

Figures

3.1	Timeline for yardstick competition game	39
3.2	Free disposal hull frontier	44
3.3	Convex DEA frontier	45
3.4	DEA frontiers with non-increasing returns and constant returns	46
3.5	Non-convex production possibility set T^N	47
3.6	Convex production possibility set T^C	48
8.1	Individual and cluster development	103
8.2	Possible cluster developments in SNS	104
8.3	Possible cluster developments in CNS	106
8.4	Possible cluster developments in NNS	107
8.5	Possible cluster developments in WOS	108
8.6	Post-tax NPV for three-field cluster (oil price \$18/bbl)	111
8.7	Post-tax NPV for three-field cluster (oil price \$12/bbl)	111
8.8	Post-tax NPV for three-field cluster (oil price \$24/bbl)	112
8.9	Post-tax NPV for three-field cluster field devex + \$1/bbl (oil price \$18/bbl)	113
8.10	Post-tax NPV for five-field cluster (oil price \$18/bbl)	113
8.11	Post-tax NPV for five-field cluster (oil price \$12/bbl)	114
8.12	Post-tax NPV for five-field cluster (oil price \$24/bbl)	114
8.13	Post-tax NPV for five-field cluster field devex + \$1/bbl (oil price \$18/bbl)	115
8.14	Post-tax NPV at 10 per cent for five-field cluster with delays for 35 mmbbl field (oil price \$18/bbl)	116
8.15	Post-tax NPV at 10 per cent for five-field cluster with delays for 35 mmbbl field (oil price \$12/bbl)	117
8.16	Post-tax NPV at 10 per cent for five-field cluster with delays for 35 mmbbl field (oil price \$24/bbl)	117
8.17	Post-tax NPV at 10 per cent for five-field cluster with delays for 35 mmbbl devex + \$1/bbl (oil price \$18/bbl)	118
8.18	Three-field cluster fields at 10 per cent (mean oil price \$18 p/b)	121
8.19	Three-field cluster fields at 15 per cent (mean oil price \$18 p/b)	122
8.20	Three-field cluster development (mean oil price \$18 p/b)	124

8.21	Five-field cluster fields at 10 per cent (mean oil price \$18 p/b)	126
8.22	Five-field cluster fields at 15 per cent (mean oil price \$18 p/b)	128
8.23	Five-field cluster development (mean oil price \$18 p/b)	131
9.1	Possible biases in estimated price elasticities of energy demand	145
9.2	Possible biases in estimated income elasticities of energy demand	147
9.3	UK whole economy aggregate energy demand	160
9.4	UK transportation oil demand	167
10.1a	UK: CO ₂ emissions per capita, 1700–1998	180
10.1b	UK: CO ₂ emissions and income, 1870–1998	181
10.1c	UK: primary energy use, 1700–1998	181
10.2a	USA: CO ₂ emissions and income, 1870–1998	183
10.2b	USA: primary energy use, 1870–1998	183
10.3a	Germany: CO ₂ emissions and income, 1870–1998	184
10.3b	Germany: primary energy use, 1870–1998	184
10.4a	Japan: CO ₂ emissions and income, 1870–1998	185
10.4b	Japan: primary energy use, 1870–1998	186
10.5	Carbon intensities of four countries, 1870–1998	187
10.6	Primary energy intensities of four countries, 1870–1998	188
10.7	GDP per capita of four countries, 1870–1998	188
10.8	Population of four countries, 1870–1998	189
10.9a	China: CO ₂ emissions and income, 1870–1998	190
10.9b	China: primary energy use, 1870–1998	190
10.10a	India: CO ₂ emissions and income, 1870–1998	191
10.10b	India: primary energy use, 1870–1998	191
10.11a	Indonesia: CO ₂ emissions and income, 1870–1998	192
10.11b	Indonesia: primary energy use, 1870–1998	192
10.12	Carbon intensities of three developing countries, 1870–1998	194
10.13	Primary energy intensities of three developing countries, 1870–1998	195
10.14	GDP per capita of three developing countries, 1870–1998	195
10.15	Population of three developing countries, 1870–1998	196
10.16	CO ₂ emissions per capita of seven countries, 1870–1998	198
11.1	Emissions production and targets	213