

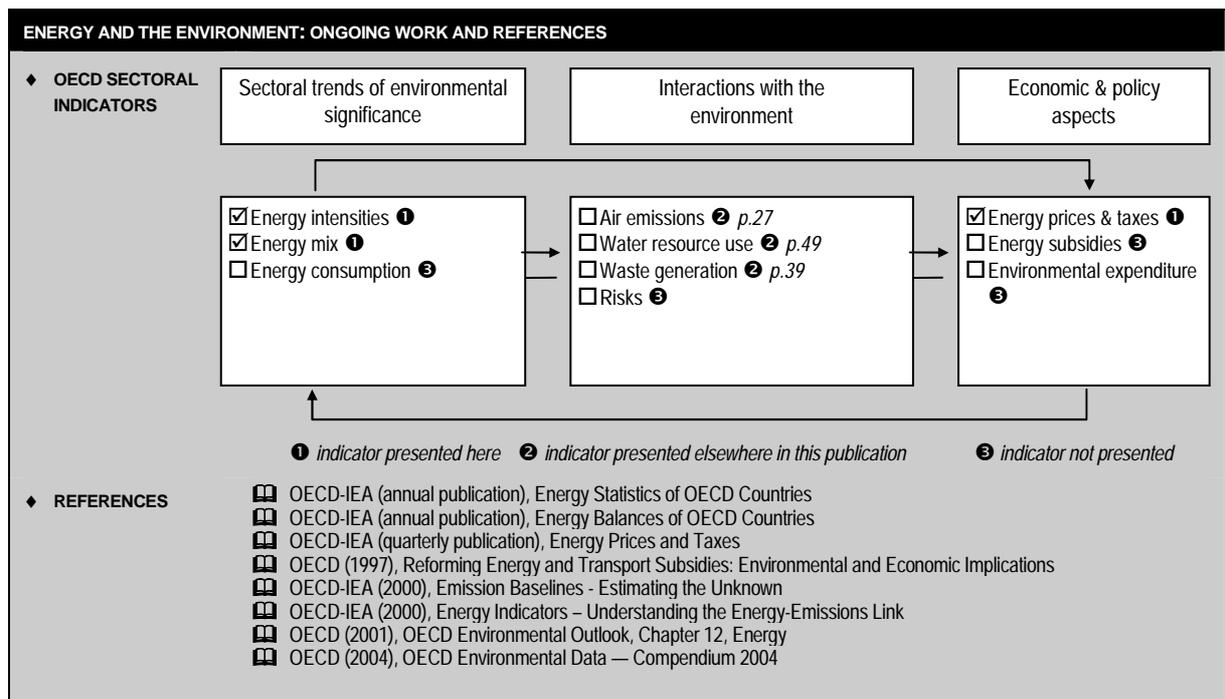
## ENERGY

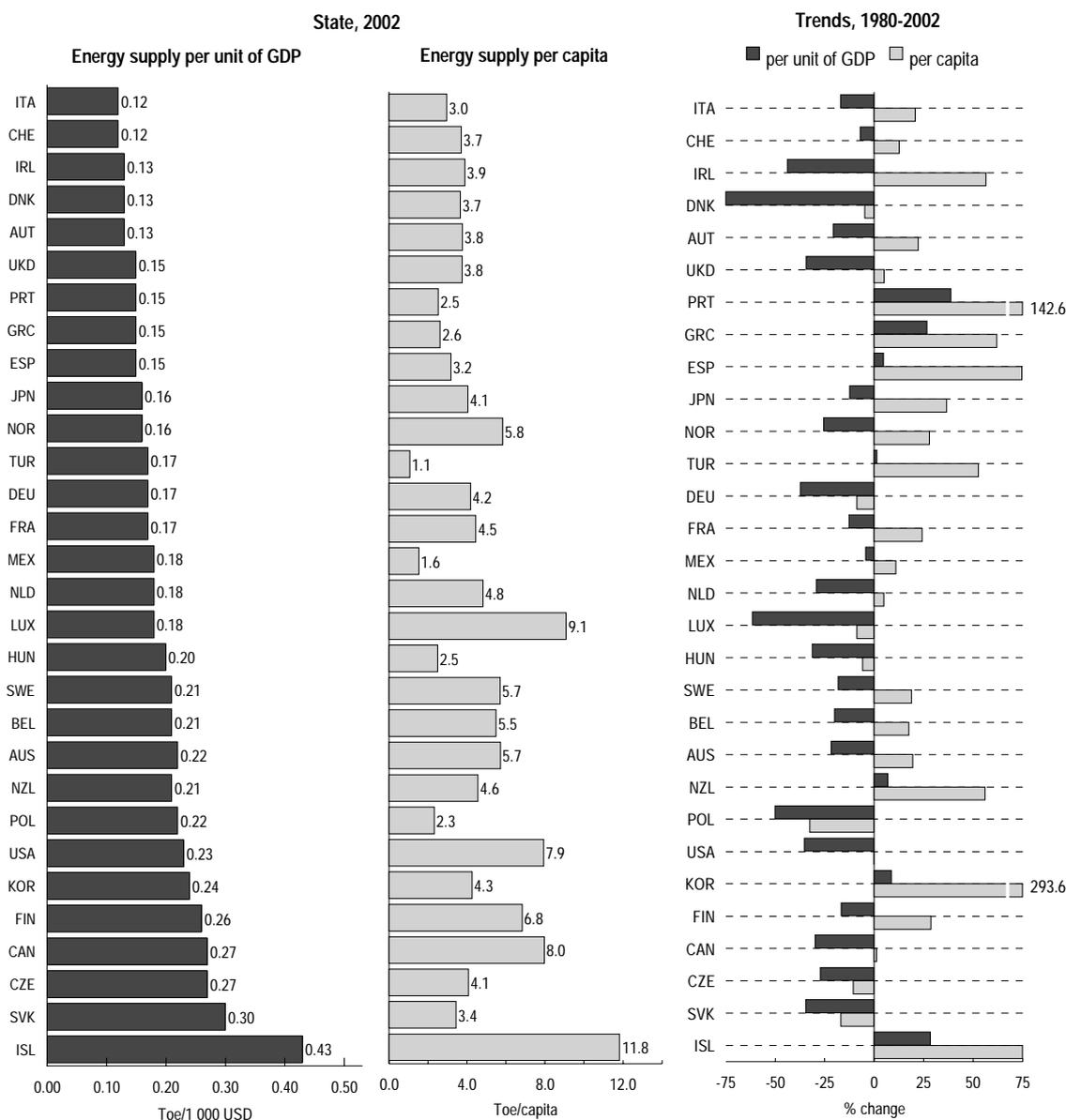
Energy is a major component of OECD economies, both as a sector in itself and as a factor input to all other economic activities. Energy production and use have environmental effects that differ greatly by energy source. Fuel combustion is the main source of local and regional air pollution and greenhouse gas emissions; other effects involve water quality, land use, risks related to the nuclear fuel cycle and risks related to the extraction, transport and use of fossil fuels.

The structure of a country's energy supply and the intensity of its energy use, along with changes over time, are key determinants of environmental performance and sustainability of economic development. The supply structure varies considerably among countries. It is influenced by demand from industry, transport and households, by national energy policies and by national and international energy prices. Environmental performance can be assessed against domestic objectives such as energy efficiency targets, and targets concerning the share of renewable energy sources; and against international environmental commitments that have direct implications for domestic energy policies and strategies (e.g. the United Nations Framework Convention on Climate Change (1992), Convention on Long-Range Transboundary Air Pollution (1979)). The main challenge is to further de-couple energy use and related air emissions from economic growth, through improvements in energy efficiency and through the development and use of cleaner fuels may be necessary.

Indicators presented here relate to:

- ◆ trends in energy intensities. Energy intensities, expressed as energy supply per unit of GDP and per capita, reflect, at least partly, changes in energy efficiency and efforts to reduce atmospheric emissions. They also reflect structural and climatic factors.
- ◆ energy mix, i.e. the structure of and changes in energy supply, in terms of primary energy source as a percentage of total energy supply. This is closely related to consumption and production patterns and to environmental effects.
- ◆ energy prices for industry and households, with changes in real energy end-use prices.



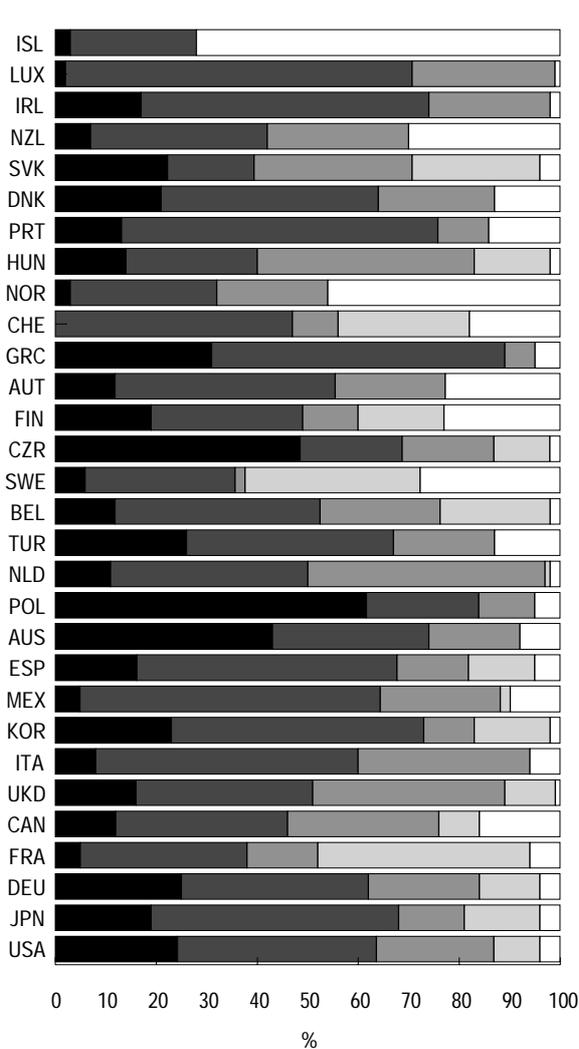
ENERGY INTENSITIES **23****STATE AND TRENDS  
SUMMARY**

During the 1980s, energy intensity per unit of GDP generally decreased for OECD countries overall as a consequence of economic structural changes and energy conservation measures. In the 1990s, energy intensity did not further improve in most countries, due to decreasing prices for energy resources (oil, gas, etc.). Progress in per capita terms has been much slower, reflecting an overall increase in energy supply and energy demands for transport activities.

Variations among OECD countries are wide (from 1 to 4 per unit of GDP, from 1 to 11 per capita) and depend on national economic structure, geography (e.g. climate) energy policies and prices, and countries' endowment in different types of energy resources.

## 24 ENERGY MIX

Supply by source, 2002



Solid fuel
  Oil
  Gas
  Nuclear
  Other

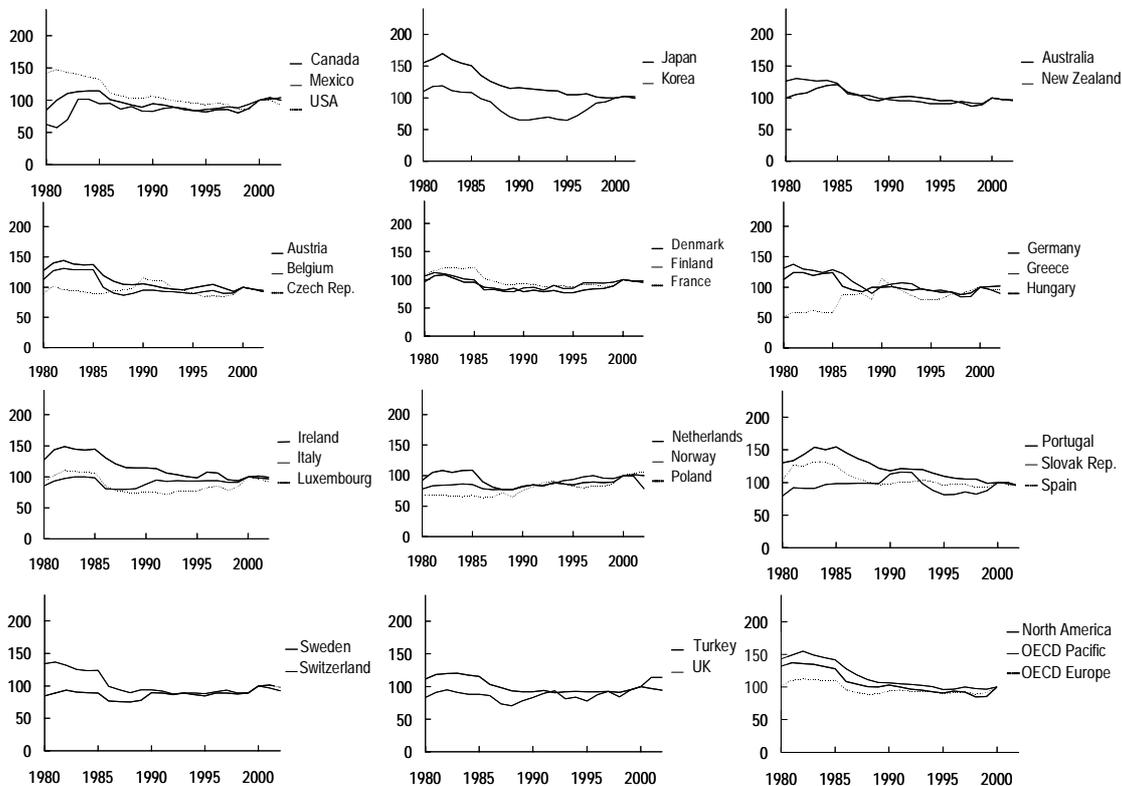
	Primary energy supply						
	Total (Mtoe)		Structure by source, share of total (%)				
	2002	% change since 1980	Solid fuel	Oil	Gas	Nuclear	Other
Iceland	3	122	3	25	-	-	72
Luxembourg	4	11	2	68	28	-	1
Ireland	15	80	17	57	24	-	2
New Zealand	18	96	7	35	28	-	30
Slovak Republic	19	-10	22	17	31	25	4
Denmark	20	0	21	43	23	-	13
Portugal	26	156	13	62	10	-	14
Hungary	25	-11	14	26	43	15	2
Norway	27	42	3	29	22	-	46
Switzerland	27	30	-	47	9	26	18
Greece	29	85	31	58	6	-	5
Austria	30	31	12	44	22	-	23
Finland	36	40	19	30	11	17	23
Czech Republic	42	-12	48	20	18	11	2
Sweden	51	28	6	30	2	35	28
Belgium	57	23	12	41	24	22	2
Turkey	75	139	26	41	20	-	13
Netherlands	78	20	11	39	47	1	2
Poland	89	-28	61	22	11	-	5
Australia	113	60	43	31	18	-	8
Spain	132	92	16	51	14	13	5
Mexico	157	62	5	60	24	2	10
Korea	203	392	23	50	10	15	2
Italy	173	24	8	52	34	-	6
UK	227	13	16	35	38	10	1
Canada	250	30	12	34	30	8	16
France	266	37	5	33	14	42	6
Germany	346	-4	25	37	22	12	4
Japan	517	49	19	49	13	15	4
USA	2290	26	24	39	23	9	4
OECD	5346	31	21	41	22	11	6

STATE AND TRENDS  
SUMMARY

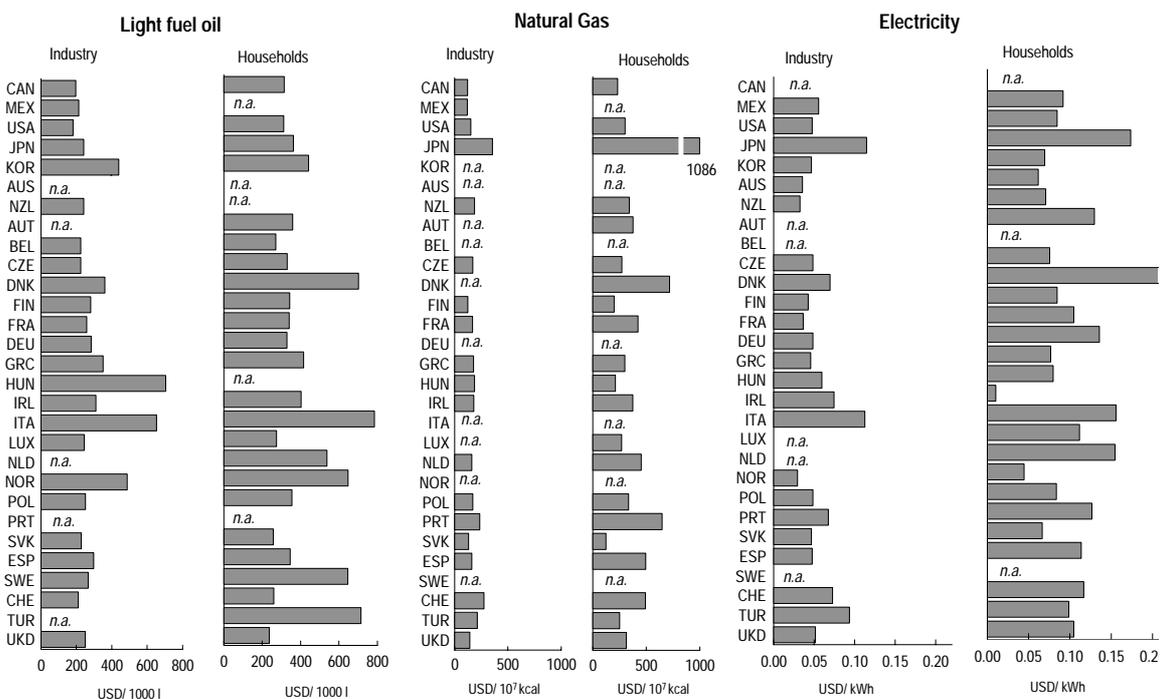
The energy supply mix has a major effect on environmental performance because the environmental impact of each energy source differs greatly.

During the 1980s and early 1990s, growth in total primary energy supply was accompanied by changes in the fuel mix: the shares of solid fuels and oil fell, while those of gas and other sources rose. This trend is particularly visible in OECD Europe. The rates of change, however, vary widely by country.

Trends in real energy end-use prices (Index 2000 = 100)



Selected energy prices for industry and households, 2002



## 25 ENERGY PRICES

	Industry						Households						Real energy end-use prices Change (%) since 1980	
	Oil		Natural gas		Electricity		Oil		Natural gas		Electricity			
	Price USD/1 000 2002	Tax (%) 2002	Price USD/10 <sup>3</sup> kcal 2002	Tax (%) 2002	Price USD/kWh 2002	Tax (%) 2002	Price USD/1 000 2002	Tax (%) 2002	Price USD/10 <sup>3</sup> kcal 2002	Tax (%) 2002	Price USD/kWh 2002	Tax (%) 2002		
Canada	19 <sup>c</sup>	..	125	..	..	..	316	10	236	..	..	..	18.7	
Mexico	21 <sup>c</sup>	-	123	-	0.056	-	..	..	..	..	0.092	11	66.9	
USA	18 <sup>c</sup>	5	154	..	0.048	..	314	6	304	..	0.085	..	-35.0	
Japan	24 <sup>c</sup>	5	357	5	0.115	9	364	5	1086	5	0.174	6	-35.8	
Korea	44 <sup>c</sup>	33	..	..	0.047	..	443	33	..	..	0.070	..	-7.6	
Australia	..	..	..	..	0.036	..	..	..	..	..	0.062	16	-4.1	
New Zealand	24 <sup>c</sup>	-	189	5	0.033	-	..	..	344	14	0.071	14	-23.4	
Austria	..	..	..	..	..	..	361	37	379	27	0.130	31	-25.8	
Belgium	22 <sup>c</sup>	6	..	..	..	..	273	22	..	..	..	..	-18.3	
Czech Republic	22 <sup>c</sup>	-	174	-	0.049	-	332	32	275	18	0.076	13	2.3	
Denmark	36 <sup>c</sup>	8	..	..	0.070	14	703	57	720	59	0.209	62	-0.7	
Finland	28 <sup>c</sup>	23	127	14	0.043	-	345	36	202	27	0.085	24	-8.0	
France	26 <sup>c</sup>	18	172	-	0.037	-	343	30	426	15	0.105	19	-13.8	
Germany	28 <sup>c</sup>	20	..	..	0.049	-	331	31	..	..	0.136	15	-9.4	
Greece	35 <sup>c</sup>	30	181	-	0.046	-	417	41	303	7	0.077	13	-31.2	
Hungary	706	45	189	-	0.060	-	x	..	215	11	0.080	13	87.8	
Ireland	312	14	184	-	0.075	-	405	22	376	11	0.011	93	-23.8	
Italy	655	58	..	..	0.113	27	786	65	c	..	0.156	32	16.0	
Luxembourg	247	2	..	..	..	..	277	12	273	6	0.112	9	-0.2	
Netherlands	..	..	164	6	c	..	539	51	457	37	0.155	45	9.1	
Norway	489	24	x	..	0.030	33	649	38	x	..	0.045	44	0.8	
Poland	254	15	173	-	0.049	-	356	29	337	18	0.084	24	53.3	
Portugal	x	x	238	-	0.068	-	x	x	651	5	0.127	8	-26.6	
Slovak Republic	230	-	133	-	0.047	-	259	11	126	9	0.067	15	18.8	
Spain	300	27	165	-	0.048	-	348	37	497	14	0.114	18	-8.0	
Sweden	269	21	..	..	..	..	648	61	..	..	..	..	17.3	
Switzerland	213	3	279	1	0.073	-	262	9	495	8	0.117	9	-31.2	
Turkey	..	..	215	16	0.094	21	717	63	255	16	0.099	20	37.2	
UK	€	252	19	146	7	0.052	-	239	24	317	5	0.105	-	-15.5

♦ See Technical Annex for data sources, notes and comments.

.. not available - nil or negligible x not applicable c: confidential

### STATE AND TRENDS SUMMARY

Energy end-use prices influence overall energy demand and the fuel mix, which in turn largely determine environmental pressures caused by energy activities. They can help internalise environmental costs. Though price elasticities vary considerably by end-use sector, historical and cross-country experience suggests that the overall price effect on energy demand is strong and that increases in energy prices have reduced energy use and hence its environmental impact.

The indicators show a general downward trend in real end-use energy prices in most OECD countries, though rates of change differ greatly among countries. Energy prices and related taxes, whether for industry or households, also vary widely among countries for all types of energy.