

INDONESIA  
ENERGY BALANCE TABLES

<b>2002</b>										Mtoe
	Coal	Oil	Gas	Hydro	Nuclear	NRE	Electricity	Heat	Total	
Production	75.4	63.5	73.4	0.9		45.7				258.9
Net Imports	- 56.1	- 1.5	- 33.8							- 91.4
<b>TPED</b>	<b>18.7</b>	<b>63.0</b>	<b>39.7</b>	<b>0.9</b>		<b>45.7</b>				<b>168.0</b>
Electricity and Heat Generation	- 9.4	- 3.3	- 6.7	- 0.9		- 4.5	7.6			- 17.2
Petroleum Refineries		- 12.1	- 1.1							- 13.1
Others	- 3.7		- 21.2							- 24.8
<b>TFED</b>	<b>5.7</b>	<b>46.9</b>	<b>10.7</b>			<b>41.2</b>	<b>7.5</b>			<b>112.0</b>
Industry	5.7	11.6	10.6			2.0	3.2			33.1
Transport		23.7								23.7
Residential		10.5				39.0	2.9			52.5
Commercial		1.2				0.2	1.4			2.8

  

<b>2010</b>										Mtoe
	Coal	Oil	Gas	Hydro	Nuclear	NRE	Electricity	Heat	Total	
Production	126.4	65.0	112.5	0.9		52.9				357.7
Net Imports	- 87.0	14.5	- 54.5				0.2			- 126.8
<b>TPED</b>	<b>39.4</b>	<b>79.5</b>	<b>58.1</b>	<b>0.9</b>		<b>52.9</b>	<b>0.2</b>			<b>231.0</b>
Electricity and Heat Generation	- 20.0	- 3.3	- 8.8	- 0.9		- 7.6	11.9			- 28.7
Petroleum Refineries		- 15.3	- 1.3							- 16.6
Others	- 9.8		- 33.7							- 43.5
<b>TFED</b>	<b>9.5</b>	<b>60.9</b>	<b>14.2</b>			<b>45.3</b>	<b>12.2</b>			<b>142.2</b>
Industry	9.5	16.2	14.1			2.6	5.0			47.4
Transport		32.8								32.9
Residential		10.5				42.5	4.8			57.9
Commercial		1.4				0.2	2.3			4.0

  

<b>2020</b>										Mtoe
	Coal	Oil	Gas	Hydro	Nuclear	NRE	Electricity	Heat	Total	
Production	138.2	55.6	111.5	1.3		57.1				363.7
Net Imports	- 82.6	47.7	- 39.8				0.5			- 74.2
<b>TPED</b>	<b>55.6</b>	<b>103.2</b>	<b>71.7</b>	<b>1.3</b>		<b>57.1</b>	<b>0.5</b>			<b>289.5</b>
Electricity and Heat Generation	- 30.3	- 1.5	- 16.0	- 1.3		- 6.0	18.4			- 36.7
Petroleum Refineries		- 19.4	- 1.6							- 21.0
Others	- 10.7		- 31.4							- 42.1
<b>TFED</b>	<b>14.5</b>	<b>82.4</b>	<b>22.7</b>			<b>51.2</b>	<b>18.9</b>			<b>189.7</b>
Industry	14.5	22.6	22.5			3.5	7.7			70.8
Transport		47.8								47.8
Residential		10.4				47.4	7.3			65.1
Commercial		1.6	0.1			0.3	3.9			5.9

  

<b>2030</b>										Mtoe
	Coal	Oil	Gas	Hydro	Nuclear	NRE	Electricity	Heat	Total	
Production	145.3	54.9	90.6	1.8		65.2				357.8
Net Imports	- 77.0	81.3	- 4.0				0.5			0.8
<b>TPED</b>	<b>68.3</b>	<b>136.2</b>	<b>86.7</b>	<b>1.8</b>		<b>65.2</b>	<b>0.5</b>			<b>358.6</b>
Electricity and Heat Generation	- 36.7	- 1.4	- 24.3	- 1.8		- 8.9	25.9			- 47.1
Petroleum Refineries		- 24.9	- 2.0							- 26.9
Others	- 11.3		- 26.7							- 38.0
<b>TFED</b>	<b>20.3</b>	<b>109.9</b>	<b>33.7</b>			<b>56.3</b>	<b>26.4</b>			<b>246.7</b>
Industry	20.3	29.5	33.5			4.7	10.7			98.6
Transport		68.6	0.1							68.7
Residential		9.9	0.1			51.3	9.5			70.9
Commercial		1.9	0.1			0.3	6.2			8.5

## INDONESIA

## MACRO ASSUMPTIONS

	1980	2002	2010	2020	2030	Growth Rate (% per annum)				
						80-02	02-10	10-20	20-30	02-30
<b>GDP</b> (2000 PPP US\$ billion)	273	790	1 152	1 809	2 795	5.0	4.8	4.6	4.4	4.6
<b>Population</b> (million)	148	212	233	258	276	1.6	1.2	1.0	0.7	1.0
<b>GDP per capita</b> (2000 PPP US\$)	1 838	3 729	4 944	7 021	10 116	3.3	3.6	3.6	3.7	3.6
<b>GDP in Services</b> (2000 PPP US\$ billion)	107	283	467	782	1 276	4.5	6.5	5.3	5.0	5.5
<b>GDP in Industry</b> (2000 PPP US\$ billion)	86	246	332	519	788	4.9	3.8	4.6	4.3	4.3
<b>Urbanisation level</b> (%)	22	44	53	62	68	3.2	2.3	1.5	0.9	1.5

## ENERGY PROJECTIONS

	1980	2002	2010	2020	2030	Growth rate (% per annum)				
						80-02	02-10	10-20	20-30	02-30
<b>Production</b>	<b>125.0</b>	<b>258.9</b>	<b>357.7</b>	<b>363.7</b>	<b>357.8</b>	<b>3.4</b>	<b>4.1</b>	<b>0.2</b>	<b>-0.2</b>	<b>1.2</b>
Coal		75.4 (29%)	126.4 (35%)	138.2 (38%)	145.3 (41%)		6.7	0.9	0.5	2.4
Oil	80.0 (64%)	63.5 (25%)	65.0 (18%)	55.6 (15%)	54.9 (15%)	-1.0	0.3	-1.6	-0.1	-0.5
Gas	15.0 (12%)	73.4 (28%)	112.5 (31%)	111.5 (31%)	90.6 (25%)	7.5	5.5	-0.1	-2.0	0.8
Hydro	0.2 (0%)	0.9 (0%)	0.9 (0%)	1.3 (0%)	1.8 (0%)	7.0	1.2	3.6	2.8	2.6
NRE	29.7 (24%)	45.7 (18%)	52.9 (15%)	57.1 (16%)	65.2 (18%)	2.0	1.8	0.8	1.3	1.3
Nuclear										
<b>Net Imports</b>	<b>- 68.1</b>	<b>- 91.4</b>	<b>- 126.8</b>	<b>- 74.2</b>	<b>0.8</b>	<b>1.3</b>	<b>4.2</b>	<b>- 5.2</b>		
Coal		- 56.1	- 87.0	- 82.6	- 77.0		5.6	- 0.5	- 0.7	1.1
Oil	- 58.1	- 1.5	14.5	47.7	81.3	-15.3		12.6	5.5	
Gas	- 10.0	- 33.8	- 54.5	- 39.8	- 4.0	5.7	6.2	- 3.1	-20.6	- 7.3
Electricity			0.2	0.5	0.5			9.1		
<b>Total Primary Energy Demand</b>	<b>56.0</b>	<b>168.0</b>	<b>231.0</b>	<b>289.5</b>	<b>358.6</b>	<b>5.1</b>	<b>4.1</b>	<b>2.3</b>	<b>2.2</b>	<b>2.7</b>
Coal	0.2 (0%)	18.7 (11%)	39.4 (17%)	55.6 (19%)	68.3 (19%)	23.9	9.7	3.5	2.1	4.7
Oil	21.0 (38%)	63.0 (38%)	79.5 (34%)	103.2 (36%)	136.2 (38%)	5.1	2.9	2.6	2.8	2.8
Gas	4.9 (9%)	39.7 (24%)	58.1 (25%)	71.7 (25%)	86.7 (24%)	9.9	4.9	2.1	1.9	2.8
Hydro	0.2 (0%)	0.9 (1%)	0.9 (0%)	1.3 (0%)	1.8 (0%)	7.0	1.2	3.6	2.8	2.6
NRE	29.6 (53%)	45.7 (27%)	52.9 (23%)	57.1 (20%)	65.2 (18%)	2.0	1.8	0.8	1.3	1.3
Nuclear										
<b>Input for Electricity and Heat Generation</b>	<b>- 2.3</b>	<b>- 24.8</b>	<b>- 40.7</b>	<b>- 55.1</b>	<b>- 73.0</b>	<b>11.3</b>	<b>6.4</b>	<b>3.1</b>	<b>2.9</b>	<b>3.9</b>
Coal		- 9.4 (38%)	- 20.0 (49%)	- 30.3 (55%)	- 36.7 (50%)		9.9	4.2	1.9	5.0
Oil	- 2.1 (92%)	- 3.3 (13%)	- 3.3 (8%)	- 1.5 (3%)	- 1.4 (2%)	2.0	0.1	- 7.6	- 0.9	- 3.1
Gas		- 6.7 (27%)	- 8.8 (22%)	- 16.0 (29%)	- 24.3 (33%)		3.5	6.1	4.3	4.7
Hydro	- 0.2 (8%)	- 0.9 (3%)	- 0.9 (2%)	- 1.3 (2%)	- 1.8 (2%)	7.0	1.2	3.6	2.8	2.6
NRE		- 4.5 (18%)	- 7.6 (19%)	- 6.0 (11%)	- 8.9 (12%)		6.7	- 2.3	4.1	2.5
Nuclear										
<b>Other Transformation</b>	<b>- 2.3</b>	<b>- 38.0</b>	<b>- 60.1</b>	<b>- 63.1</b>	<b>- 64.8</b>	<b>13.7</b>	<b>5.9</b>	<b>0.5</b>	<b>0.3</b>	<b>1.9</b>
Coal	- 0.04 (2%)	- 3.7 (10%)	- 9.8 (16%)	- 10.7 (17%)	- 11.3 (17%)	23.1	13.1	0.9	0.5	4.1
Oil	- 1.1 (47%)	- 12.1 (32%)	- 15.3 (25%)	- 19.4 (31%)	- 24.9 (38%)	11.7	3.0	2.4	2.5	2.6
Gas	- 1.2 (51%)	- 22.2 (59%)	- 35.0 (58%)	- 33.0 (52%)	- 28.6 (44%)	14.4	5.8	- 0.6	- 1.4	0.9
NRE										
Electricity										
Heat										

## INDONESIA

	Mtoe					Growth rate (% per annum)				
	1980	2002	2010	2020	2030	80-02	02-10	10-20	20-30	02-30
<b>Total Final Energy Demand</b>	<b>47.8</b>	<b>112.0</b>	<b>142.2</b>	<b>189.7</b>	<b>246.7</b>	<b>3.9</b>	<b>3.0</b>	<b>2.9</b>	<b>2.7</b>	<b>2.9</b>
Coal	0.1 (0%)	5.7 (5%)	9.5 (7%)	14.5 (8%)	20.3 (8%)	18.0	6.7	4.3	3.4	4.7
Oil	17.2 (36%)	46.9 (42%)	60.9 (43%)	82.4 (43%)	109.9 (45%)	4.7	3.3	3.1	2.9	3.1
Gas	2.4 (5%)	10.7 (10%)	14.2 (10%)	22.7 (12%)	33.7 (14%)	7.1	3.6	4.8	4.0	4.2
NRE	27.8 (58%)	41.2 (37%)	45.3 (32%)	51.2 (27%)	56.3 (23%)	1.8	1.2	1.2	1.0	1.1
Electricity	0.4 (1%)	7.5 (7%)	12.2 (9%)	18.9 (10%)	26.4 (11%)	14.9	6.3	4.5	3.4	4.6
Heat										
<b>Industry</b>	<b>8.3</b>	<b>33.1</b>	<b>47.4</b>	<b>70.8</b>	<b>98.6</b>	<b>6.5</b>	<b>4.6</b>	<b>4.1</b>	<b>3.4</b>	<b>4.0</b>
Coal	0.1 (2%)	5.7 (17%)	9.5 (20%)	14.5 (21%)	20.3 (21%)	18.6	6.7	4.3	3.4	4.7
Oil	5.7 (68%)	11.6 (35%)	16.2 (34%)	22.6 (32%)	29.5 (30%)	3.3	4.3	3.4	2.7	3.4
Gas	2.4 (28%)	10.6 (32%)	14.1 (30%)	22.5 (32%)	33.5 (34%)	7.1	3.6	4.8	4.0	4.2
NRE		2.0 (6%)	2.6 (5%)	3.5 (5%)	4.7 (5%)		3.2	3.1	2.8	3.0
Electricity	0.2 (2%)	3.2 (10%)	5.0 (11%)	7.7 (11%)	10.7 (11%)	14.8	5.9	4.3	3.4	4.4
Heat										
<b>Transport</b>	<b>6.2</b>	<b>23.7</b>	<b>32.9</b>	<b>47.8</b>	<b>68.7</b>	<b>6.3</b>	<b>4.2</b>	<b>3.8</b>	<b>3.7</b>	<b>3.9</b>
Coal										
Oil	6.2 (100%)	23.7 (100%)	32.8 (100%)	47.8 (100%)	68.6 (100%)	6.3	4.2	3.8	3.7	3.9
Gas		0.03 (0%)	0.04 (0%)	0.1 (0%)	0.1 (0%)		1.5	3.6	4.1	3.2
NRE										
Electricity										
<b>Residential</b>	<b>33.3</b>	<b>52.5</b>	<b>57.9</b>	<b>65.1</b>	<b>70.9</b>	<b>2.1</b>	<b>1.2</b>	<b>1.2</b>	<b>0.9</b>	<b>1.1</b>
Coal										
Oil	5.3 (16%)	10.5 (20%)	10.5 (18%)	10.4 (16%)	9.9 (14%)	3.2		-0.2	-0.4	-0.2
Gas		0.02 (0%)	0.02 (0%)	0.03 (0%)	0.1 (0%)		4.9	4.1	4.7	4.5
NRE	27.8 (83%)	39.0 (74%)	42.5 (73%)	47.4 (73%)	51.3 (72%)	1.6	1.1	1.1	0.8	1.0
Electricity	0.2 (1%)	2.9 (6%)	4.8 (8%)	7.3 (11%)	9.5 (13%)	13.0	6.4	4.3	2.7	4.3
Heat										
<b>Commercial</b>		<b>2.8</b>	<b>4.0</b>	<b>5.9</b>	<b>8.5</b>		<b>4.6</b>	<b>4.0</b>	<b>3.6</b>	<b>4.0</b>
Coal										
Oil <sup>1</sup>		1.2 (41%)	1.4 (34%)	1.6 (28%)	1.9 (22%)		2.2	1.8	1.2	1.7
Gas <sup>1</sup>		0.03 (1%)	0.1 (1%)	0.1 (1%)	0.1 (2%)		7.0	5.6	5.1	5.8
NRE <sup>1</sup>		0.2 (8%)	0.2 (6%)	0.3 (5%)	0.3 (4%)		1.3	1.0	1.0	1.1
Electricity <sup>1</sup>		1.4 (50%)	2.3 (58%)	3.9 (66%)	6.2 (73%)		6.7	5.3	4.6	5.5
Heat										

Note: 1 Historical data prior to 2002 are from national sources.

## ENERGY SECURITY

	1980	2002	2010	2020	2030
Diversity of Primary Energy Demand (Rated between 1 and 100)	62	84	88	88	86
Net Energy Import Ratio (%)	-120	-55	-55	-26	0
Net Oil Import Dependency (%)	-276	-2	18	46	60

**INDONESIA**  
**ELECTRICITY GENERATION**

	1980	2002	2010	2020	2030	Growth rate (% per annum)				
						80-02	02-10	10-20	20-30	02-30
<b>Total Electricity Generation (TWh)</b>	<b>8</b>	<b>95</b>	<b>151</b>	<b>231</b>	<b>324</b>	<b>11.9</b>	<b>5.9</b>	<b>4.4</b>	<b>3.5</b>	<b>4.5</b>
Coal		30 (32%)	69 (46%)	118 (51%)	159 (49%)		10.8	5.5	3.0	6.1
Oil	6 (72%)	16 (17%)	16 (11%)	7 (3%)	7 (2%)	4.7	0.2	-7.5	-0.8	-3.0
Gas		34 (35%)	45 (30%)	83 (36%)	127 (39%)		3.6	6.3	4.4	4.8
Hydro	2 (28%)	10 (10%)	11 (7%)	16 (7%)	20 (6%)	7.0	1.2	3.6	2.8	2.6
NRE		5 (5%)	9 (6%)	8 (3%)	11 (3%)		7.6	-2.1	3.8	2.7
Nuclear										
<b>Total Installed Generation Capacity (GW)</b>	<b>3</b>	<b>28</b>	<b>41</b>	<b>81</b>	<b>108</b>	<b>11.5</b>	<b>4.8</b>	<b>7.0</b>	<b>2.9</b>	<b>4.9</b>
Thermal	2 (85%)	24 (83%)	35 (85%)	71 (87%)	95 (88%)	11.4	5.0	7.3	3.0	5.1
Coal		7 (26%)	14 (35%)	36 (44%)	50 (46%)		8.9	9.7	3.4	7.1
Oil	2 (84%)	8 (28%)	7 (18%)	5 (6%)	5 (5%)	6.1	-0.8	-3.4		-1.5
Gas		8 (30%)	13 (32%)	30 (36%)	40 (37%)		5.8	8.4	3.1	5.7
Hydro	0.4 (15%)	4 (13%)	4 (9%)	7 (9%)	9 (8%)	10.5	0.9	6.6	2.1	3.3
NRE		1 (4%)	2 (6%)	3 (4%)	4 (4%)		10.3	1.9	3.3	4.8
Nuclear										

**ENERGY INTENSITY & CO<sub>2</sub> EMISSIONS**

	1980	2002	2010	2020	2030	Growth Rates (% per annum)				
						80-02	02-10	10-20	20-30	02-30
<b>Energy Intensity (toe per US\$ million GDP)</b>	<b>205</b>	<b>213</b>	<b>201</b>	<b>160</b>	<b>128</b>	<b>0.2</b>	<b>-0.7</b>	<b>-2.2</b>	<b>-2.2</b>	<b>-1.8</b>
Industry (toe per US\$ million GDP in Industry)	97	135	143	137	125	1.5	0.7	-0.4	-0.9	-0.3
Commercial (toe per US\$ million GDP in Services)		10	9	8	7		-1.7	-1.2	-1.3	-1.4
<b>Energy Intensity (kgoe per capita)</b>	<b>377</b>	<b>794</b>	<b>992</b>	<b>1 124</b>	<b>1 298</b>	<b>3.4</b>	<b>2.8</b>	<b>1.3</b>	<b>1.5</b>	<b>1.8</b>
Industry	56	156	204	275	357	4.8	3.4	3.0	2.6	3.0
Transport	42	112	141	186	249	4.6	2.9	2.8	3.0	2.9
Residential	224	248	248	253	256	0.5	0.0	0.2	0.2	0.1
Commercial		13	17	23	31		3.4	2.9	2.9	3.1
<b>CO<sub>2</sub> Emissions (million tonnes)</b>	<b>70.0</b>	<b>291.8</b>	<b>415.5</b>	<b>571.2</b>	<b>745.9</b>	<b>6.7</b>	<b>4.5</b>	<b>3.2</b>	<b>2.7</b>	<b>3.4</b>
Electricity Generation	6.8	62.2	108.3	159.4	203.4	10.6	7.2	3.9	2.5	4.3
Transformation other than Electricity Generation	5.1	41.6	54.0	55.4	56.0	10.0	3.3	0.3	0.1	1.1
Industry	23.5	82.0	119.1	177.7	246.5	5.8	4.8	4.1	3.3	4.0
Transport	18.4	70.4	97.7	141.9	203.7	6.3	4.2	3.8	3.7	3.9
Residential	15.8	32.0	32.1	31.6	30.3	3.3		-0.2	-0.4	-0.2
Commercial	0.3	3.6	4.3	5.2	6.0	11.8	2.2	1.9	1.4	1.8
<b>CO<sub>2</sub> Emissions Intensity</b>										
CO <sub>2</sub> emissions per GDP (tonnes per US\$ million)	256.6	369.6	360.8	315.8	266.9	1.7	-0.3	-1.3	-1.7	-1.2
CO <sub>2</sub> emissions per capita (tonnes per capita)	0.5	1.4	1.8	2.2	2.7	5.0	3.3	2.2	2.0	2.4

**ENERGY INVESTMENT REQUIREMENTS**

(Cumulative from 2003 - )	2010	2020	2030
<b>Total (2000 US\$ billion)</b>	<b>65.0 - 83.6</b>	<b>147.6 - 184.4</b>	<b>218.8 - 274.4</b>
Coal Production & Transportation	6.2 - 8.1	8.7 - 11.4	10.5 - 14.0
Oil & Gas Production & Processing	17.3 - 25.6	26.8 - 39.2	38.2 - 55.7
Oil & Gas International Trade	11.9 - 12.8	15.5 - 16.9	17.6 - 19.3
Oil & Gas Domestic Pipeline	0.8 - 1.1	1.5 - 2.1	2.4 - 3.5
Electricity Generation & Transmission	28.8 - 36.0	95.1 - 114.8	150.0 - 182.1