

**PAPUA NEW GUINEA**  
**ENERGY BALANCE TABLES**

<b>2002</b>										Mtoe
	Coal	Oil	Gas	Hydro	Nuclear	NRE	Electricity	Heat	Total	
Production		2.6	0.1	0.1						2.8
Net Imports		- 1.4								- 1.4
<b>TPED</b>		<b>1.2</b>	<b>0.1</b>	<b>0.1</b>						<b>1.4</b>
Electricity and Heat Generation		- 0.4	- 0.1	- 0.1			0.2			- 0.4
Petroleum Refineries										
Others										
<b>TFED</b>		<b>0.8</b>					<b>0.2</b>			<b>1.0</b>
Industry		0.5					0.2			0.7
Transport		0.3								0.3
Residential							0.1			0.1
Commercial										

  

<b>2010</b>										Mtoe
	Coal	Oil	Gas	Hydro	Nuclear	NRE	Electricity	Heat	Total	
Production		2.3	1.6	0.2		0.3				4.4
Net Imports		- 0.8	- 1.6							- 2.3
<b>TPED</b>		<b>1.5</b>	<b>0.1</b>	<b>0.2</b>		<b>0.3</b>				<b>2.1</b>
Electricity and Heat Generation		- 0.3	- 0.1	- 0.2		- 0.3	0.3			- 0.6
Petroleum Refineries		- 0.1								- 0.1
Others										
<b>TFED</b>		<b>1.1</b>					<b>0.3</b>			<b>1.4</b>
Industry		0.8					0.2			1.0
Transport		0.3								0.3
Residential							0.1			0.1
Commercial										

  

<b>2020</b>										Mtoe
	Coal	Oil	Gas	Hydro	Nuclear	NRE	Electricity	Heat	Total	
Production		2.0	5.8	0.2		0.4				8.4
Net Imports		0.1	- 5.5							- 5.4
<b>TPED</b>		<b>2.2</b>	<b>0.2</b>	<b>0.2</b>		<b>0.4</b>				<b>3.0</b>
Electricity and Heat Generation		- 0.5	- 0.2	- 0.2		- 0.4	0.5			- 0.8
Petroleum Refineries		- 0.1								- 0.1
Others										
<b>TFED</b>		<b>1.6</b>					<b>0.5</b>			<b>2.1</b>
Industry		1.2					0.3			1.5
Transport		0.4								0.4
Residential							0.1			0.2
Commercial										

  

<b>2030</b>										Mtoe
	Coal	Oil	Gas	Hydro	Nuclear	NRE	Electricity	Heat	Total	
Production		1.9	5.9	0.2		0.4				8.4
Net Imports		0.9	- 5.5							- 4.5
<b>TPED</b>		<b>2.8</b>	<b>0.4</b>	<b>0.2</b>		<b>0.4</b>				<b>3.8</b>
Electricity and Heat Generation		- 0.6	- 0.4	- 0.2		- 0.4	0.6			- 1.0
Petroleum Refineries		- 0.1								- 0.1
Others										
<b>TFED</b>		<b>2.1</b>					<b>0.6</b>			<b>2.7</b>
Industry		1.6					0.4			2.0
Transport		0.4								0.4
Residential		0.1					0.2			0.3
Commercial										

## PAPUA NEW GUINEA

## 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)	7	12	16	23	30	2.6	3.9	3.6	2.8	3.4
<b>Population</b> (million)	3.09	5.38	6.37	7.59	8.76	2.6	2.1	1.8	1.4	1.8
<b>GDP per capita</b> (2000 PPP US\$)	2 166	2 207	2 531	3 034	3 482	0.1	1.7	1.8	1.4	1.6
<b>GDP in Services</b> (2000 PPP US\$ billion)	3	4	5	6	9	1.4	2.8	3.3	3.3	3.2
<b>GDP in Industry</b> (2000 PPP US\$ billion)	2	5	7	11	15	4.6	5.0	4.3	2.8	4.0
<b>Urbanisation level</b> (%)	13	13	14	16	20	0.1	0.4	1.5	2.6	1.6

## ENERGY PROJECTIONS

	1980	2002	Mtoe			2030	Growth rate (% per annum)				
			2010	2020	2030		80-02	02-10	10-20	20-30	02-30
<b>Production</b>		2.8	4.4	8.4	8.4		23.5	5.9	6.6	-0.04	4.0
Coal											
Oil		2.6	2.3	2.0	1.9			-1.5	-1.0	-1.0	-1.1
		(91%)	(51%)	(24%)	(22%)						
Gas		0.1	1.6	5.8	5.9			39.5	13.4	0.3	15.1
		(4%)	(37%)	(69%)	(71%)						
Hydro	0.03	0.09	0.18	0.18	0.17		5.7	8.7	0.2	-0.9	2.2
		(3%)	(4%)	(2%)	(2%)						
NRE		0.04	0.34	0.39	0.41			29.7	1.5	0.6	8.5
		(1%)	(8%)	(5%)	(5%)						
Nuclear											
<b>Net Imports</b>	0.6	-1.4	-2.3	-5.4	-4.5			6.6	8.7	-1.7	4.3
Coal											
Oil	0.6	-1.4	-0.8	0.1	0.9			-7.4		21.6	
Gas			-1.6	-5.5	-5.5				13.4	-0.1	
Electricity											
<b>Total Primary Energy Demand</b>	0.7	1.4	2.1	3.0	3.8		3.5	5.1	3.7	2.5	3.6
Coal											
Oil	0.6	1.2	1.5	2.2	2.8		2.8	3.4	3.8	2.5	3.2
		(96%)	(82%)	(72%)	(73%)						
Gas		0.1	0.1	0.2	0.4			-7.1	13.8	6.8	5.0
		(8%)	(3%)	(8%)	(12%)						
Hydro	0.03	0.1	0.2	0.2	0.2		5.7	8.7	0.2	-0.9	2.2
		(5%)	(7%)	(9%)	(6%)						
NRE			0.3	0.4	0.4			29.7	1.5	0.6	8.5
			(16%)	(13%)	(11%)						
Nuclear											
<b>Input for Electricity and Heat Generation</b>	-0.3	-0.6	-0.9	-1.3	-1.6		3.4	4.9	3.7	2.5	3.6
Coal											
Oil	-0.3	-0.4	-0.3	-0.5	-0.6		1.4	-1.6	4.3	2.9	2.1
		(91%)	(59%)	(35%)	(38%)						
Gas		-0.1	-0.1	-0.2	-0.4			-7.1	13.8	6.5	4.8
		(19%)	(7%)	(18%)	(26%)						
Hydro		-0.1	-0.2	-0.2	-0.2		5.7	8.7	0.2	-0.9	2.2
		(15%)	(20%)	(14%)	(10%)						
NRE			-0.3	-0.4	-0.4			29.7	1.5	0.6	8.5
			(38%)	(30%)	(25%)						
Nuclear											
<b>Other Transformation</b>			-0.1	-0.1	-0.1						
Coal											
Oil			-0.1	-0.1	-0.1						
			(100%)	(100%)	(100%)						
Gas											
NRE											
Electricity											
Heat											

## PAPUA NEW GUINEA

	1980	2002	Mtoe			Growth rate (% per annum)				
			2010	2020	2030	80-02	02-10	10-20	20-30	02-30
<b>Total Final Energy Demand</b>	<b>0.43</b>	<b>1.02</b>	<b>1.42</b>	<b>2.07</b>	<b>2.67</b>	<b>4.0</b>	<b>4.2</b>	<b>3.9</b>	<b>2.6</b>	<b>3.5</b>
Coal										
Oil	0.34 (78%)	0.79 (77%)	1.10 (77%)	1.61 (78%)	2.05 (77%)	3.9	4.2	3.9	2.5	3.5
Gas										
NRE										
Electricity	0.09 (22%)	0.23 (23%)	0.32 (23%)	0.46 (22%)	0.61 (23%)	4.3	3.9	3.7	2.9	3.5
Heat										
<b>Industry</b>	<b>0.19</b>	<b>0.65</b>	<b>0.99</b>	<b>1.51</b>	<b>1.95</b>	<b>5.7</b>	<b>5.4</b>	<b>4.3</b>	<b>2.6</b>	<b>4.0</b>
Coal										
Oil	0.11 (56%)	0.48 (74%)	0.76 (77%)	1.19 (79%)	1.56 (80%)	7.0	5.9	4.7	2.7	4.3
Gas										
NRE										
Electricity	0.08 (44%)	0.17 (26%)	0.23 (23%)	0.32 (21%)	0.40 (20%)	3.4	3.8	3.2	2.2	3.0
Heat										
<b>Transport</b>	<b>0.21</b>	<b>0.27</b>	<b>0.30</b>	<b>0.37</b>	<b>0.44</b>	<b>1.2</b>	<b>1.1</b>	<b>2.1</b>	<b>1.9</b>	<b>1.7</b>
Coal										
Oil	0.21 (100%)	0.27 (100%)	0.30 (100%)	0.37 (100%)	0.44 (100%)	1.2	1.1	2.1	1.9	1.7
Gas										
NRE										
Electricity										
<b>Residential</b>	<b>0.03</b>	<b>0.10</b>	<b>0.13</b>	<b>0.19</b>	<b>0.27</b>	<b>5.8</b>	<b>3.4</b>	<b>3.7</b>	<b>3.7</b>	<b>3.6</b>
Coal										
Oil	0.02 (66%)	0.04 (38%)	0.04 (34%)	0.05 (26%)	0.06 (20%)	3.2	1.8	1.3	1.0	1.3
Gas										
NRE										
Electricity	0.01 (34%)	0.06 (62%)	0.09 (66%)	0.14 (74%)	0.22 (80%)	8.6	4.3	4.8	4.5	4.6
Heat										
<b>Commercial</b>										
Coal										
Oil										
Gas										
NRE										
Electricity										
Heat										

## ENERGY SECURITY

	1980	2002	2010	2020	2030
Diversity of Primary Energy Demand (Rated between 1 and 100)	7	30	43	43	44
Net Energy Import Ratio (%)	96	-100	-112	-182	-120
Net Oil Import Dependency (%)	100	-122	-51	6	33

**PAPUA NEW GUINEA**  
**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>3.0</b>	<b>4.1</b>	<b>5.9</b>	<b>7.8</b>	<b>3.8</b>	<b>3.7</b>	<b>2.9</b>	<b>3.5</b>	
Coal										
Oil		1.5 (48%)	1.3 (33%)	2.2 (37%)	3.1 (39%)	-1.1	4.9	3.5	2.7	
Gas		0.5 (15%)	0.3 (7%)	1.1 (19%)	2.3 (30%)	-6.0	15.0	7.5	6.0	
Hydro		1.1 (35%)	2.1 (51%)	2.1 (36%)	1.9 (25%)	8.8	0.2	-0.9	2.2	
NRE		0.05 (2%)	0.4 (10%)	0.5 (8%)	0.5 (6%)	29.7	1.5	0.6	8.5	
Nuclear										
<b>Total Installed Generation Capacity (GW)</b>	<b>0.3</b>	<b>0.6</b>	<b>1.2</b>	<b>1.6</b>	<b>2.1</b>	<b>2.4</b>	<b>10.6</b>	<b>2.5</b>	<b>2.7</b>	<b>4.8</b>
Thermal	0.2 (55%)	0.4 (63%)	0.7 (55%)	1.0 (65%)	1.5 (73%)	3.1	8.8	4.1	3.9	5.3
Coal										
Oil	0.2 (52%)	0.2 (41%)	0.4 (30%)	0.5 (32%)	0.7 (34%)	1.3	6.1	3.3	3.1	4.0
Gas		0.1 (22%)	0.3 (26%)	0.5 (33%)	0.8 (39%)	12.9	4.9	4.6	7.0	
Hydro	0.2 (45%)	0.2 (36%)	0.5 (40%)	0.5 (31%)	0.5 (24%)	1.3	12.2		3.3	
NRE		0.01 (1%)	0.1 (5%)	0.1 (4%)	0.1 (3%)	32.2			8.3	
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>98</b>	<b>118</b>	<b>129</b>	<b>129</b>	<b>125</b>	<b>0.9</b>	<b>1.2</b>	<b>0.0</b>	<b>-0.4</b>	<b>0.2</b>
Industry (toe per US\$ million GDP in Industry)	104	133	136	137	134	1.1	0.4	0.1	-0.3	0.0
Commercial (toe per US\$ million GDP in Services)										
<b>Energy Intensity (kgoe per capita)</b>	<b>211</b>	<b>260</b>	<b>327</b>	<b>392</b>	<b>434</b>	<b>0.9</b>	<b>2.9</b>	<b>1.8</b>	<b>1.0</b>	<b>1.9</b>
Industry	62	121	155	199	223	3.1	3.2	2.5	1.1	2.2
Transport	68	51	47	48	50	-1.4	-1.0	0.3	0.4	-0.0
Residential	9	19	21	25	31	3.2	1.3	1.9	2.2	1.8
Commercial										
<b>CO<sub>2</sub> Emissions (million tonnes)</b>	<b>1.9</b>	<b>3.7</b>	<b>4.5</b>	<b>6.9</b>	<b>9.1</b>	<b>3.1</b>	<b>2.2</b>	<b>4.5</b>	<b>2.9</b>	<b>3.2</b>
Electricity Generation	0.4	1.4	1.1	2.0	2.9	6.0	-2.5	6.0	3.9	2.8
Transformation other than Electricity Generation		0.02	0.05	0.1	0.1		10.0	3.3	-0.2	3.9
Industry	0.8	1.4	2.3	3.6	4.6	2.9	6.0	4.6	2.7	4.3
Transport	0.8	0.8	0.9	1.1	1.3	0.3	1.1	2.1	1.9	1.8
Residential		0.1	0.1	0.2	0.2		1.7	1.5	0.8	1.3
Commercial										
<b>CO<sub>2</sub> Emissions Intensity</b>										
CO <sub>2</sub> emissions per GDP (tonnes per US\$ million)	285.8	315.5	276.2	298.9	299.2	0.5	-1.6	0.8		-0.2
CO <sub>2</sub> emissions per capita (tonnes per capita)	0.6	0.7	0.7	0.9	1.0	0.5		2.6	1.4	1.4

**ENERGY INVESTMENT REQUIREMENTS**

(Cumulative from 2003 - )	2010	2020	2030
<b>Total (2000 US\$ billion)</b>	<b>4.50 - 4.88</b>	<b>7.42 - 8.32</b>	<b>7.98 - 9.06</b>
Coal Production & Transportation			
Oil & Gas Production & Processing	0.53 - 0.70	0.81 - 1.11	0.91 - 1.28
Oil & Gas International Trade	3.09 - 3.19	5.34 - 5.71	5.36 - 5.74
Oil & Gas Domestic Pipeline			
Electricity Generation & Transmission	0.88 - 1.00	1.28 - 1.49	1.71 - 2.04