

SINGAPORE
ENERGY BALANCE TABLES

2002										Mtoe
	Coal	Oil	Gas	Hydro	Nuclear	NRE	Electricity	Heat	Total	
Production						0.6				0.6
Net Imports		17.7	3.1							20.7
TPED		17.7	3.1			0.6				21.3
Electricity and Heat Generation		-4.2	-2.9			-0.6	2.8			-4.9
Petroleum Refineries		-4.2					-0.2			-4.5
Others										
TFED		9.3	0.1				2.5			11.9
Industry		4.3					1.0			5.3
Transport		4.9								5.0
Residential			0.1				0.5			0.6
Commercial							1.0			1.0

2010										Mtoe
	Coal	Oil	Gas	Hydro	Nuclear	NRE	Electricity	Heat	Total	
Production						0.6				0.6
Net Imports		20.1	7.4							27.5
TPED		20.1	7.4			0.6				28.1
Electricity and Heat Generation		-1.6	-7.3			-0.6	3.8			-5.6
Petroleum Refineries		-4.6					-0.2			-4.8
Others										
TFED		14.0	0.1				3.6			17.7
Industry		7.6	0.1				1.3			9.0
Transport		6.3								6.4
Residential			0.1				0.8			0.9
Commercial							1.4			1.4

2020										Mtoe
	Coal	Oil	Gas	Hydro	Nuclear	NRE	Electricity	Heat	Total	
Production						0.6				0.6
Net Imports		25.4	11.1							36.5
TPED		25.4	11.1			0.6				37.1
Electricity and Heat Generation		-1.2	-10.9			-0.6	5.4			-7.3
Petroleum Refineries		-4.5					-0.2			-4.8
Others										
TFED		19.7	0.2				5.2			25.1
Industry		11.6	0.1				1.8			13.5
Transport		8.0								8.1
Residential			0.1				1.1			1.3
Commercial							2.2			2.2

2030										Mtoe
	Coal	Oil	Gas	Hydro	Nuclear	NRE	Electricity	Heat	Total	
Production						0.7				0.7
Net Imports		31.3	14.7							46.0
TPED		31.3	14.7			0.7				46.7
Electricity and Heat Generation		-1.3	-14.5			-0.7	7.3			-9.1
Petroleum Refineries		-4.5					-0.3			-4.7
Others										
TFED		25.5	0.2				7.1			32.8
Industry		15.6	0.1				2.2			18.0
Transport		9.9								9.9
Residential			0.1				1.5			1.7
Commercial							3.3			3.3

SINGAPORE

MACRO ASSUMPTIONS

	1980	2002	2010	2020	2030	Growth Rate (% per annum)				
						80-02	02-10	10-20	20-30	02-30
GDP (2000 PPP US\$ billion)	26	110	154	224	313	6.8	4.4	3.8	3.4	3.8
Population (million)	2.41	4.17	4.59	5.28	6.10	2.5	1.2	1.4	1.5	1.4
GDP per capita (2000 PPP US\$)	10 605	26 273	33 619	42 437	51 365	4.2	3.1	2.4	1.9	2.4
GDP in Services (2000 PPP US\$ billion)	15	72	102	154	221	7.4	4.4	4.3	3.6	4.1
GDP in Industry (2000 PPP US\$ billion)	13	39	58	87	120	5.3	5.1	4.1	3.3	4.1
Urbanisation level (%)	100	100	100	100	100	0.0	0.0	0.0	0.0	0.0

ENERGY PROJECTIONS

	1980	2002	2010	2020	2030	Growth rate (% per annum)				
						80-02	02-10	10-20	20-30	02-30
Production		0.6	0.6	0.6	0.7		0.3	0.6	0.9	0.6
Coal										
Oil										
Gas										
Hydro										
NRE		0.6	0.6	0.6	0.7		0.3	0.6	0.9	0.6
Nuclear		(100%)	(100%)	(100%)	(100%)					
Net Imports	8.0	20.7	27.5	36.5	46.0	4.4	3.6	2.9	2.3	2.9
Coal										
Oil	8.0	17.7	20.1	25.4	31.3	3.7	1.7	2.4	2.1	2.1
Gas		3.1	7.4	11.1	14.7		11.7	4.1	2.9	5.8
Electricity										
Total Primary Energy Demand	6.1	21.3	28.1	37.1	46.7	5.9	3.5	2.8	2.3	2.8
Coal										
Oil	6.1	17.7	20.1	25.4	31.3	5.0	1.7	2.4	2.1	2.1
Gas		3.1	7.4	11.1	14.7		11.7	4.1	2.9	5.8
Hydro										
NRE		0.6	0.6	0.6	0.7	23.9	0.3	0.6	0.9	0.6
Nuclear		(3%)	(2%)	(2%)	(1%)					
Input for Electricity and Heat Generation	- 1.6	- 7.7	- 9.4	- 12.7	- 16.5	7.5	2.6	3.1	2.6	2.8
Coal										
Oil	- 1.6	- 4.2	- 1.6	- 1.2	- 1.3	4.5	- 11.6	- 2.7	0.9	- 4.1
Gas		- 2.9	- 7.3	- 10.9	- 14.5		11.9	4.2	2.9	5.9
Hydro										
NRE		- 0.6	- 0.6	- 0.6	- 0.7		0.3	0.6	0.9	0.6
Nuclear		(7%)	(6%)	(5%)	(4%)					
Other Transformation	- 1.9	- 4.5	- 4.8	- 4.8	- 4.7	3.9	1.0	- 0.1	- 0.1	0.2
Coal										
Oil	- 1.9	- 4.2	- 4.6	- 4.5	- 4.5	3.8	1.0	- 0.2	- 0.1	0.2
Gas										
NRE										
Electricity	- 0.1	- 0.2	- 0.2	- 0.2	- 0.3	6.5	1.3	0.2	0.2	0.5
Heat										

SINGAPORE

	Mtoe					Growth rate (% per annum)				
	1980	2002	2010	2020	2030	80-02	02-10	10-20	20-30	02-30
Total Final Energy Demand	2.7	11.9	17.7	25.1	32.8	6.9	5.1	3.6	2.7	3.7
Coal										
Oil	2.2 (81%)	9.3 (78%)	14.0 (79%)	19.7 (79%)	25.5 (78%)	6.8	5.3	3.5	2.6	3.7
Gas		0.1 (1%)	0.1 (1%)	0.2 (1%)	0.2 (1%)	4.0	3.3	3.0	2.4	2.9
NRE										
Electricity	0.5 (17%)	2.5 (21%)	3.6 (20%)	5.2 (21%)	7.1 (22%)	7.9	4.4	3.8	3.2	3.8
Heat										
Industry	0.5	5.3	9.0	13.5	18.0	11.5	6.8	4.1	2.9	4.4
Coal										
Oil	0.3 (52%)	4.3 (81%)	7.6 (85%)	11.6 (86%)	15.6 (87%)	13.7	7.4	4.3	3.0	4.7
Gas	0.02 (4%)	0.05 (1%)	0.1 (1%)	0.1 (1%)	0.1 (1%)	4.2	2.8	2.7	2.3	2.6
NRE										
Electricity	0.2 (43%)	1.0 (18%)	1.3 (15%)	1.8 (13%)	2.2 (12%)	7.2	3.9	3.0	2.4	3.0
Heat										
Transport	1.9	5.0	6.4	8.1	9.9	4.6	3.1	2.4	2.1	2.5
Coal										
Oil	1.9 (100%)	4.9 (100%)	6.3 (100%)	8.0 (100%)	9.9 (100%)	4.5	3.1	2.4	2.1	2.5
Gas										
NRE										
Electricity										
Residential	0.2	0.6	0.9	1.3	1.7	5.4	4.6	3.8	2.9	3.7
Coal										
Oil	0.1 (38%)									
Gas		0.1 (10%)	0.1 (9%)	0.1 (9%)	0.1 (8%)	3.6	3.6	3.3	2.5	3.1
NRE										
Electricity	0.1 (45%)	0.5 (90%)	0.8 (91%)	1.1 (91%)	1.5 (92%)	8.7	4.7	3.8	2.9	3.7
Heat										
Commercial	0.2	1.0	1.4	2.2	3.3	8.1	4.9	4.7	3.9	4.4
Coal										
Oil										
Gas										
NRE										
Electricity	0.2 (100%)	1.0 (100%)	1.4 (100%)	2.2 (100%)	3.3 (100%)	8.1	4.9	4.7	3.9	4.4
Heat										

ENERGY SECURITY

	1980	2002	2010	2020	2030
Diversity of Primary Energy Demand (Rated between 1 and 100)	0	28	43	46	47
Net Energy Import Ratio (%)	100	97	98	98	99
Net Oil Import Dependency (%)	100	100	100	100	100

SINGAPORE
ELECTRICITY GENERATION

	1980	2002	2010	2020	2030	Growth rate (% per annum)				
						80-02	02-10	10-20	20-30	02-30
Total Electricity Generation (TWh)	7	35	47	66	89	7.5	3.8	3.6	3.0	3.4
Coal										
Oil	7 (100%)	18 (51%)	7 (14%)	5 (8%)	6 (6%)	4.3	- 11.5	- 2.6	1.0	- 4.0
Gas		15 (44%)	38 (82%)	59 (89%)	81 (91%)		12.3	4.5	3.2	6.2
Hydro										
NRE		2 (6%)	2 (4%)	2 (3%)	2 (3%)		0.3	0.6	0.9	0.6
Nuclear										
Total Installed Generation Capacity (GW)	2	8	11	15	18	6.7	3.3	3.1	2.4	2.9
Thermal	2 (100%)	8 (97%)	10 (98%)	14 (98%)	18 (98%)	6.5	3.4	3.1	2.5	3.0
Coal										
Oil		4 (52%)	4 (37%)	3 (24%)	3 (16%)		- 1.1	- 1.3	- 1.4	- 1.3
Gas		4 (45%)	7 (61%)	11 (74%)	15 (82%)		7.3	5.1	3.5	5.2
Hydro										
NRE		0.3 (3%)	0.3 (2%)	0.3 (2%)	0.3 (2%)		0.7	1.1	1.0	0.9
Nuclear										

ENERGY INTENSITY & CO₂ EMISSIONS

	1980	2002	2010	2020	2030	Growth Rates (% per annum)				
						80-02	02-10	10-20	20-30	02-30
Energy Intensity (toe per US\$ million GDP)	237	194	182	166	149	- 0.9	- 0.8	- 0.9	- 1.1	- 0.9
Industry (toe per US\$ million GDP in Industry)	39	137	156	155	150	5.9	1.6	0.0	- 0.4	0.3
Commercial (toe per US\$ million GDP in Services)	12	13	14	15	15	0.7	0.5	0.4	0.2	0.4
Energy Intensity (kgoe per capita)	2 511	5 097	6 121	7 028	7 649	3.3	2.3	1.4	0.9	1.5
Industry	202	1 277	1 965	2 554	2 943	8.7	5.5	2.7	1.4	3.0
Transport	770	1 193	1 384	1 528	1 624	2.0	1.9	1.0	0.6	1.1
Residential	80	145	189	237	273	2.8	3.4	2.3	1.4	2.3
Commercial	72	234	310	426	540	5.5	3.6	3.2	2.4	3.0
CO₂ Emissions (million tonnes)	15.2	54.0	69.2	91.2	115.0	5.9	3.1	2.8	2.3	2.7
Electricity Generation	5.0	19.5	21.7	29.1	37.8	6.4	1.3	3.0	2.7	2.4
Transformation other than Electricity Generation	3.6	9.6	10.6	10.7	11.0	4.6	1.2	0.1	0.3	0.5
Industry	0.8	10.3	18.2	27.6	37.0	12.1	7.4	4.3	3.0	4.7
Transport	5.5	14.5	18.5	23.5	28.9	4.5	3.1	2.4	2.1	2.5
Residential	0.3	0.1	0.2	0.3	0.3	- 4.3	9.1	4.1		4.0
Commercial										
CO₂ Emissions Intensity										
CO ₂ emissions per GDP (tonnes per US\$ million)	592.9	492.7	448.4	406.9	366.9	- 0.8	- 1.2	- 1.0	- 1.0	- 1.0
CO ₂ emissions per capita (tonnes per capita)	6.3	12.9	15.1	17.3	18.8	3.3	1.9	1.4	0.9	1.4

ENERGY INVESTMENT REQUIREMENTS

(Cumulative from 2003 -)	2010	2020	2030
Total (2000 US\$ billion)	9.2 - 12.7	19.8 - 27.2	30.5 - 42.2
Coal Production & Transportation			
Oil & Gas Production & Processing	2.83 - 4.09	8.43 - 12.22	14.66 - 21.23
Oil & Gas International Trade	3.11 - 4.37	4.68 - 6.60	5.47 - 8.05
Oil & Gas Domestic Pipeline	1.11 - 1.59	1.11 - 1.59	1.12 - 1.60
Electricity Generation & Transmission	2.14 - 2.62	5.55 - 6.77	9.28 - 11.34