WATER RESOURCES

Freshwater resources are of major environmental and economic importance. Their distribution varies widely among and within countries. When consumers do not pay the full cost of water, they tend to use it inefficiently. This can result in serious problems, such as low river flows, water shortages, salinisation of freshwater bodies in coastal areas, human health problems, loss of wetlands, desertification and reduced food production. Pressures on water resources are exerted by overexploitation as well as by degradation of environmental quality. Relating resource abstraction to renewal of stocks is a central question concerning sustainable water resource management. If a significant share of a country's water comes from transboundary rivers, tensions between countries can arise, especially if water availability in the upstream country is less than in the downstream one.

Sustainable management of water resources has become a major concern in many countries: it can affect human health and the sustainability of agriculture. The efficiency of water use is key in matching supply and demand. Reducing losses, using more efficient technologies and recycling are all part of the solution, but applying the user pays principle to all types of users will be an essential element of sustainable management. Another important element is the application of an integrated approach to the management of freshwater resources by river basin. Performance can be assessed against domestic objectives and international commitments. Agenda 21, adopted at UNCED (Rio de Janeiro, 1992), explicitly considers items such as the protection and preservation of freshwater resources. This was reaffirmed at the WSSD (Johannesburg, 2002). The main challenge is to ensure a sustainable management of water resources, avoiding overexploitation and degradation, so as to maintain adequate supply of freshwater of suitable quality for human use and to support aquatic and other ecosystems.

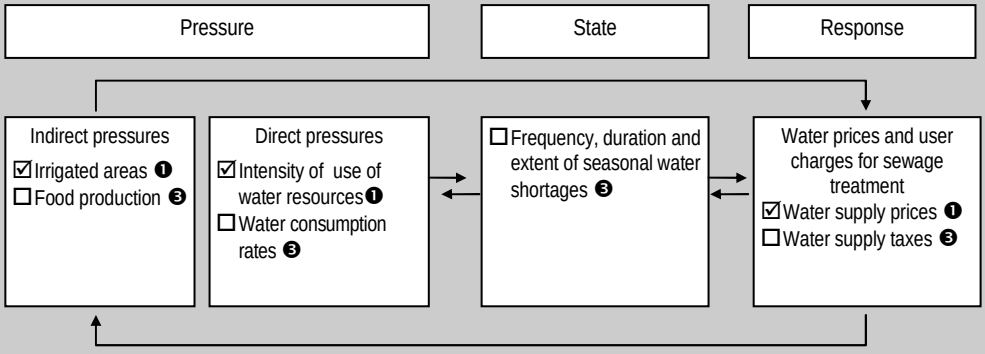
Indicators presented here relate to:

- *the intensity of use of water resources, expressed as gross abstractions as % of total available renewable freshwater resources (including inflows from neighbouring countries) as % of internal resources (i.e. precipitations - evapotranspiration) and per capita. When interpreting this indicator, it should be kept in mind that it gives insights into quantitative aspects of water resources and that a national level indicator may hide territorial differences and should be complemented with information at sub-national level.*
- *prices for public water supply to households, expressed in US dollars per cubic metre supplied. Abstractions for public water supply per capita are shown as complementary information.*

These indicators should be read in connection with other indicators of the OECD Core Set and in particular with indicators on the quality of water resources.

WATER RESOURCES: ONGOING WORK AND REFERENCES

♦ **OECD CORE SET AND RELATED INDICATORS**



❶ *indicator presented here* ❷ *indicator presented elsewhere in this publication* ❸ *indicator not presented*

♦ **REFERENCES**

🕮 OECD (1994), Natural Resource Accounts: Taking Stock in OECD Countries
🕮 OECD (1997), Water Subsidies and the Environment
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🕮 OECD (1998), Water Pricing in OECD Countries – Household Water, Agricultural Water, Industrial Water
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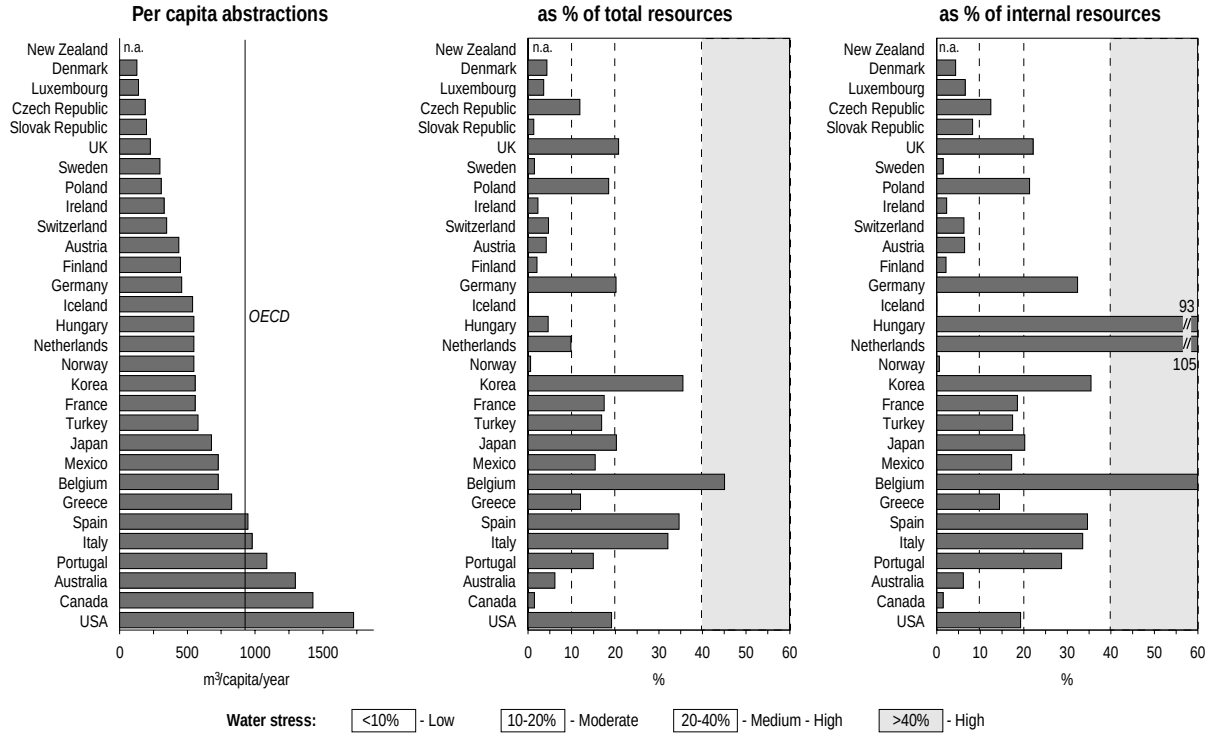
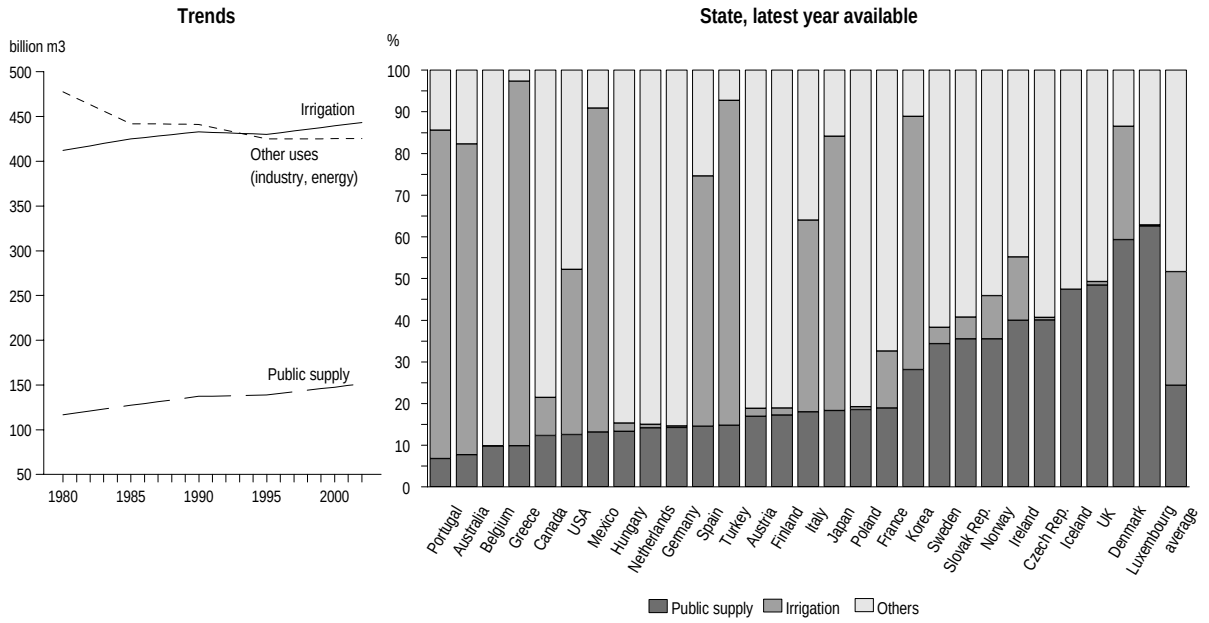
🕮 OECD (2004), OECD Environmental Data — Compendium 2004

INTENSITY OF USE OF WATER RESOURCES 11

Gross freshwater abstractions, early 2000s



Freshwater abstractions by major uses



11 INTENSITY OF USE OF WATER RESOURCES

		Intensity of use of water resources				Irrigation		
		abstractions as % of available resources		abstractions per capita		water abstractions per area of irrigated land	Irrigated areas as a share of cultivated land	
		% early 2000s	absolute change since 1980	m3/cap/year early 2000s	% change since 1980	m3/ha/year 2002	% 2002	% change since 1980
Canada	♦	1.5	0.2	1430	-6	5198	1.9	29
Mexico	♦	15.5	3.5	730	-10	8921	23.2	14
USA	♦	19.2	-1.7	1730	-24	8443	12.7	18
Japan	♦	20.3	-	680	-8	21457	54.0	-4
Korea	♦	35.6	18.1	560	67	13639	60.7	2
Australia	♦	6.2	3.4	1300	75	7545	5.0	51
New Zealand		..	..	..	..	..	53.4	32
Austria	♦	4.2	0.3	440	--	16876	0.3	11
Belgium	♦	45.1	..	730	..	11	4.3	171
Czech Republic	♦	11.9	-10.7	190	-47	471	0.7	..
Denmark	♦	4.4	-3.1	130	-44	430	19.5	33
Finland	♦	2.1	-1.2	450	-41	625	2.5	6
France	♦	17.5	..	560	..	1744	14.0	89
Germany	♦	20.2	-2.2	460	-14	336	4.0	10
Greece	♦	12.1	5.1	830	58	10297	37.1	53
Hungary	♦	4.7	0.7	550	22	498	4.8	91
Iceland	♦	0.1	-	540	15	-	-	-
Ireland	♦	2.3	0.2	330	4	..	-	-
Italy	♦	32.1	..	980	..	9582	28.5	33
Luxembourg	♦	3.7	..	140	..	11	4.3	171
Netherlands	♦	9.9	-0.3	550	-14	135	54.3	-3
Norway	♦	0.7	..	550	..	1969	14.3	58
Poland	♦	18.6	-5.4	310	-28	876	0.7	4
Portugal	♦	15.1	0.8	1090	2	13488	26.3	31
Slovak Republic		1.4	-1.4	200	-55	311	11.6	..
Spain	♦	34.7	-1.2	950	-11	6206	21.1	43
Sweden	♦	1.5	-0.8	300	-39	922	4.3	82
Switzerland	♦	4.8	-0.1	350	-13	..	5.7	-2
Turkey	♦	17.0	10.1	580	59	6219	20.1	109
UK	♦	20.8	-1.9	230	-14	624	3.0	49
OECD	♦	11.3	0.2	910	-12	8342	12.6	26

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

STATE AND TRENDS SUMMARY

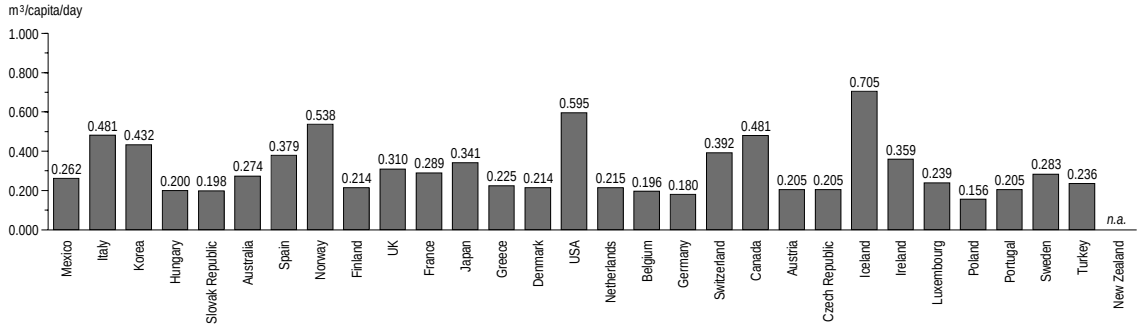
Irrigation, industry and household water use are generally pushing up demand for fresh water worldwide. It is estimated that global water demand rose by more than double the rate of population growth in the last century.

Most OECD countries increased their water abstractions over the 1970s in response to demand by the agricultural and energy sectors. Since the 1980s, some countries have stabilised their abstractions through more efficient irrigation techniques, the decline of water intensive industries (e.g. mining, steel), increased use of cleaner production technologies and reduced losses in pipe networks. Agriculture is the largest user of water worldwide. Global abstractions for irrigation have increased by over 60% since 1960. In OECD countries overall, abstractions for irrigation increased in the 1960s and the 1970s. In nine OECD countries, irrigation accounts for more than 50% of total abstractions.

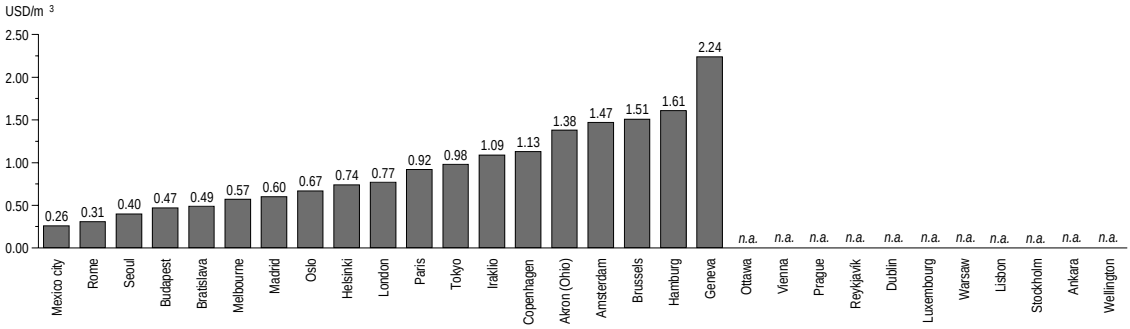
Although at national level most OECD countries show sustainable use of water resources, several countries have extensive arid or semi-arid regions where development is shaped by water scarcity. Indicators of water resource use intensity show great variations among and within individual countries. The national indicator may thus conceal unsustainable use in some regions and periods, and high dependence on water from other basins.

PUBLIC WATER SUPPLY AND PRICE 12

Abstractions for public supply per capita, early 2000s



Water prices in major selected cities, 2003



Average prices for public freshwater supply to households, selected cities, 2003

		Price, USD/m³		Price, USD/m³		Price, USD/m³		Price, USD/m³
Canada	Nat. average	0.45	Perth	0.65	Germany	Hamburg	1.61	Norway	Oslo	0.67
Mexico	Mexico city	0.26	Darwin	0.66		München	1.42		Bergen	0.74
	Monterrey	2.21	Belgium	Brussels	1.51		Düsseldorf	1.94		Trondheim	0.89
	Cancún	0.02	Antwerp	1.10		Gelsenkirche	1.98	Slovak Rep.	Bratislava	0.49
	Villahermosa	0.09	Liège	1.64	Greece	Iraklio	1.09		Košice	0.49
	La Paz	0.86	Denmark	Copenhagen	1.13		Rethymno	1.54		Prešov	0.49
USA	Akron (Ohio)	1.38	Århus	1.06	Hungary	Budapest	0.47		Žilina	0.49
Japan	Tokyo	0.98	Odense	1.05		Miskolc	0.58		Tmava	0.49
	Yokohama	1.06	Aalborg	1.19		Pécs	0.93	Spain	Madrid	0.60
	Osaka	0.86	Esbjerg	1.29	Italy	Rome	0.31		Barcelona	0.88
	Nagoya	0.95	Finland	Helsinki	0.74		Milan	0.13		Valencia	0.50
	Sapporo	1.46	Espoo	1.26			Naples	0.60		Seville	0.60
Korea	Seoul	0.40	Tampere	0.84			Turin	0.36		Bilbao	0.43
	Pusan	0.47	Vantaa	1.09			Bologna	0.81	Switzerland	Geneva	2.24
	Inchon	0.42	Turku	1.20	Netherlands		Amsterdam	1.47	UK	London	0.77
	Daegu	0.38	France	Paris	0.92		Rotterdam	1.28		Bristol	0.82
	Daejeon	0.35	Lyon	1.43			The Hague	1.56		Manchester	0.83
Australia	Sydney	0.73	Bordeaux	1.16			Utrecht	1.07		Cardiff	0.96
	Melbourne	0.57	Lille	1.03			Eindhoven	1.03		Newcastle	0.69
	Brisbane	0.73									

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

STATE AND TRENDS

Policies for pricing water supply and waste water treatment are important in matching supply and demand and improving the cost-effectiveness of water services. Prices charged to domestic and industrial users sometimes include an abstraction tax and increasingly cover full investment and operating costs. Domestic prices vary widely among and within countries. The cost of delivering clean water to urban areas depends, inter alia, on the proximity of water sources, the degree of purification needed and the settlement density of the area served.