



Session 4.1

Data needs and requirements for water accounts

RW-2-REG

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Modular structure of WA



**Water and
Environment Support**
in the ENI Southern Neighbourhood region

- Water accounts provide a **modular structure**
- Allow a step-by-step compilation on countries based on their **policy concerns** and **data availability**

Example

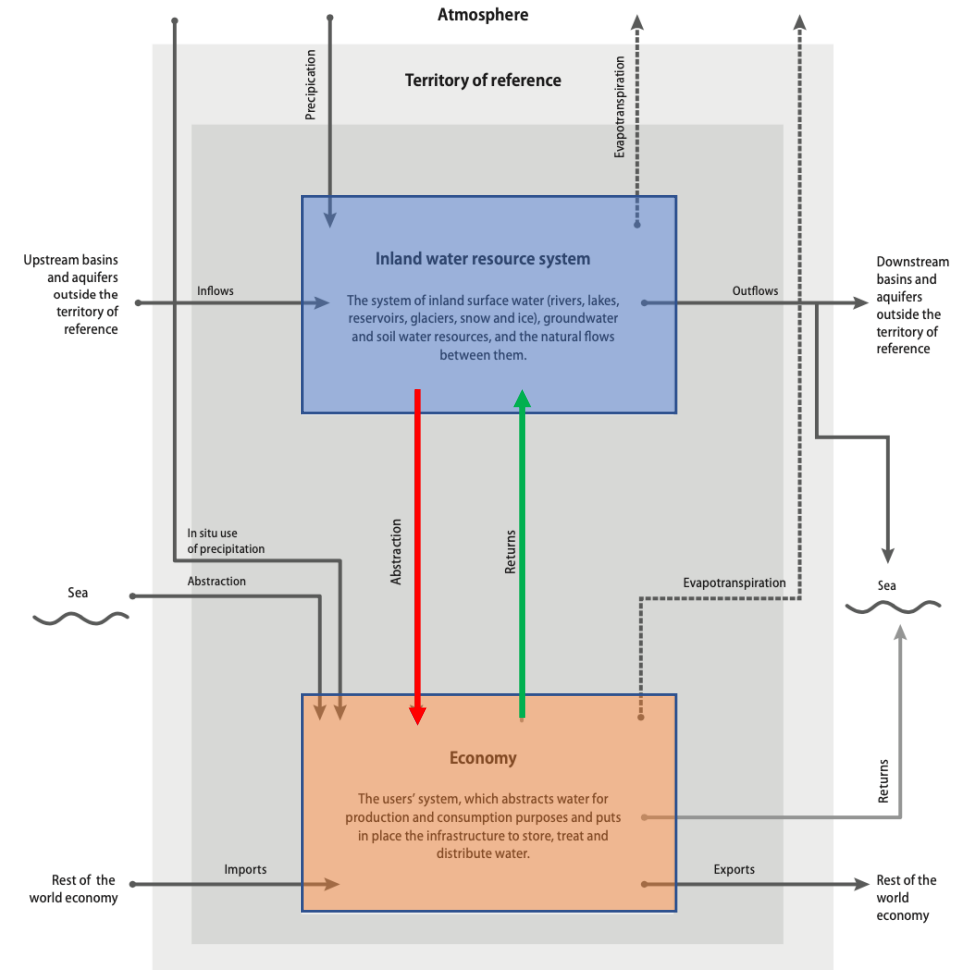
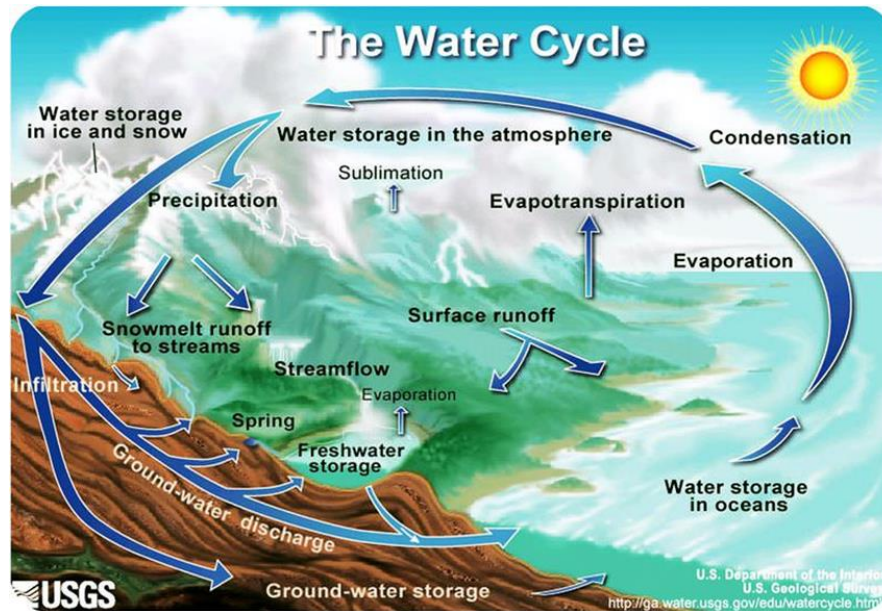
- Scarce countries often start the compilation of water information on hydrological balance which feeds the PSU tables and allows
 - Sources of pressure on the environment
 - Design possible allocation strategies for the **competitive water uses**



From aquatic to water resources



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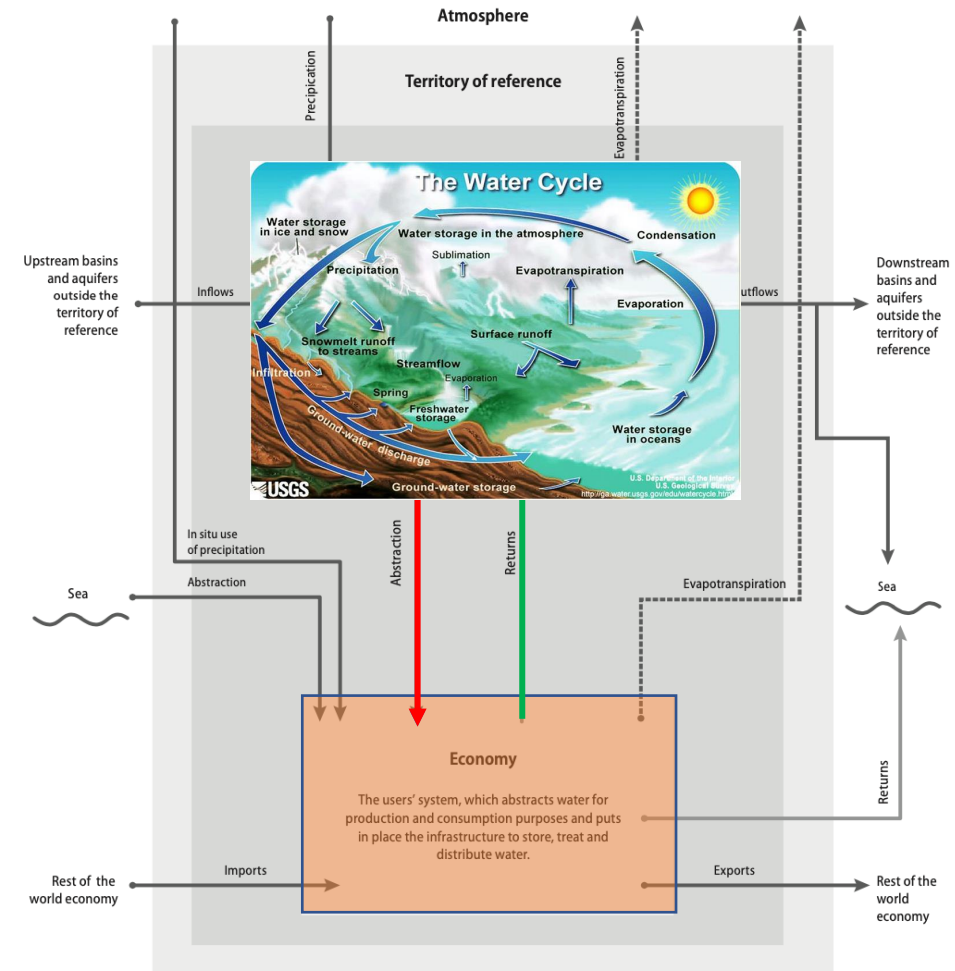


From monitoring → data



**Water and
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- We transform the aquatic assets (H_2O) into
- water resources (H_2O + capital + infrastructure) by bringing water into human life cycle
- Human water cycle
 - Intense use for food, industrial production and economic development
 - driving societal wellbeing

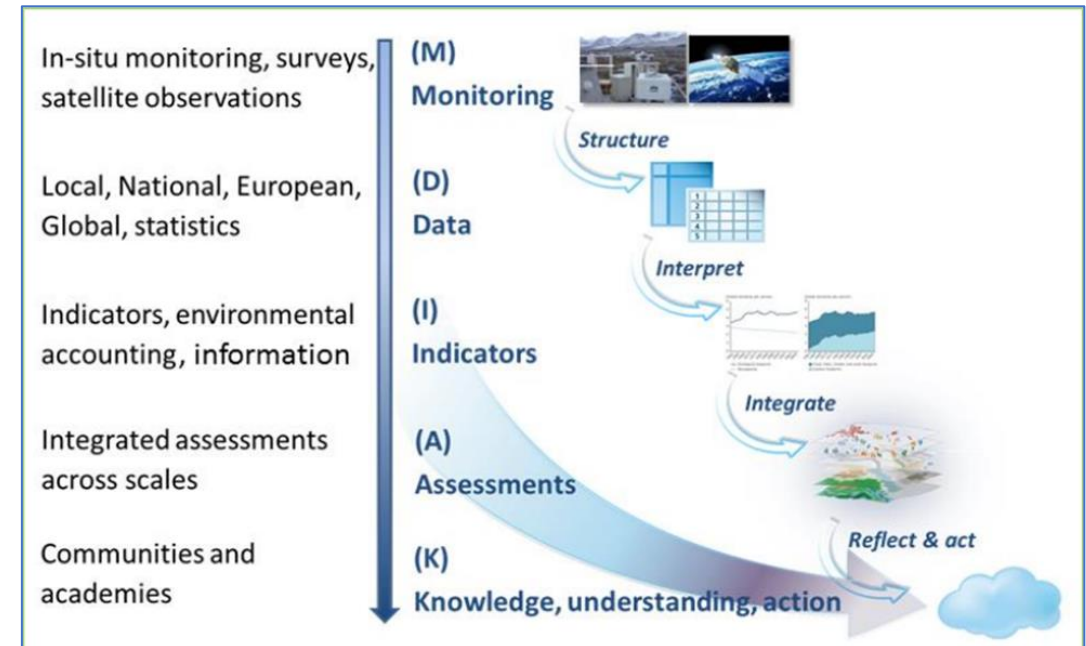


Basic realities/principles



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- Different mandates
- Different administrations
- Different scales
- Different priorities
- Common purpose
 - Efficient use of water resources
 - Human wellbeing
 - Environmental protection
 - Economic sustainability
 - Integrated water resources management



The real challenges are integration,
Transparency, Reproducibility



Collection and compilation of data items



**Water and
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- Units of measurement
- Spatial and temporal reference
- Industry classification (ISIC, NACE, National standards)
- Physical water data items (hydrology)
- Flows of water (ENV-ECO / ECO-ECO / ECO-ENV)
- Monetary data items (hybrid accounts)



Data-collection strategy



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- A data-collection strategy provides
 - **an agreed understanding** of data needs and institutional arrangements
 - **The priorities** for the development of water statistics
 - The **roles and responsibilities** of the main water **data users** and **producers**





The purposes of a data-collection strategy

- Determining the needs of the users of water statistics and reviewing existing water statistics
- Assessing the use, accessibility and quality of existing water statistics and identify the gaps
- Setting priorities for the production of water statistics
- **Strengthening the institutional arrangements for the production and use of water statistics**
- Facilitating the coordination between data producers and data users
- Providing a realistic plan for improving water statistics
- **Ensuring that different data sources use consistent concepts and definitions**

*Involve data users and the developers of water policy, to ensure that **the issues of most relevance** to them are supported by data **as quickly as possible***



Data collection strategy



**Water and
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Determination of data needs

- Users
- Producers
- **Identification of water related societal issues**
- Key water policy questions to be answered

Review existing water statistics

- Legal arrangements
- Available resources to produce water statistics
- Data gaps / data quality issues

Prioritization of data

- Data items
- Geographic regions
- Reference Period
- **Frequency**
- Sectors

Roles & Responsibilities

- Agreement on data access & confidentiality

Data collection strategy

- Water statistics production
- Legal and institutional arrangements
- Roles and responsibilities
- Timeline of implementation



Stakeholders and institutional arrangements



**Water and
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- National statistical offices
- Government agencies (water, meteo, agriculture, energy, land planners etc.)
- Water suppliers and sewerage service providers
- Water research organizations
- Non-governmental organizations



Remarks



**Water and
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- Responsibilities for water management and water statistics are often divided by economic activity
- Responsibilities for water statistics (e.g. ENV may have responsibility for statistics related to water pollution, while an agency responsible for meteorology may monitor and report precipitation)
- Many agencies produce water information for their own monitoring, analysis (unavailable for sharing)
- The legal framework and mechanisms of coordination



Data sharing



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- For the collectors, cost may be eliminated or reduced compared to the cost of initiating a new data collection, if the information can be obtained from existing data sources.
- eliminates the possibility of conflicting data being produced
- reduce the burden (report once – use multiple times)
- Formalize **sensitivities and data confidentiality**

Data-sharing agreements should clearly define procedures for requesting, sharing and attributing data





Review of existing statistics

- **Identify** what data currently exist
- **Determine** the quality of the data
- **Assess** it against data needs identified

Establish priorities for the data collection

*A common finding from this process is that **government agencies do not use the same classification systems.***



Prioritization



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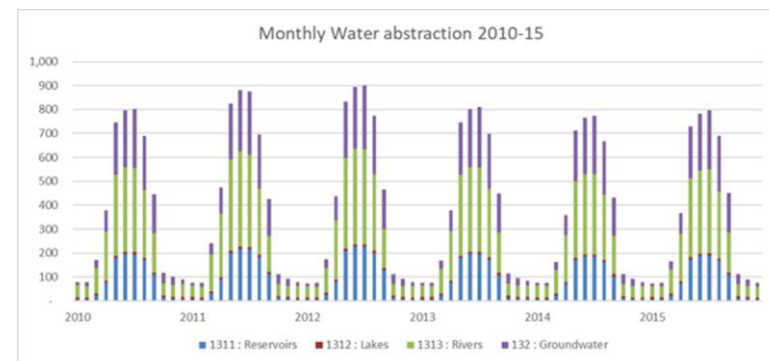
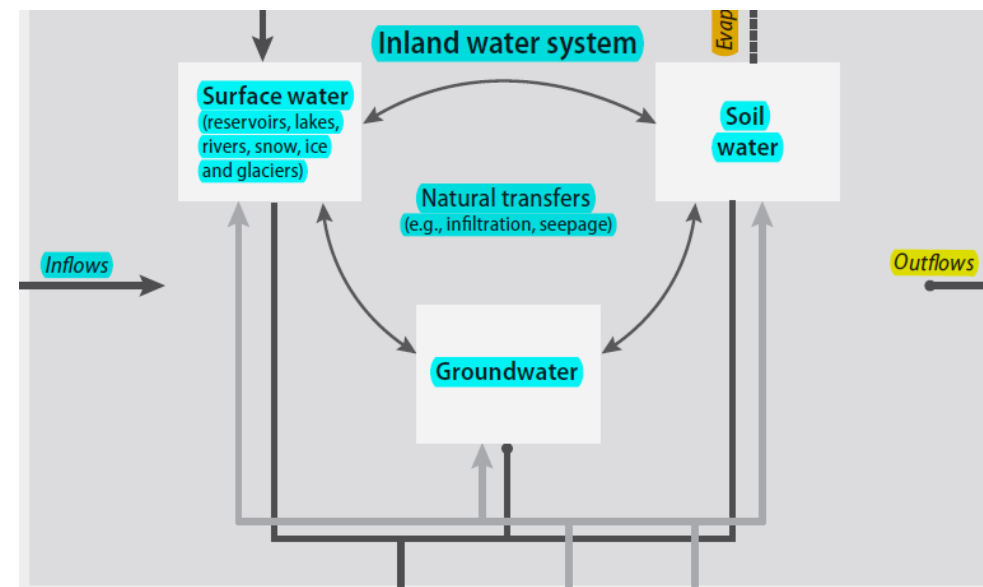
- Data items
 - Scarce countries focus on water availability
 - Industrial countries focus on water emissions
- Geographic regions
- Frequency of data production
- Prioritizing industries and households
- Prioritizing water resources





Asset accounts data needs-1

- Mainly involve hydrological elements following the increase/decrease in stocks approach
- Classifies the water into three main assets
 - Surface water (SW)
 - Ground water (GW)
 - Soil water (SOW)
- Meteorological information is necessary





Asset accounts data needs-2

- Asset accounts table – more than 50 parameters
- Exchanges table more than 20 parameters
- Most of the information can be provided **by well established and robust outcomes of hydrological model**
 - Require long term monitoring network for runoff and climate parameters

	EA.131. Surface water				EA.132 Groundwater	EA.133 Soil water	Total
	EA.1311 Artificial reservoirs	EA.1312 Lakes	EA.1313 Rivers	EA.1314 Snow, ice and glaciers			
1. Opening stocks	1 500	2 700	5 000	0	100 000	500	109 700
Increases in stocks							
2. Returns	300	0	53		315	0	669
3. Precipitation	124	246	50			23 015	23 435
4. Inflows	1 054	339	20 137		437	0	21 967
4.a. From upstream territories			17 650				17 650
4.b. From other resources in the territory	1 054	339	2 487	0	437	0	4 317
Decreases in stocks							
5. Abstraction	280	20	141		476	50	967
6. Evaporation/actual evapotranspiration	80	215	54			21 125	21 474
7. Outflows	1 000		20 773	0	87	1 787	23 747
7.a. To downstream territories			9 430				9 430
7.b. To the sea			10 000				10 000
7.c. To other resources in the territory	1 000		1 343	0	87	1 787	4 317
8. Other changes in volume							0
9. Closing stocks	1 618		4 272		100 189	553	109 583

	EA.131. Surface water				EA.132 Groundwater	EA.133 Soil water	Outflows to other resources in the territory
	EA.1311 Artificial reservoirs	EA.1312 Lakes	EA.1313 Rivers	EA.1314 Snow, ice and glaciers			
EA.1311. Artificial reservoirs			1 000				1 000
EA.1312. Lakes			100				100
EA.1313. Rivers	1 000	293			50		1 343
EA.1314. Snow, ice and glaciers							0
EA.132. Groundwater			87				87
EA.133. Soil water	54	46	1 300		387		1 787
Inflows from other resources in the territory	1 054	339	2 487	0	437	0	4 317

PSU Tables data needs



Water and Environment Support
in the ENI Southern Neighbourhood region

- Include the flows ENV \leftrightarrow ECO
 - Increase in stocks (returns)
 - Decrease in stocks (abstractions)
- From water assets and specific economic sectors
- Require more than 90 parameters from assets to economic sectors and backwards

		Industries (by ISIC category)						Households	Rest of the world	Total
		1-3	5-33, 41-43	35	36	37	38, 39, 45-99			
A. Physical use table (physical units)										
From the environment	1. Total abstraction (= 1.a + 1.b = 1.I + 1.II)									
	1.a. Abstraction for own use									
	1.b. Abstraction for distribution									
	1.I. From inland water resources:									
	1.I.1. Surface water									
	1.I.2. Groundwater									
	1.I.3. Soil water									
	1.II. Collection of precipitation									
	1.III. Abstraction from the sea									
Within the economy	2. Use of water received from other economic units of which:									
	2.a. Reused water									
	2.b. Wastewater to sewerage									
3. Total use of water (= 1 + 2)										

		Industries (by ISIC category)							Households	Rest of the world	Total
		1-3	5-33, 41-43	35	36	37	38, 39, 45-99	Total			
B. Physical supply table (physical units)											
Within the economy	4. Supply of water to other economic units of which:										
	4.a. Reused water										
	4.b. Wastewater to sewerage										
Into the environment	5. Total returns (= 5.a + 5.b)										
	5.a. To Inland water resources										
	5.a.1. Surface water										
	5.a.2. Groundwater										
	5.a.3. Soil water										
	5.b. To other sources (e.g., sea water)										
6. Total supply of water (= 4 + 5)											
7. Consumption (= 3 - 6)											





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Data flows that can support development of water accounts

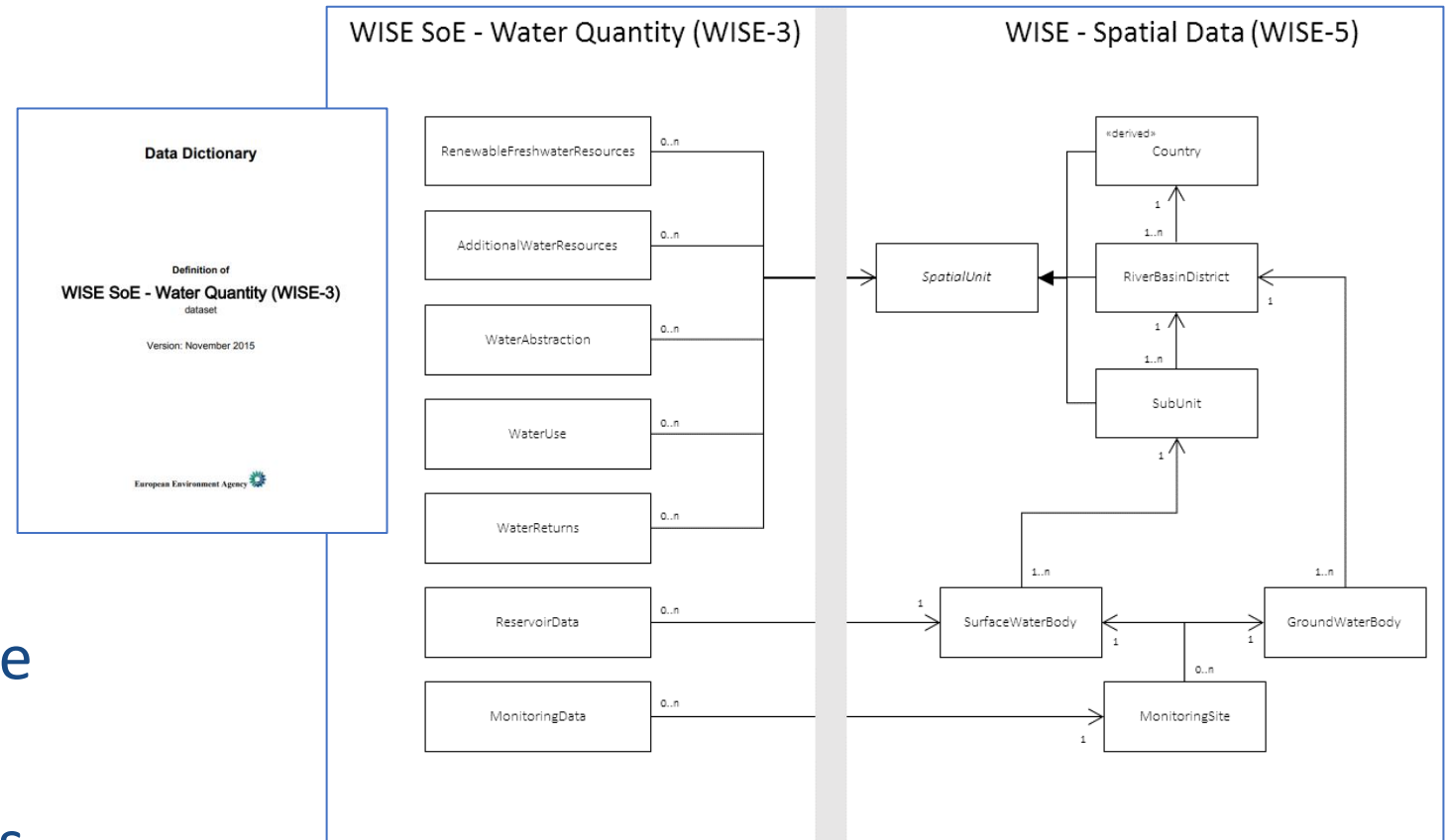


EEA WISE-3 (Water quantity)



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- WISE-3 ([link](#))
- 7 main tables
- Annual reporting
- Multiple scales
- Multiple time resolutions
- ISIC compatible
- Water accounts compatible
- WFD compatible
- Strength = monitoring sites



WISE
FRESHWATER

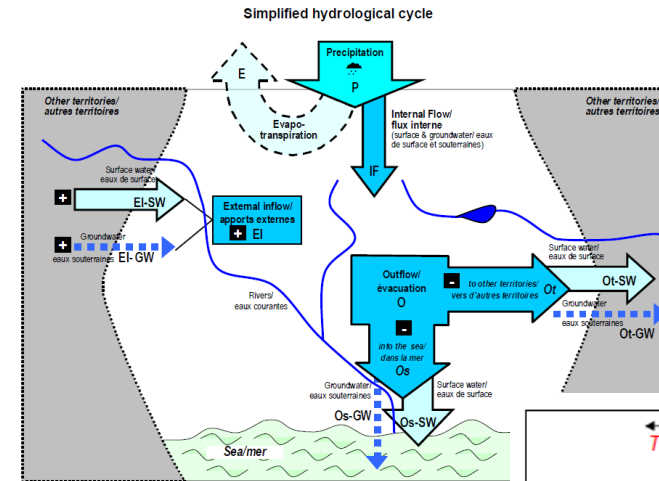


Eurostat water statistics(OECD/ESTAT JQ IQ)



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- Covering both quantity and quality
- Tabular format
- Annual reporting
- Multiple scales
- Annual resolution
- ISIC compatible
- Strength = sectorial water abstraction / use

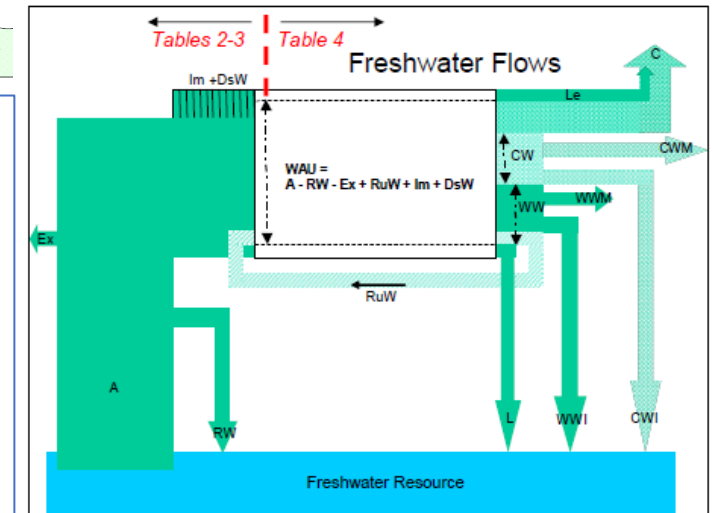


eurostat

Data Collection Manual
for the OECD/Eurostat
Joint Questionnaire on Inland Waters
and Eurostat regional water
questionnaire

Concepts, definitions, current practices,
evaluations and recommendations

Version 4 (2018)



FAO - Aquastat



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- Long term reporting
- Key statistics estimated
- 5-year reporting cycles
- Global coverage
- Agricultural focus

**Food and Agriculture
Organization of the
United Nations**

AQUASTAT

SELECT VARIABLES

- ☐ All Variables
- ☒ Geography and population
 - ☒ Land use
 - ☒ Population
 - ☒ Economy, development and food security
- ☒ Water resources
 - ☒ Precipitation
 - ☒ Internal renewable water resources
 - ☒ External renewable water resources
 - ☒ Total renewable water resources
 - ☒ Exploitable water resources and dam capacity
- ☒ Water use
 - ☒ Water withdrawal by sector
 - ☒ Water withdrawal by source
 - ☒ Wastewater
 - ☒ Pressure on water resources
 - ☒ Irrigation and drainage development

SELECT COUNTRIES

- ☐ All Countries
- ☐ Afghanistan
- ☐ Albania
- ☐ Algeria
- ☐ Andorra
- ☐ Angola

SELECT PERIOD

1960	1965	1970	1975	1980	1985	1990	1995	2000	2005	2010
1958-1962	1963-1967	1968-1972	1973-1977	1978-1982	1983-1987	1988-1992	1993-1997	1998-2002	2003-2007	2008-2012

OPTIONS

Axes: X: Y:

☒ Data Symbols
 ☐ Suppress em

**Country Fact Sheet
Ethiopia**

LAND AND POPULATION	Year	Value	Unit
Area			
Country total area	2016	110 430	1 000 ha
Cultivated area (arable land + permanent crops)	2016	18 229	1 000 ha
Population			
Total population	2015	99 391	1 000
Population density	2016	89	inhab/ha ¹
Rural population	2015	80 125	1 000
Economically active population in agriculture	2014	37 026	1 000
As % of total economically active population	2014	75.14	%
RENEWABLE WATER RESOURCES (RWR)			
Long-term average annual precipitation			
Depth		848	mm/year
Volume		936.4	km ³ /year
Long-term average annual RWR			
Internal (IRWR)		122	km ³ /year
External (ERWR)		0	km ³ /year
Total Actual (TRWR)		122	km ³ /year
Dependency ratio		0	%
TRWR per capita	2014	1 227	m ³ /year
Total dam capacity	2015	31.48	km ³
WATER WITHDRAWAL			
By sector			
Agricultural	2016	9.687	km ³
Municipal	2005	0.81	km ³
Industrial	2005	0.0011	km ³
Total	2016	10.55	km ³
Total water withdrawn per capita	2016	106.1	m ³
By source			
Surface water withdrawal		-	km ³
Groundwater withdrawal		-	km ³
Total freshwater withdrawal	2016	10.55	km ³
Desalinated water produced		-	km ³
Direct use of treated municipal wastewater	2002	0	km ³
Direct use of agricultural drainage water		-	km ³
Pressure on water resources			
Total freshwater withdrawn as % of TRWR	2016	8.648	%
Agricultural water withdrawn as % of TRWR	2016	7.94	%
IRRIGATION AREAS			
Area equipped for irrigation			
Full control irrigation			
Surface irrigation (2001)	144.8	1 000 ha	
Sprinkler irrigation (2001)	6.355	1 000 ha	
Irrigated area (2001)	0.012	1 000 ha	
Equipped lowland areas			
Spate irrigation	2010	200	1 000 ha
Total area equipped for irrigation	2015	658.3	1 000 ha
As % of cultivated area	2015	5.279	%
Area actually irrigated			
As % of area equipped for irrigation		-	%

Notes: 1 km³ = 10⁹ m³; 1 000 million m³; 1 ha = 1 hectare = 10 000 m²
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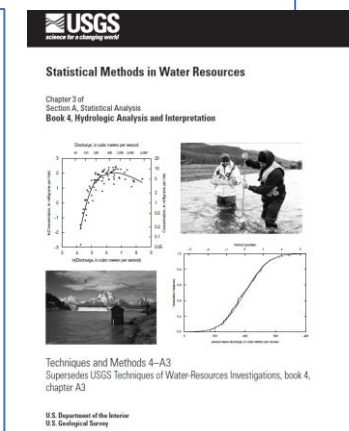
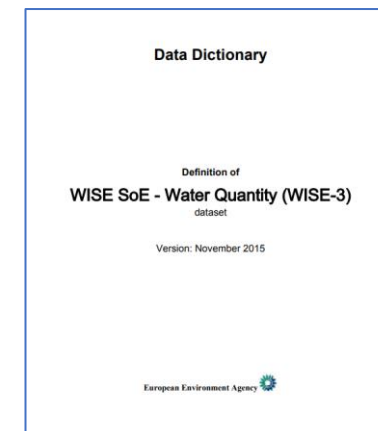
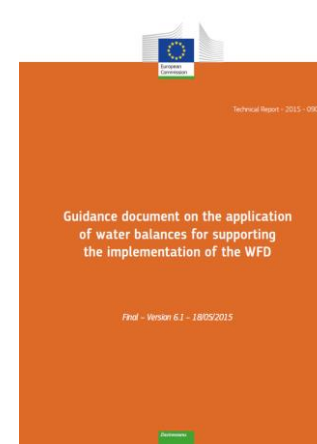
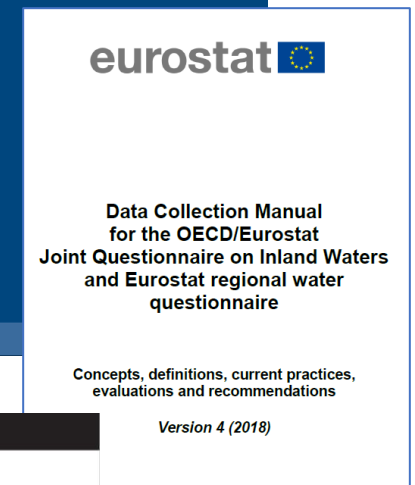
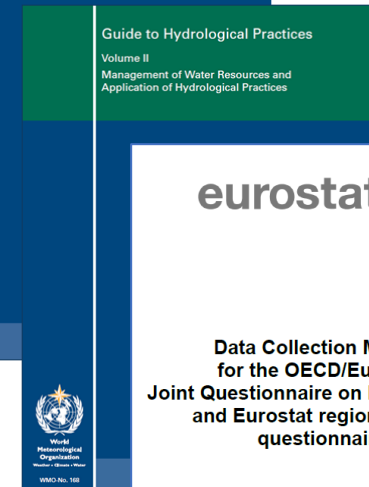
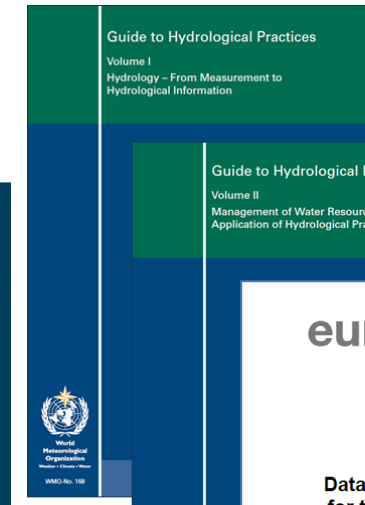
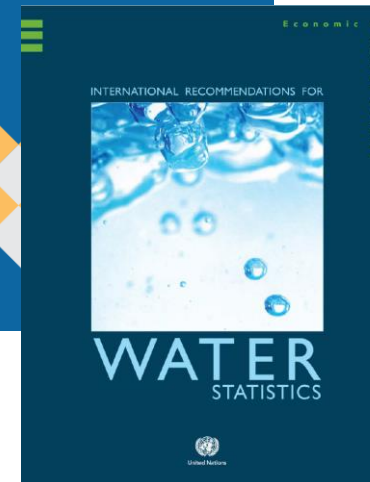


Useful literature



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- More added in Google Drive ...





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Thank you for your attention!

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