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## PREFACE

The updating of the Handbook of Indonesia's Energy Economic Statistics, is a part of the Center for Data and Information on Energy and Mineral Resource's (CDI-EMR) effort to provide accurate and reliable energy economic data and information consolidated in one book. Data and information related to energy economy are dispersed in various sources and locations, and are generally available in different formats unready for energy analysis. In addition, they are generally not provided with sufficient explanation or clarification. The standardization of energy economic data is still quite a critical problem. Currently, some researchers in various institutions, do not have common terminology on energy economy, in some cases may have a number of meanings. This subsequently leads to inaccurate energy analysis.

We hope the process to standardize Energy and Economic data and information in the future will be continued as part of the updating of the Handbook of Indonesia's Energy Economic Statistics. Therefore, in updating the Handbook, CDI-EMR will continue to coordinate with all related parties within the Ministry of Energy and Mineral Resources (MEMR) as well as with statistics units outside MEMR.

We would like to appreciate all parties, for their diligence and patience in preparing this book. May God Almighty always guide us in utilizing our energy resources wisely for the maximum benefit of all the people of Indonesia.

Farida Zed  
Head of Center for Energy and Mineral Resources  
Data and Information

## INTRODUCTION

This Handbook of Indonesia's Energy Economic Statistics, 5th edition, contains data on Indonesia's energy and economy from 2000 through 2006. This edition is an updated version of the 4th Edition, covering estimated energy demand for every sector. The structure of the table is arranged as follows:

### A. Tables

Shown in 6 Main Categories, as follows:

- Table 1 General Information and Energy Economic Indicators
- Table 2 Indonesia's Energy Balance Table
- Table 3 Situation of Energy Supply and Demand
- Table 4 Energy Price
- Table 5 Situation of Energy Demand by Sectors
- Table 6 Situation of Energy Supply by Energy Sources

### B. Annexes

Annex 1. Methodology and Clarification of Tables which explains the methodology applied to prepare the data for the tables

Annex 2. Glossary, contains important terms which are used in the tables and their respective units.

Annex 3. Conversion Factors, presenting list of multiplication factors used to convert various original units of energy into BOE (barrel oil equivalent).

## List of Contents

Preface .....	ii
Introduction .....	iii
List of Contents .....	iv
Concise Energy Profile .....	vii
<b>Chapter 1</b>	
1.1 GDP and Energy Indicator .....	2
1.2 Macro Economy.....	4
1.3 Finance and Banking .....	4
1.4 Price Index .....	5
1.5 Population and Employment .....	6
1.6 International Trade.....	6
1.7 Supply of Primary Energy .....	8
1.8 Comparison of Primary Energy Intensity in Some Countries.....	9
1.9 Intensity of Final Energy Consumption per Capita.....	10
<b>Chapter 2</b>	
2.1 Indonesia Energy Balance Table 2006 .....	11
<b>Chapter 3</b>	
3.1 Primary Energy Supply by Sources .....	16
3.2 Final Energy Consumption by Sector .....	18
3.3 Share of Distribution of Final Energy Consumption by Sector .....	20
3.4 Final Energy Consumption by Type .....	21
3.5 Share of Distribution of Final Energy Consumption .....	22
<b>Chapter 4</b>	
4.1 Crude Oil Price .....	24
4.2 International Gas Price .....	25
4.3 Average Price of LPG, LNG and Coal FOB Export .....	25
4.4 Energy Price Per Energy Unit.....	26
4.5 Average Price of Coal Import .....	28

## Chapter 5

5.1.1	Energy Consumption in Industrial Sector (in Original Unit) .....	30
5.1.2	Energy Consumption in Industrial Sector (in Energy Unit) .....	30
5.1.3	Share of Energy Consumption in Industrial Sector .....	32
5.2.1	Energy Consumption in Household Sector (in Original Unit) .....	32
5.2.2	Energy Consumption in Household Sector (in Energy Unit) .....	33
5.2.3	Share of Energy Consumption in Household Sector .....	33
5.3.1	Energy Consumption in Commercial Sector (in Original Unit) .....	34
5.3.2	Energy Consumption in Commercial Sector (in Energy Unit) .....	34
5.3.3	Share of Energy Consumption in Commercial Sector .....	35
5.4.1	Energy Consumption in Transportation Sector (in Original Unit) .	36
5.4.2	Energy Consumption in Transportation Sector (in Energy Unit) ...	36
5.4.3	Share of Energy Consumption in Transportation Sector .....	38
5.5.1	Energy Consumption in Others Sector (in Original Unit).....	38
5.5.2	Energy Consumption in Others Sector (in Energy Unit).....	39
5.5.3	Share of Energy Consumption in Others Sector .....	40

## Chapter 6

6.1.1	Coal Reserves .....	42
6.1.2	Coal Supply .....	43
6.1.3	Indonesia Coal Export by Destination.....	44
6.1.4	Coal Sales .....	44
6.2.1	Oil Reserves .....	46
6.2.2	Refinery Capacity in 2006.....	47
6.2.3	Domestic Oil Fuels Sales.....	48
6.2.4	Crude Oil Supply and Demand .....	48
6.2.5	Crude Oil Refinery Production .....	50
6.2.6	Import of Refined Products .....	51
6.2.7	Export of Refined Products .....	51
6.2.8	Indonesia Crude Oil Export by Destination .....	52
6.2.9	LPG Supply.....	52
6.3.1	Natural Gas Reserves.....	53
6.3.2	Natural Gas Production.....	53
6.3.3	Natural Gas and LNG Supply Demand.....	54

6.3.4	City Gas Sales and Utilization from PGN (in Original Unit) .....	54
6.4.1	Power Plant Installed Capacity .....	56
6.4.2	Power Plant Production .....	58
6.4.3	Electricity Sales.....	60
6.4.4	Fuel Consumption of Power Plant .....	61
6.4.5	Share of Fuel Consumption of Power Plant .....	62
6.4.6	PLN Electricity System Performance .....	63
6.5.1	Geothermal Resources .....	64
6.5.2	Geothermal Power Plant Capacity .....	65
6.5.3	Geothermal Steam Production .....	66
6.5.4	Geothermal Electricity Production .....	66
ANNEX		
	ANNEX 1 Methodology and Table Explanation .....	67
	ANNEX 2 Glossary .....	76
	ANNEX 3 List of Industrial Codes .....	87

## Concise Energy Profile - Indonesia 2006

### A. SOCIO ECONOMY

Teritorial Area :	9,822,570.00	km <sup>2</sup>
Land Area :	1,922,570.00	km <sup>2</sup>
Population :	222,192.00	Thousand People
Household :	60,553.54	Thousand Household

### GDP Regional

Total Value :	3,338.20	Trillion Rupiah
Per Capita :	15,023.92	Thousand Rupiah per Year

### B. Energy Production

#### Primary Energy Production

Crude Oil :	367,049.20	Thousand Barel
Natural Gas :	2,954.10	BSCF
Coal :	193,761.31	Thousand Ton
Hydro :	9,622.66	GWh Output
Geothermal :	6,658.35	GWh Output

### C. Final Energy Consumption

**852.12 Thousand BOE**

#### Energy Consumption by Type of Energy

Coal :	89.19	Thousand BOE
Fuel :	314.05	Thousand BOE
Gas :	94.21	Thousand BOE
Electricity :	70.67	Thousand BOE
LPG :	9.41	Thousand BOE
Biomass :	276.27	Thousand BOE

#### Energy Consumption by Sector

Industry :	317.11	Thousand BOE
Household :	312.88	Thousand BOE
Commercial :	21.97	Thousand BOE
Transportation :	171.54	Thousand BOE
Others :	30.31	Thousand BOE
Non Energy :	34.09	Thousand BOE

### Ratio Electrification

**63 %**

- 1.1 GDP and Energy Indicator
- 1.2 Macro Economic
- 1.3 Finance and Banking
- 1.4 Price Index
- 1.5 Population and Employment
- 1.6 International Trade
- 1.7 Supply of Primary Energy
- 1.8 Comparison of Primary Energy Intensity in Some Countries
- 1.9 Intensity of Final Energy Consumption per Capita



## 1.1 GDP and Energy Indicator

	Unit	2000	2001
GDP at Constant Price 2000	Billion Rupiahs	1,390	1,443
	Million US\$	144,843	158,156
GDP Nominal	Billion Rupiahs	1,390	1,684
	Juta US\$	144,843	161,950
GDP Nominal Per Capita	Million US\$	6,752	8,072
	US\$	704	776
Population	Thousand	205,843	208,647
Number of Households	Thousand	52,010	54,317
Primary Energy Supply	Thousand BOE	797,370	841,477
Primary Energy Supply Per Capita	BOE/person	3.87	4.03
Final Energy Consumption	Thousand BOE	496,589	509,456
Final Energy Consumption Per Capita	BOE/capita	2.41	2.44

Year	Growth (%)	
	1999-2000	2000-2001
GDP at Constant Price 2000	4.90	3.83
GDP Nominal	26.37	21.19
GDP Nominal Per Capita	24.66	19.56
Population	1.38	1.36
Number of Households	3.31	4.43
Primary Energy Supply	9.31	5.53
Final Energy Consumption Per Capita	7.82	4.11
Final Energy Consumption	46.08	2.59

BPS, Statistics Indonesia; Bank Indonesia;

Note: Final Energy and Primary Energy which are calculated is commercial energy (excluded biomass)

2002	2003	2004	2005	2006
1,506	1,580	1,657	1,750	1,847
200,044	227,352	227,229	247,642	318,910
1,863	2,046	2,303	2,730	3,338
208,420	241,684	247,904	277,691	370,088
8,789	9,503	10,571	12,414	15,024
983	1,123	1,138	1,263	1,666
212,003	215,276	217,854	219,893	222,192
55,041	56,623	58,253	59,927	60,554
858,168	865,709	915,091	961,338	927,413
4.05	4.02	4.20	4.37	4.17
492,113	509,482	569,962	568,472	577,533
2.32	2.37	2.62	2.59	2.60

Growth (%)				
2001-2002	2002-2003	2003-2004	2004-2005	2005-2006
4.38	4.88	4.89	5.60	5.55
10.63	9.80	12.57	18.53	22.29
8.88	8.13	11.24	17.43	21.03
1.61	1.54	1.20	0.94	1.05
1.33	2.87	2.88	2.87	1.05
1.98	0.88	5.70	5.05	-3.53
0.37	-0.66	4.45	4.08	-4.53
-3.40	3.53	11.87	-0.26	1.59

## 1.2 Macro Economic

Year	GDP at Constant 2000 Prices				
	GDP		Private Consumption	Government Consumption	Fixed Capital Formation
	Billion Rupiah	Growth (%)	Billion Rupiah	Billion Rupiah	Billion Rupiah
2000	1,389,770.30	4.90	856,798.30	90,779.70	275,881.20
2001	1,442,984.60	3.83	886,736.00	97,646.00	293,792.70
2002	1,506,124.40	4.38	920,749.60	110,333.60	307,584.60
2003	1,579,559.00	4.88	956,593.40	121,404.10	310,776.90
2004	1,656,825.70	4.89	1,004,109.00	126,248.70	354,561.30
2005	1,749,546.90	5.60	1,043,805.10	136,424.90	389,757.20
2006	1,846,654.00	5.55	1,076,928.10	147,563.70	404,606.60

Source : BPS, Statistics Indonesia

## 1.3 Finance and Banking

Year	Money Supply (M1)			Money Supply (M2)	
	Total	Currency Outside Banks	Demand Deposits	Total	Quasi
	Billion Rupiah	Billion Rupiah	Billion Rupiah	Billion Rupiah	Billion Rupiah
2000	162,186	72,371	89,815	606,837	444,651
2001	177,731	76,342	101,389	689,287	511,556
2002	191,939	80,686	111,253	743,443	551,504
2003	223,799	94,542	129,257	816,515	592,716
2004	253,818	109,265	144,553	1,033,528	779,710
2005	281,905	124,316	157,589	1,203,218	921,310
2006	313,451	123,976	189,476	1,260,445	765,688

Source: Bank of Indonesia

GDP at Constant 2000 Prices			GDP Nominal (Current Prices)	Index GDP Deflator (2000=100)
Stock Change	Export of Goods and Services	Import of Goods and Services		
Billion Rupiah	Billion Rupiah	Billion Rupiah	Billion Rupiah	
33,282.80	569,490.30	423,317.90	1,389,769.50	100.00
41,846.80	573,163.40	441,012.00	1,684,280.50	116.72
13,085.00	566,188.40	422,271.40	1,863,274.70	123.71
-4,707.60	612,559.40	433,809.00	2,045,853.50	129.52
36,403.50	680,465.70	544,962.50	2,303,031.50	139.00
52,806.30	739,006.90	612,253.50	2,729,700.00	156.02
13,095.10	864,503.50	684,077.80	3,338,195.70	180.77

## 1.4 Price Index

Year	Wholesale Price Index <sup>1)</sup>		Consumer Price Index of 45 Cities <sup>1)</sup> 2000=100	Fuel Oil Price Index <sup>2)</sup>	Coal Price Index <sup>2)</sup>	Electricity Price Index <sup>2)</sup>	
	Export	Import					
	2000 = 100						
2000	100.0	100.0	100.0	100.00	100.00	100.00	
2001	114.2	113.0	112.7	111.5	188.64	161.97	122.34
2002	118.0	108.0	112.0	124.7	207.64	151.14	189.44
2003	122.0	109.0	114.0	133.1	274.34	156.53	251.99
2004	131.0	121.0	127.0	141.3	256.26	150.04	269.01
2005	151.0	145.0	149.0	155.9	486.14	163.57	271.56
2006	172.0	154.0	162.0	182.0	560.25	218.36	273.78

- Notes : 1) Processed from BPS, Statistics Indonesia  
 2) Processed from Electrical and Energy Statistics, DGEEU, Indonesia Oil and Gas Statistics, Directorate General Oil & Gas, Indonesia Mineral and Coal Statistics, Directorate General of Mineral, Coal & Geothermal

## 1.5 Population and Employment

Year	Population	Labor Force	Household	Unemployment
	Thousand People	Thousand People	Thousand Household	Thousand People
2000	205,843	95,651	52,010	5,813
2001	208,647	98,812	54,317	8,005
2002	212,003	99,564	55,041	9,132
2003	215,276	100,316	56,623	9,531
2004	217,854	103,973	58,253	10,251
2005	219,893	105,802	59,927	10,854
2006	222,192	106,389	60,554	10,932

Source : BPS, Statistics Indonesia

## 1.6 International Trade

Year	Based on Major Portion		Trade Indexes	
			2000 = 100	
	Export	Import	Export	Import
	Million US \$			
2000	62,124	33,515	100.0	100.0
2001	56,321	30,962	90.7	92.4
2002	57,159	31,289	92.0	93.4
2003	61,058	32,551	98.3	97.1
2004	71,585	46,525	115.2	138.8
2005	85,660	57,701	137.9	172.2
2006	100,799	61,066	162.3	182.2

Source : BPS, Statistics Indonesia

Note : \*) Derived from World Economic Outlook Database, October 2007, IMF

Unemployment Percentage (towards labor force) (%)	Average Wage		
	Industry	Hotel	Mining
(%)	Thousand Rupiahs Per Month		
6.1	372.8	395.6	1,234.0
8.1	541.3	575.1	1,226.6
9.2	671.6	651.0	1,405.7
9.5	712.7	581.1	2,116.7
9.9	851.8	801.3	1,368.0
10.3	869.5	788.1	2,114.4
10.3	1,291.7	1,163.3	3,571.8

Balance Payment			Exchange Rate Rupiah to US \$	US\$ Deflator <sup>*)</sup>
Current Transaction	Capital Transaction	Total		
Million US \$				
7,991	-7,896	95	9,595	1.0000
6,900	-7,617	-717	10,400	1.0240
7,822	-1,103	6,719	8,940	1.0419
8,107	-950	7,157	8,465	1.0630
3,108	2,612	5,720	9,290	1.0910
3,097	6,254	9,351	9,830	1.1213
3,495	2,180	5,675	9,020	1.1605

## 1.7 Supply of Primary Energy

### 1.7.1 By Type

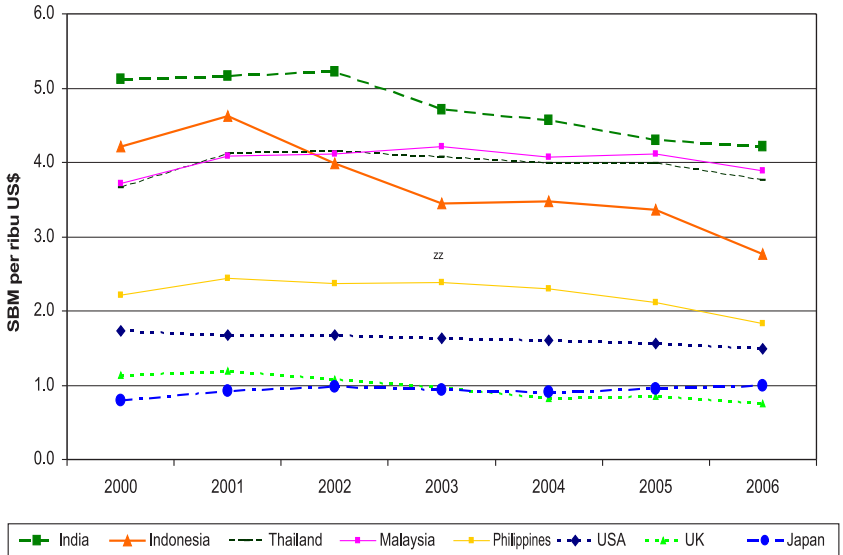
(%)

Type of Energy	2000	2001	2002	2003	2004	2005	2006
Crude Oil and Fuel Export/ Import	43.47	40.89	39.72	40.16	41.50	43.56	40.53
Coal	8.80	10.36	10.89	11.32	12.77	14.09	17.10
Natural Gas and Export/ Import (LPG & LNG)	19.23	20.99	22.32	21.69	19.85	17.27	16.48
Hydropower	2.37	2.65	2.22	2.02	2.05	2.20	2.02
Geothermal	0.90	0.90	0.91	0.91	0.93	0.89	0.93
Biomass	25.23	24.22	23.95	23.91	22.90	22.00	22.95

### 1.7.2 By Type (excluded Biomass)

Type of Energy	2000	2001	2002	2003	2004	2005	2006
Crude Oil and Fuel Export/Import	58.14	53.95	52.22	52.78	53.83	55.84	52.61
Coal	11.77	13.67	14.32	14.87	16.56	18.07	22.19
Natural Gas and Export/ Import (LPG & LNG)	25.72	27.70	29.35	28.50	25.74	22.13	21.38
Hydropower	3.17	3.49	2.92	2.65	2.66	2.82	2.62
Geothermal	1.20	1.18	1.19	1.20	1.21	1.13	1.21

## 1.8 Comparison of Primary Energy Intensity in Some Countries

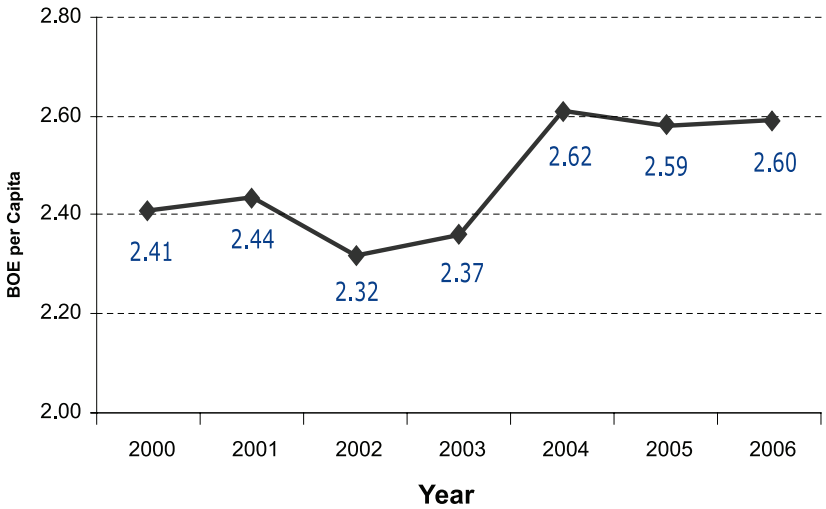


GDP Primary Energy Consumption using US\$ fix rate in year 2000

Source : BP Statistical Review of World Energy June 2007 and World Economic Outlook Database, October 2007, IMF



## 1.9 Intensity of Final Energy Consumption per Capita



**2.1** Indonesia Energy Balance 2006

## 2. Indonesia Energy Balance Table 2006

	Hydro Power	Power Plant	Biomass	Coal	Natural Gas
<b>1 Primary Energy Supply</b>	<b>24.257</b>	<b>11.183</b>	<b>276.329</b>	<b>209.325</b>	<b>501.541</b>
a. Production	24.257	11.183	276.329	813.798	530.556
b. Import	0	0		473	0
c. Export	0	0		-603.258	-29.015
d. Stock Change	0	0		-1.687	0
<b>2 Energy Transformation</b>	<b>-24.257</b>	<b>-11.183</b>	<b>-58</b>	<b>-118.871</b>	<b>-305.814</b>
a. Refinery	0	0	0	0	-2.723
b. LPG Plant	0	0	0	0	-8.468
c. LNG Plant	0	0	0	0	-257.922
d. Coal Processing Plant	0	0	0	-203	0
e. Power Plant	-24.257	-11.183	-58	-118.668	-36.701
- State Own Utility (PLN)	-22.079	-5.389	0	-80.155	-28.358
- Independent Power Producer (Non-PLN)	-2.178	-5.794	-58	-38.513	-8.344
<b>3 Own Use and Losses</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>-84.246</b>
a. During Transformation Process	0	0	0	0	-61.543
b. Gas Flaring	0	0	0	0	-20.085
c. Transmission & Distribution	0	0	0	0	-2.618
<b>4 Final Energy Supply</b>	<b>0</b>	<b>0</b>	<b>276.271</b>	<b>90.454</b>	<b>111.480</b>
<b>5 Statistic Discrepancy</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>225</b>
<b>6 Final Energy Consumption</b>	<b>0</b>	<b>0</b>	<b>276.271</b>	<b>89.194</b>	<b>94.210</b>
a. Industry	0	0	46.676	89.043	93.835
b. Transportation	0	0	0	0	42
c. Household	0	0	228.186	151	128
d. Commercial	0	0	1.409	0	206
e. Other Sectors	0	0	0	0	0
<b>7 Non-Energy Use</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1.260</b>	<b>17.046</b>

Thousand BOE

Crude Oil	Fuel	LPG	Other Petroleum Products	Listrik	LNG	Total
<b>348.321</b>	<b>127.175</b>	<b>-1.493</b>	<b>-37.193</b>	<b>0</b>	<b>-211.261</b>	<b>1.248.184</b>
367.049,201		0	0	0	0	2.023.172
116.232,183	134.638	588	0	0	0	251.931
-134.960,256	-281	-2.470	-37.193	0	-211.261	-1.018.439
0	-7.181	388	0	0	0	-8.480
<b>-333.136</b>	<b>187.483</b>	<b>10.907</b>	<b>70.669</b>	<b>81.595</b>	<b>208.676</b>	<b>-233.989</b>
-333.136	254.190	3.258	70.669	0	0	-7.743
0	0	7.649	0	0	0	-819
0	0	0	0	0	208.676	-49.246
0	0	0	0	0	0	-203
0	-66.707	0	0	81.595	0	-175.978
0	-65.996	0	0	64.039	0	-137.937
0	-711	0	0	17.556	0	-38.041
<b>-6.663</b>	<b>-613</b>	<b>0</b>	<b>0</b>	<b>-8.789</b>	<b>0</b>	<b>-100.311</b>
0	-14	0	0	0	0	-61.557
0	0	0	0	0	0	-20.085
-6.663	-599	0	0	-8.789	0	-18.668
<b>8.522</b>	<b>314.046</b>	<b>9.414</b>	<b>33.476</b>	<b>72.807</b>	<b>-2.585</b>	<b>913.884</b>
<b>8.522</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2.137</b>	<b>-2.585</b>	<b>8.299</b>
<b>0</b>	<b>314.046</b>	<b>9.414</b>	<b>0</b>	<b>70.670</b>	<b>0</b>	<b>853.804</b>
0	57.765	1.453	0	28.335	0	317.107
0	171.458	0	0	41,14	0	171.541
0	50.873	6.719	0	26.821	0	312.878
0	7.824	1.241	0	11.289	0	21.968
0	26.127	0	0	4.184	0	30.311
<b>0</b>	<b>0</b>	<b>0</b>	<b>33.476</b>	<b>0</b>	<b>0</b>	<b>51.781</b>



- 3.1 Primary Energy Supply by Sources
- 3.2 Final Energy Consumption by Sector
- 3.3 Share of Final Energy Consumption by Sector
- 3.4 Final Energy Consumption by Type
- 3.5 Share of Final Energy Consumption by Type

### 3.1 Primary Energy Supply by Sources

Year	Coal	Crude Oil & Export / Import Fuel	Natural Gas & Export / Import (LPG & LNG)
2000	93,831,548	463,606,966	205,086,654
2001	115,029,247	454,005,517	233,101,103
2002	122,879,411	448,138,791	251,863,760
2003	128,763,347	456,879,879	246,752,734
2004	151,524,496	492,552,103	235,551,546
2005	173,673,093	536,843,174	212,789,796
2006	205,779,290	487,883,317	198,310,686

(BOE)

Hydro Power	Geothermal	Biomass	TOTAL
25,248,895	9,596,400	269,042,410	1,066,412,872
29,380,607	9,960,940	268,953,321	1,110,430,736
25,038,179	10,248,040	270,206,780	1,128,374,960
22,937,538	10,375,200	271,974,216	1,137,682,914
24,385,647	11,077,000	271,764,931	1,186,855,722
27,120,985	10,910,460	271,094,208	1,232,431,716
24,256,796	11,182,742	276,271,044	1,203,683,875



## 3.2 Final Energy Consumption by Sector

### 3.2.1 Energy Consumption (included Biomass)

Sector	2000	2001
Industry	279,054,481	277,198,094
Household	296,648,161	301,424,449
Commercial	18,210,911	18,880,147
Transportation	140,044,651	147,751,157
Others	31,673,356	33,155,303
Total Final Energy Consumption	765,631,561	778,409,149
Non Energy Consumption	45,829,969	41,331,887

### 3.2.2 Commercial Energy Consumption (Excluded Biomass)

Sector	2000	2001
Industry	220,073,194	222,012,335
Household	88,038,614	89,101,204
Commercial	16,759,335	17,435,829
Transportation	140,044,651	147,751,157
Others	31,673,356	33,155,303
Total Final Energy Consumption	496,589,151	509,455,828
Non Energy Consumption	45,829,969	41,331,887

(BOE)

2002	2003	2004	2005	2006
255,957,530	265,252,670	292,052,142	290,823,745	317,106,778
303,112,399	309,128,117	314,198,710	315,020,793	312,877,949
19,043,545	19,352,466	21,778,959	22,330,115	21,968,006
151,498,823	156,149,810	178,268,595	178,383,640	171,540,675
32,707,301	31,573,190	35,428,973	33,008,358	30,310,946
762,319,597	781,456,254	841,727,379	839,566,651	853,804,354
47,723,312	46,110,684	45,566,496	46,987,470	34,091,062

(BOE)

2002	2003	2004	2005	2006
203,652,418	215,085,262	245,135,442	246,903,272	270,430,621
86,647,826	88,751,220	90,773,240	89,262,705	84,691,631
17,606,448	17,922,555	20,356,198	20,914,468	20,559,437
151,498,823	156,149,810	178,268,595	178,383,640	171,540,675
32,707,301	31,573,190	35,428,973	33,008,358	30,310,946
492,112,817	509,482,038	569,962,448	568,472,443	577,533,309
47,723,312	46,110,684	45,566,496	46,987,470	34,091,062

### 3.3 Share of Final Energy Consumption by Sector

(%)

Year	Industry	Household	Commercial	Transportation	Others
2000	44.32	17.73	3.37	28.20	6.38
2001	43.58	17.49	3.42	29.00	6.51
2002	41.38	17.61	3.58	30.79	6.65
2003	42.22	17.42	3.52	30.65	6.20
2004	43.01	15.93	3.57	31.28	6.22
2005	43.43	15.70	3.68	31.38	5.81
2006	46.83	14.66	3.56	29.70	5.25

Note: Commercial Energy (Excluded Biomass)

### 3.4 Final Energy Consumption by Type

(Thousand BOE)

Year	Biomass	Coal	Natural Gas	Fuel	LPG	Electricity	Total
2000	269,042	36,135	87,499	316,138	8,261	48,555	765,632
2001	268,953	37,098	84,541	327,695	8,280	51,841	778,409
2002	270,207	38,778	65,971	325,202	8,744	53,418	762,320
2003	271,974	32,159	91,700	321,384	8,766	55,473	781,456
2004	271,765	55,428	89,637	354,317	9,187	61,393	841,727
2005	271,094	65,862	90,537	337,976	8,453	65,644	839,567
2006	276,271	89,194	94,210	314,046	9,414	70,670	853,804

### 3.5 Share of Final Energy Consumption by Type

(%)

Year	Coal	Natural Gas	Fuel	LPG	Electricity
2000	7.28	17.62	63.66	1.66	9.78
2001	7.28	16.59	64.32	1.63	10.18
2002	7.88	13.41	66.08	1.78	10.85
2003	6.31	18.00	63.08	1.72	10.89
2004	9.72	15.73	62.17	1.61	10.77
2005	11.59	15.93	59.45	1.49	11.55
2006	15.44	16.31	54.38	1.63	12.24

- 4.1 Crude Oil Price
- 4.2 International Gas Price
- 4.3 Average Price of Export LPG, LNG and Coal FOB
- 4.4 Energy Price Per Energy Unit
- 4.5 Average Price of Coal Import

## 4.1 Crude Oil Price

(US \$ per Barrel)

Crude Oil Type	2000	2001	2002	2003	2004	2005	2006
SLC	28.53	23.99	25.11	29.04	36.30	53.92	64.24
Arjuna	28.65	24.29	24.35	28.81	36.90	55.07	65.52
Arun Kondensat	28.92	24.40	24.65	29.16	37.40	54.62	64.85
Attaka	29.09	24.75	24.89	29.41	37.60	57.51	67.59
Cinta	27.83	23.15	24.08	28.09	35.00	51.81	61.77
Duri	27.09	22.02	23.30	27.11	30.40	46.62	54.93
Handil Mix	n/a	24.42	24.48	28.96	37.10	55.23	65.67
Lalang	n/a	24.04	25.16	29.09	36.40	53.13	64.29
Widuri	27.87	23.10	24.08	28.05	35.00	51.19	61.94
Belida	29.07	24.74	24.74	29.19	37.30	56.54	67.56
Senipah Kondensat	29.05	24.40	24.65	29.17	39.95	54.62	65.57
Average	28.39	21.94	22.46	26.34	36.39	53.66	64.27

Source : Oil and Gas Statistics, Directorate General of Oil and Gas

## 4.2 International Gas Price

(US \$ /MMBTU)

Year	LNG CIF on Japan	Natural Gas			
		CIF on Uni Eropa	UK (Heren NBP Index)	USA (Henry Hub)	Canada (Alberta)
2000	4.72	3.25	2.71	4.23	3.75
2001	4.64	4.15	3.17	4.06	3.60
2002	4.27	3.47	2.37	3.34	2.58
2003	4.77	4.40	3.33	5.62	4.82
2004	5.18	4.56	4.46	5.85	5.03
2005	6.05	6.28	7.38	8.80	7.26
2006	7.14	8.77	7.87	6.76	5.83

Source: BP Statistical Review of World Energy, 2007

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

Year	LPG	LNG	Coal
	US \$/Thousand Tons	US \$/MMBTU	US \$/Ton
2000	294.86	4.82	29.60
2001	252.97	4.31	32.07
2002	246.41	4.45	29.98
2003	278.42	4.84	28.63
2004	332.52	6.00	43.00
2005	443.02	7.19	36.48
2006	487.12	7.72	33.07

Source : Directorate General of Oil and Gas, Bank Indonesia and Department of Trade



## 4.4 Energy Price Per Energy Unit

Year	Gasoline (Premium)		Avtur		Avgas		Kerosene	
	Rp/BOE	US\$/BOE	Rp/BOE	US\$/BOE	Rp/BOE	US\$/BOE	Rp/BOE	US\$/BOE
2000	197,340	20.6	179,945	18.8	306,141	31.9	59,048	6.2
2001	248,820	23.9	332,728	32.0	884,207	85.0	65,459	6.3
2002	300,300	33.6	354,797	39.7	766,613	85.8	101,225	11.3
2003	310,596	36.7	601,287	71.0	1,150,909	136.0	118,096	14.0
2004	310,596	33.4	580,746	62.5	1,118,885	120.4	118,096	12.7
2005	534,878	54.4	857,362	87.2	2,170,568	220.8	347,707	35.4
2006	772,201	85.6	974,884	108.1	2,346,374	260.1	337,416	37.4

Year	Coal		Electricity (Average)					
			Household		Industry		Commercial	
	Rp/BOE	US\$/BOE	Rp/BOE	US\$/BOE	Rp/BOE	US\$/BOE	Rp/BOE	US\$/BOE
2000	35,961	3.7	338,238	35.3	493,507	51.4	620,734	64.7
2001	46,673	4.5	413,785	39.8	590,000	56.7	737,210	70.9
2002	51,384	5.7	640,767	71.7	722,577	80.8	966,998	108.2
2003	53,973	6.4	852,333	100.7	865,122	102.2	1,078,972	127.5
2004	53,956	5.8	909,886	97.9	912,153	98.2	1,113,083	119.8
2005	58,820	6.0	918,515	93.4	929,641	94.6	1,133,295	115.3
2006	78,523	8.7	926,020	102.7	1,013,442	112.4	1,092,023	121.1

ADO		IDO		LPG		Average of Refinery Product	
Rp/BOE	US\$/BOE	Rp/BOE	US\$/BOE	Rp/BOE	US\$/BOE	Rp/BOE	US\$/BOE
92,491	9.6	83,235	8.7	246,346	25.7	166,364	17.3
165,542	15.9	157,978	15.2	246,346	23.7	300,154	28.9
238,936	26.7	228,518	25.6	281,538	31.5	324,561	36.3
254,351	30.0	249,705	29.5	334,327	39.5	431,324	51.0
254,351	27.4	249,705	26.9	351,923	37.9	426,329	45.9
443,496	45.1	-	-	498,557	50.7	808,761	82.3
662,854	73.5	-	-	498,557	55.3	932,048	103.3

## 4.5 Average Price of Coal Import

Year	Import Total	Import Value (CIF)	Import Price (CIF)
	Ton	US \$	US \$/Ton
2000	140,116	5,837,447	41.66
2001	30,466	2,004,976	65.81
2002	20,026	1,627,954	81.29
2003	38,228	5,340,687	139.71
2004	97,183	15,204,824	156.46
2005	96,030	12,891,514	134.25
2006	112,505	13,684,335	121.63

Source : Department of Trade

- 5.1.1 Energy Consumption in Industrial Sector (in Original Unit)
- 5.1.2 Energy Consumption in Industrial Sector (in Energy Unit)
- 5.1.3 Share of Energy Consumption in Industrial Sector
- 5.2.1 Energy Consumption in Household Sector (in Original Unit)
- 5.2.2 Energy Consumption in Household Sector (in Energy Unit)
- 5.2.3 Share of Energy Consumption in Household Sector
- 5.3.1 Energy Consumption in Commercial Sector (in Original Unit)
- 5.3.2 Energy Consumption in Commercial Sector (in Energy Unit)
- 5.3.3 Share of Energy Consumption in Commercial Sector
- 5.4.1 Energy Consumption in Transportation Sector (in Original Unit)
- 5.4.2 Energy Consumption in Transportation Sector (in Energy Unit)
- 5.4.3 Share of Energy Consumption in Transportation Sector
- 5.5.1 Energy Consumption in Others Sector (in Original Unit)
- 5.5.2 Energy Consumption in Others Sector (in Energy Unit)
- 5.5.3 Share of Energy Consumption in Others Sector

### 5.1.1 Energy Consumption in Industrial Sector (in Original Unit)

Year	Biomass	Coal	Gas	Fuel		
				Kerosene	ADO	IDO
	Thousand Ton		MMSCF	Kilo Liter		
2000	25,667	8,586	485,027	711,774	5,729,941	1,211,930
2001	24,016	8,815	468,638	701,791	6,082,584	1,170,511
2002	22,762	9,214	365,221	667,247	5,985,416	1,106,467
2003	21,832	7,637	508,548	671,513	5,764,971	962,232
2004	20,417	13,177	496,959	676,827	6,626,385	887,061
2005	19,113	15,653	502,114	650,515	6,155,112	731,015
2006	20,313	21,201	522,465	572,797	5,353,646	388,484

### 5.1.2 Energy Consumption in Industrial Sector (in Energy Unit)

Year	Biomasa	Coal	Gas	Fuel	
				Kerosene	ADO
2000	58,981	36,060	87,111	4,219	37,171
2001	55,186	37,021	84,167	4,160	39,458
2002	52,305	38,698	65,594	3,955	38,828
2003	50,167	32,077	91,335	3,980	37,398
2004	46,917	55,344	89,254	4,012	42,986
2005	43,920	65,744	90,180	3,856	39,929
2006	46,676	89,043	93,835	3,395	34,730

Fuel		LPG	Electricity
Fuel Oil	Total Fuel		
Kilo Liter		Thousand Ton	GWh
3,674,761	11,328,406	126	34,013
3,832,704	11,787,590	114	35,593
3,676,959	11,436,088	128	36,831
2,981,697	10,380,414	95	36,497
3,140,129	11,330,403	129	40,324
2,185,384	9,722,026	133	42,448
2,452,549	8,767,477	170	46,224

Thousand BOE

Fuel			LPG	Electricity	Total
IDO	Fuel Oil	Total Fuel			
8,008	25,581	74,979	1,073	20,850	279,054
7,735	26,680	78,033	972	21,819	277,198
7,311	25,596	75,690	1,093	22,578	255,958
6,358	20,756	68,493	808	22,373	265,253
5,862	21,859	74,718	1,101	24,719	292,052
4,830	15,213	63,828	1,131	26,021	290,824
2,567	17,073	57,765	1,453	28,335	317,107

### 5.1.3 Share of Energy Consumption in Industrial Sector

(%)

Year	Coal	Gas	Fuel				LPG	Electricity
			Kerosene	ADO	IDO	Fuel Oil		
2000	16.39	39.58	1.92	16.89	3.64	11.62	0.49	9.47
2001	16.68	37.91	1.87	17.77	3.48	12.02	0.44	9.83
2002	19.00	32.21	1.94	19.07	3.59	12.57	0.54	11.09
2003	14.91	42.46	1.85	17.39	2.96	9.65	0.38	10.40
2004	22.58	36.41	1.64	17.54	2.39	8.92	0.45	10.08
2005	26.63	36.52	1.56	16.17	1.96	6.16	0.46	10.54
2006	32.93	34.70	1.26	12.84	0.95	6.31	0.54	10.48

### 5.2.1 Energy Consumption in Household Sector

*(in Original Unit)*

Year	Biomass	Briquette	Gas	Kerosene	LPG	Electricity
	Thousand Ton		MMSCF	Kilo Liter	Thousand Ton	GWh
2000	90,783	37	449	10,665,049	696	30,563
2001	92,399	31	487	10,515,453	724	33,340
2002	94,201	25	535	9,997,862	748	33,994
2003	95,904	25	553	10,061,787	823	35,753
2004	97,230	18	691	10,141,412	798	38,588
2005	98,245	28	693	9,747,150	704	41,184
2006	99,302	36	711	8,582,651	788	43,753

## 5.2.2 Energy Consumption in Household Sector (in Energy Unit)

Thousand BOE

Year	Biomass	Briquette	Gas	Kerosene	LPG	Electricity	Total
2000	208,610	75	81	63,216	5,932	18,735	296,648
2001	212,323	77	87	62,329	6,170	20,437	301,424
2002	216,465	80	96	59,261	6,373	20,838	303,112
2003	220,377	82	99	59,640	7,013	21,917	309,128
2004	223,425	84	124	60,112	6,798	23,655	314,199
2005	225,758	119	124	57,775	5,998	25,246	315,021
2006	228,186	151	128	50,873	6,719	26,821	312,878

## 5.2.3 Share of Energy Consumption in Household Sector

(%)

Year	Briquette	Gas	Kerosene	LPG	Electricity
2000	0.085	0.092	71.805	6.737	21.281
2001	0.087	0.098	69.953	6.925	22.937
2002	0.092	0.111	68.393	7.355	24.049
2003	0.092	0.112	67.199	7.902	24.694
2004	0.093	0.137	66.222	7.489	26.059
2005	0.133	0.139	64.725	6.720	28.283
2006	0.179	0.151	60.068	7.934	31.669



### 5.3.1 Energy Consumption in Commercial Sector

(in Original Unit)

Year	Biomass	Gas	Fuel				LPG	Electricity
			Kerosene	ADO	IDO	Total		
	Thousand Ton	MMSCF	Kilo Liter				Thousand Ton	GWh
2000	632	745	588,919	825,064	6,503	1,420,486	147	10,576
2001	629	821	580,658	875,842	6,281	1,462,781	134	11,395
2002	625	913	552,077	861,851	5,937	1,419,865	150	11,845
2003	622	882	555,607	830,108	5,163	1,390,878	111	13,224
2004	619	972	560,004	954,145	4,760	1,518,909	151	15,258
2005	616	1,057	538,233	886,286	3,923	1,428,441	155	17,023
2006	613	1,145	473,930	770,881	2,085	1,246,895	146	18,416

### 5.3.2 Energy Consumption in Commercial Sector

(in Energy Unit)

(Thousand BOE)

Year	Biomass	Gas	Fuel				LPG	Electricity	Total
			Kerosene	ADO	IDO	Total Fuel			
2000	1,452	134	3,491	5,352	43	8,886	1,257	6,483	18,211
2001	1,444	147	3,442	5,682	42	9,165	1,138	6,985	18,880
2002	1,437	164	3,272	5,591	39	8,903	1,279	7,261	19,044
2003	1,430	158	3,293	5,385	34	8,712	946	8,106	19,352
2004	1,423	174	3,319	6,190	31	9,540	1,288	9,353	21,779
2005	1,416	190	3,190	5,749	26	8,966	1,324	10,435	22,330
2006	1,409	206	2,809	5,001	14	7,824	1,241	11,289	21,968

### 5.3.3 Share of Energy Consumption in Commercial Sector

(%)

Year	Gas	Fuel			LPG	Electricity
		Kerosene	ADO	IDO		
2000	0.798	20.829	31.936	0.256	7.498	38.683
2001	0.845	19.740	32.586	0.238	6.528	40.063
2002	0.931	18.586	31.755	0.223	7.264	41.241
2003	0.884	18.375	30.046	0.190	5.276	45.229
2004	0.857	16.306	30.407	0.155	6.329	45.947
2005	0.908	15.254	27.490	0.124	6.330	49.894
2006	1.000	13.664	24.324	0.067	6.038	54.908

### 5.4.1 Energy Consumption in Transportation Sector (in Original Unit)

Year	Gas	Fuel			
		Avgas	Avtur	Mogas	Kerosene
	MMSCF	Kilo Liter			
2000	968	4,678	1,348,664	12,059,026	4,708
2001	773	5,788	1,384,970	12,705,861	4,642
2002	654	3,488	1,597,291	13,323,304	4,414
2003	599	3,556	1,929,351	14,211,145	4,442
2004	471	3,416	2,437,923	15,928,928	4,477
2005	238	3,068	2,322,635	16,959,594	4,303
2006	233	3,132	2,504,584	17,068,237	3,789

### 5.4.2 Energy Consumption in Transportation Sector (in Energy Unit)

Year	Gas	Fuel			
		Avgas	Avtur	Mogas	Kerosene
2000	174	26	7,945	70,274	28
2001	139	32	8,158	74,043	28
2002	118	19	9,409	77,642	26
2003	108	20	11,365	82,815	26
2004	85	19	14,361	92,826	27
2005	43	17	13,682	98,832	26
2006	42	17	14,754	99,465	22

Fuel				Electricity
ADO	IDO	Fuel Oil	Total Fuel	
Kilo Liter				GWh
9,365,388	48,356	71,474	22,902,295	44
9,941,771	46,704	74,546	24,164,282	49
9,782,952	44,148	71,517	24,827,114	53
9,422,642	38,393	57,994	25,667,524	53
10,830,594	35,394	61,075	29,301,808	55
10,060,316	29,168	42,506	29,421,589	55
8,750,347	15,501	47,702	28,393,292	67

(Thousand BOE)

Fuel				Electricity	Total
ADO	IDO	Fuel Oil	Total Fuel		
60,754	320	498	139,844	27	140,045
64,493	309	519	147,582	30	147,751
63,463	292	498	151,349	33	151,499
61,126	254	404	156,010	33	156,150
70,259	234	425	178,151	34	178,269
65,262	193	296	178,307	34	178,384
56,764	102	332	171,458	41	171,541

### 5.4.3 Share of Energy Consumption in Transportation Sector

(%)

Year	Gas	Fuel							Electricity
		Avgas	Avtur	Mogas	Kerosene	ADO	IDO	Fuel Oil	
2000	0.00	0.02	5.67	50.18	0.02	43.38	0.23	0.36	0.02
2001	0.00	0.02	5.52	50.11	0.02	43.65	0.21	0.35	0.02
2002	0.08	0.01	6.21	51.25	0.02	41.89	0.19	0.33	0.02
2003	0.07	0.01	7.28	53.04	0.02	39.15	0.16	0.26	0.02
2004	0.05	0.01	8.06	52.07	0.01	39.41	0.13	0.24	0.02
2005	0.02	0.01	7.67	55.40	0.01	36.59	0.11	0.17	0.02
2006	0.02	0.01	8.60	57.98	0.01	33.09	0.06	0.19	0.02

### 5.5.1 Energy Consumption in Others Sector

(in Original Unit)

Year	Fuel						Electricity
	Mogas	Kerosene	ADO	IDO	Fuel Oil	Total Fuel	
	Kilo Liter						GWh
2000	370,265	487,325	2,906,942	181,019	590,966	4,536,516	4,012
2001	390,125	480,490	3,085,847	174,832	616,365	4,747,660	4,192
2002	409,084	456,839	3,036,551	165,266	591,319	4,659,059	4,419
2003	436,344	459,760	2,924,714	143,723	479,509	4,444,049	4,967
2004	489,088	463,398	3,361,731	132,495	504,987	4,951,699	5,927
2005	520,733	445,383	3,122,642	109,187	351,448	4,549,394	6,377
2006	524,069	392,173	2,716,039	58,026	394,413	4,084,719	6,826

## 5.5.2 Energy Consumption in Others Sector

(in Energy Unit)

(Thousand BOE)

Year	Fuel						Electricity	Total
	Mogas	Kerosene	ADO	IDO	Fuel Oil	Total Fuel		
2000	2,158	2,889	18,858	1,196	4,114	29,214	2,459	31,673
2001	2,273	2,848	20,018	1,155	4,291	30,586	2,570	33,155
2002	2,384	2,708	19,698	1,092	4,116	29,999	2,709	32,707
2003	2,543	2,725	18,973	950	3,338	28,529	3,045	31,573
2004	2,850	2,747	21,808	875	3,515	31,796	3,633	35,429
2005	3,035	2,640	20,257	721	2,446	29,099	3,909	33,008
2006	3,054	2,325	17,619	383	2,746	26,127	4,184	30,311

### 5.5.3 Share of Energy Consumption in Others Sector

(%)

Year	Fuel					Electricity
	Mogas	Kerosene	ADO	IDO	Fuel Oil	
2000	6.81	9.12	59.54	3.78	12.99	7.77
2001	6.86	8.59	60.38	3.48	12.94	7.75
2002	7.29	8.28	60.23	3.34	12.59	8.28
2003	8.05	8.63	60.09	3.01	10.57	9.64
2004	8.04	7.75	61.55	2.47	9.92	10.26
2005	9.19	8.00	61.37	2.19	7.41	11.84
2006	10.08	7.67	58.13	1.26	9.06	13.80

- 6.1.1 Coal Reserves
- 6.1.2 Coal Supply
- 6.1.3 Indonesia Coal Export by Destination
- 6.1.4 Coal Sales
- 6.2.1 Oil Reserves
- 6.2.2 Refinery Capacity in 2006
- 6.2.3 Domestic Oil Fuels sales
- 6.2.4 Crude Oil Supply and Demand
- 6.2.5 Crude Oil Refinery Production
- 6.2.6 Import of Refined Products
- 6.2.7 Export of Refined Products
- 6.2.8 Indonesia Crude Oil Export by Destination
- 6.2.9 LPG Supply
- 6.3.1 Natural Gas Reserves
- 6.3.2 Natural Gas Production
- 6.3.3 Natural Gas and LNG Supply Demand
- 6.3.4 City Gas Sales and Utilization per Customer (in Original Unit)
- 6.3.5 City Gas Sales and Utilization per Customer (in Energy Unit)
- 6.4.1 Power Plant Installed Capacity
- 6.4.2 Power Plant Production
- 6.4.3 Electricity Sales
- 6.4.4 Fuel Consumption of Power Plant
- 6.4.5 Share of Fuel Consumption of Power Plant
- 6.4.6 PLN Electricity System Performance
- 6.5.1 Geothermal Resources
- 6.5.2 Geothermal Power Plant Capacity
- 6.5.3 Geothermal Steam Production
- 6.5.4 Geothermal Electricity Production



## 6.1.1 Coal Reserves

*per 1 January 2006*

(Million Ton)

Province	Resources					Reserves
	Hypothetic	Inferred	Indicated	Measured	Total	
Banten	5.47	5.75	0.00	2.09	13.31	0.00
West Java	0.00	0.00	0.00	0.00	0.00	0.00
Central Java	0.00	0.82	0.00	0.00	0.82	0.00
East Java	0.00	0.08	0.00	0.00	0.08	0.00
Nanggroe Aceh Darussalam	0.00	346.35	13.40	90.40	450.15	0.00
North Sumatera	0.00	7.00	0.00	19.97	26.97	0.00
Riau	12.79	467.89	6.04	1,262.89	1,749.61	1,926.24
West Sumatera	19.70	475.94	42.72	181.24	719.60	36,07
Bengkulu	15.15	113.09	8.11	62.30	198.65	21,12
Jambi	190.84	1,462.03	36.32	173.20	1,862.39	9.00
South Sumatera	13,298.35	9,222.21	13,700.32	12,495.59	48,716.47	11,910.19
Lampung	0.00	106.95	0.00	0.00	106.95	0.00
West Kalimantan	42.12	482.60	1.32	1.48	527.52	0.00
Central Kalimantan	122.72	956.01	5.08	194.02	1,277.83	48.59
South Kalimantan	0.00	5,517.81	334.48	3,435.79	9,288.08	1,684.56
East Kalimantan	3,224.44	13,696.70	2,540.69	5,669.66	25,131.49	3,075.48
South Sulawesi	0.00	144.93	33.09	53.10	231.12	0.00
Central Sulawesi	0.00	1.98	0.00	0.00	1.98	0.00
North Maluku	0.00	2.13	0.00	0.00	2.13	0.00
West Irian Jaya	89.40	61.86	0.00	0.00	151.26	0.00
Papua	0.00	2.16	0.00	0.00	2.16	0.00
TOTAL	17,020.98	33,074.29	16,721.57	23,641.73	90,458.57	18,654.06

Source : Agency Geology

## 6.1.2 Coal Supply

(Ton)

Year	Production			Export	Import *)
	Steam Coal	Anthracite	Total		
2000	77,014,956	25,229	77,040,185	58,460,492	140,116
2001	92,499,653	40,807	92,540,460	65,281,086	30,466
2002	103,286,403	42,690	103,329,093	74,177,926	20,026
2003	114,274,243	3,952	114,278,000	85,680,621	38,228
2004	132,352,025	0	132,352,025	93,758,806	97,183
2005	152,722,438	0	152,722,438	107,809,343	96,030
2006	193,761,311	0	193,761,311	143,632,865	112,505

Sources : Directorate General of Mineral, Coal and Geothermal  
Dept of Trade

### 6.1.3 Indonesia Coal Export by Destination

Year	Coal		
	Japan	Taiwan	Other Asian
2000	13,177.44	13,519.59	19,819.47
2001	15,216.26	11,506.81	20,440.57
2002	16,529.76	13,099.99	30,605.89
2003	17,992.18	14,144.14	34,021.52
2004	19,013.41	16,677.88	34,220.46
2005	24,237.43	14,524.21	41,336.87
2006	32,778.44	19,642.39	55,903.55

### 6.1.4 Coal Sales

Year	Total	Iron & Steel	Power Plant
2000	22,340,845	1,135,483	13,718,285
2001	27,387,916	220,666	19,517,366
2002	29,257,003	236,802	20,018,456
2003	30,657,940	201,907	22,995,614
2004	36,077,261	119,181	22,882,190
2005	41,350,736	221,309	25,669,226
2006	48,995,069	299,990	27,758,317

Source : Directorate General of Mineral, Coal and Geothermal

(Thousand Ton)

Coal			Total
Europe	Pacific	Others	
8,861.56	1,876.11	1,206.32	58,460.49
10,226.65	2,160.83	5,729.97	65,281.09
9,936.18	2,555.17	1,450.95	74,177.93
12,786.77	3,118.10	3,617.91	85,680.62
13,162.87	2,874.74	7,809.44	93,758.81
15,835.69	2,964.32	7,308.22	106,206.74
21,416.02	4,008.91	9,883.56	143,632.87

(Ton)

Ceramic & Cement	Pulp & Paper	Briquette	Others
2,228,583	780,676	36,799	4,441,019
5,142,737	822,818	31,265	2,628,333
4,684,970	499,585	24,708	3,792,481
4,773,621	1,704,498	24,976	957,323
5,549,309	1,160,909	17,963	6,347,709
5,152,162	1,188,323	28,216	9,091,501
5,300,552	1,216,384	36,018	14,383,808

## 6.2.1. Oil Reserves

*per 1 January*

(Billion Barrel)

Year	Reserves		
	Proven	Potential	Total
2000	5.12	4.49	9.61
2001	5.10	4.65	9.75
2002	4.72	5.03	9.75
2003	4.73	4.40	9.13
2004	4.30	4.31	8.61
2005	4.19	4.44	8.63
2006	4.37	4.56	8.93

Source : Directorate General of Oil and Gas

## 6.2.2 Refinery Capacity in 2006

(MBSD)

Refinery	Refinery Capacity
Pangkalan Brandan	5.00
Dumai	120.00
Sungai Pakning	50.00
Musi	135.20
Cilacap	348.00
Balikpapan	260.00
Balongan	125.00
Cepu	3.80
Kasim	10.00
Total Capacity	1,057.00

Source : Directorate General of Oil and Gas

### 6.2.3 Domestic Oil Fuels Sales

	2000	2001	2002
Avgas	4,678	5,788	3,488
Avtur	1,348,664	1,384,970	1,597,291
Premium	12,429,291	13,095,986	13,732,388
Kerosene	12,457,776	12,283,033	11,678,439
ADO	22,072,256	23,359,617	24,212,847
IDO	1,472,168	1,426,877	1,360,379
Fuel Oil	6,076,212	6,162,485	6,260,273
Oil Fuels	55,861,045	57,718,756	58,845,105

Source : Directorate General of Oil and Gas and PT.Pertamina (Persero)

### 6.2.4 Crude Oil Supply and Demand

Year	Production		Export	
	Thousand bbl	Growth (%)	Thousand bbl	Growth (%)
2000	517,489	-5.1	223,500	-21.7
2001	489,306	-5.4	241,612	8.1
2002	456,026	-6.8	218,115	-9.7
2003	419,255	-8.1	189,095	-13.3
2004	400,554	-4.5	178,869	-5.4
2005	386,483	-3.5	159,703	-10.7
2006	367,049	-5.0	134,960	-15.5

Source : Directorate General of Oil and Gas

(Kilo Liter)

2003	2004	2005	2006
3,556	3,416	3,068	3,132
1,929,351	2,437,923	2,322,635	2,504,584
14,647,489	16,418,016	17,480,327	17,661,757
11,753,109	11,846,119	11,385,584	10,025,340
24,064,458	26,487,751	27,056,409	25,013,036
1,183,478	1,093,414	889,548	486,930
6,215,566	5,754,507	4,734,052	4,975,893
59,797,007	64,041,146	63,871,623	60,670,672

Import		Oil Refinery Input	
Thousand bbl	Growth (%)	Thousand bbl	Growth (%)
78,615	-7.2	360,232	987
117,168	49.0	361,396	990
124,148	6.0	357,971	981
137,127	10.5	358,519	982
148,490	8.3	366,033	1,003
164,007	10.4	357,656	980
116,232	-29.1	333,136	913



## 6.2.5 Crude Oil Refinery Production

(Thousand KL)

Year	Fuel							Total
	Gasoline	Avtur+JP5	Avgas	Kerosene	ADO	IDO	FO	
2000	11,742	1,342	0.00	9,206	15,249	1,294	5,165	43,999
2001	12,180	1,371	8.24	9,221	15,253	1,448	5,579	45,059
2002	11,653	1,482	5.22	8,952	14,944	1,340	5,931	44,307
2003	11,559	1,701	5.10	9,310	15,035	1,239	5,386	44,236
2004	11,969	1,783	5.13	9,034	15,685	1,622	4,923	45,021
2005	11,630	1,699	5.38	8,542	15,047	1,361	4,413	42,696
2006	11,611	1,694	3.34	8,853	14,439	552	3,841	40,994

(Thousand barel)

Year	Secondary Fuel				Non Fuel	Lubricant	LPG	Total Production
	Naphtha	LOMC	LSWR	Total				
2000	16,647	1,666	38,618	56,931	8,172	2,676	8,378	352,880
2001	20,180	143	34,211	54,534	7,922	2,712	8,160	356,717
2002	16,230	0	28,363	44,593	7,796	2,252	8,199	341,498
2003	18,306	0	32,050	50,357	11,402	2,867	8,702	351,539
2004	18,737	0	29,189	47,926	9,284	2,823	9,380	352,566
2005	21,216	0	28,965	50,181	9,634	2,404	8,457	339,205
2006	25,405	0	31,070	56,475	11,460	2,734	8,971	337,461

Source : Directorate General of Oil and Gas

## 6.2.6 Import of Refined Products

(Thousand KL)

Year	Avtur	Gasoline	DPK	HOMC	ADO	FO	Total
2000	0	0	2,966	1,984	7,194	2,326	14,470
2001	0	0	2,718	2,410	7,879	1,166	14,174
2002	0	0	2,916	3,154	9,637	1,232	16,940
2003	0	0	2,516	3,076	9,955	1,512	17,058
2004	679	772	2,907	5,804	12,339	1,896	24,398
2005	654	6,191	2,604	1,076	14,440	1,491	26,456
2006	796	5,820	1,167	1,056	11,929	1,685	22,454

Source : Directorate General of Oil and Gas

DPK = Dual Purpose Kerosene (Avtur and Kerosene)

## 6.2.7 Export of Refined Products

(Thousand Barrel)

Year	Gasoline (Premium)	Kerosene	IDO	FO	Naphtha	Lubricant	Other Products	Total
2000	0.0	0.0	0.0	0	11,390	0	55,694	67,085
2001	0.0	0.0	0.0	0	13,448	147	41,522	55,118
2002	0.0	0.0	0.0	3,253	10,993	417	40,826	55,490
2003	0.0	0.0	0.0	2,813	18,715	674	41,510	63,712
2004	0.0	0.0	0.0	4,940	11,763	513	47,285	64,501
2005	0.0	0.0	0.0	3,234	6,531	64	33,358	43,187
2006	53.0	0.8	5.7	204	947	87	36,159	37,456

Source : Directorate General of Oil and Gas and PT. Pertamina (Persero)

## 6.2.8 Indonesia Crude Oil Export by Destination

(Thousand bbl)

Year	Japan	USA	Korea	Taiwan	Singapore	Others	Total
2000	74,807	14,153	37,408	9,157	15,656	72,320	223,500
2001	77,866	15,349	51,965	8,167	20,517	67,748	241,612
2002	61,752	15,864	43,977	7,023	14,648	74,852	218,115
2003	61,285	12,051	40,822	5,528	11,410	57,999	189,095
2004	52,040	11,930	42,111	6,029	8,761	57,998	178,869
2005	43,628	6,256	40,108	2,639	7,612	59,209	159,453
2006	42,203	8,950	23,723	7,249	5,480	47,355	134,960

Source : Directorate General of Oil and Gas

## 6.2.9 LPG Supply

(Ton)

Year	Production			Export	Import	Total Supply
	Gas Refinery	Oil Refinery	Total			
2000	1,321,037	766,632	2,087,669	1,253,197	0	834,472
2001	1,415,534	772,143	2,187,677	1,423,928	0	763,749
2002	1,285,579	814,177	2,099,756	1,217,410	0	882,346
2003	1,143,275	819,354	1,962,629	1,033,672	111,178	1,040,135
2004	1,119,606	896,395	2,016,001	981,780	32,994	1,067,216
2005	1,058,000	832,717	1,890,717	1,015,366	22,166	897,517
2006	897,304	382,145	1,279,449	289,698	68,997	1,058,748

Source : Directorate General of Oil and Gas

### 6.3.1. Natural Gas Reserves *per 1 January*

(TSCF)

Year	Proven	Potential	Total
2000	94.75	75.56	170.31
2001	92.10	76.05	168.15
2002	90.30	86.29	176.59
2003	91.17	86.96	178.13
2004	97.81	90.53	188.34
2005	97.26	88.54	185.80
2006	94.00	93.10	187.10

Source : Directorate General of Oil and Gas

### 6.3.2 Natural Gas Production

(MMSCF)

Year	Pertamina	Production Sharing Contract	Total
2000	346,483	2,554,896	2,901,379
2001	346,710	2,460,440	2,807,150
2002	334,745	2,707,130	3,041,875
2003	336,966	2,818,277	3,155,243
2004	383,870	2,646,262	3,030,132
2005	379,612	2,605,729	2,985,341
2006	306,482	2,647,617	2,954,099

Source : Directorate General of Oil and Gas

### 6.3.3 Natural Gas and LNG Supply and Demand

Year	Natural Gas Production	Utilization				
		Gas Lift & Reinjection	LNG Plant	LPG Plant	Oil Refinery	City Gas
	(MMSCF)					
2000	2,901,379	256,371	1,584,365	31,832	32,277	69,370
2001	2,807,150	382,583	1,489,935	12,807	29,437	76,671
2002	3,041,875	472,134	1,656,905	26,901	30,879	86,768
2003	3,155,243	460,722	1,713,501	24,429	22,776	95,545
2004	3,030,132	431,629	1,681,468	28,661	20,795	105,094
2005	2,985,341	422,303	1,511,335	24,578	16,155	108,193
2006	2,954,099	328,396	1,436,093	32,879	15,159	116,304

Source : Directorate General of Oil and Gas

\*) Including Petrokimia

### 6.3.4 City Gas Sales and Utilization per customer by Perusahaan Gas Negara (PT PGN) (in Original Unit)

Year	Sales (million M <sup>3</sup> )				Number of Customer	
	Household	Industry and Commercial	Transportation	Total	Household	Industry
2000	12.74	1,907.88	27.44	1,948	42,991	594
2001	13.51	2,116.60	21.91	2,152	48,401	626
2002	15.00	2,442.24	19.72	2,477	51,943	646
2003	15.66	2,690.19	17.14	2,723	64,889	675
2004	19.00	2,918.00	13.26	2,950	75,244	677
2005	19.32	3,125.43	6.68	3,151	77,833	723
2006	19.82	3,277.98	6.55	3,304	79,736	723

Source : PT.PGN

Utilization		LPG Products	LNG Products	LNG Export	Gas Export
Industry and Power Plant	Total				
(MMSCF)		(ton)		(Thousand MMBTU)	MMSCF
627,199	2,601,414	1,321,037	27,321,020	1,400,024	0
644,795	2,636,228	1,415,534	24,343,678	1,238,785	31,967
629,468	2,903,055	1,285,579	26,184,740	1,360,293	82,619
593,709	2,910,681	1,143,275	26,077,500	1,369,603	118,114
542,244	2,809,891	1,119,606	25,237,867	1,322,415	129,342
549,503	2,632,067	1,058,000	23,676,765	1,217,829	181,246
526,943	2,455,773	1,279,449	22,400,121	1,176,288	161,555

Number of Customer		Specific Consumption (Thousand M <sup>3</sup> )		
Commercial	Total	Household	Industry and Commercial	Average Uses
1,053	44,638	0.2964	1,158	43.03
1,160	50,187	0.2791	1,185	42.44
1,330	53,919	0.2889	1,236	45.57
1,305	66,869	0.2413	1,359	40.46
1,158	77,079	0.2525	1,590	38.10
1,412	79,968	0.2482	1,464	39.33
1,463	81,922	0.2485	1,500	40.26

### 6.4.1 PLN Power Plant Installed Capacity

Year	Hydro PP	Steam PP	Gas PP	Combined Gas-Steam PP
2000	4,199.28	11,116.98	3,804.80	6,863.22
2001	3,112.61	7,946.11	1,972.77	6,998.22
2002	3,155.17	6,900.00	1,224.72	6,863.22
2003	3,169.77	9,574.00	1,224.72	7,148.22
2004	3,199.45	10,865.00	2,339.57	6,845.97
2005	3,220.96	10,865.00	2,723.63	6,715.97
2006	3,532.11	12,990.00	2,727.22	7,894.97

Source : PLN Statistics dan Electricity Statistics, DGEEU.

(MW)

Geothermal	Diesel PP	Combined Oil-Gas PP	Total
525.00	11,223.33	0.00	37,732.61
785.00	3,016.05	0.00	23,830.77
785.00	2,589.12	0.00	21,517.23
785.00	2,879.19	0.00	24,780.91
800.00	3,277.10	12.00	27,327.09
800.00	3,325.62	12.42	27,663.60
800.00	3,001.49	12.42	30,958.21



## 6.4.2 Power Plant Production

Year	PLN				
	Hydro PP	Geothermal PP	Steam PP		
			Coal	Oil	Gas
2000	9,110	2,649	28,776	6,055	3,598
2001	10,651	2,982	29,330	6,557	3,489
2002	8,834	3,187	29,313	8,884	835
2003	8,472	2,959	31,737	9,108	1,334
2004	8,943	3,147	30,806	9,636	1,204
2005	9,831	3,006	33,253	8,180	835
2006	8,759	3,141	38,362	8,575	828

Year	PLN Electricity Purchase from Captive Power & IPP				
	Hydro PP	Geothermal PP	Steam PP		
			Coal	Gas	Biomass
2000	906	2,220	5,226	0	6
2001	1,004	3,049	8,383	0	8
2002	1,099	3,051	13,616	0	11
2003	627	3,335	14,722	1,492	15
2004	731	3,509	17,405	12	20
2005	928	3,598	18,521	165	22
2006	864	3,517	20,268	27	32

(GWh)

PLN				
Total	Gas PP	Combined Gas- Steam PP	Diesel PP	Sub Total
38,429	1,252	26,397	6,355	84,190
39,376	1,459	27,366	6,520	88,355
39,032	2,229	28,803	7,209	89,293
42,178	2,486	28,409	7,977	92,481
41,645	3,179	30,700	8,577	96,192
42,268	6,039	31,272	8,866	101,282
47,764	5,031	30,918	8,855	104,469

(GWh)

PLN Electricity Purchase from Captive Power & IPP				Total
Steam PP	Combined Gas- Steam PP	Diesel PP	Sub Total	
Total				
5,232	682	v	9,135	93,325
8,391	773	88	13,304	101,659
13,627	925	221	18,923	108,217
20,192	1,511	283	21,986	114,467
17,437	1,947	347	23,970	120,162
18,728	2,681	151	26,087	127,369
20,327	3,578	354	28,640	133,108

### 6.4.3 Electricity Sales

(GWh)

Year	Electricity Sales Per Tariff Segment						
	Household	Commercial	Industry	Street Lighting	Social	Government	Total
2000	30,563.42	10,575.97	34,013.22	1,070.85	1,643.52	1,297.83	79,164.81
2001	33,339.78	11,395.35	35,593.25	1,128.82	1,781.55	1,281.63	84,520.38
2002	33,993.56	11,845.04	36,831.30	1,294.47	1,842.89	1,281.49	87,088.75
2003	35,753.05	13,223.84	36,497.25	1,512.02	2,021.60	1,433.19	90,440.95
2004	38,588.28	15,257.73	40,324.26	2,044.59	2,237.86	1,644.74	100,097.46
2005	41,184.29	17,022.84	42,448.36	2,221.24	2,429.84	1,725.66	107,032.23
2006	43,753.17	18,415.52	46,223.59	2,414.13	2,603.64	1,807.92	115,217.97

Source : PLN Statistic

### 6.4.4 Fuel Consumption of PLN Power Plant

Year	Coal	HSD	IDO	FO	Natural Gas
	(Ton)	(KL)	(KL)	(KL)	(MMSCF)
2000	13,135,584.0	3,141,917.0	23,146.0	1,858,568.0	228,838.0
2001	14,027,712.7	3,575,348.2	30,457.4	1,793,282.5	222,420.8
2002	14,054,377.5	4,625,521.3	40,681.7	2,300,603.5	192,926.7
2003	15,260,304.8	5,024,361.5	31,573.0	2,557,546.2	184,304.5
2004	15,412,738.3	6,299,706.3	36,934.9	2,502,597.5	176,436.1
2005	16,900,972.4	7,626,201.2	27,580.6	2,258,775.9	143,050.1
2006	19,084,438.0	7,586,916.0	23,977.0	2,387,622.0	157,894.0

Source : PLN Statistics

### 6.4.5 Share of Fuel Consumption of PLN Power Plant

(%)

Year	Type of Fuel			Type of Fuel	
	Coal	HSD	IDO	FO	Natural Gas
2000	44.09	13.62	0.12	10.10	32.08
2001	45.42	14.95	0.15	9.40	30.08
2002	44.10	18.74	0.20	11.69	25.28
2003	45.37	19.29	0.14	12.31	22.89
2004	44.00	23.23	0.16	11.57	21.04
2005	46.40	27.04	0.12	10.04	16.40
2006	48.46	24.88	0.09	9.82	16.75

Source : PLN Statistics

## 6.4.6 PLN Electricity System Performance

Year	Average Thermal Efficiency	Capacity Factor	Load Factor	Peak Load	Transmission & Distribution Losses
	(%)			(MW)	(%)
2000	34.3	46.29	69.54	15,320	11.65
2001	34.1	47.90	71.13	16,314	13.52
2002	34.6	48.28	72.10	17,160	16.45
2003	34.4	49.78	71.88	17,949	16.88
2004	34.2	51.14	72.64	18,896	12.90
2005	34.6	52.15	75.48	19,263	11.54
2006	33.5	48.00	64.15	20,354	11.45

Source : PLN Statistics

## 6.5.1 Geothermal Resources

### *Status Year 2006*

(MW)

No	Location	Resources		Reserves			Total
		Speculative	Hipotethic	Probable	Possible	Proven	
1	Sumatera	5,275	2,194	5,555	15	380	13,419
2	Java	2,235	1,446	3,175	885	1,815	9,556
3	Bali-Nusa Tenggara	360	359	943	-	14	1,676
4	Sulawesi	925	12	865	150	78	2,030
5	Maluku	400	37	297	-	-	734
6	Kalimantan	45	-	-	-	-	45
7	Papua	50	-	-	-	-	50
Total		9,290	4,048	10,835	1,050	2,287	27,510

Source : Agency Geology

## 6.5.2 Geothermal Power Plant Capacity

(MW)

No	Working Area	Location	Turbine Capacity	Operator	Total Capacity
1	PLTP Kamojang, (Pertamina)	West Java	1 x 30 MWe	PLN	140
			2 x 55 MWe	PLN	
2	PLTP Lahendong, (Pertamina)	North Sulawesi	1 x 20 MWe	PLN	20
3	PLTP Sibayak, (Pertamina)	North Sumatera	1 x 2 MWe	Pertamina	2
4	PLTP Salak, (Chevron GS)	West Java	3 x 60 MWe	PLN	375
			3 x 65 MWe	CGS	
5	PLTP Darajat (Chevron GI)	West Java	1 x 55 MWe	PLN	145
			1 x 90 MWe	CGI	
6	PLTP Wayang Windu (Star Energi)	West Java	1 x 110 MWe	SE	110
7	PLTP Dieng, (Geo Dipa Energi)	Central Java	1 x 60 MWe	GDE	60
				Total	852.0

Source : Statistics Geothermal Business Indonesia 2006. Direktorat Geothermal, Directorate General of Mineral, Coal and Geothermal



### 6.5.3 Geothermal Steam Production

Year	Pertamina Field				KOB Field	
	Kamojang	Sibayak	Lahendong	Sub Total	Salak	Darajat
2000	8,238	66	-	8,304	19,494	4,876
2001	8,623	242	457	9,322	22,044	7,242
2002	9,292	212	954	10,458	21,742	7,453
2003	9,274	42	1,132	10,448	21,325	7,435
2004	9,277	126	1,173	10,576	22,595	8,011
2005	7,462	74	1,012	8,548	24,167	7,551
2006	8,096	165	1,240	9,501	24,527	7,633

Source : Statistics Geothermal Business Indonesia 2006. Direktorat Geothermal, Directorate General of Mineral, Coal and Geothermal

### 6.5.4 Geothermal Electricity Production

Year	Pertamina Field				KOB Field	
	Kamojang	Sibayak	Lahendong	Sub Total	Salak	Darajat
2000	1,072	3	-	1,075	2,398	741
2001	1,116	11	61	1,188	2,726	1,107
2002	1,202	10	93	1,305	2,668	1,169
2003	1,201	1	155	1,357	2,637	1,170
2004	1,200	4	159	1,363	2,737	1,251
2005	963	2	134	1,099	2,930	1,218
2006	1,043	6	166	1,215	2,920	1,176

Source : Statistics Geothermal Business Indonesia 2006. Direktorat Geothermal, Directorate General of Mineral, Coal and Geothermal

(Thousand Ton)

KOB Field			Total
Wayang Windu	Geodipa (60MW)	Sub Total	
3,717	-	28,087	36,391
6,669	-	35,955	45,277
6,929	-	36,124	46,582
6,431	1,521	36,712	47,160
6,863	2,305	39,774	50,350
6,809	2,518	41,045	49,593
6,625	2,544	41,330	50,831

(MWh)

KOB Field			Total
Wayang Windu	Geodipa (60MW)	Sub Total	
507	-	3,646	4,721
888	-	4,721	5,909
910	-	4,747	6,052
858	186	4,851	6,208
921	288	5,197	6,560
936	323	5,407	6,506
924	319	5,339	6,554



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**2007**

## METHODOLOGY AND TABLE EXPLANATION

### GENERAL METHODS

Data shown in the tables of Indonesia's energy economic statistics are consolidated from various statistics of regular publication with harmonization of format and definition also covering an estimate of energy demand using macro-economic approach. Data sources used are the statistics of published by: Statistic Indonesia, technical unit within Ministry of Energy and Mineral Resources, energy companies, energy associations and some International Agencies.

Statistics book used as the sources of the energy economic data consolidation, are as follows:

- a. Crude Oil and Oil Products (BBM)
  - Indonesia Oil and Gas Statistics, Direktorat General of Oil and Gas, 2000 – 2006
- b. Natural Gas (Production, utilization and flaring)
  - Indonesia Oil and Gas Statistics, Direktorat General of Oil and Gas , 2000 - 2006
  - PT PGN Annual Report, 2000-2006
- c. Coal
  - Indonesia Coal Statistics, Directorate General of Geology and Mineral Resources, 2000 and 2001.
  - Indonesia Mineral and Coal Statistics, Directorate General of Mineral, Coal and Geothermal 2002 -2006.
- d. Biomass
  - National Survey on Social & Economic (SUSENAS) Statistic Indonesia (BPS), 1999, 2002, 2005
- e. LPG
  - Indonesia Oil and Gas Statistics, Direktorat General of Oil and Gas , 2000 - 2006
  - PT PGN Annual Report, 2000-2006
- f. Electricity
  - PLN Statistics, 2000 - 2006

- Energy and Electricity Statistics, Direktorat General of Electricity and Energy Utilization, 2000-2006

g General

- Indonesia Statistics, Statistic-Indonesia (BPS) 2000-2006
- Finance and Economic Statistic, Central Bank of Indonesia (www.bi.go.id)
- Ministry of Energy and Mineral Resources Annual Report, 2000-2006
- Trade Statistics, Departement of Trade, 2000-2006

## TABLE 2.1 up to 2.13

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

## ENERGY BALANCE DEFINITIONS

### BY COLUMN

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

## RENEWABLE ENERGY

Hydropower is the potential energy of flowing water. The energy is computed as input power to generate electricity and consists of dam, river stream, minihydro and microhydro. The amount of hydro energy required

is equivalent to fossil energy required to generate electricity.

Geothermal is a kind energy that produced from the magma inside earth in the volcanic areas. The hot and high pressure steam emitted from the production well head can be utilized to pressed the steam turbine in the Geothermal Power Generation or utilized directly for drying agriculture products

Biomass is a kind of renewable organic material based fuel. Among the kinds of biomass are firewood (wood and wood waste), agriculture waste (rice hulks, rice straws, palm fronds, coconut shells, etc.), urban solid waste, and industrial waste.

## **SOLID Energy**

Coal consists of hard coal and lignite. Data information on the volume of coal is only available in aggregate number. In the energy balanced table the conversion factor using average of Indonesia coal calorific factor (4.276 BOE per Ton Coal). Detail 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 5700 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. Included in this category are anthracite and bituminous coal. It has a gross calorific value of more than 23,865.0 kJ/kg (5700 kcal/kg), lower than coking coal.

Coking coal is a type of coal that is used to produce coke for use as reducing material in blast furnace. Its gross calorific value is higher than 23,865 kJ/kg (5700 kcal/kg), ash free.

Sub-bituminous coal is a type of coal that has a gross calorific value between 17,435.0 kJ/kg (4165 kcal/kg) and 23,865.0 kJ/kg (5700 kcal/kg).

Anthracite is a type of coal that has similar characteristics as 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; also called brown coal.

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

Briquettes are 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 material.

## **GASEOUS**

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

## **LIQUID**

Crude oil is the mineral oil which consists of a mixture of hydrocarbons, blackish green color, and has a range of density and viscosity. It is the raw material for producing oil fuels (BBM) and petrochemical products.

Condensate is a kind of liquid hydrocarbons among which is natural gas liquid (NGL). NGL consists of ethane, propane, butane, pentane, and natural gasoline.

OIL FUELS/Petroleum Products, (BBM), Category BBM in the energy balance table is petroleum products used for energy. It comprise of Avgas, Avtur,



Mogas (Motor gasoline), Automotive Diesel Oil (HSD/ADO), Marine Diesel Fuel (MDF/IDO), Fuel Oil and Kerosene. Detail description of each fuels are as follows:

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

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

Mogas (motor gasoline) is light hydrocarbons used in motor vehicle internal combustion engine (not including aircraft). Mogas is distilled between 35°C and 215°C and is processed in Reformer, Catalytic Cracking, or Blending with aromatic fraction to achieve high octane number. In Indonesian market, three types of gasoline are available, namely Premium, Premix/Pertamax, and Super TT/Pertamax Plus.

- Premium has an octane number of about 89 RON
- Premix has octane number of about 94 RON
- Super TT has octane number of about 98 RON, and is lead free.

Diesel Oil is a refinery product that contains heavy. This type of BBM is obtained from the lowest fraction of crude oil atmospheric distillation, while the heavy gas oil is obtained from vacuum distillation of atmospheric distillation residue. In the market, diesel oil is distinguished into Automotive Diesel Oil (ADO/Minyak Solar) and Industrial Diesel Oil (IDO/Minyak Diesel).

Fuel Oil (FO) is oil made of distillation residue. This type of BBM includes all kinds of residues including residue from blending. It has a viscosity of about 10 cSt at 80°C. Its flash point is higher than 50°C and density more than 0.9.

Kerosene is the BBM produced from crude oil distillation which has volatility

between that of gasoline and gasoil. It has distillation range between 150°C and 300°C, where a minimum of 65% volume is distilled at 250°C. It has a specific gravity of 0.8 and flash point of over 38°C.

LPG is light hydrocarbon fraction of crude oil, produced in oil refinery, and consists of either propane (C<sub>3</sub>H<sub>8</sub>) and butane (C<sub>4</sub>H<sub>10</sub>) or mixture of both. In addition to oil refinery, LPG is also produced from natural gas purification.

Non BBM is Other Oil Products (OOP), include naphtha, lubricating oil, bitumen, paraffin, etc. (sulphur, grease).

Electricity, electric power produced from various kinds of power plant such as Hydro Power Plant (PLTA), Geothermal Power Plant (PLTP), Gas Power Plant (PLTG), Gas Steam Power Plant (PLTGU), Coal Steam Power Plant (Coal PLTU), and Diesel Power Plant (PLTD), etc.

LNG (liquefied natural gas) is the liquid produced by liquefying natural gas at a temperature of -160°C to facilitate its transportation over very long distances.

Total is the total of all columns at certain row. At transformation row the total of all columns indicates efficiency of transformation process.

### **BY ROW of Energy Balance Table**

Total Primary Energy Supply is domestic production plus import minus export minus bunker and minus or plus stock change. The bunker and stock change data, is not available.

Production, total gross primary energy produced (extracted) from underground.

Import is energy obtained from other countries, not including energy in transit.

Export is energy sold to other country.

## **ENERGY TRANSFORMATION**

Transformation, is the transformation process from primary energy type into final energy type. This includes processes in LPG plant, and carbonizing plant. Input bears a negative sign while production bears positive sign.

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

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

Power Generation is transformation of energy into electric power. This row records the quantity of fuel consumed: (coal, BBM, natural gas, hydropower, geothermal, biomass, wind, photovoltaic (solar energy) etc) and the electricity generated.

## **OWNUSE AND LOSSES**

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

- Losses and Own Use in Production Field are losses that occur due to transportation, distribution, and transfer by pipe. Own use includes all energy consumed in the field (off-road transportation, gen-set, boiler, etc., all energy consumed in transportation is computed in Transportation Sector).
- Losses and Own Use in Oil Refining are losses that occur due to transportation, distribution, and transfer by pipe. Own use is all energy consumed in oil refining processes.
- Losses and Own Use in Gas Processing are losses that occur due to transportation, distribution, and transfer by pipe. Own use is all energy consumed in gas processing.

- Losses in Electricity System, is losses incurred in transformer, transmission distribution network.
- Own use in Electricity Generation is all energy consumed in power plant area.

Statistical Difference the different 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 consumed in household, commercial, industry and, transportation sectors and non-energy consumption.

Household, all energy consumption for household, not including consumption for private car.

Commercial, energy consumption of commercial sector such as restaurants, financial institutions, government agencies, schools, hospitals, etc.

Industry, energy consumption of industry in the following sub-sectors (not including transportation): iron and steel, chemical, non-iron metal, non-metal production, machine and equipment, non-energy mining and quarrying, food, paper, wood, construction, textile, etc.

Transportation, energy consumption for transportation covers all transportation activities in all sectors of economy. Transportation sub-sectors are: air transportation, land transportation (motor cycles, cars, buses, and trucks), ferries and railway transportation.

Non-energy, energy consumption for non-energy uses, covering lubricating oils, petrochemical industry, raw materials (naphtha, natural gas, and cokes), and gas used as raw material for petrochemical products (methanol and ammonia/urea).

# ANNEX 2

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2007

# GLOSSARY

**Automotive Diesel Oil (ADO)**

A type of diesel oil used as fuel for high speed diesel engine.

**Avgas**

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

**Avtur**

Aviation turbine fuel; special fuel for turbine/jet aircraft, a special kerosene with 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**

Power plant owned by industry to produce electricity for their own use.

**Coal**

Sedimentary rock 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**

Group of energy consumers which use 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 business such as: commerce, hotel, restaurant, financial institution, government agency, school, hospital, etc.

**Condensate**

Liquid extracted from natural gas; can be in the form liquid petroleum gas or natural gasoline.

**Conversion Factor**

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

**Crude Oil**

Mixture of hydrocarbons occurring in liquid phase in subsurface reservoir and remains liquid under atmospheric pressure.

**Diesel Oil**

A refinery product which contains heavy gasoil, and available as automotive diesel oil (ADO) or industrial diesel oil (IDO).

**DPPU**

Depo Pengisian Bahan Bakar Pesawat Udara (Aircraft Refueling Depot), serving AVGAS and AVTUR for aircraft consumption.

**Electricity**

Electric power produced in electric power plant such as Hydro Power Plant (PLTA), Geothermal Power Plant (PLTP), Gas Power Plant (PLTG), Gas Steam Power Plant (PLTGU), Coal Steam Power Plant (Coal PLTU), Diesel Power Plant (PLTD), etc.

**Energy Balance Table**

Energy system input-output table, the rows indicate 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 four sectors of energy consumers, namely: household sector, commercial sector, industry sector, and transportation sector as well as consumption of energy as raw material and reduction agent. In compiling REP Riau, household sector is combined with commercial sector due to the limited data obtained.

### **Final Stock**

Total stock at the end of the year.

### **Fuel Oil**

Lowest order refinery product; heavy distillate, residue and their mixture which is used as fuel in industrial furnace and electric power plant.

### **Gasoline**

(see mogas)

### **Gas Process**

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 the price occurring in each year.

### **Goods and Services Export**

All transfer and sale of goods and services from resident of a country



to resident of another country, including those conducted in the same country or in another country. Value of good export is based on FOB.

### **Government Consumption**

Expenditures for employees expenses, depreciation and purchase of goods and services (including travel expenses, maintenance and other routine expenditures), expended by central government or regional governments but not including receipt from result of production of goods and services.

### **Household**

Group of energy consumers which use energy for cooking, lighting, and household appliances but not including energy consumption for private car.

### **Hydropower**

Potential energy of flowing water, computed as input energy to generate electric power, consists of dam, river stream, micro hydro.

### **Import**

Purchase from other country, not including the one in transit.

### **Industrial Diesel Oil (IDO)**

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

### **Industry**

Group of energy consumers which use energy for industrial process such as steam boiler, direct heating, lighting, and mechanical equipment, but does not include energy used for electricity generation for such industries: 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**

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 which volatility lies between that of mogas and 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 of crude oil, produced from oil refinery process or purification process of natural gas, consisting of propane (C<sub>3</sub>H<sub>8</sub>) and butane (C<sub>4</sub>H<sub>10</sub>) or their mixture.

**LSWR**

Low Sulphur Waxy Residue, a by product of oil refining.

**Mogas**

Motor gasoline, light hydrocarbon oil used in internal combustion engine, except aircraft engine, available in the market as Premium, Premix, Super TT, and BB2L.

**Money Supply (M2)**

Money supply consisting of currency (kartal) and demand deposits (giral).

**Natural Gas**

All kinds of hydrocarbon gas produced from wells; mixture of hydrocarbon gas and vapour 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**

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

**Non-renewable Energy**

Energy which reserve 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, ADO, IDO, gasoline, 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**

Category that include energy losses and energy used in primary energy production field and in each transformation.

**Own Use in Electricity Generation**

Own use is all energy consumed in power plant and the transmission and distribution sub-station.

**Own Use and Losses in Gas Processing**

Losses that occur due to transport, distribution, and transfer by pipe. Own use is all 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 is all energy consumes in oil refinery processes.

**Own Use and Losses in Production Field**

Losses that occur due to transport, distribution, and transfer by pipe. Own use is all 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 which is 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.

**Quasy Money**

Time deposit and saving, in Rupiah and foreign exchange, including foreign exchange deposit by residents.

**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 (Premium, Premix, and Super TT) and diesel oil (ADO).

**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 the end of the year. Stock decrease in energy balance is shown by positive sign which means there is increase in supply, while stock increase is shown by negative sign which means there is decrease in supply.

**Sub-bituminous coal**

A type of coal which has calorific value of 5000–6000 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**

Group of energy consumers which use energy for transport vehicles.

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2007

## Conversion Factor

Type of Energy	Original Unit	Multiplier Factor to BOE (Barel Oil Equivalent)
<b>Coal</b>		
Antracite	Metrik Ton	4.9893
Coal Import	Metrik Ton	4.2766
Kalimantan Coal	Metrik Ton	4.2000
Ombilin Coal	Metrik Ton	4.8452
Tanjung Enim Coal	Metrik Ton	3.7778
Lignit	Metrik Ton	3.0649
Riau Peat	Metrik Ton	2.5452
Coal Briquette	Ton	3.5638
<b>Biomass</b>		
Charcoal	Ton	4.9713
Firewood	Ton	2.2979
<b>Natural Gas</b>		
<b>Gas Product</b>		
City Gas	Thousand KKal	0.0007
CNG	Thousand KKal	0.0007
LNG	Ton	8.0532
LNG	MMBTU	0.1796
LPG	Ton	8.5246
<b>Crude Oil</b>		
Condensate	Barel	0.9545
Crude Oil	Barel	1.0000
<b>Fuel</b>		
Aviation Gasoil (Avgas)	Kilo Liter	5.5530
Aviation Turbin Gas (Avtur)	Kilo Liter	5.8907
Super TT	Kilo Liter	5.8275
Premix	Kilo Liter	5.8275
Premium	Kilo Liter	5.8275
Minyak Tanah (Kerosene)	Kilo Liter	5.9274
Minyak Solar (ADO)	Kilo Liter	6.4871
Minyak Diesel (IDO)	Kilo Liter	6.6078
Minyak Bakar (FO)	Kilo Liter	6.9612
<b>Petroleum Product</b>		
Other Petroleum Products	Barel	1.0200
<b>Bahan Bakar Kilang</b>		
Refinery Fuel Gas (RFG)	Barel	1.6728
Refinery Fuel Oil (RFO)	Barel	1.1236
Bahan Baku Kilang (Feed Stock)	Barel	1.0423
<b>Geothermal</b>		
	MWh	1.9558
<b>Hydro Power</b>		
	MWh	2.5208
<b>Electricity Power</b>		
	MWh	0.6130

Source : Indonesia Energy Balance 1990-1994, Departemen of Mining and Energy