

LATIN AMERICA
ENERGY BALANCE TABLES

2002									Mtoe
	Coal	Oil	Gas	Hydro	Nuclear	NRE	Electricity	Heat	Total
Production	5.6	180.1	34.7	5.7	2.5	18.8			247.4
Net Imports	6.9	- 78.9	5.3						- 66.7
TPED	11.3	101.6	40.0	5.7	2.5	18.8			180.0
Electricity and Heat Generation	- 9.1	- 19.5	- 19.1	- 5.7	- 2.5	- 5.3	21.4		- 39.8
Petroleum Refineries		- 12.6	- 0.4				- 0.3		- 13.3
Others			- 9.5			- 0.2			- 9.7
TFED	2.2	74.9	10.6			13.3	19.6		120.7
Industry	2.2	15.9	9.3			2.4	12.9		42.7
Transport		47.4					0.1		47.6
Residential		9.4	0.9			10.9	4.3		25.5
Commercial		2.2	0.3			0.1	2.3		4.9

2010									Mtoe
	Coal	Oil	Gas	Hydro	Nuclear	NRE	Electricity	Heat	Total
Production	6.3	167.1	40.8	6.6	2.6	20.4			243.8
Net Imports	8.3	- 44.5	18.8				0.6		- 16.9
TPED	14.6	122.6	59.6	6.6	2.6	20.4	0.6		226.9
Electricity and Heat Generation	- 12.1	- 16.0	- 35.1	- 6.6	- 2.6	- 6.6	28.4		- 50.7
Petroleum Refineries		- 13.8	- 0.5				- 0.4		- 14.7
Others			- 8.5			- 0.2			- 8.7
TFED	2.4	92.8	15.6			13.5	28.6		152.9
Industry	2.4	19.1	13.0			2.4	19.0		56.0
Transport		60.5	0.1				0.1		60.7
Residential		10.5	1.8			11.0	6.1		29.5
Commercial		2.6	0.6			0.1	3.3		6.6

2020									Mtoe
	Coal	Oil	Gas	Hydro	Nuclear	NRE	Electricity	Heat	Total
Production	7.3	189.7	47.7	8.1	2.7	21.2			276.8
Net Imports	18.2	- 40.9	38.7				0.1		16.1
TPED	25.5	148.8	86.4	8.1	2.7	21.2	0.1		292.9
Electricity and Heat Generation	- 22.5	- 13.6	- 55.2	- 8.1	- 2.7	- 7.4	41.5		- 68.0
Petroleum Refineries		- 12.1	- 0.5				- 0.4		- 13.0
Others			- 9.1			- 0.2			- 9.3
TFED	3.0	123.1	21.6			13.6	41.2		202.6
Industry	3.0	24.5	17.0			2.9	27.6		75.0
Transport		83.4	0.2				0.1		83.8
Residential		12.0	3.2			10.6	8.8		34.6
Commercial		3.1	1.2			0.1	4.8		9.2

2030									Mtoe
	Coal	Oil	Gas	Hydro	Nuclear	NRE	Electricity	Heat	Total
Production	8.5	213.9	72.0	9.2	2.7	21.9			328.2
Net Imports	30.5	- 30.2	43.2				0.8		44.2
TPED	39.0	183.6	115.2	9.2	2.7	21.9	0.8		372.4
Electricity and Heat Generation	- 35.0	- 11.2	- 77.8	- 9.2	- 2.7	- 8.0	56.9		- 87.0
Petroleum Refineries		- 11.6	- 0.5				- 0.4		- 12.5
Others			- 9.8			- 0.2			- 10.0
TFED	4.0	160.9	27.1			13.7	57.3		262.9
Industry	4.0	30.0	21.0			3.5	38.6		97.1
Transport		113.5	0.4				0.1		114.0
Residential		13.9	4.1			10.0	11.9		39.9
Commercial		3.5	1.6			0.2	6.7		12.0

LATIN AMERICA
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)	725	1 269	1 736	2 654	3 954	2.6	4.0	4.3	4.1	4.1
Population (million)	95	143	159	175	189	1.9	1.3	1.0	0.8	1.0
GDP per capita (2000 PPP US\$)	7 602	8 852	10 912	15 155	20 911	0.7	2.6	3.3	3.3	3.1
GDP in Services (2000 PPP US\$ billion)	496	789	1 097	1 681	2 521	2.1	4.2	4.4	4.1	4.2
GDP in Industry (2000 PPP US\$ billion)	210	342	459	693	1 028	2.3	3.7	4.2	4.0	4.0
Urbanisation level (%)	68	76	78	82	84	0.5	0.4	0.4	0.3	0.4

ENERGY PROJECTIONS

	Mtoe					Growth rate (% per annum)				
	1980	2002	2010	2020	2030	80-02	02-10	10-20	20-30	02-30
Production	167.9	247.4	243.8	276.8	328.2	1.8	- 0.2	1.3	1.7	1.0
Coal	2.5 (2%)	5.6 (2%)	6.3 (3%)	7.3 (3%)	8.5 (3%)	3.6	1.5	1.5	1.5	1.5
Oil	127.0 (76%)	180.1 (73%)	167.1 (69%)	189.7 (69%)	213.9 (65%)	1.6	- 0.9	1.3	1.2	0.6
Gas	22.7 (14%)	34.7 (14%)	40.8 (17%)	47.7 (17%)	72.0 (22%)	1.9	2.1	1.6	4.2	2.6
Hydro	2.7 (2%)	5.7 (2%)	6.6 (3%)	8.1 (3%)	9.2 (3%)	3.4	1.8	2.1	1.3	1.7
NRE	12.9 (8%)	18.8 (8%)	20.4 (8%)	21.2 (8%)	21.9 (7%)	1.7	1.0	0.4	0.3	0.5
Nuclear		2.5 (1%)	2.6 (1%)	2.7 (1%)	2.7 (1%)		0.3	0.3	0.2	0.2
Net Imports	- 48.2	- 66.7	- 16.9	16.1	44.2	1.5	- 15.8		10.6	
Coal	1.3	6.9	8.3	18.2	30.5	7.7	2.3	8.2	5.3	5.5
Oil	- 47.2	- 78.9	- 44.5	- 40.9	- 30.2	2.4	- 6.9	- 0.8	- 3.0	- 3.4
Gas	- 2.4	5.3	18.8	38.7	43.2		17.1	7.5	1.1	7.8
Electricity	0.1		0.6	0.1	0.8			- 13.0	18.5	
Total Primary Energy Demand	118.4	180.0	226.9	292.9	372.4	1.9	2.9	2.6	2.4	2.6
Coal	3.7 (3%)	11.3 (6%)	14.6 (6%)	25.5 (9%)	39.0 (10%)	5.2	3.2	5.8	4.3	4.5
Oil	78.7 (66%)	101.6 (56%)	122.6 (54%)	148.8 (51%)	183.6 (49%)	1.2	2.4	2.0	2.1	2.1
Gas	20.3 (17%)	40.0 (22%)	59.6 (26%)	86.4 (30%)	115.2 (31%)	3.1	5.1	3.8	2.9	3.8
Hydro	2.7 (2%)	5.7 (3%)	6.6 (3%)	8.1 (3%)	9.2 (2%)	3.4	1.8	2.1	1.3	1.7
NRE	12.9 (11%)	18.8 (10%)	20.4 (9%)	21.2 (7%)	21.9 (6%)	1.7	1.0	0.4	0.3	0.5
Nuclear		2.5 (1%)	2.6 (1%)	2.7 (1%)	2.7 (1%)		0.3	0.3	0.2	0.2
Input for Electricity and Heat Generation	- 18.2	- 61.2	- 79.0	- 109.4	- 143.9	5.7	3.2	3.3	2.8	3.1
Coal	- 0.5 (3%)	- 9.1 (15%)	- 12.1 (15%)	- 22.5 (21%)	- 35.0 (24%)	14.4	3.7	6.4	4.5	4.9
Oil	- 11.2 (62%)	- 19.5 (32%)	- 16.0 (20%)	- 13.6 (12%)	- 11.2 (8%)	2.5	- 2.4	- 1.6	- 2.0	- 2.0
Gas	- 2.9 (16%)	- 19.1 (31%)	- 35.1 (44%)	- 55.2 (50%)	- 77.8 (54%)	8.9	7.9	4.6	3.5	5.1
Hydro	- 2.7 (15%)	- 5.7 (9%)	- 6.6 (8%)	- 8.1 (7%)	- 9.2 (6%)	3.4	1.8	2.1	1.3	1.7
NRE	- 0.9 (5%)	- 5.3 (9%)	- 6.6 (8%)	- 7.4 (7%)	- 8.0 (6%)	8.7	2.8	1.1	0.8	1.5
Nuclear		- 2.5 (4%)	- 2.6 (3%)	- 2.7 (2%)	- 2.7 (2%)		0.3	0.3	0.2	0.2
Other Transformation	- 15.0	- 23.0	- 23.4	- 22.3	- 22.5	2.0	0.2	- 0.5	0.1	- 0.1
Coal	- 0.1 (0%)					- 6.1				
Oil	- 10.7 (71%)	- 12.6 (55%)	- 13.8 (59%)	- 12.1 (54%)	- 11.6 (52%)	0.8	1.2	- 1.3	- 0.4	- 0.3
Gas	- 4.2 (28%)	- 9.9 (43%)	- 9.0 (38%)	- 9.6 (43%)	- 10.3 (46%)	3.9	- 1.2	0.7	0.7	0.1
NRE		- 0.2 (1%)	- 0.2 (1%)	- 0.2 (1%)	- 0.2 (1%)					
Electricity		- 0.3 (1%)	- 0.4 (2%)	- 0.4 (2%)	- 0.4 (2%)	12.6	2.4	- 0.1	- 0.5	0.5
Heat										

LATIN AMERICA

	Mtoe					Growth rate (% per annum)				
	1980	2002	2010	2020	2030	80-02	02-10	10-20	20-30	02-30
Total Final Energy Demand	70.1	120.7	152.9	202.6	262.9	2.5	3.0	2.9	2.6	2.8
Coal	2.2 (3%)	2.2 (2%)	2.4 (2%)	3.0 (2%)	4.0 (2%)		1.1	2.4	2.7	2.1
Oil	36.9 (53%)	74.9 (62%)	92.8 (61%)	123.1 (61%)	160.9 (61%)	3.3	2.7	2.9	2.7	2.8
Gas	13.1 (19%)	10.6 (9%)	15.6 (10%)	21.6 (11%)	27.1 (10%)	-0.9	4.9	3.3	2.3	3.4
NRE	11.9 (17%)	13.3 (11%)	13.5 (9%)	13.6 (7%)	13.7 (5%)	0.5	0.2	0.1	0.04	0.1
Electricity	6.1 (9%)	19.6 (16%)	28.6 (19%)	41.2 (20%)	57.3 (22%)	5.5	4.8	3.7	3.3	3.9
Heat										
Industry	33.5	42.7	56.0	75.0	97.1	1.1	3.4	3.0	2.6	3.0
Coal	2.1 (6%)	2.2 (5%)	2.4 (4%)	3.0 (4%)	4.0 (4%)	0.2	1.1	2.4	2.7	2.1
Oil	12.5 (37%)	15.9 (37%)	19.1 (34%)	24.5 (33%)	30.0 (31%)	1.1	2.3	2.5	2.0	2.3
Gas	12.4 (37%)	9.3 (22%)	13.0 (23%)	17.0 (23%)	21.0 (22%)	-1.3	4.2	2.7	2.1	2.9
NRE	2.5 (8%)	2.4 (6%)	2.4 (4%)	2.9 (4%)	3.5 (4%)	-0.3	0.1	1.8	2.0	1.4
Electricity	4.0 (12%)	12.9 (30%)	19.0 (34%)	27.6 (37%)	38.6 (40%)	5.5	5.0	3.8	3.4	4.0
Heat										
Transport	21.0	47.6	60.7	83.8	114.0	3.8	3.1	3.3	3.1	3.2
Coal	0.1 (0%)									
Oil	20.9 (99%)	47.4 (100%)	60.5 (100%)	83.4 (100%)	113.5 (100%)	3.8	3.1	3.3	3.1	3.2
Gas			0.1 (0%)	0.2 (0%)	0.4 (0%)		11.7	8.5	4.8	8.1
NRE										
Electricity	0.1 (0%)	0.1 (0%)	0.1 (0%)	0.1 (0%)	0.1 (0%)	3.5	1.3	0.7	0.4	0.8
Heat										
Residential	13.8	25.5	29.5	34.6	39.9	2.8	1.8	1.6	1.4	1.6
Coal										
Oil	2.6 (19%)	9.4 (37%)	10.5 (36%)	12.0 (35%)	13.9 (35%)	6.0	1.4	1.3	1.4	1.4
Gas	0.6 (5%)	0.9 (4%)	1.8 (6%)	3.2 (9%)	4.1 (10%)	1.8	8.8	5.8	2.6	5.5
NRE	9.3 (68%)	10.9 (43%)	11.0 (37%)	10.6 (31%)	10.0 (25%)	0.7	0.2	-0.4	-0.6	-0.3
Electricity	1.2 (8%)	4.3 (17%)	6.1 (21%)	8.8 (25%)	11.9 (30%)	6.1	4.5	3.6	3.1	3.7
Heat										
Commercial	1.8	4.9	6.6	9.2	12.0	4.5	4.0	3.3	2.7	3.3
Coal										
Oil	0.9 (49%)	2.2 (45%)	2.6 (40%)	3.1 (34%)	3.5 (29%)	4.0	2.5	1.7	1.3	1.8
Gas	0.03 (2%)	0.3 (6%)	0.6 (9%)	1.2 (13%)	1.6 (13%)	10.7	9.4	6.4	3.3	6.1
NRE		0.1 (1%)	0.1 (1%)	0.1 (1%)	0.2 (2%)		5.0	5.0	5.0	5.0
Electricity	0.9 (49%)	2.3 (48%)	3.3 (50%)	4.8 (52%)	6.7 (55%)	4.4	4.4	3.8	3.4	3.8
Heat										

Note: Net imports include intraregional trade

ENERGY SECURITY

	1980	2002	2010	2020	2030
Diversity of Primary Energy Demand (Rated between 1 and 100)	54	68	69	72	73
Net Energy Import Ratio (%)	-40	-37	-7	5	12
Net Oil Import Dependency (%)	-60	-78	-36	-28	-16

LATIN AMERICA
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)	89	283	377	545	743	5.4	3.6	3.8	3.2	3.5
Coal	2 (2%)	35 (12%)	48 (13%)	91 (17%)	145 (20%)	14.2	4.0	6.6	4.7	5.2
Oil	43 (49%)	82 (29%)	69 (18%)	60 (11%)	51 (7%)	3.0	-2.2	-1.4	-1.7	-1.7
Gas	11 (12%)	82 (29%)	161 (43%)	272 (50%)	410 (55%)	9.7	8.8	5.4	4.2	5.9
Hydro	32 (36%)	66 (23%)	77 (20%)	94 (17%)	107 (14%)	3.4	1.8	2.1	1.3	1.7
NRE	1 (1%)	8 (3%)	12 (3%)	16 (3%)	19 (3%)	9.2	6.1	2.9	1.7	3.3
Nuclear		10 (3%)	10 (3%)	10 (2%)	10 (1%)		0.3	0.2	0.2	0.2
Total Installed Generation Capacity (GW)	21	58	78	112	138	4.8	3.7	3.7	2.2	3.1
Thermal	11 (54%)	39 (67%)	55 (70%)	83 (74%)	107 (77%)	5.8	4.4	4.2	2.5	3.7
Coal		6 (10%)	8 (10%)	16 (14%)	24 (17%)		3.8	7.0	4.0	5.0
Oil		19 (32%)	19 (24%)	17 (16%)	14 (10%)		-0.2	-0.6	-2.1	-1.0
Gas		14 (24%)	28 (36%)	50 (45%)	69 (50%)		9.2	5.8	3.3	5.9
Hydro	9 (45%)	17 (29%)	19 (25%)	24 (21%)	26 (19%)	2.7	1.8	2.0	0.9	1.5
NRE	0.2 (1%)	1 (2%)	2 (3%)	4 (3%)	4 (3%)	8.9	7.5	4.6	1.7	4.4
Nuclear		1 (2%)	1 (2%)	1 (1%)	1 (1%)					

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)	163	142	131	110	94	-0.6	-1.0	-1.7	-1.6	-1.5
Industry (toe per US\$ million GDP in Industry)	160	125	122	108	94	-1.1	-0.3	-1.2	-1.4	-1.0
Commercial (toe per US\$ million GDP in Services)	4	6	6	5	5	2.3	-0.2	-1.0	-1.3	-0.9
Energy Intensity (kgoe per capita)	1 242	1 255	1 427	1 673	1 970	0.0	1.6	1.6	1.6	1.6
Industry	352	298	352	429	513	-0.8	2.1	2.0	1.8	2.0
Transport	220	332	382	479	603	1.9	1.8	2.3	2.3	2.2
Residential	144	178	186	198	211	1.0	0.5	0.6	0.6	0.6
Commercial	19	34	42	52	64	2.6	2.6	2.3	1.9	2.3
CO₂ Emissions (million tonnes)	216	450	558	747	973	3.4	2.7	3.0	2.7	2.8
Electricity Generation	41	139	178	258	352	5.8	3.1	3.8	3.2	3.4
Transformation other than Electricity Generation	29	51	55	57	60	2.7	0.8	0.4	0.6	0.6
Industry	73	79	98	127	156	0.3	2.7	2.6	2.1	2.5
Transport	61	141	180	248	337	3.9	3.1	3.3	3.1	3.2
Residential	9	33	38	46	53	6.0	1.9	1.8	1.5	1.7
Commercial	3	7	9	12	14	3.1	3.6	2.6	2.0	2.6
CO₂ Emissions Intensity										
CO ₂ emissions per GDP (tonnes per US\$ million)	298	355	321	281	246	0.8	-1.2	-1.3	-1.3	-1.3
CO ₂ emissions per capita (tonnes per capita)	2.3	3.1	3.5	4.3	5.1	1.5	1.4	2.0	1.9	1.8

ENERGY INVESTMENT REQUIREMENTS

(Cumulative from 2003 -)	2010	2020	2030
Total (2000 US\$ billion)	68 - 87	166 - 215	265 - 349
Coal Production & Transportation	0.32 - 0.42	0.51 - 0.68	0.72 - 0.98
Oil & Gas Production & Processing	14 - 19	36 - 51	60 - 87
Oil & Gas International Trade	9 - 11	16 - 20	20 - 24
Oil & Gas Domestic Pipeline	9 - 13	21 - 30	36 - 52
Electricity Generation & Transmission	35 - 44	92 - 114	148 - 184