statistiche report

Istat Istituto Nazionale di Statistica

ISTAT WATER STATISTICS | YEARS 2019-2021

Over a third of the water in the public supply network gets lost

In 2020 41 cubic metres daily lost per kilometer of mains in provincial and metropolitan capital cities, 36.2% of the total volumes input into the public water supply network (37.3% in 2018).

236 litres per inhabitant per day provided for authorized uses in the public water supply network.

In 2020, 11 provincial and metropolitan capital cities (all located in Southern Italy) affected by rationing measures in the public water supply.

In 2021, 86.0% households very or fairly satisfied with water service in their houses, while 65.9% of people aged 14 and over careful not to waste water.

28.5%

Households not trusting to drink tap water in 2020.

40.1% in 2002

605thousand

People still not connected to urban wastewater treatment plants in the regional capital cities in 2020.

14.68 euro

Household average monthly expenditure for water service in 2020.

12.56 euro average monthly expenditure for mineral water

www.istat.it

UFFICIO STAMPA
tel. +39 06 4673.2243/44
ufficiostampa@istat.it

CONTACT CENTRE
tel. +39 06 4673.3102
contact@istat.it

Water and services provided are at the basis of people's wellbeing, environmental sustainability and economic growth. Constant and timely monitoring and interventions are essential to develop adequate management strategies of the water resource, as encouraged in the 17 UN Sustainable Development Goals (SDGs), in particular Goal 6 "Ensure access to water and sanitation for all" and Goal 14 "Conserve and sustainably use the oceans, seas and marine resources"; due to their integrated and indivisible nature, other Goals are related to water, in particular Goal 13 "Adopting urgent measures to combat climate change and its impacts".

Climate change and pollution are increasing the pressure on water resources and infrastructures, already heavily stressed by urbanization processes and economic development that have had, over the years, a direct impact on the increase in water demand. It is therefore necessary to strengthen the resilience of the water system, making processes more efficient especially in areas vulnerable to water critical situations.

The protection of water resources and the efficient and sustainable management of water services are, in Italy, among the objectives of the Recovery and Resilience Plan. Policies for sustainable water management require continuous and widespread monitoring of the resource through increasingly updated and updatable information with a greater territorial detail. Hence the necessity to consolidate the information system to meet the needs of the several stakeholders and build a system of governance, planning and evaluation.

Among the different types of water uses, the civil use is a supervised sector to monitor the availability and pressures on water resources, also considering the direct consequences on the socio-economic system and on citizens' well-being and habits.

On the occasion of the World Water Day, established by the United Nations in 1992 and celebrated on 22 March, Istat provides an annual focus that, through a multi-source approach, presents the results of its several surveys, elaborations and analysis, thus offering an integrated reading of the phenomenon with reference to the aspects linked both to the territory and to the population.

WATER: KEY NUMBERS. Years 2016-2021

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	Water losses in public water supply in the 109 provincial and metropolitan capital cities	Water supplied in the 109 provincial and metropolitan capital cities (litres per capita per day)
2016	9.4%	13.59 euro	10.75 euro	29.9%	39.0%	240
2017	10.1%	14.69 euro	11.94 euro	29.1%	-	-
2018	10.4%	14.65 euro	12.48 euro	29.0%	37.3%	237
2019	8.6%	14.62 euro	12.57 euro	29.0%	-	-
2020	8.9%	14.68 euro	12.56 euro	28.4%	36.2%	236
2021	9.4%			28.5%	-	-

Total water losses in decrease in the provincial capitals supply networks

In 2020, in the 109 Italian provincial and metropolitan capital cities, where the 30% of the population lives, a total of 236 litres per inhabitant per day were provided for authorized uses (1.5 billion cubic metres). Against a 370 litres per inhabitant per day input in the network (2.4 billion cubic metres), total water losses in the supply system were still quite high: 36.2% of the total volumes input in public water network were lost, continuing a slight reduction in time series (37.3% in 2018).

In 2020 about 41 cubic metres were lost per kilometer of mains per day in public water supply network of provincial and metropolitan capital cities (44 in 2018).

The supply of water presented a high heterogeneity in the territory. In more than one municipality in three, total water losses were well over 45%, besides in nine cities there were linear losses over than 100 cubic metres per kilometer of mains per day.

Variations in the figures may depend both on infrastructural changes and different methods used for estimate unmeasured volumes. Even the pandemic may have generated changes in the volumes supplied in 2020, but it is rather difficult to find an unequivocal direct cause-effect relationship. We point out that in some municipalities with a strong tourist vocation, such as Rimini and Venice, there was a significant reduction in the volumes supplied by about 15%.

Still water rationing in Southern provincial capitals

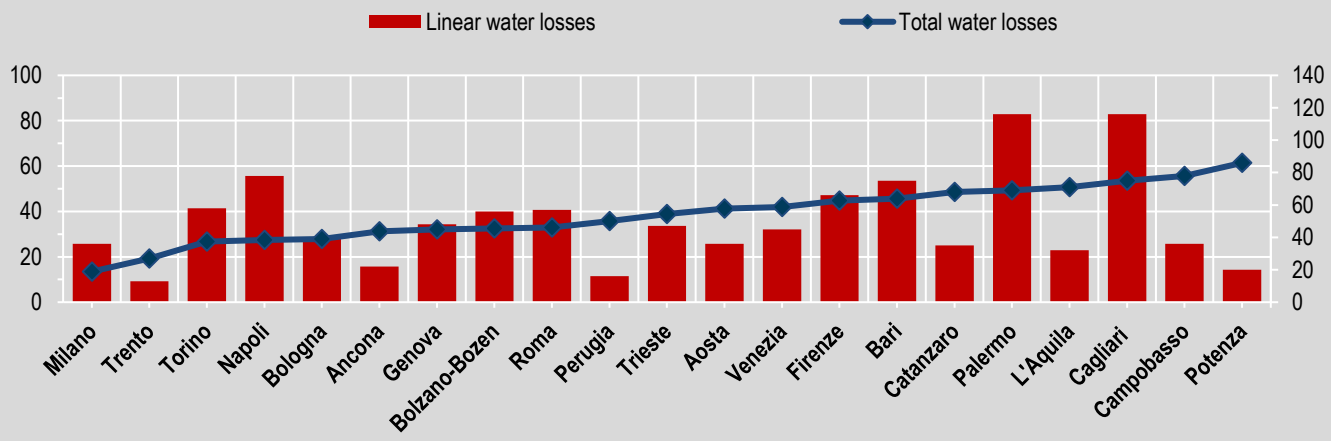
Water rationing measures in the public water supply occurred, in 2020, in 11 provincial and metropolitan capital cities, almost all located in the area of South Italy. Although the number of cities involved increased (+2), the number of days of water rationing remained stable.

Public sewerage and urban wastewater treatments for 9 out 10 residents

In 2020, the 94.7% of the resident population in the 21 Italian regional capital cities was served by the public sewerage system, regardless of the availability of subsequent treatment plants. The service was completely absent for 514 thousand people (5.3% of the total resident population); in this cases, urban wastewater is generally treated in autonomous disposal systems, such as private Imhoff tanks, especially in less central areas, difficult to reach.

The subsequent treatment was guaranteed by urban wastewater treatment plants for the 93.7% of the resident population in the 21 capital cities. The remaining share of the population (6.3%, 605 thousand people) lived in area where the public sewerage service was absent or conveyed the wastewater directly into rivers or into the sea via subsea pipeline.

FIGURE 1. TOTAL WATER LOSSES IN PROVINCIAL OR METROPOLITAN CAPITAL CITIES. Year 2020, percentage values on the total volumes (main axis) and cubic metres lost per kilometer per day (secondary axis)



Source: Istat, Urban water census

Nine out ten households satisfied with water service in their houses

In 2021, 86.0% of households connected to public water supply declared themselves very or fairly satisfied with water service in their houses.

Regarding the absence of interruptions in the water supply, just under 90.0% of households declared to be very or fairly satisfied.

Regarding the smell, taste and clarity of water, 76.2% of households declared high levels of satisfaction.

On the meter reading frequency, eight out of ten households claimed to be very or fairly satisfied.

The level of households' satisfaction generally lowered in case of the comprehensibility of water bills: less than seven in ten households (66.5%) claimed to be very or fairly satisfied.

At the regional level, households living in northern regions showed, in general, the highest levels of satisfaction, which declined in other geographical areas, reaching generally the minimum in the Islands.

In 2021 9.4% of households complained about irregular water supply in their houses, value stable compared to 2020. This problem affected the whole of the Italian territory at different levels, involving 2.4 million households, mostly in the South and Islands. 34.0% of households complaining about irregularities declared that the malfunctioning occurred throughout the year, in 33% of cases in summer period and just sporadically in the remaining 32%.

With regard to water bill expenditure, more than half of households (55.1%) assumed that it was adequate; while 38.1% of households, mostly in the southern regions, considered it high.

Still low confidence to drink 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 28.5% in 2021. This distrust showed a marked territorial variability, with the highest values in the South Italy.

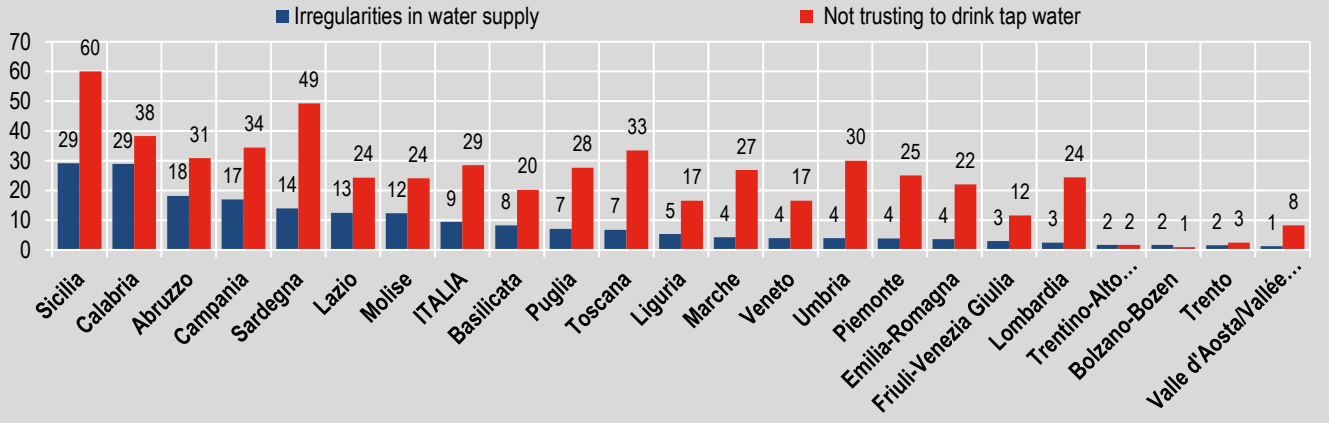
Still widespread bottled water use

In 2020 each household spent on average 14.68 euro for the supply of water in the home and 12.56 euro for mineral water consumption.

Compared to 2015, household spending on bottled water grew more than that for the supply of water in the home (respectively, +22.3% and +9.6%).

In 2021 in the 67.3% of households there was at least one member used to drink daily more than one litre of mineral water.

FIGURE 2. HOUSEHOLDS COMPLAINING IRREGULARITIES IN WATER SUPPLY AND NOT TRUSTING TO DRINK TAP WATER. Year 2021, per 100 households in the same area



Source: Istat, Survey "Aspects of daily life"

Concern for climate change and the greenhouse effect back to 2018 level

In 2021 one of the top five environmental problems declared by people aged 14 and over is water pollution. Four out ten people were worried and belonging to different age groups seems to have a rather appreciable impact on attitudes towards the water pollution: less sensitivity to the issue was found in the older groups (75 years and more, 33.4%).

66.5% of people aged 14 and over said that they are worried about climate change and the greenhouse effect. However, if up to the prepandemic year (2019) the share of worried people was constantly growing, in the two-year period 2020-2021 there was a general reversal of the trend (it was 71.0% in 2019). It is reasonable to assume that concerns about the pandemic and economic crisis have been overwhelming.

22.4% of people aged 14 and over said that they are worried about hydrogeological instability (landslides and floods). Older respondents (people aged 55 and over, 26.3%) were more worried about hydrogeological risks, whereas young people (people aged 14-24 year, 15.9%) expressed less concern.

In 2021 65.9% of respondents (people aged 14 years or over) declared to be careful not to waste water, confirming the consciousness of how important is an appropriate management of the natural resources.

Italy in 5th place among the Eu27 countries for meteoric contributions

The average annual precipitation in the period 1991-2020 (climatic value) was 943 mm in Italy. In the thirty years under examination, in our country there was an average annual rainfall of approximately 285 billion cubic metres.

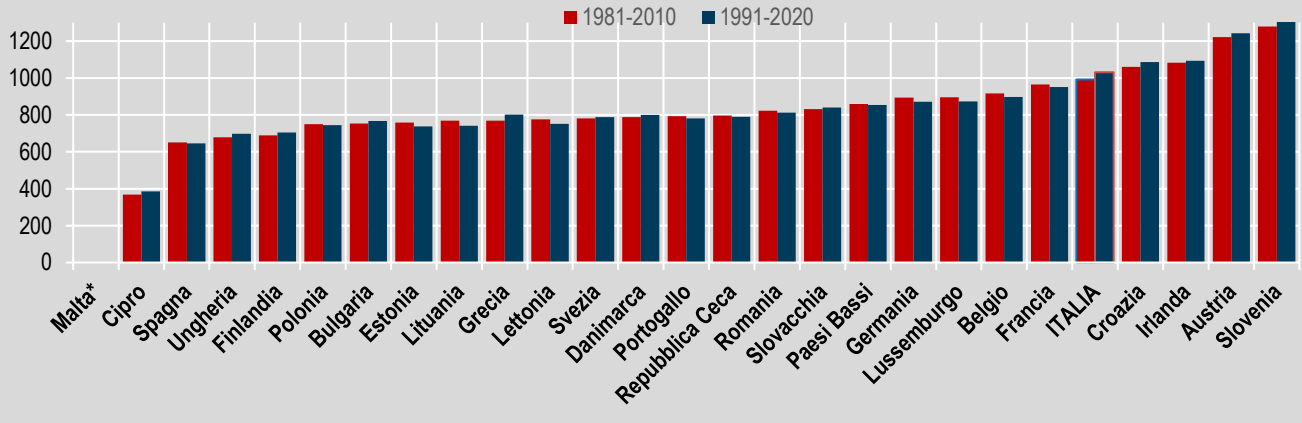
About 53% of rainwater (501 mm) returned to the atmosphere by evaporation, from the soil and water bodies, and by transpiration through the leaf systems of plants (real evapotranspiration). The residual part (47%) remained on the ground, one part infiltrating the subsoil (23%) and the other flowing to the surface (24%), thus feeding the country's aquifers, rivers and natural and artificial lakes.

The values examined represent national averages that can considerably differ from local measurements, due to the strong climatic and orographic heterogeneity of our country.

The comparison, at the European level, of the average annual precipitation was made (in mm) using data coming from *Climate Data Store* del *"Copernicus climate change service"*. Italy is among the nations with a greater rainfall, after Slovenia, Austria, Croatia e Ireland.

Considering the average of the periods 1981-2010 and 1991-2020, Italy is always in 5th place, with values beyond the third quartile and higher than all the Countries of Northern Europe. The lowest annual average precipitation (less than 750 mm) was recorded in Cyprus, Spain, Hungary, Finland and Poland. The median of the two distributions are 795 mm for 1981-2010 and 801 mm for 1991-2020.

FIGURE 3. AVERAGE ANNUAL PRECIPITATION IN EU27 COUNTRIES. Years 1981-2010 e 1991-2020, values in millimeters



Source: Istat elaboration on Climate Data Store of Copernicus climate change service
* Data not available

In decrease the total annual precipitation with respect to the period 1971–2000

In 2020, in the Italian regional and metropolitan capital cities the total annual precipitation was about 661 mm (calculated as average of the values recorded in the cities observed), one of the lowest values recorded in the last decade (as in 2011). It means -132 mm compared to 2006-2015 average period.

Considering only the Italian regional capital cities, in 2020 the total annual precipitation anomaly compared to the 1971-2000 average values (CLINO) was on average -91 mm.

Indices of climate extremes related to precipitation showed a significant variability at local scale, also linked to the geographical location of the cities.

The annual number of days without rain (R0 index) was 293, +10 days compared to the climatic values 1971-2000. The maximum length of dry spell, that is the maximum number of consecutive days with precipitation ≤ 1 mm (CDD index), was 26, +2 compared to the climatic values 1971-2000.

Continuous increasing in natural mineral waters withdrawals

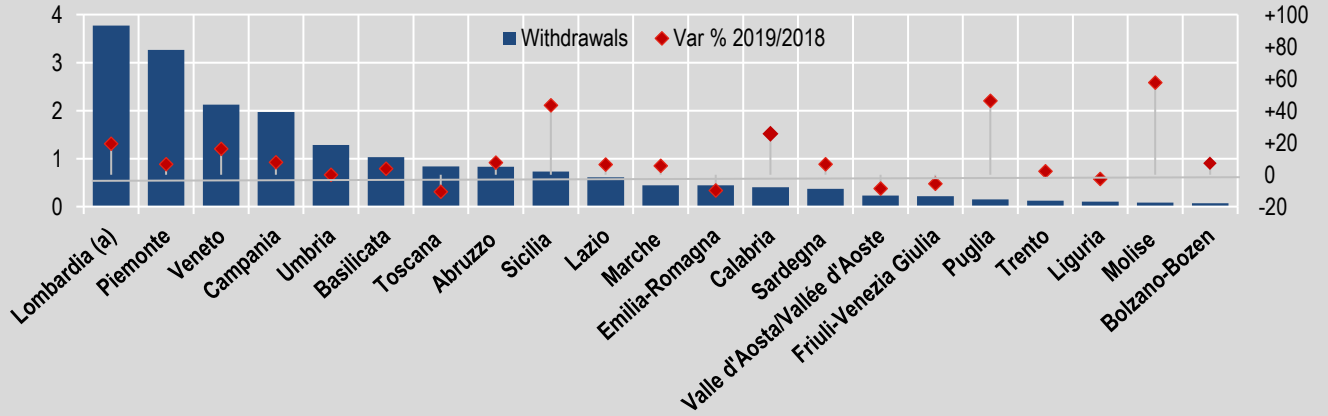
In 2019 natural mineral waters extraction for production purposes amounted to more than 19 million cubic metres (+17.6% compared to 2015). Extraction sites were located in 162 municipalities.

Natural mineral waters withdrawals were mostly concentrated in the North of Italy with 10.3 million cubic metres (54.3% of the total extracted).

Compared with 2018, natural mineral waters withdrawals had an increase of 9.3%, equal to 1.6 million cubic metres.

In 2019, the Extraction Intensity Indicator (IE, ratio between volumes extracted and land areas considered) was 63 cubic meters of mineral waters per square km at the national level, with the highest value recorded in the North-west of Italy (127).

FIGURE 4. NATURAL MINERAL WATERS WITHDRAWALS FOR PRODUCTION PURPOSES BY REGION. Year 2019, absolute values in million cubic metres (main axis) and percentage variations over 2018 (secondary axis)



Source: Istat, Anthropic Pressure and Natural Risks
(a) 2018 data not available for Brescia.

Methodological notes

Characteristics of the urban water services

Since 1951 Istat has periodically collected information on water resources for domestic use through 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 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 2021, in reference to 2020.

For further information:

https://www.istat.it/it/archivio/84333

https://www.istat.it/en/archivio/255680

https://www.istat.it/en/archivio/252831

Water rationing

The survey "Urban environmental data" is carried out annually by Istat in order to collect environmental information relating to the all Italian provincial and metropolitan capital cities. Present in the National Statistical Programme (IST-00907), it aims to provide useful indicators to compose an information framework in support of 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 (including 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/264816

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 data on individual and household daily life. From 1993 to 2003 the survey was conducted in 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, the economic situation, the area in which they live, the functioning of all public utility services; all topics useful. 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 behavior objectivity, motivations, opinions contribute to define the social information.

For further information:

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

Household water expenditure

The Household Budget Survey (HBS) aims to measure and analyze expenditure behaviors of households, according to their main social, economic and territorial characteristics. It is included in the National Statistical Programme (IST-02396) and carried out continuously with a Computer Assisted Personal Interview technique on an annual theoretical national sample of about 28,000 households. It 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, as 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 aggregates since 1997. Time comparisons can be made only using reconstructed data.

For further information:

https://www.istat.it/it/archivio/258409

The precipitation in Europe

Within the scientific collaboration Istat-ISPRA for the determination of the national hydrological and water balance, the estimation of indicators was carried out through the BIGBANG hydrological balance model of ISPRA, developed in GIS environment (GIS BAsed Hydrological Balance at a national scale on regular grid, version 5.0, update 2020).

The European data come from the Data Store of "Copernicus climate change service". Actual evapotranspiration was estimated by a soil balance using the Thornthwaite-Mather approach (1955).

For further information:

ISPRA: Idrologia, Idromorfologia, Risorse Idriche, Inondazioni e Siccità

https://land.copernicus.eu/

Meteo-climatic and hydrological data

The Istat Meteo-climatic and hydrological data survey is included in the National Statistical Programme (IST-02190) and is regularly conducted by Istat. Data analyzed in the report are referred to 2020. 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 facilitate 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 and metropolitan capital cities. 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 and metropolitan capital cities climatic variability are described, in particular observing precipitation anomaly of 2020 compared to the Climatological Normal (CLINO) value, defined by the 1971-2000 period, and to the 2006-2015 mean values. 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 capital cities.

For further information:

https://www.istat.it/it/archivio/263811

https://www.istat.it/it/archivio/251803

https://www.istat.it/it/archivio/202875

Mineral waters

The survey “Anthropic Pressure and Natural Risks”, included in the National Statistical Programme (IST-02559), was carried out for the first time in 2015 with the aim to analyze extracting mineral resources from quarries and mines at the regional level, and also to highlight aspects related to the pressures exerted on the natural environment. Subsequently, survey was carried out on an annual basis, with the aim to update the Istat’s Mineral Database. Extending the field of observation, since 2017 data on mineral and thermal waters withdrawals were collected per region for the first time. Extraction of energy-producing minerals is not included. 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 located in Regions, Provinces, Autonomous Provinces of Trento and Bolzano, Sicilian mining districts.

In the 2020 edition, important innovations were introduced in the data collection, implementing some methodological advances aimed at standardizing the information collected and improving the quality of statistical production.

Data are available on I.Stat *Datawarehouse* under the theme Environment and Energy.

For further information:

https://www.istat.it/it/archivio/204473

https://www.istat.it/en/archivio/257609

https:/dati.istat.it

For more details, please refer to the Italian version