Frits van der Leeden

Water Resources of the World

Selected Statistics

A WATER INFORMATION CENTER PUBLICATION

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Selected Statistics

Compiled and Edited by

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Geraghty & Miller, Inc.
Port Washington, New York

Published by WATER INFORMATION CENTER, INC.
Port Washington, New York

Acknowledgments

The author wishes to thank the many persons and organizations that contributed statistics on water resources and gave permission to reproduce data.

The guidance and assistance in preparing the book received from James J. Geraghty, President of Geraghty & Miller, Inc., and Fred L. Troise, Vice President of Water Information Center, Inc., are gratefully acknowledged. Jon A Pollack of Yale University assisted with research, selection and proofing of tabular data. Miklos Pinther, Chief Cartographer of the American Geographical Society, prepared the maps of the continents. Irene Berkenfield typed and composed the statistical material.

WATER RESOURCES OF THE WORLD

Library of Congress Catalog Card Number: 75-20952

ISBN: 0-912394-14-5

Printed in the United States of America

WATER INFORMATION CENTER, Inc.

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Preface

Solving critical water problems will be one of the principal tasks of planners, scientists and engineers in the years ahead. The tremendous growth of the world's population accompanied by industrial and agricultural development is creating heavy demands on the water resource everywhere on earth. Projections of water demand and water supplies by the World Health Organization show that the situation in most developing countries is critical and that the rate of increase in community water supplies is not sufficient to keep pace with the growing population. It is estimated that by 1980, 55 percent of the urban population, or 390 million people, will not be served with drinking water. By the year 2000, the world's total annual water demand, now 2,000 cubic kilometers, will triple to 6,000 cubic kilometers. Because the world's fresh-water supplies are limited and unevenly distributed over the surface of the earth, the search for, and development and distribution of new water sources will become increasingly important and crucial to man's continuing existence on earth.

Information on water availability and water use is of key importance for sound water planning and water management. It is with this in mind that these important water statistics have been selected for handy reference to hydrologists, engineers, planners, developers, managers, and other interested persons. In compiling this book, every effort has been made to include, as far as possible, uniform data on streamflow and runoff, water demand and water use for public supply, irrigation, industry and power generation. In addition, miscellaneous factual data of interest are also included. The tables represented reflect the nature and type

of statistics available. On a worldwide basis, information on streamflow proved to be fairly complete, but data on the use of water resources were found to be quite inadequate. Nevertheless, a significant start has been made in putting together essential worldwide water statistics. Undoubtedly, further editions will show an improved and broadened worldwide coverage as more of this type of material is published and cooperative efforts among nations increase.

A detailed index has been provided to guide the reader. Statistical data are frequently found on more than one table and some overlapping material and occasional discrepancies in specific data will be noticed. In each case, however, the origin and date of the material are clearly identified on the table and in the bibliography that follows each continental section.

The editor believes that the book will prove to be useful for water resources studies and he would like to regard it as his personal contribution to the goals and success of the International Hydrological Program.

Westbury, New York *Frits van der Leeden*
May 1975

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TABLE 1-1. EUROPE—ANNUAL PRECIPITATION AND RUNOFF

(Source: Economic Commission for Europe, 1967)

Country	Population	Area	Density of population	Approximate average precipitation		Approximate average runoff		Average flow of rivers	
								received from countries situated upstream	leaving the country
	millions	1,000 km^2	persons/km^2	mm/year	km^3/year	mm/year	km^3/year	km^3/year	km^3/year
Albania	1.6	29	56	1,200	34	350	10	3	13
Austria (1966)	7.1	84	84	1,191	100	661	55	35	90
Belgium (1966)	9.5	30.5	311	850	25.9	360	11	5	16
Bulgaria (1964)	8.2	111	74	672	74.5	162	18	179	197
Cyprus (1965)	0.6	9.2	65	503	4.5	37	0.3	–	–
Czechoslovakia	13.8	128	108	717	91	220	28	62	90
Denmark (1966)	4.6	43	106	660	28	260	11	–	11
Finland (1966)	4.5	337	13	550	185	300	100	4	104
France (1966)	49.2	551	89	750	415	300	168	39	207
East Germany (1966)	17.0	108	158	600	65	150	16.2	10	26.2
West Germany (1966)	54.2	248	219	803	200	307	77	85	162
Greece	8.4	131	64	650	86	150	20	23	43
Hungary (1966)	10.0	93	108	640	60	64	6	114	120
Iceland (1966)	0.2	103	2	1,400	140	1,750	170	–	170
Ireland (1966)	2.9	70	41	1,194	84	710	50	–	50
Italy	49.6	301	164	1,000	301	615	185	2	187
Luxembourg (1966)	0.3	3	131	850	2	300	1	4	5
Malta (1965)	0.3	0.2	1,301	508	0.1	10	–	–	–
Netherlands (1965)	12.2	34	360	750	30	250	10	80	90
Norway (1966)	3.6	324	11	1,450	470	1,250	405	8	413
Poland (1966)	31.5	312	101	583	182	158	49	6	55
Portugal	8.5	89.3	95	896	80	224	20	17	37
Romania (1965)	19.0	238	80	700	167	190	39	155	194
Spain	30.1	496	60	600	300	153	76	–	76
Sweden (1966)	7.8	450	17	700	315	400	180	3	183
Switzerland (1965)	5.9	41.2	144	1,500	61.5	1,000	42	8	50
Turkey in Europe (1966)	2.5	24	104	620	14.9	140	3.3	5.8	9.1
Yugoslavia	18.5	256	72	975	248	430	110	117	227
United Kingdom (1966)	53.3	241	221	1,064	256	508	122	–	122
USSR in Europe (1965)	165.7	5,326	31.1	570	3,160	201	1,117	204	1,321
Totals (or averages)	602.6	10,211.4	av. 59	av. 983	10,674	av. 389	3,104.8	–	–
Turkey (entire) (1966)	31.4	781	40	670	518	215	167	–	–
USSR (entire) (1965)	231.9	22,402	10.3	502	11,200	195	4,353	–	–

TABLE 1-2. EUROPE—ANNUAL WATER WITHDRAWAL

(Source: Economic Commission for Europe, 1967)

Country	Water withdrawal			
	Municipal	Industrial	Agricultural	Total
	million m^3/year			
Albania	60	120	20	200
Austria (1966)	500	1,000	350	1,850
Belgium (1966)	284.9	277.6	133.4	695.9
Bulgaria (1964)	566	1,120	3,800	5,486
Cyprus (1965)	26	–	422	448
Czechoslovakia	650	3,700	250	4,600
Denmark (1966)	295	190	105	590
Finland (1966)	200	2,100	50	2,350
France (1966)	3,500	13,000	10,000	26,500
East Germany (1966)	700	4,900	400	6,000
West Germany (1966)	2,600	9,050	1,260	12,910
Greece	200	300	2,500	3,000
Hungary (1966)	480	1,790	1,660	3,930
Iceland (1966)	40	–	10	50
Ireland (1966)	85	80	70	235
Italy	1,500	3,500	10,000	15,000
Luxembourg (1966)	17	150	8	175
Malta (1965)	2.5	0.2	0.1	2.8
Netherlands (1965)	430	840	700	1,970
Norway (1966)	200	1,200	30	1,430
Poland (1966)	1,116	5,348	1,303	7,767
Portugal	150	600	1,600	2,350
Romania (1965)	642	3,764	1,746	6,152
Spain	1,200	1,000	3,500	5,700
Sweden (1966)	850	3,600	50	4,500
Switzerland (1965)	985	1,100	360	2,445
Turkey in Europe (1966)	75	60	125	260
Yugoslavia	450	1,500	550	2,500
United Kingdom (1966)	3,300	7,350	70	10,720
USSR in Europe (1965)	4,402	20,033	26,540	84,584
Totals (or averages)	25,506.4	87,692.8	67,612.5	214,400.7
Turkey (entire) (1966)	–	–	–	–
USSR (entire) (1965)	9,855	54,275	120,470	240,100

TABLE 1-3. EUROPE—WATER WITHDRAWN FOR PUBLIC SUPPLIES IN SELECTED COUNTRIES, 1969

(Source: Verband der deutschen Gas-und Wasserwerke e.V., 1971)

Country	Year	Ground Water * Million m3	%	Spring Water Million m3	%	Surface Water Million m3	%	Total Water Withdrawn Million m3	%
Belgium	1968	313.5	74	–	–	109.5	26	423.0	100
	1969	310.3	73	–	–	114.7	27	425.0	100
West Germany	1968	2,850.0	75	653.0	17	317.0	8	3,820.0 6	100
	1969	2,973.0	75	678.0	17	339.0	8	3,990.0 6	100
United Kingdom 1	1968	2,723.0 7	34	–	–	5,214.0	66	7,937.0	100
	1969	2,713.0 7	34	–	–	5,195.0	66	7,908.0	100
Italy 2	1968	1,470.0	55	911.2	34	296.4	11	2,677.6	100
	1969	1,550.8	56	933.1	33	315.3	11	2,799.2	100
Luxembourg 3	1968	–	–	11.1	100	–	–	11.1	100
	1969	–	–	12.4	100	–	–	12.4	100
Netherlands	1968	620.1 8	81	–	–	149.3	19	769.4	100
	1969	660.1 8	80	–	–	160.0	20	820.1	100
Austria	1968	165.1	45	194.6	54	3.8	1	363.5	100
	1969	175.8	47	195.5	52	4.6	1	375.9	100
Sweden	1968	370.0	45	–	–	459.0	55	829.0	100
	1969	367.0	42	–	–	508.0	58	875.0	100
Switzerland	1968	277.0	44	192.0	31	159.0	25	628.0	100
	1969	284.0	44	185.0	28	179.0	28	648.0	100
Spain	1968	423.9	27	31.3	2	1,111.7	71	1,566.9	100
	1969	444.3	27	32.5	2	1,167.1	71	1,643.9	100

For explanation of footnotes see Table 1-4.

TABLE 1-4. EUROPE—WATER USED FOR PUBLIC SUPPLIES IN SELECTED COUNTRIES, 1969

(Source: Verband der deutschen Gas-und Wasserwerke e.V., 1971)

Country	Year	Population		Consumption (Million m3)				Daily Per Capita Consumption (liters)	
		Total Population 1,000	Served 1,000	Household including small business	Other	Industrial included in "Other"	Total	Household water use **	Total water use **
Belgium	1968	9,632	8,885	247.7	133.3	–	381.0	76.2	117.2
	1969	9,692	8,885	250.7	135.0	–	385.7	77.3	118.9
West Germany	1968	60,184	57,200	2,235.0	1,265.0	995.0	3,500.0	106.8	167.2
	1969	60,848	58,100	2,345.0	1,315.0	1,035.0	3,660.0	110.6	172.6
United Kingdom 1	1968	48,593	48,320	2,933.0	1,793.0 4	–	4,726.0 4	165.8	267.2
	1969	48,827	48,717	2,976.0	1,849.0 4	–	4,825.0 4	167.4	271.3
Italy 2	1968	53,940	23,835	1,968.3	404.2	285.4	2,372.5	225.6	271.9
	1969	54,250	24,403	2,073.4	425.6	299.4	2,499.0	232.8	280.6
Luxembourg 3	1968	336	130	6.1	3.3	3.3	9.4	128.2	197.6
	1969	338	132	6.9	3.6	3.6	10.5	143.2	217.9
Netherlands	1968	12,798	12,670	404.1	294.0	–	698.1	87.4	150.5
	1969	12,958	12,828	425.0	322.1	–	747.1	90.8	159.6
Austria	1968	7,362	3,352	147.8	162.7	–	348.2	120.5	283.8
	1969	7,384	3,415	163.4	117.5	–	362.9	131.1	291.1
Sweden	1968	7,942	5,739	494.0	253.0	168.0	747.0	235.2	355.6
	1969	8,004	5,770	457.0	260.0	167.0	717.0	217.0	340.4
Switzerland	1968	6,147 5	3,551	347.0	170.0	126.0	517.0	267.0	397.8
	1969	6,224 5	3,604	359.0	178.0	132.0	537.0	272.9	408.2
Spain	1968	32,788	26,786	1,255.1	311.4	–	1,566.9	128.0	159.8
	1969	33,100	27,035	1,329.0	314.9	–	1,643.9	134.7	166.6

* Artificial recharge included.
** Based on population served.
1 England and Wales only.
2 Information applies only to 50% of population.
3 Information applies only to area served with drinking water by the "Syndicat des Eaux du Sud".
4 Industrial water use excluded.
5 Population covered by SVGW Statistical Survey only.
6 Purchased water excluded.
7 Includes spring water.
8 Includes infiltrated surface water.

TABLE 1-5. EUROPE—HYDROELECTRIC AND THERMAL POWER GENERATING CAPACITY AND PRODUCTION, 1968

(Source: U.S. Federal Power Commission, 1971)

Country	Installed capacity (MW.)[1]			Energy production (GWh.)[2]			Population (1,000)	Kwh. per capita
	Hydro	Thermal	Total	Hydro	Thermal	Total		
Albania	116	113	229	460	190	650	2,019	322
Austria	4,821	2,235	7,056	18,003	7,154	25,157	7,349	3,423
Belgium	65	6,665	6,730	242	24,781	25,023	9,619	2,601
Bulgaria	771	2,691	3,462	1,292	13,018	14,310	8,370	1,710
Czechoslovakia	1,540	8,531	10,071	3,115	35,223	38,338	14,362	2,669
Denmark	9	3,911	3,920	21	12,076	12,097	4,870	2,484
Finland	2,093	2,542	4,635	10,384	6,980	17,364	4,689	3,703
France	14,512	19,621	34,133	50,342	67,583	117,925	49,914	2,362
Germany (East)	667	11,006	11,673	1,185	58,934	60,119	17,084	3,519
Germany (West)[3]	4,741	42,313	47,054	16,515	173,186	189,701	60,165	3,153
Greece	703	1,212	1,915	1,352	5,987	7,339	8,803	834
Hungary	21	2,339	2,360	86	11,756	11,842	10,256	1,155
Iceland	127	66	193	684	37	721	201	3,587
Ireland	219	1,126	1,345	763	3,897	4,660	2,910	1,601
Italy	14,765	15,499	30,264	43,262	56,987	100,249	52,750	1,900
Luxembourg	925	228	1,153	707	1,255	1,962	336	5,839
Netherlands	0	9,296	9,296	0	31,847	31,847	12,725	2,503
Norway	11,981	141	12,122	59,609	92	59,701	3,819	15,633
Poland	486	11,105	11,591	1,046	50,398	51,444	32,305	1,592
Portugal	1,555	605	2,160	5,165	938	6,103	9,465	645
Romania	831	4,780	5,611	1,550	24,956	26,506	19,721	1,344
Spain	8,560	5,575	14,135	24,040	19,833	43,873	32,621	1,345
Sweden	10,423	3,308	13,731	48,284	7,063	55,347	7,918	6,990
Switzerland	8,940	560	9,500	29,402	1,150	30,552	6,147	4,970
United Kingdom	2,164	57,464	59,628	3,869	205,306	209,175	55,283	3,784
USSR[4]	27,035	115,469	142,504	103,000	507,891	610,891	237,798	2,569
Yugoslavia	2,832	2,044	4,876	11,650	8,434	20,084	20,154	997
Islands[5]	18	237	255	56	713	769	1,249	616
Total	120,920	330,682	451,602	436,084	1,337,665	1,773,749	692,902	2,560

[1] MW. – Megawatts–Thousand Kilowatts.

[2] GWh.– Gigawatt-hours–Million kilowatt-hours.

[3] Includes West Berlin.

[4] Includes all of USSR.

[5] Includes Cape Verde, Cyprus, Faroe Islands, Gibraltar, Malta.