

25-28 October 2022

Ninth Meeting of the Expert Group on Environment Statistics

Assessment of the current status on Water Statistics: the Italian experience

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Main topics on Water Statistics in Italy

Public water supply

- Istat, Urban water census

Water use in Agriculture and Industry

- Istat, Estimation procedures

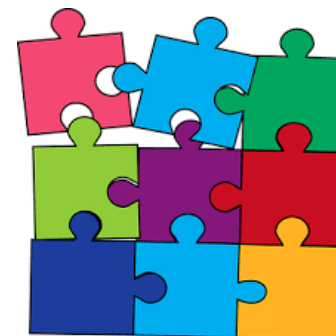
Water balance

- Joint project Istat-Ispra

Generation and discharge of wastewater



**Lack of a national
information system on
Water resources**



**Meet users needs,
fill data gaps**



**Provide high quality statistical
information:
reliable, consistent, timely,
comparable, accessible,
regional**

Main Istat's national and international commitments on Water



Inland waters questionnaire



Regional water questionnaire



Through Ministry of Ecological Transition and Ispra

Benessere Equo e Sostenibile
Equitable and Sustainable Well-being



AQUASTAT



- **DB: SDG indicators since 2016, every 6 months**
- **Report: SDG since 2018 Italian/English**



In collaboration with all institutes belonging to the National Statistical System (NSS) and beyond, such as the ISPRA-Italian National Institute for Environmental Protection and Research, Ministry of Ecological Transition

Public water supply

Istat, Urban Water census: main data source, from water withdrawal for drinkable use to urban wastewater treatment

➤ **Since 1951** Istat has periodically collected information on water resources for civil use with a dedicated Census

- ❑ Respondent units: all water management companies (*water utility companies / municipalities or other local authorities*)
- ❑ Progressive updating of the contents of the questionnaire, in line with national and international requirements
- ❑ Long time series available (since 1999)

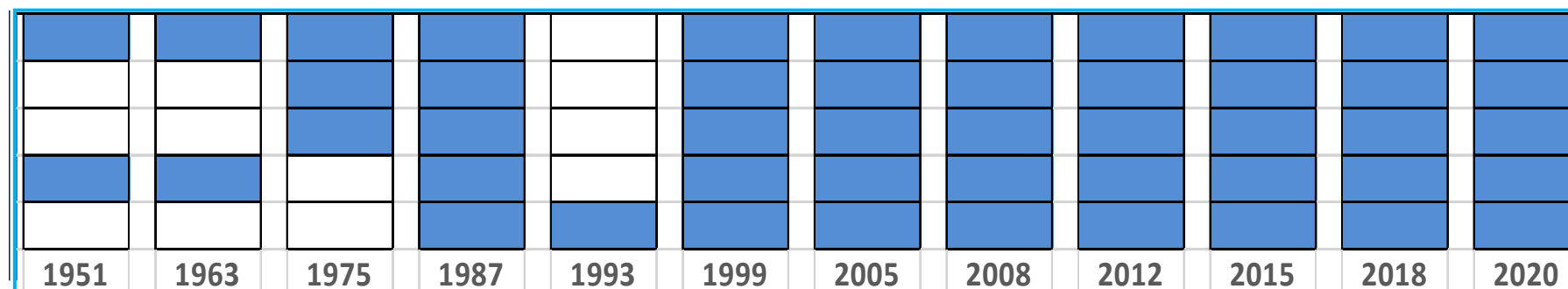
Water withdrawal

Public water supply

Public water supply networks

Public sewerage

Urban wastewater treatment plants



Frequency of data collection every two years

Data collection mode via web



Last edition: 2020 (carried out on 2021) → main 2020 indicators will be disseminated by December 2022. Some indicators already released at the end of 2021.

Next edition: 2022 (from June 2023)

Urban water census: an overview (numbers and main indicators)

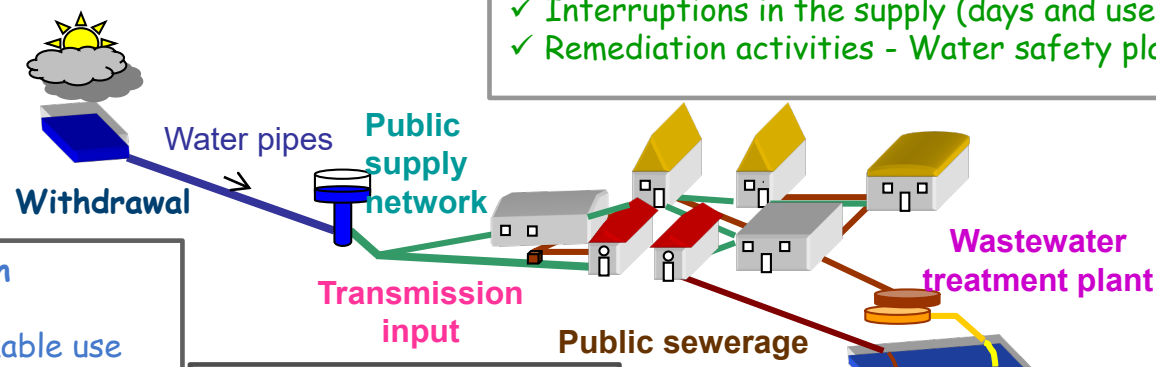


A high level of fragmentation persists in the **management** of urban water services in Italy: 2,552 water operators in 2018 (~2,400 in 2020; 7,826 in 1999)

~80,000 questionnaires
~300 variables
~7,900 municipalities

~1,620 operators
~35,000 points

- ✓ **Water withdrawal and transmission**
- ✓ Identification code
- ✓ Annual water withdrawal for drinkable use
- ✓ Water withdrawal by month
- ✓ Type of source
- ✓ Geographical coordinates
- ✓ Wise codes
- ✓ Water withdrawal by treatment
- ✓ Water delivered to municipalities
- ✓ Water tradings between water operators
- ✓ Water delivered for not civil uses (agriculture, industry, oilers, supply ship)



Public water supply network

- ✓ Water input into the network
- ✓ Water supplied
- ✓ Water invoiced and users by use: civil, public, agricultural and zootechnical, industrial, ...
- ✓ Network length
- ✓ Number and length of connections
- ✓ % resident population connected to PWS
- ✓ Interruptions in the supply (days and users involved)
- ✓ Remediation activities - Water safety plan

~1,970 operators

Public sewerage

- ✓ Type of public sewerage network
- ✓ % Population connected to public sewerage
- ✓ Discharge destination

~2,140 operators

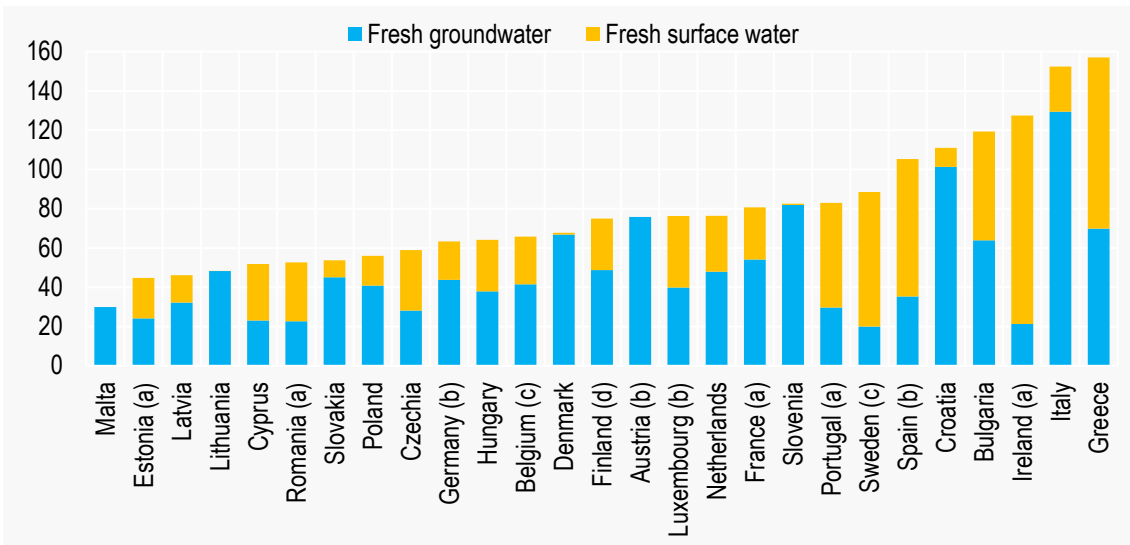
Urban wastewater treatment plants

- ✓ Identification code
- ✓ Treatment level
- ✓ Municipalities connected to WWTP
- ✓ Capacity (in p.e.)
- ✓ Total urban population equivalent
- ✓ Total industrial population equivalent
- ✓ Water parameters (BOD, COD, suspended solid, ...)
- ✓ Sludge production and disposal
- ✓ Reuse of WW (quantity and destination)

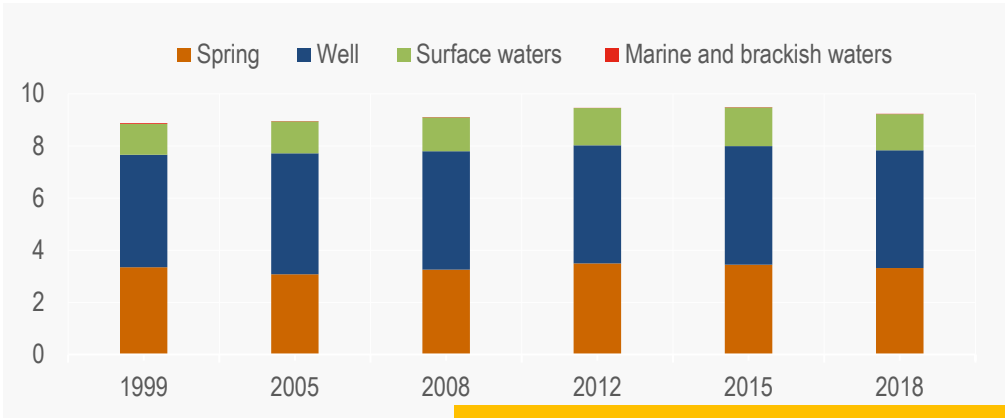
~1,400 operators
~18,000 UW WTPs

Water withdrawal by Public Water Supply: some figures

Freshwater withdrawal by PWS in EU27 countries. Year 2018 or last available year (cubic metres per capita per year)

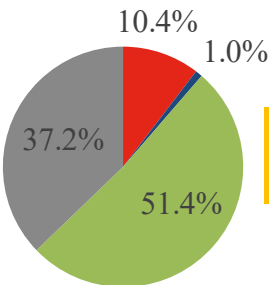


Data source: Istat, Urban water census



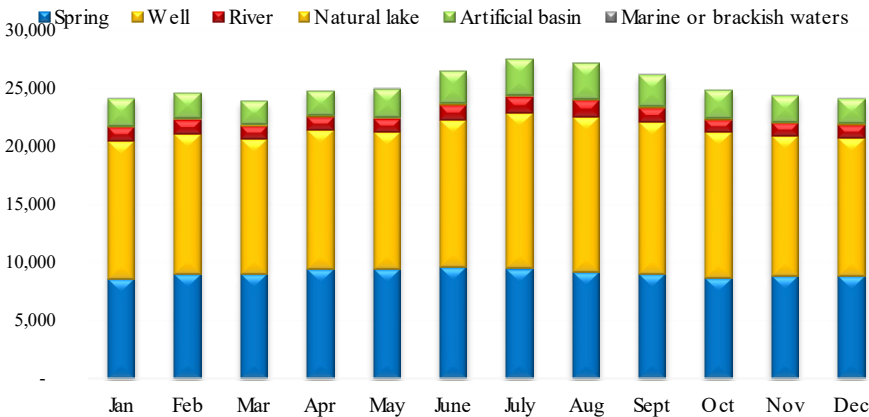
Annual water withdrawal by PWS, by source.
Years 1999-2018, billion cubic metres

- Water losses in adduction
- Water supplied for not civil uses
- Water supplied for authorised civil uses
- Water losses in supply



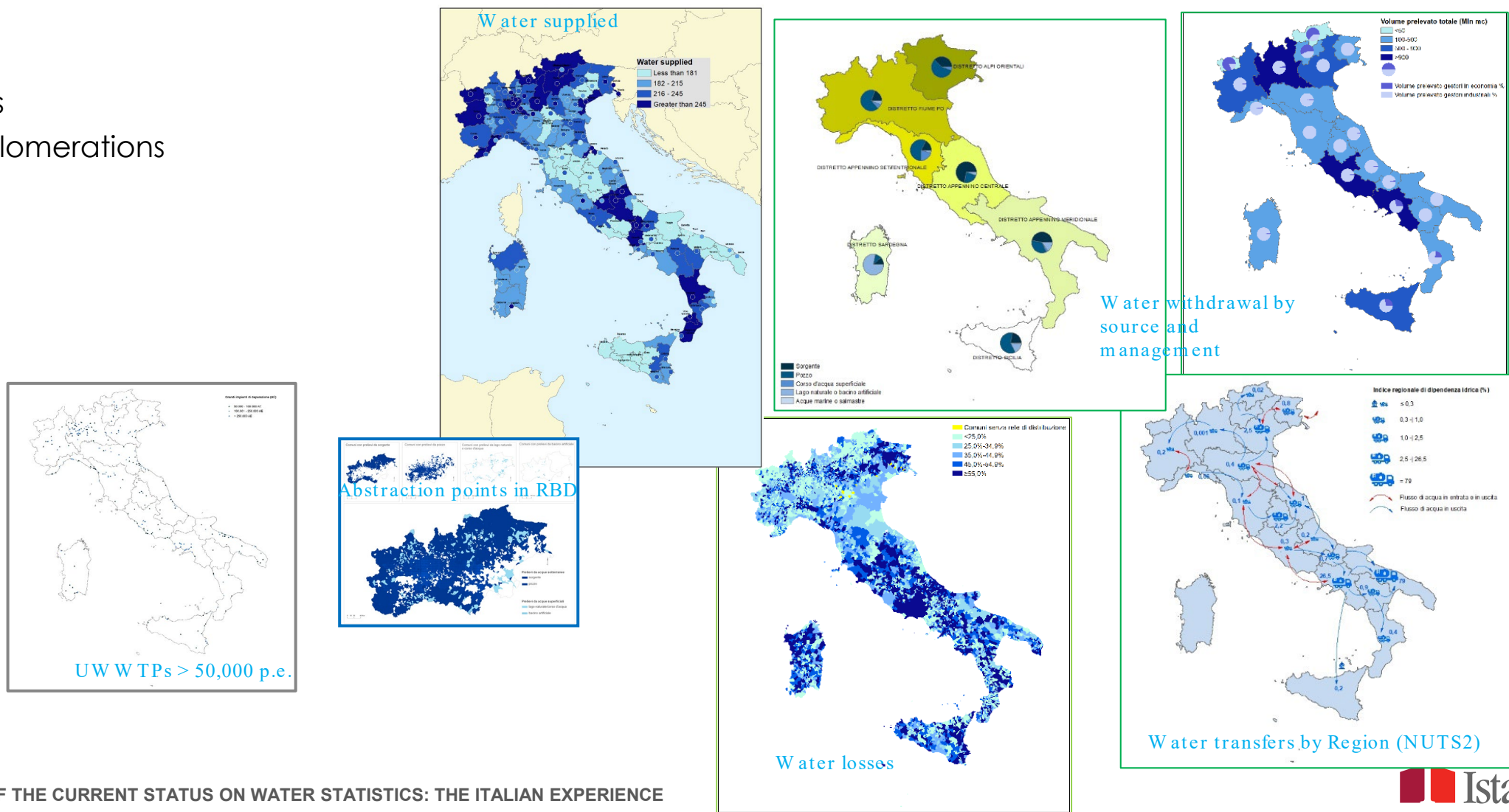
Water withdrawal by PWS.
Year 2018, percentage composition

Water withdrawal by PWS, by month and source.
Year 2018, million cubic metres



PWS: territorial level of analysis

- Administrative levels: Nation, Regions (NUTS2), Provinces, Metropolitan Cities, Municipalities
- RBD
- Basins
- Water bodies
- Sewage agglomerations



Water use in Agriculture and Industry

Starting conditions

- **Lack** of an adequate monitoring system for water used in agriculture and industry.
- The information available often produced by various agencies and institutions with administrative purposes and according to **different** levels of quality and archiving procedures.
- For this reason Water Statistics on Italian agricultural and industrial activities have suffered from a large **fragmentation** of information, data **heterogeneity** and lack of **standardization**.

Current activities

- Istat has been working for several years in order to improve national knowledge on Water use in agriculture and Industry.
- Estimation models
- Progressive increasing in the calculation of indicators (also aligned to Eurostat-OECD reporting).

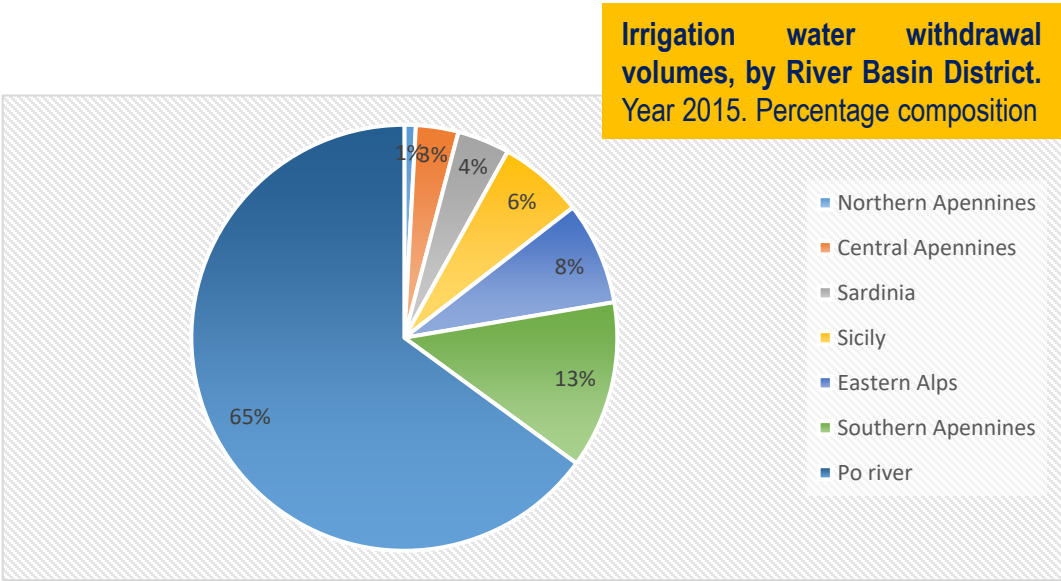
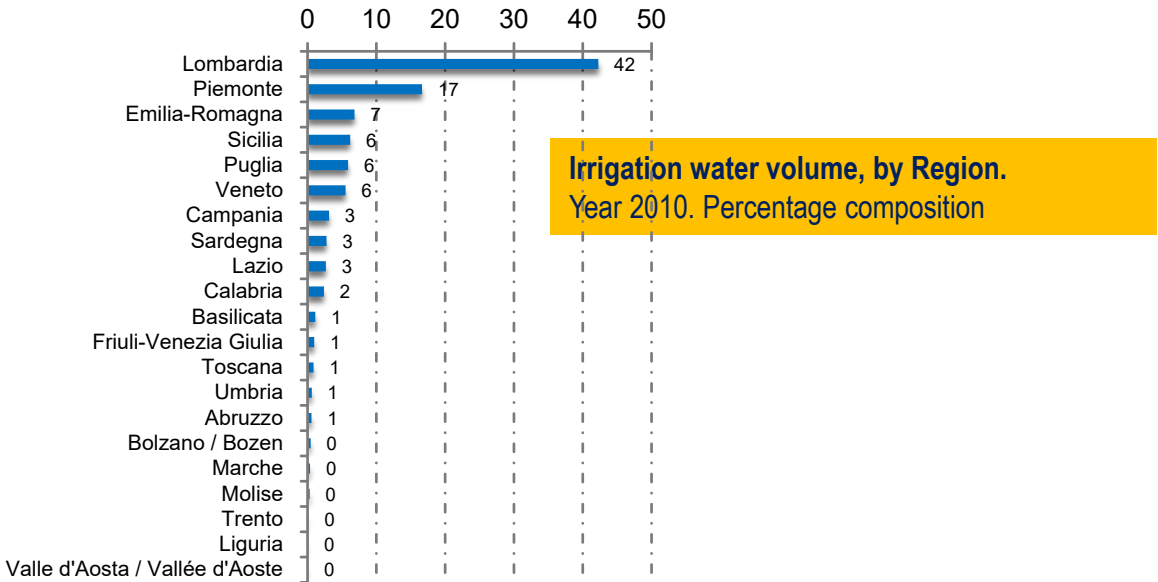
Water use in Agriculture

The estimation of the irrigation water use at the farm level was performed through a methodology developed by Inea (actually Crea) and Istat, in the framework of a Eurostat grant, based on [2010 Italian Agricultural Census](#).

- ❑ Estimations updated on the basis of Farm Structure Survey 2016
- ❑ Data at the national and RBD level



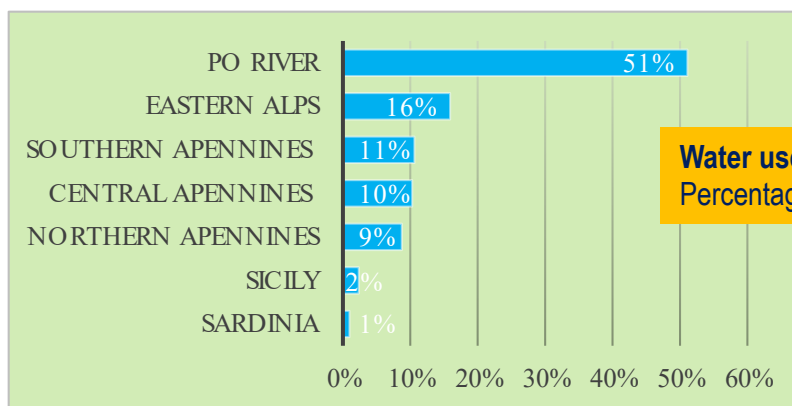
Next update on the 2020 Italian Agricultural Census data *(in course of publication)*



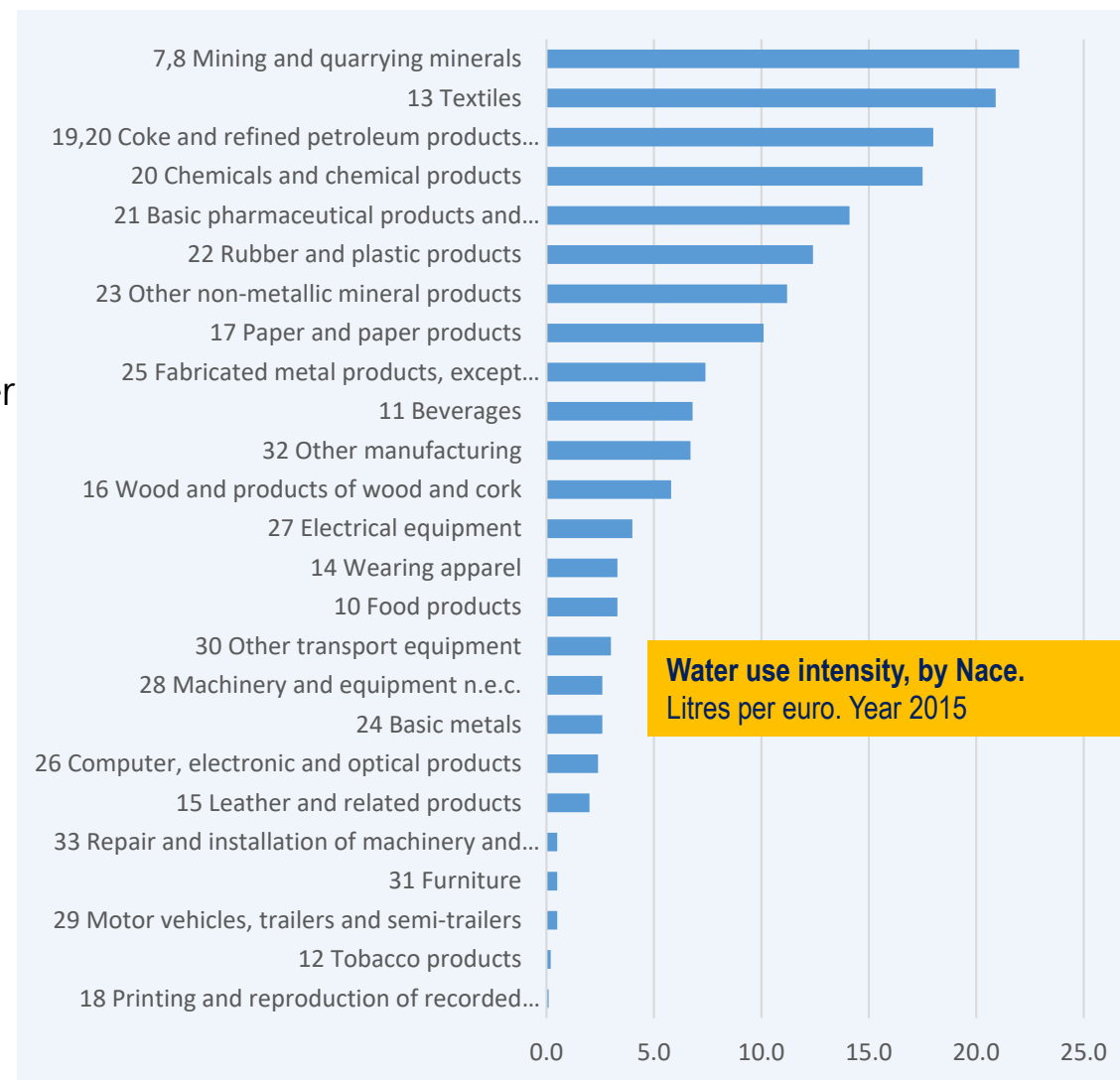
Water use in Industry

Manufacturing industry (Nace Rev. 2, 10-33) and mining and quarrying sector (Nace Rev. 2, 05-09)

- Estimation procedure to obtain volumes of water use in manufacturing industry by unit of product based on:
 - statistics coming from the current Istat PRODCOM (Community Production) Sample Survey
 - selected technical processing coefficients (drawn either by scientific literature and by information directly provided by Italian enterprises)
- at the national, RBD, Regional and SLL (Local Labour System) levels

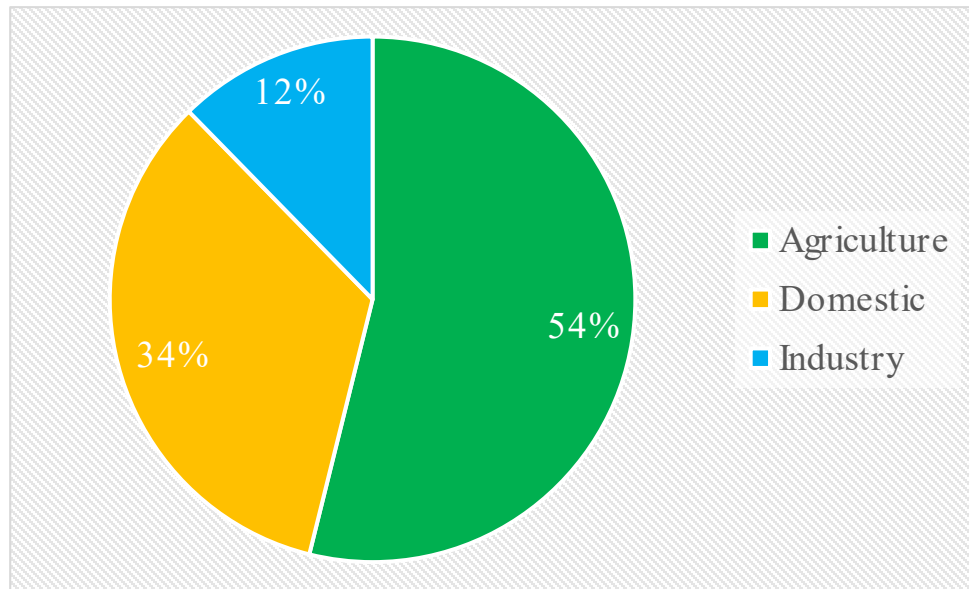


Water use, by RBD. Year 2015.
Percentage composition



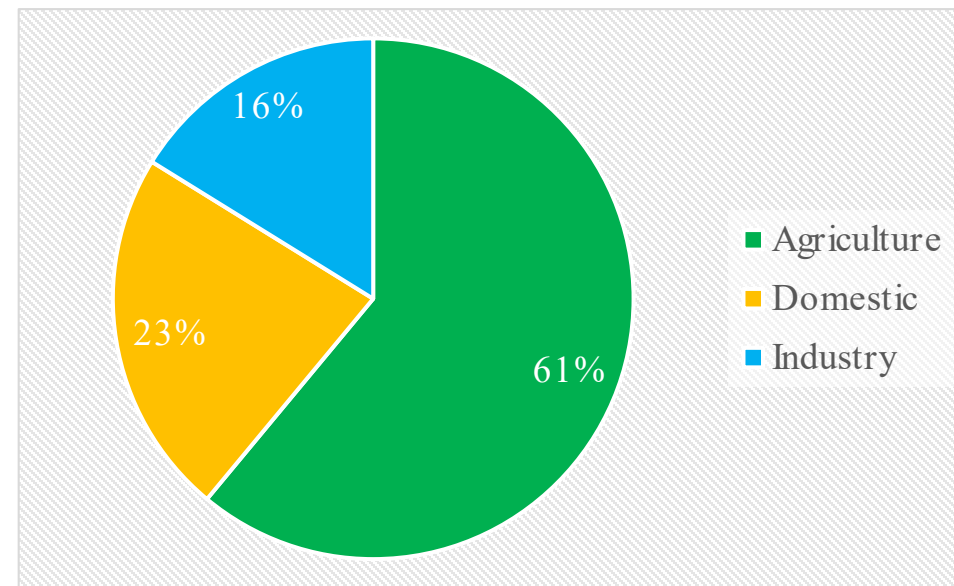
Water use intensity, by Nace.
Litres per euro. Year 2015

Water withdrawal and use by supply category



Water withdrawal by supply category in Italy. Year 2015

- Total: 28,1 km³
- Industry 3,5 km³



Water use by supply category in Italy. Year 2015

- Total: 21,4 km³
- Industry 3,4 km³



Water balance

Ongoing joint project

Istat-Italian National Institute of Statistics & ISPRA-Italian National Institute for Environmental Protection and Research

- ❑ definition, construction and calculation of indicators on the water resources availability, abstraction and use at the national and RBD level
- ❑ application of geostatistical and deterministic techniques (ISPRA, BIGBANG 4.0 - Bilancio Idrologico Gis – BAsed a scala Nazionale su Griglia regolare / Nationwide Gis Based Water balance on a regular grid).
- ❑ Homogenization of the various international data collections in which the two institutions are involved (inter-alia: JQ-Inland Waters, Regional water questionnaire, Wise, Aquastat-Fao).

SDG 6.4.2: Level of water stress: freshwater withdrawal as a proportion of available freshwater resources

Ref. SDG	INDICATOR	Compared to SDG indicator	Value	VARIATIONS	
				Compared to 10 years before	Compared to the previous year
6.4.2	Level of water stress: freshwater withdrawal as a proportion of available freshwater resources				
Freshwater withdrawal for public water supply (Istat, 2018, Million m³)		Partial	9.219,8	 (a)	

Data source: Istat, Urban water census

✓ Collaboration Istat & ISPRA & FAO

Disaggregation at RBD Level



About Wastewater statistics

Persistent criticalities in the calculation of the volume generated/treated by all plants in operation, at the national and subnational level.




UWWTPs fleet

- Size (approximately 18,000 plants in operation and 1,600 operators).
- Partial validation of wastewater related statistics for:
 - missing data on some quality parameters,
 - data quality,
 - management aspects,
 - low level of monitoring for plants managed by municipalities or other local authorities.

Other plants

- Low knowledge on plants for industrial exclusive use.

SDG 6.3.1: Proportion of domestic and industrial wastewater flow safely treated

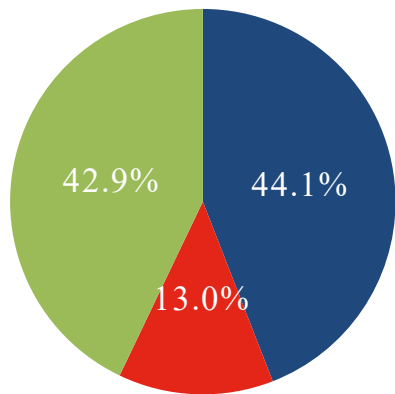
Ref. SDG	INDICATOR	Compared to SDG indicator	Value	VARIATIONS	
				Compared to 10 years before	Compared to the previous year
6.3.1	Proportion of domestic and industrial wastewater flow safely treated				
Sewage treatment (Istat, 2015, Percentage values)		Partial	59,6	 (a)	--
Urban wastewater safely treated with secondary or advanced treatment (Istat, 2018, N.)		National context	7.781	 (a)	
Public sewage coverage (Istat, 2018, Percentage values)		National context	87,8	--	--

- Population equivalent connected to secondary or advanced treatment plants (in % on p.e. generated)
 - Number of plants
 - % resident population
- Resident population connected to UWWTPs (at the national level and provincial/metropolitan capital cities)

Data source: Istat, Urban water census

Wastewater: some figures

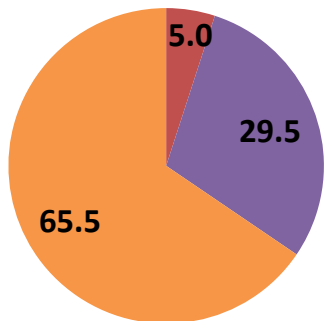
■ Imhoff ■ Primary ■ Secondary/Advanced



Urban wastewater treatment plants in operation, by treatment. Year 2018. Percentage composition

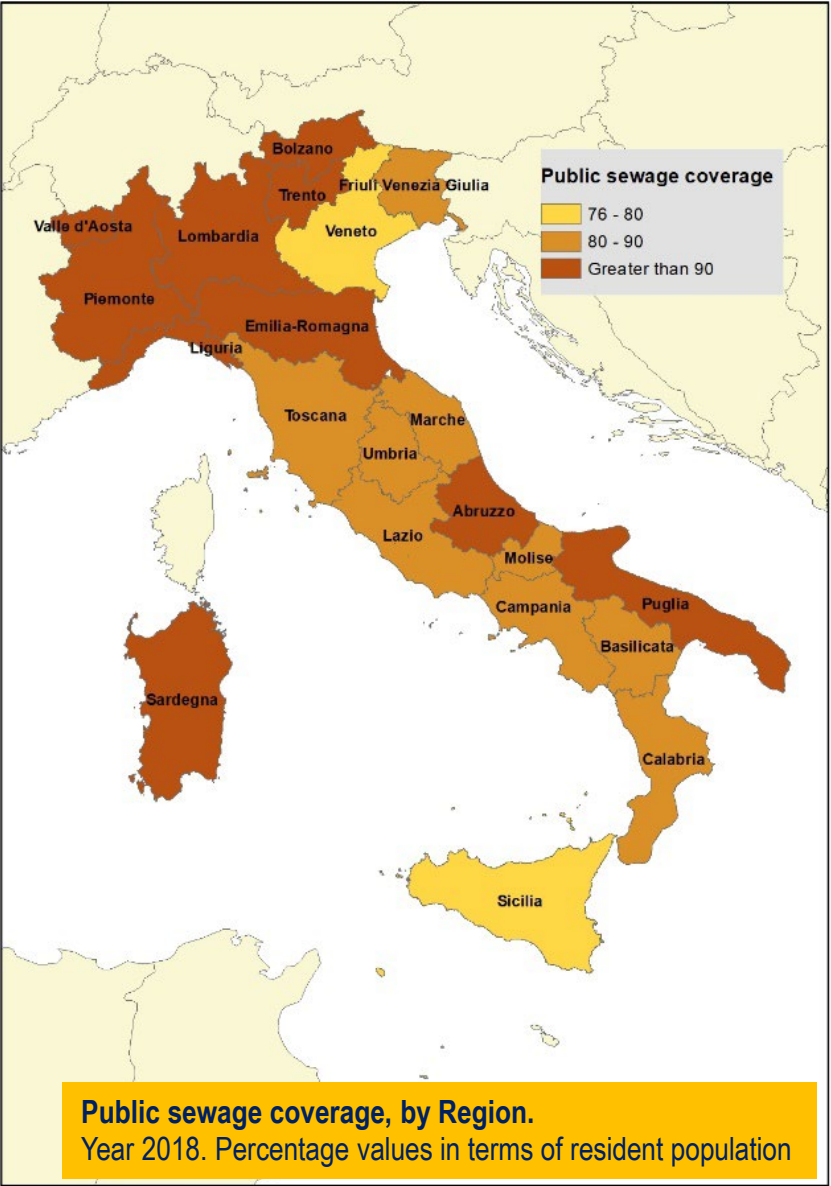
18,140 UW WTPs (2018)

■ Primary-Imhoff tank ■ Secondary ■ Advanced



Pollutant loads in entrance to urban wastewater collecting and treatment systems, by treatment level. Year 2018. Percentage values in terms of population equivalent

about 68 million population equivalent (2018)



Next steps

Water use

- Complete the coverage of all urban water services in terms of resident population at various territorial levels.
- Systematize the production of indicators of non-civil uses of water (to be updated at least on the occasion of Urban water census).



Sludges

- Complete the estimation on production and disposal for all UWWTPs (currently available on plants with >50,000 p.e.)

Wastewater treatment plants for industrial use only

- Estimation of wastewater treated starting from water use.



Treated Wastewater reuse

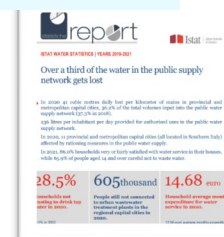
- Estimation of annual volumes of treated urban wastewater by type of reuse.

Participatory approaches

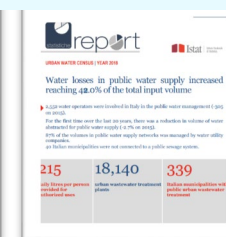
- Further strengthening the network within the institutions involved in Water resources field: Istat, River Basin District Authorities, ISPRA, Regions, Ministries (Environment, Health, Agriculture), Italian National Institute of Health, Civil Protection Department, Water Utilities Association and water data producers.
- Enhancing the awareness of the citizens.



World water day 2022



Urban water census 2018



Thank you
Grazie

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