063.60
2015[3)]	5,068.59	26,447.58	4,495.56	10,293.47	1,438.30	3,824.07	1,101.23	1.46		90.15	148.71	36.94	0.00	15.65	54.72	1,671.29	54,687.72
2016[3)]	5,343.59	28,351.97	4,969.24	10,293.47	1,533.30	3,979.40	1,806.99	1.46		95.87	211.40	46.70	0.00	15.65	64.16	1,703.29	58,416.48
2017[3)]	5,343.59	30,768.07	4,976.24	10,418.47	1,808.30	4,396.35	2,264.85	1.46		103.76	240.55	54.48	0.00	15.65	100.62	1,740.54	62,232.93
2018[3)]	4,461.59	31,587.17	5,348.44	11,220.10	1,948.30	4,630.90	2,357.66	143.03		98.39	267.79	24.42	0.00	15.65	40.35	142.02	62,285.81
2019	4,620.52	34,737.17	5,348.44	11,669.54	2,130.70	4,779.68	2,842.03	153.83		99.49	311.14	105.03	0.00	15.65	42.15	147.02	67,002.40

6.4.1 Power Plant Installed Capacity (Continued)

(MW)

Year	On Grid								Off Grid			Grand Total On Grid + Off Grid
	Hydro PP[1)]	Micro Hydro PP	Mini Hydro PP	Solar PP + PV	Wind PP	Biomass PP	Biogas PP		Waste PP	Hybrid PP	Sub Total	
2018[3)]	938.00	6.38	n.a	35.77	0.48	1,616.52	68.26		n.a	3.58	2,668.99	64,954.80
2019	938.00	6.88	n.a	40.78	0.48	1,616.52	70.26		n.a	3.58	2,676.50	69,678.90

Source : PLN Statistics and Electricity Statistics, Directorate General of Electricity, Directorat General of New and Renewable Energy and Energy Conservation

Note : 1) Source from Directorat General of New and Renewable Energy and Energy Conservation
2) Diesel PP including captive power
3) Revised data

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6.4.2 Power Plant Production

(GWh)

Year	PLN									PLN				
	Hydro PP	Geothermal PP	Solar PP	Diesel PP	Steam PP					Combined Gas-Steam PP	Gas PP	Gas Engine PP	Wind PP	Sub-Total
					Coal	Oil	Gas	Total						
2009	10,307	3,504	0	10,432	43,138	9,031	795	52,964		34,747	8,674	0	0	120,628
2010	15,827	3,398	1	11,926	46,685	6,712	1,009	54,407		36,812	9,266	74	0	131,710
2011	10,316	3,487	1	16,125	54,950	6,383	1,003	62,335		40,410	10,018	48	0	142,739
2012	10,525	3,558	3	18,913	66,633	2,391	4,799	73,823		34,569	8,310	55	0	149,755
2013	13,014	4,345	5	18,919	75,193	1,055	5,602	81,850		36,493	8,958	382	0	163,966
2014	11,164	4,285	7	21,862	83,397	759	5,856	90,012		38,800	9,117	51	0	175,297
2015	10,005	4,392	5	18,859	85,191	11,419	146	96,756		39,316	5,907	1,233	0	176,472
2016	13,886	3,958	9	19,122	92,682	1,092	4,488	98,262		42,377	3,745	2,451	0	183,809
2017	12,425	4,096	6	16,453	101,333	285	4,159	105,778		38,468	4,117	82	0	181,425
2018	10,729	4,013	5	15,019	110,035	517	3,846	114,398		39,017	5,357	157	0	188,698
2019	9,877	4,110	5	9,053	119,520	126	3,730	123,376		37,758	3,213	6,151	0	193,543

Source : PLN Statistics and Electricity Statistics, Directorate General of Electricity

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6.4.2 Power Plant Production (Continued)

(GWh)

Year	PLN Purchase from IPP & PPU																Total On Grid
	Hydro PP	Geothermal PP	Solar PP	Diesel PP	Steam PP					Combined Gas-Steam PP	Gas PP	Gas Engine PP	Wind PP	Bio-mass PP	Biogas PP	Waste PP	Sub-Total	
					Coal	Gas	Bio-mass	Total										
2009	1,077	5,791	0	393	22,776	2	63	22,841		4,395	1,669	0	5	0	4	0	36,169	156,797
2010	1,629	5,959	0	369	21,792	99	95	21,985		6,512	1,618	0	4	0	4	0	38,076	169,786
2011	2,103	5,884	0	350	26,140	154	186	26,480		4,179	1,647	0	4	0	4	31	40,679	183,419
2012	2,274	5,859	0	279	35,533	134	238	35,904		4,519	1,691	0	5	0	5	53	50,585	200,340
2013	3,909	5,069	0	388	36,059	147	144	36,349		4,939	1,529	0	0	0	0	41	52,223	216,189
2014	3,998	5,753	0	418	36,135	137	205	36,477		4,981	1,595	0	0	0	0	36	53,258	228,555
2015	3,736	5,656	0	633	39,466	115	461	40,043		5,330	2,090	0	4	0	4	19	57,510	233,982
2016	4,791	6,698	12	586	42,699	129	584	43,411		5,832	2,767	0	6	0	0	6	64,109	247,918
2017	6,207	8,668	23	2,110	46,631	263	0	46,894		5,704	3,002	35	0	0	0	590	73,235	254,660
2018[1)]	6,099	10,006	15	2,410	49,978	242	0	50,220		4,946	3,841	41	188	0	0	622	78,387	267,085
2019	6,669	9,990	49	1,403	54,973	228	0	55,201		5,396	5,577	266	482	219	126	21	85,399	278,942

Source : PLN Statistics and Electricity Statistics, Directorate General of Electricity
Note : 1) Revised data

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6.4.2 Power Plant Production (Continued)

(GWh)

Year	Off Grid							Off Grid					Total Off Grid[1)]	Grand Total
	Hydro PP	Micro Hydro PP	Mini Hydro PP	Solar PP + Solar PV	Wind PP	Biomass PP		Biogas PP	Waste PP	Hybrid PP	Solar-Powered Public Street Lighting	Solar-Powered Energy Saving Lamp		
2009	n.a	n.a	n.a	n.a	n.a	n.a		n.a	n.a	n.a	n.a	n.a	0	156,797
2010	n.a	n.a	n.a	n.a	n.a	n.a		n.a	n.a	n.a	n.a	n.a	0	169,786
2011	n.a	n.a	n.a	n.a	n.a	n.a		n.a	n.a	n.a	n.a	n.a	0	183,419
2012	n.a	n.a	n.a	n.a	n.a	n.a		n.a	n.a	n.a	n.a	n.a	0	200,340
2013	n.a	n.a	n.a	n.a	n.a	n.a		n.a	n.a	n.a	n.a	n.a	0	216,189
2014	n.a	n.a	n.a	n.a	n.a	n.a		n.a	n.a	n.a	n.a	n.a	0	228,555
2015	n.a	n.a	n.a	n.a	n.a	n.a		n.a	n.a	n.a	n.a	n.a	0	233,982
2016	n.a	n.a	n.a	n.a	n.a	n.a		n.a	n.a	n.a	n.a	n.a	0	247,918
2017	n.a	n.a	n.a	n.a	n.a	n.a		n.a	n.a	n.a	n.a	n.a	0	254,660
2018	4,785	24	0	56	2	11,325		478	0	5	5	10	16,690	283,776
2019	4,579	36	0	44	2	11,329		492	0	5	6	14	16,507	295,449

Source : PLN Statistics and Electricity Statistics, Directorate General of Electricity
Note : 1) Off grid consist of captive power from IO & PPU, PP financed by State Budget and PP financed by Non-Governmental

6.4.3 Import of Electricity

(GWh)

Year	Country of Origin	Hydro PP
2009	Malaysia	1.26
2010	Malaysia	2.22
2011	Malaysia	2.54
2012	Malaysia	2.99
2013	Malaysia	3.03
2014	Malaysia	8.99
2015	Malaysia	12.75
2016	Malaysia	692.70
2017	Malaysia	1,119.47
2018	Malaysia	1,495.89
2019	Malaysia	1,683.12

Source : PLN Statistics

6.4.4 Electricity Sales

(GWh)

Year	Electricity Sales / Tariff Segment							
	House-hold	Com-merce	Industry	Street Lighting	Social	Govern-ment	Transpor-tation	Total
2009	54,945	24,715	46,204	2,888	3,384	2,335	111	134,582
2010	59,825	27,069	50,985	3,000	3,700	2,630	89	147,297
2011	65,112	30,093	54,725	3,068	3,994	2,787	88	159,867
2012	72,133	30,880	60,176	3,141	4,496	3,057	108	173,991
2013	77,211	34,369	64,381	3,251	4,939	3,261	129	187,541
2014	84,086	36,128	65,909	3,394	5,446	3,484	155	198,602
2015	88,682	36,773	64,079	3,448	5,941	3,717	205	202,846
2016	93,635	39,852	68,145	3,498	6,631	4,022	223	216,004
2017	94,457	41,459	72,238	3,527	7,095	4,121	236	223,134
2018	97,832	43,753	76,947	3,627	7,781	4,403	274	234,618
2019	102,917	45,817	77,142	3,618	8,555	4,709	301	243,058

Source : Directorate General of Electricity and PLN Statistic

6.4.5 National Electricity System Performance

Year	Average Thermal Efficiency	Capacity Factor	Load Factor	Peak Load	Transmis-sion & Distribussion Losses[1)]
	(%)	(%)	(%)	(MW)	(%)
2009	29.95	53.71	76.37	23,438	9.93
2010	29.46	55.90	77.78	24,917	9.70
2011	29.23	55.67	78.53	26,665	9.41
2012	26.87	51.96	79.18	28,882	9.21
2013	27.18	54.72	80.04	30,834	9.05
2014	26.80	50.94	78.26	33,321	8.98
2015	26.92	50.53	80.02	33,381	8.87
2016	30.33	51.92	62.62	32,204	8.70
2017	27.02	51.98	74.93	38,797	9.75
2018	26.61	52.73	75.76	37,944	9.55
2019	26.78	50.68	76.41	41,671	9.35

Source : Directorate General of Electricity and PLN Statistic
Note : 1) Revised data for 2013-2017

6.5.1 Geothermal Resources and Reserves

as of December 2019

(MW)

No	Location	Resources		Reserves			Total
		Speculative	Hypothetical	Possible	Probable	Proven	
1	Sumatera	2,276	1,557	3,735	1,041	1,070	9,679
2	Jawa	1,265	1,190	3,414	418	1,820	8,107
3	Bali	70	21	104	110	30	335
4	Nusa Tenggara	190	148	892	121	12	1,364
5	Kalimantan	151	18	13	0	0	182
6	Sulawesi	1,365	362	1,041	180	120	3,068
7	Maluku	560	91	497	6	2	1,156
8	Papua	75	0	0	0	0	75
Total		**5,952**	**3,387**	**9,696**	**1,876**	**3,054**	**23,966**

Source : Geological Agency

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6.5.2 Geothermal Power Plant Capacity 2019

(MWe)

No	Working Area	Location	IPB Owner		Turbine Capacity	Operator Steam Area	Operator PLTP	Total Capacity
1	PLTP Kamojang	West Java	PT. Pertamina Geothermal Energy (PGE)		1 x 30 MWe	PGE	PLN	235.0
					2 x 55 MWe			
					1 x 60 MWe		PGE	
					1 x 35 MWe		PGE	
2	PLTP Lahendong	North Sulawesi	PT. Pertamina Geothermal Energy (PGE)		4 x 20 MWe	PGE	PLN	120.0
					2 x 20 MWe		PGE	
3	PLTP Sibayak	North Sumatra	PT. Pertamina Geothermal Energy (PGE)		1 x 10 MWe 2 MWe (Monoblock)	PGE	PT. Dizamatra Powerindo	12.0
4	PLTP Salak	West Java	PT. Pertamina Geothermal Energy (PGE)		3 x 60 MWe	CGS	PLN	376.8
					3 x 65.6 MWe		SEGS	
5	PLTP Darajat	West Java	PT. Pertamina Geothermal Energy (PGE)		1 x 55 MWe	CGI	PLN	270.0
					1 x 94 MWe		SEGD II	
					1 x 121 MWe		SEGD II	
6	PLTP Wayang Windu	West Java	PT. Pertamina Geothermal Energy (PGE)		1 x 110 MWe 1 x 117 MWe	SE	SEGWWL	227.0
7	PLTP Dieng	Central Java	PT. Geo Dipa Energy (GDE)		1 x 60 MWe	GDE	GDE	60.0
8	PLTP Ulubelu	Lampung	PT. Pertamina Geothermal Energy (PGE)		2x 55 MWe 2 x 55 MWe	PGE	PLN	220.0
9	PLTP Ulumbu	NTT	PT. PLN (Persero)		4 x 2.5 MWe	PLN	PLN	10.0
10	PLTP Mataloko	NTT	PT. PLN (Persero)		1 x 2.5 MWe	PLN	PLN	2.5
11	PLTP Patuha	West Java	PT. Geo Dipa Energy (GDE)		1 x 55 MWe	GDE	GDE	55.0
12	PLTP Sarulla	North Sumatra	PT. Pertamina Geothermal Energy (PGE) and Joint Operation Contract (JOC) Sarulla Operation Limited (SOL)		3 x 110 Mwe	SOL	SOL	330.0
13	PLTP Karaha	West Java	PT. Pertamina Geothermal Energy (PGE)		1 x 30 Mwe	PGE	-	30.0
14	PLTP Lumut Balai	West Java	PT. Pertamina Geothermal Energy (PGE)		1 x 55 MWe	PGE	PGE	55.0
15	PLTP Sorik Marapi	North Sumatera	PT Sorik Marapi Geothermal Power (SMGP)		1 x 42,4 Mwe	SMGP	SMGP	42.4
16	PLTP Muara Laboh	West Sumatera	PT Supreme Energi Muara Laboh (SEML)		1 x 85 Mwe	SEML	SEML	85.0
							Total	**2,130.7**

Source : Directorate General of New and Renewable Energy and Energy Conservation

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6.5.3 Geothermal Steam Production

(Thousand Tonnes Geothermal Steam)

Year	Pertamina Field							KOB Field				KOB Field		PT. PLN (Persero) Field			PT. Geo Dipa Energy Field			Total
	Kamojang	Sibayak	Lahendong	Ulubelu	Karaha	Lumut Balai	Sub total	Salak	Darajat	Wayang Windu		Sarulla	Sub total	Ulumbu	Mataloko	Sub total	Dieng	Patuha	Sub total	
2009	12,612	497.92	2,665	0	0	0	15,775	24,538	13,977	12,989		0	51,505	0	0	0	780	0	780	68,060
2010	12,446	548.41	2,964	0	0	0	15,959	24,272	14,264	13,675		0	52,211	0	0	0	1,221	0	1,221	69,391
2011	12,470	310.00	2,510	0	0	0	15,290	24,673	14,131	13,523		0	52,327	0	0	0	1,106	0	1,106	68,723
2012	10,878	160.36	3,262	1,393	0	0	15,694	24,513	14,283	13,233		0	52,029	0	0	0	1,047	0	1,047	68,770
2013	11,256	238.67	3,841	5,575	0	0	20,910	23,728	10,678	13,378		0	47,785	253	0	253	348	0	348	69,296
2014	10,489	183.98	4,138	6,174	0	0	20,985	24,307	13,856	13,143		0	51,306	261	0	261	205	840	1,045	73,598
2015	11,974	0.37	4,693	6,044	0	0	22,711	24,755	13,916	7,850		0	46,521	382	41	423	1,770	2,837	4,607	74,263
2016	12,679	0.00	3,295	6,718	0	0	22,692	24,575	13,952	13,613		0	52,140	339	0	339	1,393	3,153	4,546	79,717
2017	12,522	0.00	6,059	10,187	0	0	28,768	24,655	13,871	13,526		4,877	56,929	610	0	610	2,835	2,947	5,782	92,089
2018	14,305	0.00	5,525	9,923	1,334	0	31,086	24,820	12,722	13,222		13,593	64,356	545	0	545	2,511	2,967	5,477	101,465
2019	13,534	0.00	6,628	11,290	1,192	193	32,838	22,511	13,055	12,972		11,683	60,221	679	0	679	2,570	3,003	5,574	99,311

6.5.3 Geothermal Steam Production (Continued)

Year	PT Sorik Marapi Geothermal Power		PT Supreme Energy		Grand Total
	Sorik Marapi	Sub Total	Muara Laboh	Sub total	
2019	649	649	197	197	100,157

Source : Directorate General of New and Renewable Energy and Energy Conservation

6.6.1 Biofuel Production Capacity in 2019

(KL)

Province	Biodiesel	Bioethanol
Banten	12,000	0
West Java	857,699	0
East Java	2,228,736	40,000
Bali	360	0
Riau	4,528,735	0
Batam	0	0
North Sumatera	1,773,563	0
South Sumatera	885,058	0
West Sumatera	35,000	0
West kalimantan	0	0
East Kalimantan	419,540	0
Central Kalimantan	402,299	0
South Kalimantan	440,517	0
North Sulawesi	475,862	0
TOTAL	**12,059,369**	**40,000**

Source : Directorate General of New, Renewable Energy and Energy Conservation

6.6.2 Biodiesel & Biogas Supply

Year	Production (Thousand KL)	Export (Thousand KL)	Domestic (Thousand KL)	Biogas (Thousand m^3)
2009	190	70	119	n.a
2010	243	20	223	n.a
2011	1,812	1,453	359	n.a
2012	2,221	1,552	669	n.a
2013	2,805	1,757	1,048	n.a
2014	3,961	1,629	1,845	n.a
2015	1,620	328	915	18,953
2016	3,656	477	3,008	22,800
2017	3,416	187	2,572	24,786
2018	6,168	1,803	3,750	25,670
2019	8,399	1,319	6,396	26,277

Source : Directorate General of New and Renewable Energy and Energy Conservation

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ANNEX

METHODOLOGY AND TABLE EXPLANATION

GENERAL METHODS

Data shown in the tables of Indonesia's energy and economic statistics are consolidated from various statistics of regular publication. The data are harmonized in format and definition as well as cover an estimate of energy demand calculated by using the macro-economic approach. These data are sourced from the statistics published by Statistics Indonesia, technical units within the Ministry of Energy and Mineral Resources, energy companies, energy associations, and some international agencies.

Statistics books used as the sources of the energy and economic data consolidation are as follows:

a. Crude Oil and Oil Products
   - Indonesia's Oil and Gas Statistics, Directorate General of Oil and Gas

b. Natural Gas (Production, utilization, and flaring)
   - Indonesia's Oil and Gas Statistics, Directorate General of Oil and Gas
   - PT PGN Annual Report

c. Coal
   - Indonesia's Coal Statistics, Directorate General of Mineral and Coal
   - Indonesia's Mineral and Coal Statistics, Directorate of Mineral and Coal Enterprises

d. Biomass
   - National Survey on Social & Economic Issues (*Survei Sosial dan Ekonomi Nasional*. SUSENAS) Statistics Indonesia, 1993, 1996, 1999, 2002

e. LPG
   - Indonesia's Oil and Gas Statistics, Directorate General of Oil and Gas

f. Electricity
   - PLN Statistics
   - Statistics of Electricity, Directorate General of Electricity

g. General
   - Indonesia Statistics, Statistics Indonesia
   - Finance and Economic Statistics, Bank Indonesia (www.bi.go.id)
   - Trade Statistics, Ministry of Trade

h. Renewable Energy
   - Renewable Energy Statistics, Directorate General of New, Renewable Energy, and Energy Conservation

TABLE 2: ENERGY BALANCE TABLE

Energy balance table is a table of energy input-output system. The rows indicate the activities of an energy commodity which consist of four main elements, namely primary energy activity, transformation, own use & losses, and energy consumption, while the columns indicate the types of energy. Energy balance is presented to fully depict the energy activities in a region.

ENERGY BALANCE

DEFINITIONS BY COLUMN

Each column of the energy balance table represents one type of energy. It begins from the left with renewable energy, followed by solid energy, gaseous energy, liquid energy, and electricity.

RENEWABLE ENERGY

Hydropower is energy derived from flowing water. Hydropower plants consist of two basic configurations: with dams and reservoirs, or without. Hydropower dams with a large reservoir can store water over short or long periods to meet peak demand. The amount of hydro energy required to generate electricity is equivalent to that of fossil energy to do the same.

Geothermal energy is good energy produced from the magma inside the earth in the volcanic areas. The hot and high pressure steam emitted from the production well head can be utilized to propel the steam turbine in a geothermal power plant or be used directly for drying agriculture products.

Solar power is the conversion of energy from sunlight into electricity, either directly using photovoltaics (PV), indirectly using concentrated solar power, or a combination of both. Concentrated solar power systems use lenses or mirrors and tracking systems to focus a large area of sunlight into a small beam. Photovoltaic cells convert light into an electric current using the photovoltaic effect. The amount of solar energy required to generate electricity is equivalent to that of fossil energy to do the same.

Wind power is the use of air flowing through wind turbines to provide the mechanical power to turn electric generators and, traditionally, to do other work like milling or pumping. Wind power is, as an alternative to burning fossil fuels, plentiful, renewable, widely distributed, and clean. It produces no greenhouse gas emissions during operation, consumes no water, and uses little land. The net effects of wind power on the environment are far less problematic than those of fossil fuel sources. The amount of wind energy required to generate electricity is equivalent to that of fossil energy to do the same.

Other renewable energy is generally used in small-capacity power plants, for example biomass power plants (PLTBm), biogas power plants (PLTBg), waste power plants (PLTSa), and hybrid power plants. PLTBm is a thermal power plant that uses fuel wood as primary energy, while PLTBg uses oil palm waste and livestock manure as primary energy, and PLTSa uses waste. The amount of other renewable energy required to generate electricity is equivalent to that of fossil energy to do the same.

Solar-powered energy-saving lamp (*Lampu Tenaga Surya Hemat Energi*/LTSHE) is a lighting device in the form of integrated lights with batteries whose energy is sourced from photovoltaic solar power plants. The LTSHE works by capturing the energy from the sun in solar panels, converts the solar energy into electrical energy which is then stored in a battery. The electrical energy inside this battery is then used to turn on the lights. Meanwhile, solar-powered street lighting

(*Penerangan Jalan Umum Tenaga Surya*/PJUTS) is a street lighting lamp that uses sunlight as the source of electrical energy.

Biomass is a renewable, organic material-based fuel. Biomass includes, among others, firewood (wood, wood waste, charcoal), agriculture wastes (rice hulls, rice straw, palm fronds, coconut shell, etc.), urban solid waste, and industrial waste. The data of biomass consumption in the household sector has been calculated based on the approach of the National Socio-Economic Survey (*Survei Sosial Ekonomi Nasional*/SUSENAS) and the share of biomass use in the household sector.

SOLID ENERGY

Coal consists of hard coal and lignite. Data on the volume of coal is only available in aggregate number. In the energy balance table, the conversion factor used is the average of Indonesian coal calorific factor (4,276 BOE per Ton Coal). Detailed category and specification of coal available in Indonesia are as follows:

- Hard coal is a type of coal that has a calorific value of more than 5,700 kcal/kg (23.26 MJ/kg). Hard coal consists of steam coal, coking coal, bituminous coal, and anthracite.

- Steam coal is a type of coal that is used in boiler, steam generator and furnace. This category includes anthracite and bituminous coal. Steam coal has a gross calorific value of more than 23,865.0 kJ/kg (5,700 kcal/kg), lower than that of coking coal.

- Coking coal is a type of coal that is used to produce material that reduces coke in blast furnace. Its gross calorific value is higher than 23,865 kJ/kg (5,700 kcal/kg), ash free. Sub-bituminous coal is a type of coal that has a gross calorific value between 17,435.0 kJ/kg (4,165 kcal/kg) and 23,865.0 kJ/kg (5,700 kcal/kg). Anthracite is a type of coal that has similar characteristics to those of steam coal.

- Lignite is a type of coal that has a gross calorific value of less than 4,165 kcal/kg (17.44 MJ/kg) and volatile matter of more than 31%, dry basis. Lignite is often called low-rank coal or brown coal.

- Coke is the product of high temperature carbonization of steam coal. Coke is used as reducing agent in steel plants.

- Briquettes is the fuel produced by briquetting sub-bituminous coal, lignite, or peat through the process of carbonization or powdering. Briquette is more convenient to use and has better quality than its raw materials.

GASEOUS ENERGY

Gaseous energy includes natural gas and town gas. Natural gas generally consists of methane mined from underground accumulation, and associated gas from oil production, as well as coal bed methane. Town gas includes all kinds of gas, such as gas produced from carbonization process, gasification of petroleum oils, and chemical conversion of hydrocarbon fossil fuels.

LIQUID

Crude oil is a mineral oil consisting of a mixture of hydrocarbons with blackish green color and a range of density and viscosity. It is the raw material for producing oil fuels (*Bahan Bakar Minyak*/BBM) and petrochemical products.

Condensate is a kind of liquid hydrocarbon which includes Natural Gas Liquid (NGL). NGL consists of ethane, propane, butane, pentane, and natural gasoline.

OIL FUELS/Petroleum Products (BBM). The energy balance table contains petroleum products used for energy, namely Avgas, Avtur, Mo-gas (Motor gasoline), Gasoil, Marine Diesel Fuel (MDF/IDO), Fuel Oil, and Kerosene. Detailed description of each fuel is as follows:

Avgas (aviation gasoline) is aircraft fuel that consists of light hydrocarbons distilling between 100°C and 250°C. The distilled product contains at least 20% of the volume at 143°C.

Avtur is jet aircraft fuel which consists of hydrocarbon middle distillates having similar distillation and flash point characteristics as those of kerosene, with a maximum aromatic content of 20% of the volume. It has a freezing point of less than -47°C and octane number between 80-145 RON.

Mogas (motor gasoline) is a light hydrocarbon used in the internal combustion engine of motorized vehicles (excluding aircrafts). Mogas is distilled at a temperature between 35°C and 215°C and processed in Reformer, Catalytic Cracking, or Blending with aromatic fraction to achieve a high octane number. In the Indonesian markets, three gasoline types are available, namely RON 88, RON 92, and RON 95.

Diesel Oil is a refinery product containing heavy gasoil. This type of fuel is obtained from the lowest fraction of crude oil distilled at atmospheric pressure, while the heavy gasoil is obtained from the vacuum residue of crude oil distilled at atmospheric pressure. On the market, diesel oil is divided into Gasoil CN 48 (*Minyak Solar*) and Industrial Diesel Oil (IDO/*Minyak Diesel*). Fuel Oil (FO) is oil made from the distillation of residue. This type of fuel includes all kinds of residues including those from blending. FO has viscosity of about 10 cSt at SOT. Its flash point is higher than SOT and its density is more than 0.9.

Kerosene is the fuel produced from crude oil distillation having volatility between the volatility of gasoline and that of gasoil. It has a distillation range between 150°C and 300°C, where a minimum of 65% of the volume is distilled at 250°C. It has specific gravity of 0.8 and flash point of over 38°C.

LPG is light hydrocarbon fraction of crude oil, produced at oil refinery, consisting of either propane (C_3H_8) and butane (C_4H_{10}) or a mixture of both. In addition to oil refinery, LPG is also produced from natural gas purification.

Electricity is the electric power generated by various kinds of power plants, such as Hydro Power Plant (*Pembangkit Listrik Tenaga Air*/PLTA), Geothermal Power Plant (*Pembangkit Listrik Tenaga Panas Bumi*/PLTP), Solar Power Plant (*Pembangkit Listrik Tenaga Surya*/PLTS), Wind Power Plant (*Pembangkit Listrik Tenaga Bayu*/PLTB), Biomass Power Plant (*Pembangkit Listrik Tenaga Biomassa*/PLTBm), Biogas Power Plant (*Pembangkit Listrik Tenaga Biogas*/PLTBg), Waste Power Plant (*Pembangkit Listrik Tenaga Sampah*/PLTSa), Gas Power Plant (*Pembangkit Listrik Tenaga Gas*/PLTG), Gas Steam Power Plant (*Pembangkit Listrik Tenaga Gas Uap*/PLTGU), Coal Steam Power Plant (*Pembangkit Listrik Tenaga Uap*/PLTU), and Diesel Power Plant (*Pembangkit Listrik Tenaga Diesel*/PLTD), etc. The capacity data displayed in the table is in accordance with those stated in the power plant construction permit.

LNG (Liquefied Natural Gas) is the liquid produced by liquefying natural gas at a temperature of -160T to facilitate its transportation over very long distances.

Total is the sum of all columns in certain row. In the energy transformation row, the total of all columns indicates the efficiency of the transformation process.

DEFINITIONS BY ROW

Total Primary Energy Supply equals domestic production plus import minus export minus bunker and minus/plus stock change. Data on bunker and stock change are not available. Production refers to the total gross primary energy produced (extracted) from the earth. Import refers to the energy obtained from other countries, not including energy in transit. Export refers to the energy sold to other countries.

Domestic supply is defined as indigenous production + from other sources + imports – exports – international marine bunker – international aviation bunker ± stock change. Production is defined as the capture, extraction, or manufacture of fuel or energy in a form that is ready for general use.

ENERGY TRANSFORMATION

Transformation refers to the transformation process of primary energy into final energy. Transformation includes the processes in LPG plants, and carbonizing plants. Input has a negative sign while production has a positive sign.

Oil Refining refers to the processing of crude oil and condensate to produce oil fuels such as naphtha, avgas, avtur, gasoil, IDO, mogas, kerosene, fuel oil, LPG, etc. The consumption of energy such as natural gas and naphta is also included.

Gas Processing (at LNG plants and LPG plants) refers to the process of liquefaction or purification of natural gas to produce LNG or LPG.

Power Generation is the transformation of energy into electric power. The row records the quantity of consumed fuels (coal, oil fuels, natural gas, hydropower, geothermal power, biomass, wind, photovoltaic (solar energy), biogas, waste, etc.) and the amount of electricity generated which includes the electricity from

on-grid and off-grid systems. The data on electricity production from off-grid power plants are obtained through a data capacity approach. In 2018, data on production and electricity capacity from off-grid power plants emerged as a result of off-grid power plant inventory with the aim of calculating the national energy mix.

Biofuel Blending is the quantity of liquid biofuels which are not delivered for the final consumption but are instead used by other petroleum products as reported in the oil questionnaire.

LNG Regasification is a process of converting Liquefied Natural Gas (LNG) at a temperature of -162°C back to natural gas at atmospheric temperature.

OWN USE AND LOSSES

Own Use and Losses include own uses and losses in primary energy production and transformation processes.

- Losses in Production are losses that occur due to transportation, distribution, and transfer by pipe. Own use in Production includes all energy consumed in the field (off-road transportation, genset, boiler, etc.), while all energy consumed in transportation is computed in the Transportation Sector.
- Losses in Oil Refining are losses that occur due to transportation, distribution, and transfer by pipe. Own use in Oil Refining is all energy consumed in the oil refining processes.
- Losses in Gas Processing are losses that occur due to transportation, distribution, and transfer by pipe. Own use in Gas Processing is all energy consumed in the gas processing.
- Losses in Electricity System are losses occurred in transformer, transmission, and distribution network.
- Own use in Electricity Generation is all energy consumed within a power plant area.

Statistical Difference is the difference between net supply (production + import – export – transformation input + transformation production – own use and losses) and total final consumption (household, commercial, industry, and transportation).

FINAL ENERGY CONSUMPTION

Total Final Energy Consumption is the quantity of energy consumption by household, commerce, industry, and transportation sectors as well as non-energy consumption.

Household consumption refers to all energy consumption by households, excluding consumption by private cars.

Commercial consumption refers to the energy consumption by commercial units such as the markets, hotels, restaurants, financial institutions, government agencies, schools, hospitals, etc.

Industry consumption refers to the energy consumption by the following industrial subsectors (excluding transportation): iron and steel, chemical, non-iron metal, non-metal production, machine and equipment, non-energy mining and quarrying, food, paper, wood, petrochemical, textile, etc.

Transportation consumption refers to the energy consumption by all transportation activities in all economic sectors. Transportation subsectors are air transportation, land transportation (motor-cycles, cars, buses, and trucks), ferries, and railway transportation. The consumption by the fishery, construction, and mining subsectors is also included in the transportation consumption.

Non-energy consumption refers to the energy consumption for non-energy uses, such as hydrocarbons or coal used as lubricating oils or raw materials (naphtha, natural gas, and cokes), and gas used as raw material for petrochemical products (methanol and ammonia/urea).

02

ANNEX

GLOSSARY

Avgas
Aviation gasoline; special high-octane gasoline for aircraft reciprocating engines; has high stability, low freezing point, and a rather flat distillation curve.

Avtur
Aviation turbine fuel; special fuel for turbine/jet aircraft; special kerosene with a distillation range of 150°C - 250°C.

Biomass
Collective name for firewood, agriculture waste (rice husks, rice stems, palm fronds, coconut shells), black liquor, wood chips, wood barks.

BOE (Barrel Oil Equivalent)
Calorific equivalent of a barrel of crude oil.

Captive Power Plant
A power plant owned by an industry to produce electricity for its own use.

Coal
Sedimentary rocks originated from piles of wood since millions of years ago.

Coal Transformation
Processing of coal (coking coal, steam coal, sub-bituminous coal, and lignite) to produce coke, blast furnace gas, and briquette.

Commercial
A group of energy consumers which uses energy for lighting, air conditioning, mechanical equipment, cooking appliance, and water heating, but not including consumption for vehicles/ transportation. Energy consumers included in this group are commercial and general businesses, such as market, hotel, restaurant, financial institution, government agency, school, hospital, etc.

Condensate
Liquid extracted from natural gas; may be in the form of liquid petroleum gas or natural gasoline.

Conversion Factor
Factors used to convert physical units, such as liter, barrel, ton, and cubic meter, to energy units, such as Joule, BTU, ton coal equivalent (TCE), or barrel or ton oil equivalent (BOE or TCE).

Crude Oil
A mixture of hydrocarbons occurring in liquid phase in the subsurface reservoir and one that remains liquid under atmospheric pressure.

Diesel Oil
A refinery product which contains heavy gasoil, and available as gasoil CN 48 or Industrial Diesel Oil (IDO).

DPPU
Depo Pengisian Bahan Bakar Pesawat Udara (Aircraft Refueling Depot), a depot serving avgas and avtur for aircraft consumption.

Electricity
Electric power generated by electric power plants, such as Hydro Power Plant (PLTA), Geothermal Power Plant (PLTP), Solar Power Plant (PLTS), Wind Power Plant (PLTB), Gas Power Plant (PLTG), Gas Steam Power Plant (PLTGU), Coal Steam Power Plant (Coal PLTU), Diesel Power Plant (PLTD), etc.

Energy Balance Table
The energy system's input-output table; the rows indicate the activities of an energy commodity which consists of four main elements, namely primary energy, transformation, own use & losses, and energy consumption. The columns indicate the type of energy commodity.

Final Energy
Energy which can be directly consumed by user.

Final Energy Consumption
Energy consumption of the four sectors of energy consumers, namely household sector, commercial sector, industry sector, and transportation sector as well as the consumption of energy as raw material and reduction agent. In compiling the Energy Planning of Riau, the household sector is combined with the commercial sector due to the limited data obtained.

Final Stock
Total stock at the end of the year.

Fuel Oil
The lowest order of refinery product; heavy distillate, residue, and their mixture which are used as the fuel in industrial furnace and electric power plant.

Gasoil CN 48
A type of diesel oil with Cetane Number 48 used as the fuel for high-speed diesel engine.

Gasoline
(see mogas)

Gas Process
At LNG plant or LPG plant; liquefaction or purification process to produce LNG and LPG.

GDP at Constant Price
Added value of goods and services computed on the basis of prices in a certain year.

GDP, Nominal (based on current price)
Added value of goods and services computed on the basis of prices in each year.

Goods and Services Export
All transfer and sale of goods and services from a resident of a country to a resident of another country, including those conducted in the same country or in another country. Value of goods export is based on FOB.

Government Consumption
Expenditures for employee expenses, depreciation and purchase of goods and services (including travel expenses, maintenance and other routine expenditures), spent by central government or regional governments, but excluding revenue from the production of goods and services.

Household
A group of energy consumers which uses energy for cooking, lighting, and household appliances, but excluding energy consumption for private cars.

Hydropower
Hydropower is energy derived from flowing water. Hydropower plants consist of two basic configurations: with dams and reservoirs, or without. Hydropower dams with a large reservoir can store water over short or long periods to meet peak demand.

Import
Purchase from other countries, excluding goods in transit.

Industrial Diesel Oil (IDO)
A type of diesel oil used as fuel in low or medium-speed industrial diesel engine (and marine engine).

Industry
A group of energy consumers which uses energy for industrial processes, such as steam boiling, direct heating, lighting, and the driving force of mechanical equipment, but does not include the energy used for electricity generation by industries; such as iron and steel, chemical, non-iron metal, non-metal production, food, paper, wood, construction, textile etc.

Initial Stock
Total stock at the beginning of the year.

International Bunker
The energy consumption for international shipping; supplied to international ships for all ships bearing any flag.

Kerosene
A type of oil fuel produced from distillation process; its volatility lies between the volatility of motor gasoline (mogas) and that of diesel oil; used as fuel for lighting, kitchen stove, and outboard engine.

Losses in Electricity Generation
Losses that occur in transformer, transmission, and distribution network.

LPG
Liquefied Petroleum Gas; light hydrocarbons from crude oil; produced from oil refinery process or purification process of natural gas; consisting of either propane (C_3H_8) and butane (C_4H_{10}) or a mixture of both.

LNG Regasification
A process of converting Liquefied Natural Gas (LNG) at -162°C temperature back to natural gas at atmospheric temperature.

LSWR
Low Sulphur Waxy Residue; a by-product of oil refining.

Mogas
Motor gasoline; light hydrocarbon oil used in internal combustion engine, except aircraft engine; available in the market as gasoline RON 88, gasoline RON 90, gasoline RON 92, and gasoline RON 95.

Natural Gas
All kinds of hydrocarbon gas produced from wells; a mixture of hydrocarbon gas and vapor occurring naturally which main components are methane, ethane, propane, butane, pentane, and hexane; mined from underground accumulation either directly or as associated gas in oil mining.

Natural Gas Liquid
(see Condensate)

Non-energy Consumption

Non-energy consumption includes consumption of lubricating oil, raw material for petrochemical industry (naphtha, natural gas, and coke), and gas consumed as chemical raw materials (methanol and ammonia/urea).

Non-renewable Energy

Energy which reserves cannot be brought back into original condition; generally consists of fossil energy.

Oil Refinery

Crude oil or condensate processing unit to produce oil fuels, such as naphtha, avgas, avtur, gasoil CN 48, IDO, mogas, kerosene, fuel oil, LPG, etc.

Other Oil Products (OOP)

Other refinery products, such as naphtha, lubricating oil, bitumen, paraffin, etc. (sulphur, grease).

Own Use and Losses

A category that includes energy losses and the energy used in primary energy production field and in each transformation.

Own Use in Electricity Generation

Own use refers to the amount of energy consumed in power plant and in the transmission and distribution sub-stations.

Own Use and Losses in Gas Processing

Losses that occur due to transportation, distribution, and transfer by pipe. Own use refers to the amount of energy consumed in gas processing.

Own Use and Losses in Oil Refinery

Losses that occur due to transportation, distribution, and transfer by pipe. Own use refers to the amount of energy consumes in oil refinery processes.

Own Use and Losses in Production Field
Losses that occur due to transportation, distribution, and transfer by pipe. Own use refers to the amount of energy consumed in production field.

PLN Power Plant
Electric power plant owned by PT PLN (Persero) to produce electricity for sale to the public.

Primary Energy
Energy in its original form extracted by means of mining, dam, or renewable energy utilization.

Private Sector Power Plant
Power plant owned by private sector to produce electricity for sale to the public. Known as Independent Power Producer (IPP).

Production
Total gross primary energy extracted/produced.

Renewable Energy
Energy which reserve can be brought back into original condition.

SBM
(see BOE)

Secondary Energy
Energy which has undergone transformation process into other form of energy.

SPBU
Stasiun Pengisian BBM Umum, public oil fuel refueling station, which sells gasoline (RON 88, RON 90, RON 92, and RON 95) and gasoil (CN 48).

Solar-Powered Energy Saving Lamp
A lighting device in the form of integrated lights with batteries whose energy is sourced from photovoltaic solar power plants.

Solar-Powered Street Lighting
A street lighting lamp that uses sunlight as a source of electrical energy.

Statistical Difference
Difference between net supply (production + import – export – international bunker – stock change – consumption for transformation + production from transformation – own use – losses) and total final consumption.

Stock Change
Difference between the stock in the beginning and at the end of the year. Stock decrease in energy balance is shown by positive sign which means there is an increase in supply, while stock increase is shown by negative sign which means there is a decrease in supply.

Sub-bituminous coal
A type of coal which has calorific value of 5,000–6,000 kcal/kg.

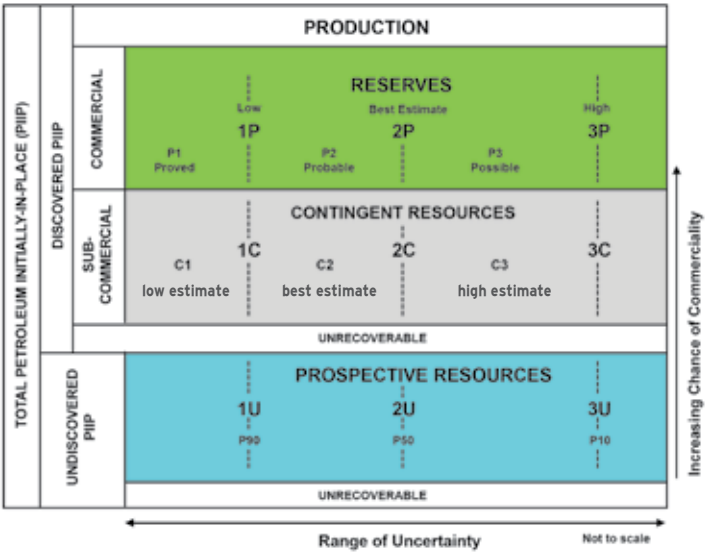
Total Energy Balance
Total of all columns in a certain row. In transformation row, the total of columns indicates efficiency of the transformation process.

Total Final Energy Consumption
Sum of energy consumption in the following sectors: household, commercial, industry, transportation, and non-energy consumption.

Total Primary Energy Supply
Local production plus import less export less bunker and less or plus stock change.

Transportation
A group of energy consumers which uses energy for transportation vehicles.

Oil and Gas Classification Reserves Based on Petroleum Resources Management System 2018



Source : Society of Petroleum Engineers

03

ANNEX

CONVERSION FACTOR

Energy	Original Unit	Multiplier Factor to BOE (Barrel Oil Equivalent)
Coal		
Anthracite	Ton	4.9893
Imported Coal	Ton	4.2766
Kalimantan Coal	Ton	4.2000
Ombilin Coal	Ton	4.8452
Tanjung Enim Coal	Ton	3.7778
Lignite	Ton	3.0649
Riau Peat	Ton	2.5452
Briquette	Ton	3.5638
Biomass		
Charcoal	Ton	4.9713
Firewood	Ton	2.2979
Natural Gas	MSCF	0.1796
Gas Products		
City Gas	Thousand KCal	0.0007
CNG	Thousand KCal	0.0007
LNG	Ton	8.0532
LNG	MMBTU	0.1796
LPG	Ton	8.5246

CONVERSION FACTOR (continued)

Energy	Original Unit	Multiplier Factor to BOE (Barrel Oil Equivalent)
Oil		
Condensate	Barrel	0.9545
Crude Oil	Barrel	1.0000
Oil Fuel		
Aviation Gasoil (Avgas)	Kilo Liter	5.5530
Aviation Turbine Gas (Avtur)	Kilo Liter	5.8907
Super TT	Kilo Liter	5.8275
Premix	Kilo Liter	5.8275
Premium	Kilo Liter	5.8275
Kerosene	Kilo Liter	5.9274
Gasoil	Kilo Liter	6.4871
IDO	Kilo Liter	6.6078
FO	Kilo Liter	6.9612
Oil Products		
Other Oil Products	Barrel	1.0200
Refinery Fuel		
Refinery Fuel Gas (RFG)	Barrel	1.6728
Refinery Fuel Oil (RFO)	Barrel	1.1236
Feed Stock	Barrel	1.0423
Electric Power	MWh	0.6130

Source : Neraca Energi 1990-1994, Department of Mining and Energy

Ministry of Energy and Mineral Resources
Republic of Indonesia

HANDBOOK OF ENERGY & ECONOMIC STATISTICS OF INDONESIA 2019

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