Twinning Project
"Strengthening of the National Statistical System of Armenia – Phase II"

Activity 6.1

Assessment of the current status on water statistics and water accounts

The Italian experience on Water Statistics and Accounts

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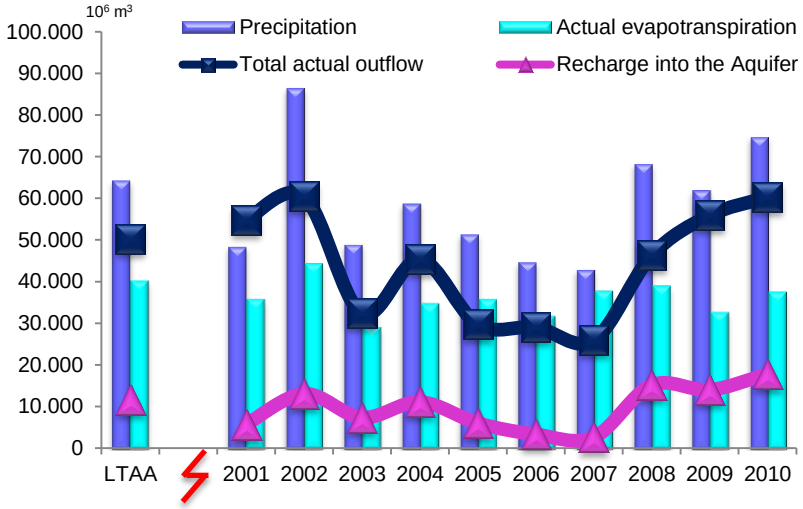


Yerevan, 1-4 February 2016

Istat

Outline fo the talk

1. Brief overview of Italian situation on Water resources (WR)
2. Main projects on WR
3. Istat dissemination

Brief overview of Italian situation on WR

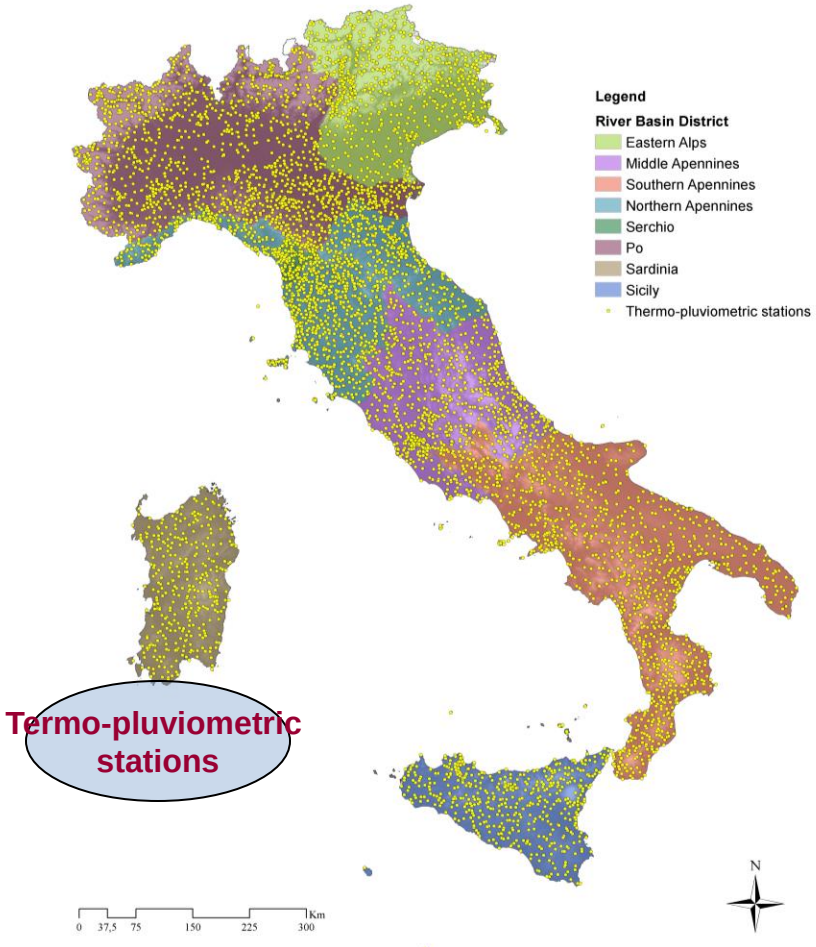
- Lack of a national information system on WR.
- High dispersion of meteorological and hydrological information.
- Regional management of WR.
- Information is collected by local administration with administrative purposes and with different archiving procedures.
  - Large fragmentation of information, data heterogeneity and lack of standardization.
  - Methodological autonomy in calculating indicators in the various institutions involved in Water field.

- Low timeliness and coeherence over time.
- Break in time series.
- Historical data are often stored only in paper format.
- Lack of an official cartography at RBD level.

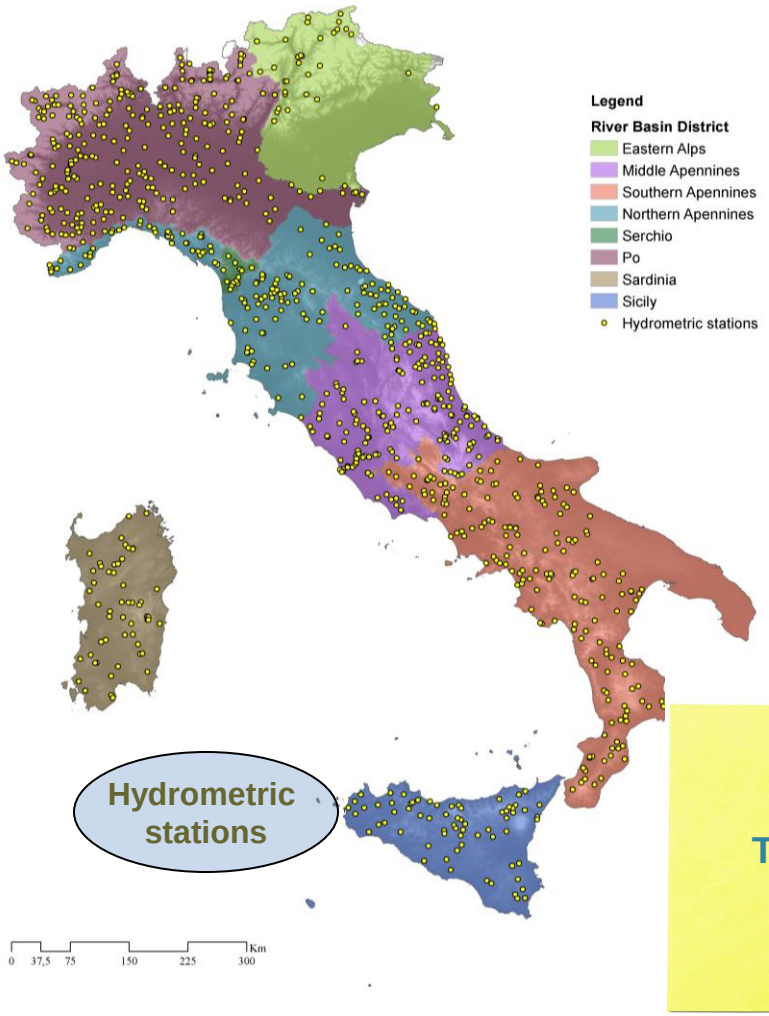
Im Italy there are 20 Regions (NUT2)

The Istat project on climate statistics

- Implementation of a **geographical data-warehouse** with meteorological, agro-meteorological and hydrological daily values measured since 1951. The termo-pluviometric monitoring network has about 6,200 stations and the hydrometric one about 950 stations.
- Homogenization of geographical coordinate systems (**WGS84/UTM zone 33N**).
- A quality control system for data and metadata errors.
- Data organization in a GIS.



Termo-pluviometric stations



Hydrometric stations

JQ_IW
TABLE 1

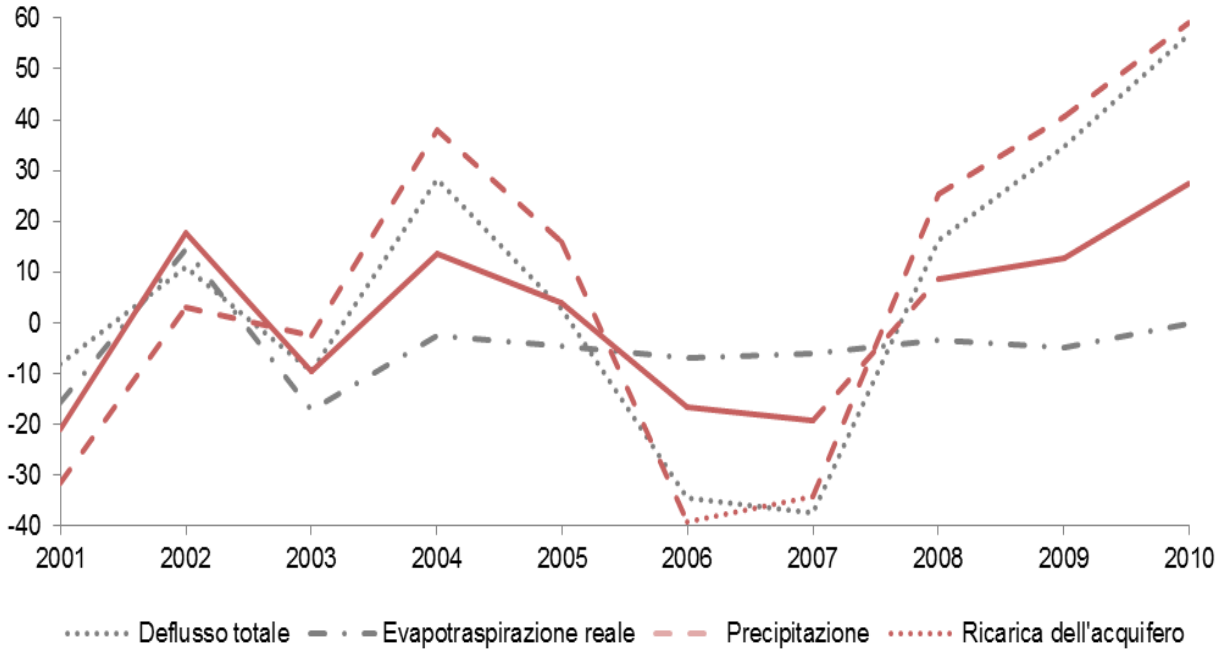
PWFA

Renewable freshwater resources – 1971-2000 / 2001-2010

volumes in millions of m³

Years	Precipitation	Actual evapotranspiration	Total actual outflow	Recharge into the aquifer
1971-2000	241.104	155.808	115.882	55.076
2001-2010	245.457	148.590	122.884	59.193

Renewable Water Resources



PERCENTAGE VARIATIONS IN PRECIPITATION, ACTUAL EVAPOTRANSPIRATION, TOTAL ACTUAL OUTFLOW AND RECHARGE INTO THE AQUIFER FROM 2001 TO 2010 WITH RESPECT TO LTAA 1971-2000

In Italy, the average precipitation occurred in the decade 2001-2010 corresponds to a volume of water equal to 245,457 mio m³ (+1.8% compared to LTAA), almost in line with the average value for 1971-2000. The most droughty year was 2001 with 190,839 mio m³ (20.8% less than LTAA), on the contrary 2010 was the wettest year with 306,883 mio m³ (+27.3%).

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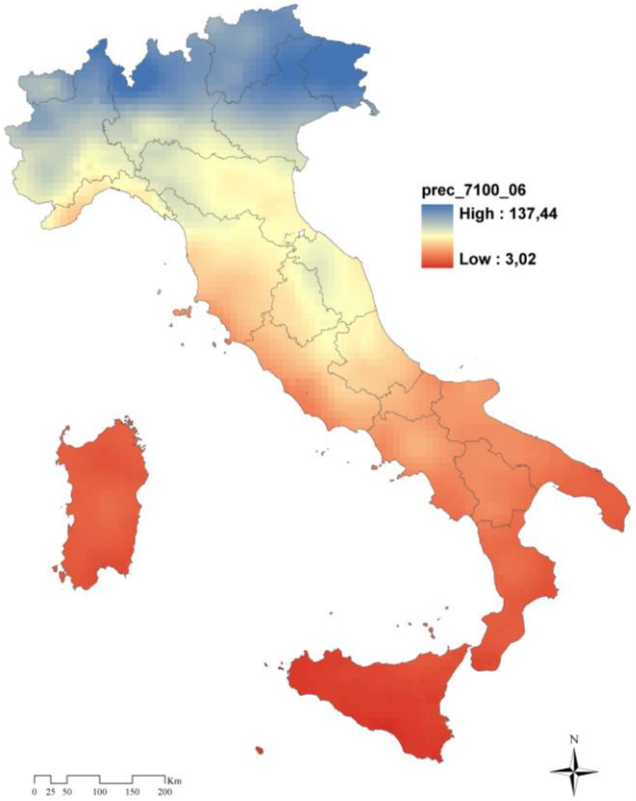
Precipitation

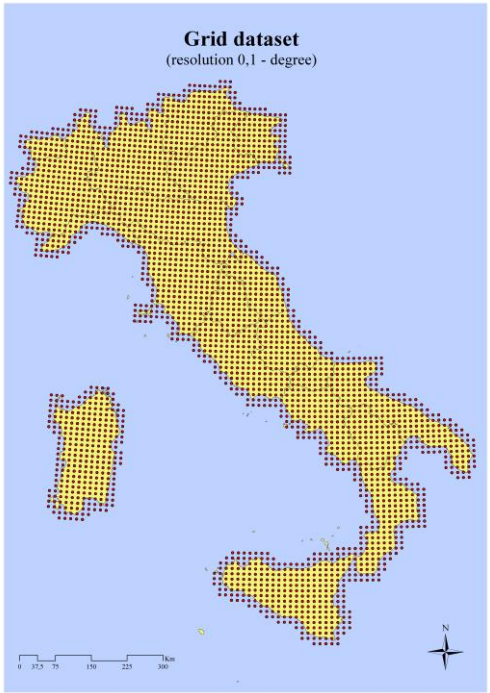
This variable refers to data processed on a regular grid of 0.1° to the side (3193 knots) generated through procedures of geostatistics spatial analysis (Universal Kriging).

These data, with a daily coverage from 1971 to 2010, were aggregated by month producing 12 layers of information related to the LTAA 1971-2000 and 120 total layers of information for the years 2001-2010. GIS spatial analysis procedures provide the monthly average rainfall at river basin level.

Gridded rainfall data – June 1971-00



Grid dataset



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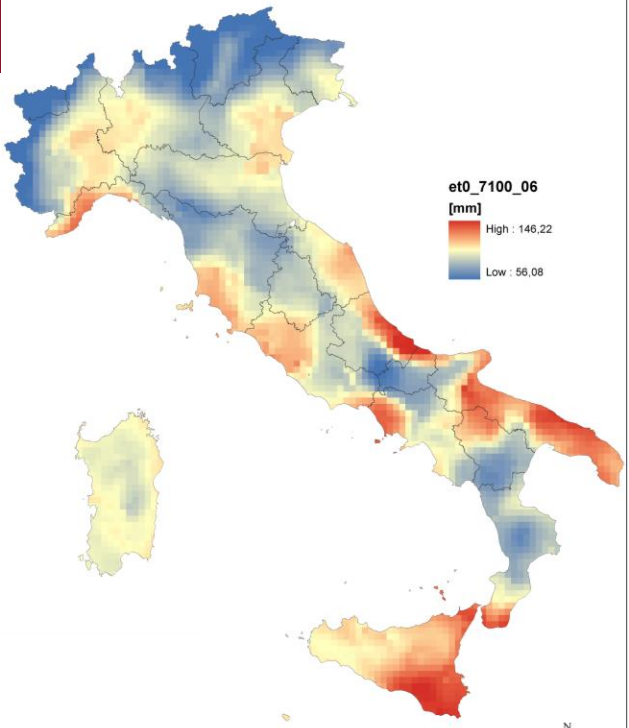
Actual Evapotraspiration

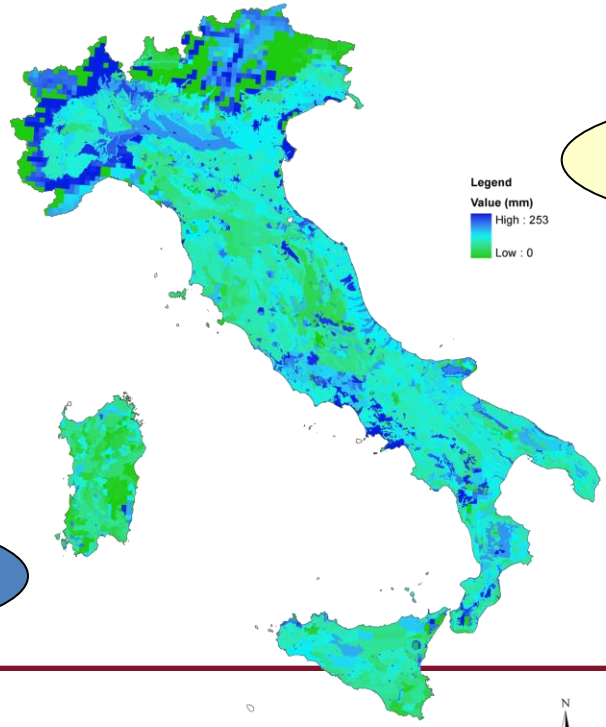
It is calculated on the basis of monthly water balance model proposed by Thornthwaite-Mather.

The calculation of the Potential Evapotranspiration (ET_0), necessary to determine the Actual Evapotraspiration, is based on the Hargreaves-Samani equation (with monthly recalibration of the empirical coefficient, in order to avoid systematic overestimates). This allowed the reconstruction of the average trend of ET_0 from 1971 to 2010, for each river basin, through the use of minimum and maximum temperature, monthly spatialized on regular grid of 0.1° to the side (3193 nodes) by a co-kriging geostatistical.



Gridded Potential Evapotranspiration data

For the calculation of the Actual Evapotraspiration it was also considered the Available water capacity soil water content (AWC), that is the water that can be stored in soil and be available for growing crops, which was derived by the average value of the river basin, starting from the information layer available on a national scale (resolution 1 km x 1 km).



Soil water capacity (AWC) resolution 10 arc min

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Actual external inflow

- The runoff of surface waters from the territories outside the territorial units considered (e.g. river basin districts) were obtained from flow measurements of the input streams.
- Where flow data are not available, they are estimated by the method inflows / outflows for the basin underlying the river area.
- The outflows of groundwater are estimated considering surpluses and water deficits determined through the hydrological balance carried by river basin.

Actual external inflow

River Basin District	Neighbouring countries	Actual external inflow LTAA (10^6 m^3)	2010 (10^6 m^3)	2009 (10^6 m^3)	2008 (10^6 m^3)	2007 (10^6 m^3)	2006 (10^6 m^3)	2005 (10^6 m^3)	2004 (10^6 m^3)	2003 (10^6 m^3)	2002 (10^6 m^3)	2001 (10^6 m^3)
	Switzerland	4.380	4.836	4.474	5.447	2.893	2.654	1.902	4.050	2.493	5.408	4.967
Po District	France	155	189	166	177	105	113	125	136	132	240	102
	Total	**4.535**	**5.025**	**4.639**	**5.623**	**2.998**	**2.767**	**2.027**	**4.186**	**2.625**	**5.648**	**5.069**
	Switzerland	79	73	66	89	52	62	55	79	71	76	127
Eastern Alps	Slovenia	2.545	4.571	3.537	3.458	1.909	2.163	1.794	3.086	1.659	2.284	2.990
	Total	**2.624**	**4.644**	**3.603**	**3.548**	**1.962**	**2.226**	**1.849**	**3.165**	**1.729**	**2.360**	**3.117**
Northern Apennines	Francia	360	755	787	802	441	472	512	513	564	908	460

Actual outflow into neighbouring territories

River Basin District	Neighbouring countries	Actual external outflow LTAA (10^6 m^3)	2010 (10^6 m^3)	2009 (10^6 m^3)	2008 (10^6 m^3)	2007 (10^6 m^3)	2006 (10^6 m^3)	2005 (10^6 m^3)	2004 (10^6 m^3)	2003 (10^6 m^3)	2002 (10^6 m^3)	2001 (10^6 m^3)
Po District	Switzerland	222	213	182	224	128	138	134	171	134	244	188
Eastern Alps	Austria	236	239	226	283	214	184	214	310	235	293	227

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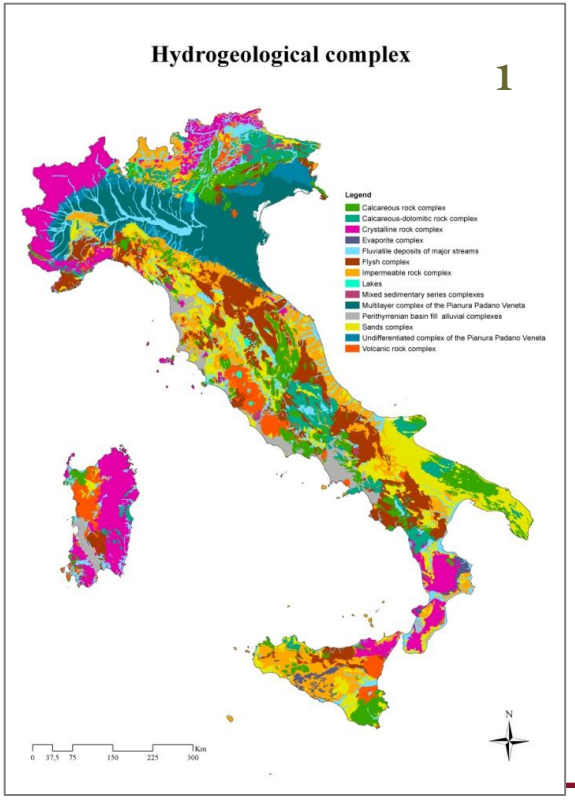
Total actual outflow

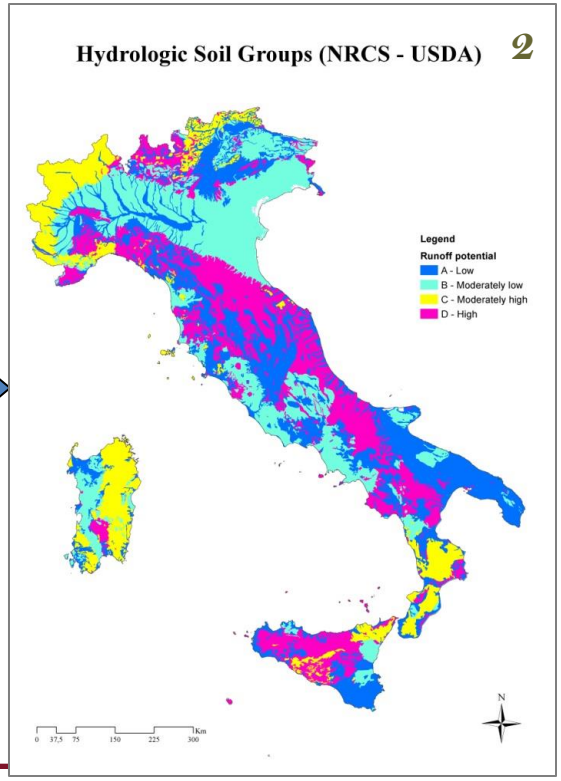
The total actual outflow of rivers was calculated considering the measured flow in the hydrometric gauging stations near the mouth.

For the rivers for which we did not have hydrometric gauging stations, the volumes were estimated using the Curve Number method, that allows the estimation, for each river basin, of the run-off and recharge into the aquifer. The parameter CN was estimated, for each river basin, weighing the areas corresponding to four hydrological groups (A, B, C and D), identified by intersecting the land use layer (Corine Land Cover, 2006) with the state Hydrogeological Complexes layer.



SCS (Soil Conservation Service) Runoff Curve Number Method

Hydrogeological complex are classified in to 4 Hydrologic Soil Groups (A-D) according to infiltration rate



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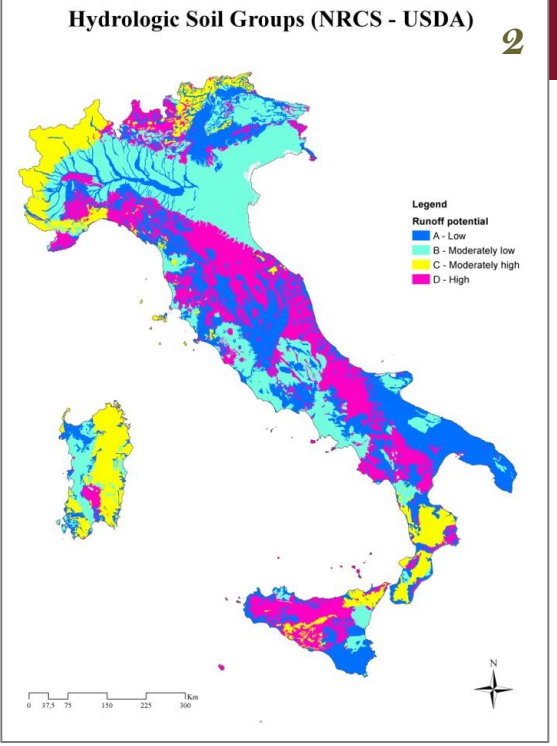

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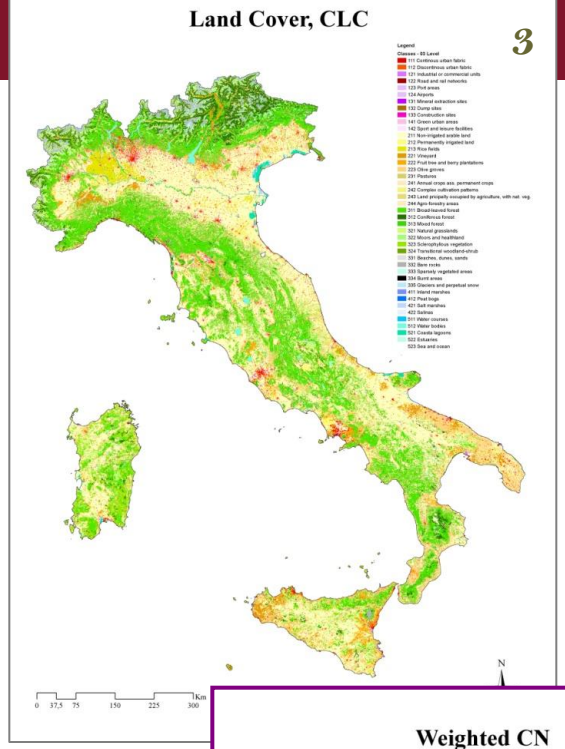
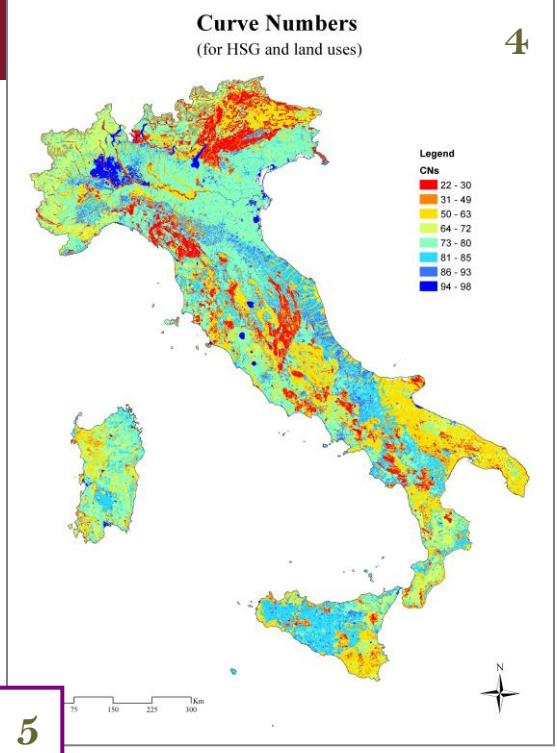
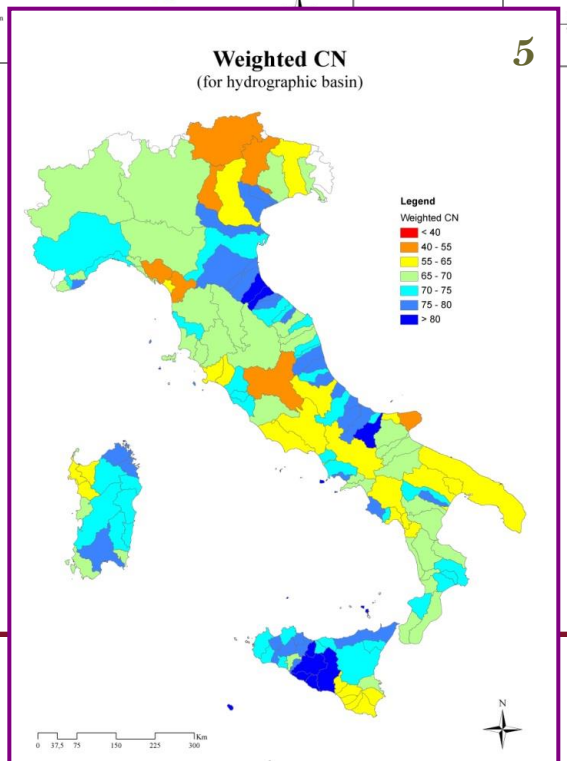




- The CNs (4) and the Istat Istat hydrographic basins maps were intersected.

- For each basin, the CN was obtained as a weighted average of the CNs present in each polygon (5).



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Recharge into the aquifer

The volumes of recharge into the aquifer were calculated at the river basin level considering the data flow of hydrometric stations located at river mouth.

The analysis of daily and monthly flow allowed us to decompose the hydrograph into the components "*run-off*" and "*baseflow*", the latter represents the recharge into the aquifer.

For the rivers for which we did not have hydrometric stations, the volumes were estimated using the Curve Number method, that allows the estimation, for each river basin, of the run-off and recharge into the aquifer.

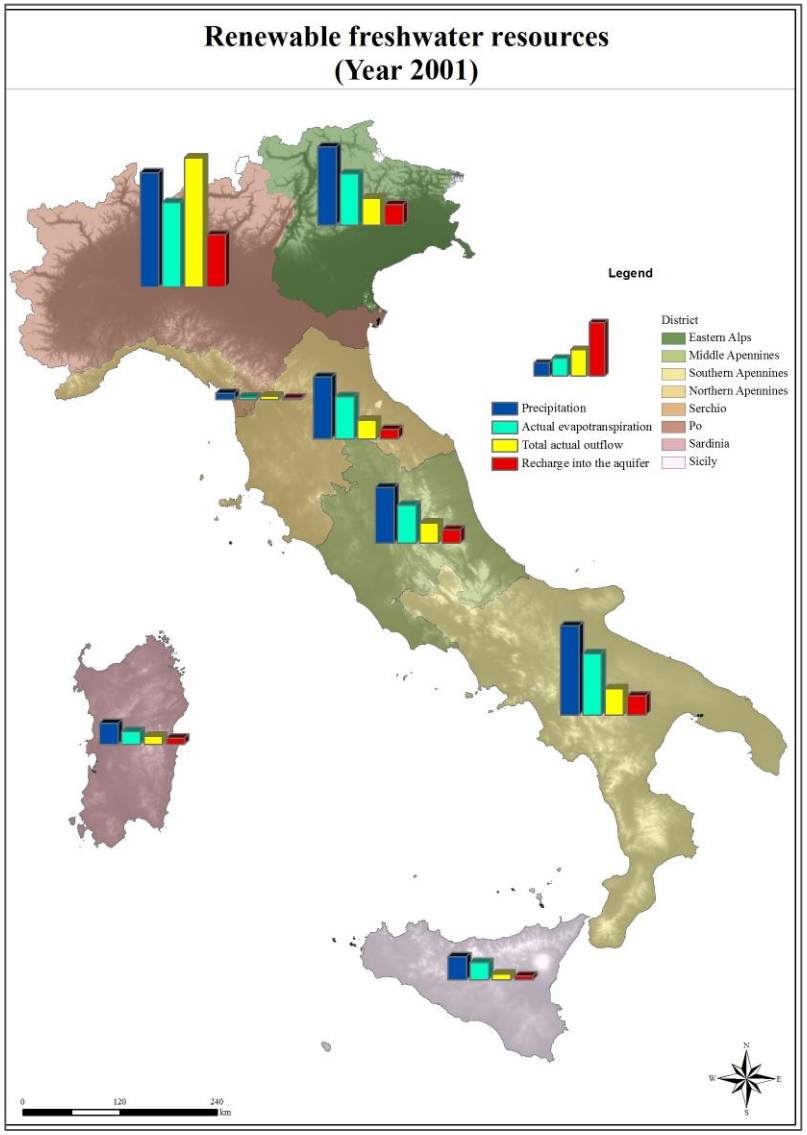
Groundwater available for annual abstraction

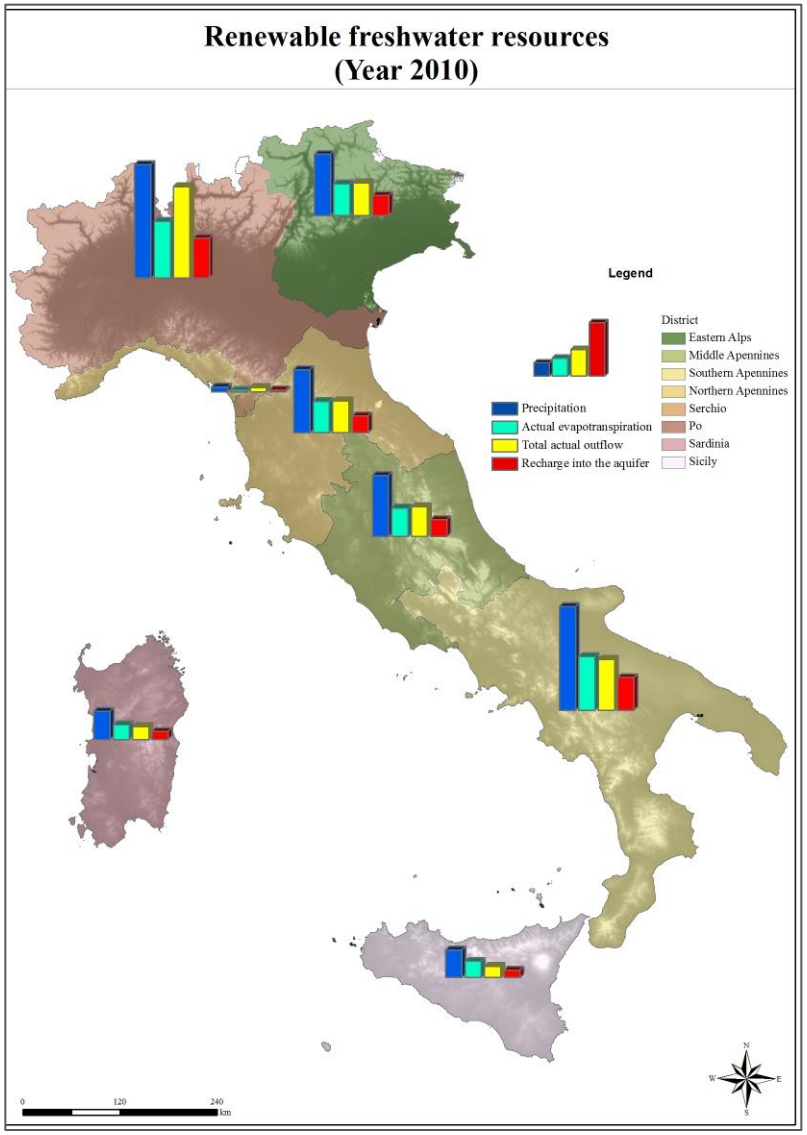
This indicator, according to the Eurostat definition, is calculated as the "*Recharge less the long term annual average rate of flow required to achieve ecological quality objectives for associated surface water*".

In Italy there is no a national legislation that takes into account of the ecological restrictions of the groundwater exploitability.

Given the scale at which the data refer to the calculation, it was adopted the 80% criterion of "Recharge into the Aquifer".

Renewable freshwater resources at RBD level





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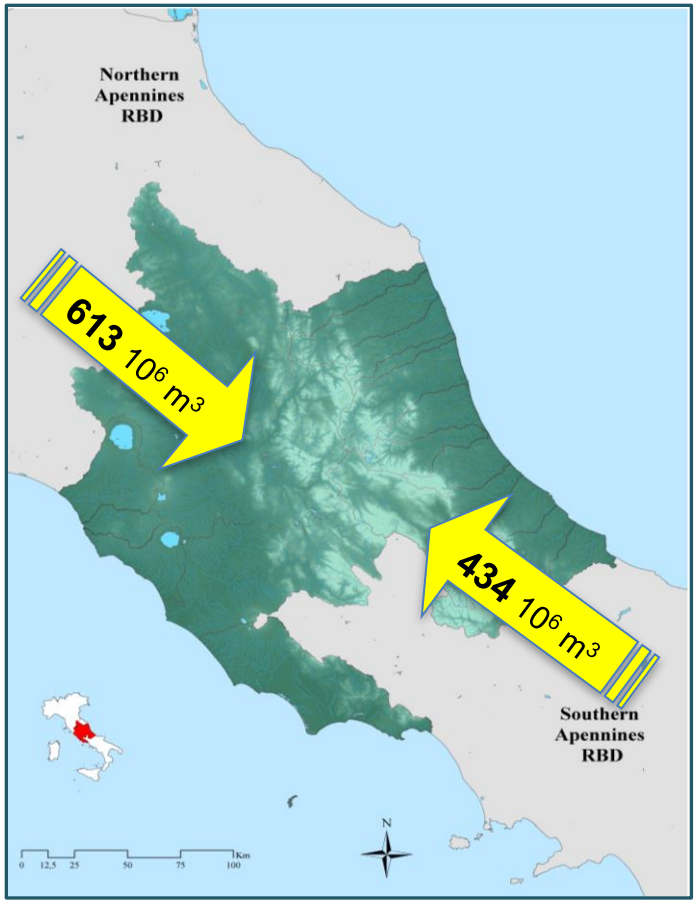
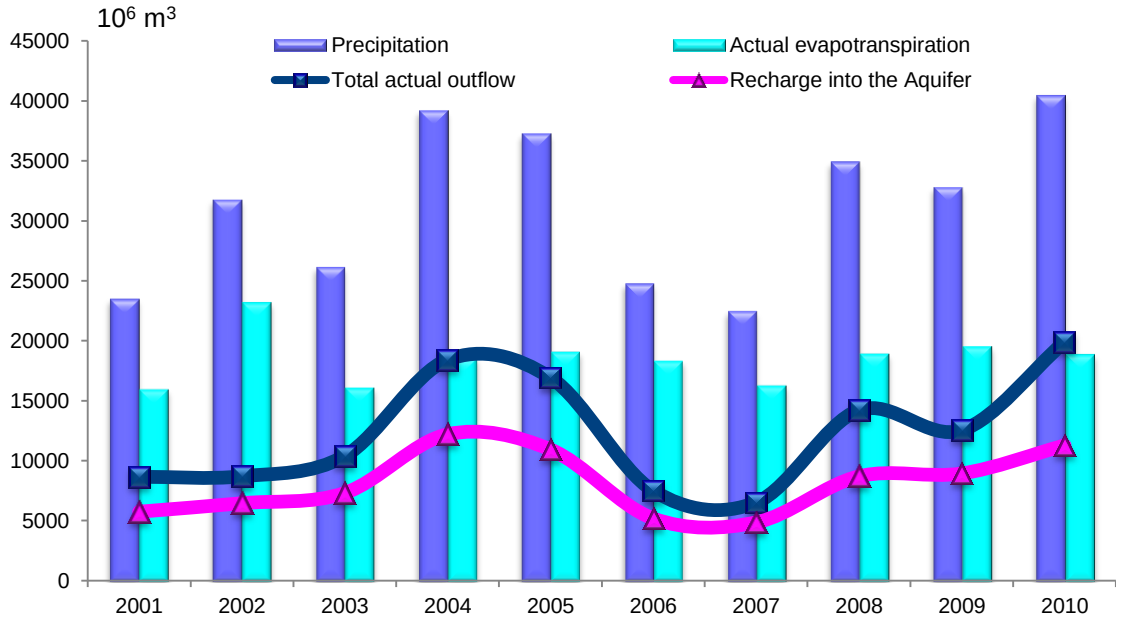
The case of Middle Apennines District



Renewable Water Resources

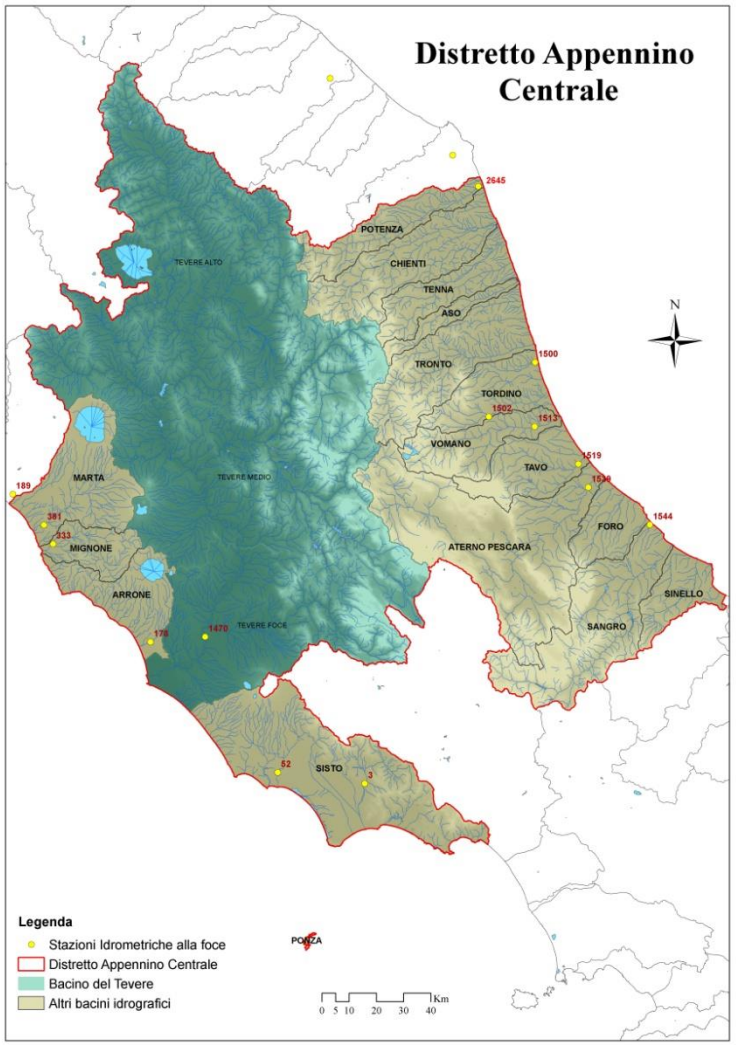


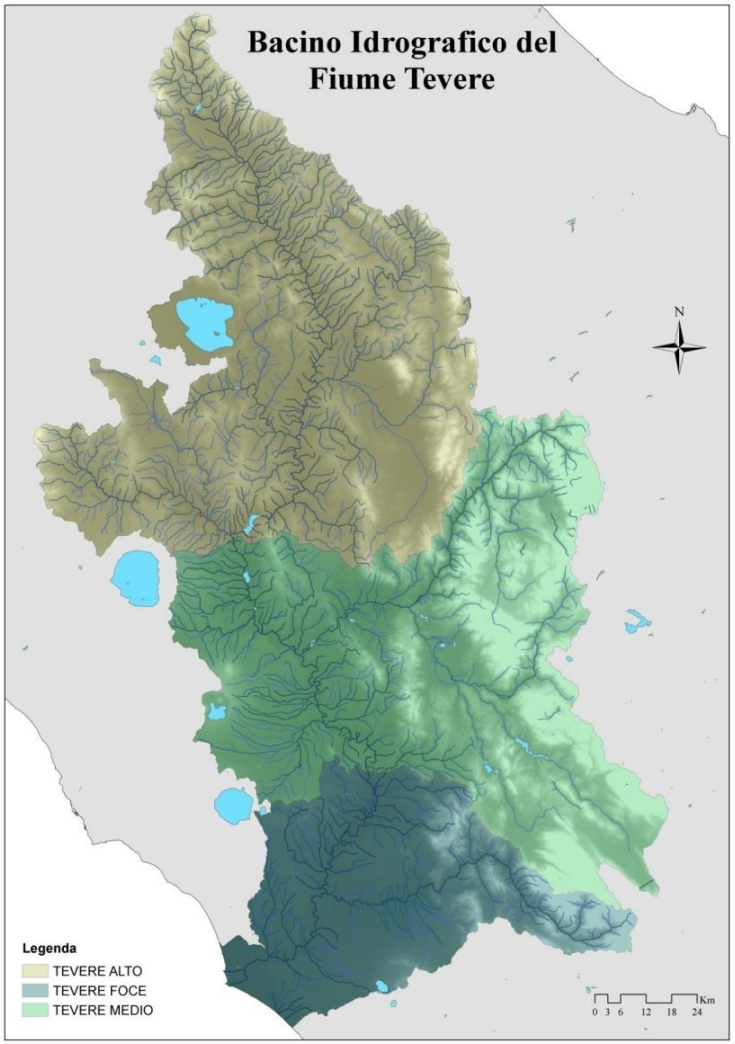
RIVER BASIN DISTRICT / SUBUNIT	REGIONAL ENVIRONMENTAL DATA COLLECTION		Table 1.1.R - Renewable freshwater resources - by RBD										
	Country IT Italy		Contact:										
		UNIT	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	LTAA 71-00
ITE Middle Apennines - RBD	- Precipitation (1)	10⁶ m³	40.482	32.844	34.940	22.530	24.822	37.303	39.220	26.193	31.805	23.540	29.401
	- Actual evapotranspiration (2)	10⁶ m³	18.917	19.567	18.953	16.331	18.376	19.128	18.632	16.138	23.235	16.013	19.895
	Internal Flow (1-2)	10⁶ m³	21.565	13.277	15.986	6.200	6.446	18.174	20.588	10.055	8.570	7.527	9.506
	- Actual external inflow (3)	10⁶ m³				319	1.047			340	129	1.132	1.121
	Total renewable freshwater resources (1-2+3)	10⁶ m³	21.565	13.277	15.986	6.519	7.493	18.174	20.588	10.395	8.699	8.659	10.627
	- Total actual outflow	10⁶ m³	19.904	12.541	14.213	6.519	7.493	16.926	18.416	10.395	8.699	8.659	10.627
	- Recharge into the Aquifer	10⁶ m³	11.273	8.934	8.694	4.855	5.179	10.936	12.200	7.309	6.455	5.745	6.991
	- Groundwater available for annual abstraction	10⁶ m³	9.018	7.147	6.955	3.884	4.143	8.749	9.760	5.847	5.164	4.596	5.592

Eurostat INLAND WATERS questionnaire

Istat

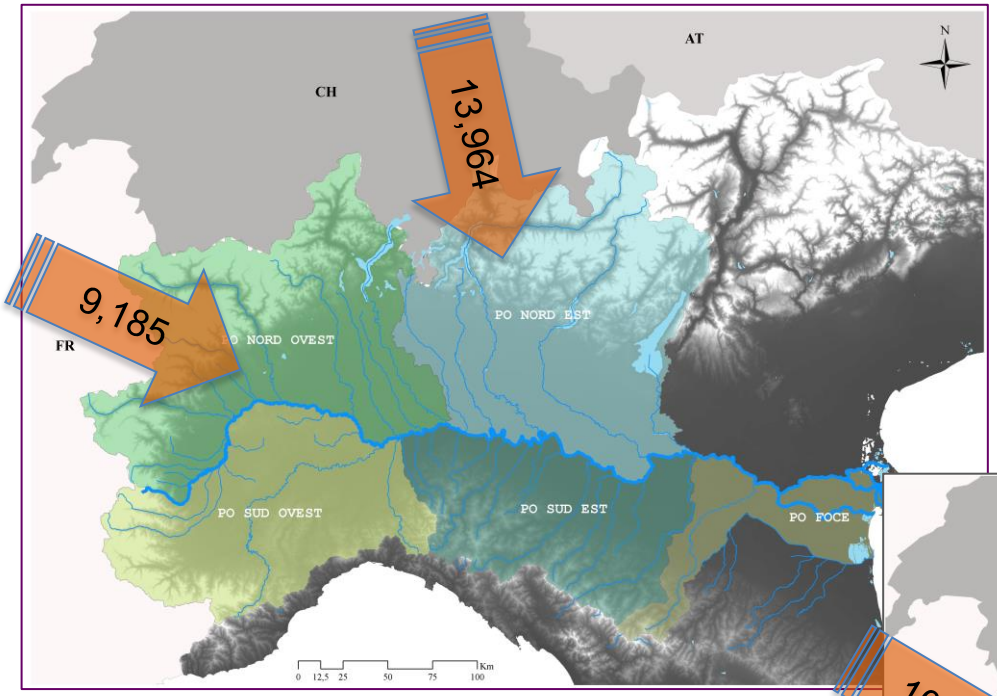
The case of Tever River Basin



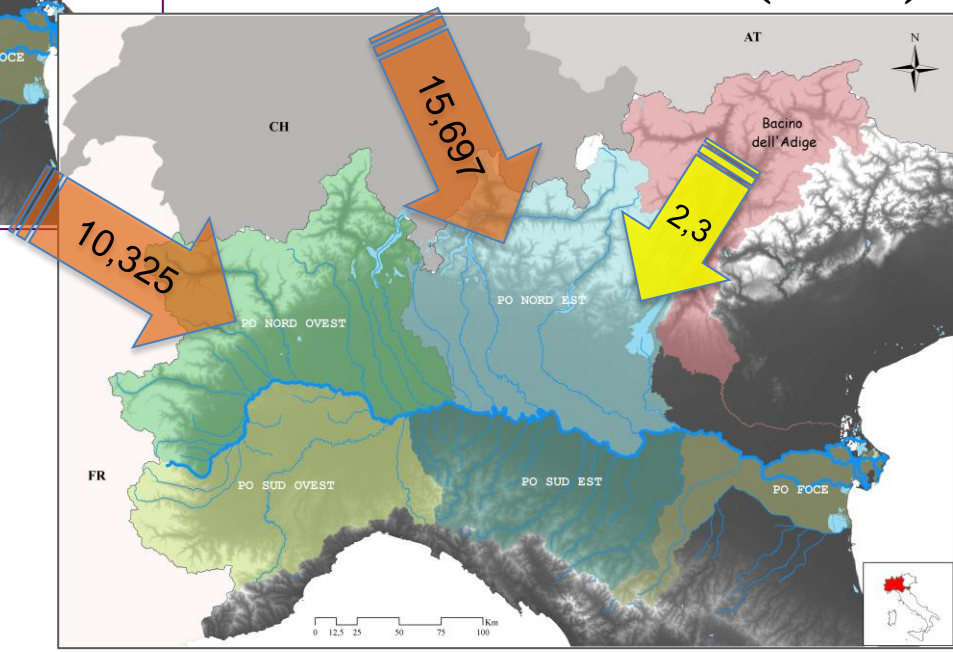


Padano district - Actual external inflow

Anno 2010 (10^6 m^3)



LTAA (10^6 m^3)



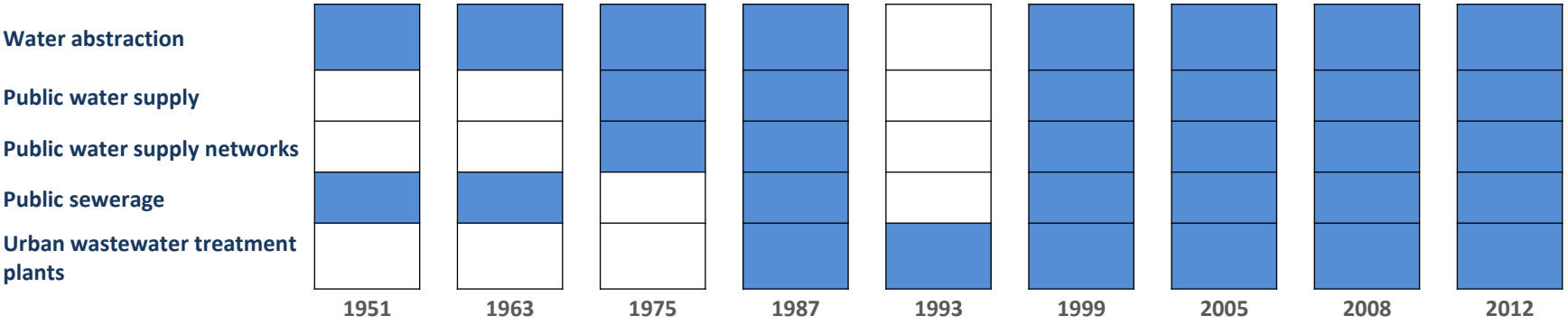
Urban Water Census

JQ_IW
TABLES
2-3-4 (5,6,7)

PWFA

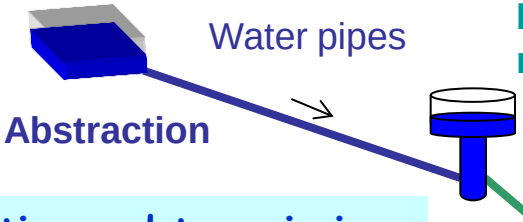
- Since 1951 Istat has periodically collected information on water resourc civil use with a dedicated **Census**
- The time series available allow to develop an integrated information basis of all the **urban water system**
- New national/EU directives and increasing information demand determine progressive updating questionnaire content
- Respondent units are **Water management companies** (3,161 in 2012)
- Next UWcensus scheduled in **2016**, reference period of data **2015**

Modules of questionnaire



Urban Water Census: about urban water system

Public water supply services



Public water supply network

- ✓ Water input to a municipal distribution system
- ✓ Water supplied
- ✓ Water invoiced
- ✓ Water invoiced for: urban use, agricultural and zootechnical use; industrial and other economic use

Water abstraction and trasmission

- ✓ Water abstracted for drinkable use
- ✓ Geographical coordinates of sampling points
- ✓ Water abstracted and treated for drinkable use
- ✓ Water delivered to municipalities
- ✓ Water tradings between water management companies
- ✓ Water delivered for different uses (agriculture, industry, oilers, supply ship)

Public sewerage

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

Urban wastewater treatment plants

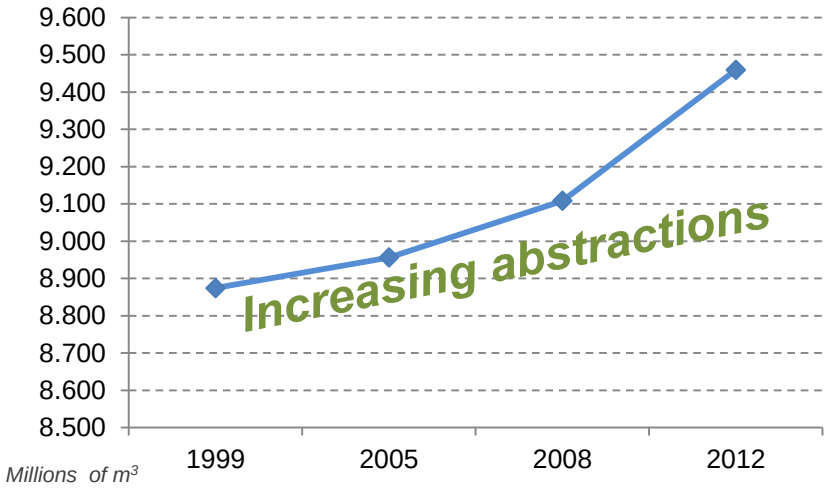
- ✓ Municipalities connected to WWTP
- ✓ Urban wastewater treatment plants in operation
- ✓ Domestic population equivalent
- ✓ Total urban population equivalent
- ✓ Total population equivalent
- ✓ Water parameters
- ✓ Mud production and dehydration

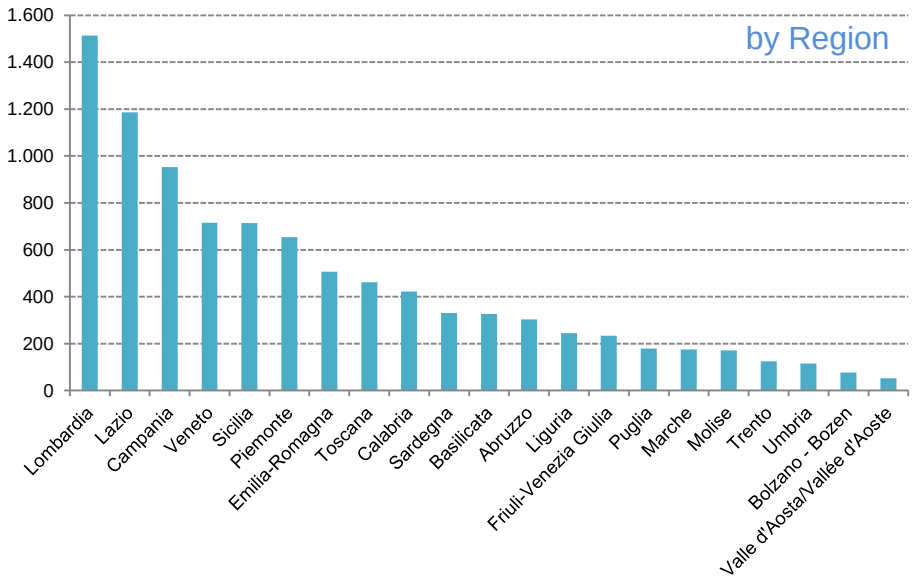
Istat

Urban Water Census: some outcomes

Water abstracted

9,5 billions of m³ (year 2012)





Water input in public water supply

8,4 billions of m³ (year 2012)

Water losses (37,4%)

Water delivered

5,2 billions of m³ (year 2012)

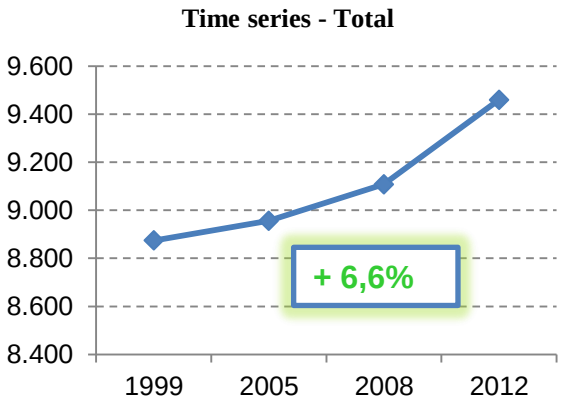
More than 3,1 billions of m³ are lost in the journey along the pipes

Source: Istat, Urban water Census

Istat

Water abstraction for drinkable use

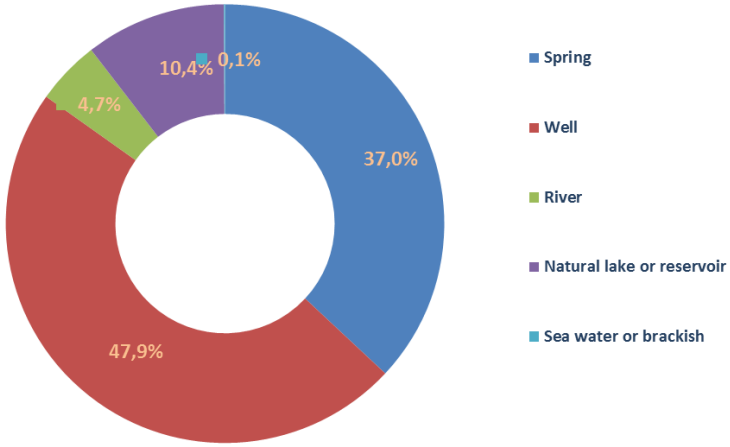
	1999	2005	2008	2012
GEOGRAPHICAL AREAS				
Nord-ovest	2.356	**2.353**	2.343	2.465
Nord-est	1.583	**1.629**	1.685	1.657
Centro	1.784	**1.852**	1.919	1.938
Sud	2.227	**2.213**	2.238	2.355
Isole	924	**908**	924	1.044
REGIONS				
Piemonte	591	588	594	654
Valle d'Aosta/Vallée d'Aoste	38	38	40	53
Liguria	275	202	258	244
Lombardia	1.452	1.465	1.452	1.513
Trentino-Alto Adige	195	199	214	201
Bolzano – Bozen	*72*	74	77	76
Trento	*123*	125	137	125
Veneto	678	702	730	715
Friuli-Venezia Giulia	202	263	224	234
Emilia-Romagna	509	526	517	507
Toscana	432	448	460	462
Umbria	112	115	116	115
Marche	205	202	202	176
Lazio	1.035	1.087	1.140	1.186
Abruzzo	337	293	291	303
Molise	166	160	161	171
Campania	848	870	872	953
Puglia	202	198	210	179
Basilicata	316	319	316	327
Calabria	360	374	388	422
Sicilia	617	628	626	714
Sardegna	307	280	298	330
ITALIA	**8.874**	**8.956**	**9.108**	**9.459**

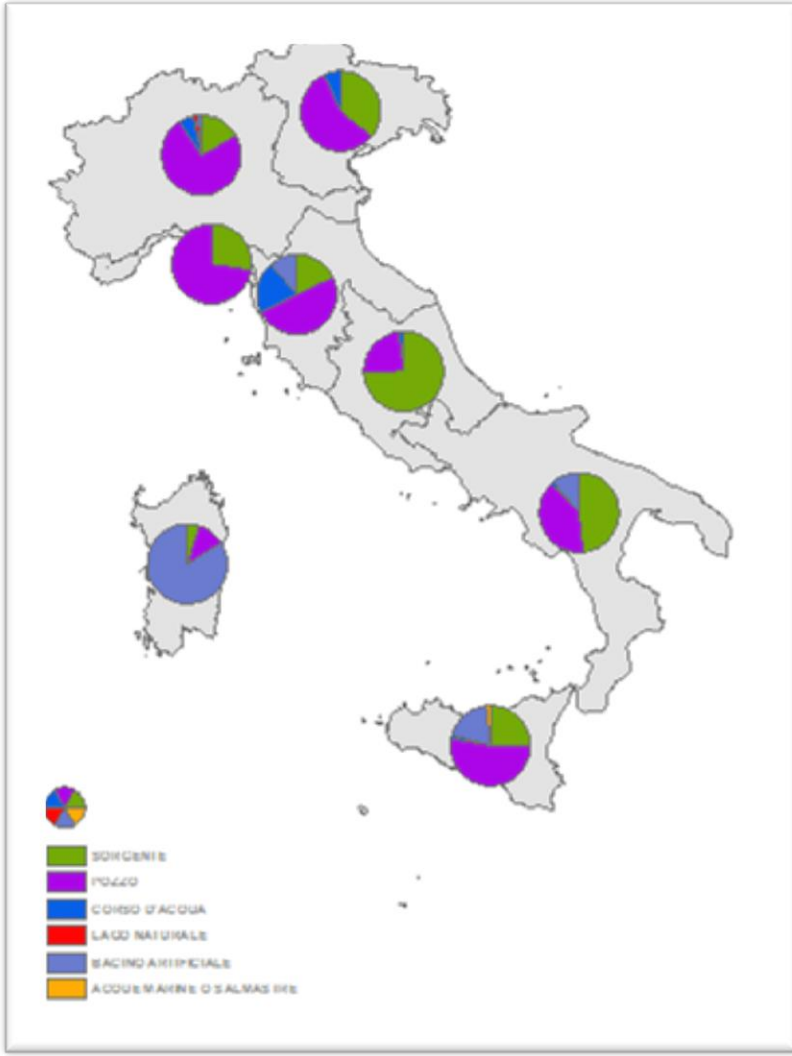


Treatments aimed to make water drinkable were made on 30.6% of water abstraction, for an annual total of 2.9 billions of cubic meters.

Istat

Water abstraction for drinkable use by source and RBD

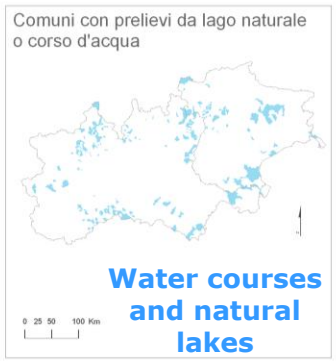


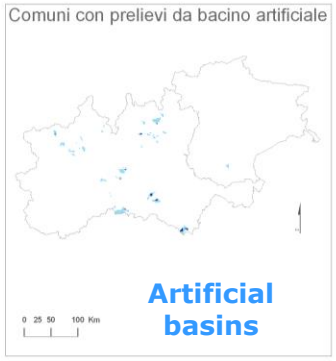


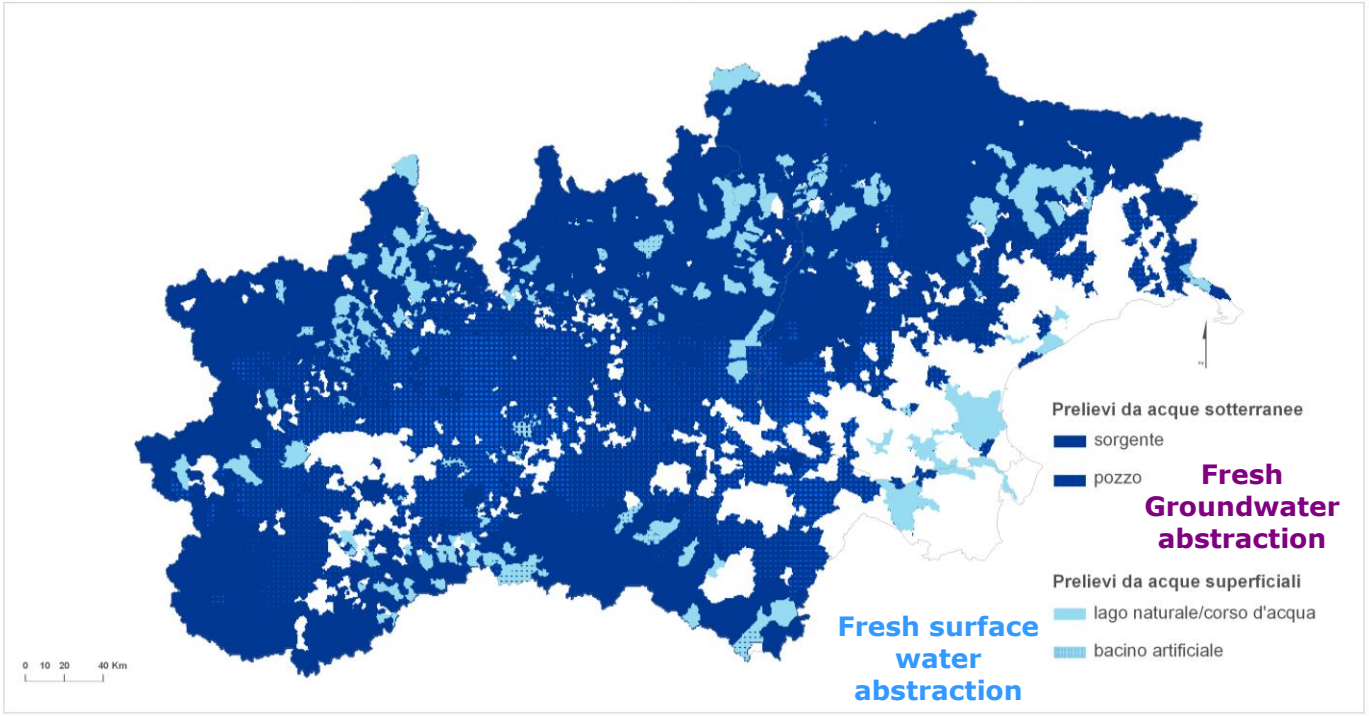
RBD	Spring	Well	River	Natural lake or reservoir	Brackish water
Padano	18,8	39,3	22,3	8,8	-
Alpi Orientali	12,2	13,4	15,2	0,1	-
Appennino Settentrionale	4,8	10,2	47,1	8,7	13,9
Serchio	0,2	0,5	–	-	-
Appennino Centrale	27,4	7,4	2,7	2,4	-
Appennino Meridionale	30,5	19,1	10,9	43,5	-
Sicilia	4,9	9,0	1,0	11,6	86,1
Sardegna	1,1	0,9	0,8	25,0	-
Extra territoriali	0,2	..	–	-	–
ITALIA	**100,0**	**100,0**	**100,0**	**100,0**	**100,0**

Istat

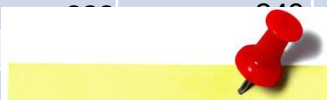
Water abstraction in some Northern municipalities







	Water supplied by the public water supply system				Daily supply of water per inhabitant			
	1999	2005	2008	2012	1999	2005	2008	2012
GEOGRAPHICAL AREAS								
Nord-ovest	1.668	1.689	1.697	1.613	**303**	**298**	293	280
Nord-est	985	1.021	1.030	990	**254**	**252**	247	236
Centro	1.060	1.069	1.127	961	**262**	**259**	263	226
Sud	1.031	1.058	1.130	1.159	**200**	**206**	219	227
Isole	533	533	549	510	**217**	**219**	225	210
REGIONS								
Piemonte	403,2	397	398	372	258	250	247	233
Valle d'Aosta/Vallée d'Aoste	12,0	14	15	21	274	309	334	461
Liguria	197,2	187	172	166	332	318	293	290
Lombardia	1056,0	1.092	1.111	1.053	319	316	314	296
Trentino-Alto Adige	101,9	109	117	109	298	304	315	289
Bolzano - Bozen	48,5	47	51	46	287	268	280	247
Trento	53,4	62	66	63	309			
Veneto	420,2	436	436	408	255			
Friuli-Venezia Giulia	118,1	112	118	113	273			
Emilia-Romagna	344,7	363	359	360	237			
Toscana	296,0	315	325	262	229			
Umbria	63,6	62	61	65	208			
Marche	125,1	118	119	117	235			
Lazio	575,2	574	622	517	299			
Abruzzo	108,8	112	121	134	233			
Molise	25,9	27	29	29	216			
Campania	448,7	449	467	449	213			
Puglia	234,6	243	259	293	157			
Basilicata	49,2	55	55	43	223			
Calabria	164,0	172	199	212	219			
Sicilia	392,6	399	403	377	211	218	220	207
Sardegna	140,4	133	146	132	233	220	239	221
ITALIA	**5.277**	**5.369**	**5.533**	**5.232**	**251**	**250**	**253**	**241**

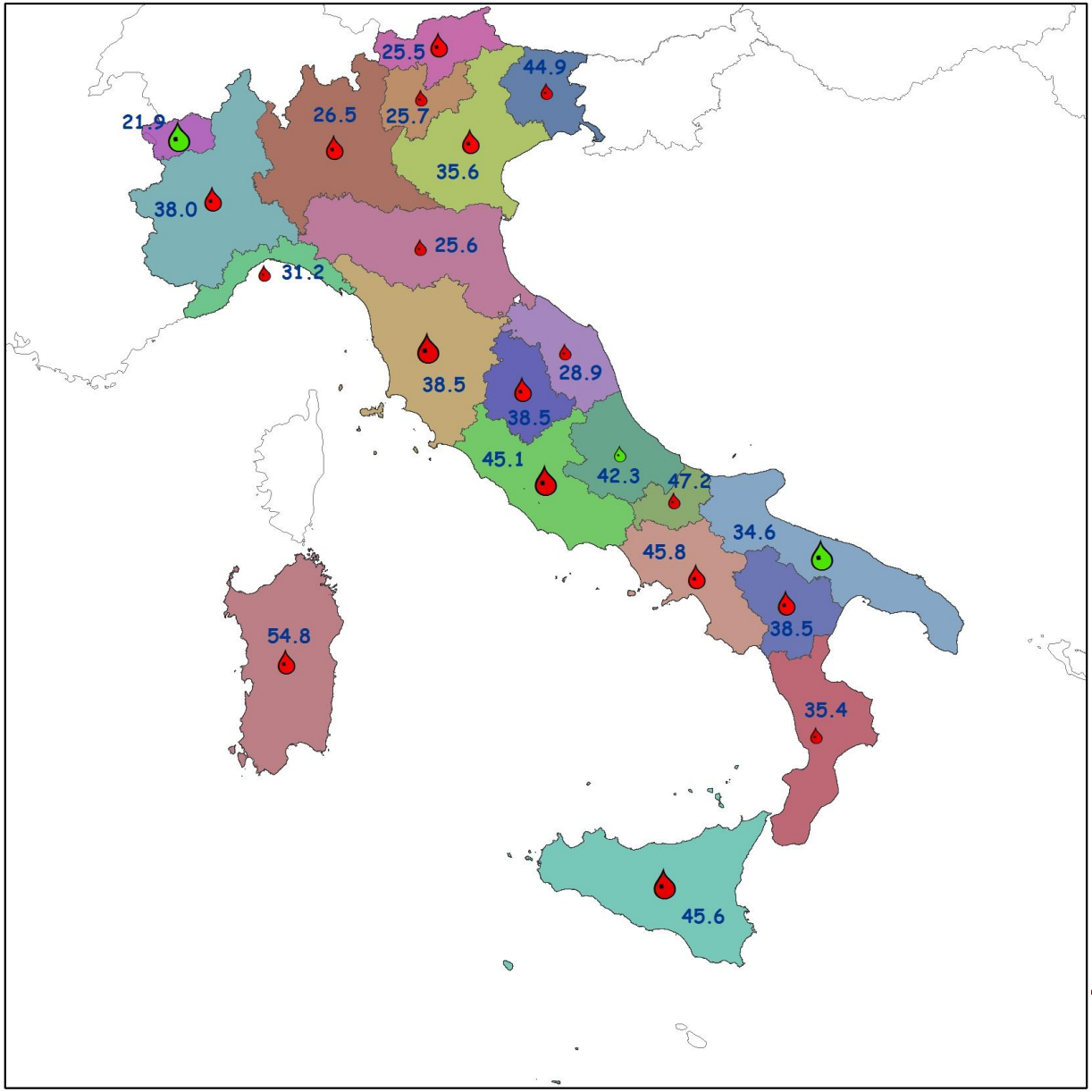


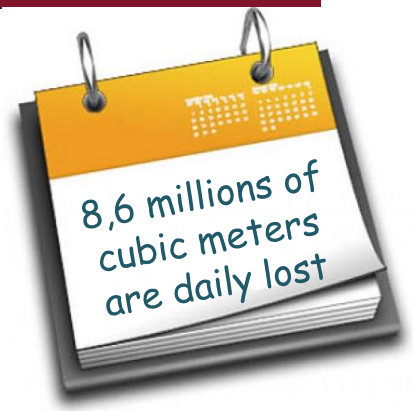
- In 2012 the municipalities served by a drinking water supply network were 8,067.
- Those totally devoid of a drinking water supply network were 25 (corresponding to 114,561 inhabitants, 0.2% of the Italian population).

Losses from water supply systems by territory

	1999	2005	2008	2012
GEOGRAPHICAL AREAS				
Nord-ovest	25,5	25,2	24,7	30,0
Nord-est	28,9	29,2	28,6	32,6
Centro	31,5	32,5	32,2	41,4
Sud	41,7	41,6	40,3	40,9
Isole	39,1	38,7	38,4	48,3
REGIONS				
Piemonte	31,4	31,7	31,7	38,0
Valle d'Aosta/Vallée d'Aoste	41,0	34,3	33,0	21,9
Liguria	26,4	25,9	28,0	31,2
Lombardia	22,5	22,3	21,1	26,5
Trentino-Alto Adige	25,7	24,2	21,6	25,6
Bolzano - Bozen	23,2	21,7	20,4	25,5
Trento	27,9	26,0	22,4	25,7
Veneto	30,4	30,1	30,0	35,6
Friuli-Venezia Giulia	37,9	38,2	40,6	44,9
Emilia-Romagna	24,3	26,3	24,0	25,6
Toscana	31,1	29,4	27,7	38,5
Umbria	32,1	33,8	32,2	38,5
Marche	26,0	26,0	25,3	28,9
Lazio	32,8	35,0	35,4	45,1
Abruzzo	45,1	44,6	43,6	42,3
Molise	45,8	45,1	43,9	47,2
Campania	38,3	40,2	38,8	45,8
Puglia	49,6	47,3	46,6	34,6
Basilicata	39,6	34,8	32,9	38,5
Calabria	34,5	34,5	33,1	35,4
Sicilia	36,1	35,6	35,1	45,6
Sardegna	46,0	46,4	45,9	54,8
ITALIA	**32,5**	**32,6**	**32,1**	**37,4**

Losses from water supply systems





- Physical water losses
- Metering Inaccuracies
- Unauthorised consumption

A more widespread metering systems highlighted critical areas not previously identified.

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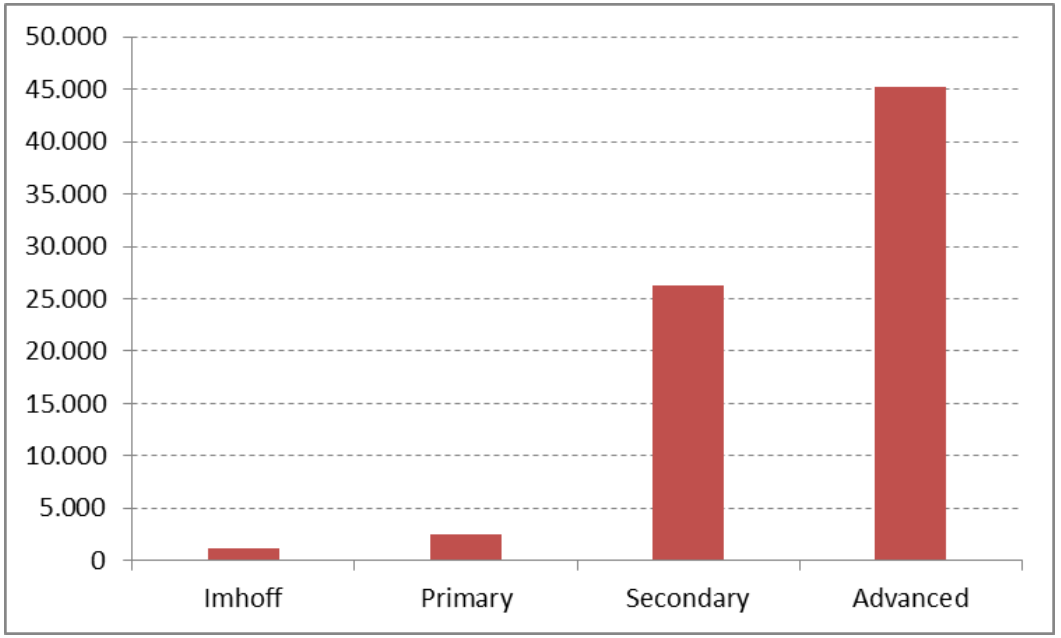
UWWTP: some figures

- Urban wastewater treatment plants (UWWTP) are, in 2012, 18,786, of which 18,162 in operation.
- UWWTP with advanced treatment, even if represent only the 10.0% of the total plants, process more than 60% of pollutant loads. In most cases, these plants are at the service of big urban areas.

- In 2012 at least an urban wastewater treatment was active in 7,550 municipalities, by working plants fully or partially treating wastewater.
- Municipalities without wastewater treatment services were 542, covering 2.3 millions of resident population (3.8% of the total population).

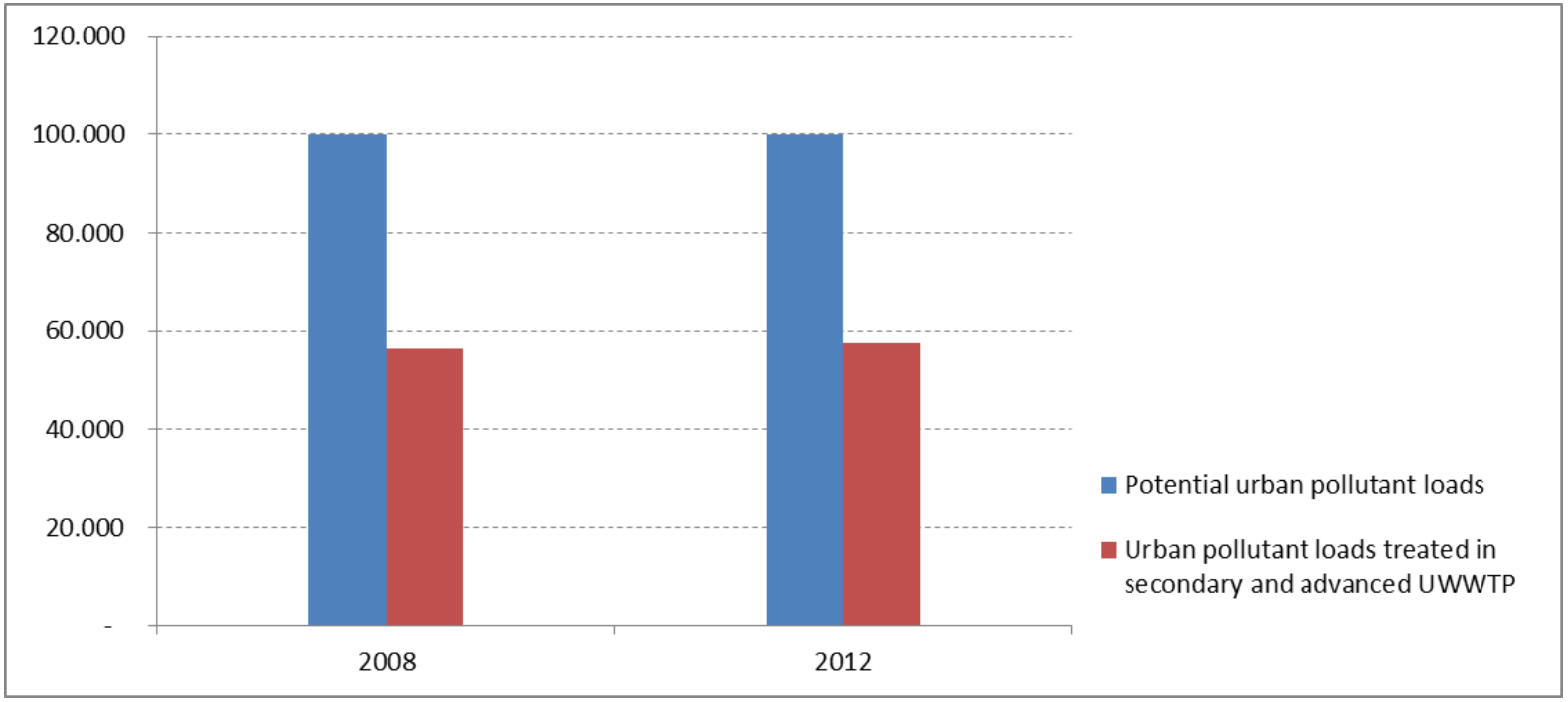


Population equivalent

x1000

UWWTP: some figures

In 2012 the share of urban pollution loads treated in secondary and advanced urban waste water treatment plants, compared with the potential urban pollutant loads generated was equal to 57.6% (in terms of population equivalent), with a slight increase (56.5%) in comparison to the value beforehand recorded (year 2008).



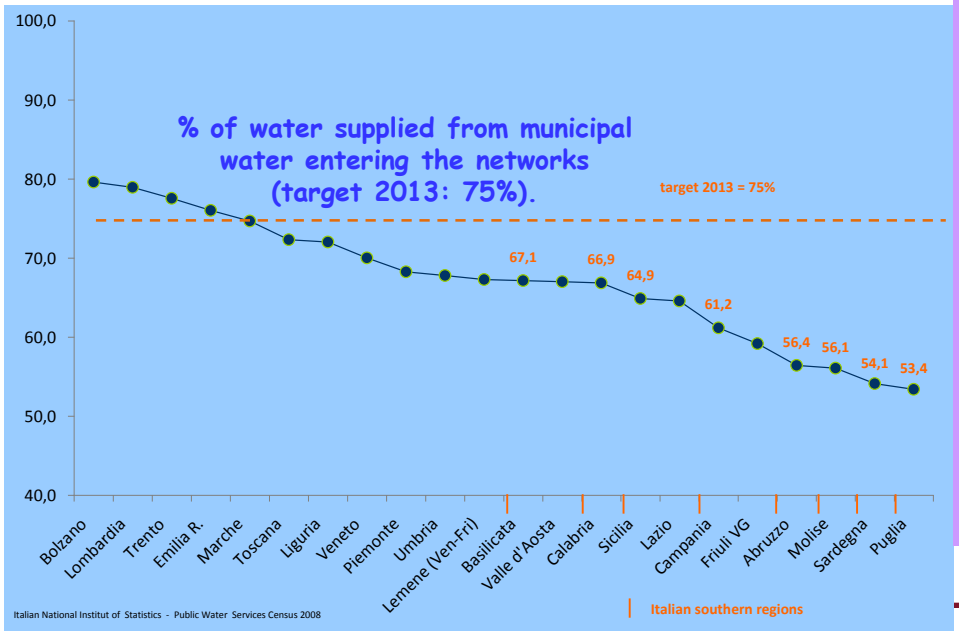
Population equivalent

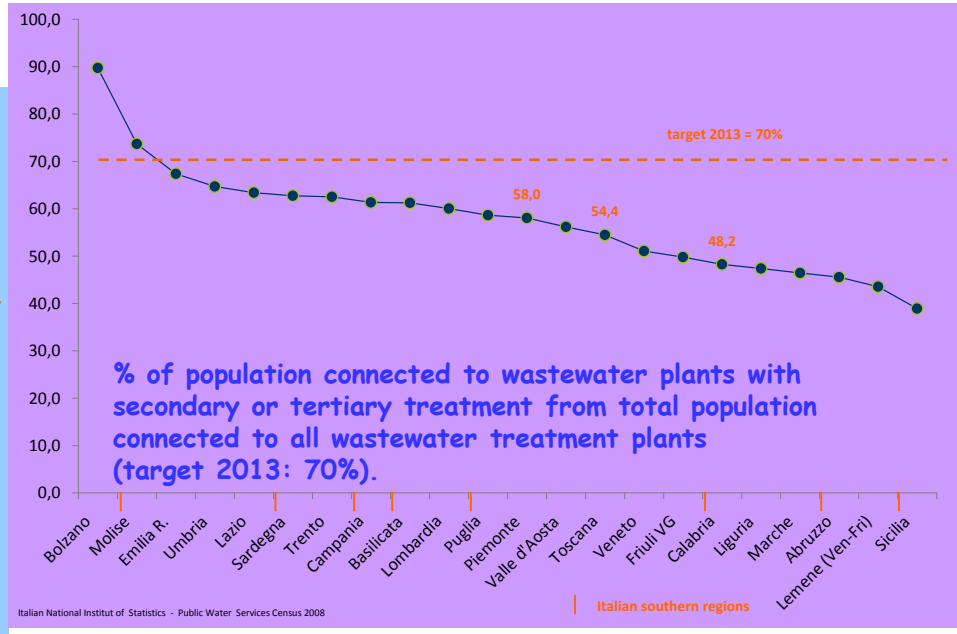
x1000

Urban Water Census : governative target

Istat set the following two indicators as requested by the Ministry of Economic Development which in the past provided incentives, based on the achievement of the target or on the enhancement of the performance, for national southern regions.

These indicators are still at the base of the evaluation of the urban water management state.





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Water use in agriculture /1

6° Censimento Generale dell'Agricoltura | Istat Istituto Nazionale di Statistica

RACCOGLIAMO RISPOSTE, SEMINIAMO FUTURO

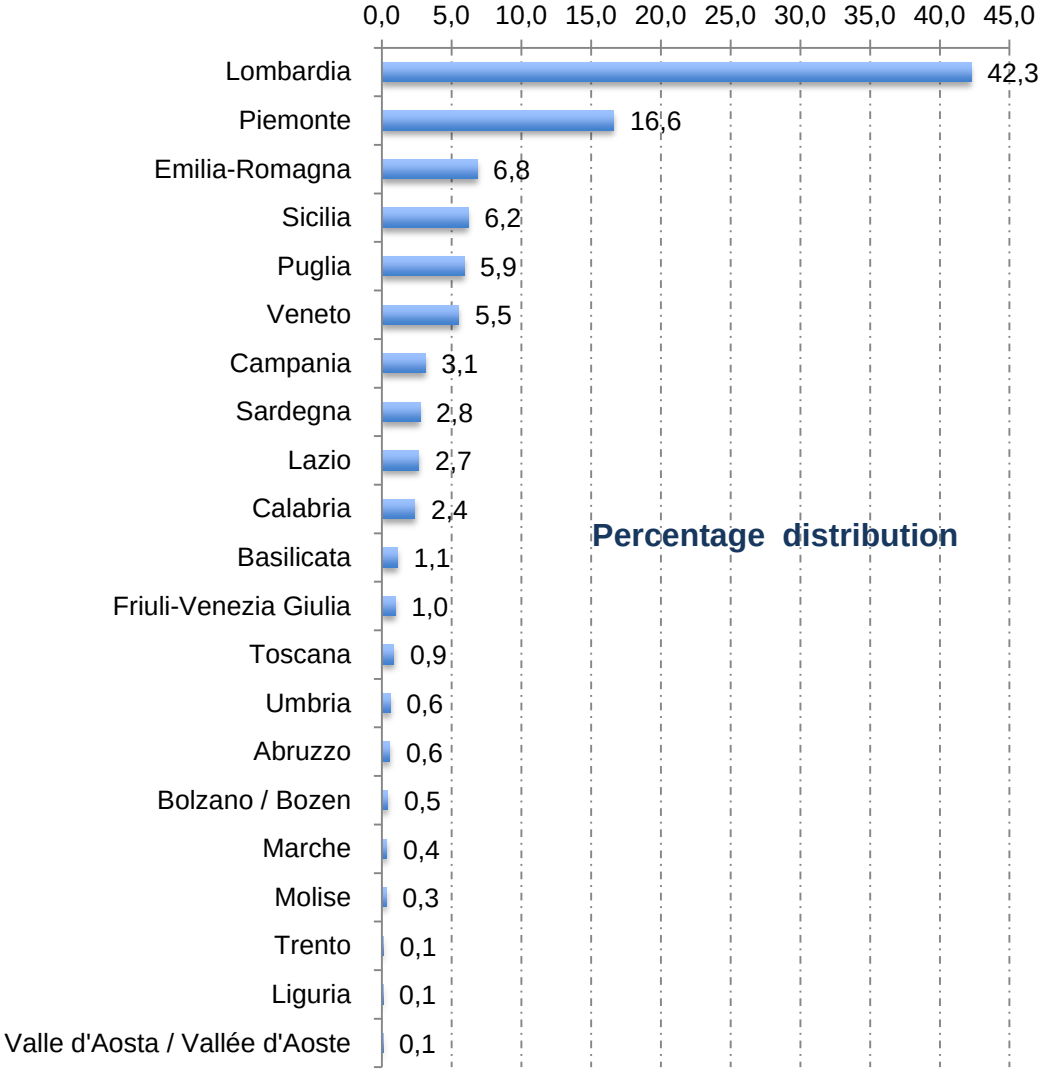
JQ_IW
TABLES
2-4

PWFA

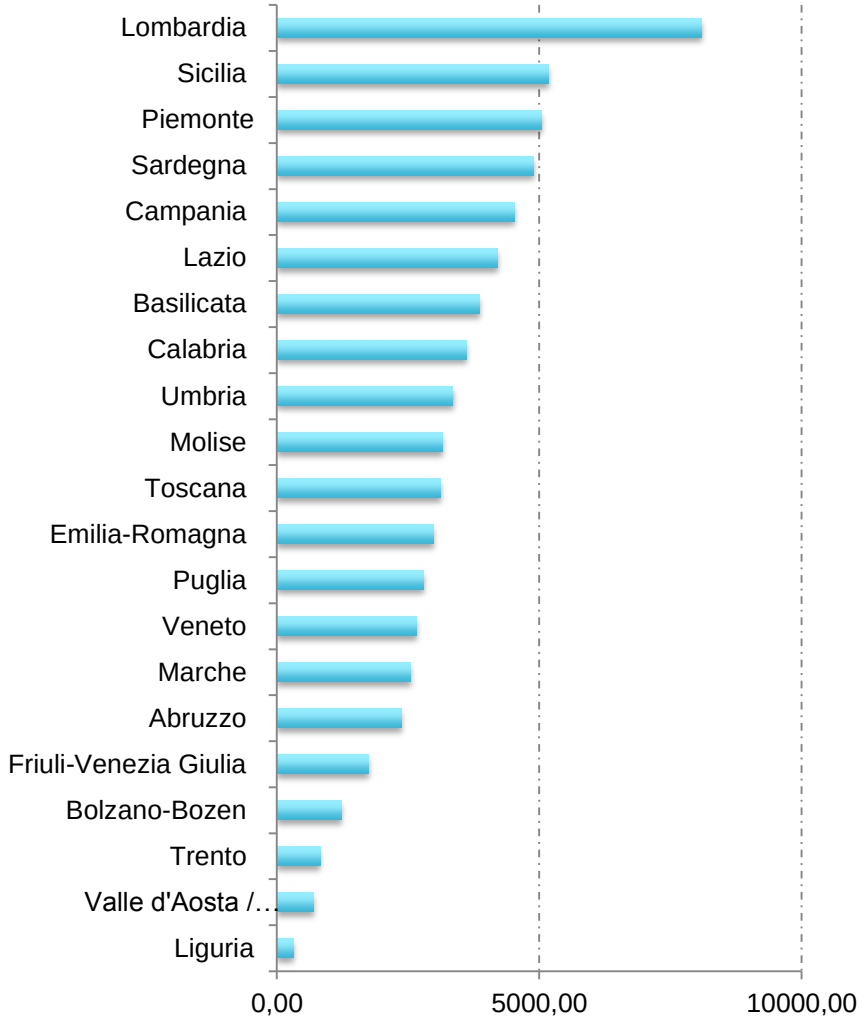
- ✓ According to 2010 Italian Agricultural Census, **volumes of irrigation water** were equal to **11,1 billions of m3** in the crop year 2009-2010
- ✓ About 708 thousands farms irrigate 2,5 millions of hectares
- ✓ Among the EU countries, **Italy is the largest user of irrigation water** and, in terms of irrigated areas, it follows only Spain
- ✓ Italy has an historic high agricultural vocation, it is the second largest producer of "*fruit and vegetable*" in Europe (following Spain) offering a wide range of **high quality products and typical Mediterranean products, officially recognized as IGP and DOP**
- ✓ **They need more water and microclimatic conditions and could suffer for long drought periods and "out of season" meteorological events**

Water use in agriculture /2

Irrigation water volume by Region



M³ per hectare of irrigated area



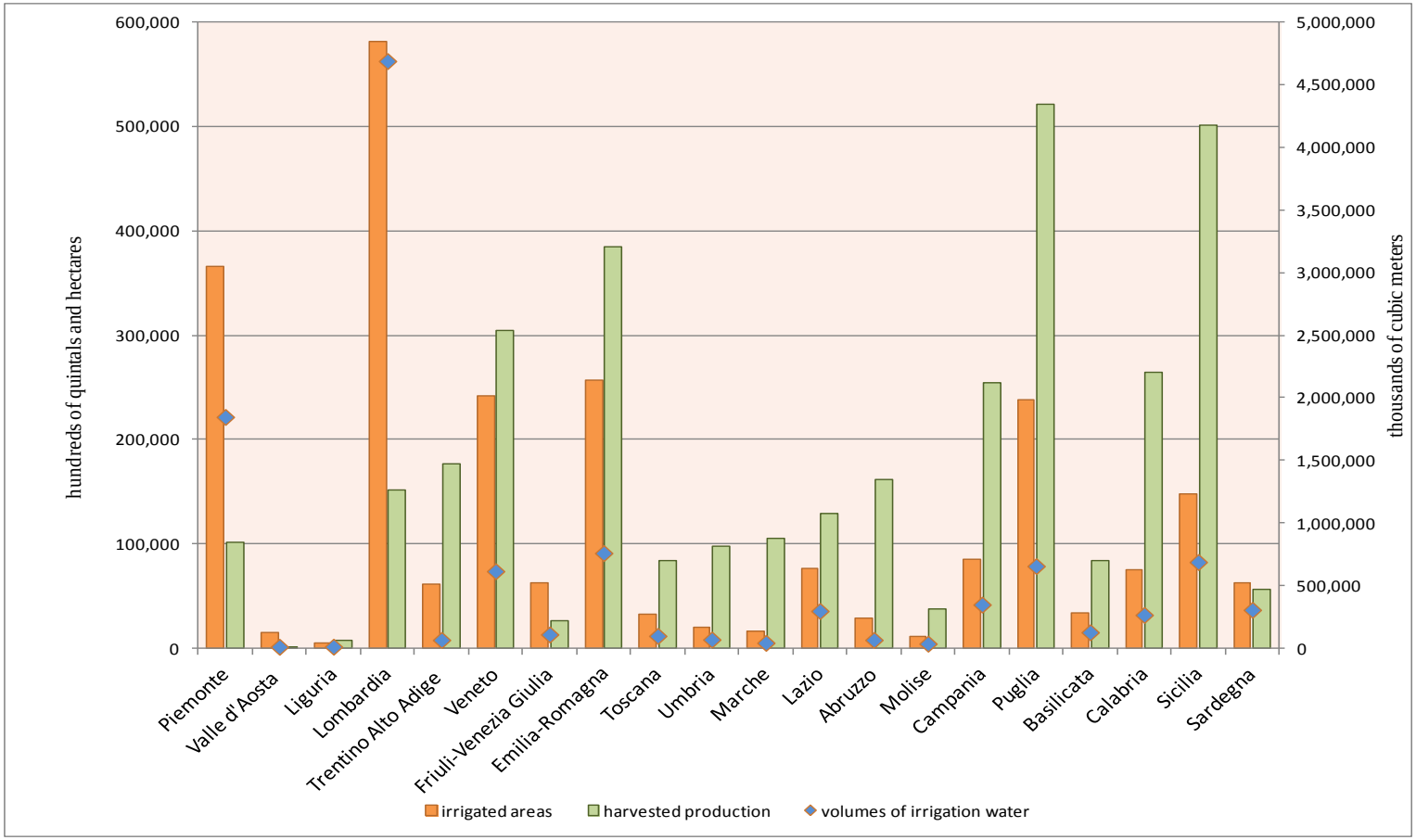
Affected by crops type, climate aspects, irrigation system, technology…

Source: ISTAT - Agricultural Census 2010

Istat

A cross reading of official statistics in agriculture

Irrigated areas, harvested production, volumes of irrigation water, in the Italian Regions
(Hectares , hundreds of quintals , thousands of m3)



Water use in industry /1

JQ_IW TABLES 2-4

PWFA

Lack of data doesn't allow to estimate

- ❑ **Volumes of water used**
- ❑ Treatment of wastewater related to industry

A first estimation: **Istat - Eurostat Grant agreement 2013**

Objective

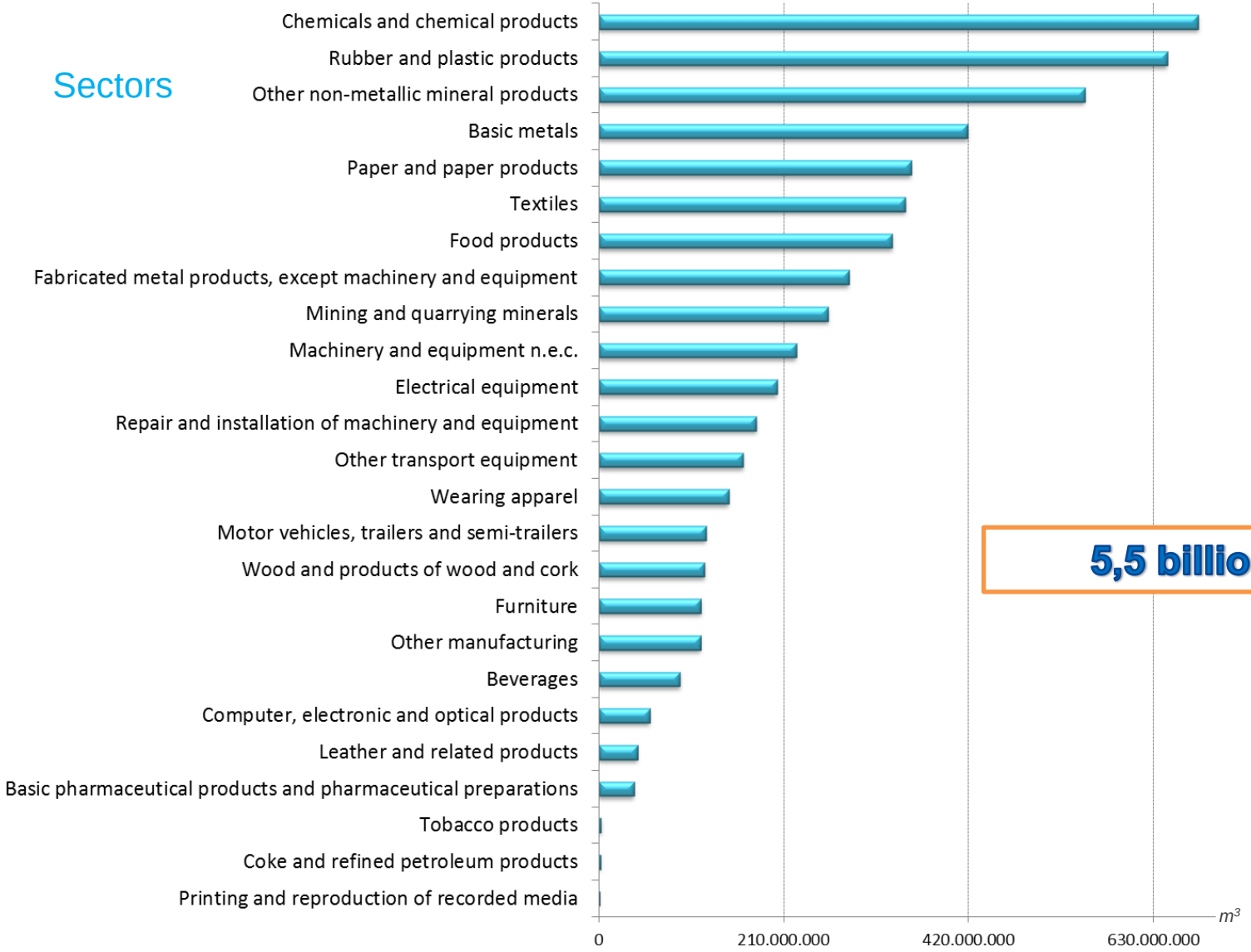
development of a statistical estimation model to calculate "*water volumes used by Italian manufacturing industry"* (NACE Rev. 2, 07-08 and 10-33) considering different types of processes, products and technologies

Method

- ✓ indirect estimation method based on ISTAT Survey on Industrial Production PRODCOM (2012) and technical processing coefficients applied to production units (detailed 8-digit)
- ✓ integration of different sources of technical processing coefficients by product:
  - Atkins Ltd & Cranfield University (2002), Hosang W., Bischof W. (1998)
  - Manual for the Oecd/Eurostat JQ on IW
  - EPD (Environmental Product Declaration of firms)
  - Selection of representative Italian companies by sector and industry associations

Water use in industry /2

Sectors



5,5 billions of m³

Source: Istat - Eurostat Grant agreement 2013

Istat

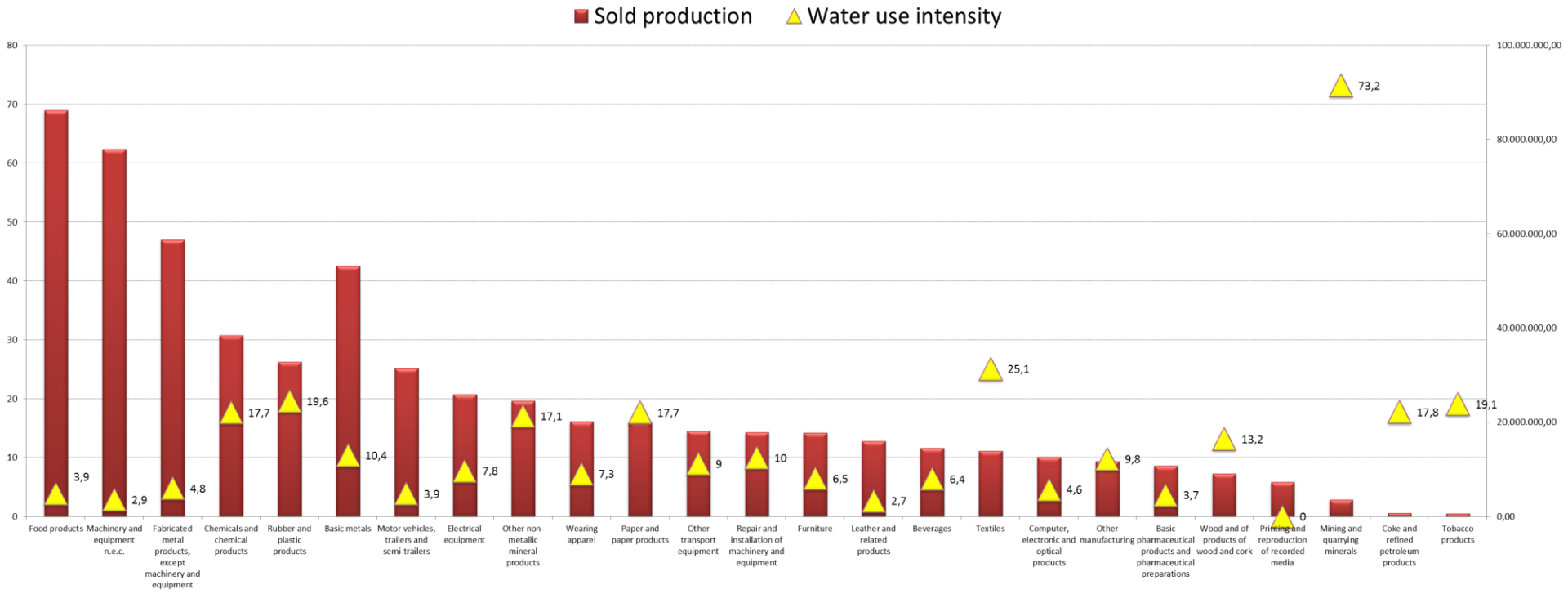
Water use in industry /3

Sold production and Water use intensity

(thousands of euro, m³/1000euro)

623 billions of euro

8,8 m³ for a thousand euro



Source: Istat - Eurostat Grant agreement 2013

Istat

Water use: towards the estimation of the total volume

Water use for	10^9 m^3
A – Public water supply - civil use	5.2
B – Irrigation	11.1
C – Manufacturing industry	5.5
A+B+C	21.8

- ✓ Energy
- ✓ Livestock

- ✓ Local scale/ National

Eurostat grants: The Italian Pilot projects /1

➢ Eurostat grants for 2010 – Water Statistics

- TITLE: **Statistics on water resources, water use and wastewater treatment – "Development of data collections systems and statistical methods for indicators at the sub-national level"**
- Duration: 24 months - 01/2011-12/2012
- Staff: Istat – *Water resources and climate Unit*
- Project Leader: Stefano Tersigni

➢ Eurostat grants for 2012 – Water Statistics

- TITLE: **"Water Statistics and Water Accounts on industrial activities in Italy"**
- Duration: 24 months
- Staff: Istat – *Water resources and climate* Unit
- Project Leader: Stefano Tersigni

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Eurostat grants: The Italian Pilot projects /3

Main outcames obtained by Istat thanks to the Grant projects

- *First time* in computation of indicators related to Water resources for Italy, with a so high spatial detail (RBD).
- *Official agreement* with the institutions involved in Water resources field: River Basin Authorities, Regions, Ministry of the Environment (currently underway).
- Creation of a *network* with data producers (water management companies, national meteorological and hydrological services)
- Development of a network between data producers and stakeholders in order to streamline the production of data in this field. This point will be of primary importance to the development of more relevant indicators, useful to the users community
- Close collaboration with the *scientific community:*

  University, Italian National Agency for New Technologies Energy and Sustainable Economic Development (Enea), Institute for Environmental Protection and Research (Ispra), National Research Council (Cnr), Euro-Mediterranean Center on Climate Change (CMCC) .

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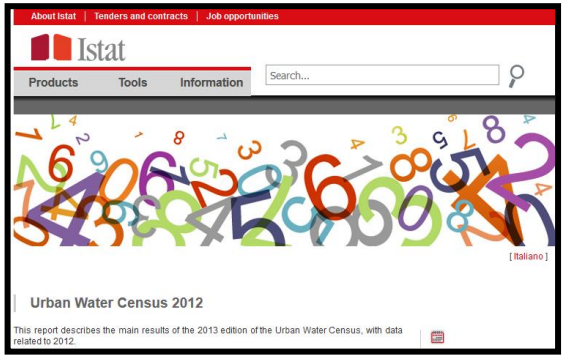
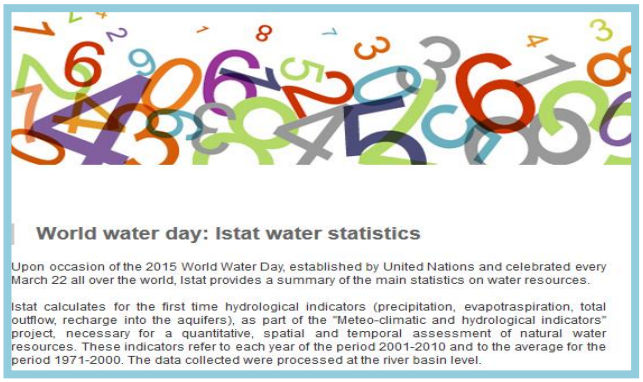
Istat dissemination on Water Resources

Urban Water Census - www.istat.it/it/archivio/127380

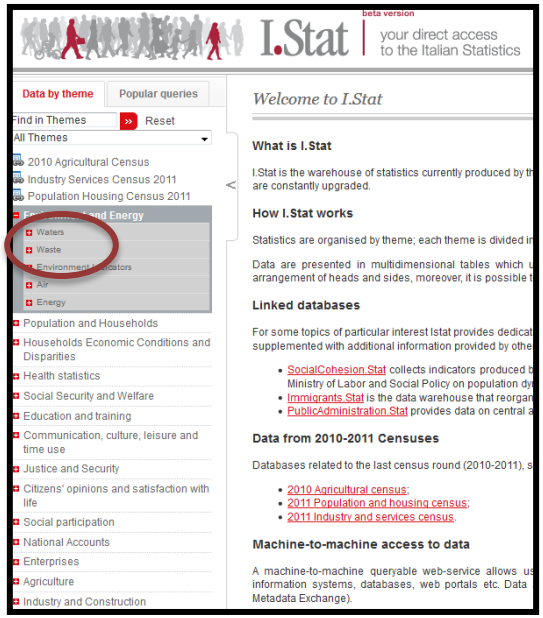


Water Portal - www.acqua.gov.it

World Water Day - www.istat.it/it/archivio/153580



Istat web data base http://dati.istat.it/ Environmental Energy / Water



Tables: Hydrological indicators - www.istat.it/it/archivio/153668

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Conclusions and future challenges

- ✓ **National Official Statistics** can represent **a solid basis for understanding** and **analysing** Water related phenomena
- ✓ Production of statistics coherent with **international guidelines**
- ✓ Methodological **improvements in existing surveys** and **integration of the information** with data coming also from **administrative archives** of local institutions
- ✓ **Linking indicators combining different thematic issues** (i.e. environment, population, health, economy, biodiversity)
- ✓ Establish a procedure for sharing data, methods and experiences between Istat and local administrations.
- ✓ Strengthen a **network** with data producers (water management companies, national meteorological and hydrological services) and stakeholders in order to streamline the production of data in this field. This point will be of primary importance to the development of more relevant indicators, useful to the users community

Enhance the production of Official Statistic
for policy makers, scientific community, civil society
to better understand and measure Water related Phenomena

Istat

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