	Parameter/ Indicator	Date	Source	Definition	Note	Link
BLUE WATER	**Surface water produced internally** (km^3/yr)	2011	FAO-AQUASTAT	"Long-term average annual volume of surface water generated by direct runoff from endogenous precipitation (surface runoff) and groundwater contributions."		http://www.fao.org/nr/water/aquastat/main/index.stm
	Groundwater produced internally (km^3/yr)	2011	FAO-AQUASTAT	"Long-term annual average groundwater recharge, generated from precipitation within the boundaries of the country. Renewable groundwater resources of the country are computed either by estimating annual infiltration rate (in arid countries) or by computing river base flow (in humid countries)."		http://www.fao.org/nr/water/aquastat/main/index.stm
	Groundwater recharge (km3)	1958-2007	FAO	" *Groundwater Recharge* is the total volume of water entering underground sources of water (typically aquifers) within a country's borders from endogenous (internal) precipitation and surface water flow."		http://earthtrends.wri.org/searchable_db/index.php?theme=2&variable_ID=11&action=select_countries
	Overlap between surface water and groundwater (km^3/yr)	2011	FAO-AQUASTAT	"Part of the renewable freshwater resources that is common to both surface water and groundwater. It is equal to groundwater drainage into rivers (typically, base flow of rivers) minus seepage from rivers into aquifers."		http://www.fao.org/nr/water/aquastat/main/index.stm

	Total internal renewable water resources (km^3/yr**)**	2011	FAO-AQUASTAT	"Internal Renewable Water Resources (IRWR): Long-term average annual flow of rivers and recharge of aquifers generated from endogenous precipitation. Double counting of surface water and groundwater resources is avoided by deducting the overlap from the sum of the surface water and groundwater resources. "	[Water resources: total internal renewable] = [Surface water: produced internally] + [Groundwater: produced internally] - [Overlap between surface water and groundwater]	http://www.fao.org/nr/water/aquastat/main/index.stm
	Total Actual External Renewable Surface Water (km3/year)	2011	FAO-AQUASTAT	That part of the country's annual renewable water resources that are not generated in the country. It includes inflows from upstream countries (groundwater and surface water), and part of the water of border lakes and/or rivers. Contrary to natural external renewable water resources (i.e. the situation without human influence), ERWR_actual take into account the quantity of flow reserved by upstream (incoming flow) and/or downstream (outflow) countries through formal or informal agreements or treaties, and possible water	Also available for natural	http://www.fao.org/nr/water/aquastat/main/index.stm

				abstraction occurring in the upstream countries. Therefore, it may vary with time. In extreme cases, it may be negative when the flow reserved to downstream countries is more than the incoming flow		
	Surface Water Actual entering and bordering the country (km^3/yr**)**	2011	FAO-AQUASTAT	"The sum of the surface water inflow not submitted to treaties, the surface water inflow secured through treaties, the actual accounted flow of border rivers and the actual accounted part of border lakes."		
	Surface Water Actual Inflow not submitted to treaties (km^3/yr**)**	2011	FAO-AQUASTAT	"Long-term average quantity of water annually entering the country through transboundary flow (rivers, canals, pipes). This figure concerns only the flows which are not submitted to formal agreements or treaties."		
	Surface Water: Actual Inflow submitted to treaties (km^3/yr**)**	2011	FAO-AQUASTAT	"Long-term average quantity of water annually entering the country through transboundary flow (rivers, canals, pipes) which is submitted to formal agreements or treaties."		
	Surface	2011	FAO-	"Long-term average quantity of		

	Water: Actual Inflow secured through treaties (km^3/yr**)**		AQUASTAT	water annually entering the country through transboundary flow (rivers, canals, pipes) which is secured through formal agreements or treaties."		
	Surface Water: Actual Accounted inflow (km^3/yr**)**	2011	FAO-AQUASTAT	"The sum of the average quantities of surface water annually entering the country not submitted to treaties and secured through treaties."	**Calculation** **Criteria:** [Surface water: accounted inflow (actual)] = [Surface water: inflow not submitted to treaties (actual)] + [Surface water: inflow secured through treaties (actual)]	
	Surface Water: Actual total flow of border rivers (km^3/yr**)**	2011	FAO-AQUASTAT	" Average annual flow of rivers that form the border between countries, taking into account water abstraction from upstream countries and/or agreed or accepted commitments towards downstream countries. "		
	Surface Water: Accounted flow of border	2011	FAO-AQUASTAT	"As a general rule, 50 percent of border river flow is assigned to each of the bordering countries. Same rules apply as described under the definition of Surface		

	rivers (km^3/yr**)**			water: accounted flow of border rivers (natural), but where a treaty exists between the adjacent countries of a river system, the rules applied are those defined in that treaty."		
	Surface Water: Actual Accounted part of border lakes (km^3/yr**)**	2011	FAO-AQUASTAT	"Same rules apply as described under the definition of Surface water: accounted portion of shared lakes (natural), but where a treaty exists between the adjacent countries of the lake, the rules applied are those defined in that treaty."		
	Surface water: Actual entering and bordering the country (km^3/yr**)**	2011	FAO-AQUASTAT	"The sum of the surface water inflow not submitted to treaties, the surface water inflow secured through treaties, the actual accounted flow of border rivers and the actual accounted part of border lakes."	"[Surface water: entering and bordering the country (actual)] = [Surface water: inflow not submitted to treaties (actual)] + [Surface water: inflow secured through treaties (actual)] + [Surface water: accounted flow of border rivers (actual)] + [Surface water: accounted part of border lakes (actual)]"	
	Surface water leaving the country (Natural) (km^3/yr**)**	2011	FAO-AQUASTAT	"Average quantity of water annually leaving the country. Border rivers that never enter the country are not included."		

	Surface Water: Actual Outflow not submitted to treaties (km^3/yr**)** km^3/year **)**	2011	FAO-AQUASTAT	"Average quantity of water annually leaving the country and not submitted to treaties."		
	Surface Water: Actual Outflow submitted to treaties (km^3/yr**)**	2011	FAO-AQUASTAT	" Average annual quantity of water submitted to a treaty for a downstream country. "		
	Surface Water: Outflow secured through treaties (km^3/yr**)**	2011	FAO-AQUASTAT	"Average annual quantity of water reserved by treaty for a downstream country."		
	Groundwater entering the country (km^3/yr**)**	2011	FAO-AQUASTAT	"For Actual:F Long-term average annual quantity of groundwater annually entering the country, taking into consideration eventual treaties. "	For actual and natural	http://www.fao.org/nr/water/aquastat/main/index.stm
	Groundwate	2011	FAO-	For actual, 'Long-term average	For actual and natural	http://www.fao.org/nr/wa

	r leaving the country (km^3/yr**)**		AQUASTAT	annual quantity of groundwater leaving the country not submitted to treaties and secured through treaties. The computation of actual considers the outflow of groundwater only in the case of an agreed apportionment between the upstream and downstream countries."		ter/aquastat/main/index.stm
	Total external renewable water resources (km3/year)	2011	FAO-AQUASTAT	"External renewable water resources (ERWR) are the portion of the country's renewable water resources which is not generated within the country. The ERWR include inflows from upstream countries (groundwater and surface water), and part of the water of border lakes or rivers."	For actual and natural. " Natural incoming flow is the average amount of water which would flow into the country without human influence. Actual incoming flow is the average annual quantity of water entering the country, taking into account extraction by upstream countries. It also accounts for the portion of the flow secured through treaties or agreements. The figure may vary with time. It may be negative when the flow reserved to downstream countries is more than the	http://www.fao.org/nr/water/aquastat/main/index.stm

					incoming flow. Actual flows in humid countries are likely to be close to natural flows because of low water consumption relative to available resources in these countries. Conversely, in arid and semi-arid countries, the actual flows are much lower than natural flows. “	
Total Renewable Water Resources (TRWR)	**TRWR**	2011	FAO-AQUASTAT	Total Renewable Groundwater + Total Renewable Surface Water – Overlap between surface water and groundwater. For Actual “ Total Actual Renewable Water Resources (TRWR_actual): The sum of internal renewable water resources (IRWR) and external actual renewable water resources (ERWR_actual). It corresponds to the maximum theoretical yearly amount of water actually available for a country at a given moment. “	For actual and natural.	http://www.fao.org/nr/water/aquastat/main/index.stm And http://www.worldwater.org/data20082009/Table1.pdf
G R	**Green Water for**					

E E N W A T E R	**Pasture/Grazing Land**					
	Green Water for Rainfed Agriculture					
	Green Water for Forests					
G R E Y W A T E R R E S O U R C E S : G R E Y	**Volume of Agriculture drainage water (?)**					
	Volume Wastewater produced (million m3/yr) (for some showing type: industrial/domestic)	varies	FAO	"Annual quantity of wastewater generated in the country, in other words, the quantity of water that has been polluted by adding waste. The origin can be domestic use (used water from bathing, sanitary, cooking, etc.) or industrial wastewater routed to the wastewater treatment plant. It does not include agricultural drainage water, which is the water withdrawn for agriculture but not consumed and returned to the system"	(no drainage water from agriculture)	http://www.fao.org/landandwater/aglw/waterquality/waterusedb1.jsp?radio4=y&radio5=y&region=%25&country=%25&search=Display
	Volume of wastewater treated (million m3/yr)	Varies	FAO	"Quantity of generated wastewater that is treated in a given year and discharged from treatment plants (effluent). Wastewater treatment is the process to render wastewater fit		http://www.fao.org/landandwater/aglw/waterquality/waterusedb1.jsp?radio4=y&radio5=y&region=%25&country=%25&search=Display

				to meet applicable		
SILVER WATER	**Desalination water production per country (million m^3)**	varies	EarthTrend WRI	What each country has made. "Water produced annually by desalination of brackish or salt water. It is estimated annually on the basis of the total capacity of water desalination installations." FAO		http://earthtrends.wri.org/searchable_db/index.php?step=countries&cID%5B%5D=100&theme=2&variable_ID=19&action=select_years
WATER & DEMOGRAPHICS	**Country population**	2011	Population Reference Bureau	"Estimates are based on a recent census, official national data, or PRB, UN, and U.S. Census Bureau projections. The effects of refugee movements, large numbers of foreign workers, and population shifts due to contemporary political events are taken into account to the extent possible" (PRB)		http://www.prb.org/pdf11/2011population-data-sheet_eng.pdf
	Agricultural population (including forestry and fisheries)	2010, 2008, and other periods	FAO			http://www.fao.org/economic/ess/ess-publications/ess-yearbook/ess-yearbook2010/yearbook2010-reources/en/
	Internal Freshwater Resources per Capita (cubic meters)	2010, as well as previous years	World Bank Little Green Data Book		There is a nice figure (fig.2-4) which shows how the average level per country in the Arab countries is much lower than the	http://www.emwis.net/topics/water-data/little-green-data-book-2010-world-bank

					world average. http://www.arab-hdr.org/publications/contents/2009/ch2-e.pdf	
	Total actual renewable water resources per capita (m3/person/ year)	2005, 2006, 2007	FAO-AQUASTAT	" *Per Capita Actual Renewable Water Resources* gives the maximum theoretical amount of water actually available, on a per person basis, for each country. In reality, a portion of this water may be inaccessible to humans. Actual renewable water resources are defined as the sum of internal renewable resources (IRWR) and external renewable resources (ERWR), taking into consideration the quantity of flow reserved to upstream and downstream countries through formal or informal agreements or treaties and possible reduction of external flow due to upstream water abstraction."	In large countries, this national indicator is hiding great internal differences. For example, due to geographical variation."Water resources per capita is frequently used to show the mismatch between freshwater resources…and population, and a sense of the level of competition."….countries with 100 m3/inhabi/yr are considered water scarce.	http://www.unwater.org/downloads/TFIMR_Annex_FinalReport.pdf See figure 1 And http://earthtrends.wri.org/searchable_db/index.php?theme=2&variable_ID=694&action=select_countries To see Countries and territories with total and internal renewable water resources less than 500 m3/inhabitant/year, see table 4: ftp://ftp.**fao**.org/agl/aglw/docs/wr34_eng.pdf
	Water crowding indicator (population per m3)	2010, and previous years		This indicator gives a stronger image of competition over finite water resources than water resources per capita. "Countries with 600 ppl per million m3 of the resources are considered water scarce."	For more info: http://www.unwater.org/downloads/TFIMR_Annex_FinalReport.pdf	By region Table 7.5 http://books.google.com/books?id=UFVmiSAr-okC&pg=PA176&lpg=PA176&dq=water+crowding&source=bl&ots=l7BCQVW_Wm&sig=LwPnteqynIMi14vETOdTyZpffow&hl=en&ei=VIeVTrb4LISh-QbnoJ3mBw&sa=X&oi=

						book_result&ct=result&resnum=3&ved=0CC0Q6AEwAg#v=onepage&q=water%20crowding&f=false
	Water Stress (persons per million cubic metres)	2007	UN-Economic and Social Commission for Western Asia (UN-ESCWA)	This is calculated by the ratio of population to renewable freshwater. It distinguishes between four levels: slight, significant, serious, and critical water stress.	See table 2.1	http://www.arab-hdr.org/publications/contents/2009/ch2-e.pdf
	Human Development Index Value	2005	Arab Human Development Report	This includes education and capacity development as well as access to clean drinking water and sanitation.	*Look up updated values at HDR? *	http://www.arab-hdr.org/publications/contents/2009/annex1-e.pdf
	Water Poverty Index	2002	P Lawrence	A five dimensional look at water poverty taking into account resources (natural from population to geography), access (sanitation and clean water), capacity (ppp, education), uses (domestic vs. industrial), and environment (water indices)	Includes a very nice graph calculating and ranking the WPI for all countries in the world, figure 2, table 1, appendix 1	www.keele.ac.uk/depts/ec/kerp or http://docs.google.com/viewer?a=v&q=cache:Qr0qX58JjdgJ:citeseerx.ist.psu.edu/viewdoc/download%3Fdoi%3D10.1.1.13.2349%26rep%3Drep1%26type%3Dpdf+water+poverty+index&hl=en&pid=bl&srcid=ADGEESg3lbsAiheJ4Mu5G47riS1AUKYOkQCYS5Vemu4u21udw1HU8suyFs-UQiLnOEirC2LVPT1hlVvKWkn7oVo7kVfQn6S-e6QcOouDrVMxw48rj6phB56mDMIO7golDHulWP4_E5_M&sig=AHIEt

						bTC9wJ-v7sOXxnOmQOl5H3IGY7EGg Also see http://www.nerc-wallingford.ac.uk/research/WPI/images/wdpaper.pdf
WATER WITHDRAWAL & CONSUMPTI	**Abstractions from non-conventional and non-renewable resources**	2004	First Arab Water State Report			
	Annual total water withdrawal (km^3/yr)	2000	Earthtrends	" *Annual Total Water Withdrawals* is the gross amount of water extracted from any source, either permanently or temporarily, for a given use. It can be either diverted towards distribution networks or directly used. It includes consumptive use, conveyance losses, and return flow"	It is calculated by the sum of the use of water from all sectors.	http://earthtrends.wri.org/searchable_db/index.php?theme=2&variable_ID=5&action=select_countries
	% of total water withdrawal by sector: Domestic, Industrial, Agricultural	1998-2007, 2000	FAO, World Water Council	" *Percent of water withdrawals used for industrial , domestic, and agricultural purposes."*		http://www.fao.org/economic/ess/ess-publications/ess-yearbook/ess-yearbook2010/yearbook2010-reources/en/ and http://www.worldwater.org/data20082009/Table2.pdf
	Total Water Withdrawal			"Annual quantity of water withdrawn for agricultural,	**% of total freshwater**	

O N T R E N D S	**by Source**			industrial and municipal purposes. It includes renewable freshwater resources as well as potential over-abstraction of renewable groundwater or withdrawal of fossil groundwater and potential use of desalinated water or treated wastewater. It does not include in stream uses, which are characterized by a very low net consumption rate, such as recreation, navigation, hydropower, inland capture fisheries, etc."	**withdrawal used for agriculture:** http://www.emwis.net/topics/water-data/little-green-data-book-2010-world-bank	
	Proportion of renewable water resources withdrawn: MDG Water Indicator	2001	FAO	"Proportion of total renewable water resources withdrawn is the total volume of groundwater and surface water withdrawn from their sources for human use (in the agricultural, municipal and industrial sectors), expressed as a percentage of the total actual renewable water resources. The terms water resources and water withdrawal are understood as freshwater resources and freshwater withdrawal"		http://www.fao.org/nr/water/aquastat/maps/AQUASTAT_water_resources_and_MDG_water_indicator-March_2009.pdf And see also WB Green Data book for 2010 as well as previous years: http://www.emwis.net/topics/water-data/little-green-data-book-2010-world-bank
	Total Freshwater Water Withdrawal (km^3/yr)			"This is the sum of surface water withdrawal and groundwater withdrawal."	[Total freshwater withdrawal (surface water + groundwater)] = [Total water withdrawal (summed by sector)] -	

					[Desalinated water produced] - [Treated wastewater reused] - [Reused agricultural drainage water]	
	Surface water withdrawal (km^3/yr)		FAO	"Annual gross amount of water extracted from rivers, lakes and reservoirs. It includes withdrawal of primary renewable surface water resources and secondary freshwater sources (water previously withdrawn and returned)."		http://www.fao.org/queries/show.html?variable_id=4261
	Groundwater withdrawal (km^3/yr)			" *Annual total groundwater withdrawals* refers to the total abstractions from groundwater sources, including nonrenewable sources per year."		http://earthtrends.wri.org/searchable_db/index.php?theme=2
	Groundwater withdrawal per capita	1973-2005	Earthtrends	" *Annual per capita groundwater withdrawals* refers to the total abstractions from groundwater sources, including nonrenewable sources per year per person. Groundwater is defined as any subsurface water that exists in the zone of saturation (i.e., below the water table). This water is commonly present as underground streams and aquifers and often feeds wells and springs on the surface."		http://earthtrends.wri.org/searchable_db/index.php?theme=2
	Groundwater withdrawal by sector		Earthtrends	" Sectoral share of withdrawals of groundwater is classified as domestic (drinking water,		http://earthtrends.wri.org/searchable_db/index.php?theme=2

	(Indust./domes./agric.) (km^3/yr)			homes, commercial establishments, public services [e.g., hospitals], and municipal use or provision); industry (including water withdrawn to cool thermoelectric plants); and agriculture (irrigation and livestock)."		
	Groundwater withdrawal as percent of annual recharge	1973-2005	Earthtrends	" *Groundwater withdrawals as a percent of annual recharge* refers to the total abstractions from groundwater sources, including nonrenewable sources, per year, as a percent of the total internal renewable groundwater resources (or groundwater recharge volume)."		http://earthtrends.wri.org/searchable_db/index.php?theme=2
	Groundwater development as share of total actual renewable water resources				"The quantity of groundwater used in total in proportion to the recharge illustrates to what degree a nation's is exploiting its groundwater water resources." Saudi Arabia, Libya, and Algeria are the world's largest **users of non-renewable aquifers (fossil)**p.10	http://www.unwater.org/downloads/TFIMR_Annex_FinalReport.pdf and http://www.unesco.org/water/wwap/wwdr/indicators/pdf/D2_Groundwater_development_as_share_of_TARWR.pdf and http://www.unesco.org/water/wwap/wwdr/indicators/pdf/WWDR2_Table_4.3.pdf
	% of rainwater use		African Water & Sanitation M & E	Total Rainwater use for all sectors (km3)/ Total volume of precipitation (km3)	An increased trend is positive indicator of greater efficiency	From Cedare Mohamed Email Oct 13, 2011
	% Reuse of	1999,	UNEP, World	Source of water includes sea,	See table 14, and	http://www.unep.or.jp/iet

	treated wastewater	2005	Water Council	river, wastewater, brackish water.	World Water report for list of Arab states.	c/publications/techpublications/techpub-8f/b/Treatment1-2.asp and http://www.worldwater.org/data20062007/Table21.pdf
	Treated wastewater reused (10^9 m^3/yr)		FAO	"Quantity of treated wastewater which is reused in a given year. Wastewater treatment is the process to render wastewater fit to meet applicable environmental standards for recycling or reuse."	Last table, last column documents reported incidence of disease breakout and spread due to wastewater reuse (attributed to lack or bad treatment?)	http://www.fao.org/landandwater/aglw/waterquality/waterusedb1.jsp?radio4=y&radio5=y&radio6=y&radio7=y&radio8=y&region=%25&country=%25&search=Display
	Reused Agricultural drainage water (10^9 m^3/yr)		FAO	"Agricultural drainage water is water withdrawn for agriculture but not consumed and returned. It can be recovered and reused and thus is considered to be a secondary source of water, contrary to primary water resources, which are the renewable freshwater resources. Like desalinated water and wastewater, it is also considered as a type of non-conventional water.		
	Irrigation water use	2000	FAO-AQUASTAT	This includes total renewable water resources (cubic km),	This is a table. Of all the countries in the	http://www.fao.org/nr/water/aquastat/water_use_ag

	(required and % withdrawal of renewable water resources) (ET)			irrigation water requirements, water withdrawal for agriculture, and water withdrawal as percentage of renewable water resources.	world, there are only three listed which exceed 100% of water withdrawal as % of renewable water resources: Libya (712%) Saudi Arabia (643%) and Yemen (154%). Egypt is close too with a record of 92% and Jordan 86%.	r/index.stm
	Rainfed agriculture water consumption (ET)					
	Grazing Land water consumption (ETgrz)					
	Water withdrawal for agriculture (by livestock, irrigation, aquaculture km3/year		FAO AQUASTAT	"Annual quantity of water withdrawn for irrigation, livestock and aquaculture purposes. It includes renewable freshwater resources as well as over-abstraction of renewable groundwater or withdrawal of fossil groundwater, use of agricultural drainage water, (treated) wastewater and desalinated water."		
	Water use intensity in agriculture (m3/he/yr)	2000	Earthtrends, WRI	" *Water use intensity* is the amount of water used in the agricultural sector per hectare of temporary and permanent		http://earthtrends.wri.org/searchable_db/index.php?theme=6&variable_ID=276&action=select_countri

				cropland in the year specified. This indicator shows a country's dependence on irrigation for agricultural production"		es
	Green water fraction (%) of total crop water consumption	1971-2000 average	GSWP		Map	http://atlas.gwsp.org/index.php?option=com_content&task=view&id=123&Itemid=63
	Blue water consumption on irrigated cropland (mm yr–1 per cropland area)	1971-2000 average	Potsdam Institute for Climate Impact Research		Map	http://atlas.gwsp.org/index.php?option=com_content&task=view&id=125&Itemid=63
	Water Scarcity Index	2010	Yale Centre for Environmental Performance	"The indicator represents the overuse of water derived by subtracting the recommended use fraction (0.4) from the ratio of total freshwater withdrawals (including surface and both renewable and fossil ground water) to total renewable water resources (not including desalinated or treated waste water). This proportion is then multiplied by a weight which is the ratio of freshwater withdrawal to total withdrawals (freshwater, desalinated water and treated wastewater). The target is <=0 overuse." Data used from AQUASTAT.	Includes graphs correlating Water Scarcity with GDP, density, corruption, taxes, and other socio-economic factors.	http://epi.yale.edu/Metrics/WaterScarcityIndex
	Relative Water Stress	2009, 2010	EPI- Yale and University of	"Water Stress is calculated as the percentage of a country's	Global map: "Domestic, Industrial	http://www.unesco.org/water/wwap/wwdr/indicato

	Index (also known as Relative Water Demand, RWD)		New Hampshire	territory affected by oversubscription of water resources. The 2010 EPI utilizes data from the University of New Hampshire's Water Systems Analysis Group. The target for each country is to have no area of its territory affected by oversubscription. Water use is represented by local demands summed by domestic, industrial, and agricultural water withdrawals, and then divided by available water supply to yield an index of local relative water use. A high degree of oversubscription is indicated when the water use is more than 40% of available supply (WMO, 1997)."	and Agricultural water demand per available water supply per grid cell along river network… Domestic Water Demand: Volume of water required for domestic use per grid cell. • Industrial Water Demand: Volume of water required for industrial use per grid cell. • Agricultural Water Demand: Volume of water required for agricultural use per grid cell. • Water Supply: Volume of water supply available per grid cell"	rs/pdf/A3_Relative_water_stress_index.pdf and http://epi.yale.edu/Metrics/WaterStressIndex
	Water Reuse Index	2009	University of New Hampshire	"Aggregate upstream water demand/use per available water supply per grid cell along river network. The indicator is based on the following definitions: • upstream demand volume per grid cell. • Water Supply: Volume of water supply available per grid cell."	Global map	http://www.unesco.org/water/wwap/wwdr/indicators/pdf/A8_Water_reuse_index.pdf
	Non-	2009	University of	Renewable freshwater resources	Global Map	http://www.unesco.org/w

	Sustainable Water Use Index		New Hampshire	(streamflow) minus geospatially distributed human water demand…The indicator is based on the following definitions (all on a per grid cell basis): • Agricultural Water Demand: Volume of water required for agricultural use. • water use. Renewable Freshwater Resources: Volume of water supply (Q) available."		ater/wwap/wwdr/indicators/pdf/A1_Index_of_non_sustainable_water_use.pdf
	Water Footprint	2001	GSWP UNWWR3	"A country's water footprint is the volume of water used in the production of all the goods and services consumed by inhabitants of the country…four major factors determining a country's water footprint are volume of consumption, consumption pattern (for example, high or low meat consumption), climate (growing conditions), and agricultural practices (water use efficiency)." (UNWWR3, p. 101)	Map	http://atlas.gwsp.org/index.php?option=com_content&task=view&id=91&Itemid=63
	Internal Water Footprint	2009	UNWWR3	Internal water footprint is the volume of water used from domestic water resources.		
	External and Internal Water footprint of national consumption by sector	1996-2005	UNESCO		Appendix IX	http://www.waterfootprint.org/Reports/Report50-NationalWaterFootprints-Vol2.pdf

	(Agri./Indust./ Domestic) by water type (green/blue/ grey)					
	Water footprint of national production by sector	1996-2005	UNESCO		Appendix I	http://www.waterfootprint.org/Reports/Report50-NationalWaterFootprints-Vol2.pdf
W A T E R & L A N D	**Area of country (100ha)**	2011	FAO-AQUASTAT			http://www.fao.org/nr/water/aquastat/main/index.stm
	Change of area of country (1000ha)			Changes, if any, in geo-political borders in the last ten years.	Example, Sudan.	
	Long –term Precipitation Average in depth (mm/y)	2011	FAO-AQUASTAT	" Long-term average (over space and time) of annual endogenous precipitation (produced in the country) in depth."		http://www.fao.org/nr/water/aquastat/main/index.stm
	Long –term Precipitation Average in volume(km3 /year)	2011	FAO-AQUASTAT	" Long-term average (over space and time) of annual endogenous precipitation (produced in the country) in volume."	[Average precipitation in volume] = [Total area] * [Average precipitation in depth] / 100000	http://www.fao.org/nr/water/aquastat/main/index.stm
	Volume of evaporation and ET	1961-1999	International Water Management Institute (IWMI)		This is a software application "World Water and Climate Atlas) that generates maps . See also The	http://www.iwmi.cgiar.org/WAtlas/Default.aspx also check their water data

					global historical climatology Network, version 1 . WMO and GPCC.	http://waterdata.iwmi.org/DataArchive.php and http://www.fao.org/nr/water/infores_databases_climwat.html
	Urban Encroachment on green areas and impact on run off, Evapotranspiration, and groundwater recharge				For maps on land use systems in the Arab region, see http://www.fao.org/nr/lada/index.php?option=com_content&view=article&id=154&Itemid=184&lang=en	
	Terrestrial Wilderness Index		Groombridge and Jenkins 1998	"A measure of the spatial extent of roads, settlements and other human infrastructure"	Used "to estimate the probable degree of anthropogenic disturbance to major river basins.	http://books.google.com/books?id=_CGeiiNE-K4C&pg=PA141&lpg=PA141&dq=table+freshwater+fish+threatened&source=bl&ots=FCBcHAU2hw&sig=3K7Fxv-4Mru646RhYBETuHm9Q7o&hl=en&ei=D9yWTqTSCYvEsgaio_mBBA&sa=X&oi=book_result&ct=result&resnum=3&ved=0CDUQ6AEwAg#v=onepage&q=table%20freshwater%20fish%20threatened&f=false p. 138
	Wetland distribution	2003	Bernhard Lehner and		Contains list of world databases on	http://www.geo.uni-frankfurt.de/ipg/ag/dl/f_p

			Petra Do¨ll		wetlands	ublikationen/2004/lehner_doell_JHydrol2004_GLWD.pdf
	Number of Ramsar sites per county and size (ha)		RAMSAR	Also known as number of wetlands of international importance, defined under the Wetlands Convention in 1971.		www.ramsar.org and http://earthtrends.wri.org/pdf_library/country_profiles/bio_cou_434.pdf
	Change in size of wetlands					
	Multilateral Agreements Status: Ramsar Convention		WRI Earthtrends	Status and Year of country ratification		http://earthtrends.wri.org/searchable_db/index.php?action=select_variable&theme=10
	Livestock density					
	Forest Area (% of land area)	2010	World Bank Little Green Data Book			http://www.emwis.net/topics/water-data/little-green-data-book-2010-world-bank
	Deforestation (Average annual %)	2007-1990	World Bank Little Green Data Book			http://www.emwis.net/topics/water-data/little-green-data-book-2010-world-bank
	Change in forest area	2010-1990	FAO		See table 3, Annex, p.229	http://www.fao.org/docrep/013/i1757e/i1757e.pdf also in http://www.fao.org/docrep/013/i2000e/i2000e.pdf

	Area of inland water in relation to forest. Extent of forest area.	2010	FAO		See table 2 Annex, p.224	http://www.fao.org/docrep/013/i1757e/i1757e.pdf
	Extent of desertification	1996 (and beyond)	LAS and UNEP		About 1/5th of the Arab region is in risk of desertification. See excellent section in the Arab Development Report for causes and suggested policies!	http://www.arab-hdr.org/publications/contents/2009/ch2-e.pdf Fig. 2-6
	Agricultural land (% of land area)	2010, and previous years as well	World Bank Little Green Data Book			http://www.emwis.net/topics/water-data/little-green-data-book-2010-world-bank
	Irrigated land and change in irrigated land	1999-2001, 2003-2005, 2006, 2007, 2008	FAO	Hectares of country land used for irrigation		http://www.fao.org/nr/water/aquastat/irrigationmap/index20.stm and http://www.fao.org/economic/ess/ess-publications/ess-yearbook/ess-yearbook2010/yearbook2010-reources/en/
	Rainfed land and change in rainfed land					
	% share of irrigated land on					http://www.fao.org/economic/ess/ess-publications/ess-

	arable land and permanent crops					yearbook/ess-yearbook2010/yearbook2010-reources/en/
	% of irrigated land with raw or treated wastewater	Varies	FAO			http://www.fao.org/landandwater/aglw/waterquality/waterusedb1.jsp?radio4=y&radio5=y&radio6=y&radio7=y&radio8=y&region=%25&country=%25&search=Display
WATER & ECOSYSTEMS	**Groundwater depletion rate**					
	Organic Water Pollutant emissions BOD (kg per day)	2009 and earlier	World Bank	" Emissions of organic water pollutants are measured by biochemical oxygen demand, which refers to the amount of oxygen that bacteria in water will consume in breaking down waste. This is a standard water-treatment test for the presence of organic pollutants."		http://data.worldbank.org/indicator/EE.BOD.TOTL.KG/countries
	Water pollution by industry: chemical, textile, clay glass, food, metal, paper, pulp, wood and other industries	2009 and earlier	World Bank	" Industry shares of emissions of organic water pollutants refer to emissions from manufacturing activities as defined by two-digit divisions of the International Standard Industrial Classification ….Emissions of organic water pollutants are measured by biochemical oxygen demand, which refers to the amount of oxygen that bacteria in water		http://data.worldbank.org/indicator/EE.BOD.WOOD.ZS/countries

				will consume in breaking down waste. This is a standard water-treatment test for the presence of organic pollutants."		
	% of watersheds that are protected					
	Change in dissolved phosphate levels at river mouths (NO3-N mgl/L)	1990-2008	UNEP	Tracks changes in dissolved phosphate levels at major river mouths over time	No or little change in Arab Region	http://www.unep.org/dewa/vitalwater/article102.html
	Change in dissolved nitrate levels at river mouths ((NO3-N mgl/L))	1990-2008	UNEP	Tracks changes in dissolved nitrate levels at major river mouths over time.		http://www.unep.org/dewa/vitalwater/article101.html
	Oxygen, Ph level, metals, physical characteristics		GEMSTAT	Available for some countries a detailed list of water characteristics for download		http://www.gemstat.org/queryrgn.aspx
	Fragmentation and flow regulation of rivers		Global runoff data centre (GRDC) And BIP	"Degree of environmental impact at the river basin level resulting from flow regulation, channel fragmentation and other stresses associated with dams, withdrawals and diversions."	Binannual updates	http://www.unesco.org/water/wwap/wwdr/indicators/pdf/E1_Fragmentation_and_flow_regulation_of_rivers.pdf and http://www.bipindicators.net/riverfragmentation

	Water river sediment yields (t/km2/yr) and runoff (mm/yr) by country	2000 (last updated only!)	FAO AQUASTAT		Compares in some cases sedimentation rates before and after dam installed. One of the major problems today with dams is the sedimentation rate it increase it induces, which reduces storage capacity of reservoirs.	http://www.fao.org/nr/water/aquastat/sediment/index.asp?river=%25&country=Iraq&cont=%25&sedyieldfrom=&sedyieldto=&wsfrom=&wsto=&rofrom=&roto=&rffrom=&rfto=&search=Search
	Effects of river sedimentation on biome type	2005	UN Water		Deserts areas highly affected	http://www.unesco.org/water/wwap/wwdr/indicators/pdf/WWDR3_Figure_8.2.pdf
	Sediment filling in reservoirs			Accumulation of sediment in natural or artificial water reservoirs (e.g. dams)		
	Sediment Trapping in Dams	2005	University of New Hampshire and WWDR2		map	http://atlas.gwsp.org/index.php?option=com_content&task=view&id=112&Itemid=63 also http://wwdrii.sr.unh.edu/download.html also http://www.unesco.org/water/wwap/wwdr/indicators/wwdr_indicators.shtml
	Freshwater species population trends index		IUCN and WWF and World Conservation	For fish, mussels, crayfish, amphibians, and birds.	" Trends in freshwater species populations reflect the health and quality	http://data.iucn.org/dbtw-wpd/edocs/2006-005.pdf And http://www.bipindicators.

			Monitoring Center (WCMC)		of freshwater ecosystems and biomes on various scales." IUCN document contains maps of freshwater fish threatened species in some Arab countries… UN Water document contains global trend figure	net/LinkClick.aspx?fileticket=IyowTSM8w8M%3d&tabid=99&language=en-US And http://www.unesco.org/water/wwap/wwdr/indicators/pdf/E4_Freshwater_species_population_trends_index.pdf
	Freshwater species population					
	Water Quality Index for biodiversity	2008		" The Water Quality Index for Biodiversity (WQIB), developed by the United Nation's Environment Programme's Global Environment Monitoring System, is based on the most comprehensive global water quality dataset in the world. The WQIB uses data related to water temperature, dissolved oxygen, pH, electrical conductivity (salinity), nitrogen and phosphorus, to determine how water quality is affecting biodiversity. Data is collected and compiled from 6,216 water monitoring stations around the	The data is for the region only. You may ask for country data from : (**Richard.Robarts@gemswater.org**).	http://www.bipindicators.net/wqib

				globe. By examining changes in water quality at each of these stations over time it becomes possible to determine if water quality is declining, remaining stable or improving with regard to its ability to sustain biodiversity."		
	Water Quality Index	2010	EPI – Yale	"The 2010 EPI Water Quality Index (WQI) uses three parameters measuring nutrient levels (Dissolved Oxygen, Total Nitrogen, and Total Phosphorus) and two parameters measuring water chemistry (pH and Conductivity). These parameters were selected because they cover issues of global relevance (eutrophication, nutrient pollution, acidification, and salinization) and because they are the most consistently reported."		http://epi.yale.edu/Metrics/WaterQualityIndex
	Relative Water Quality Indicator Value by country and global ranking	2002	UNEP		See table 6.5	http://books.google.com/books?id=_CGeiiNE-K4C&pg=PA141&lpg=PA141&dq=table+freshwater+fish+threatened&source=bl&ots=FCBcHAU2hw&sig=3K7Fxv-4Mru646RhYBETuHm9Q7o&hl=en&ei=D9yWTqTSCYvEsgaio_mBBA&sa=X&oi=book_result&ct=result&resnum=3&ved

						=0CDUQ6AEwAg#v=onepage&q=table%20freshwater%20fish%20threatened&f=false
W A T E R & H E A **L** **T** **H**	**Diarrhea prevalence (% of children under five)**	2010 (and previous years)	World Bank Little Green Data Book		According to JMP, globally 88% of diarrheal-disease deaths are due to lack of access to sanitation facilities. (UNwater).	http://www.emwis.net/topics/water-data/little-green-data-book-2010-world-bank
	Dracunculiasis reported cases	1972-2005	World Water (See also WHO for most up to date surveillance report)	"Dracunculiasis, or guinea worm disease, is the result of contact with water contaminated with a parasite, and hence directly related to drinking unclean water."	Reported cases of disease for some countries including Sudan, Yemen, and Mauritania.	http://www.worldwater.org/data20062007/Table15.pdf
	Reported cases of other water-related diseases		WHO, FAO,	"Three types of water-related diseases exist: (i) water-borne diseases are those diseases that arise from infected water and are transmitted when the water is used for drinking or cooking (for example cholera, typhoid); (ii) water-based diseases are those in which water provides the habitant for host organisms of parasites ingested (for example shistomasomiasis or bilharzia); (iii) water-related insect vector diseases are those in which insect vectors rely on water as habitat but transmission is not through direct contact with water (for example malaria, onchocerciasis or river blindness,	Morbidity and mortality cases can be found on WHO, by country . Population affected by water borne diseases (1000 habitants)- calculated in FAO.	Example http://www.worldwater.org/data19981999/table22.htm

				elephantiasis).This includes intestinal helminths, schistosomiasis, trachoma, malarial, dengue fever, poluimyelitis, trypanosomiasis, bancroftian filariasis, onchocerciasis,		
	Open defecation practice	2008	WHO-UNICEF JMP	Number of people who continue to practice open defecation		http://www.wssinfo.org/fileadmin/user_upload/resources/1278061137-JMP_report_2010_en.pdf
WATER ACCESSIBILITY & COV	**Urban Water Supply coverage per country**		FAO Irrigation in the Near East region			
	Rural Water Supply coverage per country		FAO Irrigation in the Near East region			
	% of population connected to public water supply per country					
	MDG Progress on Access to Improved Sanitation and Safe Drinking Water (%)	1990, 2004	World Water		Also by years lagging, http://www.arab-hdr.org/publications/contents/2009/ch2-e.pdf Box 2-6 Shows that Arab countries will miss	http://www.worldwater.org/data20082009/Table5.pdf

E R A G E					the 2015 target by 27 years	
	MDG Progress on Access to Safe Drinking Water (by years lagging)	2007	UN-ESCWA		Shows that Arab countries will miss the 2015 target by 27 years	http://www.arab-hdr.org/publications/contents/2009/ch2-e.pdf Box 2-6
	% of population with improved water supply (for rural and urban)	2008, 2005,2000,1995,1990	Population Reference Bureau from WHO and UNICEF (JMP), World Bank	"An improved drinking-water source is defined as one that, by nature of its construction or through active intervention, is protected from outside contamination" (PRB). Defined looking at the following sources: piped water into dwelling, yard or plot, public tap/standpipe, tubewell/borehole, protected dug well, protected spring, rainwater collection	Includes references for both Rural and Urban population . Includes country files. For population, by percentage and absolute numbers	http://data.worldbank.org/indicator/SH.H2O.SAFE.RU.ZS http://www.prb.org/pdf11/2011population-data-sheet_eng.pdf, http://www.wssinfo.org/documents-links/documents/?tx_displaycontroller[type]=country_files
	% of population with unimproved water supply (for rural and urban)	2008, 2005,2000,1995,1990	WHO-UNICEF JMP	Defined looking at the following sources as indicators: unprotected dug well, unprotected spring, cart with small tank or drum, tanker truck, surface water, bottled water.		http://www.wssinfo.org/fileadmin/user_upload/resources/1278061137-JMP_report_2010_en.pdf
	% of population with improved water	2008, 2005,2000,1995,1990	WHO-UNICEF JMP and World Bank Little Green Data	Defined looking at the following facilities as indicators: Flush or pour-flush (piped sewer system, septic tank, pit latrine), ventilated	Includes country files. Last updated March 2010. The world is not on track for meeting the MDG	http://www.wssinfo.org/documents-links/documents/?tx_displaycontroller[type]=country_files

	sanitation (for rural and urban)		Book 2010	improved pit (VIP) latrine, pit latrine with slab, composting toilet.	goal 7 by 2015 for improved sanitation access.	and http://www.emwis.net/topics/water-data/little-green-data-book-2010-world-bank
	% of population with unimproved water sanitation (for rural and urban)	2008, 2005,2000,1995,1990	WHO-UNICEF JMP	Defined looking at the following facilities as indicators: flushing or pour flush to elsewhere, pit latrine without slab/open pit, bucket, hanging toilet or hanging latrine, shared or no facilities.	Generally more improvement in urban than rural areas for sanitation…. (see p.16 Fig. 14 www.unwater.org/downloads/TFIMR_Annex_FinalReport.pdf)	http://www.wssinfo.org/fileadmin/user_upload/resources/1278061137-JMP_report_2010_en.pdf
WATER INFASTRUCTURE	**Number of water supply plants**					
	Length of water supply networks					
	Length of sewage networks					
	Length of agriculture drainage networks					
	Length of irrigation networks					
	Number of wastewater treatment plants and degree of treatment	Varies	FAO			http://www.fao.org/landandwater/aglw/waterquality/waterusedb1.jsp?radio4=y&radio5=y&region=%25&country=%25&search=Display

	Number of dams per country	All years up to date.	FAO-AQUASTAT	Includes purpose/function includes hydroelectricity, flood control, water supply, etc.	Also includes sedimentation rates of some dams	http://www.fao.org/nr/water/aquastat/main/index.stm
	Dam Capacity per country					
	Number of desalination plants per country					
	Desalination Capacity (1000m3/day) by country	2006, 2011, 2016, 2025	World Bank	Past and Projection of capacity for different years.	See table 26.2 in World Bank Report	http://www.iauiraq.org/reports/Water_Arab_World_full.pdf
	Reports of major infrastructure failure	Since 2000		This includes sinkhole and dam collapse.		Disaster databases
WATER & ENERGY	**Electricity Generated using Hydropower (% of total)**	2010, and previous years as well	World Bank Little Green Data Book	Hydropower production as percent of total electricity production		http://www.emwis.net/topics/water-data/little-green-data-book-2010-world-bank
	Hydroelectric energy consumption (thousand tonnes of oil equivalent (ktoe))	2005, 2000, 1995	OECD/IEA	Hydropower energy consumed		http://earthtrends.wri.org/searchable_db/index.php?theme=6&variable_ID=276&action=select_countries
	Hydropower potential by country		International Journal of Hydropower and Dams	Hydropower production potential	NEED SUBSCRIBTION TO GET DATA?	http://www.hydropower-dams.com/editorial-content.php?c_id=173

W A T E R P R O D U C T I V I T Y	**Industrial water productivity**	Mostly up to 2006	UNESCO	"Economic value added (in US$) per cubic meter of water withdrawn by industry" (UNESCO).	This is a general indicator of performance in water use…the intensity of water use in industry…is believed to be increasing as is the value added by industry per unit of water use." (UNWater, p. 18)	http://www.unesco.org/water/wwap/wwdr/indicators/pdf/H4_Industrial_water_productivity.pdf and www.unwater.org/downloads/TFIMR_Annex_FinalReport.pdf
	Agricultural water productivity (metric tons)		AFS M & E	Agriculture GDP / (Agriculutral water withdrawal – Water return to environment)		
	Freshwater Aquaculture production (metric tons)	1950-2005	FAO	"*Aquaculture Production by Environment: Freshwater* refers to fish, molluscs, crustaceans, miscellaneous aquatic animals, and other aquatic organisms cultivated in freshwater environments (inland waters). Data do not include aquatic plants, capture production or aquaculture production in marine and brackish environments." (Earthtrends)		http://earthtrends.wri.org/searchable_db/index.php?theme=1&variable_ID=31&action=select_countries
	Agriculture, Value added to GDP (%)		World Bank	"Agriculture corresponds to ISIC divisions 1-5 and includes forestry, hunting, and fishing, as well as cultivation of crops and livestock production. Value added is the net output of a sector after adding up all outputs and subtracting intermediate inputs. It is		http://www.worldbank.org

				calculated without making deductions for depreciation of fabricated assets or depletion and degradation of natural resources. The origin of value added is determined by the International Standard Industrial Classification (ISIC), revision 3. Note: This value is not specific to crop production, so care should be taken to ensure proper implementation."		
	Livestock GDP share of total GDP					
	% population economically active in agriculture	2010, 2008, and other periods	FAO	"Economically active population engaged in or seeking work in agriculture, hunting, fishing or forestry."		http://www.fao.org/economic/ess/ess-publications/ess-yearbook/ess-yearbook2010/yearbook2010-reources/en/
W A T E R T A R I F F S &	**Water Tariff Structures in urban and rural settlements**		AMCW			
	Changes in household water price levels over changes in household income		OECD		Household average combined sewerage and water bills	
	Water and Sanitation charges as		UNESCO	" The indicator is based on the following definitions. *Expenditure on Water Charges*	" This indicator shows how much water and sanitation	http://www.unesco.org/water/wwap/wwdr/indicators/pdf/J5_Water_charges.

AFFORDABILITY	**% of various household income groups**			*of a Given Household Income Group*: Actual monetary amount paid by households in a given income group to the water operator in return for receiving water supply and sanitation services. *Household Income of a Given Household Income Group*: It is defined as the total amount of income of households in a given income group received by all persons living in the same household. This includes, but is not limited to, wages or salary income; net self-employment income; interest, dividends, or net rental or royalty income or income from estates and trusts etc."	charges constitute of various household income groups." Rationale: " Water charges are seen as an important economic instrument for improving water use efficiency, enhancing social equity and securing financial sustainability of water utilities and operators.:	pdf
	Share of total household expenditure on water (%)	2005	Earthtrend	" *Share of total household expenditure*, *water* refers to the proportion of household spending that is dedicated to water among those earning less than $3,000 per year (the Base of the Pyramid)."	*Only Djibouti	http://earthtrends.wri.org/searchable_db/index.php?theme=5&variable_ID=2160&action=select_countries
	National *average* household water and wastewater bills to *average* net disposable household income				This is a macro-affordability indicator for the entire nation's population	

	Water charges as share of total bills in low income earning homes				This is a micro-affordability indicator of the nation's lowest lowest income earning decile of a population	
W A T E R & F I N A N C E	**Country GDP**					
	% of GDP to Sanitation and Hygiene					
	Ratio of desired over actual public water investment in drinking supply and sanitation					
	National Investment in Water (total)					http://www.unesco.org/water/wwap/wwdr/indicators/pdf/J1_Water_sector_share_in_total_public_spending.pdf
	Water sector share in total public spending					
	National Investment in Small scale water control (Million $)	2009	Sirte			http://www.sirtewaterandenergy.org/en/nationalrepts.html
	National	2009	Sirte			http://www.sirtewaterand

	Investment in Rehabilitation of irrigation (Million $)					energy.org/en/nationalreports.html
	National Investment in Large Scale Hydraulic projects (Million $)	2009	Sirte			http://www.sirtewaterandenergy.org/en/nationalreports.html
	Cost of irrigation projects by countries	1985-2003			Only a few case studies	http://www.fao.org/nr/water/aquastat/investment/index.stm
	Overseas Development assistance for Water (total and per capita)	1990-2004 average	World Water Council			http://www.worldwater.org/data20062007/Table6.pdf
WATER & TRAD	**Virtual Water (also known as External Water Footprint)**	2008	UNWWR3 And Hoekstra and Chapagain	Virtual water of one country is the volume of water used from other countries to produce the goods it imports The greater the virtual water, the greater the dependence on foreign water resources.		See printed table
	% of External to total water footprint	1996-2005	UNESCO		Last column in Appendix IX	http://www.waterfootprint.org/Reports/Report50-NationalWaterFootprints-Vol2.pdf
	Water	2008	Hoekstra and		100%- Water self	See printed table

E	**import dependency**		Chapagain		sufficiency% = Water import dependency	
	% of blue, green, and virtual water demand	2005	Plan Blue		See fig. 11. This is a proposed indicator for trade and food production by the UN.	www.unwater.org/downloads/TFIMR_Annex_FinalReport.pdf
	Virtual-water flows related to trade in crop, animal, and industrial	2011	UNESCO	With distinction of green, blue, and grey water	Appendix II.	http://www.waterfootprint.org/Reports/Report50-NationalWaterFootprints-Vol2.pdf
W A T E R & G O V E R N A N C E	**Corruption Perception Index**	2010	Transparency International	Measures the perceived levels of public sector corruption, defined as " the abuse of entrusted power for private gain (TI 2010)."	Corruption is an obstacle for achieving progress in water policy and management.	
	Direction of institutional reforms in Arab countries: change in governance indicators between 1996 and 2007	1996-2007	UNDP-AHDR	Governance indicators includes voice and accountability, political stability, government effectiveness, regulatory quality, rule of law, control of corruption, average institutional quality,		http://www.arab-hdr.org/publications/contents/2009/annex2-e.pdf
	Progress towards planning and implementing Integrated	2006	UN Water and GWP	a.k.a. IWRM targets for MDG rationale, see: http://www.unesco.org/water/wwap/wwdr/indicators/pdf/B2_Assessing_progress_towards_achi	Results are shown for the entire Arab region (must look for country-specific information in CEDARE report)	See table 2 http://www.unesco.org/water/news/pdf/wwf4_report_iwrm.pdf and

	Water Resources Management			eving_the_IWRM_target.pdf		http://water.cedare.int/cedare.int/files15%5CFile2298.pdf
	National Water Rights			A comapritive analysis of human rights to water and water permits in the country.	A textual analysis of water rights per country in the Arab region…	See chapter 16, http://www.iauiraq.org/reports/Water_Arab_World_full.pdf
	National Water Institutions		Irrigation in the near east, FAO book	A list of formal governmental or NGO bodies involved in water management of a country		FAO Water Report 9
	National water laws		Irrigation in the near east, FAO book	A list of water laws, including water price regulation.		
	National Status with International Environmental Treaties		Arab Human Development Report		See table 22	http://www.arab-hdr.org/publications/contents/2009/annex1-e.pdf
WATER & TRANSBO	**Dependency Ratio**	2011	FAO AQUASTAT	" Indicator expressing the percent of total renewable water resources originating outside the country. This indicator may theoretically vary between 0% and 100%. A country with a dependency ratio equal to 0% does not receive any water from neighbouring countries. A country with a dependency ratio equal to 100% receives all its renewable water from upstream countries, without producing any of its own."	100x (total actual groundwater entering the country + total actual surface water entering the country)/ (total actual internal renewable water resources + total actual groundwater entering the country + total actual surface water entering the country)	http://www.fao.org/nr/water/aquastat/main/index.stm
O	**Groundwate**	2008	UNESCO –	"Combining the percentage of	"For this map two	http://atlas.gwsp.org/atlas

U N D A R Y I S S U E S	**r conflict prone areas in relation to human access to improved water sources.**		Institute for Water Education	the people with access to improved water sources and the groundwater 'treaty density' indicates those transboundary groundwater aquifers that are prone to conflict on the basis of the assumption that these factors are solely responsible for future groundwater conflicts."	assumptions have been made: 1) the chance of groundwater conflict within a transboundary aquifer will reduce significantly when consensus regarding the use of groundwater is reached and treaties and agreements are ratified. 2) The percentage of the population with access to improved water sources can be regarded a measure for water scarcity and thus regarded the second large factor in the likelihood of groundwater-conflict."	/img/map/grconfa1_0_wl.png
	Groundwater conflict prone areas in relation to the quantity of groundwater treaties signed per country.	2008	UNESCO – Institute for Water Education	"Combining the percentage of the people with access to improved water sources and the groundwater 'treaty density' indicates those transboundary groundwater aquifers that are prone to conflict on the basis of the assumption that these factors are solely responsible for future groundwater conflicts."		http://atlas.gwsp.org/index.php?option=com_content&task=view&id=82&Itemid=63
	Multilateral			Status and Year of country		

	Agreements Status: Standpoints on UN water conventions			ratification		
	List of disputes and agreements over transboundary rivers (international freshwater treaties)	2011	World Bank and International Freshwater treaties Database And Atlas of International Freshwater Agreements (UNEP)		See table 15.1 in the eastern countries of Arab region of World Bank document	http://www.iauiraq.org/reports/Water_Arab_World_full.pdf and www.transboundarywaters.orst.edu/database/interfreshtreatdata.html and Atlas of International Freshwater Agreements (UNEP)
	Water Event Intensity Scale	1948-2008	Transboundary Freshwater Dispute Database	This is a scale describing intensity of water conflicts		www.ocid.nacse.org/tfdd/internationalEvents.php
	Basins with highly conflictive or cooperative events		Transboundary Freshwater Dispute Database			http://www.transboundarywaters.orst.edu/research/basins_at_risk/bar/BAR_appendix4.pdf
	Number of interactions between two countries over a basin and %outcome positive	1948-2008	Basins at Risk Project			http://www.transboundarywaters.orst.edu/research/basins_at_risk/bar/BAR_appendix5.pdf and http://www.transboundarywaters.orst.edu/research/basins_at_risk/
	Categorization of world	1948-2008	Basins at Risk Project			http://www.transboundarywaters.orst.edu/research

	basins at risk of unfriendly riparian relations					/basins_at_risk/bar/BAR_appendix13.pdf and http://www.transboundarywaters.orst.edu/research/basins_at_risk/bar/BAR_chapter4.pdf
W A T E R & E X T R E M E W E A T H E R E V E	**Trend in large flood events**	1985-present	Dartmouth flood observatory	" "large" [flood], with, for example, significant damage to structures or agriculture, long (decades) reported intervals since the last similar event, and/or fatalities."	Includes severity of flood event, and number of people and area of land affected, and monetary damage cost.	http://www.dartmouth.edu/~floods/
	Drought events	present	CRE/WMO and UNISDR	"A period in which the actual rainfall is significantly less then the average for that locale. A drought is characterized by decreased river bank heights, river volume, and/or groundwater levels. Decreased water resources due to overabstraction is not a drought." FAO		www.emdat.be http://www.unisdr.org/we/inform/events

N T S						
W A T E R & C L I M A T E C H A N G E	**Past changes in precipitation levels**	1900-2000	UNEP	A global overview of average changes in levels of precipitation over the past century	See fig. 2 map. This is an indicator of water resource variability.	http://www.unwater.org/downloads/TFIMR_Annex_FinalReport.pdf
	Project changes in precipitation levels		Stern			
	Climate Change scenarios and effects on water		GIEC		GIEC predicts a 50% reduction in yields from rain fed agriculture b y 2020.	http://www.unwater.org/downloads/TFIMR_Annex_FinalReport.pdf p.8
	Impacts of anticipated sea level rise on freshwater bodies		UNEP	Change in river area and freshwater availability and potential loss of agricultural land due to sea water intrusion and expansion.	Case study displaying impact of sea level rise on Nile delta under scenario A1 available on: http://www.unep.org/dewa/vitalwater/article151.html	
	Impact of anticipated changes in rainfall on water run-off		Arnell 2004	Changes in precipitation level and possible consequences on water availability and rain-fed agriculture for 2050, under IPCC case scenario A1.	See global map	http://www.unep.org/dewa/vitalwater/article155.html
W A T E R	**Countries with the largest storage capacity**		UN WATER, AQUASTAT	"To store water (natural or man-made surface reservoirs), with access to ground storage (aquifers) or with capacity to bring it where it is most needed	Fig.3 Note: Evaporation, which is hard to calculate, plays a big role. For example,	http://www.unwater.org/downloads/TFIMR_Annex_FinalReport.pdf

& C L I M A T E C H A N G E A D A P T I VE CAPACITY	**compare to their internal surface water**			(irrigated areas). I**t** gives a measure of the country's ability to cope with water resources variability (worsened in the context of climate change)"	Aswan lake loses 12% of its storage capacity annually due to evaporation. (See. Report.p. 10).	
	Countries with the highest natural Storage Undergroun d in total of their internal surface water		UN WATER, AQUASTAT	Countries with the highest share of groundwater in total internal renewable water resources	Fig.4	http://www.unwater.org/downloads/TFIMR_Annex_FinalReport.pdf
	Existence of early warning disaster prevention system and year of establishmen t		AMCW			
	Functioning status of Early Warning Disaster prevention system		AMCW			
	Multilateral Agreements Status: UN Framework		WRI Earthtrends	Existence of UNFCCC National report and strategy and year of adoption.		http://earthtrends.wri.org/searchable_db/index.php?action=select_variable&theme=10

	Convention on Climate Change (UNFCCC)					