20 MARCH 2020

statistiche report

Istat Istituto Nazionale di Statistica

ISTAT WATER STATISTICS | YEARS 2018-2019

Water abstraction for public water supply in decrease: 419 liters per person per day (9,2 billion cubic meter)

Still relevant water losses in public water supply network: about **44 cubic meters lost per kilometer of mains per day** in provincial or metropolitan capitals.

12 provincial or metropolitan capitals (almost all located in southern Italy) affected by **rationing measures** in the public water supply.

86.6% of households very or fairly satisfied with water service in their houses.

Household monthly expenditure for mineral water increased (+9.4% on 2015).

40

Municipalities were not connected to public sewage system

About 394,000 residents involved.

29.0%

Households did not trust tap water

40.1% in 2002.

37.3%

Total volume input in public water supply network lost in the provincial capitals

39.0% in 2016.

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Upon the occasion of the World Water Day, established by the United Nations and celebrated on March 22, Istat provides an annual focus that, through a multi-source approach, presents the results of its several surveys and elaborations, including the first results of the Urban water census carried out in 2019 with reference to 2018.

Medium-high level of satisfaction with water service for eight households in ten

In 2019, 86.6% of households connected to public water supply network declared themselves very or fairly satisfied with water service in their houses.

In North Italy the highest levels of satisfaction with water supply in houses

About 90% of households declared to be very or fairly satisfied with the absence of interruptions to water supply.

85.7% of households declared to be very or fairly satisfied of the water pressure level.

In relation to the smell, taste and clarity of water, 75.9% of households declared high levels of satisfaction.

Concerning the meter reading frequency, eight households in ten claimed to be very or fairly satisfied.

Regarding water billing frequency, more than 80% of households was very or fairly satisfied.

The level of households' satisfaction generally lowered when it came to comprehensibility of the water bills: more than 66% of households claimed to be very or fairly satisfied.

Briefly, at the regional level, households living in Northern regions showed, in general, the highest levels of satisfaction, which declined in the other geographical areas, reaching the minimum in the South and Islands (Figure 1).

Households complaining about irregularities in water supply on a slight decrease

In 2019, 8.6% of households complained about irregular water supply in their houses, on a slight decrease compared to 2018. This problem affected, at different levels, the whole of the Italian territory and involved 2.2 million households, mostly in the South and Islands. 35.9% of households complaining about irregularities declared that they occurred throughout the year, in 32.2% of cases in summer period, and just sporadically in the remaining 30.6%.

With regard to the water bill expenditure, 52.7% of households assumed that it was adequate; while 39.9% of households considered it high, overall in the Southern regions.

WATER: KEY NUMBERS. Years 2016-2019

YEARS	Households complaining irregularities in water supply in their houses	Household average monthly expenditure for water service	Household average monthly expenditure for mineral water	Households not trusting to drink tap water
2016	9.4%	13.59 euro	10.75 euro	29.9%
2017	10.1%	14.69 euro	11.94 euro	29.1%
2018	10.4%	14.65 euro	12.48 euro	29.0%
2019	8.6%	–	–	29.0%

Still low confidence in drinking tap water

Almost one household in three did not trust to drink tap water, despite the gradual and fluctuating improvement over the last eighteen years: from 40.1% in 2002 to 29.0% in 2019. This distrust was shared by 7.4 million households and showed a marked regional variability, with the highest values in the South and Islands.

Increasing household monthly expenditure on mineral water

In 2019 in 65.0% of households at least one member used to drink more than one litre of mineral water a day.

Considering all Italian households, the average monthly expenditure for mineral water consumption was 12.48 Euro in 2018, up by 4.5% compared to 2017. For water supply in the home, each household spent on average 14.65 Euro (14.69 euro in 2017).

In terms of unit cost (Euro per litre), monthly expenditure on mineral water was about 6,000 times higher than water billed for domestic use.

Overall, compared to 2014, household spending on mineral water grew more than that for water supply in the home (+20.6% and +11.8%, respectively).

Slight decrease in water abstraction for public water supply

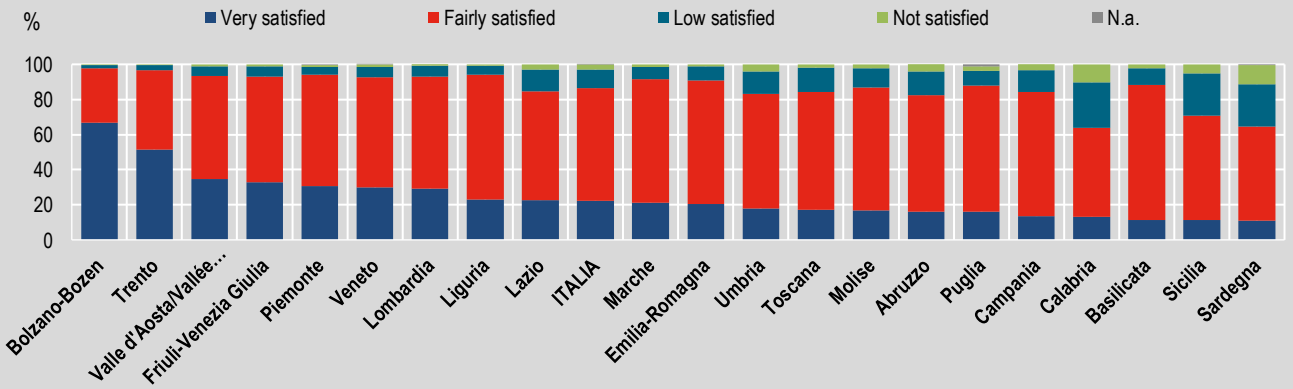
In 2018 the total volume of water abstracted for public water supply, to satisfy domestic, public, commercial and production water demand on the Italian territory, amounted to 9.2 billion cubic meters, 419 litres per person per day.

84.8% of the volume abstracted came from groundwater sources (48.9% from wells, 35.9% from springs), 15.1% from surface sources (9.8% artificial basins, 4.8% rivers, 0.5% natural lakes), and the remaining 0.1% from marine and brackish water.

Regional differences in water abstraction were quite evident and depended on different water requirements, water bodies location, different water transport infrastructures and service performance. In particular, in the South and Islands, water exchanges between neighbouring regions were frequent in order to guarantee the drinking water requirements of those regions where the resource was insufficient.

In 2018, for the first time over the last 20 years, there was a reduction in volume of water abstracted for drinking use (-2.7% on 2015). The composition of the volume abstracted by type of source varied considerably: fewer abstractions from springs and artificial basins and more withdrawals from wells (Figure 2).

FIGURE 1. HOUSEHOLDS CONNECTED TO PUBLIC WATER SUPPLY BY LEVEL OF SATISFACTION WITH WATER SERVICE. Year 2019, percentage composition



Source: Istat, Survey "Aspects of daily life"

The time series analysis shows that both quantity and type of water abstractions were essentially conditioned by the territory-specific weather-climatic situation and by the consequent effects on the available resource. A new geography of the withdrawals, especially in the areas most affected by the drought events of 2017, has led to an increase of well abstractions in many regions, to offset the reduction in some springs and surface reservoir flows.

The analysis by river basin district (Figure 3) showed that, in 2018, the largest amount of water for drinking use was abstracted in Po river district (2.8 billion cubic meters). Southern Apennines (2.3 billion cubic meters), Central Apennines (1.5 billion cubic meters), Eastern Alps (1.0 billion cubic meters), Sicilia (0.7 billion cubic meters), Northern Apennines (0.6 billion cubic meters) and Sardegna (0.3 billion cubic meters) followed in a measure almost proportional to the district surface. A minimal quantity, equal to about 390 thousand cubic meters, was abstracted in areas falling in extra-territorial districts.

Total water losses in decrease in the provincial capitals supply networks

In 2018, in the 109 Italian provincial or metropolitan capitals a total of 237 litres per inhabitant per day were provided for authorized uses (1.6 billion cubic meters). Against a 378 litres per inhabitant per day input in the network (2.5 billion cubic meters), total water losses in the supply system were still quite high: 37.7% of the total volume input in public water network were lost. The figure marked a turnaround in time series from 2012 (it was 39.0% in 2016).

Variations in the figures may depend both on infrastructural changes and different methods used to estimate unmeasured volumes.

The supply of water presented a high heterogeneity in the territory.

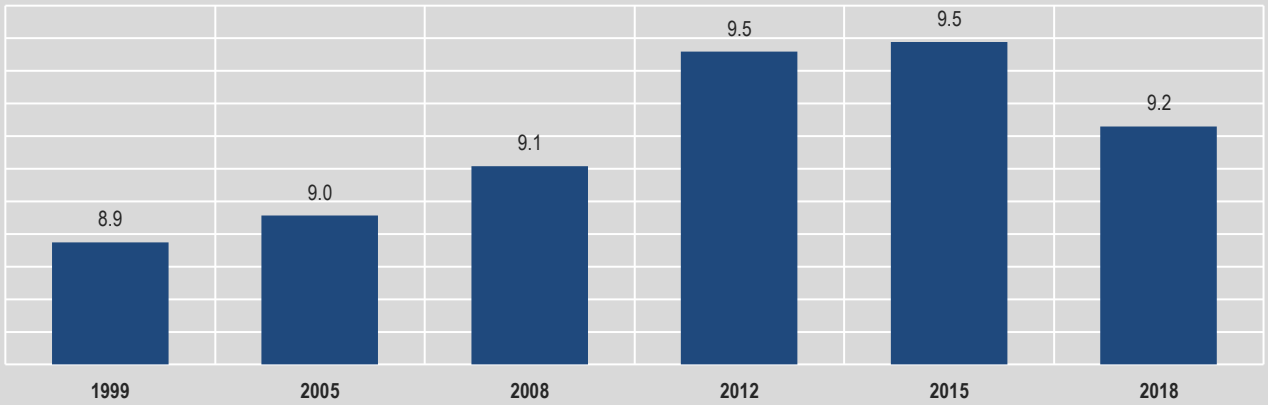
In one of three municipalities, total water losses were well over 45%.

In 2018, about 44 cubic meters were lost per kilometer of mains per day in public water supply network of provincial or metropolitan capitals.

Slight improvement in water rationing in Southern provincial capitals

In 2018, rationing measures in public water supply were taken in 12 provincial or metropolitan capitals, almost all located in the South and Islands area, with the exception of Latina. Although the number of cities involved remained almost stable, the situation was generally slightly better than in 2017, as the number water rationing days decreased considerably in some municipalities.

FIGURE 2. WATER ABSTRACTION FOR PUBLIC WATER SUPPLY. Years 1999-2018, billion cubic meters



Source: Istat, Urban water census

Still cases of municipalities without public sewage system

In 2018, 40 Italian municipalities were not connected to a public sewage system (394,044 inhabitants, 0.7% of the total). More than half of these municipalities were in Sicilia. In these cases, each dwelling was generally equipped with independent wastewater treatment systems. In some of these municipalities the sewage network was present, but not working, waiting for the connection to a wastewater treatment plant.

Over two thirds of the Italian coastline subject to bathing water monitoring

In 2018, over two thirds (67.9%) of the Italian coastline (over 9,000 km in total) were monitored to evaluate the quality of bathing water, as set out by the EU Bathing Water Directive; the remaining 32.1% was subject to permanent bathing prohibition as located in areas reserved for specific activities excluding bathing, or presenting safety risks due to hygienic-sanitary reasons.

93.5% of marine-coastal bathing waters of excellent quality

In 2018, the share of bathing water sites with excellent water quality were 93.5% of the monitored Italian coastline (Figure 4).

Puglia was the region with the greatest share of water classified as ‘excellent’, while Molise had the largest increase from 81.6% to 86.1% compared to 2017. Veneto and Friuli-Venezia Giulia had only ‘excellent and good’ waters.

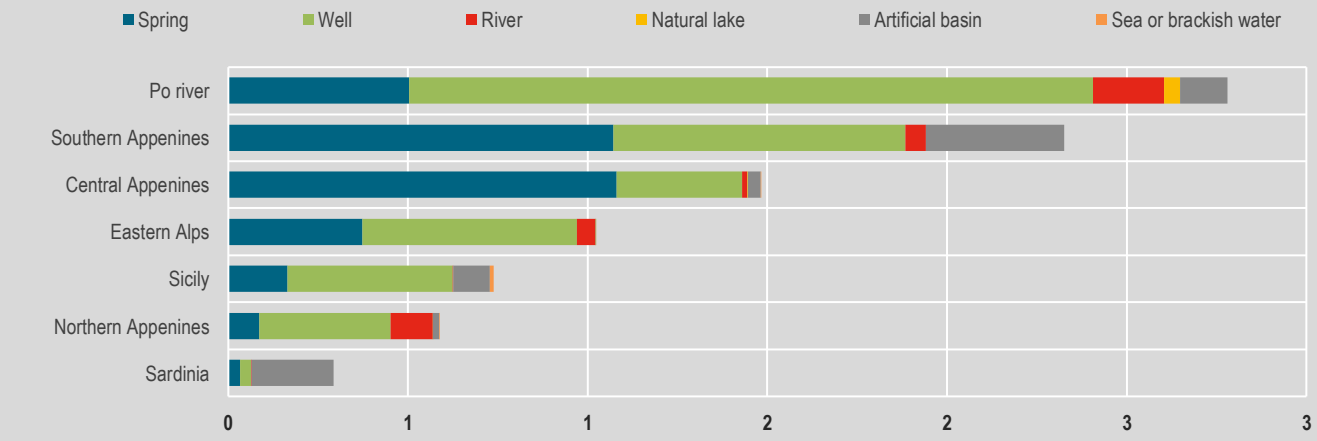
Urban wastewater discharges primary cause of bathing bans

In 2018, bathing marine-coastal waters classified as of 'poor' quality were 0.8% of the total length of the monitored coastline.

This share represented an excellent result for Italy, considering both the high proportion of bathing waters present in Italy (about a quarter of the European coastline) and the growing human activities on coasts, increasing their exposure to pollution.

Taking into account also monitored waters banned for the entire bathing season (temporary measures) due to levels of contaminants exceeding the safe levels, the indicator of bathing coasts was calculated as the ratio of the length of bathing coastline to the total length of the coastline: throughout 2018, 66.5% of Italy’s coastline was suitable for swimming, while 1,4% of the monitored coasts were closed during the entire 2018 bathing season.

FIGURE 3. WATER ABSTRACTION FOR PUBLIC WATER SUPPLY BY SOURCE AND RIVER BASIN DISTRICT.
Year 2018, billion cubic meters



Source: Istat, Urban water census

Less water in the main Italian rivers

The time series of the yearly volume of water flowing into the sea from the major Italian rivers (Po, Adige, Arno, Tevere) gives an overview of water resources available in the river basin regions.

In the last 19 years (from 2001 to 2019), for some of these rivers, there has been an important reduction in the outflow volumes into the sea compared to the 1971-2000 average, equal to -15% for Tevere and more than -11% for Po.

Outflows of rivers are strongly correlated with the rainfall in the surface river basins considered, even if several other anthropogenic variables (reservoirs, withdrawals, hydraulic works) can also affect them.

From 2001 to 2017, the annual average precipitation in Po river basin decreased by 2% (around 1,050 mm) over the 1971-2000 period. In the Adige river basin, the annual average precipitation was the lowest of the four river basins considered, with about 900 mm, while in the Arno basin there has not been a significant variation compared to the previous thirty years.

In the 2001-2017 period, the Tevere river basin registered the highest reduction of precipitation, albeit modest (-4%), although in some very dry years (2007 and 2011) there were reductions equal to, and even larger than 30% (Figure 5).

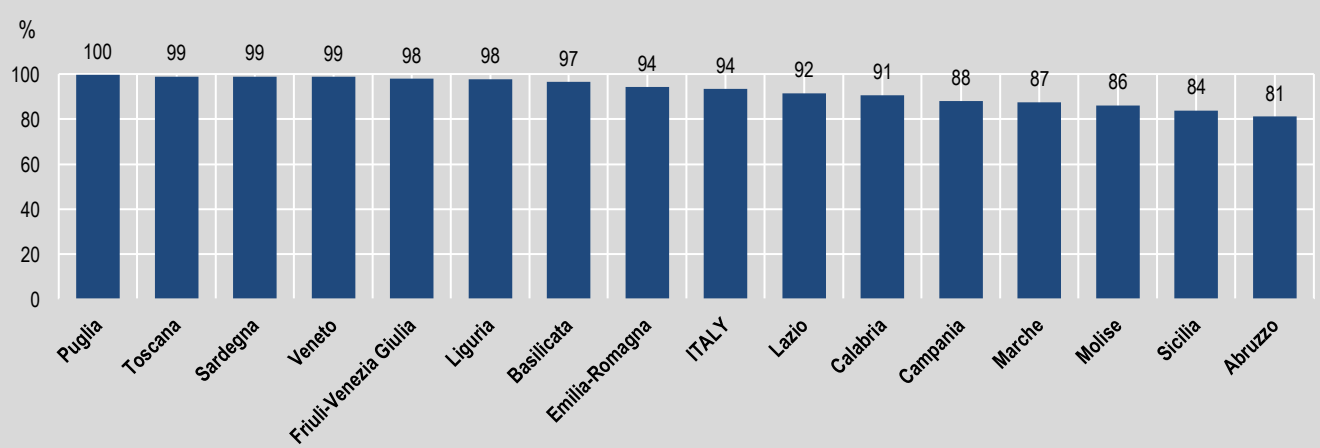
2017 the least rainy year since 1971

Climate variability phenomena are increasing in our country. In the regional capitals, where about 16% of the Italian population live, year 2017 is the fourth least rainy year since 1971 compared to the average value of the 1971-2000 period (Normal Climate), with a total precipitation of 573.7 mm (calculated as an as average of the observed capital cities).

The analysis of climate extreme indices of precipitation showed that in 2017 the decrease in the number of rainy days affected all cities observed. Consecutive days with rain were 5 on average in the year and consecutive days without rain were 27.

The precipitation index on very rainy days shows that 23.8% of the total annual precipitation is concentrated on very rainy days, with an average value of 136.5 mm in all cities observed.

FIGURE 4. LENGTH OF COASTAL BATHING WATERS WITH EXCELLENT WATER QUALITY BY COSTAL REGION.
Year 2018, percentage values on the total length of the monitored coastline



Source: Istat elaboration on data from Ministry of Health and European Environment Agency

Natural mineral water withdrawals on the increase

The typical Italian hydrogeology makes the national mineral water heritage among the most important both for the number of springs and for the quality and oligomineral diversity of these resources.

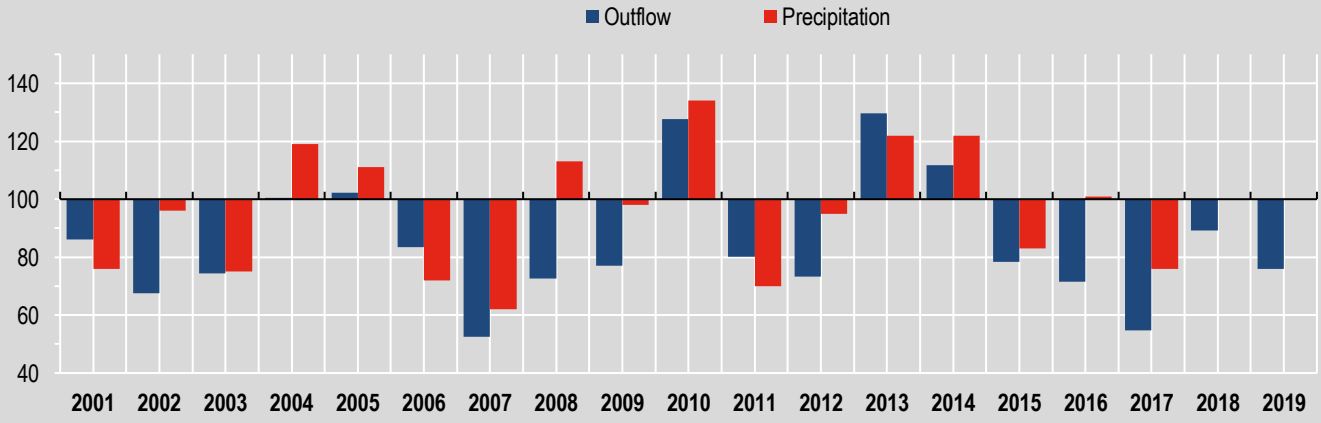
In 2017, in 173 Italian municipalities there was at least one licensed natural mineral water abstraction site. 185 companies operated in such sites (48.7% in the North and 26.5% in the Centre).

Natural mineral waters withdrawals used for production purposes amounted to 16.6 million cubic meters (+2.7% compared with 2016).

Withdrawals were mostly concentrated in the North (9 million cubic meters, 54% of the total).

In 2017, the Abstraction Intensity indicator, given by the ratio of extracted quantities to their land area, calculated at the national level was 55 cubic metres per square km. A much higher value than the national average was recorded in the North-west (108 cubic metres per square km).

FIGURE 5. TEVERE RIVER BASIN OUTFLOW AND PRECIPITATION COMPARED TO THE LONG-TERM AVERAGE 1971-2000. Years 2001-2019 (100 = average 1971-2000)



Source: Istat elaboration on data Ispra and regional hydrographic services

Methodological notes

Water abstraction and use for public water supply

Since 1951 Istat has periodically collected information on water resources for domestic use with the Urban water census. The survey, included in the National Statistical Programme (IST-02192), aims to describe the state of urban water services in Italy. The respondent units are all management companies operating in Italy in the urban water services. Information required is referred to water abstraction, water use, sewage system, urban wastewater treatment plants.

The survey contents have been progressively updated by considering both the European directives on Water resources and the increasing request of information from public institutions and private stakeholders.

The focus analyzes, in particular, the data from the survey carried out in 2019, in reference to 2018.

For further information:

https://www.istat.it/it/archivio/234904

https://www.istat.it/it/archivio/207497

Evaluations and opinions of citizens towards water services

The sample survey "Aspects of daily life" is a part of an integrated system of social surveys - The Multipurpose Surveys on Households - and it collects fundamental information on individual and household daily life. From 1993 to 2003 the survey was conducted annually, with data collected during the month of November. In 2004 the survey did not take place and, starting from 2005, it was run every year in February. The survey, included in the National Statistical Programme (IST-00204), provides information on the citizens' habits and the problems they face in everyday life. In the questionnaires, thematic areas are on different social aspects permitting to realize which is the quality of individual life, the degree of satisfaction of their conditions, their economic situation, the area in which they live, the functioning of all public utility services; all topics useful to study the quality of life. School, work, family and social life, spare time, political and social participation, health, life style, access to the services are all investigated from a point of view in which behaviour objectivity, motivations, opinions contribute to define the social information.

For further information:

http://www.istat.it/it/archivio/91926

http://www.istat.it/it/archivio/4630

Household water expenditure

The Household Budget Survey (HBS) aims to measure and analyze expenditure behaviors of households residing in Italy, according to their main social, economic and territorial characteristics. It is included in the National Statistical Programme (IST-02396). The survey, carried out continuously with CAPI (Computer Assisted Personal Interview) technique on an annual theoretical national sample of about 28,000 households, is based on the harmonized international classification of expenditure voices (Classification of Individual COnsumption by Purpose – Coicop). Since 2014, the new HBS has replaced the old HBS (carried out between 1997 and 2013). The current survey design differs deeply from the previous one: in particular, expenditure reference periods have been enlarged and the most updated ECoicop has been adopted. As a consequence, it has been necessary to reconstruct the time series of the main expenditure aggregates since 1997. Time comparisons between 2014 estimates and previously disseminated estimates can be made only using reconstructed data.

For further information:

https://www.istat.it/en/archivio/232003

Water rationing

The survey "Urban environmental data" is carried out annually by Istat in order to collect environmental information relating to the capitals cities of all Italian provinces and metropolitan areas. Present in the National Statistical Programme (IST-00907), it aims to provide useful indicators to compose an information framework to support the monitoring of the state of the urban environment and of the activities carried out by the administrations to ensure the good quality of the environment in the cities.

The survey is divided into 7 survey questionnaires: Air, Eco management (which includes water rationing for civil use, previously in the Water module), Energy, Mobility, Waste, Noise and Urban Green.

For further information:

https://www.istat.it/it/archivio/236912

Bathing waters

The purpose of Directive 2000/60 is to preserve, protect and improve the quality of the environment and to protect human health.

Istat, thanks to the contribution of Regions and ARPA, has defined and updated a homogeneous coastline on which bathing areas and sample points have been reported. The coastline produced by Istat consists of the external line of the census sections of Italian coastal municipalities, updated with the information received by the Regions, ortophotos of 2011, 2013 and 2014 and the coastline produced by ISPRA. This line indicates a coastal development of the Italian peninsula higher than 9,000 km, including also anthropic infrastructures such as port facilities, erosion barriers, docks, configuration of natural ports. This coastline is used only for statistical purposes.

For further information:

https://www.eea.europa.eu/themes/water/europes-seas-and-coasts/assessments/state-of-bathing-water/country-reports-2018-bathing-season/bwd2018-nationalreport-it.pdf/view

https://www.eea.europa.eu/publications/european-bathing-water-quality-in-2018

http://www.portaleacque.salute.gov.it/PortaleAcquePubblico/

Outflow and precipitation in the main river basins

The analysis of the available water resources has been estimated by measuring the outflows of the main Italian rivers (Po, Adige, Arno and Tiber) in the gauging stations closest to the mouth. The outflow values from 1971 to 2019 have been provided by the regional hydrographic services and by the regional agencies for environmental protection.

Precipitation data have been processed by ISPRA, using the BIGBANG - Hydrological Balance Gis BAsed model on a national scale and regular grid.

Estimates at national and river basin district level on the main indicators, which measure the water cycle and allow to determine the water resources available, withdrawn and used in the area, are carried out by ISPRA and Istat in the context of a specific research protocol.

For further information:

http://www.isprambiente.gov.it/pre_meteo/idro/BIGBANG_ISPRA.html

Meteo-climatic and hydrological data

The Istat Meteo-climatic and hydrological data survey (edition 2017) is included in the National Statistical Programme (IST-02190) and is regularly conducted by Istat. Statistical information provided by this survey can be put in relation with other official statistics regularly produced by Istat on thematic areas such as environment, human health, urban systems, public utilities, to multidimensional analyses. Meteo-climatic variables collected include daily observations of precipitation (mm), minimum temperature (Celsius degree), maximum temperature, mean temperature, and humidity. The respondents units are institutions (public and private) and agencies officially managing national networks of georeferenced meteorological stations.

In particular, given the purpose of this analysis, measurements analyzed come from meteorological gauging stations (units of analysis) located within the territory of regional capital municipalities. For this reason, data used and indices calculated provide measures related to the climatic characteristics of the individual monitored areas. In the report aspects of regional capital municipalities climatic variability are described, in particular observing anomalies of precipitation comparing the 2002-2017 mean values with the Climatological Normal (CLINO) value, defined by the 1971-2000 period.

Some Indices of climatic extremes, defined by the ETCCDI (Expert Team on Climate Change Detection and Indices of WMO-UN) core set have been calculated for Italian regional capitals.

For further information:

https://www.istat.it/it/archivio/236930

Mineral waters

In 2015 the survey “Anthropic Pressure and Natural Risks. Mining and Quarrying extraction activities”, included in the National Statistical Programme (IST-02559), was carried out for the first time with the aim to analyse extracting mineral resources from quarries and mines at regional level, and also to highlight aspects related to the pressures exerted on the natural environment and in the territory. The second edition was in 2017-2018 and data collected were referred to years 2015, 2016 and 2017.

Extending the field of observation, data on mineral and thermal water withdrawals per region were collected for the first time. Extraction of energy-producing minerals is not included in the survey.

The microdata are acquired from the administrative archives of the local public institutions responsible for the extraction of minerals that do not produce energy (also involving the Statistical Offices of the Regions) through the Technical Offices of the sector located in Regions, Provinces, Autonomous Provinces of Trento and Bolzano, Sicilia Mining Districts.

For further information:

https://www.istat.it/it/archivio/234556

For more details, please refer to the Italian version

For technical and methodological information

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