

Burden of disease (in DALYs) attributable to water, sanitation and hygiene ('000), by disease and region, 2004

DISEASE OR INJURY	DALYs							
	AFRO							
Population ('000)	737,536		Afr D 344,816		Afr E 392,720		LMIC 737,536	
	('000)	(%)	('000)	(%)	('000)	(%)	('000)	(%)
Total DALYs	376,526		172,711		203,815		376,526	
Total WSH-related	60,088		31,059		29,029		60,088	
% of total DALYs	16%		18%		14%		16%	
Diarrhoeal diseases ^a	28,684	48%	14,602	47%	14,081	49%	28,684	48%
Intestinal nematode infections ^b	1,527.8	2.5%	1,014	3%	514	2%	1,528	3%
Protein-energy malnutrition ^{a,c}	3,041	5%	1,245	4.0%	1,796	6%	3,041	5%
Consequences of malnutrition ^{a,c}	7,612	13%	4,077	13%	3,535	12%	7,612	13%
Trachoma ^b	601	1%	183	1%	419	1%	601	1%
Schistosomiasis ^b	1,502	2%	776	2%	726	3%	1,502	2%
Lymphatic filariasis ^b	908	2%	455	1%	453	2%	908	2%
Subtotal water supply, sanitation and hygiene	43,876	73%	22,351	72%	21,525	74%	43,876	73%
Malaria ^c	12,867	21%	7,210	23%	5,657	19%	12,867	21%
Dengue ^c	9	0%	1	0%	7	0%	9	0%
Onchocerciasis ^c	38	0%	33	0%	5	0%	38	0%
Japanese encephalitis ^c	-	-	-	-	-	-	-	-
Subtotal water resources management	12,913	21%	7,244	23%	5,669	20%	12,913	21%
Drownings ^c	1,334	2%	580	2%	755	3%	1,334	2%
Subtotal safety of water environments	1,334	2%	580	2%	755	3%	1,334	2%
Other infectious diseases ^{c,d}	1,965	3%	885	3%	1,080	4%	1,965	3%

a Data further validated by Comparative Risk Assessment methods (4)

b Comparative Quantification of Health Risks (4)

c Data based on literature review and expert opinion (1,9); not a formal WHO estimate

d Not attributable to one disease group alone; approximate estimate based on limited evidence

DALYs are a weighted measure of deaths and disability

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DISEASE OR INJURY	DALYs											
	AMRO											
Population ('000)	874,380		Amr A 340,046		AmrB 458,510		AmrD 75,824		HIC 329,118		LMIC 545,262	
	('000)	(%)	('000)	(%)	('000)	(%)	('000)	(%)	('000)	(%)	('000)	(%)
Total DALYs	143,235		46,624		80,208		16,402		45,116		98,118	
Total WSH-related	3,836		208		2,561		1,068		189		3,647	
% of total DALYs	3%		0%		3%		7%		0%		4%	
Diarrhoeal diseases ^a	2,211	58%	74.5	36%	1,520.3	59%	616	58%	64	34%	2,147	84%
Intestinal nematode infections ^b	180	5%	2	1%	81	3%	98	9%	0	0%	180	7%
Protein-energy malnutrition ^{a,c}	479	12%	12	6%	316	12%	151	14%	11	6%	468	18%
Consequences of malnutrition ^{a,c}	69	2%	0.2	0.1%	35.6	1%	33	3%	-	0.0%	69	3%
Trachoma ^b	15.4	0%	-	0%	15.4	1%	0	0%	-	0%	15.4	1%
Schistosomiasis ^b	46	1%	0.4	0%	46.0	2%	0	0%	0	0%	46	2%
Lymphatic filariasis ^b	7	0%	-	0%	6.3	0%	1	0%	-	0%	7	0%
Subtotal water supply, sanitation and hygiene	3,008	78%	89	43%	2,020	79%	899	84%	76	40%	2,932	115%
Malaria ^c	57	1%	0.1	0%	43	2%	14	1%	0	0%	57	2%
Dengue ^c	70	2%	0.0	0%	34	1%	36	3%	0	0%	70	3%
Onchocerciasis ^c	0	0%	-	-	0	0%	0	0%	-	-	0	0%
Japanese encephalitis ^c	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal water resources management	127	3%	0	0%	76	3%	51	5%	0	0%	127	0
Drownings ^c	436	11%	56	27%	324	13%	56	5%	50	27%	385	15%
Subtotal safety of water environments	436	11%	56	27%	324	13%	56	5%	50	27%	385	15%
Other infectious diseases ^{c,d}	265	7%	63	30%	140	5%	62	6%	63	33%	202	8%

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DISEASE OR INJURY	DALYs									
	EMRO		EmrB		EmrD		HIC		LMIC	
Population ('000)	519,688		145,753		373,934		31,086		488,602	
	('000)	(%)	('000)	(%)	('000)	(%)	('000)	(%)	('000)	(%)
Total DALYs	141,993		23,037		118,955		4,379		137,614	
Total WSH-related	13,121		754		12,366		150		12,971	
% of total DALYs	9%		3%		10%		3%		9%	
Diarrhoeal diseases ^a	7,292	56%	415	55%	6,877	56%	70	47%	7,222	56%
Intestinal nematode infections ^b	269	2%	0.8	0.1%	268	2%	0.3	0.2%	269	2.1%
Protein-energy malnutrition ^{a,c}	881	7%	113	15%	768	6%	17	0	864	7%
Consequences of malnutrition ^{a,c}	2,482	19%	30	4%	2,452	20%	5	0	2,477	19%
Trachoma ^b	208	2%	10	1%	198.0	1.6%	-	0%	207.9	2%
Schistosomiasis ^b	145	1%	39	5%	106	1%	8	6%	136	1%
Lymphatic filariasis ^b	30	0%	0	0%	30	0%	-	0%	30	0%
Subtotal water supply, sanitation and hygiene	11,306	86%	608	81%	10,698	87%	101	67%	11,205	86%
Malaria ^c	508	4%	1	0%	507	4%	0	0%	508	4%
Dengue ^c	26	0%	6	1%	21	0%	5	4%	21	0%
Onchocerciasis ^c	1	0%	-	-	1	0%	-	-	1	0%
Japanese encephalitis ^c	0	0%	-	-	0	0%	-	-	0	0%
Subtotal water resources management	536	4%	7	1%	529	4%	6	4%	530	4%
Drownings ^c	683	5%	109	14%	574	5%	38	26%	644	5%
Subtotal safety of water environments	683	5%	109	14%	574	5%	38	26%	644	5%
Other infectious diseases ^{c,d}	596	5%	31	4%	565	5%	5	4%	591	5%

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DISEASE OR INJURY	DALYs											
	EURO											
	Population ('000)		Eur A		Eur B		Eur C		HIC		LMIC	
	('000)	(%)	('000)	(%)	('000)	(%)	('000)	(%)	('000)	(%)	('000)	(%)
Population ('000)	883,311		422,026		223,210		238,074		417,486		465,824	
Total DALYs	151,437		51,490		38,082		61,866		50,792		100,645	
Total WSH-related	2,186		168		1,378		640		166		2,019	
% of total DALYs	1%		0%		4%		1%		0%		2%	
Diarrhoeal diseases ^a	1,180	54%	69	41%	940	68%	171	27%	68	41%	1,111	55%
Intestinal nematode infections ^b	0.5	0.0%	0	0.0%	0	0.0%	0.1	0.0%	0	0%	0	0%
Protein-energy malnutrition ^{a,c}	98.4	4.5%	9	5%	70	5.1%	18.8	3%	9	5.5%	89	4.4%
Consequences of malnutrition ^{a,c}	204	9%	-	0%	176	13%	28.3	4.4%	-	0%	204	10%
Trachoma ^b	-	-	-	0%	-	0%	-	0%	-	0%	-	0%
Schistosomiasis ^b	0	0%	0	0%	0	0%	-	0%	0	0%	0	0%
Lymphatic filariasis ^b	1	0%	-	0%	1	0%	-	0%	-	0%	1	0%
Subtotal water supply, sanitation and hygiene	1,483	68%	78	47%	1,187	86%	218	34%	78	47%	1,406	70%
Malaria ^c	2	0%	1	0%	0	0%	1	0%	1	0%	1	0%
Dengue ^c	0	0%	0	0%	-	-	-	-	0	0%	-	0%
Onchocerciasis ^c	-	-	-	-	-	-	-	-	-	-	-	0%
Japanese encephalitis ^c	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal water resources management	2	0%	1	0%	0	0%	1	0%	1	0%	1	0%
Drownings ^c	567	26%	45	26%	130	9%	392	61%	44	26%	523	26%
Subtotal safety of water environments	567	26%	45	26%	130	9%	392	61%	44	26%	523	26%
Other infectious diseases ^{c,d}	133	6%	45	27%	59	4%	29	5%	44	27%	89	4%

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	SEARO							
	Sear A		Sear B		Sear D		LMIC	
Population ('000)	1,671,904		304,830		1,367,074		1,671,904	
	('000)	(%)	('000)	(%)	('000)	(%)	('000)	(%)
Total DALYs	443,018		70,759		372,258		443,018	
Total WSH-related	38,127		2,882		35,245		38,127	
% of total DALYs	9%		4%		9%		9%	
Diarrhoeal diseases ^a	20,088	53%	1,223	42%	18,866	54%	20,088	53%
Intestinal nematode infections ^b	1,076	3%	254	8.8%	822	2.3%	1,076	3%
Protein-energy malnutrition ^{a,c}	2,069	5%	248	9%	1,822	5%	2,069	5%
Consequences of malnutrition ^{a,c}	6,381	17%	248	9%	6,132	17%	6,381	17%
Trachoma ^b	88	0%	-	0%	88	0%	88	0%
Schistosomiasis ^b	0	0%	0	0%	0	0%	0	0%
Lymphatic filariasis ^b	2,891	8%	228	8%	2,663	8%	2,891	8%
Subtotal water supply, sanitation and hygiene	32,594	85%	2,201	76%	30,393	86%	32,594	85%
Malaria ^c	562	1%	58	2%	504	1%	562	1%
Dengue ^c	372	1%	81	3%	291	1%	372	1%
Onchocerciasis ^c	-	-	-	-	-	-	-	-
Japanese encephalitis ^c	465	1%	44	2%	422	1%	465	1%
Subtotal water resources management	1,399	4%	182	6%	1,217	3%	1,399	4%
Drownings ^c	2,011	5%	289	10%	1,722	5%	2,011	5%
Subtotal safety of water environments	2,011	5%	289	10%	1,722	5%	2,011	5%
Other infectious diseases ^{c,d}	2,122	6%	209	7%	1,913	5%	2,122	6%

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DISEASE OR INJURY	DALYs										Total	
	WPRO										All regions	
Population ('000)	1,738,457		Wpr A 156,569		Wpr B 1,581,888		HIC 204,253		LMIC 1,534,204		6,425,275	
	('000)	(%)	('000)	(%)	('000)	(%)	('000)	(%)	('000)	(%)	('000)	(%)
Total DALYs	264,814		16,182		248,631		22,347		242,467		1,521,022	
Total WSH-related	10,766		88		10,679		184		10,582		128,123	
% of total DALYs	4%		1%		4%		1%		4%		8.4%	
Diarrhoeal diseases ^a	4,591	43%	27	31%	4,564	43%	79	43%	4,511	43%	64,046	50%
Intestinal nematode infections ^b	955	9%	4	4%	952	9%	22	12%	933	9%	4,009	3%
Protein-energy malnutrition ^{a,c}	663	6%	9	10%	655	6%	9	5%	655	6%	7,232	6%
Consequences of malnutrition ^{a,c}	450	4%	0	0%	449	4%	0	0%	449	4%	17,197	13%
Trachoma ^b	419	4%	0	0%	419	4%	0	0%	419	4%	1,332	1%
Schistosomiasis ^b	13	0%	0	0%	13	0%	0	0%	13	0%	1,706	1%
Lymphatic filariasis ^b	53	0%	-	0%	53	0%	-	-	53	1%	3,890	3%
Subtotal water supply, sanitation and hygiene	7,143	66%	40	45%	7,104	67%	111	60%	7,032	66%	99,411	78%
Malaria ^c	68	1%	0	0%	68	1%	0	0%	68	1%	14,064	11%
Dengue ^c	161	1%	0	0%	161	2%	0	0%	161	2%	638	0%
Onchocerciasis ^c	-	-	-	-	-	-	-	-	-	-	39	0%
Japanese encephalitis ^c	176	2%	-	-	176	2%	2	1%	174	2%	641	1%
Subtotal water resources management	404	4%	0	0%	404	4%	2	1%	402	4%	15,381	12%
Drownings ^c	2,761	26%	31	36%	2,729	26%	50	27%	2,711	26%	7,792	6%
Subtotal safety of water environments	2,761	26%	31	36%	2,729	26%	50	27%	2,711	26%	7,792	6%
Other infectious diseases ^{c,d}	458	4%	17	19%	441	4%	21	11%	437	4%	5,540	4%

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