GLOBAL INFORMATION AND DATA ON WATER RESOURCES

Bushara M. Ahmed

International Center for Water and Energy Systems, Abu Dhabi, UAE

Keywords: Renewable Energy - Hydro, Wind, Solar, Biomass, Geothermal, Ocean

Contents

- 1. Introduction
- 2. North America (USA and Canada)
- 3. West Asia
- 4. Africa
- 5. Asia and the Pacific
- 6. Europe and CIS countries
- 7. Latin America and the Caribbean
- 8. Economics of Water and Energy Technology

Bibliography and Suggestions for further study

1. Introduction

The following section presents diverse water resources data from around the world. These data provide quantitative and qualitative information on a wide variety of water demand, water and sanitation, water quality issues, and many other issues.

2. North America (USA and Canada)

	Annual internal renewable water resources		Annual withdrawals			Sectoral withdrawals (%) ^b		
	Total (km ³)	1995 Per capita (m ³)	Year of data	Percentage of water resources ^a	Per capita (m ³)	Domestic	Industry	Agriculture
Canada	2901.0	98 462	1991 ^b	2	1602	18 ^c	70 ^c	12 ^c
USA	2478.0	9413	1990	19	1870	13 ^d	45 ^d	42 ^d

^a Annual Internal Renewable Water Resources usually include river flows from other countries. ^b Data are from the early 1990s. ^c Sectoral percentages estimated for 1987. ^d Sectoral percentages date from the year of other annual withdrawal data.

 Table 1. Annual internal renewable water resources and water withdrawals. Source:

 World Resources Institute.

	Prices of water (US dollars per 1000 liters)	Average residential use (liters per person per day)		
Canada	0.29	370		
France	0.60	150		
Germany	0.94	150		
Sweden	0.56	210		
UK	0.45	220		

COMMON FUNDAMENTALS AND UNIT OPERATIONS IN THERMAL DESALINATION SYSTEMS – Vol. III – Global Information and Data on Water Resources - Bushara M. Ahmed

USA 0.30	430
----------	-----

3. West Asia

Country/ Territory	Population (millions) ^a	Conventional Water Resources (×10 ⁶ m ³)		Non-Conventional Water Resources (×10 ⁶ m ³)		
	1994	Surface water ^b	Ground water ^c	Desalination	Wastewater reuse	Total (×10 ⁶ m ³)
Bahrain	0.55	0.20	90.00	75.00	9.50	174.70
Iraq	19.09	76 880.00	1500.00	7.40	4900.00	78 387.40
Jordan	4.06	660.00	275.00	2.50	52.00	989.50
Kuwait	1.62	0.10	182.00	240.00	83.00	505.10
Lebanon	3.48	2500.00	12 000.00	1.70	83.00	14 501.70
Oman	2.05	918.00	10 500.00	32.00	25.00	11 475.00
Qatar	0.53	1.35	2 500.00	92.00	25.00	2618.35
Saudi Arabia	18.18	2230.00	84 000.00	795.00	217.00	87 242.00
Syrian Arab	13.73	22 688.00	3 000.00	2.00	50.00	25 740.00
United Arab	2.15	125.00	20 000.00	385.00	110.00	20 620.00
West Bank and	2.24	30.00	150.00	0.00	50.00	180.00
Yemen	13.47	2000.00	13 500.00	9.00	9.10	15 518.10
Total	81.15	108 032.65	147 697.00	1641.60	580.60	257 951.85

Source: United Nations Economic and Social Commission for Western Asia (ESCWA).

^a Demographic and related Socio-Economic Data Sheets for the Countries of ESCWA, No. 8, 1995.

^b The flow of the Tigris and Euphrates rivers will be reduced by upstream abstraction in Turkey.

^c Shallow aquifer ground-water reserve with varying water quality.

Table 3. Water resources.

Country/townstand	Sectora	Total demand		
Country/territory	Domestic	Agriculture	Industrial	$(\times 10^6 \text{ m}^3)$
Bahrain	86	120	17	223
Iraq	3800	40 000	5600	49 400
Jordan	190	650	43	883
Kuwait	295	80	8	383
Lebanon	310	750	60	1120
Oman	81	1150	5	1236
Qatar	76	109	9	194
Saudi Arabia	1508	14 600	192	16 300
Syrian Arab Republic	650	6930	146	7726
United Arab Emirates	513	950	27	1490
West Bank and Gaza	78	140	7	225
Yemen	168	2700	31	2899
Total	7755	68 179	6145	82 079

Table 4. Water demand, 1990. Source: United Nations Economic and SocialCommission for Western Asia (ESCWA)

COMMON FUNDAMENTALS AND UNIT OPERATIONS IN THERMAL DESALINATION SYSTEMS – Vol. III – *Global Information and Data on Water Resources* - Bushara M. Ahmed

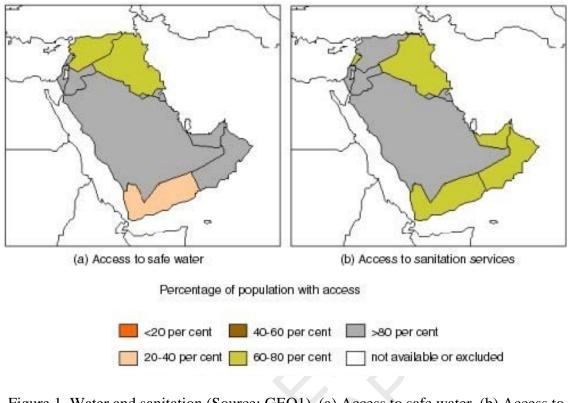


Figure 1. Water and sanitation (Source: GEO1). (a) Access to safe water. (b) Access to sanitation services.



Bibliography and Suggestions for further study

Gleick P H (1998) The World's Water. The Biennial Report on Freshwater Resources, 307 pp. Island Press, Washington, DC, USA.