Food and Agriculture Organization of the United Nations

UNITED NATIONS
ESCWA

Shared Prosperity Dignified Life

AQUASTAT

FAO's global water information system

Patricia Mejias
AQUASTAT Coordinator
Land and Water Division
FAO

Interagency and Experts Meeting to Improve the Production and Dissemination of SDG Indicators from Official National Sources
26 April – 6 May 2021

WWW.FAO.ORG/AQUASTAT

OUTLINE

1. AQUASTAT products
2. Data collection for SDG 6.4
3. AQUASTAT questionnaire
4. Results of 2020 data collection

AQUASTAT – Since 1994

- Article 1 of FAO's constitution to:

"*Collect, analyze, interpret and disseminate information related to nutrition, food and agriculture*".

Information on natural resources, in particular WATER, is central.

- Launched in 1994, with two complementary programmes:
  - **Water statistics database** - on main variables related to water resources and use at country and sub-country level
  - **GIS-based information system**

AQUASTAT – Objectives

- AQUASTAT collects, analyses and provides free access to over 180 variables and indicators by country from 1960.

- AQUASTAT plays a key role in the data collection and the monitoring of the Sustainable Development Goal 6, and in particular indicators of target 6.4 on water stress and water use efficiency. FAO is the custodian agency for SDG 6.4.

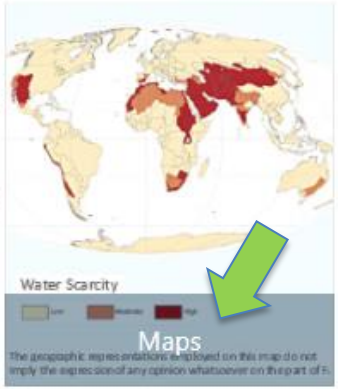
AQUASTAT – Products

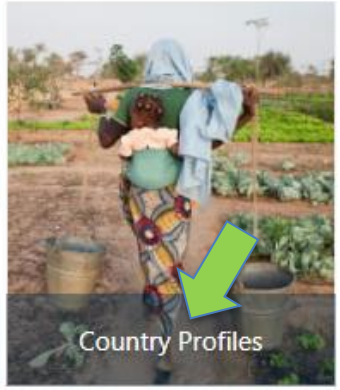
- Databases: water and agriculture statistics
- Country profiles
- Geospatial information including remote sensing tool
- Glossary
- Publications and capacity development products

AQUASTAT - FAO's Global Information System on Water and Agriculture

AQUASTAT is the FAO global information system on water resources and agricultural water management. It collects, analyses and provides free access to over 180 variables and indicators by country from 1960. AQUASTAT draws on national capacities and expertise with an emphasis on Africa, the Near East, countries of the former Soviet Union, Asia, and Latin America and the Caribbean. AQUASTAT plays a key role in the monitoring of the Sustainable Development Goal 6 that sets out to "ensure availability and sustainable management of water and sanitation for all", and in particular indicators of target 6.4 on water stress and water use efficiency.

Highlights





Did you know?

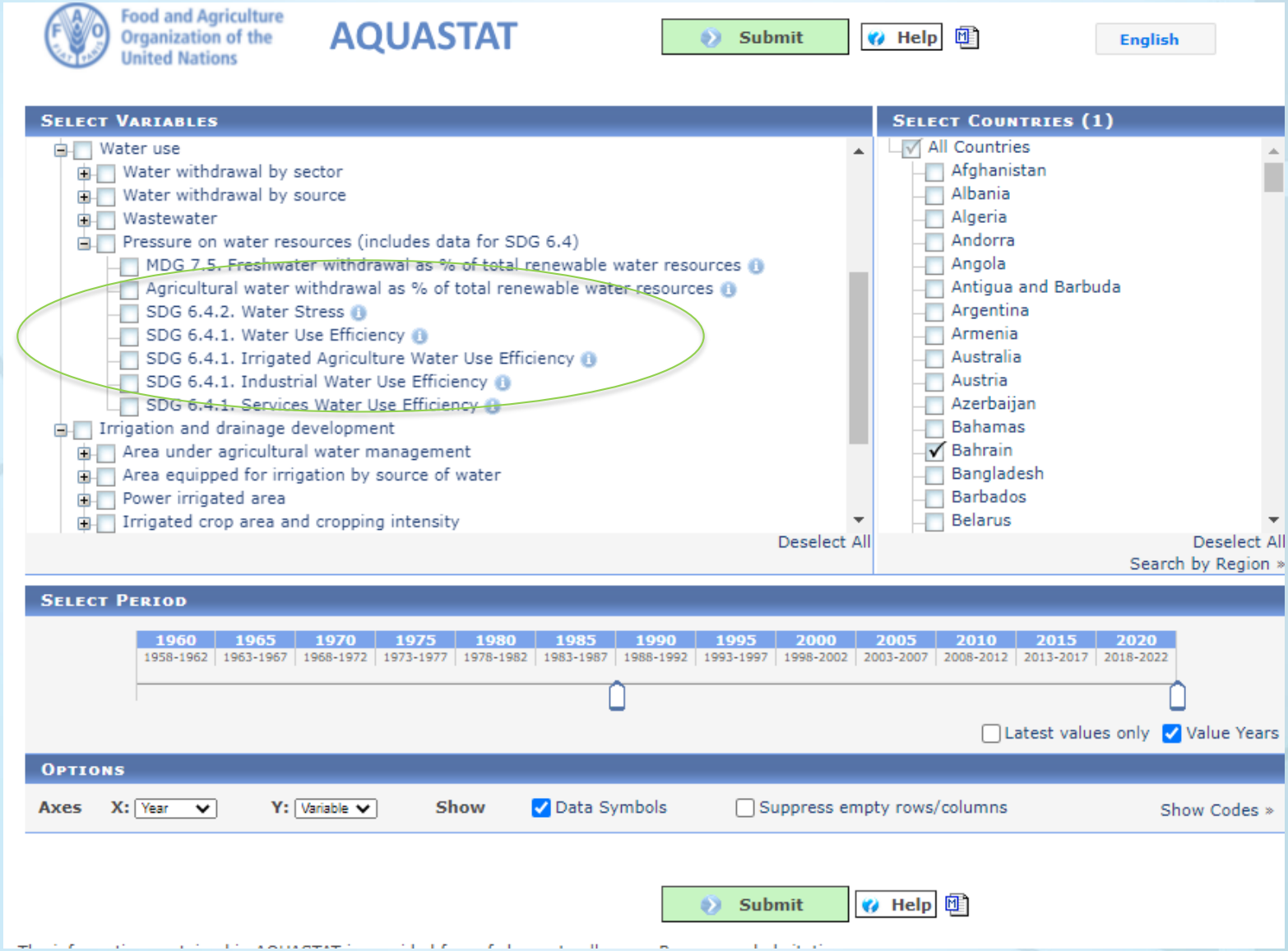
- **79 countries compiled the 2018 AQUASTAT questionnaire on water and agriculture.** The data collected through this questionnaire and validated are now available in the AQUASTAT core database. The 2019 questionnaire has also been sent out to over 180 countries.
- **WaPOR version 2 database and the WaPOR 1.0 quality assessment report were launched** at the *2nd International seminar on Drought and Agriculture 2019*. The technical report describes the quality assessment of the FAO's data portal to monitor water productivity through open access of remotely sensed derived data. [*Read the report*].

www.fao.org/aquastat/en/

AQUASTAT – Databases

- **Main database**: water and agriculture statistics (SDG 6.4 indicators)
- Institutions
- Dams
- Irrigated crop calendars

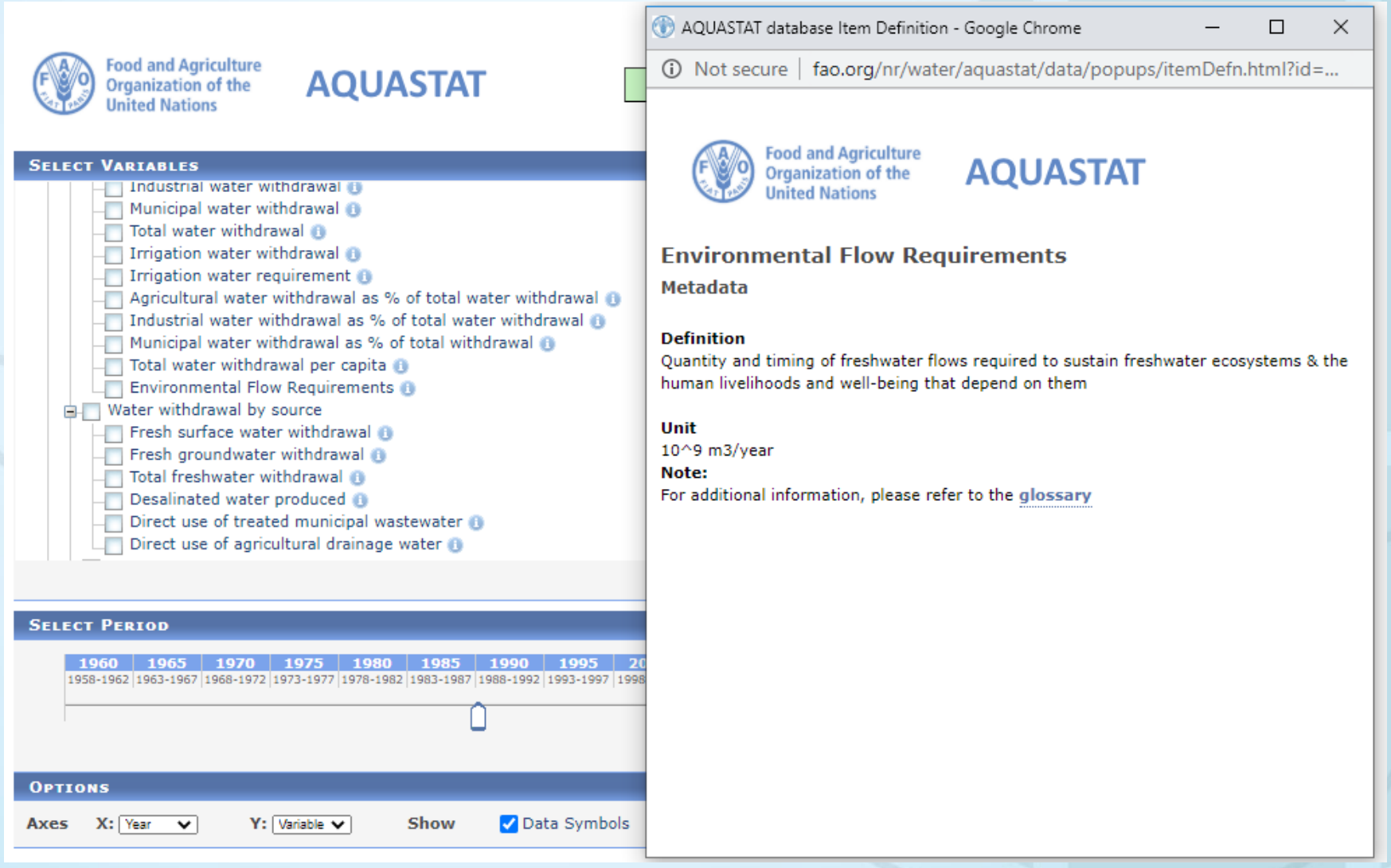
AQUASTAT – Main data base



180 variables:

15 geography & population
45 water resources
40 water use
70 irrigation and drainage
10 health and environment

AQUASTAT – Glossary



AQUASTAT – Institutions database

Filter by Institution

search an institution

Filter by Country

Egypt

Filter by Type

select type

Filter by Sector

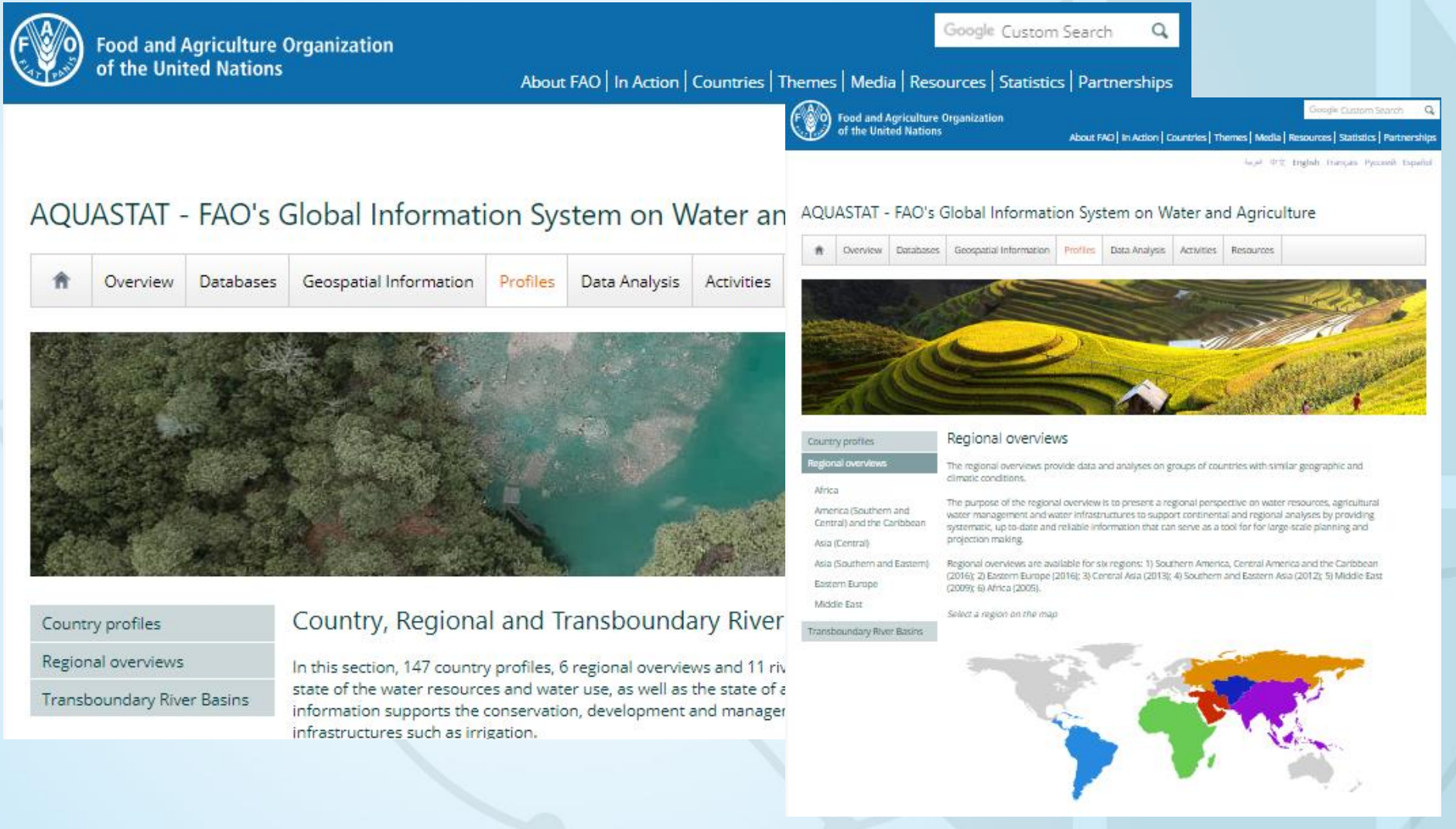
select sector

Filter by Activity

select activity

INSTITUTION	COUNTRY	TYPE	ACTIVE (Yes/No)	SECTOR	ACTIVITY
Ministry of Agriculture and Land Reclamation *(MALR)*	Egypt	Government institution	Yes	Agriculture	Policy and strategy
Agricultural Research Center *(ARC)* *Under:* Ministry of Agriculture and Land Reclamation (MALR)	Egypt	University / Research institution	Yes	Agriculture	Research, Training and extension
Soils, Water and Environment Research Institute. *(SWRI)* *Under:* Agricultural Research Center (ARC)	Egypt	University / Research institution	Yes	Agriculture, Environment, Natural resources	Research, Training and extension
Ministry of Water Resources and Irrigation *(MWRI)*	Egypt	Government institution	Yes	Water, Irrigation	Infrastructure development, Licensing and allocation, Operation and maintenance, Policy and strategy
National Water Research Center *(NWRC)*	Egypt	University / Research institution	Yes	Water, Irrigation	Research, Training and extension
Drainage Water Research Institute *Under:* National Water Research Centre (NWRC)	Egypt	University / Research institution	Yes	Irrigation	Research, Training and extension
Egyptian Public Authority for Drainage Projects *(EPADP)*	Egypt	Government institution	Yes	Irrigation	Operation and maintenance
Egyptian Public Authority for High Dam and Aswan Dam	Egypt	Government institution	Yes	Dams	Operation and maintenance
Nile Basin Initiative *(NBI)*	Egypt	River basin	Yes	Transboundar	Policy and

AQUASTAT – AQUASTAT country profiles



AQUASTAT – Country profiles

Overview | Databases | Geospatial Information | Profiles | Data Analysis | Activities | Resources

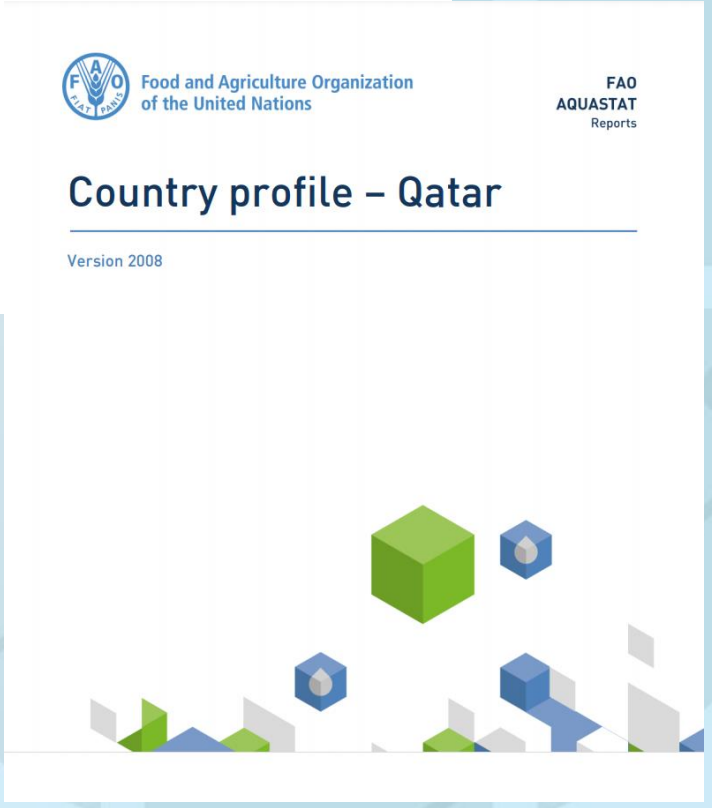
- Country profiles
- Regional overviews
- Transboundary River Basins

Country Profile - Qatar

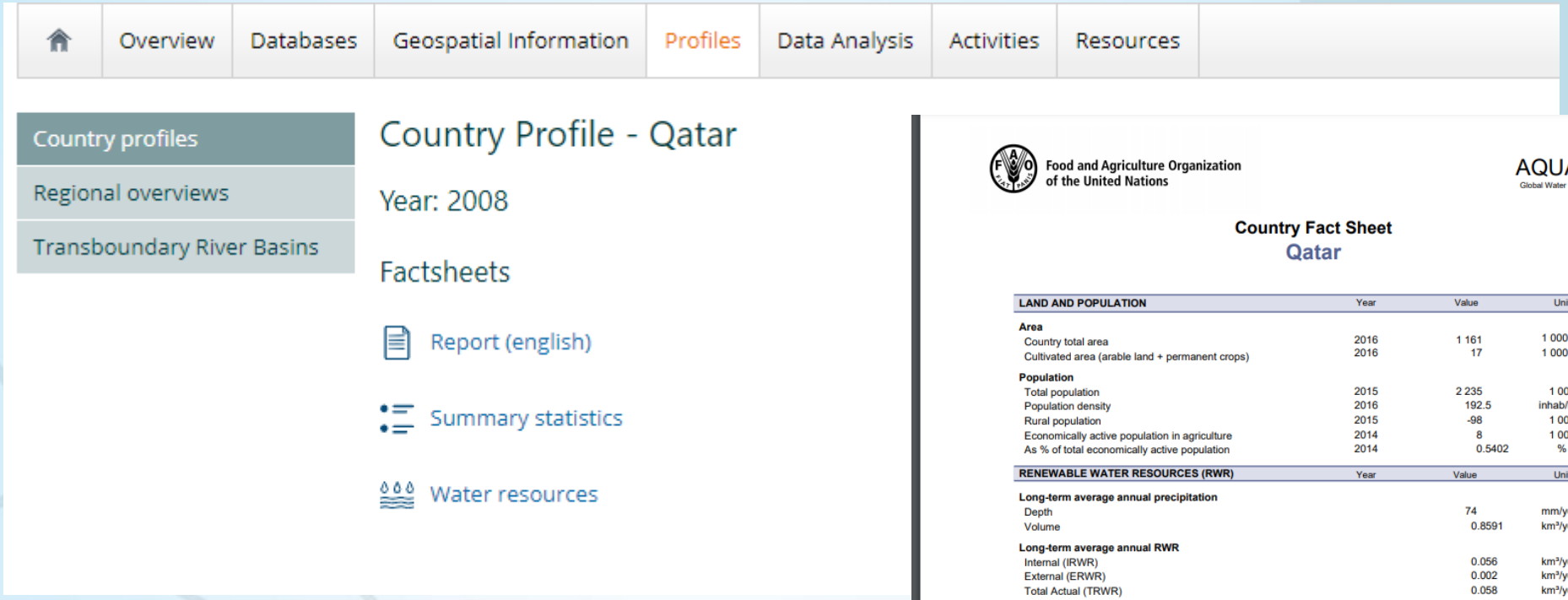
Year: 2008

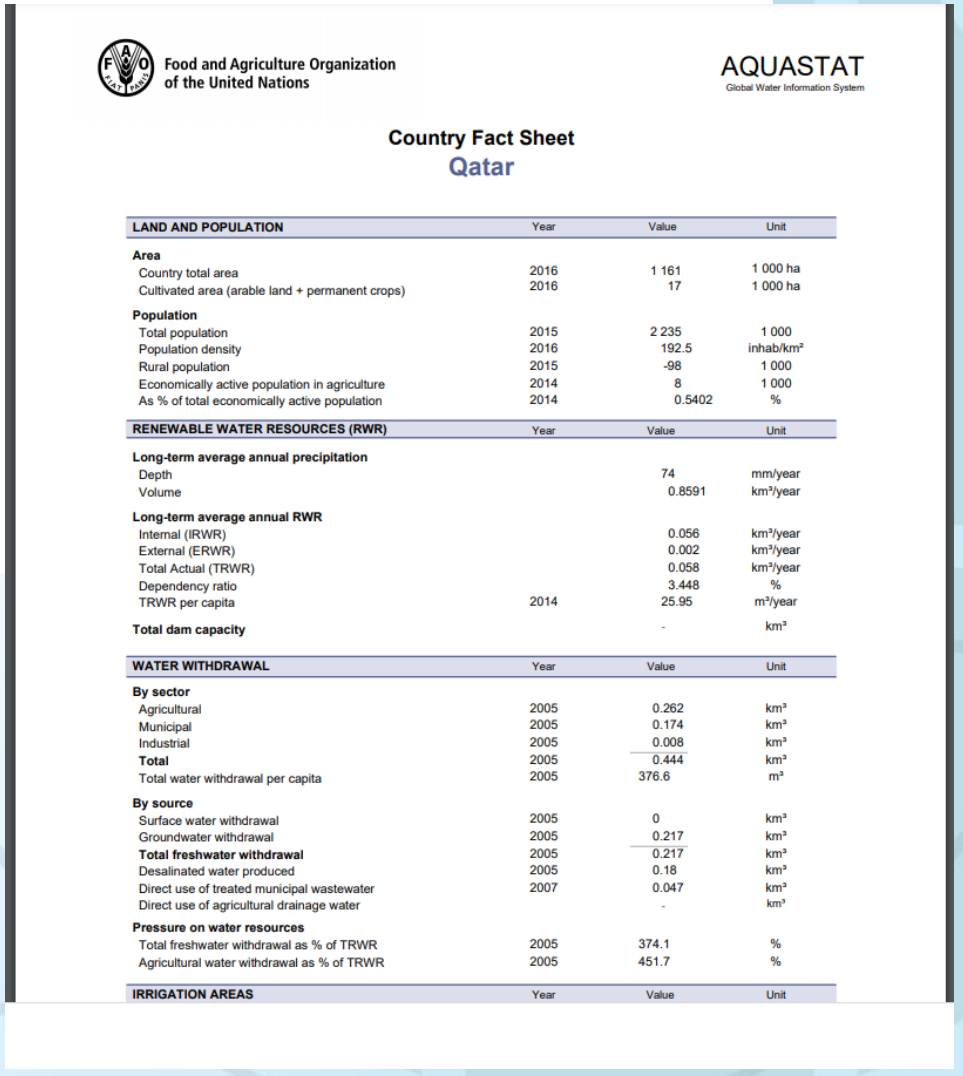
Factsheets

- Report (english)
- Summary statistics
- Water resources
- Irrigation areas
- Country Map



AQUASTAT – Country profiles





Food and Agriculture Organization of the United Nations

AQUASTAT
Global Water Information System

Country Fact Sheet
Qatar

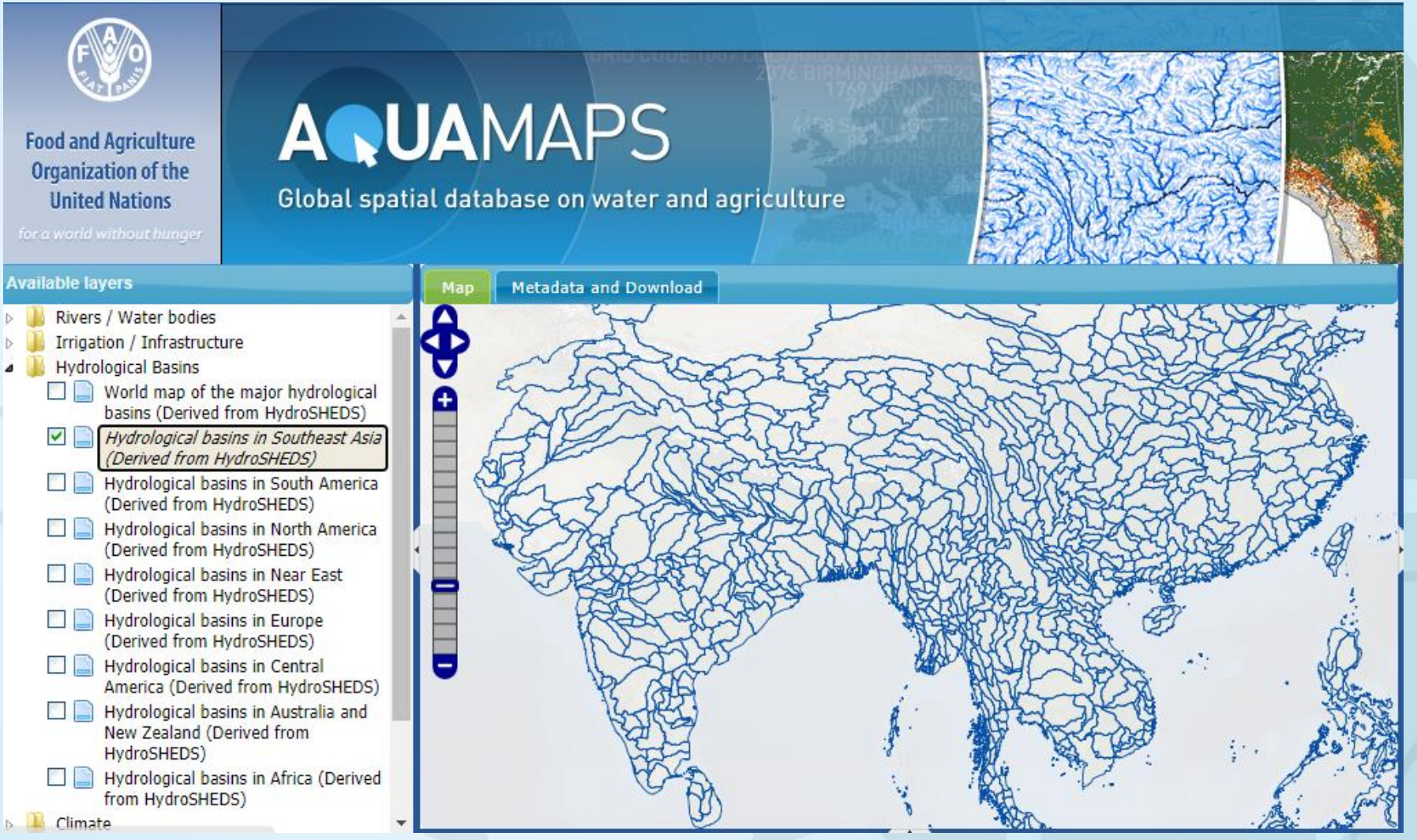
LAND AND POPULATION	Year	Value	Unit
Area			
Country total area	2016	1 161	1 000 ha
Cultivated area (arable land + permanent crops)	2016	17	1 000 ha
Population			
Total population	2015	2 235	1 000
Population density	2016	192.5	inhab/km²
Rural population	2015	-98	1 000
Economically active population in agriculture	2014	8	1 000
As % of total economically active population	2014	0.5402	%

RENEWABLE WATER RESOURCES (RWR)	Year	Value	Unit
Long-term average annual precipitation			
Depth		74	mm/year
Volume		0.8591	km³/year
Long-term average annual RWR			
Internal (IRWR)		0.056	km³/year
External (ERWR)		0.002	km³/year
Total Actual (TRWR)		0.058	km³/year
Dependency ratio		3.448	%
TRWR per capita	2014	25.95	m³/year
Total dam capacity		-	km³

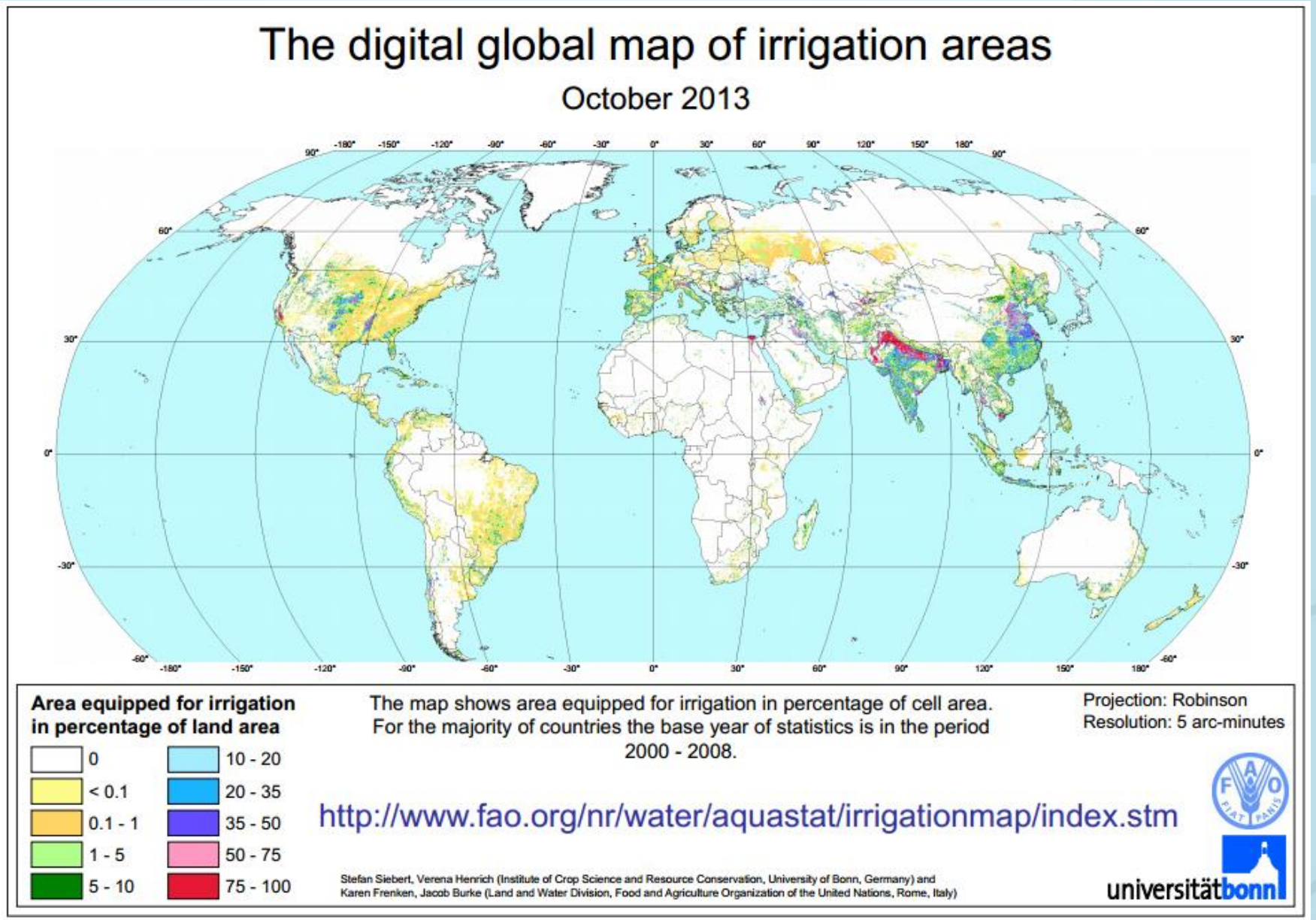
WATER WITHDRAWAL	Year	Value	Unit
By sector			
Agricultural	2005	0.262	km³
Municipal	2005	0.174	km³
Industrial	2005	0.008	km³
Total	2005	0.444	km³
Total water withdrawal per capita	2005	376.6	m³
By source			
Surface water withdrawal	2005	0	km³
Groundwater withdrawal	2005	0.217	km³
Total freshwater withdrawal	2005	0.217	km³
Desalinated water produced	2005	0.18	km³
Direct use of treated municipal wastewater	2007	0.047	km³
Direct use of agricultural drainage water		-	km³
Pressure on water resources			
Total freshwater withdrawal as % of TRWR	2005	374.1	%
Agricultural water withdrawal as % of TRWR	2005	451.7	%

IRRIGATION AREAS	Year	Value	Unit

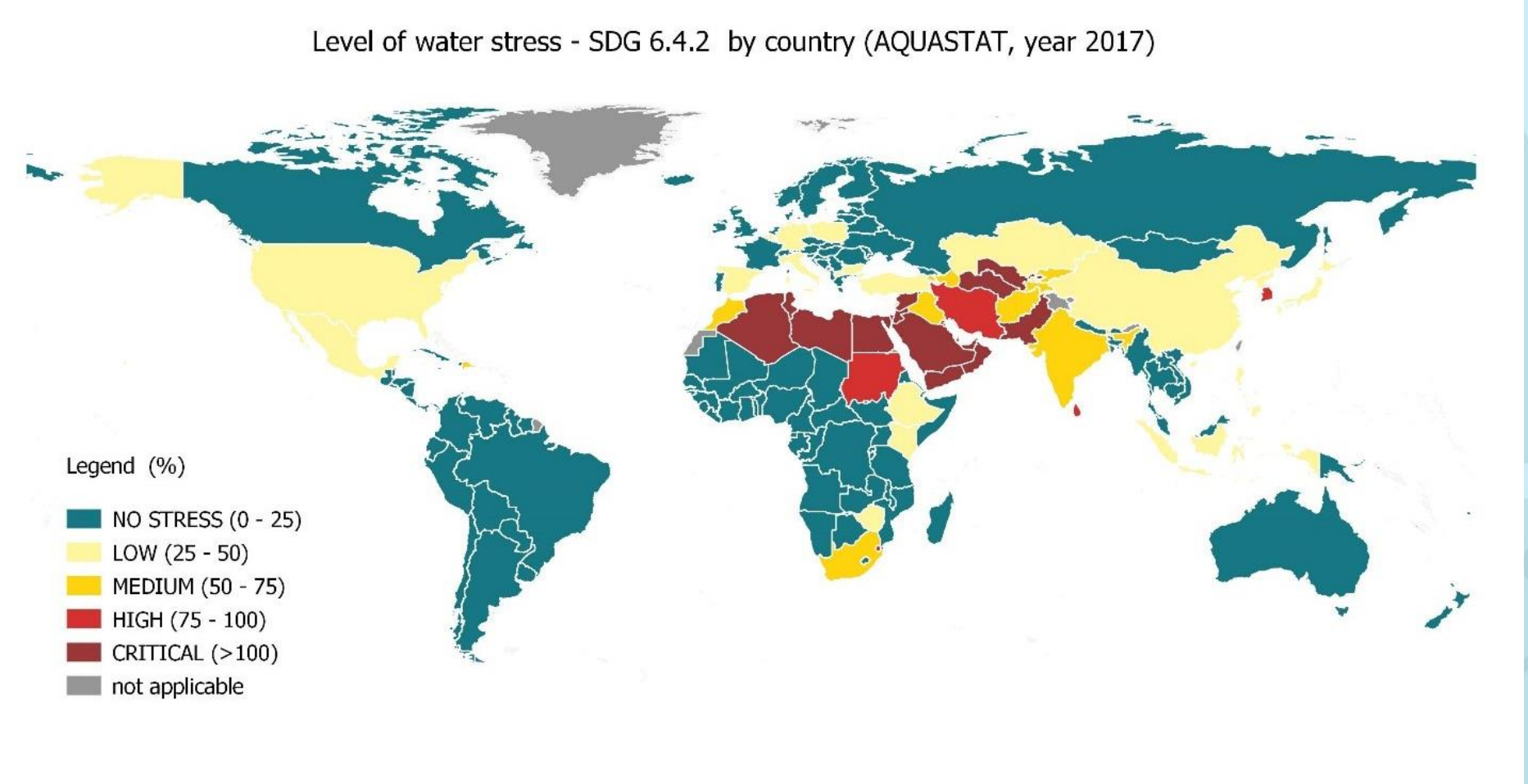
AQUASTAT – Geospatial information - AQUAMAPS



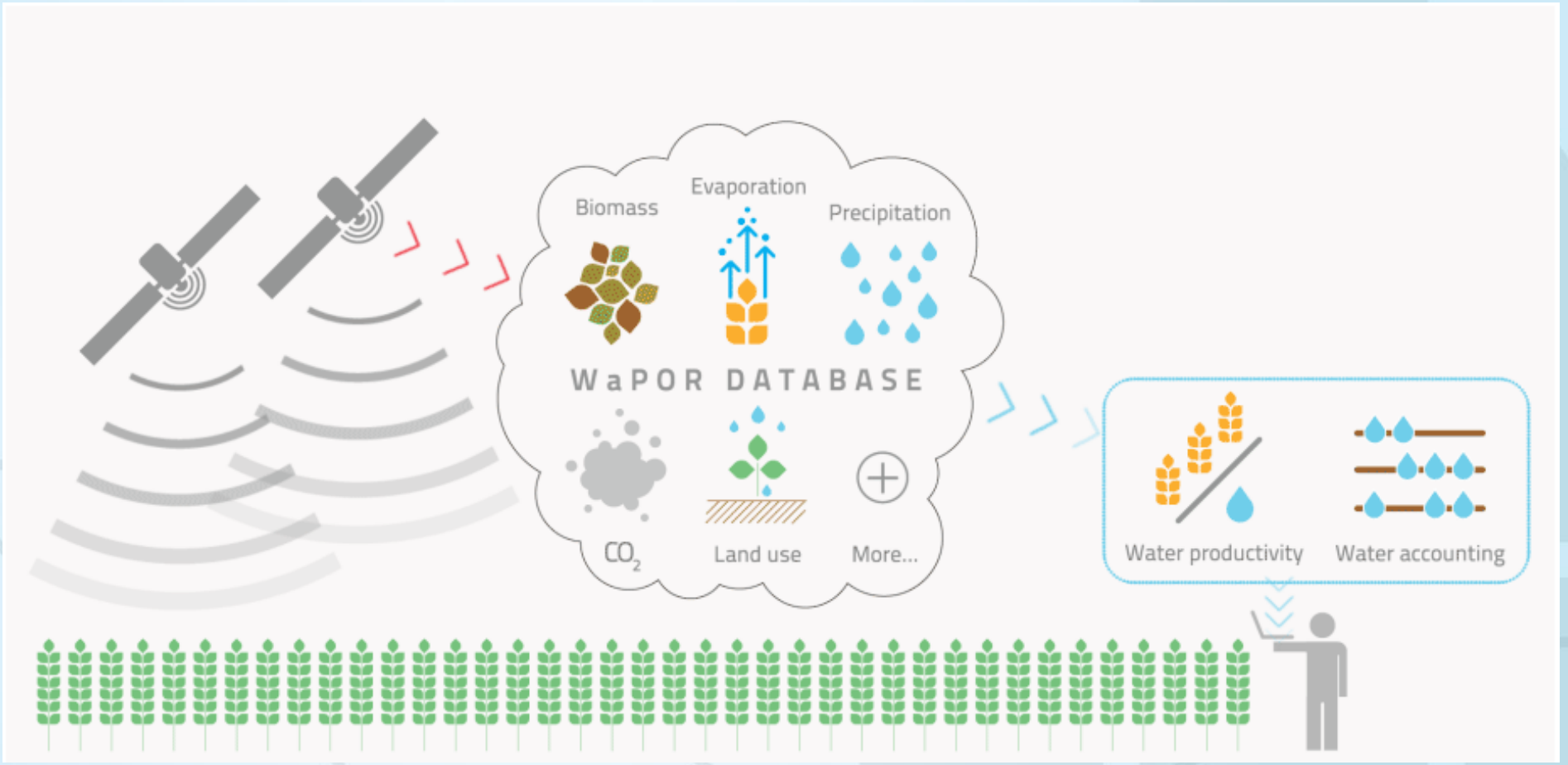
AQUASTAT – Geospatial information - AQUAMAPS



AQUASTAT – Geospatial information - AQUAMAPS

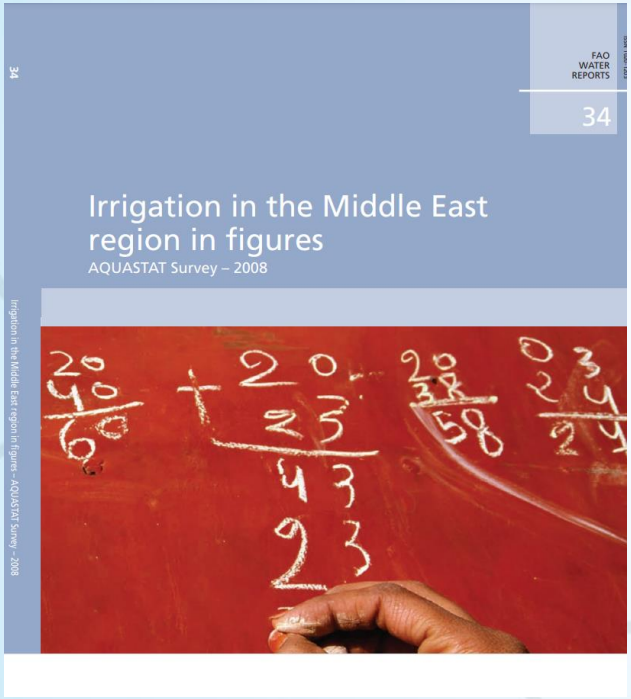


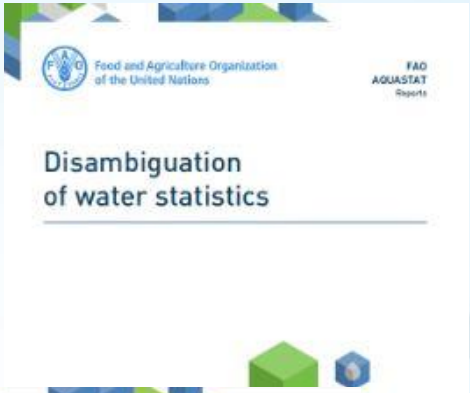
AQUASTAT – Remote sensing tools - WaPOR

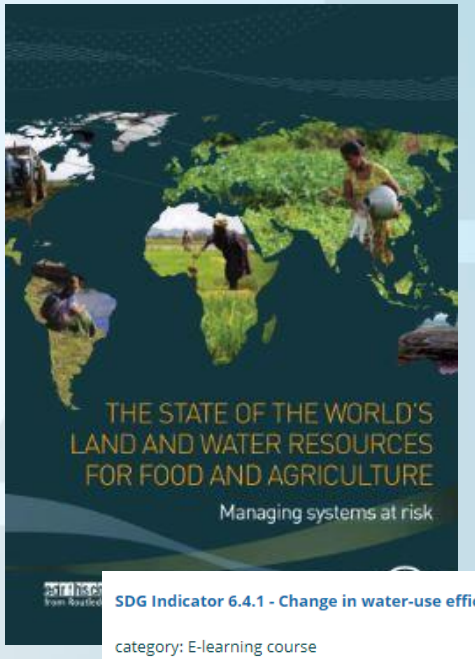


Variables: Water productivity, land productivity, actual and reference evapotranspiration, land cover and use, biomass, precipitation, carbon dioxide uptake, yields, harvested index and crop calendar.

AQUASTAT – Publications and knowledge products







SDG Indicator 6.4.1 - Change in water-use efficiency over time

category: E-learning course

This course provides guidance on the rationale and the main characteristics of Indicator 6.4.1, and on how to compute the two dimensions constituting the indicator: the hydrologic and the economic component. It also highlights possible challenges related to data availability, and the impact that monitoring results may have on national decision-making and identification of development policies.

Publication date: August 2019

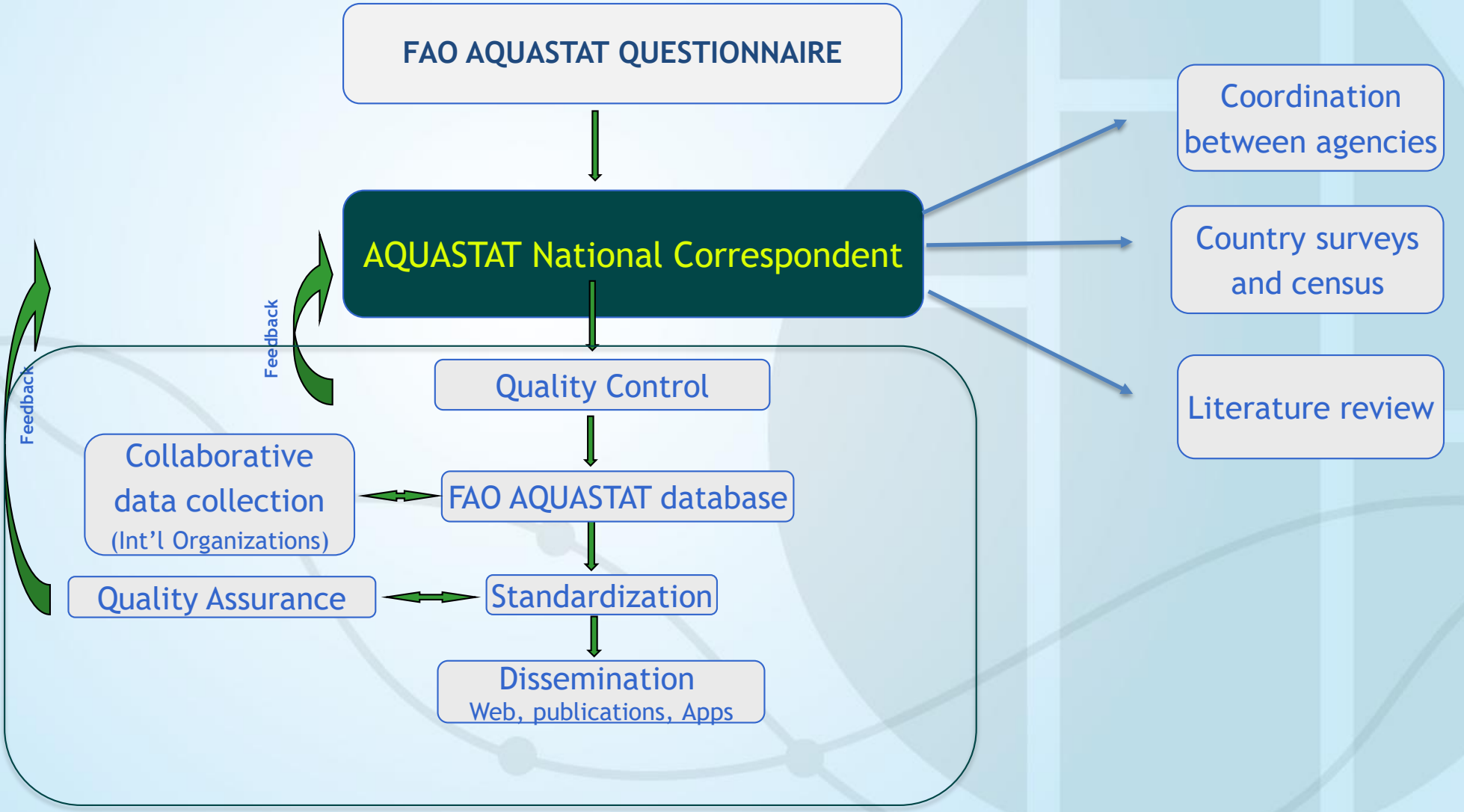
Using WaPOR to boost water productivity

category: Webinar

In this webinar, Simon Chevalking (MetaMeta), Jonna van Opstal (Future Water), and Abebe Demissie Chukalla (IHE Delft) demonstrate how to use WaPOR to obtain data remotely sensed derived data like Gross/Net Biomass Water Productivity, Evapotranspiration, Land Cover, Precipitation, Land Surface Temperature, and Normalized Difference Vegetation Index (NDVI), to monitor agricultural land and water productivity. At continental (250m), national (100 m) or sub-national (30 m) levels they explain how to interpret and model such data showcase practical application of WaPOR at the field level.

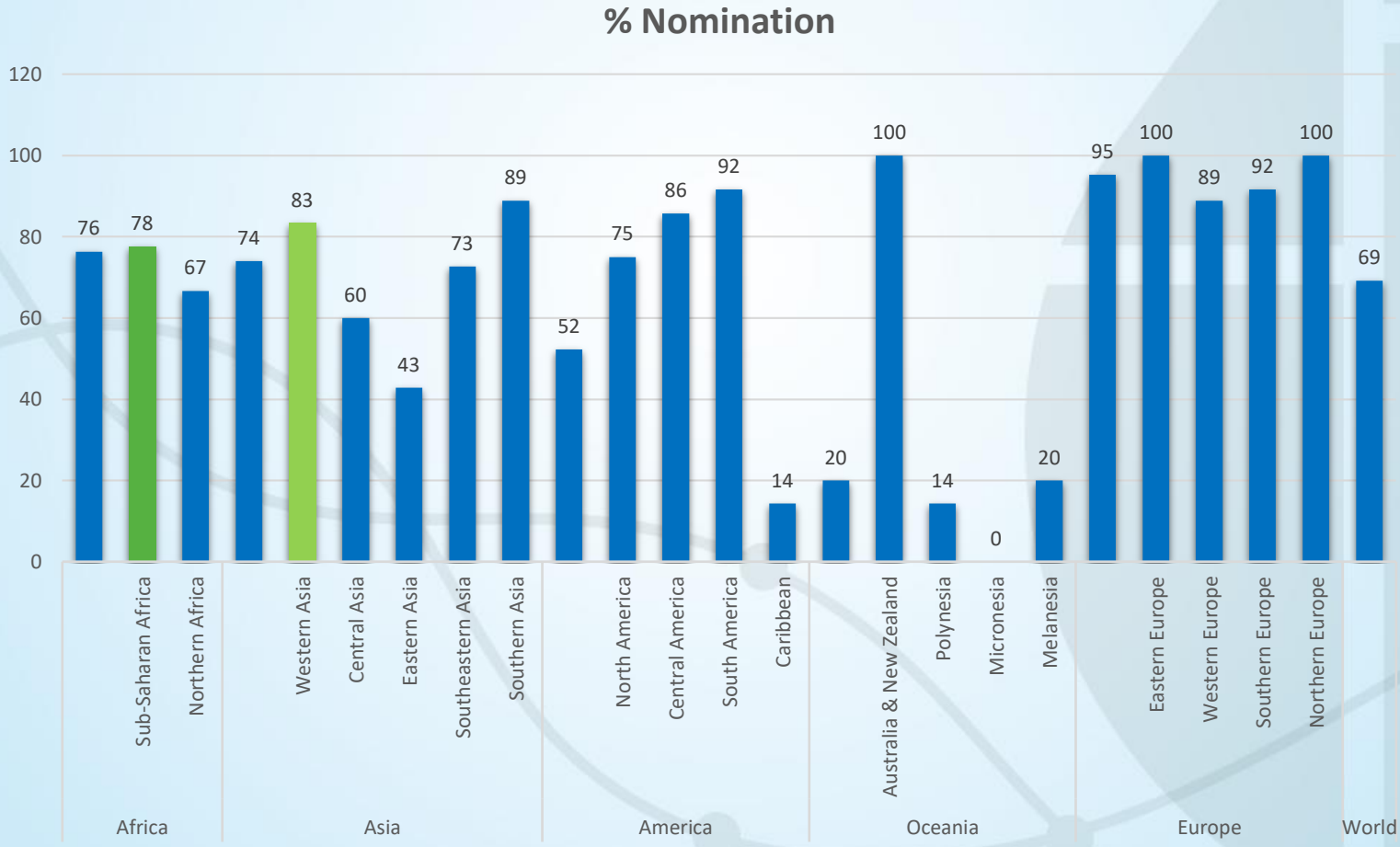
The webinar is hosted by the **Water Channel**

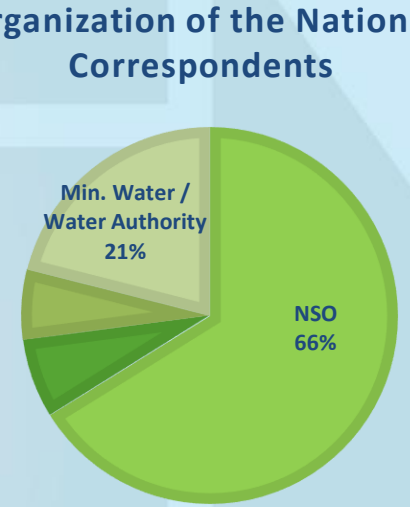
AQUASTAT – Data collection process



AQUASTAT – National correspondents

146 National Correspondents Nominated

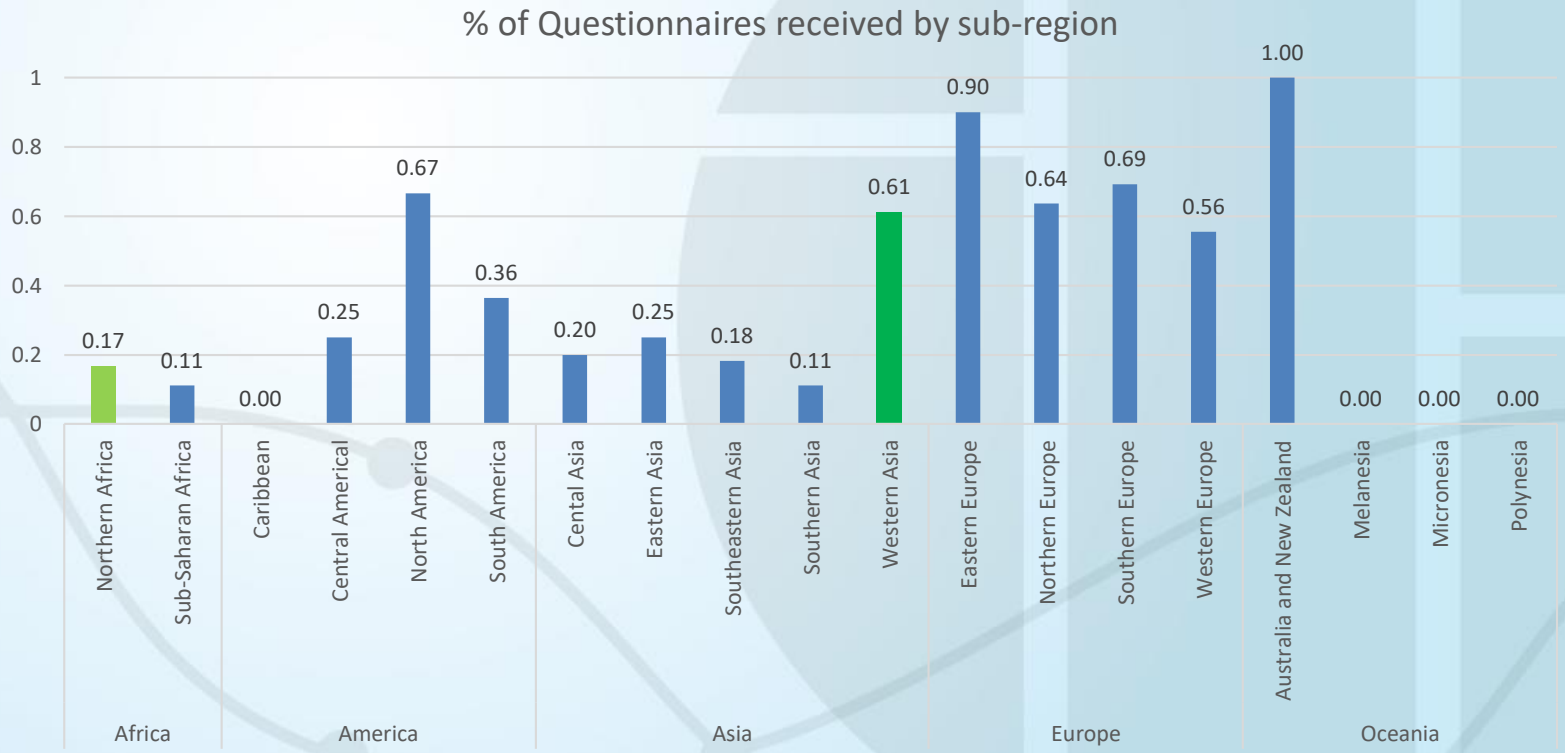




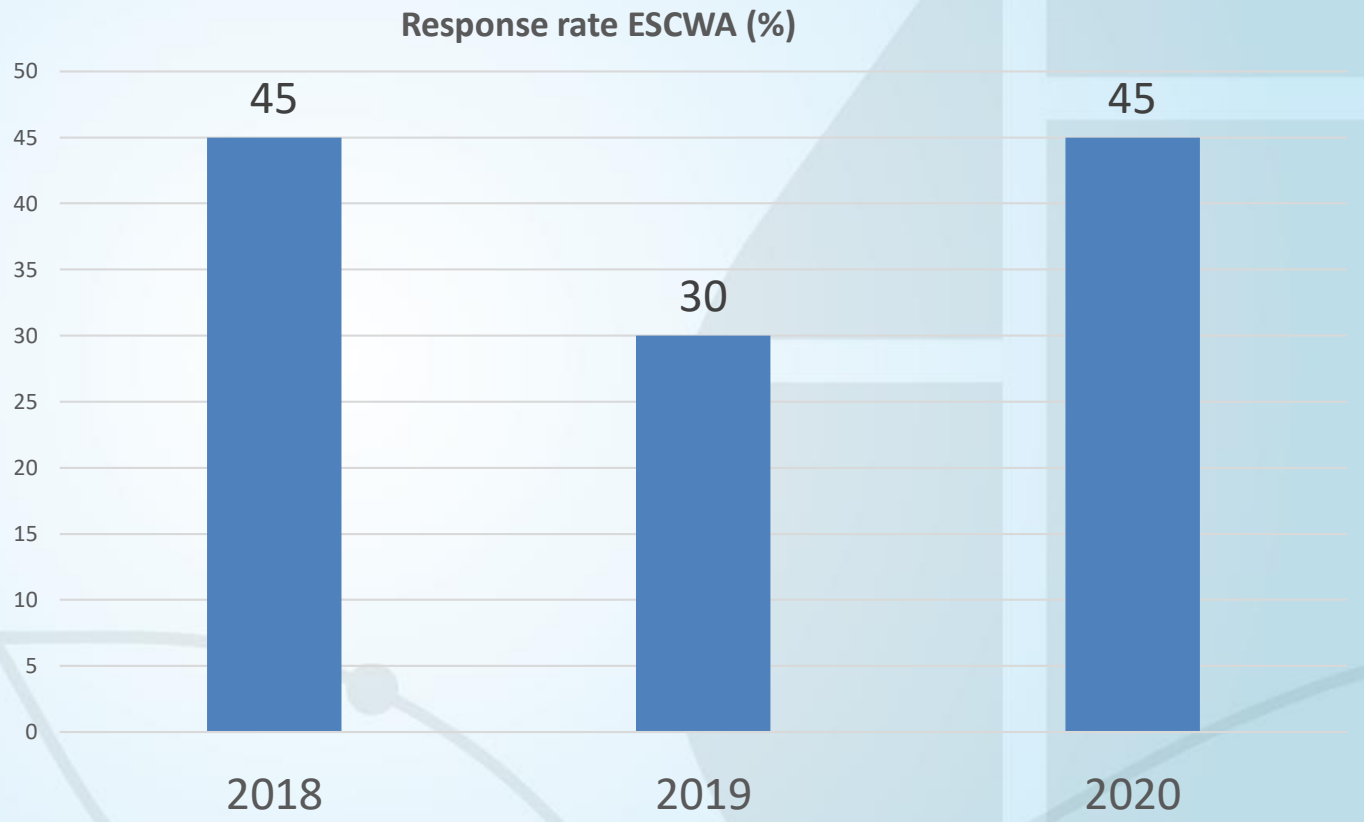
ESCWA: 15 National Correspondents Nominated (75%)

AQUASTAT – 2020 Data collection

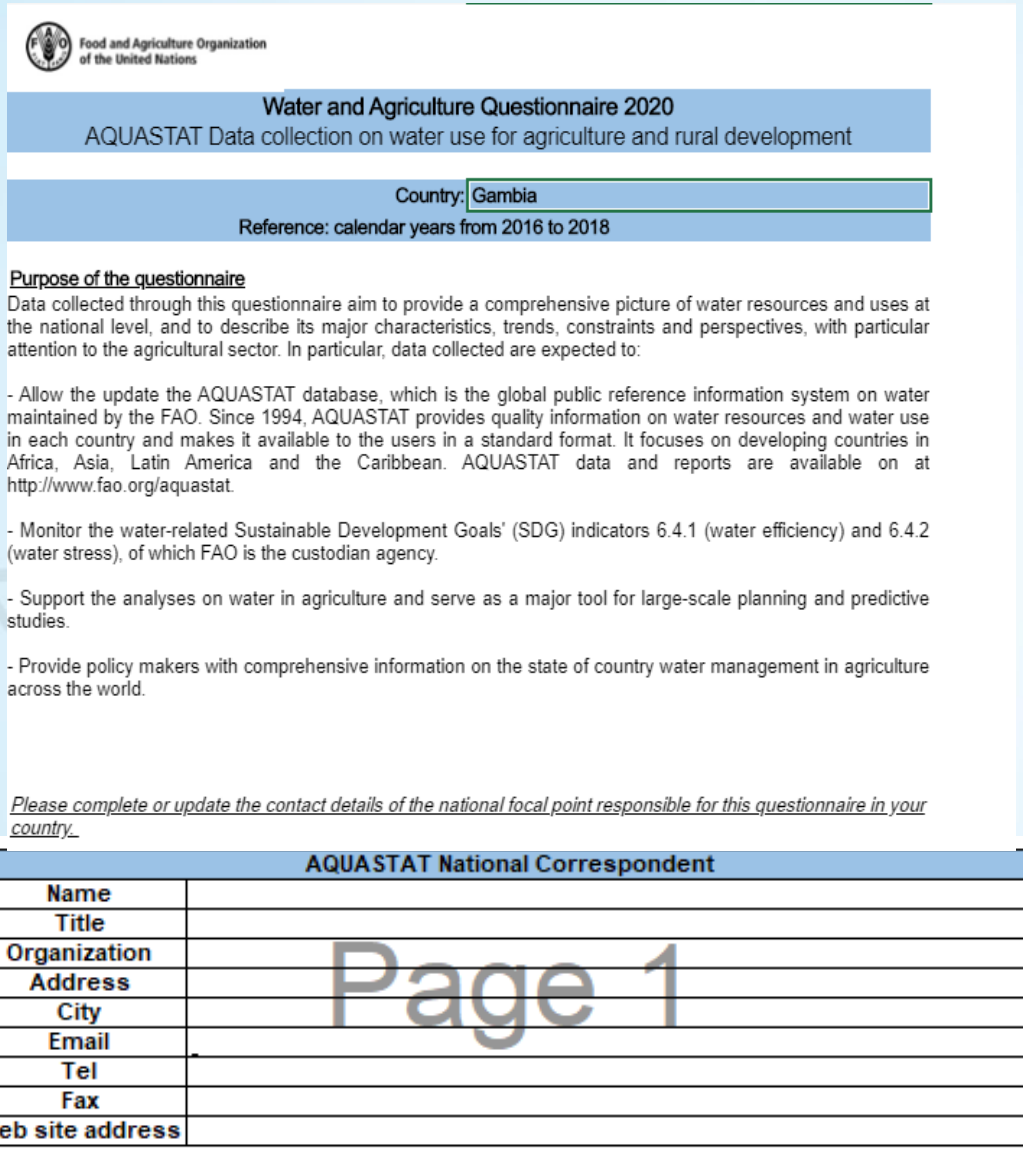
- Annual questionnaire sent to 156 countries
- 62 questionnaires received – 40%



AQUASTAT – 2020 Data collection



AQUASTAT – QUESTIONNAIRE



Food and Agriculture Organization of the United Nations

Water and Agriculture Questionnaire 2020

AQUASTAT Data collection on water use for agriculture and rural development

Country: Gambia

Reference: calendar years from 2016 to 2018

Purpose of the questionnaire

Data collected through this questionnaire aim to provide a comprehensive picture of water resources and uses at the national level, and to describe its major characteristics, trends, constraints and perspectives, with particular attention to the agricultural sector. In particular, data collected are expected to:

- Allow the update the AQUASTAT database, which is the global public reference information system on water maintained by the FAO. Since 1994, AQUASTAT provides quality information on water resources and water use in each country and makes it available to the users in a standard format. It focuses on developing countries in Africa, Asia, Latin America and the Caribbean. AQUASTAT data and reports are available on at http://www.fao.org/aquastat.

- Monitor the water-related Sustainable Development Goals' (SDG) indicators 6.4.1 (water efficiency) and 6.4.2 (water stress), of which FAO is the custodian agency.

- Support the analyses on water in agriculture and serve as a major tool for large-scale planning and predictive studies.

- Provide policy makers with comprehensive information on the state of country water management in agriculture across the world.

Please complete or update the contact details of the national focal point responsible for this questionnaire in your country.

AQUASTAT National Correspondent	
Name	
Title	
Organization	
Address	
City	
Email	
Tel	
Fax	
Web site address	

Page 1

- 3 languages
- Annual and long questionnaire
- 5 yr long data collection - 2020

AQUASTAT – QUESTIONNAIRE

0	Water Resources				
0.1.		Unit	2015	2016	2017
011	Total Renewable Water Resources (Long-term average)	10^9 m^3/year			

I	Water withdrawals				
I.1.	Water withdrawals by sector	Unit	2015	2016	2017
111	Total water withdrawal (1111 + 1112 + 1113)	10^9 m^3/year			
1111	Agricultural water withdrawal: total (11111 + 11112 + 11113)				
11111	Water withdrawal for irrigation				
11112	Water withdrawal for livestock (watering and cleaning)				
11113	Water withdrawal for aquacutlure				
1112	Municipal water withdrawal				
1113	Industrial water withdrawal (incl. water for cooling of thermoelectric plants)				
11131	Water withdrawal for cooling of thermoelectric plants				
112	Environmental flow requirements (stable over time)				
I.2.	Water withdrawals by source	Unit	2015	2016	2017
121	Total surface water and groundwater withdrawal (freshwater) (1211 + 1212)	10^9 m^3/year			
1211	Surface water withdrawal				
1212	Groundwater withdrawal				
122	Desalinated water produced				
123	Direct use of treated municipal wastewater				
124	Direct use of agricultural drainage water				

II	Municipal wastewater	Unit	2015	2016	2017
21	Produced municipal wastewater	10^9 m^3/year			
22	Collected municipal wastewater				
23	Treated municipal wastewater				

III	Irrigation and drainage	Unit	2015	2016	2017
III.1.	Area under agricultural water management				
311	Total agricultural water managed area (3111 + 3112 + 3113)	1000 ha			
3111	Area equipped for irrigation: total (31112 + 31113 + 31114)				
31111	Area equipped for irrigation: part actually irrigated				
31112	Area equipped for full control irrigation: total (311122 + 3111232 + 311124				
311121	Area equipped for full control irrigation: part actually irrigated				
311122	Area equipped for full control irrigation: surface irrigation				
311123	Area equipped for full control irrigation: sprinkler irrigation				
311124	Area equipped for full control irrigation: localized irrigation				
31113	Area equipped for irrigation: equipped lowland areas				
31114	Area equipped for irrigation: spate irrigation				
3112	Cultivated wetlands and inland valley bottoms non-equipped				
3113	Flood recession cropping area non-equipped				
III.2.	Irrigated production				
321	Total harvested irrigated crop area (full control irrigation only)	1000 ha			
III.3.	Drainage				
331	Area equipped for irrigation drained	1000 ha			

IV	Environment	Unit	2015	2016	2017
41	Area salinized by irrigation	1000 ha			

- Annual questionnaire (34 variables)

AQUASTAT – QUESTIONNAIRE

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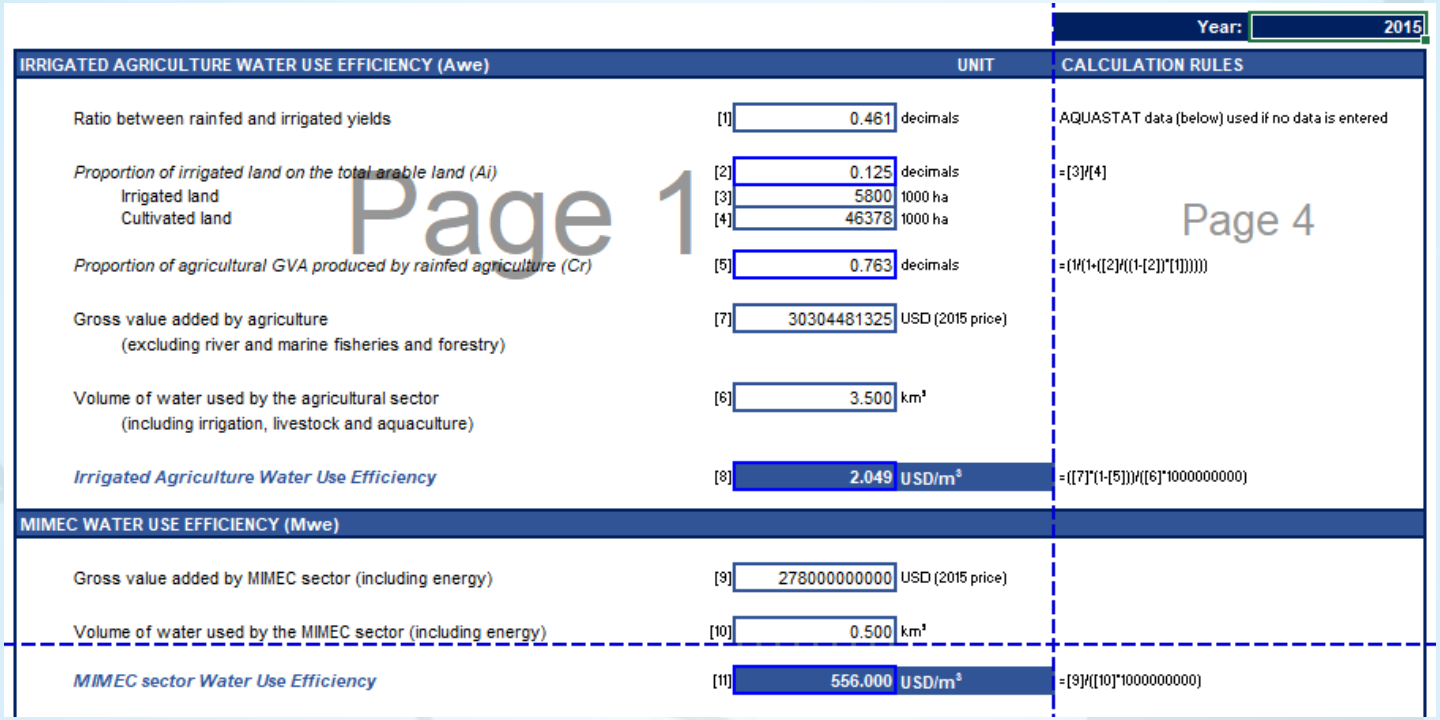
- **Annual questionnaire (12 SDG variables)**

SDG indicators 6.4.1 & 6.4.2

Gross Value Added (GVA) from UNSD

Cultivated area & GDP Deflators from FAOSTAT

AQUASTAT – QUESTIONNAIRE SDG calculators



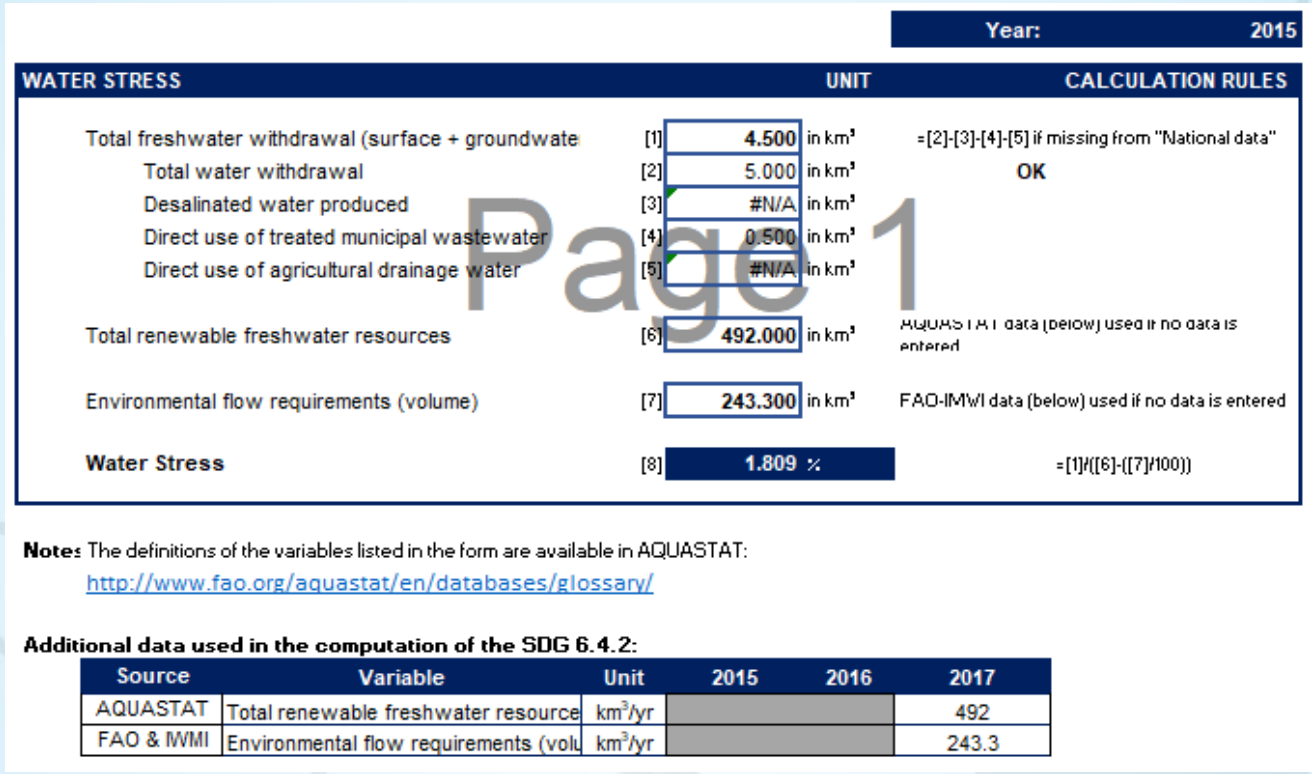
			Year:	2015
IRRIGATED AGRICULTURE WATER USE EFFICIENCY (Awe)			UNIT	CALCULATION RULES
Ratio between rainfed and irrigated yields	[1]	0.461	decimals	AQUASTAT data (below) used if no data is entered
Proportion of irrigated land on the total arable land (Ai)	[2]	0.125	decimals	=[3]/[4]
Irrigated land	[3]	5800	1000 ha	
Cultivated land	[4]	46378	1000 ha	
Proportion of agricultural GVA produced by rainfed agriculture (Cr)	[5]	0.763	decimals	=(1/(1+([2]/((1-[2])*[1]))))
Gross value added by agriculture (excluding river and marine fisheries and forestry)	[7]	30304481325	USD (2015 price)	
Volume of water used by the agricultural sector (including irrigation, livestock and aquaculture)	[6]	3.500	km³	
Irrigated Agriculture Water Use Efficiency	[8]	2.049	USD/m³	=([7]*(1-[5]))/([6]*1000000000)
MIMEC WATER USE EFFICIENCY (Mwe)				
Gross value added by MIMEC sector (including energy)	[9]	278000000000	USD (2015 price)	
Volume of water used by the MIMEC sector (including energy)	[10]	0.500	km³	
MIMEC sector Water Use Efficiency	[11]	556.000	USD/m³	=[9]/([10]*1000000000)

Page 1

Page 4

- Automatically filled in from data compiled in “National data” worksheet

AQUASTAT – QUESTIONNAIRE SDG calculators



			Year:	2015
WATER STRESS			**UNIT**	**CALCULATION RULES**
Total freshwater withdrawal (surface + groundwate	[1]	4.500	in km³	=[2]-[3]-[4]-[5] if missing from "National data"
Total water withdrawal	[2]	5.000	in km³	OK
Desalinated water produced	[3]	#N/A	in km³	
Direct use of treated municipal wastewater	[4]	0.500	in km³	
Direct use of agricultural drainage water	[5]	#N/A	in km³	
Total renewable freshwater resources	[6]	492.000	in km³	AQUASTAT data (below) used if no data is entered
Environmental flow requirements (volume)	[7]	243.300	in km³	FAO-IMWI data (below) used if no data is entered
Water Stress	[8]	1.809	%	=[1]/([6]-([7]/100))

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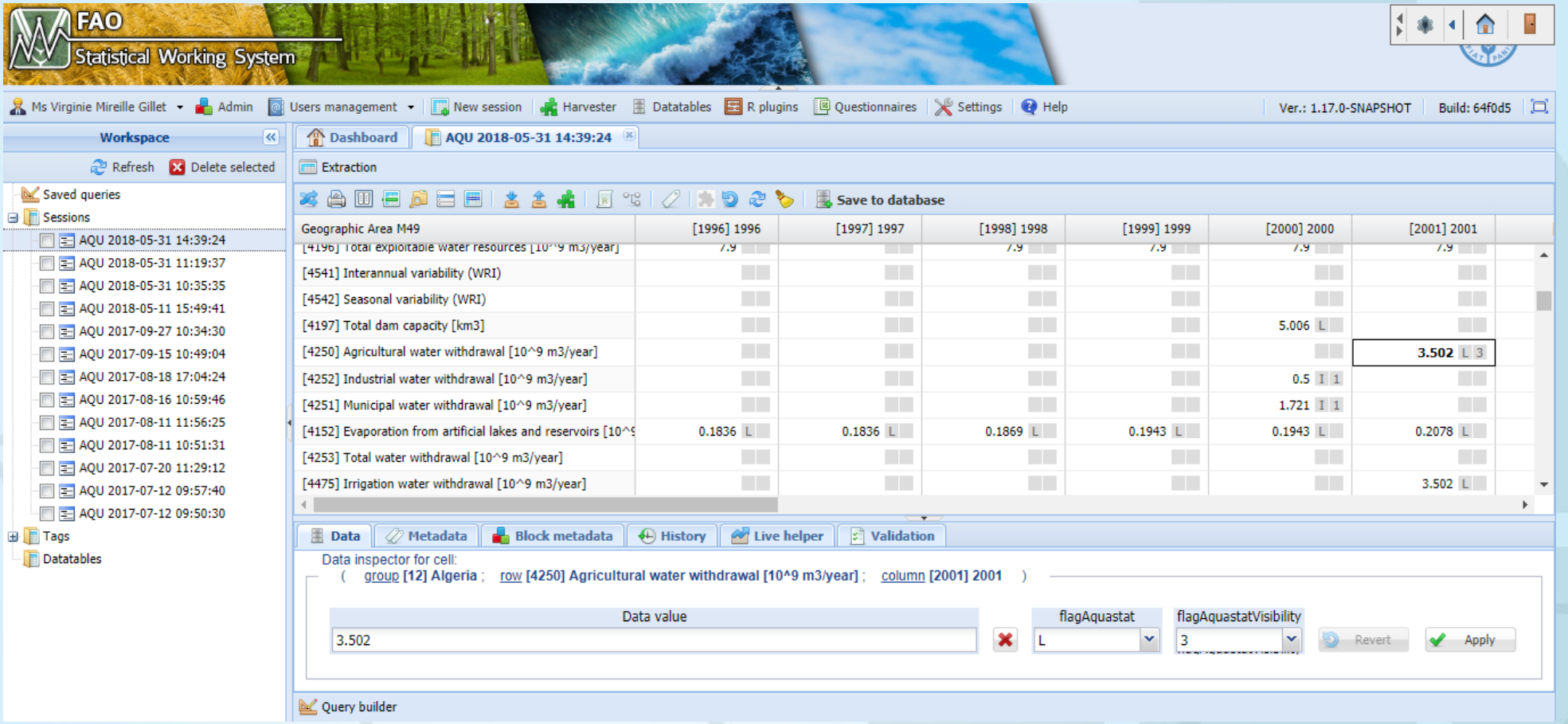
Note: The definitions of the variables listed in the form are available in AQUASTAT:
http://www.fao.org/aquastat/en/databases/glossary/

Additional data used in the computation of the SDG 6.4.2:

Source	Variable	Unit	2015	2016	2017
AQUASTAT	Total renewable freshwater resource	km³/yr			492
FAO & IWMI	Environmental flow requirements (volu	km³/yr			243.3

- Automatically filled in from data compiled in “National data” worksheet

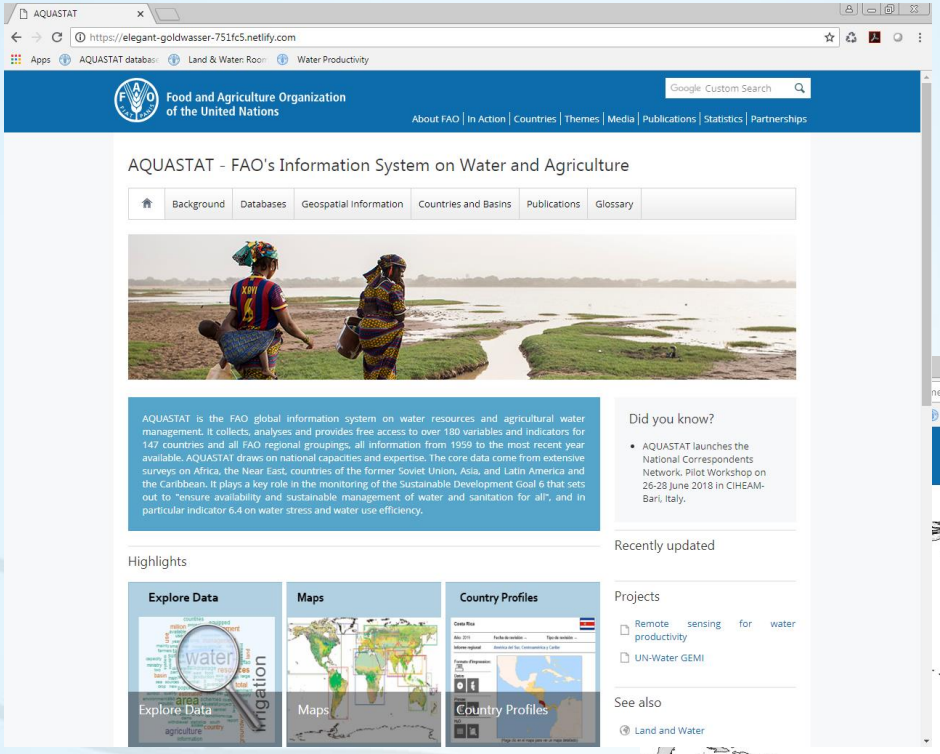
AQUASTAT – FAO Corporate Statistical Working System

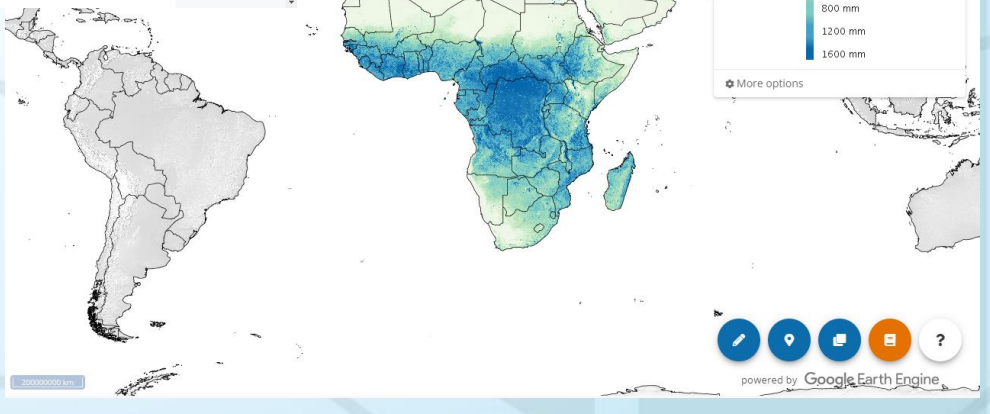


Imputation : linear interpolation, carry- forward, vertical imputation

AQUASTAT – Next steps

- Updated and harmonized information
- Disaggregated information – water basin, gender
- Geospatial information – use of GIS and remote sensing for water statistics
- Climate change variables
- Increase dialogue with national stakeholders
- .





Thank you!

Patricia.Mejiasmoreno@fao.org
AQUASTAT coordinator

www.fao.org/aquastat/en/