Ministry of Energy and Mineral Resources
Republic of Indonesia

HANDBOOK OF ENERGY & ECONOMIC STATISTICS OF INDONESIA

2022

Ministry of Energy and Mineral Resources
Republic of Indonesia

HANDBOOK OF ENERGY & ECONOMIC STATISTICS OF INDONESIA

2022

Team Handbook

Steering Committee

Agus Cahyono Adi	(Head of Center for Data and Information Technology)
Farida Lasnawatin	(Coordinator of Data Management Division)

Coordinators

Anton Budi Prananto	(Sub-Coordinator of Energy Data Management Subdivision)
Lukfi Halim	(Sub-Coordinator of Mineral Data Management Subdivision)

Technical Committee

Imam Gagas Anutomo	(Statistician and PIC of Electricity Data)
Dini Anggreani	(Statistician and PIC of NRE Data)
Fifi Indarwati	(Statistician)
Muhammad Yusuf	(PIC of Oil Data)
Linda Ambarsari	(PIC of Gas Data)
Herlina Yuanningrat	(PIC of Mineral and Coal Data)

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, May 2023
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 2012 through 2022. There are some revised data from the previous edition of the Handbook for 2015 to 2021. 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).

ISSN 2528-3464

List of Contents

Indonesia's Concise Energy Profile 2022

A. SOCIO ECONOMY[1)]

Teritorial Area :	8,300,000.00	km^2
Land Area :	1,892,410.09	km^2
Population :	275,773.80	Thousand People
Household :	70,841.75	Thousand Households
GDP Nominal		
Total Amount :	19,588.45	Trillion Rupiah
Per Capita :	71,030.84	Thousand Rupiah per Year

B. ENERGY PRODUCTION

Primary Energy Production

Crude Oil :	223,532.50	Thousand Barrels
Natural Gas (net) :	2,027.36	BSCF
Coal :	687,432.38	Thousand Tonnes
Hydro Power :	27,294.61	GWh
Geothermal :	16,676.94	GWh

C. FINAL ENERGY CONSUMPTION 1,185.56 Million BOE

Energy Consumption by Type

Coal :	299.19	Million BOE
Oil Fuel :	477.82	Million BOE
Gas :	74.58	Million BOE
Electricity :	183.41	Million BOE

[1]) Sources : BPS, Statistics Indonesia

LPG :	72.99	Million BOE
Traditional Biomass :	71.90	Million BOE
BioGas :	0.21	Million BOE
Industrial Biomass :	4.52	Million BOE
Solar Water Heater :	0.94	Million BOE
Direct Use of Geothermal :	0.00	Million BOE
Energy Consumption by Sector	**1,185.56**	
(Excluded non energy use)		
Industry :	534.75	Million BOE
Transportation :	428.61	Million BOE
Household :	161.48	Million BOE
Commercial :	49.65	Million BOE
Other Sector :	11.07	Million BOE
Non Energy :	31.59	Million BOE

D.	**ELECTRIFICATION RATIO 2022**	**99.63**	**%**

01

ENERGY & ECONOMIC INDICATORS

Handbook of Energy & Economic Statistics of Indonesia 2022

1.1 GDP and Energy Indicator

	Unit	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
GDP at 2010 Constant Price[1)]	Trillion Rupiahs	7,727	8,156	8,565	8,983	9,435	9,913	10,426	10,949	10,723	11,120	11,710
GDP Nominal[1)]	Trillion Rupiahs	8,616	9,546	10,570	11,526	12,407	13,590	14,839	15,833	15,438	16,977	19,588
GDP Nominal per Capita[1)]	Thousand Rupiahs	35,105	38,366	41,916	45,120	47,957	51,891	55,992	59,060	56,953	62,258	71,031
Population[1)]	Thousand	245,425	248,818	252,165	255,462	258,705	261,891	265,015	268,075	271,066	272,683	275,774
Number of Households[1)]	Thousand	63,097	63,938	64,767	65,582	66,385	67,173	67,945	68,701	69,439	70,048	70,842
Primary Energy Supply	Thousand BOE	1,242,481	1,221,021	1,235,133	1,213,300	1,286,934	1,335,402	1,465,223	1,558,688	1,438,784	1,476,112	1,759,721
Primary Energy Supply per Capita	BOE / capita	5,06	4,91	4,90	4,75	4,97	5,10	5,53	5,81	5,31	5.41	6,38
Final Energy Consumption	Thousand BOE	818,461	749,241	762,805	759,744	738,265	771,695	867,340	944,772	842,360	850,066	1,113,657
Final Energy Consumption per Capita	BOE / capita	3,33	3,01	3,03	2,97	2,85	2,95	3,27	3,52	3,11	3.12	4,04

	Growth (%)			Growth (%)						
	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022
GDP at 2010 Constant Price[1)]	5.56	5.01	4.88	5.03	5.07	5.17	5.02	-2.06	3.70	5.31
GDP Nominal[1)]	10.80	10.72	9.05	7.64	9.54	9.19	6.70	-2.49	9.97	15.38
GDP Nominal per Capita[1)]	9.29	9.25	7.64	6.29	8.20	7.90	5.48	-3.57	9.32	14.09
Population[1)]	1.38	1.35	1.31	1.27	1.23	1.19	1.15	1.12	0.60	1.13
Number of Households[1)]	1.33	1.30	1.26	1.22	1.19	1.15	1.11	1.07	0.88	1.13
Primary Energy Supply	-1.73	1.16	-1.78	6.07	3.77	9.72	6.38	-7.69	2.59	19.21
Final Energy Consumption	-8.46	1.81	-0.42	-2.83	4.53	12.39	8.93	-10.84	0.91	31.01
Final Energy Consumption per Capita	-9.71	0.46	-1.70	-4.05	3.26	11.07	7.68	-11.82	0.32	29.54

Sources : 1) BPS, Statistics Indonesia
Note : Primary Energy Supply and Final Energy Consumption which are calculated is commercial energy (excluded Traditional Biomass)

Handbook of Energy & Economic Statistics of Indonesia 2022

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	
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	10,425,852	5,651,456	828,877	3,444,310		197,370	2,286,395	2,203,270	14,838,756	142
2019	10,949,038	5,936,399	855,931	3,597,664		129,954	2,266,679	2,040,354	15,832,535	145
2020	10,723,055	5,780,223	872,774	3,419,182		51,334	2,090,273	1,704,165	15,438,018	144
2021	11,118,869	5,896,697	909,173	3,549,219		62,709	2,592,682	2,101,352	16,970,789	153
2022	11,710,398	6,187,190	870,093	3,686,574		70,749	2,858,316	2,415,760	19,588,446	167

Source : BPS, Statistics Indonesia

1.3 Price Index

Year	Wholesale Price Index[1)]			Consumer Price Index[2)]	Coal Price Index for Power Plant[3)]
	Export	Import	General		
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	159.72	150.00	166.22	139.07	156.70
2020	150.75	150.91	150.82	105.68	187.47
2021	174.14	169.58	172.08	105.95	168.26
2022	193.43	186.46	190.28	113.59	186.62

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) The unit is (Rp/ton); unaudited data for 2022

1.4 Population and Employment

Year	Population	Labor Force	Household	Unemployment	Unemployment Percentage (toward labor force)
	Thousand People	Thousand People	Thousand Household	Thousand People	(%)
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	121,022	67,173	7,040	5.8
2018	265,015	126,282	67,945	7,073	5.6
2019	268,075	128,755	68,701	7,104	5.5
2020	271,066	128,454	69,439	9,768	7.6
2021	272,683	131,051	70,048	9,102	6.9
2022	275,774	135,297	70,842	8,426	6.2

Source : BPS, Statistics Indonesia

Handbook of Energy & Economic Statistics of Indonesia 2022

1.5 International Trade

Year	Balance of Trade[1]		Balance of Payment[2]		Balance of Payment[2]		Exchange Rate Rupiah to US$[2]	US$ Deflator[3]
	Export	Import	Current Account		Capital and Financial Account	Overall Balance		
	Million US$		Million US$		Million US$			
2012	207,073	207,621	-24,418		-24,368	491	9,670	1.05
2013	197,060	200,548	-29,115		22,010	-7,105	12,189	1.07
2014	175,981	178,179	-4,159		5,087	928	12,440	1.09
2015	150,366	142,695	-17,519		16,860	-659	13,795	1.10
2016	145,186	135,653	-16,952		29,346	12,394	13,436	1.11
2017	168,828	156,986	-16,196		28,732	12,536	13,548	1.08
2018	180,215	188,711	-30,633		25,219	-5,414	14,038	1.10
2019	167,683	171,276	-30,279		36,603	6,324	13,901	1.12
2020	163,306	141,569	-4,433		7,921	3,488	14,105	1.14
2021	231,522	196,190	3,511		12,572	16,083	14,269	1.18
2022	291,979	237,447	4,265		-435	3,830	15,731	1.27

Source : 1. BPS, Statistics Indonesia
2. Bank of Indonesia
3. Derived from World Economic Outlook Database, IMF

1.6 Share of Supply of Primary Energy

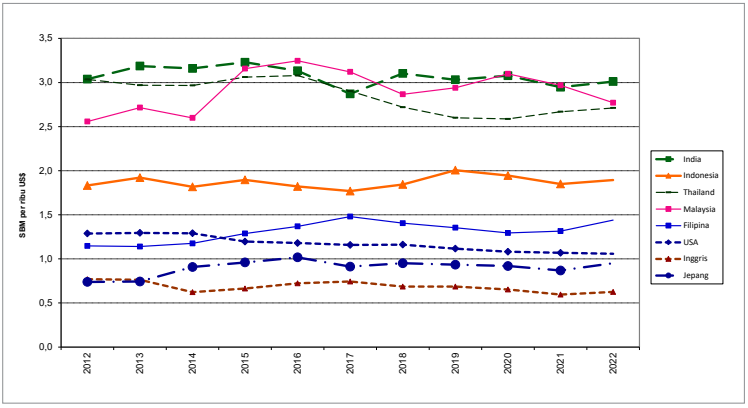
By Type (excluded Traditional Biomass)

(%)

Type of Energy	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Oil	47.43	48.13	46.77	41.99	41.35	41.42	38.71	34.97	32.74	33.43	31.40
Coal	27.77	24.79	25.90	30.05	29.55	30.52	32.99	37.30	38.50	37.85	42.38
Gas	20.88	22.12	21.97	23.05	22.42	21.39	19.68	18.51	17.46	16.40	13.92
New and Renewable Energy	3.92	4.96	5.35	4.91	6.68	6.68	8.63	9.22	11.31	12.32	12.30
Hydropower	2.35	3.15	3.07	2.85	3.69	3.56	2.74	2.52	3.14	3.11	2.89
Geothermal	1.22	1.25	1.31	1.35	1.36	1.52	1.78	1.68	2.01	2.00	1.76
Solar	n.a	n.a	n.a	n.a	n.a	n.a	0.02	0.03	0.05	0.05	0.10
Wind	n.a	n.a	n.a	n.a	n.a	n.a	0.03	0.08	0.08	0.07	0.05
Bioenergy PP	n.a	n.a	n.a	n.a	n.a	n.a	2.08	1.92	2.11	2.54	2.96
Solar-powered street lighting and solar-powered energy saving lamp	n.a	n.a	n.a	n.a	n.a	n.a	0.00	0.00	0.00	0.00	0.00
Solar Water Heater	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	0.05
Direct Use of Geothermal	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	0.00
Biofuel	0.35	0.56	0.97	0.69	1.60	1.57	1.93	2.95	3.86	4.44	4.23
BioGas	n.a	n.a	n.a	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Industrial Biomass	n.a	n.a	n.a	0.01	0.01	0.01	0.02	0.04	0.04	0.09	0.26

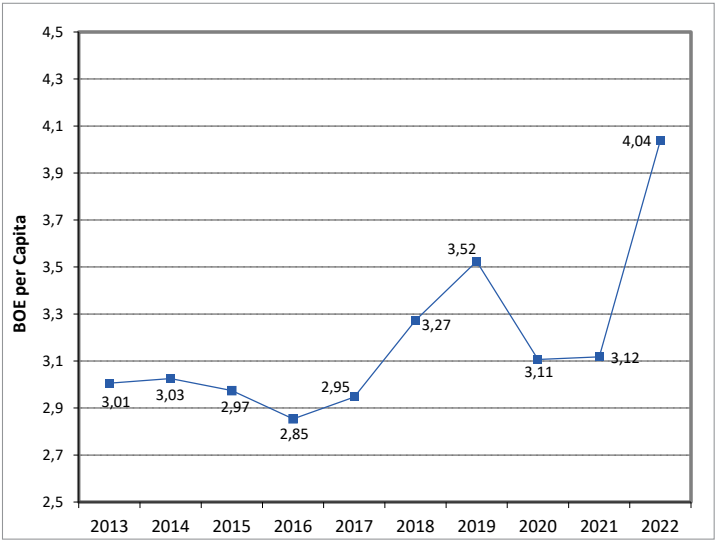
Note : Oil including crude oil, petroleum product and LPG
Coal including coal and briquette
Gas including natural gas and LNG
Solar PP including solar photovoltaic (PV), Solar-powered street lighting and solar-powered energy saving lamp
Bioenergy including biomass PP, bioGas PP, waste PP, and hybrid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

1.7. Comparison of Primary Energy Intensity in Some Country



Sources : BP Statistical Review of World Energy 2022 and World Economic Outlook Database, 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

Handbook of Energy & Economic Statistics of Indonesia 2022

Indonesia Energy Balance Table 2022

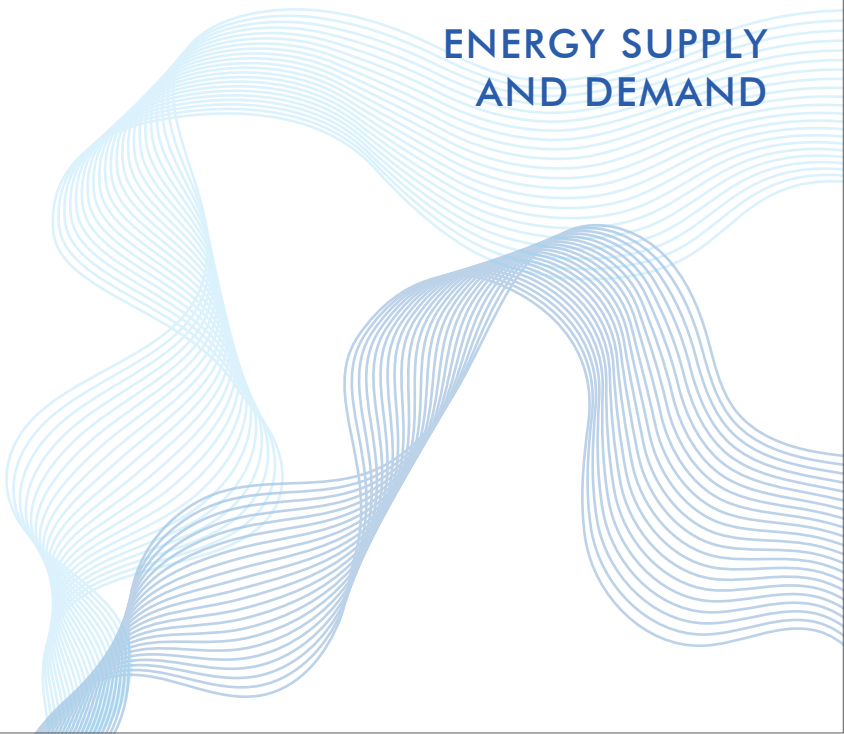
(Thousand BOE)

		Hydro Power	Geo-thermal	Solar PP & Solar PV	Wind PP	Bioenergy PP	Solar Powered Public Street Lighting & Energy Saving Lamp	Solar Water Heater	Direct Use of Geo-thermal	Industrial Biomass		Traditional Biomass	Coal	Natural Gas	Crude Oil	Oil Fuel	Biofuel	BioGas	LPG	Electricity	LNG	Total
1	**Primary Energy Supply**	**50,781**	**30,979**	**1,706**	**873**	**52,086**	**50**	**936**	**4**	**4,524**		**71,899**	**745,721**	**324,761**	**328,992**	**167,422**	**74,371**	**206**	**56,055**	**0**	**-79,745**	**1,831,619**
	a, Production	50,781	30,979	1,706	873	52,086	50	936	4	4,524		71,899	2,375,354	364,114	223,532	0	76,782	206	0	0	0	3,253,824
	b, Import	0	0	0	0	0	0	0	0	0		0	43,167	0	104,722	163,891	0	0	57,448	0	0	369,228
	c, Export	0	0	0	0	0	0	0	0	0		0	-1,607,921	-39,353	-15,494	-11,729	-2,411	0	-1	0	-79,745	-1,756,654
	d, Stock Change	0	0	0	0	0	0	0	0	0		0	-64,879	0	16,231	15,260	0	0	-1,391	0	0	-34,779
2	**Energy Transformation**	**-50,781**	**-30,979**	**-1,706**	**-873**	**-52,086**	**-50**	**0**	**0**	**0**		**0**	**-446,530**	**-182,815**	**-322,541**	**311,316**	**-67,784**	**0**	**16,932**	**204,458**	**80,683**	**-542,755**
	a, Refinery	0	0	0	0	0	0	0	0	0		0	0	-2,727	-322,541	261,659	0	0	7,684	0	0	-55,926
	b, Gas Processing	0	0	0	0	0	0	0	0	0		0	0	-134,266	0	0	0	0	9,249	0	141,725	16,708
	c, LNG Regas	0	0	0	0	0	0	0	0	0		0	0	32,091	0	0	0	0	0	0	-32,091	0
	d, Coal Processing Plant	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0
	e, Biofuel Blending	0	0	0	0	0	0	0	0	0		0	0	0	0	67,784	-67,784	0	0	0	0	0
	f, Power Plant	-50,781	-30,979	-1,706	-873	-52,086	-50	0	0	0		0	-446,530	-77,913	0	-18,127	0	0	0	204,458	-28,951	-503,537
	- State Own Utility (PLN)	-24,474	-7,687	-43	0,00	-1,470	0	0	0	0		0	-241,453	-64,087	0	-18,127	0	0	0	112,681	-28,951	-273,610
	- Independent Power Producer (Non-PLN)	-17,052	-23,292	-984	-867	-906	0	0	0	0		0	-205,077	-13,826	0	0	0	0	0	76,181	0	-185,822
	- Off Grid	-328	0	-679	-5	-49,711	-50	0	0	0		0	0	0	0	0	0	0	0	12,650	0	-38,123
	- IO	-8,928	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	2,946	0	-5,982
3	**Own Use and Losses**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**		**0**	**0**	**-33,080**	**-6,451**	**-917**	**0**	**0**	**0**	**-23,292**	**-938**	**-64,678**
	a, During Transformation	0	0	0	0	0	0	0	0	0		0	0	-2,727	-6,451	0	0	0	0	-7,377	0	-16,555
	b, Energy Use/ Own Use	0	0	0	0	0	0	0	0	0		0	0	-30,353	0	0	0	0	0	0	0	-30,353
	c, Transmission & Distribution	0	0	0	0	0	0	0	0	0		0	0	0	0	-917	0	0	0	-15,915	-938	-17,770
4	**Final Energy Supply**	**0**	**0**	**0**	**0**	**0**	**0**	**936**	**4**	**4,524**		**71,899**	**299,191**	**108,866**	**0**	**477,821**	**6,587**	**206**	**72,988**	**181,166**	**0**	**1,224,186**
5	**Statistic Discrepancy**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**		**0**	**0**	**2,698**	**0**	**0**	**6,587**	**0**	**0**	**-2,246**	**0**	**7,039**
6	**Final Consumption**	**0**	**0**	**0**	**0**	**0**	**0**	**936**	**4**	**4,524**		**71,899**	**299,191**	**106,168**	**0**	**477,821**	**0**	**206**	**72,988**	**183,412**	**0**	**1,217,147**
7,	**Final Energy Consumption**	**0**	**0**	**0**	**0**	**0**	**0**	**936**	**4**	**4,524**		**71,899**	**299,191**	**74,576**	**0**	**477,821**	**0**	**206**	**72,988**	**183,412**	**0**	**1,185,555**
	a, Industry	0	0	0	0	0	0	0	4	4,524		53,589	299,191	73,376	0	33,394	0	0	1,058	69,616	0	534,751
	b, Transportation	0	0	0	0	0	0	0	0	0		0	0	67	0	428,329	0	0	0	211	0	428,606
	c, Household	0	0	0	0	0	0	0	0	0		17,009	0	362	0	2,558	0	206	69,992	71,355	0	161,482
	d, Commercial	0	0	0	0	0	0	936	0	0		1,300	0	772	0	2,473	0	0	1,938	42,230	0	49,649
	e, Other Sector	0	0	0	0	0	0	0	0	0		0	0	0	0	11,067	0	0	0	0	0	11,067
8,	**Non Energy Use**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**		**0**	**0**	**31,591**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**31,591**

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

03

ENERGY SUPPLY AND DEMAND



Handbook of Energy & Economic Statistics of Indonesia 2022

3.1 Primary Energy Supply by Sources

(BOE)

Year	Coal	Crude Oil & Product	Natural Gas & Product	Hydro Power	Geo-thermal	Solar PP & Solar PV	Wind		Bio-energy PP[1]	Solar Powered Public Street Lighting & Energy Saving Lamp	Solar Water Heater	Direct Use of Geo-thermal	Biofuel	Bio-Gas	Tradi-tional Bio-mass[2]	Indus-trial Bio-mass	Total
2012	345,000,022	589,342,626	259,456,414	29,212,853	15,129,340	n.a	n.a		n.a	n.a	n.a	n.a	4,339,870	n.a	99,383,737	n.a	1,341,864,860
2013	302,694,000	587,652,963	270,134,751	38,495,952	15,245,038	n.a	n.a		n.a	n.a	n.a	n.a	6,798,481	n.a	95,374,094	n.a	1,316,395,279
2014	319,956,003	577,688,014	271,375,371	37,955,765	16,191,566	n.a	n.a		n.a	n.a	n.a	n.a	11,966,513	n.a	92,873,723	n.a	1,328,006,955
2015	364,619,216	509,485,005	279,632,345	34,604,474	16,337,878	n.a	n.a		n.a	n.a	n.a	n.a	8,380,587	120,162	84,925,229	120,200	1,298,225,096
2016	380,310,000	532,134,133	288,546,633	47,450,306	17,537,710	n.a	n.a		n.a	n.a	n.a	n.a	20,625,241	144,549	80,062,430	185,041	1,366,996,043
2017	407,526,000	553,121,237	285,604,946	47,599,892	20,259,621	n.a	n.a		n.a	n.a	n.a	n.a	20,947,287	157,140	73,672,711	185,810	1,409,074,644
2018	483,335,998	567,189,661	288,310,815	40,204,916	26,040,932	355,896	466,082		30,493,437	8,795	n.a	n.a	28,312,237	162,745	71,173,942	341,891	1,536,397,347
2019	581,356,407	545,007,702	288,586,414	39,329,376	26,193,174	461,856	1,185,873		29,906,203	12,217	n,a	n,a	45,927,085	166,591	67,290,556	554,868	1,625,978,320
2020	553,923,901	471,002,427	251,143,838	45,206,315	28,909,243	704,140	1,164,203		30,386,506	13,284	n,a	n,a	55,515,900	176,604	74,156,454	637,393	1,512,940,208
2021	558,782,122	493,428,112	242,072,434	45,947,523	29,532,560	788,979	1,070,935		37,420,528	13,336	n,a	n,a	65,566,941	179,989	74,130,692	1,308,665	1,550,242,815
2022	745,721,066	552,469,086	245,015,999	50,781,201	30,978,688	1,705,507	872,631		52,086,071	50,462	935,639	3,645	74,370,840	206,181	71,898,591	4,523,519	1,831,619,126

Note: Changes in Biofuel Assumptions as Biodiesel (pure)
1) Bioenergy PP is including Biomass PP, BioGas PP, Waste PP & Hybrid PP
2) Estimation data

3.2 Final Energy Consumption by Sector

3.2.1 Energy Consumption (included Traditional Biomass)

(BOE)

Sector	2012	2013	2014	2015		2016	2017	2018	2019	2020	2021	2022
Industrial	369,704,681	283,560,959	291,220,893	288,769,719		266,085,246	274,080,378	329,736,553	388,582,844	341,717,328	319,371,661	534,751,117
Households	147,629,368	149,215,259	152,605,345	149,099,799		149,406,672	148,133,263	151,934,391	153,610,230	158,184,408	161,671,581	161,482,312
Commercial	37,135,487	39,236,140	40,249,580	39,286,992		41,369,026	42,378,126	43,602,238	45,544,675	42,204,476	43,947,608	49,649,031
Transportation	329,520,051	341,409,711	342,781,960	345,525,210		341,243,475	363,776,479	399,662,864	413,212,008	364,165,810	388,417,946	428,606,223
Other	33,709,215	31,105,254	28,694,657	21,704,642		19,864,507	16,999,541	13,577,545	11,112,694	10,244,770	10,788,136	11,066,651
Final Energy Consumption	917,698,803	844,527,323	855,552,435	844,386,362		817,968,927	845,367,787	938,513,591	1,012,062,452	916,516,793	924,196,932	1,185,555,334
Non Energy Utilization	29,147,610	28,369,578	28,468,567	29,928,818		25,158,961	25,142,679	25,567,690	25,546,489	24,615,795	30,090,484	31,591,456

3.2.2 Energy Consumption (excluded Traditional Biomass)

(BOE)

Sector	2012	2013	2014	2015		2016	2017	2018	2019	2020	2021	2022
Industrial	326,972,929	239,162,167	246,033,257	243,941,280		222,108,008	229,740,272	286,560,569	345,720,491	289,552,918	265,910,894	481,161,829
Households	92,489,973	99,687,947	106,398,267	110,632,078		115,019,233	120,133,665	125,262,774	130,501,736	137,505,475	142,308,201	144,473,021
Commercial	35,768,650	37,876,138	38,896,378	37,940,555		40,029,321	41,045,120	42,275,897	44,224,966	40,891,366	42,641,063	48,349,019
Transportation	329,520,051	341,409,711	342,781,960	345,525,210		341,243,475	363,776,479	399,662,864	413,212,008	364,165,810	388,417,946	428,606,223
Other	33,709,215	31,105,254	28,694,657	21,704,642		19,864,507	16,999,541	13,577,545	11,112,694	10,244,770	10,788,136	11,066,651
Final Energy Consumption	818,460,818	749,241,218	762,804,518	759,743,765		738,264,545	771,695,076	867,339,649	944,771,896	842,360,339	850,066,240	1,113,656,743
Non Energy Utilization	29,147,610	28,369,578	28,468,567	29,928,818		25,158,961	25,142,679	25,567,690	25,546,489	24,615,795	30,090,484	31,591,456

Note: Final Energy Consumptions is exclude Non Energy Utilization

Handbook of Energy & Economic Statistics of Indonesia 2022

3.3 Final Energy Consumption by Type

(Thousand BOE)

Year	Tradi-tional Biomass	Indus-trial Bio-mass	Solar Water Heater	Direct Use of Geo-thermal	Coal[1)]	Natural Gas	Oil Fuel		BioGasoil[2)]			BioGas	Bri-quette	LPG	Electricity	Total
									Gasoil	Biodiesel	Blending Product					
2012	99,238	n.a	n.a	n.a	123,022	97,512	389,030		54,888	4,340	59,227	n.a	130	42,883	106,656	917,699
2013	95,286	n.a	n.a	n.a	42,729	98,546	378,049		60,226	6,798	67,025	n.a	130	47,801	114,962	844,527
2014	92,748	n.a	n.a	n.a	55,064	97,417	363,713		60,901	11,967	72,868	n.a	58	51,942	121,743	855,552
2015	84,643	120	n.a	n.a	70,228	95,354	323,331		85,895	5,939	91,834	120	50	54,361	124,344	844,386
2016	79,704	185	n.a	n.a	63,504	77,434	329,094		59,244	19,516	78,760	145	107	56,626	132,411	817,969
2017	73,673	186	n.a	n.a	58,800	89,029	331,454		77,200	16,682	93,882	157	107	61,299	136,781	846,418
2018	71,174	342	n,a	n,a	100,506	96,765	320,730		105,949	24,327	130,276	163	36	64,471	154,052	938,514
2019	67,291	555	n,a	n,a	167,412	95,824	261,971		150,395	41,494	191,889	167	28	66,304	160,621	1,012,062
2020	74,156	637	n,a	n,a	113,416	98,179	222,339		124,806	54,494	179,300	177	188	68,400	159,725	916,517
2021	74,131	1,309	n.a	n.a	87,820	89,557	235,941		133,767	60,292	194,059	180	0	71,253	169,948	924,197
2022	71,899	4,524	936	4	299,191	74,576	264,563		145,473	67,784	213,257	206	0	72,988	183,412	1,185,555

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) BioGasoil consumption is blending product of biodiesel

3.4 Share of Final Energy Consumption by Sector

(%)

Year	Industry	Household	Commer-cial	Transpor-tation	Other
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	32.11	14.56	4.99	45.48	2.86
2016	30.09	15.58	5.42	46.22	2.69
2017	29.77	15.57	5.32	47.14	2.20
2018	33.04	14.44	4.87	46.08	1.57
2019	36.59	13.81	4.68	43.74	1.18
2020	34.37	16.32	4.85	43.23	1.22
2021	31.28	16.74	5.02	45.69	1.27
2022	43.21	12.97	4.34	38.49	0.99

Note: excluded Traditional Biomass

3.5 Share of Final Energy Consumption by Type

(%)

Year	Industrial Biomass	Solar Water Heater	Direct Use of Geo-thermal	Coal[1)]	Natural Gas	Oil Fuel
2012	0.00	0.00	0.00	15.05	11.91	47.53
2013	0.00	0.00	0.00	5.72	13.15	50.46
2014	0.00	0.00	0.00	7.23	12.77	47.68
2015	0.02	0.00	0.00	9.25	12.55	42.56
2016	0.03	0.00	0.00	8.62	10.49	44.58
2017	0.02	0.00	0.00	7.63	11.54	42.95
2018	0.04	0.00	0.00	11.59	11.16	36.98
2019	0.06	0.00	0.00	17.72	10.14	27.73
2020	0.08	0.00	0.00	13.49	11.66	26.39
2021	0.15	0.00	0.00	10.33	10.54	27.76
2022	0.41	0.08	0.00	26.87	6.70	23.76

Note: exclude Traditional Biomass
1) Coal is including Briquette
2) BioGasoil consumption is blending product of biodiesel; Gasoil is processed data; source of biodiesel is from Directorate General of New and Renewable Energy and Energy Conservation

3.5 Share of Final Energy Consumption by Type (continued)

(%)

Year	BioGasoil[2)]			BioGas	LPG	Electricity
	Gasoil	Biodiesel	Blending Product			
2012	7.16	0.07	7.24	0.00	5.24	13.03
2013	8.84	0.10	8.95	0.00	6.38	15.34
2014	9.39	0.16	9.55	0.00	6.81	15.96
2015	12.02	0.06	12.09	0.02	7.16	16.37
2016	10.42	0.25	10.67	0.02	7.67	17.94
2017	11.99	0.18	12.17	0.02	7.94	17.72
2018	14.83	0.19	15.02	0.02	7.43	17.76
2019	20.10	0.22	20.31	0.02	7.02	17.00
2020	20.99	0.30	21.29	0.02	8.12	18.96
2021	22.52	0.31	22.83	0.02	8.38	19.99
2022	18.83	0.32	19.15	0.02	6.55	16.47

Note: exclude Traditional Biomass
1) Coal is including Briquette
2) BioGasoil consumption is blending product of biodiesel; Gasoil is processed data; source of biodiesel is from Directorate General of New and Renewable Energy and Energy Conservation

04

ENERGY PRICES

Handbook of Energy & Economic Statistics of Indonesia 2022

4.1 Crude Oil Price

(US$ per Barrel)

Crude Oil Type	2012	2013	2014	2015	2016		2017	2018	2019	2020	2021	2022
SLC	115.59	108.15	98.63	49.39	40.98		51.98	68.20	63.10	41.98	68.94	99.18
Arjuna	111.75	104.23	94.82	48.54	39.35		51.20	67.65	63.42	39.24	68.15	98.38
Attaka	114.47	107.57	97.96	51.20	41.82		52.86	69.78	65.14	40.07	69.45	99.27
Cinta	114.07	106.51	96.83	48.22	40.00		50.59	66.65	61.79	40.27	66.81	97.47
Duri	112.31	104.44	94.67	47.60	37.63		49.47	65.76	64.75	48.69	73.84	107.15
Widuri	114.16	106.05	97.03	48.44	40.13		50.76	66.82	61.99	40.82	67.75	98.02
Belida	115.19	109.69	99.63	52.62	43.15		53.33	70.25	64.87	39.89	69.64	99.42
Senipah Condensate	108.97	106.48	98.25	52.92	43.44		53.31	69.57	59.89	39.35	69.90	91.70
Average [1)]	112.73	105.85	96.51	49.21	40.13		51.19	67.47	62.37	40.39	68.47	97.03

Sources : Oil and Gas Statistics - Directorate General of Oil and Gas
Note : 1) Arithmatic Average Indonesian Crude Oil Price from 52 type of crude

4.2 International Gas Price

(US$/MMBTU)

Year	LNG	Natural Gas			
	CIF on Japan[1)]	Average German Import Price[2)]	UK (Heren NBP Index)[3)]	USA (Henry Hub)[4)]	Canada (Alberta)[5)]
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
2020	7.81	4.06	3.42	1.99	1.58
2021	10.07	8.94	15.80	3.84	2.75
2022	18.43	37.52	22.57	6.45	5.81

Source : BP Statistical Review of World Energy, 2022
Note : 1) in 2022, based on statista.com/statistics/lng
2) in 2022, based on www.ycharts.com/indicators/germany_natural_gas_border_price
3) in 2022, based on www.gov.uk/government/statistical-data-sets/gas-and-electricity-prices
4) in 2022, based on www.eia.gov/dnav/ng
5) in 2022, based on www.alberta.ca/alberta-natural-gas-reference-price.aspx

4.3 Average Price of LNG, and Coal FOB Export

Year	LNG[1)]	Coal[2)]
	US$/MMBTU	US$/Ton
2012	10.13	95.48
2013	9.63	82.92
2014	9.50	72.62
2015	6.57	60.13
2016	3.80	61.84
2017	5.50	85.92
2018	6.64	98.96
2019	4.58	77.89
2020	3.32	58.17
2021	4.15	121.47
2022	11.17	276.58

Source : 1) Bank Indonesia
2) Directorate General of Mineral and Coal

Handbook of Energy & Economic Statistics of Indonesia 2022

4.4 Energy Price per Energy Unit[1)]

Year	Gasoline[2)] (Ron 88)		Gasoline (Ron 92)		Avtur		Kerosene			Gasoil CN 48		Gasoil CN 53		LPG (3 Kg)		LPG (12 Kg)		LPG (50 Kg)	
	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$/ BOE	Thousand Rp/BOE	US$/ BOE	Thousand Rp/BOE	US$/ BOE
2012	772	80	1,614	178	1,591	165	422	35		694	72	1,595	176	499	52	686	71	1,316	136
2013	954	78	1,678	185	1,694	139	422	35		775	64	1,721	190	499	41	747	61	1,569	129
2014	1,157	93	1,859	205	1,524	123	422	34		885	71	1,920	212	499	40	1,211	97	1,548	124
2015	1,238	90	1,517	167	1,562	113	422	31		1,052	76	1,673	184	499	36	1,440	104	1,428	104
2016	1,129	84	1,305	144	1,227	91	422	31		815	61	1,290	142	499	37	1,361	101	1,247	93
2017	1,110	82	1,413	156	1,418	105	422	31		794	59	1,318	145	499	37	1,410	104	1,461	108
2018	1,110	79	1,613	178	1,713	122	422	30		794	57	1,622	179	499	36	1,457	104	1,612	115
2019	1,110	80	1,695	187	1,664	120	422	30		794	57	1,804	199	499	36	1,457	105	1,612	116
2020	1,110	79	1,547	171	1,664	118	422	30		794	56	1.572	173	499	35	1,457	103	1,612	114
2021	1,110	78	1,544	170	1,664	117	422	30		794	56	1,621	179	499	35	1,457	102	1,612	113
2022	1,716	122	2,084	230	1,664	106	422	27		794	50	2.411	266	499	32	2,361	150	2,289	145

Note : 1) At the official selling point
2) Gasoline RON 90 price for 2022

Handbook of Energy & Economic Statistics of Indonesia 2022

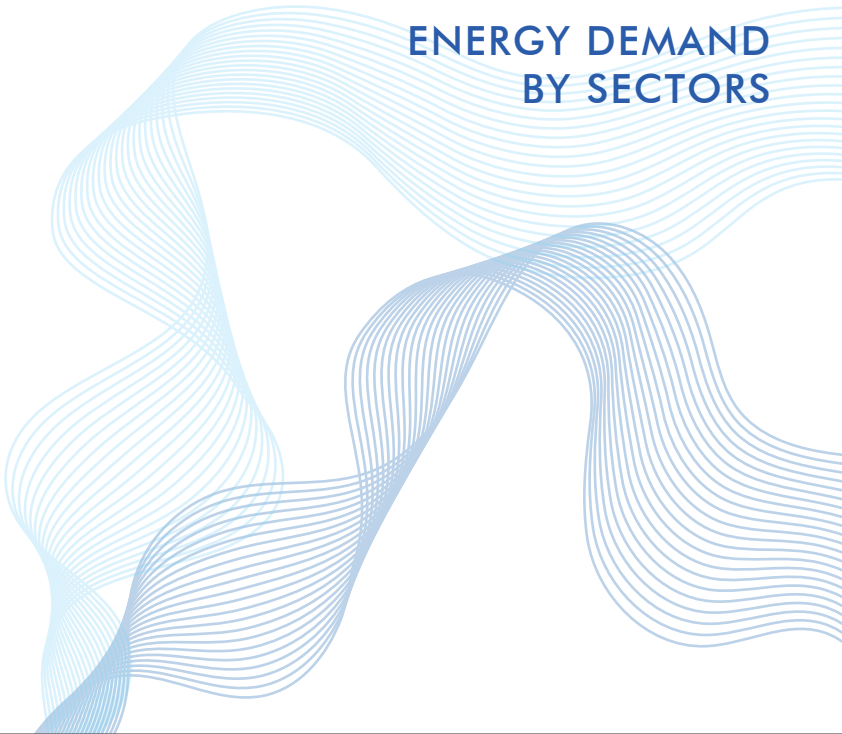
4.4 Energy Price per Energy Unit[1)] (continued)

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
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
2020	214	15	1,618	115		1,780	126	2,022	143
2021	192	13	1,670	117		1,772	124	2,014	141
2022	213	14	1,841	117		1,763	112	2,048	130

Note : 1) At the official selling point

05

ENERGY DEMAND BY SECTORS



5.1.1 Energy Consumption in Industrial Sector

(in Original Unit)

Year	Traditional Biomass[1]	Industrial Biomass	Direct Use of Geothermal	Coal	Briquette	Gas	Oil Fuel	Oil Fuel					LPG	Electricity
							Kerosene	Gasoil CN 48	BioGasoil[2]	MDF	Fuel Oil	Total Oil Fuel		
	Thousand Ton		Thermal GWh	Thousand Ton		MMSCF	Kilo Liter	Kilo Liter					Thousand Ton	GWh
2012	18,596	n,a	n,a	29,291	36	532,288	78,987	7,632,801	0	76,676	2,905,168	10,693,632	73	60,176
2013	19,321	n,a	n,a	10,174	36	539,068	72,018	7,217,679	0	66,244	1,672,420	9,028,360	81	64,381
2014	19,665	n,a	n,a	13,110	16	539,068	55,503	6,525,236	0	50,953	1,596,283	8,227,975	88	65,909
2015	19,508	47	n,a	16,721	14	520,919	43,950	4,570,091	0	44,423	1,395,820	6,054,284	92	64,079
2016	19,138	72	n,a	15,120	30	422,160	34,211	4,262,333	0	35,294	1,696,881	6,028,718	96	68,145
2017	19,296	73	n,a	14,000	30	487,506	35,067	3,839,186	0	82,275	1,761,804	5,718,331	104	72,238
2018	18,789	133	n,a	23,930	10	529,601	34,265	2,854,407	0	59,633	1,892,499	4,840,804	110	93,537
2019	18,653	217	n,a	39,860	8	524,276	32,328	169,475	2,053,730	47,464	1,419,742	3,722,739	113	94,281
2020	22,701	249	n,a	27,004	53	540,664	30,032	315,726	1,918,990	35,415	1,101,693	3,401,856	116	89,133
2021	23,265	511	n,a	20,910	0	492,658	29,911	571,220	2,076,953	45,559	1,166,224	3,889,866	121	100,313
2022	23,321	1,765	6	86,587	0	408,550	28,798	212,154	2,282,432	50,744	2,399,835	4,973,963	124	113,565

Note: 1) Estimation Data
2) Based on Regulation of the Minister of Energy and Mineral Resources No. 12 year 2015 regarding to mandatory of minimum biodiesel utilization as blending product of gasoil by 30% in 2020

5.1.2 Energy Consumption in Industrial Sector

(in Energy Unit)

(Thousand BOE)

Year	Tra-ditional Bio-mass[1)]	Industrial Biomass	Direct Use of Geo-thermal	Coal	Briquette	Gas	Oil Fuel		Oil Fuel				LPG	Electricity	Total
							Kero-sene	Gasoil CN 48	BioGasoil[2)]	MDF	Fuel Oil	Total Oil Fuel			
2012	42,732	n.a	n.a	123,022	130	95,599	468	49,515	0	507	20,223	70,713	621	36,888	369,705
2013	44,399	n.a	n.a	42,729	130	96,817	427	46,822	0	438	11,642	59,328	693	39,466	283,561
2014	45,188	n.a	n.a	55,064	58	95,649	329	42,330	0	337	11,112	54,108	753	40,402	291,221
2015	44,828	120	n.a	70,228	50	93,557	261	29,647	0	294	9,717	39,917	788	39,281	288,770
2016	43,977	185	n.a	63,504	107	75,820	203	27,650	0	233	11,812	39,899	821	41,773	266,085
2017	44,340	186	n.a	58,800	107	87,556	208	24,905	0	544	12,264	37,921	888	44,282	274,080
2018	43,176	342	n.a	100,506	36	95,116	203	18,517	0	394	13,174	32,288	934	57,338	329,737
2019	42,862	555	n.a	167,412	28	94,160	192	1,099	13,323	314	9,883	24,811	961	57,794	388,583
2020	52,164	637	n.a	113,416	188	97,103	178	2,048	12,449	234	7,669	22,578	991	54,638	341,717
2021	53,461	1,309	n.a	87,820	0	88,481	177	3,706	13,473	301	8,118	25,776	1,033	61,492	319,372
2022	53,589	4,524	4	299,191	0	73,376	171	1,376	14,806	335	16,706	33,394	1,058	69,616	534,751

Note: 1) Estimation Data
2) Based on Regulation of the Minister of Energy and Mineral Resources No. 12 year 2015 regarding to mandatory of minimum biodiesel utilization as blending product of gasoil by 30% in 2020

Handbook of Energy & Economic Statistics of Indonesia 2022

5.1.3 Share of Energy Consumption in Industrial Sector

(%)

Year	Industrial Biomass	Direct Use of Geo-thermal	Coal	Briquette	Gas	Oil Fuel		Oil Fuel				LPG	Elec-tricity
						Kerosene		Gasoil CN 48	Bio-Gasoil[1)]	MDF	Fuel Oil		
2012	0.00	0.00	37.62	0.04	29.24	0.14		15.14	0.00	0.15	6.19	0.19	11.28
2013	0.00	0.00	17.87	0.05	40.48	0.18		19.58	0.00	0.18	4.87	0.29	16.50
2014	0.00	0.00	22.38	0.02	38.88	0.13		17.20	0.00	0.14	4.52	0.31	16.42
2015	0.05	0.00	28.79	0.02	38.35	0.11		12.15	0.00	0.12	3.98	0.32	16.10
2016	0.08	0.00	28.59	0.05	34.14	0.09		12.45	0.00	0.11	5.32	0.37	18.81
2017	0.08	0.00	25.59	0.05	38.11	0.09		10.84	0.00	0.24	5.34	0.39	19.27
2018	0.12	0.00	35.07	0.01	33.19	0.07		6.46	0.00	0.14	4.60	0.33	20.01
2019	0.16	0.00	48.42	0.01	27.24	0.06		0.32	3.85	0.09	2.86	0.28	16.72
2020	0.22	0.00	39.17	0.07	33.54	0.06		0.71	4.30	0.08	2.65	0.34	18.87
2021	0.49	0.00	33.03	0.00	33.27	0.07		1.39	5.07	0.11	3.05	0.39	23.13
2022	0.94	0.00	62.18	0.00	15.25	0.04		0.29	3.08	0.07	3.47	0.22	14.47

Note: Excluded Traditional Biomass

1) Based on Regulation of the Minister of Energy and Mineral Resources No. 12 year 2015 regarding to mandatory of minimum biodiesel utilization as blending product of gasoil by 30% in 2020

5.2.1 Energy Consumption in Household Sector
(in Original Unit)

Year	Traditional Biomass[1)]	Gas	Kerosene	LPG	BioGas	Electricity
	Thousand Ton	MMSCF	Kilo Liter	Thousand Ton	Thousand m^3	GWh
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	12,185	983	525,429	6,896	24,786	94,457
2018	11,607	1,131	513,411	7,252	25,670	97,927
2019	10,056	1,291	484,392	7,459	26,277	103,833
2020	8,999	1,500	449,994	7,694	27,856	112,235
2021	8,427	1,713	448,180	8,015	28,390	115,556
2022	7,402	2,016	431,507	8,211	32,521	116,403

Note: 1) Estimation data

5.2.2 Energy Consumption in Household Sector

(in Energy Unit)

(Thousand BOE)

Year	Tra-ditional Bio-mass[1)]	Gas	Kerosene	LPG	BioGas	Electricity	Total
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	28,000	177	3,114	58,783	157	57,902	148,133
2018	26,672	203	3,043	61,824	163	60,029	151,934
2019	23,108	232	2,871	63,583	167	63,649	153,610
2020	20,679	269	2,667	65,592	177	68,800	158,184
2021	19,363	308	2,657	68,328	180	70,836	161,672
2022	17,009	362	2,558	69,992	206	71,355	161,482

Note: 1) Estimation data

5.2.3 Share of Energy Consumption in Household Sector

(%)

Year	Gas	Kerosene	LPG	BioGas	Electricity
2012	0.15	7.58	44.46	0.00	47.81
2013	0.12	6.42	45.98	0.00	47.48
2014	0.11	4.63	46.81	0.00	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	2.43	49.36	0.13	47.92
2019	0.18	2.20	48.72	0.13	48.77
2020	0.20	1.94	47.70	0.13	50.03
2021	0.22	1.87	48.01	0.13	49.78
2022	0.25	1.77	48.45	0.14	49.39

Note: Excluded Traditional Biomass

5.3.1 Energy Consumption in Commercial Sector

(in Original Unit)

Year	Traditional Biomass[1)]	Solar Water Heater	Gas	Oil Fuel					LPG	Electricity
				Kerosene	Gasoil CN 48	Bio-Gasoil[2)]	MDF	Total Oil Fuel		
	Thousand Ton	Thousand TOE	MMSCF	Kilo Liter					Thousand Ton	GWh
2012	595	n.a	9,050	65,354	1,099,061	0	411	1,164,826	134	41,574
2013	592	n.a	7,915	59,587	1,039,286	0	355	1,099,229	149	45,820
2014	589	n.a	8,057	45,923	939,580	0	273	985,777	162	48,452
2015	586	n.a	7,990	36,364	658,056	0	238	694,658	169	49,879
2016	583	n.a	7,084	28,306	613,741	0	189	642,236	176	54,002
2017	580	n.a	6,705	29,014	552,811	0	441	582,267	191	56,202
2018	577	n.a	6,745	28,350	411,011	0	320	439,681	201	59,570
2019	574	n.a	6,871	26,748	24,403	295,720	255	347,126	207	63,611
2020	571	n.a	4,076	24,848	45,462	276,319	190	346,819	213	58,902
2021	569	n.a	3,906	24,748	82,251	299,064	244	406,308	222	61,053
2022	566	128	4,297	23,828	30,548	328,651	272	383,300	227	68,891

Note: 1) Estimation Data
2) Based on Regulation of the Minister of Energy and Mineral Resources No. 12 year 2015 regarding to mandatory of minimum biodiesel utilization as blending product of gasoil by 30% in 2020

5.3.2 Energy Consumption in Commercial Sector
(in Energy Unit)

(Thousand BOE)

Year	Tra-ditional Bio-mass[1)]	Solar Water Heater	Gas	Oil Fuel					LPG	Elec-tricity	Total
				Kero-sene	Gasoil CN 48	Bio-Gas-oil[2)]	MDF	Total Oil Fuel			
2012	1,367	n.a	1,625	387	7,130	0	3	7,520	1,139	25,485	37,135
2013	1,360	n.a	1,422	353	6,742	0	2	7,098	1,269	28,088	39,236
2014	1,353	n.a	1,447	272	6,095	0	2	6,369	1,379	29,701	40,250
2015	1,346	n.a	1,435	216	4,269	0	2	4,486	1,444	30,576	39,287
2016	1,340	n.a	1,272	168	3,981	0	1	4,150	1,504	33,103	41,369
2017	1,333	n.a	1,204	172	3,586	0	3	3,761	1,628	34,452	42,378
2018	1,326	n.a	1,211	168	2,666	0	2	2,836	1,712	36,516	43,602
2019	1,320	n.a	1,234	159	158	1,918	2	2,237	1,761	38,993	45,545
2020	1,313	n.a	732	147	295	1,793	1	2,236	1,816	36,107	42,204
2021	1,307	n.a	701	147	534	1,940	2	2,622	1,892	37,426	43,948
2022	1,300	936	772	141	198	2,132	2	2,473	1,938	42,230	49,649

Note: 1) Estimation Data
2) Based on Regulation of the Minister of Energy and Mineral Resources No. 12 year 2015 regarding to mandatory of minimum biodiesel utilization as blending product of gasoil by 30% in 2020

5.3.3 Share of Energy Consumption in Commercial Sector

(%)

Year	Solar Water Heater	Gas	Oil Fuel				LPG	Electricity
			Kero-sene	Gasoil CN 48	Bio-Gasoil[1]	MDF		
2012	0.00	4.54	1.08	19.93	0.00	0.01	3.18	71.25
2013	0.00	3.75	0.93	17.80	0.00	0.01	3.35	74.16
2014	0.00	3.72	0.70	15.67	0.00	0.00	3.55	76.36
2015	0.00	3.78	0.57	11.25	0.00	0.00	3.80	80.59
2016	0.00	3.18	0.42	9.95	0.00	0.00	3.76	82.70
2017	0.00	2.93	0.42	8.74	0.00	0.01	3.97	83.94
2018	0.00	2.87	0.40	6.31	0.00	0.01	4.05	86.38
2019	0.00	2.79	0.36	0.36	4.34	0.00	3.98	88,17
2020	0.00	1.79	0.36	0.72	4.38	0.00	4.44	88.30
2021	0.00	1.64	0.34	1.25	4.55	0.00	4.44	87.77
2022	1.94	1.60	0.29	0.41	4.41	0.00	4.01	87.34

Note: excluded Traditional Biomass
1) Based on Regulation of the Minister of Energy and Mineral Resources No. 12 year 2015 regarding to mandatory of minimum biodiesel utilization as blending product of gasoil by 30% in 2020

Handbook of Energy & Economic Statistics of Indonesia 2022

5.4.1 Energy Consumption in Transportation Sector

(in Original Unit)

Year	Gas	Oil Fuel							Oil 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	MDF	Fuel Oil	BioGasoil[1)]	Total Oil Fuel	
	MMSCF	Kilo Liter							Kilo Liter							GWh
2012	856	2,606	3,898,832	27,612,171	666,461	149,424	0	12,297	0	522	12,475,546	3,059	56,505	9,130,039	54,007,463	108
2013	1,031	2,868	4,159,010	28,622,924	850,408	158,714	0	23,053	0	476	11,797,043	2,643	32,528	10,332,005	55,981,673	129
2014	1,152	1,499	4,229,094	28,822,039	1,062,920	154,888	0	33,305	0	367	10,665,269	2,033	31,048	11,232,729	56,235,192	155
2015	1,368	3,070	4,336,624	27,269,723	2,761,956	278,758	379,959	38,552	0	291	7,469,653	1,772	27,149	14,156,373	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	1,408	33,004	12,141,027	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	3,283	34,267	14,472,082	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	4,665,428	2,379	36,809	20,082,381	65,544,765	274
2019	1,105	2,366	5,030,485	11,337,192	4,254,343	326,569	19,410,819	547,193	287,043	214	277,001	1,894	27,614	26,188,701	67,691,434	301
2020	415	1,453	2,774,198	8,383,244	4,056,945	353,168	18,143,189	507,151	268,111	199	516,042	1,413	21,428	24,470,536	59,497,078	292
2021	369	1,047	2,031,726	3,358,307	5,713,190	481,184	23,297,401	701,009	333,628	198	933,639	1,818	22,683	26,484,837	63,360,667	317
2022	372	1,333	3,320,032	18,298	5,773,457	318,770	29,684,964	1,017,376	334,456	190	346,758	2,025	46,677	29,105,057	69,969,393	344

Note: 1) Based on Regulation of the Minister of Energy and Mineral Resources No. 12 year 2015 regarding to mandatory of minimum biodiesel utilization as blending product of gasoil by 30% in 2020

Handbook of Energy & Economic Statistics of Indonesia 2022

5.4.2 Energy Consumption in Transportation Sector

(in Energy Unit)

(Thousand BOE)

Year	Gas	Oil Fuel								Oil Fuel							Elec-tricity	Total
		AvGas	Avtur	Gasoline RON 88	Gasoline RON 92	Gasoline RON 95+98+100	Gasoline RON 90	Gasoil CN 51		Gasoil CN 53	Kero-sene	Gasoil CN 48	MDF	Fuel Oil	Bio-Gasoil[1)]	Total Oil Fuel		
2012	154	14	22,967	160,910	3,884	871	0	80		0	3	80,930	20	393	59,227	329,300	66	329,520
2013	185	16	24,499	166,800	4,956	925	0	150		0	3	76,529	17	226	67,025	341,146	79	341,410
2014	207	8	24,912	167,960	6,194	903	0	216		0	2	69,187	13	216	72,868	342,480	95	342,782
2015	246	17	25,546	158,914	16,095	1,624	2,214	250		0	2	48,456	12	189	91,834	345,154	126	345,525
2016	205	18	28,720	122,575	27,861	2,134	33,830	687		884	1	45,193	9	230	78,760	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	22	239	93,882	363,540	144	363,776
2018	234	21	33,681	60,805	32,885	2,249	103,186	4,322		1,297	1	30,265	16	256	130,276	399,261	168	399,663
2019	198	13	29,633	66,067	24,792	1,903	113,117	3,550		1,862	1	1,797	13	192	169,889	412,829	185	413,212
2020	74	8	16,342	48,853	23,642	2,058	105,729	3,290		1,739	1	3,348	9	149	158,743	363,912	179	364,166
2021	66	6	11,968	19,571	33,294	2,804	135,766	4,548		2,164	1	6,057	12	158	171,810	388,157	194	388,418
2022	67	7	19,557	107	33,645	1,858	172,989	6,600		2,170	1	2,249	13	325	188,807	428,329	211	428,606

Note: 1) Based on Regulation of the Minister of Energy and Mineral Resources No. 12 year 2015 regarding to mandatory of minimum biodiesel utilization as blending product of gasoil by 30% in 2020

5.4.3 Share of Energy Consumption in Transportation Sector

(%)

Year	Gas	Oil Fuel						Oil Fuel								Electricity
		AvGas	Avtur	Gasoline RON 88	Gasoline RON 92	Gasoline RON 95+98+100	Gasoline RON 90	Gasoil CN 51	Gasoil CN 53	Kero-sene	Gasoil CN 48	MDF	Fuel Oil	Bio-Gasoil[1)]	Total Oil Fuel	
2012	0.05	0.00	6.97	48.86	1.18	0.26	0.00	0.02	0.00	0.00	24.58	0.01	0.12	17.99	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	0.01	0.07	19.65	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	0.00	0.06	21.28	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	0.00	0.05	26.58	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	0.00	0.07	23.08	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	0.01	0.07	25.81	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	0.00	0.06	32.60	99.90	0.04
2019	0.05	0.00	7.17	15.99	6.00	0.46	27.37	0.86	0.45	0.00	0.43	0.00	0.05	41.11	99.91	0.04
2020	0.02	0.00	4.49	13.42	6.49	0.57	29.03	0.90	0.48	0.00	0.92	0.00	0.04	43.59	99.93	0.05
2021	0.02	0.00	3.08	5.04	8.57	0.72	34.95	1.17	0.56	0.00	1.56	0.00	0.04	44.23	99.93	0.05
2022	0.02	0.00	4.56	0.02	7.85	0.43	40.36	1.54	0.51	0.00	0.52	0.00	0.08	44.05	99.94	0.05

Note: 1) Based on Regulation of the Minister of Energy and Mineral Resources No. 12 year 2015 regarding to mandatory of minimum biodiesel utilization as blending product of gasoil by 30% in 2020

5.5.1 Energy Consumption in Others Sector
(in Original Unit)

(Kilo Liter)

Year	Mogas	Kero-sene	Gasoil CN 48	Bio-Gasoil[1)]	MDF	Fuel Oil	Total Oil Fuel
	Kilo Liter						
2012	847,814	54,080	3,872,311	0	11,453	467,202	5,252,859
2013	878,849	49,308	3,661,709	0	9,894	268,954	4,868,714
2014	884,962	38,001	3,310,415	0	7,611	256,710	4,497,699
2015	837,299	30,091	2,318,521	0	6,635	224,472	3,417,019
2016	645,831	23,423	2,162,388	0	5,272	272,888	3,109,802
2017	372,149	24,009	1,947,715	0	12,289	283,329	2,639,491
2018	320,372	23,460	1,448,112	0	8,907	304,347	2,105,198
2019	348,101	22,134	85,979	1,041,908	7,089	228,319	1,733,531
2020	257,402	20,562	160,175	973,552	5,290	177,171	1,594,152
2021	103,115	20,479	289,794	1,053,690	6,805	187,549	1,661,432
2022	562	19,717	107,631	1,157,935	7,579	385,935	1,679,359

Note: 1) Based on Regulation of the Minister of Energy and Mineral Resources No. 12 year 2015 regarding to mandatory of minimum biodiesel utilization as blending product of gasoil by 30% in 2020

5.5.2 Energy Consumption in Others Sector

(in Energy Unit)

(Thousand BOE)

Year	Mogas	Kero-sene	Gasoil CN 48	Bio-Gasoil[1)]	MDF	Fuel Oil	Total Oil Fuel
2012	4,941	321	25,120	0	76	3,252	33,709
2013	5,121	292	23,754	0	65	1,872	31,105
2014	5,157	225	21,475	0	50	1,787	28,695
2015	4,879	178	15,040	0	44	1,563	21,705
2016	3,764	139	14,028	0	35	1,900	19,865
2017	2,169	142	12,635	0	81	1,972	17,000
2018	1,867	139	9,394	0	59	2,119	13,578
2019	2,029	131	558	6,759	47	1,589	11,113
2020	1,500	122	1,039	6,316	35	1,233	10,245
2021	601	121	1,880	6,835	45	1,306	10,788
2022	3	117	698	7,512	50	2,687	11,067

Note: 1) Based on Regulation of the Minister of Energy and Mineral Resources No. 12 year 2015 regarding to mandatory of minimum biodiesel utilization as blending product of gasoil by 30% in 2020

5.5.3 Share of Energy Consumption in Others Sector

(%)

Year	Mogas	Kerosene	Gasoil CN 48	BioGasoil[1)]	MDF	Fuel Oil
2012	14.66	0.95	74.52	0.00	0.22	9.65
2013	16.47	0.94	76.37	0.00	0.21	6.02
2014	17.97	0.78	74.84	0.00	0.18	6.23
2015	22.48	0.82	69.30	0.00	0.20	7.20
2016	18.95	0.70	70.62	0.00	0.18	9.56
2017	12.76	0.84	74.33	0.00	0.48	11.60
2018	13.75	1.02	69.19	0.00	0.43	15.60
2019	18.25	1.18	5.02	60.82	0.42	14.30
2020	14.64	1.19	10.14	61.65	0.34	12.04
2021	5.57	1.13	17.43	63.36	0.42	12.10
2022	0.03	1.06	6.31	67.88	0.45	24.28

Note: 1) Based on Regulation of the Minister of Energy and Mineral Resources No. 12 year 2015 regarding to mandatory of minimum biodiesel utilization as blending product of gasoil by 30% in 2020

06

ENERGY SUPPLY BY ENERGY RESOURCES

6.1.1 Coal Resources and Reserves

as of December 2022

(Million Ton)

Province	Exploration Target[1)]	Total Inventory[1)]	Resources[1)]				Verified Resources[2)]	Reserves[1)]	Verified Reserves[2)]
			Inferred	Indicated	Measured	Total			
Banten	5.47	52.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Central Java	0.00	0.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00
East Java	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aceh	1.16	87.83	275.46	421.87	325.59	1,022.93	803.79	539.34	428.65
North Sumatera	0.00	14.62	10.24	8.48	7.55	26.26	0.00	7.12	0.00
Riau	36.10	412.05	150.47	502.59	293.51	946.57	901.98	407.82	382.82
West Sumatera	1.19	318.34	35.95	15.21	35.69	86.85	50.82	29.75	8.99
Jambi	142.37	1,704.89	1,153.56	1,157.47	1,865.32	4,176.35	3,476.16	1,682.26	1,538.72
Bengkulu	36.86	210.61	139.54	111.54	167.92	418.99	370.78	124.76	102.64
South Sumatera	4,885.39	10,749.68	7,384.14	9,311.68	8,163.14	24,858.95	22,473.01	9,808.30	9,345.57
Lampung	0.00	106.95	149.60	134.20	29.60	313.40	313.40	109.80	109.80
West Kalimantan	2.26	463.44	0.98	0.48	0.00	1.46	1.46	0.43	0.43
Central Kalimantan	31.34	3,069.97	4,270.55	3,281.68	3,215.52	10,767.75	8,757.41	2,929.52	2,434.38
South Kalimantan	7.83	1,343.64	3,663.23	4,032.61	7,351.49	15,047.33	14,224.16	4,780.40	4,579.45
East Kalimantan	890.55	15,724.45	8,487.92	12,942.97	17,560.83	38,991.71	38,272.00	13,701.52	13,528.95
North Kalimantan	25.79	333.32	848.12	792.23	872.35	2,512.70	2,472.19	919.40	903.89
West Sulawesi	13.79	25.74	3.02	1.84	0.72	5.57	5.57	1.77	1.77
South Sulawesi	11.46	26.26	0.00	0.00	1.80	1.80	1.80	1.26	1.26
Southeast Sulawesi	0.52	1.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Central Sulawesi	0.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
North Maluku	8.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
West Papua	93.66	32.82	4.31	6.24	3.94	14.49	14.49	10.63	10.63
Papua	7.20	31.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	6,201.79	34,711.01	26,577.08	32,721.07	39,894.96	99,193.11	92,139.01	35,054.07	33,377.95

Source : Geological Agency
Note : 1) Classification based on Indonesian National Standard 5015-2019
2) Verified by Competent Person Indonesia

6.1.2 Coal Supply

(Ton)

Year	Production[1)]	Export	Import
	Steam Coal		
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
2020	563,728,255	405,052,868	8,756,363
2021	613,990,256	435,217,208	14,469,013
2022	687,432,384	465,335,605	12,492,657

Sources : 1. Directorate General of Mineral and Coal
2. Ministry of Trade and BPS for Import Data
Note : 1) The type of coal produced in Indonesia is only steam coal

6.1.3 Indonesia Coal Export by Destination

(Thousand Ton)

Year	China	India	Japan	Korea	Taiwan	Hong-kong	Malaysia		Philippines	Thailand	Spain	Others	Total
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	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	356,395
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
2020	127,789	97,507	26,970	24,778	17,009	3,864	26,192		27,483	16,884	-	36,578	405,053
2021	196,243	72,124	22,740	21,260	16,199	5,301	25,588		30,160	15,294	77	30,230	435,217
2022	173,323	109,843	26,474	26,297	18,038	5,108	25,314		30,780	15,533	408	34,217	465,336

Source : Directorate General of Mineral and Coal
Note : Since 2019 based on surveyor report

6.1.4 Domestic Coal Sales

(Ton)

Year	Total	Iron, Steel & Metal-lurgy[1)]	Power Plant	Cement, Textile, Fertilizer	Pulp & Paper	Briquette	Others[2)]
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
2020	131,886,643	13,210,585	104,829,892	6,511,942	2,000,387	52,826	5,281,012
2021	133,043,362	11,393,020	112,133,733	4,681,560	1,116,329	0	3,718,720
2022	215,813,239	49,375,407	129,226,621	13,112,483	6,300,036	0	17,798,692

Source : Directorate General of Mineral and Coal
Note : 1) In 2018 - 2019, there is acceleration for downstream mineral industry
2) in 2012-2015, others sales include trader
Since 2016, others sales not include trader
In 2019 companies report the data through online reporting 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	Reserves			Contingent Resources		Un-recover-able[5]
	Proven[2]	Potential[3]	Total	Low Estimate[4]	Best+High Estimate[4]	
2012	3.74	3.67	7.41	-	-	-
2013	3.69	3.86	7.55	-	-	-
2014	3.62	3.75	7.37	-	-	-
2015	3.60	3.70	7.31	-	-	-
2016	3.31	3.94	7.25	-	-	-
2017	3.17	4.36	7.53	-	-	-
2018	3.15	4.36	7.51	-	-	-
2019[1]	2.48	1.29	3.77	0.33	0.38	3.03
2020[1]	2.44	1.73	4.17	0.29	0.34	2.71
2021[1]	2.25	1.70	3.95	0.31	0.36	2.89
2022[1]	2.27	1.90	4.17	0.29	0.34	2.70

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 2022

(MBSD)

Refinery	Refinery Capacity
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	1,151.10

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)	Crude (thousand bpd)
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	286,814	115,063	136,666	271,372	743
2016	303,336	125,541	148,361	323,910	1,100
2017	292,374	102,723	141,616	323,142	887
2018	281,780	74,472	126,082	334,281	916
2019	272,025	25,971	89,315	334,963	918
2020	259,247	31,448	79,685	302,344	826
2021	240,367	43,769	104,403	300,371	823
2022	223,532	15,494	104,722	322,541	884

Source : Directorate General of Oil and Gas

Handbook of Energy & Economic Statistics of Indonesia 2022

6.2.4 Domestic Oil Fuels Sales

(Kilo Liter)

Fuel Types	2012	2013	2014	2015	2016		2017	2018	2019	2020	2021	2022
AvGas	2,606	2,868	1,499	3,070	3,172		2,964	3,808	2,366	1,453	1,047	1,333
Avtur	3,898,832	4,159,010	4,229,094	4,336,624	4,875,486		5,371,183	5,717,729	5,030,485	2,774,198	2,031,726	3,320,032
RON 88	28,459,985	29,501,773	29,707,002	28,107,022	21,679,698		12,492,553	10,754,461	11,685,293	8,640,647	3,461,421	18,860
Kerosene	1,382,469	1,260,490	971,434	769,233	598,769		613,750	599,712	565,815	525,635	523,516	504,040
Gasoil CN48 [1)]	25,079,718	23,715,716	21,440,501	15,016,321	14,005,096		12,614,727	9,378,959	556,859	1,037,405	1,876,903	697,091
MDF	91,600	79,137	60,870	53,069	42,163		98,288	71,239	56,702	42,308	54,426	60,621
Fuel Oil	3,428,875	1,973,903	1,884,040	1,647,441	2,002,773		2,079,400	2,233,655	1,675,675	1,300,292	1,376,456	2,832,447
Gasoline RON 95 [2)]	149,424	158,714	154,888	278,758	366,168		379,998	385,977	326,569	353,168	481,184	318,770
Gasoline RON 92	666,461	850,408	1,062,920	2,761,956	4,780,929		6,188,300	5,643,055	4,254,343	4,056,945	5,713,190	5,773,457
Gasoline RON 90	n.a	n.a	n.a	379,959	5,805,228		14,487,098	17,706,790	19,410,819	18,143,189	23,297,401	29,684,964
Gasoil CN53	n.a	n.a	n.a	n.a	136,311		178,695	199,901	287,043	268,111	333,628	334,456
Gasoil CN51 [3)]	12,297	23,053	33,305	38,552	105,889		391,895	666,191	547,193	507,151	701,009	1,017,376
BioGasoil	9,130,039	10,332,005	11,232,729	14,156,373	13,747,237		16,078,292	20,717,619	30,045,699	28,074,488	30,385,449	33,391,568
Total Oil Fuel	**72,302,305**	**72,057,077**	**70,778,283**	**67,548,378**	**68,148,919**		**70,977,143**	**74,079,096**	**74,444,861**	**65,724,990**	**70,237,358**	**77,955,016**

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

Handbook of Energy & Economic Statistics of Indonesia 2022

6.2.5 Refinery Production by Type

(Thousand Barrel)

Year	Gasoline RON 88 + RON 90	Avtur + JP5	AvGas	Kerosene	Gasoil CN48		MDF	Fuel Oil	Gasoline RON 95, RON 98, & RON 100	Gasoline RON 92	Gasoil CN51 & CN53	Total Oil Fuel
2012	67,684	19,050	0	10,808	122,099		1,139	15,043	514	2,487	122	238,946
2013	67,819	18,623	0	9,614	122,907		927	13,879	566	2,651	517	237,505
2014	70,829	19,938	0	7,332	129,502		1,107	12,243	545	3,629	382	245,507
2015	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	53,712	22,917	0	6,041	133,920		876	9,827	604	39,085	577	267,559
2018	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
2020	41,830	19,394	0	4,751	121,197		820	10,893	1,625	48,294	2,671	251,475
2021[1)]	62,216	15,259	0	2,394	130,584		191	12,083	2,469	28,572	2,274	256,041
2022	78,229	18,904	0	2,552	129,708		146	20,646	1,303	7,495	2,677	261,659

Source : Directorate General of Oil and Gas
Note : Revised Data for Gasoil CN48

Handbook of Energy & Economic Statistics of Indonesia 2022

6.2.5 Refinery Production by Type (Continued)

(Thousand Barrel)

Year	Secondary Fuel				Non Fuel					
	Naphtha	LOMC	LSWR	Total			Lubricant	LPG	HOMC	Total Production
2012	23,180	0	26,308	49,488	18,999		2,988	7,288	10,405	328,115
2013	23,793	0	23,743	47,536	21,726		2,697	6,635	6,564	322,664
2014	21,985	243	26,946	49,174	30,460		2,529	6,362	8,544	342,577
2015	13,089	3,131	24,713	40,933	27,175		0	8,084	4,498	329,536
2016	13,641	107	24,798	38,546	15,770		2,019	10,297	6,904	340,289
2017	18,165	1,223	26,565	45,953	22,470		2,457	10,062	8,254	356,755
2018	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
2020	16,006	0	21,497	37,504	27,032		2,339	10,183	6,311	334,844
2021	231	0	4,905	5,137	23,666		2,160	10,145	79	296,235
2022	1,406	0	14,806	16,213	24,262		2,073	10,073	112	314,391

Source : Directorate General of Oil and Gas

Handbook of Energy & Economic Statistics of Indonesia 2022

6.2.6 Import of Refined Products

(Thousand KL)

Year	Avtur	AvGas	Gasoline RON 88 & RON 90[1)]	Gasoline RON 95	Gasoline RON 92		Naphta	HOMC	Gasoil	Fuel Oil	MDF	Total Oil Fuel
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	1,153	3	17,211	57	1,303		0	1,031	7,040	487	8	28,293
2016	1,119	2	12,879	140	3,783		66	33	4,861	585	31	23,500
2017	1,786	3	10,423	180	7,012		0	759	6,882	392	59	27,496
2018	1,518	4	9,229	277	9,295		15	447	6,499	893	47	28,225
2019[2)]	280	2	11,084	150	7,954		46	948	3,873	358	32	24,729
2020[2)]	0	1	9,732	106	6,157		278	218	3,182	216	39	19,929
2021	0	1	8,145	101	9,840		38	576	3,190	175	21	22,087
2022	448	2	15,106	115	6,391		0	369	5,270	154	6	27,861

Source : Directorate General of Oil and Gas
Note : 1) Since 2018, include Gasoline RON 90
2) Revised Data

Handbook of Energy & Economic Statistics of Indonesia 2022

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 Oil Fuel	Naphtha	Lubricant	Other Product	Total
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	1,377	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
2020[1)]	0	2,886	0	697	346	0		0	3,928	0	0	16,519	20,447
2021	0	1,052	0	0	0	0		0	1,052	0	0	11,851	12,903
2022	0	11	0	0	10,589	0		0	10,600	0	0	18,253	28,852

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

6.2.8 Indonesia Crude Oil Export by Destination

(Thousand Barrel)

Year	Japan	USA	Korea	Taiwan	Singa-pore	Others	Total
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	45,489	115,063
2016	18,404	9,943	6,619	6,525	13,581	70,470	125,541
2017	11,901	11,986	7,466	7,543	12,371	51,455	102,723
2018	9,943	10,235	7,122	6,172	7,222	33,777	74,472
2019	160	0	1,765	675	895	22,476	25,971
2020	0	0	635	0	4,573	26,240	31,448
2021	1,094	0	300	575	5,617	36,183	43,769
2022	220	0	225	0	1,154	13,895	15,494

Source : Directorate General of Oil and Gas

6.2.9 LPG Supply and Demand

(Ton)

Year	Production			Export	Import	Sales
	Gas Refinery	Oil Refinery	Total			
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	1,394,804	831,398	2,226,202	494	4,475,929	6,642,633
2017	1,141,552	865,366	2,006,918	372	5,461,934	7,190,871
2018	1,119,049	883,305	2,002,354	434	5,566,572	7,562,893
2019[1)]	1,113,475	821,697	1,935,172	457	5,714,693	7,777,990
2020	1,063,499	858,153	1,921,652	334	6,396,962	8,023,805
2021[1)]	1,038,750	863,807	1,902,557	351	6,336,354	8,358,499
2022	1,084,956	901,338	1,986,294	174	6,739,131	8,562,019

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

6.3.1 Natural Gas Reserves

as of 1 January

(TSCF)

Year	Reserves			Contingent Resources		Un-recover-able[5]
	Proven[2]	Potential[3]	Total	Low Estimate[4]	Best+High Estimate[4]	
2012	103.35	47.35	150.70	n.a	n.a	n.a
2013	101.54	48.85	150.39	n.a	n.a	n.a
2014	100.26	49.04	149.30	n.a	n.a	n.a
2015	97.99	53.34	151.33	n.a	n.a	n.a
2016	101.22	42.84	144.06	n.a	n.a	n.a
2017	100.37	42.35	142.72	n.a	n.a	n.a
2018	96.06	39.49	135.55	n.a	n.a	n.a
2019[1]	49.74	27.55	77.29	48.75	4.44	5.07
2020[1]	43.57	18.82	62.39	61.22	5.58	6.37
2021[1]	41.62	18.99	60.61	62.71	5.71	6.52
2022[1]	36.34	18.49	54.83	67.54	6.15	7.02

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 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

6.3.2 Natural Gas Production

(MMSCF)

Year	Associated	Non Associated	Total
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
2020[1)]	388,015	2,054,816	2,442,831
2021[1)]	386,561	2,047,116	2,433,677
2022[1)]	376,392	1,993,265	2,369,657

Source : Directorate General of Oil and Gas
Note : 1) Estimation data for associated and non associated production

6.3.3 Natural Gas and LNG Supply and Demand

Year	Natural Gas Production	Gas Lift & Reinjection[3]	Own Use[3]	Flare[3]	Net Production of Natural Gas[1]	Utilization[3]			Utilization[3]					LNG Production	Export of LNG	LNG Domestic[3]
						LNG Plant[3]	LPG Plant		Refinery	City Gas	Industry[2]	Electricity	Export by Pipeline Gas			
	(MMSCF)	(MMSCF)	(MMSCF)	(MMSCF)	(MMSCF)	(MMSCF)	(MMSCF)		(MMSCF)	(MMSCF)	(MMSCF)	(MMSCF)	(MMSCF)	(MMSCF)	(Thousand MMBTU)	(MMSCF)
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	982,382	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	901,988	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	9,628	671,960	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	10,156	666,517	238,703	252,237	865,034	512,517	184,752
2020	2,442,831	139,469	174,223	213,399	2,089,963	818,900	18,468		13,897	8,046	677,723	249,876	184,180	812,385	507,431	139,592
2021[4]	2,433,677	138,946	173,570	212,600	2,082,131	772,440	19,200		21,880	8,692	660,200	248,164	274,736	774,329	459,554	174,934
2022	2,369,657	135,291	169,004	207,007	2,027,359	728,463	19,118		30,367	10,372	584,449	226,490	219,113	789,113	444,014	178,678

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) Natural gas utilization in industry is included non energy use from fertilizer
3) Data being processed from the main source
4) Revised Data for Export of LNG

Handbook of Energy & Economic Statistics of Indonesia 2022

6.3.4 City Gas Sales and Utilization

Year	Sales (Million M^3)					Number of Customer				
	Household	Industry & Commercial	Transportation	Total		Household	Commercial Industry[1)]	Small Customer[2)]	Commercial[2)]	Total
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	4,930	35	4,997		198,075	1,719	1,973	n.a	201,767
2019	37	4,837	30	4,904		233,204	1,750	2,114	n.a	237,068
2020	43	4,317	11	4,371		279,856	1,760	2,286	n.a	283,902
2021	49	4,837	10	4,896		352,928	1,776	2,413	n.a	357,117
2022	57	5,268	10	5,335		460,864	1,819	2,452	n.a	465,135

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

6.4.1 Power Plant Installed Capacity

(MW)

Year	On Grid									On Grid							Total On Grid
	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 Gasifi-cation PP	Waste PP	BioGas PP	Biomass PP	
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	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	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	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	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
2020	4,700.67	36,667.86	5,348.44	12,235.71	2,130.70	4,863.53	3,177.93	153.83		99.49	375.84	107.37	0.00	15.65	18.60	150.52	70,046.14
2021	5,050.67	37,036.36	5,348.44	12,411.51	2,286.05	4,986.58	3,218.87	153.83		100.13	486.65	155.29	0.00	28.45	22.10	151.52	71,436.45
2022	5,050.67	46,014.26	4,456.74	13,397.82	2,360.33	4,352.09	2,976.47	153.83		102.27	572.67	190.06	30.00	24.45	24.11	157.42	79,863.19

6.4.1 Power Plant Installed Capacity (Continued)

(MW)

Year	Off Grid								Off Grid			Grand Total On Grid + Off Grid
	Hydro PP[1)]	Micro Hydro PP	Solar PP + Solar PV	Wind PP	Biomass PP	BioGas PP	Hybrid PP[4)]		Solar-Powered Public Street Lighting[3)]	Solar-Powered Energy Saving Lamp	Total Off Grid	
2018	938.00	6.38	28.19	0.48	1,616.52	68.26	3.58		5.28	7.58	2,668.99	64,954.80
2019	938.00	6.88	29.88	0.48	1,616.52	70.26	3.58		9.23	10.90	2,676.50	69,678.90
2020	938.00	6.88	29.02	0.48	1,616.52	99.22	3.58		16.04	10.90	2,704.59	72,750.73
2021	938.00	26.30	34.86	0.48	1,969.64	112.69	3.58		23.95	10.94	3,096.49	74,532.94
2022	938.00	25.41	82.16	0.48	2,767.63	125.30	0.00		29.74	10.92	3,949.90	83,813.09

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) Solar-Powered Public Street Lighting not included in the total power plant capacity
4) Include in Solar PP+Solar PV

Handbook of Energy & Economic Statistics of Indonesia 2022

6.4.2 Power Plant Production

(GWh)

Year	PLN										PLN				
	Hydro PP	Geo-ther-mal PP	Solar PP	Diesel PP	Steam PP				Total		Combined Gas-Steam PP	Gas PP	Gas Engine PP	Wind PP	Sub-Total
					Coal	Oil	Gas	Cofiring							
2012	10,525	3,558	2.85	18,913	66,633	2,391	4,799	0	73,823		34,569	8,310	55	0	149,755
2013	13,014	4,345	5.48	18,919	75,193	1,055	5,602	0	81,850		36,493	8,958	382	0	163,966
2014	11,164	4,285	6.81	21,862	83,397	759	5,856	0	90,012		38,800	9,117	51	0	175,297
2015	10,005	4,392	5.28	18,859	85,191	11,419	146	0	96,756		39,316	5,907	1,233	0	176,472
2016	13,886	3,958	8.78	19,122	92,682	1,092	4,488	0	98,262		42,377	3,745	2,451	0	183,809
2017	12,425	4,096	5.84	16,453	101,333	285	4,159	0	105,778		38,468	4,117	82	0	181,425
2018	10,729	4,013	4.56	15,019	110,035	517	3,846	0	114,402		39,017	5,357	157	0	188,698
2019	9,877	4,110	5.00	9,053	119,520	126	3,730	0	123,376		37,758	3,213	6,151	0	193,543
2020	11,949	4,186	5.65	5,601	113,335	34	1,413	11	114,793		30,098	2,414	8,646	0	177,692
2021	11,869	4,217	5.66	6,034	113,762	225	950	274	114,937		33,612	2,797	9,503	0	182,974
2022	13,175	4,138	9.09	5,993	114,728	9	288	599	115,624		33,322	2,147	9,411	0	183,819

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

Handbook of Energy & Economic Statistics of Indonesia 2022

6.4.2 Power Plant Production (Continued)

(GWh)

Year	PLN Purchase from IPP & PPU																Total On Grid
	Hydro PP	Geo-thermal PP	Solar PP + Solar PV	Diesel PP	Steam PP		Total		Com-bined Gas-Steam PP	Gas PP	Gas Engine PP	Wind PP	Bio-mass PP	BioGas PP	Waste PP	Sub-Total	
					Coal	Gas											
2012	2,274	5,859	0.16	279	35,533	134	35,667		4,519	1,691	0	5	238	0	53	50,585	200,340
2013	3,909	5,069	0.02	388	36,059	147	36,205		4,939	1,529	0	0	144	0	41	52,223	216,189
2014	3,998	5,753	0.00	418	36,135	137	36,272		4,981	1,595	0	0	205	0	36	53,258	228,555
2015	3,736	5,656	0.00	633	39,466	115	39,582		5,330	2,090	0	4	461	0	19	57,510	233,982
2016	4,791	6,698	12.31	586	42,699	129	42,827		5,832	2,767	0	6	584	0	6	64,109	247,918
2017	6,207	8,668	23.21	2,110	46,631	263	46,894		5,704	3,002	35	0	534	52	5	73,235	254,660
2018	6,099	10,006	14.71	2,410	49,978	242	50,220		4,946	3,841	41	188	526	95	1	78,387	267,085
2019	6,669	9,990	49.28	1,403	54,973	228	55,201		5,396	5,577	266	482	219	126	21	85,399	278,942
2020	7,506	11,377	120.32	1,129	67,534	19	67,553		4,045	4,028	613	473	195	102	17	97,159	274,851
2021	7,895	11,682	113.96	389	76,196	0	76,196		4,363	4,190	850	435	222	150	11	106,497	289,471
2022	9,180	12,539	208.64	87	90,580	0	90,580		5,153	4,410	1,395	354	159	166	44	124,276	308,095

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

6.4.2 Power Plant Production (Continued)

(GWh)

Year	Off Grid[1]								Off Grid[1]				Total Off Grid	Grand Total
	Hydro PP	Micro Hydro PP	Mini Hydro PP	Solar PP + Solar PV	Wind PP	Biomass PP	BioGas PP		Waste PP	Hybrid PP[2]	Solar-Powered Public Street Lighting	Solar-Powered Energy Saving Lamp		
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
2020	4,834	36	0	23	2	11,360	697		0	5	8	14	16,980	291,831
2021	4,814	119	0	48	2	13,803	790		0	5	11	14	19,605	309,076
2022	4,806	134	0	144	2	19,396	878		0	0	52	30	25,442	333,537

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
2) Include in Solar PP+Solar PV

6.4.3 Import of Electricity

(GWh)

Year	Country of Origin	Hydro PP
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
2020	Malaysia	1,553.00
2021	Malaysia	972.73
2022	Malaysia	797.38

Source : PLN Statistics

6.4.4 Electricity Sales

(GWh)

Year	Electricity Sales / Tariff Segment							
	House-hold	Commer-cial	Industry	Street Lighting	Social	Govern-ment	Transpor-tation	Total
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	103,733	46,600	77,879	3,633	8,622	4,750	301	245,518
2020	112,156	42,527	72,240	3,635	8,098	4,635	292	243,583
2021[1)]	115,370	44,124	80,904	3,545	8,666	4,708	317	257,634
2022	116,095	50,188	88,483	3,582	10,073	4,995	344	273,761

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

6.4.5 PLN Electricity System Performance

Year	Average Thermal Efficiency	Capacity Factor	Load Factor	Peak Load	Transmission & Distribussion Losses
	(%)	(%)	(%)	(MW)	(%)
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	26.62	52.73	75.76	37,944	9.55
2019	25.84	50.68	76.41	41,671	9.35
2020	25.48	49.54	78.32	41,761	9.12
2021	24.69	51.19	77.23	42,785	8.61
2022	24.54	50.93	84.11	43,485	8.76

Source : Directorate General of Electricity and PLN Statistic

6.5.1 Geothermal Resources and Reserves

as of December 2022

(MW)

No	Location	Resources		Reserves			Total
		Spec-ulative	Hypo-thetical	Possible	Probable	Proven	
1	Sumatera	2,188	1,567	3,514	867	1,169	9,305
2	Jawa	1,164	1,270	3,121	363	1,855	7,773
3	Bali	70	21	104	110	30	335
4	Nusa Tenggara	215	146	731	138	33.5	1,264
5	Kalimantan	151	18	6	0	0	175
6	Sulawesi	1,352	342	996	180	120	2,990
7	Maluku	560	80	496	6	2	1,144
8	Papua	75	0	0	0	0	75
Total		**5,775**	**3,444**	**8,968**	**1,664**	**3,210**	**23,060**

Source : Geological Agency

Handbook of Energy & Economic Statistics of Indonesia 2022

6.5.2 Geothermal Power Plant Capacity 2022

(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 (Persero)		1 x 30 MWe	PT Pertamina Geothermal Energy (Persero)	Indonesia Power	235
					2 × 55 MWe		Indonesia Power	
					1 x 60 MWe		PGE	
					1 x 35 MWe		PGE	
2	PLTP Darajat	West Java	PT Pertamina Geothermal Energy (Persero)		1 x 55 MWe	KKOB Star Energy Geothermal Darajat II, Ltd.	Indonesia Power	270.0
					1 x 94 MWe		KKOB SEGD II, Ltd.	
					1 x 121 MWe		KKOB SEGD II, Ltd.	
3	PLTP Salak	West Java	PT Pertamina Geothermal Energy (Persero)		3 x 60 MWe	KKOB Star Energy Geothermal Salak, Ltd.	Indonesia Power	376.8
					3 x 65.6 MWe		KKOB SEGS, Ltd.	
4	PLTP Dieng	Central Java	PT Pertamina Geothermal Energy (Persero)		1 x 60 MWe	PT Geo Dipa Energi (Persero)	GDE	60.0
5	PLTP Sibayak	North Sumatera	PT Pertamina Geothermal Energy (Persero)		1 x 10 MWe	PT Pertamina Geothermal Energy (Persero)	PGE	12
					2 MWe (Monoblock)		PT Dizamatra Powerindo	
6	PLTP Wayang Windu	West Java	PT Pertamina Geothermal Energy (Persero)		1 x 110 MWe	KKOB Star Energy Geothermal Wayang Windu, Ltd.	KKOB SEGWW, Ltd.	227
					1 x 117 MWe			
7	PLTP Patuha	West Java	PT Pertamina Geothermal Energy (Persero)		1 x 55 MWe	PT Geo Dipa Energi (Persero)	GDE	55
8	PLTP Lahendong	North Sulawesi	PT Pertamina Geothermal Energy (Persero)		4 x 20 MWe	PT Pertamina Geothermal Energy (Persero)	PLN	120
					2 x 20 MWe			
9	PLTP Ulubelu	Lampung	PT Pertamina Geothermal Energy (Persero)		2 x 55 MWe	PT Pertamina Geothermal Energy (Persero)	PGE	220
					2 x 55 MWe			
10	PLTP Ulumbu	East Nusa Tenggara	PT PLN (Persero)		4 x 2.5 MWe	PT PLN (Persero)	PLN	10
11	PLTP Mataloko	East Nusa Tenggara	PT PLN (Persero)		1 x 2.5 MWe	PT PLN (Persero)	PLN	2.5
12	PLTP Sarulla	North Sumatera	PT Pertamina Geothermal Energy (Persero)		3 x 110 MWe	KKOB Sarulla Operations, Ltd.	KKOB SO, Ltd.	330
13	PLTP Karaha	West Java	PT Pertamina Geothermal Energy (Persero)		1 x 30 MWe	PT Pertamina Geothermal Energy (Persero)	PGE	30
14	PLTP Lumut Balai	West Java	PT Pertamina Geothermal Energy (Persero)		1 x 55 MWe	PT Pertamina Geothermal Energy (Persero)	PGE	59.9
15	PLTP Sorik Marapi	North Sumatera	PT Sorik Marapi Geothermal Power		1 x 42.4 MWe	PT Sorik Marapi Geothermal Power	SMGP	162.15
					1 x 56.95 MWe			
					1 x 62.8 MWe			
16	PLTP Muara Laboh	West Sumatera	PT Supreme Energi Muara Laboh		1 x 85 MWe	PT Supreme Energy Muara Laboh	SEML	85
17	PLTP Rantau Dedap	South Sumatera	PT Supreme Energi Rantau Dedap		1 x 98.4 MWe	PT Supreme Energy Rantau Dedap	SERD	98.4
18	PLTP Sokoria	East Nusa Tenggara	PT Sokoria Geothermal Indonesia		1 × 6,6 MWe	PT Sokoria Geothermal Indonesia	SGI	6.6
							Total	**2,360.33**

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

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	Lahen-dong	Ulubelu	Karaha	Lumut Balai	Sub Total	Salak	Darajat	Wayang Windu		Sarulla	Sub Total	Ulumbu	Mataloko	Sub Total	Dieng	Patuha	Sub Total	
2012	10,878	160	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	239	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	184	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	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	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	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	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	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
2020	13,123	0	6,694	11,753	789	3,138	35,498	22,785	14,224	13,695		11,503	62,207	707	0	707	2,711	3,028	5,739	104,150
2021	13,869	0	6,143	11,733	733	3,252	35,731	23,836	13,929	13,552		12,747	64,064	774	0	774	2,639	2,994	5,633	106,202
2022	13,147	0	6,785	11,192	725	3,191	35,040	23,273	13,903	13,784		13,146	64,105	692	0	692	2,515	3,045	5,560	105,397

6.5.3 Geothermal Steam Production (Continued)

Year	PT Sorik Marapi Geothermal Power		PT Supreme Energy			PT Sokoria Geothermal Indonesia		Total
	Sorik Marapi	Sub Total	Muara Laboh	Rantau Dadap	Sub Total	Sokoria	Sub Total	
2019	649	649	197	0	197	0	0	100.157
2020	2,401	2,401	4,366	0	4,366	0	0	110,917
2021	3,569	3,569	4,533	338	4,871	0	0	114,642
2022	8,196	8,196	4,719	5,051	9,770	223	223	123,586

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

6.6.1 Biofuel Production Capacity in 2022

(KL)

Province	Biodiesel	Bioethanol
Banten	580,966	-
West Java	857,699	-
Central Java	138,000	-
East Java	3,885,633	40,000
Bali	360	-
Riau	5,097,701	-
Batam	896,552	-
North Sumatera	912,000	-
West Sumatera	-	-
Lampung	885,058	-
East Kalimantan	2,547,000	-
Central Kalimantan	402,299	-
South Kalimantan	1,702,000	-
West Kalimantan	910,345	-
North Sulawesi	475,862	-
TOTAL	**19,291,474**	**40,000**

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

6.6.2 New and Renewable Energy for Non Electricity

Year	Biodiesel			BioGas	Industrial Biomass	Solar Water Heater	Direct Use of Geo-thermal
	Product-ion (Thousand KL)	Export (Thou-sand KL)	Domes-tic (Thou-sand KL)	Product-ion (Thou-sand m^3)	Consumpt-ion (Thousand Ton)	Water Heat (Thou-sand TOE)	Heat (Thermal MWh)
2012	2,221	1,552	669	n.a	n.a	n.a	n.a
2013	2,805	1,757	1,048	n.a	n.a	n.a	n.a
2014	3,961	1,629	1,845	n.a	n.a	n.a	n.a
2015	1,620	328	915	18,953	47	n.a	0
2016	3,656	477	3,008	22,800	72	n.a	0
2017	3,416	187	2,572	24,786	73	n.a	0
2018	6,168	1,803	3,750	25,670	133	n.a	0
2019	8,399	1,319	6,396	26,277	217	n.a	0
2020	8,594	36	8,400	27,856	249	n.a	0
2021	10,240	133	9,294	28,390	511	n.a	0
2022	11,836	372	10,449	32,521	1,765	128	6,195

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

01

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.

Traditional 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.

Industrial biomass is biological material derived from animals, plants, or algae, such as wood and crops, and organic waste from cities and industries. Wood chips, wood pellets, agricultural and forestry residues, and other solid forms of bioenergy that can be used as raw materials for the industry are examples of industrial biomass.

Solar water heater is a water heater that utilizes sunlight.

Direct utilization of geothermal energy is an activity of exploiting geothermal energy directly without carrying out the process of converting heat and or fluid energy into other types of energy for non-electrical purposes.

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 (HSD/ADO), Medium Distillate 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 Medium Distillate Fuel (MDF) which include 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, Gasoil, MDF, 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 Medium Distillate Fuel (MDF) and include 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.

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 (C3H8) and butane (C4H10) 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.

Medium Distillate Fuel (MDF)
A type of diesel oil used as fuel in low or medium speed industrial diesel engine (IDO) and marine engine.

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, MDF, 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.

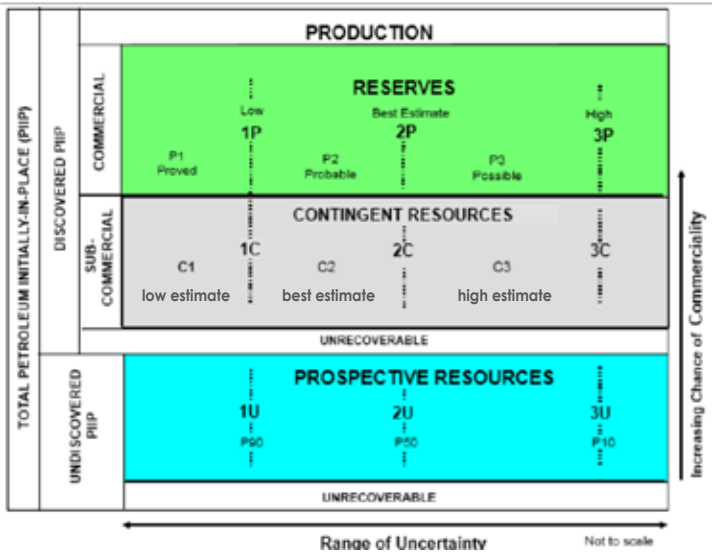
Total Energy Balance
Total of all columns in a certain row. In transformation row, the total of columns indicates efficiency of the transformation process.

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[1)]	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
Average Coal	Ton	3.4554
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
Oil		
Condensate	Barrel	0.9545
Crude Oil	Barrel	1.0000

Conversion Factor (continued)

Energy	Original Unit	Multiplier Factor to BOE (Barrel Oil Equivalent)
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
MDF	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
Note : 1) Before 2022, using 4,2 as multiplier factor to BOE

Ministry of Energy and Mineral Resources
Republic of Indonesia

HANDBOOK OF ENERGY & ECONOMIC STATISTICS OF INDONESIA 2022

Ministry of Energy and Mineral Resources Republic of Indonesia
Jl. Medan Merdeka Selatan No. 18
Jakarta Pusat, DKI Jakarta
Phone : (62) 21-380-4242
Facsimile : (62) 21-350-7210
Email : pusdatin@esdm.go.id
Website : www.esdm.go.id