Version: 101 5

ESTIMATED WATER CONSUMPTION IN THE WORLD + PER APPLIANCE AND SECTOR

NB: Although not all information is referenced, they have been taken from reliable sources. As shown below numbers can vary greatly and it will depend on experience and local reliable data what numbers are estimated. If estimations are made for sewage treatment it is better to estimate on a high average (without overdesigning / sizing) in order to ensure trouble-free long term robust treatment.

1 US Gallon = 1 squ. foot =

<u>Conversation table</u>

US Gallon = 3.7854 Liters

e (without overdesigning / sizing) in order to ensure trouble-free long term		1 squ. foot =	0.0929	O Square meter
Per person per day Gallons Liters			Unit	Comments and Sources
ANCES				
TOILETS:				Average of 5 flushes / day / person
TOILET / Sitting flush toilet				
Minimum		6	Per Flush	Average toilets after 2000 but each toilet must be checked
		30	Per day	
Maximum		23	Per Flush	Older toilets
		115	Per day	
TOILET / Dual Flush				
Urine		2.3	Per Flush	3.5 - 4 flushes/day
Faeces		6	Per Flush	1.5 - 1-2 flushes/day
		21.2	Per day	
TOILET / Squat toilet no flush				
Small Bucket		1.5 - 2	Per Flush	
Large Bucket		5	For Faecal Flush	
TOILET / Dual Flush - Urine Diversion flush Toilets (UDT)				
Urine flush		0.3	Per Flush	- Wostman EcoFlush toilets
Faeces flush		2.5	For Faecal Flush	- Wostman Ecoriush tollets
TOILET LAVABO				
Тар		12-16	Liters/Minute on average	
Old Taps		15-22	Liters/Minute on average	
New efficient taps		9	Liters/Minute on average	
Average - Minimum		20	Per person / Per day	
Average - Maximum		50	Per person / Per day	
HAND WASHING - Running water - Low range		2	Per person / Per day	
HAND WASHING - Running water - Mid range		4	Per person / Per day	
HAND WASHING - Running water - High range		8	Per person / Per day	
SHAVING Minimum		8	Per person / Per day	
SHAVING Maximum		19	Per person / Per day	
SHAVING - Running water		76	Per person / Per day	
WASHING TEETH Minimum		8	Per person / Per day	
WASHING TEETH Medium		12	Per person / Per day	
WASHING TEETH Running water		40	Per person / Per day	

Per person per day	Gallons	Liters	Unit	Comments and Sources
SHOWER			•	
		13.25	Per minute	
		19	Per minute	
		6-9	Per minute	Latest generation shower head with flow reductors
Shower - Average		20	Per person / Per day	24001 301010101101011010110110110101010101
Shower - Maximum		50	Per person / Per day	
Average temperate climate - 7 min		105	Per person / Per day	
Average - 2 min at 15L/min		30	Per person / Per day	
Average - 5 min at 6L/min		30	Per person / Per day	
Average - 5 min at 15L/min		75	Per person / Per day	
Average - 5 min at 38L/min		190	Per person / Per day	
Average hot weather - 3 min at 6L/min		18	Per person / Per day	
Average hot weather - 3 min at 15L/min		45	Per person / Per day	
Average hot weather - 3 min at 38L/min		114	Per person / Per day	
NB: Older shower heads may provide 26-38 Liters/minutes				
NB: In some studies the averaged time is 12-15 min per shower				
BATH TUB		I		
Bath Tub - Minimum		50	Per use	
Bath Tub - Maximum		230	Older bathtubs	
Bath Tub - Medium		130	Per use	
See http://www.depannage-plombier.fr/salle-de-bain/les-differents-type	s-de-haignoires/	100	i ci usc	
KITCHEN SINK				
Food preparation + Washing dishes by hand - Blocked tap		15	Per person / Per day	Canada ayaraga
Food preparation + Washing dishes by hand - Blocked tap		20	Per person / Per day	Canada average
, ,			 	LIOA A
Food preparation + Washing dishes by hand - Running water		100-150	Per person / Per day	USA Average
Drinking and Cooking		3	Per person / Per day	1444 0000 ND
Food preparation		10	Per person / Per day	WHO 2003 "Domestic Water Quantity, Service, Level and Health" - Gleick (1996)
Food preparation		4.2	Per person / Per day	With piped connection - EAST AFRICA - Thompson et al. (2001) - WHO 2003 "Domestic Water Quantity, Servic Level and Health" - Gleick (1996)
Food preparation		3.8	Per person / Per day	Without pipes connection - EAST AFRICA - WHO 2003 "Domestic Water Quantity, Service, Level and Health" Gleick (1996)
DISH WASHING		6	Per person / Per day	
Dishwashing by hand - Minimum		42	Per wash	
Dishwashing by hand - Maximum		100	Per wash	
Restaurant - Average / dish		15	Per person / Per day	
DISHWASHER				
DISTIVASTER				
Dishwasher Minimum		15	Per load	

International Water consumption data table

Wastewater Gardens Information Sheet

				wastewater Gardens Information
Per person per day	Gallons	Liters	Unit	Comments and Sources
LAUNDRY				
Handwashing		10-20	Per wash / Per day	
Laundry machine				
Washing machine Minimum		15	Per Load	
Washing machine Average		50	Per Load	
Washing machine Average - Spain		100	Per Load	
Washing machine Maximum		250	Per Load	
Washing Machine EU standard		50	Per Load	
Industrial machines (HOTELS)		> 350	Per Load	
LAWN				
1m2 grass		8-10 L		
urce: U.S. Geological Survey (USGS) - Water Resources in Georgia	/edu/sq3.html			
Toilet	3.5	13.2489	Per flush	Older toilets
Shower	2.3	8.70642	Per minute	
Bath	50	189.27	Per bath	
Teethbrushing	1	3.7854	Per use	
Hand/Face washing	1	3.7854	Per use	
Face/Leg shaving	1	3.7854	Per use	
Dishwasher	20	75.708	Per load	
Dishwashing by hand	5	18.927	Per load	
Laudry machine	10	37.854	per load	
licative: USA - FLOW-REDUCTORS - Obligatory in some countries of	or regions			
Faucet aerators and low-flow				
Minimum	0.5	1.8927	Per minute	
Maximum	1	3.7854	Per minute	
Showerheads				
Minimum	1.5	5.6781	Per minute	
Maximum	2.5	9.4635	Per minute	

				Wastewater Gardens Information S
Per person per day	Gallons	Liters	Unit	Comments and Sources
ANTS AND HOTELS				
RESTAURANT				
Standard 1		15	Average / meal	
Standart 2 - Small to medium restaurant - Average low		25	Per person	
Standart 2 - Small to medium restaurant - Average high		40	Per person	
Standart 2 - Small to medium restaurant - Average low		120	Per person	
Standart 2 - Small to medium restaurant - Average low		180	Per person	
Restaurants - Per m2				Benchmarking Task Force Collaboration for Industrial, Commercial & Institutional Water Conservation
Restaurant - Minimum	170	643.52	Per m2	Colorado Waterwise Council, June 2007.
Restaurant - Maximum	210	794.93	Per m2	
HOTEL with Summer peak season	•	•		
Hotel Radisson Blu Resort Temple Bay's		429	Per guest per night	(70.8% better than the Best Practice level) - Recipient 2012 The HICAP Sustainable Operations Awards - En Consumption: 141.1 MJ / Guest Night (57% better than the Best Practice level) Greenhouse Gas Emissions (Scope 1 and Scope 2): 27.7 kg CO2-e / Guest Night (45.5% better than the Best Practice level) - Waste Sent to Landfill: 1.0 L / Guest Night (47.4% better than the Best Practice level) Community Commitment: 72% (12% better than baseline) Community Contributions Rating: 84.2 (4.2 Points better than the Best Practice level)
Hotels/Motels	•	•	•	
Hotel/Motel - Minimum	79	299.0466	Per m2	Benchmarking Task Force Collaboration for Industrial, Commercial & Institutional Water Conservation
Hotel/Motel - Maximum	165	624.591	Per m2	Colorado Waterwise Council, June 2007.
Toilet Flushing		45	Per person / Per day	SUSTAINABLE WATER MANAGEMENT AND WASTEWATER PURIFICATION IN TOURISM FACILITIES,
Potable		3	Per person / Per day	Guidelines for Sustainable Water Management in Tourism Facilities, European Union (EU), , Environment and
Dishwashing		10	Per person / Per day	Sustainable Development Programme of the 5th Framework Programme, SWAMP, EVK1-CT-2000-00071,
Washing		10	Per person / Per day	www.swamp-eu.org, January 2005.
Laundry		22	Per person / Per day	
Cleaning		15	Per person / Per day	
Others		12	Per person / Per day	
urce: Instituto Universitario de Geografia (España?)				
Hotel - 5***		394.00	Per person	Medium annual occupation: 88%
Hotel - 3***		594.00	Per person	
Hotel - 3-4 ***			Per person	
Hotel and residences of 2-3 ***		280.00	Per person	
Hotel - 4 ***			Per person	
Hotel - 5***		>450	Per person	
Hotel - 5^^^		-	· ·	•
FAO: Food and Agriculture Organisation, Fisheries and Aquaculture D	epartment.			
FAO: Food and Agriculture Organisation, Fisheries and Aquaculture D	Department.	Liter/day		
	Department.	<u>Liter/day</u>	per 1 Kg of fish landed	

Per person per day	Gallons	Liters	Unit	Comments and Sources
10 litres per fish box handled (reduced to 2.5 litres if a high pressure jet cleaner is used);				
Toilet and shower facilities flow rate		100	per person per day (full time employees + part-time	
Canteen services (hot food cooked on premises) flow rate		15	Per serving	
Source: WHO 2003 "Domestic Water Quantity, Service, Level and Health"			•	
Basic minimum of water required / day		7.5	Per day / Per person	Taking into account the needs of lactating women: Drinking water plus water for foodstuffs preparation
RURAL - Mozambique - Standpipe serving village 15 min away		12.3	Per person / Per day	Example Mozambique Cairncross (1987)
RURAL - Mozambique - Well > 5 hours walk		3.24	Per person / Per day	Example Mozambique Cairncross (1987)
RURAL - Uganda - Piped into house		155	Per person / Per day	Example Uganda - WELL, 1998
RURAL - Uganda - Supplied yard level		50	Per person / Per day	Example Uganda - WELL, 1998
RURAL - Uganda - Outside Home		17	Per person / Per day	Example Uganda - WELL, 1998
RURAL - Kenya, Tanzania - Water supply OUTSIDE Home - WASHING DISHES + CLOTHE		6.6	Per person / Per day	Example Kenya, Tanzania, Uganda - Thompson et al., 2001)
RURAL - Kenya, Tanzania - BATHING		7.3	Per person / Per day	Example Kenya, Tanzania, Uganda - Thompson et al., 2001)
RURAL - Kenya, Tanzania - Water supply INSIDE Home - WASHING DISHES + CLOTHE		16.3	Per Person ?	Example Kenya, Tanzania, Uganda - Thompson et al., 2001)
RURAL - Kenya, Tanzania - BATHING		17.4	Per person / Per day	Example Kenya, Tanzania, Uganda - Thompson et al., 2001)
RURAL Communal Level (Shared tap)		20	Per person / Per day	if multiple taps are provided this will increase further.
RURAL Communal level (In-house tap)		50	Per person / Per day	
RURAL - Individualized taps		> 50	Per person / Per day	
EMERGENCY		7.5	Per person / Per day	
RELIEF WATER		15	Per person / Per day	Key indicator in meeting minimum standards for disaster relief (SPHERE, 1998)
Recommended minimum		20	Per person / Per day	In their guidance manual prepared for the Department for International Development (UK), WELL (1998)
Recommended minimum		50	Per person / Per day	Gleick (1996) suggestion that the international community adopt a figure of 50 litres per capita per day as a basic water requirement for domestic water supply.

International Water consumption data table

B	0.11	120	11.9	Wastewater Gardens Information S
Per person per day	Gallons	Liters	Unit	Comments and Sources
nchmarking Task Force Collaboration for Industrial, Commercial &	Institutional Wa	<mark>iter Conservati</mark>		
Hotels/Motels				0.079 - 0.165 thousand gals. (Kgal)/sq. ft.
Hotel/Motel - Minimum	79	27.8	Per m2	
Hotel/Motel - Maximum	165	58.1	Per m2	
Auditorium	60	227	Per person / Per day	
Construction camp	55	208	Per person / Per day	
Camp – summer camp	100	379	Per campsite	
Campground (no water or sewer hookups)	120	454	Per campsite	
Campground (with hookups)	15	57	Per person / Per day	
Day Care	25	95	Per person per shift	
Factory (not including industrial waste)	300	1136	Per Person ?	
Hospital	300	1136	Per bed	
Institution (with residents)	100	379	Per person	
Laundry	450	1703	Per standardized machine	
Marina (no bathhouse)	10	38	Per boat slip	
Marina (with bathhouse)	30	113.56	Per boat slip	
Motor pool	300	1,135.62	Per car wash	
Office buildings (without cafeteria)	25	94.64	Per employee	
Restaurant – 24 hour	50	189.27	Per seat	
Restaurant – standard (or cafeteria)	35	132.49	Per seat	
Restaurant –food stand	5	17.58	Per 10m2 of total floor space	
School –boarding school	60	227.12	Per student	
School –day school (no cafeteria or showers)	10	37.85	Per student	
School –day school (with cafeteria)	12	45.42	Per student	
School –day school (with cafeteria, showers, gym)	15	56.78	Per student	
Service station - 1st bay or pump	1000	3,785.40	For first bay or pump island	
Service station - Additional bay or pump	500		Per additional bay/pump islar	nd
Stadium	5		Per seat	
Swimming pool	10	37.85	Per swimmer	
Swimming pool (with hot water shower)	13	49.21	Per swimmer	
Nursing Home				
Nursing - Minimum	62	21.90	Per m2	
Nursing - Maximum	101		Per m2	
Restaurants - Per m2	<u> </u>			
Restaurant - Minimum	170	59.80	Per m2	
Restaurant - Maximum	210		Per m2	
Schools - Per m2		1		
Schools - Per m2 - Minimum	12	4.30	Per m2	
Schools - Per m2 - Maximum	19	6.7	Per m2	

Per person per day	Gallons	Liters	Unit	Comments and Sources
average consumptions in the World (Liter / per person / o	day) on various reference	d publications		
INDONESIA - Palembang		130	Per person	KFW - Entwicklungsbank
INDONESIA		112	Per person	
USA		> 300	Per person	Washington Suburban Sanitary Commission
USA		189-265	Per person	Homes built before 1994 - Cited in "Treatment Wetlands", Second Edition, Robert H. Kadlec and Scott D. Wallace CRC Press, 2009
USA		161-227	Water-efficilent appliances widely used since 1994 (source: U.S. EPA, 2002c - Cite Second Edition, Robert H. Kadlec and Scott D. Wallace, CRC Press, 2009)	
Europe		150	Per person	EU statistics
SPAIN - Overall		171	Per person	Ministerio de Medio Ambiente
SPAIN - Andalucia		189	Per person	Ministerio de Medio Ambiente
Jordan		90		Wastewater characteristics and effluent quality parameters, Natural Resources Management and Environment Department, Food and Agriculture Organization (FAO)
ISRAEL		306	Per person	http://www.biu.ac.il/Besa/waterarticle4.html - Bar-llan University - Prof. Benjamin Zur - IMPROVING THE EFFICIENCY OF WATER USE: SUMMARY OF RECOMMENDATIONS
MALDIVES		80	With pour flush toilet	(from Falkland, 2001b) - Water resources management in Maldives with an emphasis on desalination
MALDIVES		110	With cistern flush toilet	(from Falkland, 2001b) - Water resources management in Maldives with an emphasis on desalination
SWEEDEN		330	Per person	WWF - Global Water Footprint

From the United Nations Economic and Social Commission for Asia and Pacific (ESCAP) - Statistical Yearbook for Asia and the Pacific 2007 - Data 2000

Afghanistan	;	56.4	Per person / Per day
Australia	5	10.9	Per person / Per day
CAMBODIA	,	13.1	Per person / Per day
China	9	90.9	Per person / Per day
India	1	38.7	Per person / Per day
Indonesia		87	Per person / Per day
Japan	3	80.6	Per person / Per day
Republic of Korea	3	93.1	Per person / Per day
DPR Korea	2	16.7	Per person / Per day
Malaysia	1	81.4	Per person / Per day
Mongolia	1	01.2	Per person / Per day
New Zealand	4	57.3	Per person / Per day
Philippines	1	72.5	Per person / Per day
Russian Federation	2	70.9	Per person / Per day
Thailand	9	99.5	Per person / Per day
Turkey	2	26.7	Per person / Per day
Vietnam	1	94.5	Per person / Per day
Average Low-income	123.4		Per person / Per day
Average Middle-Income	119.5		Per person / Per day
Average High-Income	403.1		Per person / Per day
Other Asia Pacific	168.1		Per person / Per day

				wastewater Gardens Information Sheet
Per person per day	Gallons	Liters	Unit	Comments and Sources
Per person / Per region average			Per person / Per day	
Africa		86.4	Per person / Per day	
Latin America and Carribean		271.4	Per person / Per day	
North America		614.8	Per person / Per day	
Europe		239.8	Per person / Per day	
f water				
Manufacture of 1 tonne of paper.		55,000.00		To be confirmed
Manufacture of 1 tonne of steel.		400,000.00		To be confirmed
Pour produire 1 litre de lait, il faut 1 000 litres d'eau. 100. Pour produire 1 kilogramme de : - riz, il faut 3 000 litres d'eau - maïs, il faut 900 litres d'eau - blé, il faut 1 350 litres d'eau - bœuf, il faut 16 000 litres d'eau				To be confirmed
A steel mill, for example, might discharge anywhere from 5700 to 151,0	00 liters (about 1	500 to 40,000 ga	allons) per ton of steel manufa	To be confirmed
Le tourisme du golf a un impact énorme sur les prélèvements d'eau : ur d'eau par jour. Aux Philippines, les prélèvements d'eau utilisés pour le t Grenade, en Espagne, utilisent généralement sept fois plus d'eau que l zones touristiques en développement although great efforts have taken wastewater. - Dans un pays tropical tel que la Thaïlande, un terrain de golf moyen n d'herbicides par an et utilise autant d'eau que 60 000 personnes vivant	ourisme menace es habitants de la place in the last écessite 1 500 kg	les rizières. Les a ville et cet écar few years to red g d'engrais chim	1er Rapport mondial des Nations Unies sur la mise en valeur des ressources en eau, «L'eau pour les hommes, l'eau pour la vie» (2003), http://www.unesco.org/water/wwap/wwdr1/table_contents/index.shtml); 2ème Rapport mondial des Nations Unies sur la mise en valeur des ressources en eau, «L'eau, une responsabilité partagée» (2006),, http://www.unesco.org/water/wwap/wwdr2/table_contents.shtml et de la section sur le Tourisme durable du Programme des Nations Unies pour l'environnement, http://www.uneptie.org/pc/tourism/sust-tourism/env-3main.htm.	