10. Environment[1]

The preservation of the natural environment, the struggle against pollution, and the adaptation to climate change have a primary role for a population's well-being and health. The strong and acknowledged link between these conditions is therefore a reason for common political initiatives at European and international level (Ostrawa declaration, 2017)[2].
In recent years, from the perspective of sustainable socio-economic development, environmental issues have become increasingly central to the analysis of the determinants of the well-being of people and communities, both in terms of perception of the quality of the environment in which we live, and in terms of availability of natural resources and accessibility to the environmental contexts.
Despite the significant progress made in the last decade, efforts did not produce adequate solutions, and the environmental picture still shows critical aspects, with a variety of situations in different areas of the Country, not always connected to the traditional North-South divide.
The European Green Deal, focused on sustainable development (Agenda 2030) is the European Union's response to the many challenges set, among others, by environmental degradation and climate change. The Green Deal includes an action plan and a series of substantial investments, aimed at reducing pollution, promoting the efficient use of resources to enable the transition to a green and circular, equitable and inclusive economy, restoring biodiversity. The analysis of the Bes Environment domain is based on six dimensions, which describe how the environment contributes to collective well-being. Air quality, water quality and water resources, biodiversity and the naturality of marine and terrestrial ecosystems, and soil quality are all factors or dimensions that ensure a higher level of social well-being. In addition, there is the cross-sectional dimension of the subjective assessment of the environmental situation. Finally, "materials, energy and climate change" collects indicators that measure the domestic material consumption, extreme weather and climate conditions, emissions of climate-altering gases, and the consumption of energy from renewable resources.These dimensions are broken down into a total of 21 indicators, some of which updated to 2020.

Growing concern about climate change and the greenhouse effect

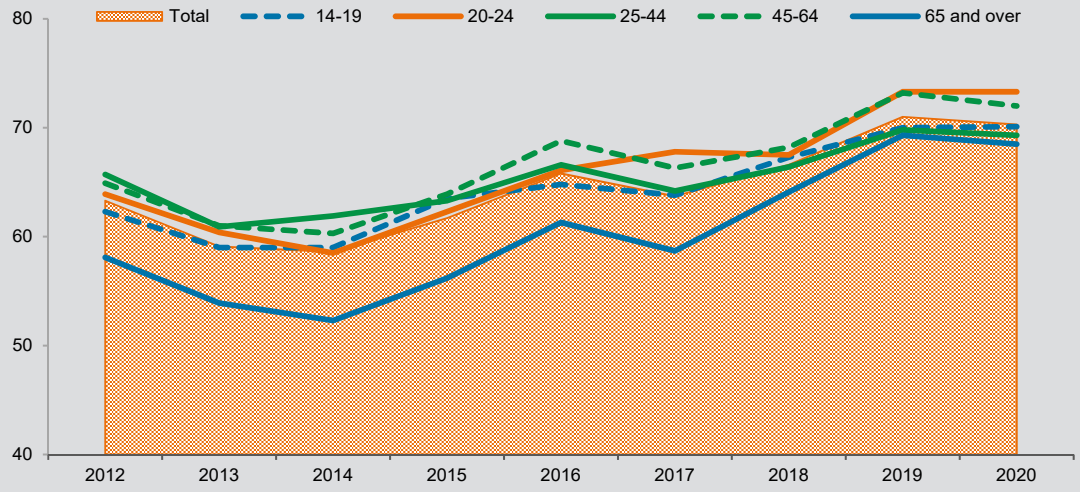
The effects of climate change and the increase of the greenhouse effect represent one of the environmental issues that people are most concerned about, which is widespread and shared throughout the Country.
The Istat Aspects of Daily Life survey testifies how, starting from 2015, the share of citizens expressing this concern is growing steadily. In 2014 they were 58.7%, but in the last two years they exceeded 70%.

1 This chapter was edited by Stefano Tersigni, with contributions from: Domenico Adamo, Tiziana Baldoni, Raffaella Chiocchini, Luigi Costanzo, Elisabetta Del Bufalo, Aldo Femia, Flora Fullone, Antonino Laganà, Maria Rosaria Prisco, Simona Ramberti, Silvia Zannoni.

2 WHO, Unece, Unep - Declaration of sixth ministerial conference on environment and health, Ostrawa (Czech Republic) 13-15 June 2017.

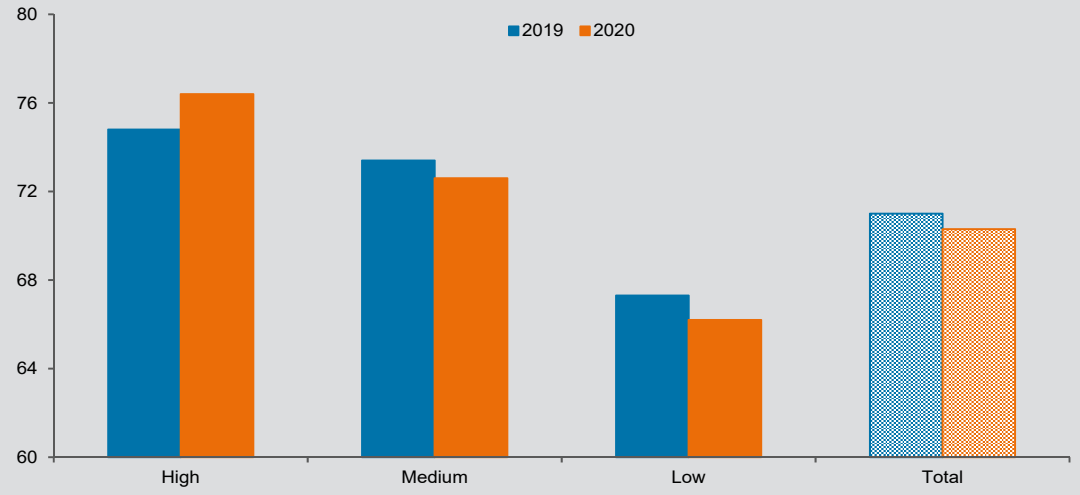
In the northern and central regions, since 2015, the percentage of people expressing concern is slightly higher than in the South. In 2020, in the North, it was 72.2%, in the South 67.5%. The exception is Molise, which is the southern region recording the highest percentage of people concerned about the greenhouse effect and climate change (77.4%).
While in past years people aged 65 and over expressed slightly less concern about these environmental issues than all other age groups, in the past two years (2019-2020) awareness of this topic is high among citizens of all ages, including young people (Figure 1).
Substantial differences, however, are associated with the education attainment. Indeed, among people with a medium-high qualification, the share of those who express concern about the greenhouse effect and climate change is higher (Figure 2).

Figure 1. Concern about climate change and/or increasing greenhouse effect by age group. Years 2012-2020 (a)**. Per 100 persons aged 14 and over**



Source: Istat, Survey on Aspects of daily life
(a) 2020 data are provisional.

Figure 2. Concern about climate change and/or increasing greenhouse effect by education attainment. Years 2012-2020 (a) (b)**. Per 100 persons aged 14 and over**

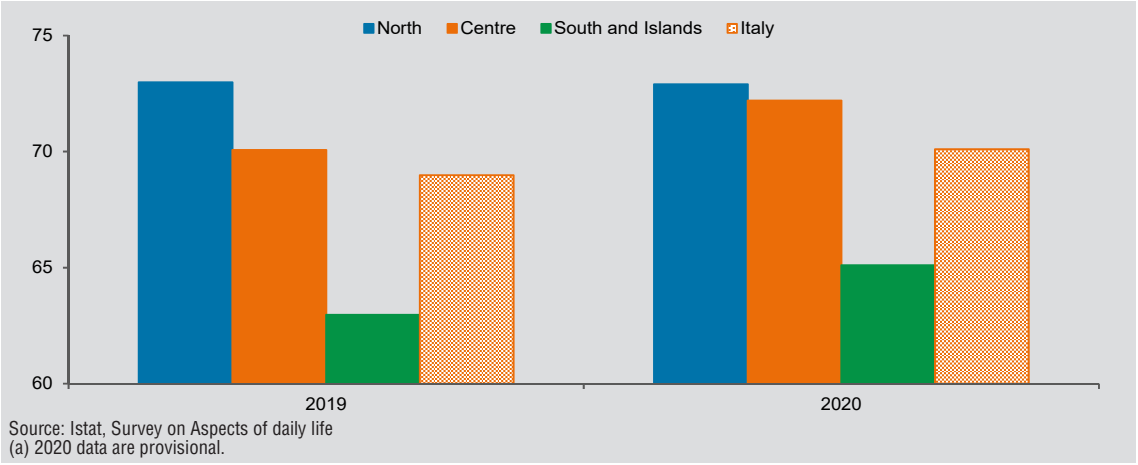


Source: Istat, Survey on Aspects of daily life
(a) 2020 data are provisional.
(b) Low level of education: Isced 0-2; Medium level of education: Isced 3-4; High level of education: Isced 5-8.

Seven out of ten people satisfied with the state of the environment in the place of living

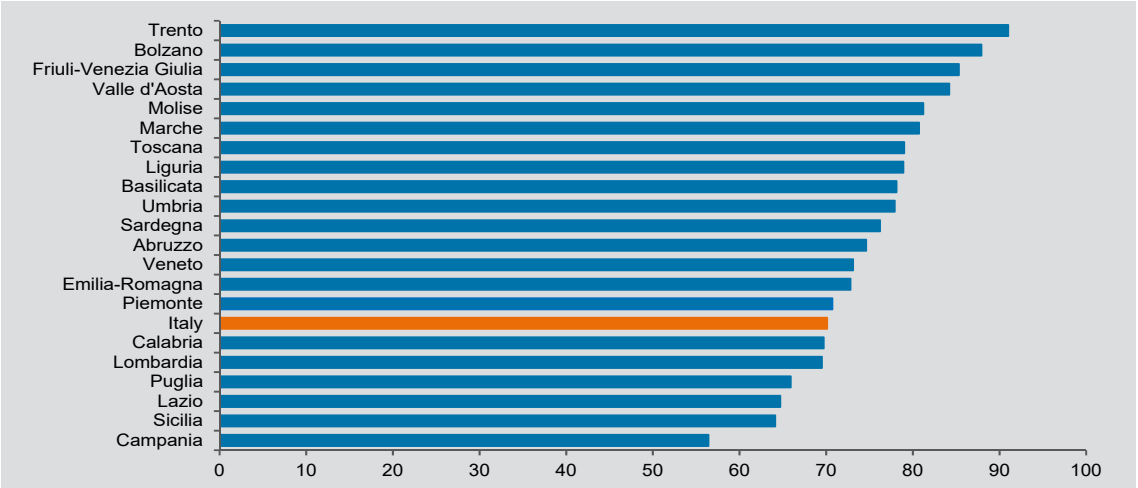
In 2020, people aged 14 and over who report being very or quite satisfied with the environmental situation in the area where they live are 70.1%, slightly up (+1.1 points) from 2019. Over the past five years, the national figure remained quite stable. Variability depends most on the area of residence: in the North and in the Center more than 72% of those interviewed declared to be satisfied, while in the South the percentage dropped to 65% (Figure 3). In Trentino-Alto Adige, Friuli-Venezia Giulia and Valle d'Aosta, values of over 84% were recorded. In Molise, the figure is 81.2%, the highest percentage in southern Italy. Residents in Campania and Sicilia are the least satisfied with the state of the environment, 56.4% and 61.1% respectively (Figure 4). Significant differences, though not very marked, related to age and education were observed: satisfaction was more common among younger people (14-19 years) and the elderly (65 and over) and among those with lower education attainment, while no difference is observed between women and men.

Figure 3. Satisfaction for the environmental situation (air, water, noise) of the area where people live by geographic area. Years 2019-2020 (a)**. Per 100 persons aged 14 and over**



Source: Istat, Survey on Aspects of daily life
(a) 2020 data are provisional.

Figure 4. Satisfaction for the environmental situation (air, water, noise) of the area where people live by region. Years 2019-2020 (a)**. Per 100 persons aged 14 and over**

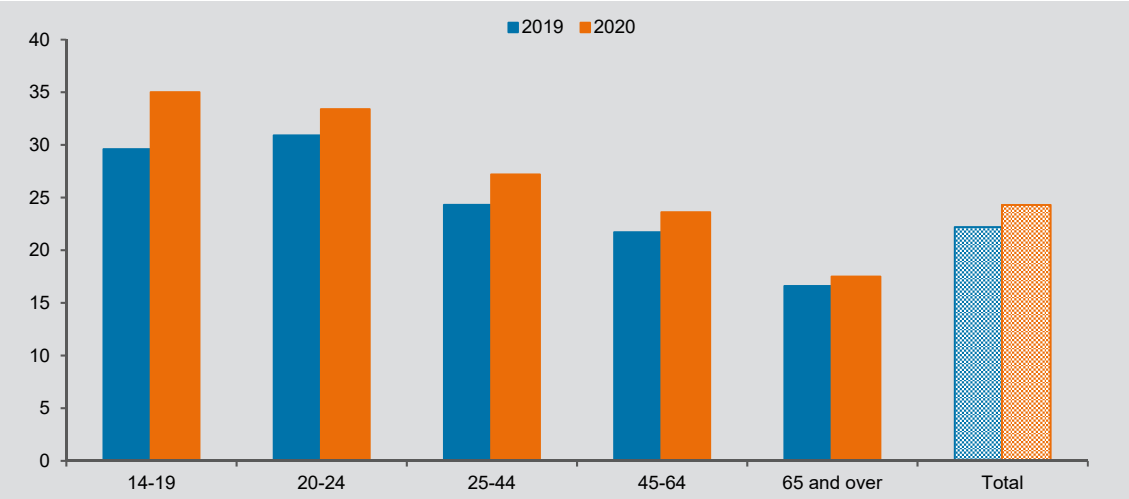


Source: Istat, Survey on Aspects of daily life
(a) 2020 data are provisional.

Growing concern among young people about loss of biodiversity

The concern about biodiversity loss, i.e., the extinction of animal and vegetal species is increasing. In 2020, it is reported by 24.3% of the population aged 14 and over (it was 22.2% in 2019). This increase is observed all over Italy, although the highest percentages are found in the northern and central regions.
Among the younger and those with higher education, a greater sensitivity to the protection of the natural environment emerges, especially in the last two years. Concern about biodiversity loss appears to be most common among young people (14-19 and 20-24 age groups), who overtook the corresponding share of people aged 65 and over by about 13 percentage points in 2019 and by 16 points in 2020 (Figure 5). Respondents with medium-high educational qualifications have always been more aware of these problems, with differences of about 6 percentage points compared to those with low qualifications. There are no significant gender gaps in the perception and assessment of this issue.

Figure 5. Concern for biodiversity loss by age group. Years 2019-2020 (a)**. Per 100 persons aged 14 years and over**



Source: Istat, Survey on Aspects of daily life
(a) 2020 data are provisional.

The coverage of protected areas remains unchanged

The areas belonging to the "Natura 2000 Network" and/or to the Official List of Protected Areas (EUAP) are the main protected, marine and terrestrial areas of the Country and represent the primary instrument for the conservation of biodiversity.
The set of terrestrial protected areas covers 21.6% of the national territory, a value that is stable since 2012[3]. The higer regional percentages of protected areas are in southern Italy: in particular in Abruzzo (36.6%) and Campania (35.3%). Marine protected areas cover about 11 thousand square kilometers of sea surface, equal to 7.2% of national territorial waters.

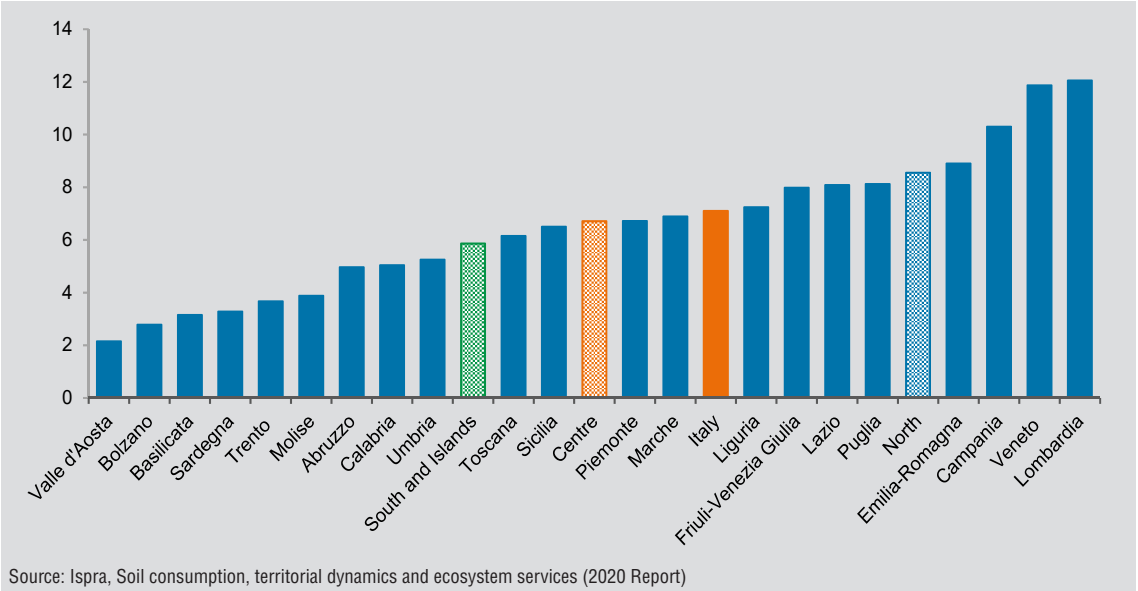
3 The indicator considers, net of overlaps, only the land surfaces of the sites included in the official list of protected natural areas published by MATTM and those belonging to the Natura 2000 Network. The latter include the Sites of Community Importance (Sic), identified by the Regions and subsequently designated as Special Areas of Conservation (Zsc) according to the Directive 92/43/EEC "Habitat", and the Special Protection Areas (Zps) established according to the Directive 2009/147/EC "Birds".

The availability of public urban parks and gardens in Italian capital cities is 32.8 square meters per inhabitant. Since 2011, this value is on the rise, but recorded only slight variations (+0.6% per year, and only +0.3% in southern cities). Public green areas, however, are not equally distributed among the 109 provincial capitals, since about 50% of the total surface is concentrated in just 11 cities and one city out of ten does not reach the minimum standard, required by law, of 9 square meters per inhabitant.

Gradual increase in soil consumption

The expansion of artificial cover on natural soil reduces the permeability and functional development of the land. This phenomenon can be considered practically irreversible in the short term, given the difficulty in carrying out demolition, de-impermeabilisation and renaturation work. For this reason, land consumption is similar to other forms of consumption of non-renewable resources.
In 2019, new artificial ground cover amounted to 57.5 square kilometres, an increase of 22.1 square kilometres over the previous year. An increase that, unfortunately, has been constant in recent years, correlated with that of building production, which is its main cause. The target of zero soil consumption, set by the European Commission since 2006, therefore still seems very ambitious. Ispra estimates show that in 2019 the amount of soil consumed represents 7.1% of the national territory. In the North, the figure is higher (8.6%), slightly lower in the Centre (6.7%) and in the South (5.9%).
The regions with the highest share of consumed soil are Lombardia, Veneto and Campania (Figure 6). The largest regional increases between 2018 and 2019 occurred in Veneto (+785 hectares), Lombardia (+642), Puglia (+625), Sicilia (+611) and Emilia-Romagna (+404). Valle d'Aosta is the first region with almost zero consumption (only 3 hectares more). In terms of percentage increase compared to the 2018 area, the highest values are those of Puglia (+0.40%), Abruzzo (+0.39%), Sicilia (+0.37%) and Veneto (+0.36%).

Figure 6. Percentage of soil sealed following a change from non-artificial to artificial coverage by region. Year 2019. Percentage value of the regional area



Source: Ispra, Soil consumption, territorial dynamics and ecosystem services (2020 Report)

13% of the population live in areas at hydrogeological risk

Among the phenomena that cause soil degradation, the most relevant and widespread are landslides and floods. Due to the geomorphological characteristics of our Country, hydrogeological risk is widespread throughout the territory, with local variations, also in terms of hazard for human life. The Research Institute for Hydrogeological Protection of the CNR, as part of the Polaris project, recorded 8,777 victims in 2019 throughout the Country, including dead, injured, missing and displaced. In 2020, there were 3,078 victims.
The increasing frequency of extreme weather events, and in particular of intense and localised rainfall, just heightens such risk. Human activities that exacerbate the vulnerability of the territory are cementing, unauthorised building, abandonment of highlands, irresponsible quarrying, unsustainable cultivation techniques, lack of maintenance of waterways and invasive and careless interventions on them. In 2017, according to Ispra estimates, 12.6% of the Italian population lived in areas classified at high or very high landslide hazard and in areas of medium and high hydraulic hazard (i.e. periodically subject to flooding, with return periods varying between 100 and 200 years). Compared to estimates based on the 2015 mapping, the indicators show an overall worsening on both fronts. The population most exposed to risk is mainly living in the North. The regions with the highest percentage values are Emilia-Romagna, Liguria and Valle d'Aosta, followed by regions in the Centre and in the South, Toscana and Abruzzo in particular.

Bathing permitted on only two-thirds of Italian coasts

In 2019, the percentage of marine coasts where bathing is allowed stands at 65.5%, slightly decreasing for the third consecutive year: 1 point less than 2018 (66.5%) and about 2 points less than 2016 (67.2%), which was the maximum observed since 2013[4]. The regions with the highest shares of bathing coastline are Basilicata and Calabria (90.8% and 85.3%), while those with most restrictions are Friuli-Venezia Giulia (42.2%) and Sicilia (50.8%). The most significant decreases compared to 2018 are observed in Sicilia (from 55.4% to 50.8%) and Abruzzo (from 77.5% to 75.5%). In three regions (Campania, Sardegna and Calabria), on the other hand, the indicator shows an increase, albeit very slight, in the availability of the coast for bathing.

42% of water input to municipal drinking water supply networks gets lost

In 2018, drinking water supply network operators delivered 4.7 billion cubic metres (215 litres per inhabitant per day) to ensure the water uses of the population, small businesses, hotels, offices, commercial, productive, agricultural and industrial activities directly connected to the urban networks, and to meet public demands (street washing, school and hospital water, watering of green areas, fountains and fire-fighting services).[5]

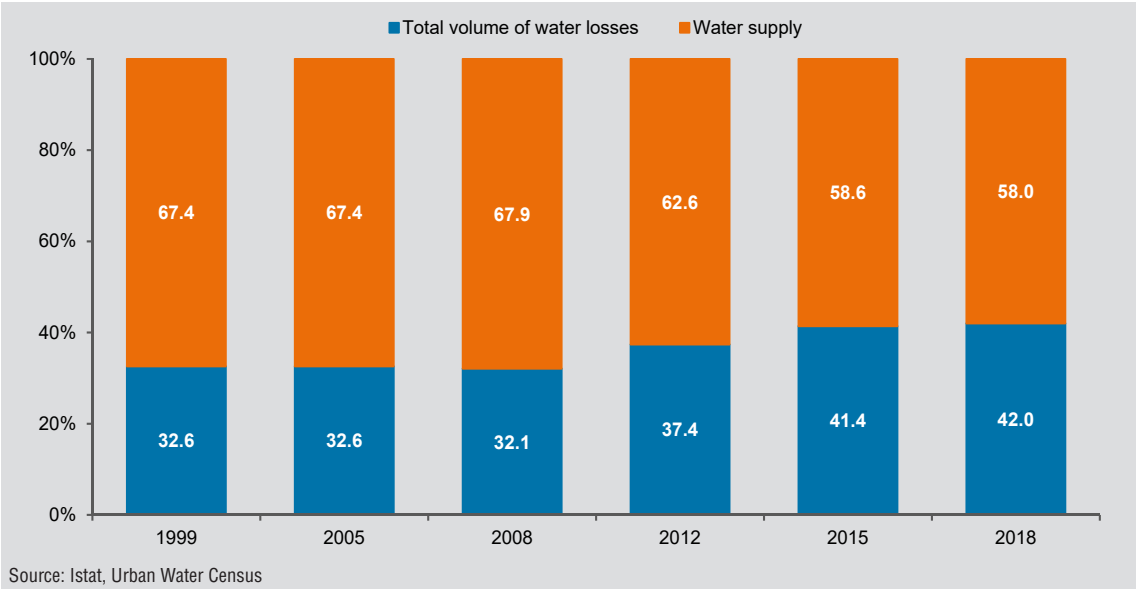
4 The criteria for determining the bathing prohibition are established by the Ministerial Decree (Health) of 30/3/2010, implementing Legislative Decree. n. 116 of 30/5/2008, implementing Directive 2006/7/EC.
5 This quantity includes both billed and free uses.

The per capita supply is on average higher in the municipalities of the North, with a peak in the North-West (254 litres per inhabitant per day) where regional values range from 233 litres per inhabitant per day in Piemonte to 446 in Valle d'Aosta (the region with the highest value). Significantly higher than average per capita volumes may be linked to the spread of drinking fountains, especially in mountainous areas, which can give rise to anything but marginal supplies. Residents in the Islands receive, on average, the lowest volume of water (189 litres per inhabitant per day), although the lowest regional values of the indicator are observed in Umbria (164) and Puglia (152).
While 8.2 billion cubic metres of drinking water were pumped into the municipal supply networks (371 litres per inhabitant per day), total water losses amounted to 3.4 billion cubic metres (156 litres per inhabitant per day). This is a truly considerable volume, equal to the average consumption of about 44 million people for a whole year. In percentage terms, 42% of the water entering the network is lost in distribution.

Severe inefficiency in the drinking water supply network: water losses on the rise

Compared to 2015, total percentage network losses have increased by about half a point (they were 41.4%), confirming the serious inefficiency of the drinking water infrastructure. Thus, the relentless increase in water leakage continues; it has been recorded, at national level, on an almost continuous basis for 20 years, with only a slight decrease in 2008 compared to the previous figure (Figure 7).
Also compared to 2015, in 13 out of 21 regions and autonomous provinces total water losses in distribution are increasing. These range from minimal increases, as in the case of Lazio and Emilia-Romagna, to quite significant increases, as in Liguria, Umbria and Abruzzo. Among the regions where the indicator decreases, the only ones to present a significant change are Friuli-Venezia Giulia, Basilicata and Sardegna, although they still present very high levels of leakage, higher than the national value.

Figure 7. Water supplied for authorised uses and total water losses. Years 1999-2018. Percentage of the volumes fed into the network

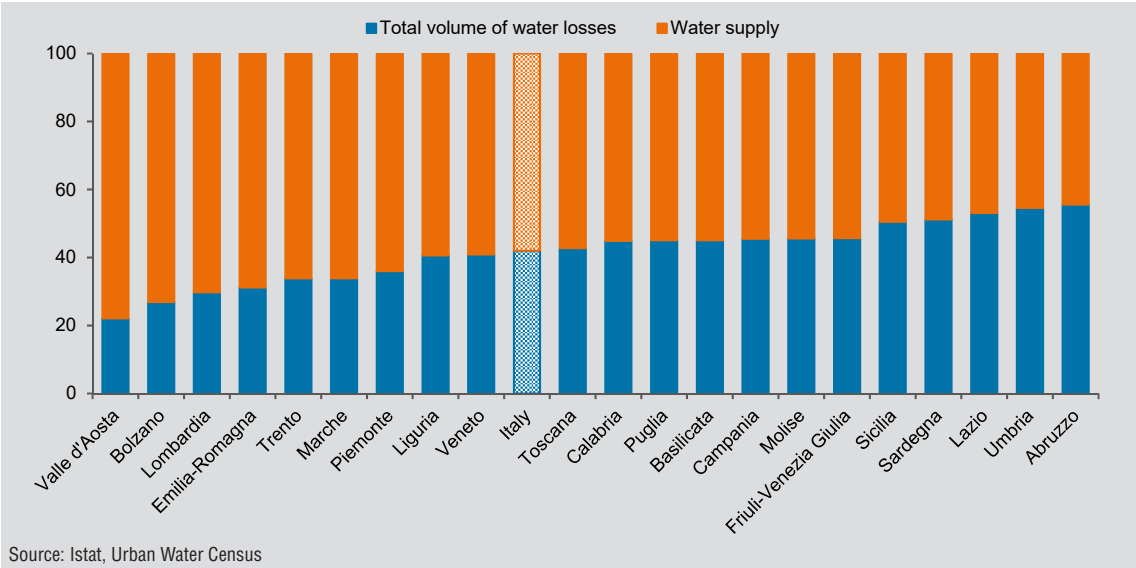


Source: Istat, Urban Water Census

In more than half of the regions, total water losses in municipal drinking water supply networks exceed 45%

In Italy, in about one in three regions water losses in municipal drinking water supply networks are below 35%. The proportion of those with high leakage is greater: one region out of two has total water losses in distribution by more than 45% (Figure 8).
An even more inadequate infrastructural situation is observed in the central and southern regions, which present significant criticalities in about one out of two municipalities. In Abruzzo (55.6%), Umbria (54.6%) and Lazio (53.1%), where the highest regional values are recorded, more than half of the municipalities report distribution losses equal to at least 55% of the volume fed into the network.
A lower level of total network water losses, compared to the national average, is found in all northern regions, excep Friuli-Venezia Giulia (45.7%). The lowest value in 2018 is recorded in Valle d'Aosta (22.1%), although it is about 4 percentage points higher than in 2015.

Figure 8. Water delivered for authorised uses and total water losses in distribution by region. Year 2018. Percentage values of volume injected into the network

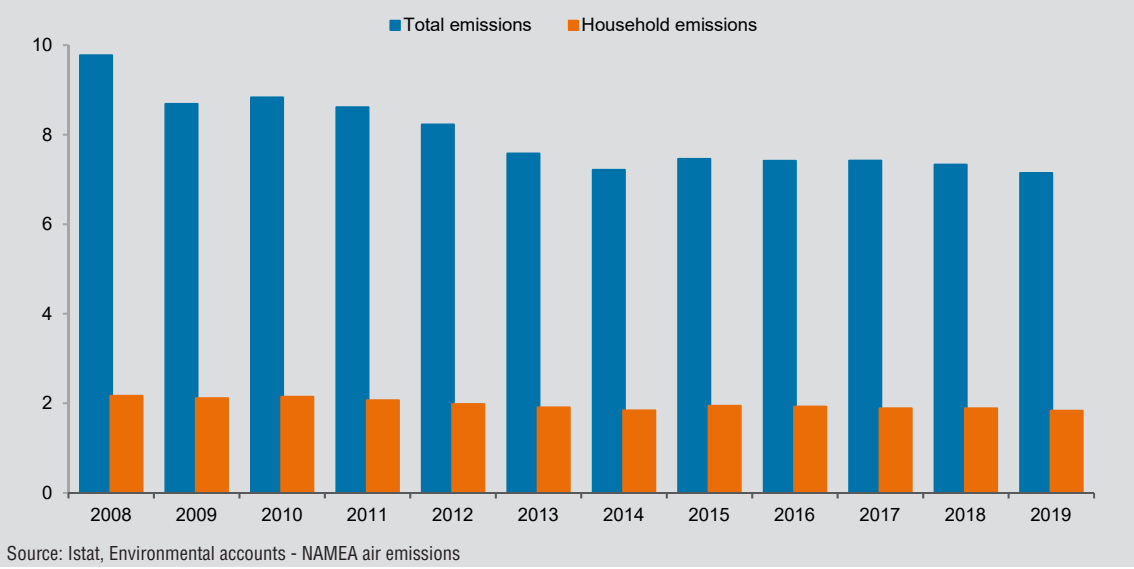


Source: Istat, Urban Water Census

CO_2 and greenhouse gas emissions stable in recent years, as well as the domestic material consumption

In 2019, the emissions of CO_2 and other climate-changing gases (or greenhouse gases, GHG) per capita are 7.1 tonnes of CO_2 equivalent. This confirms the slow decline that began in 2015, when the tonnes emitted per capita were 7.5 (Figure 9).
The share of the emissions generated by households, mainly due to the fuel consumption for private transport and domestic uses, is 25.7%, corresponding to 1.8 tonnes of CO_2 equivalent per capita, slightly lower than in 2015 (26.1%), but higher than in 2008 (22.2%).

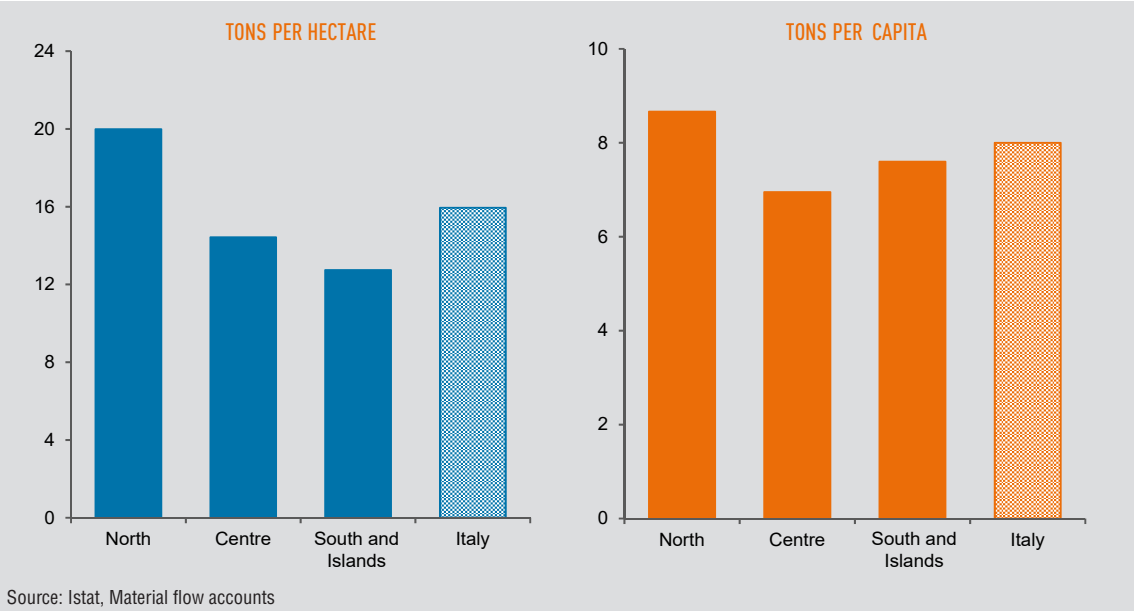
Figure 9. Total emissions of CO_2 and other greenhouse gasses and share generated by households. Years 2008-2019 (a). Tonne of CO_2 equivalent per capita



Source: Istat, Environmental accounts - NAMEA air emissions

As for the Domestic material consumption (Dmc), which represents the pressure exerted by the economic system on the environment by effect of the country's socio-economic dynamics, the phase of stability, started in 2013, keeps going on. In 2018, 489.9 million tonnes of material were consumed, 1.7% more than the previous year.
Considering the breakdown by geographic area, in 2017 50% of Dmc took place in the North, one third in the South and Islands (33%) and the rest in the Centre (17%). In terms of consumption per hectare, the South and Islands show the lowest values, 12.2 tonnes per hectare. The variability between the geographic areas is smaller in terms of per capita values, ranging from 8.7 tonnes per capita in the North to 6.9 in the Centre (Figure 10).

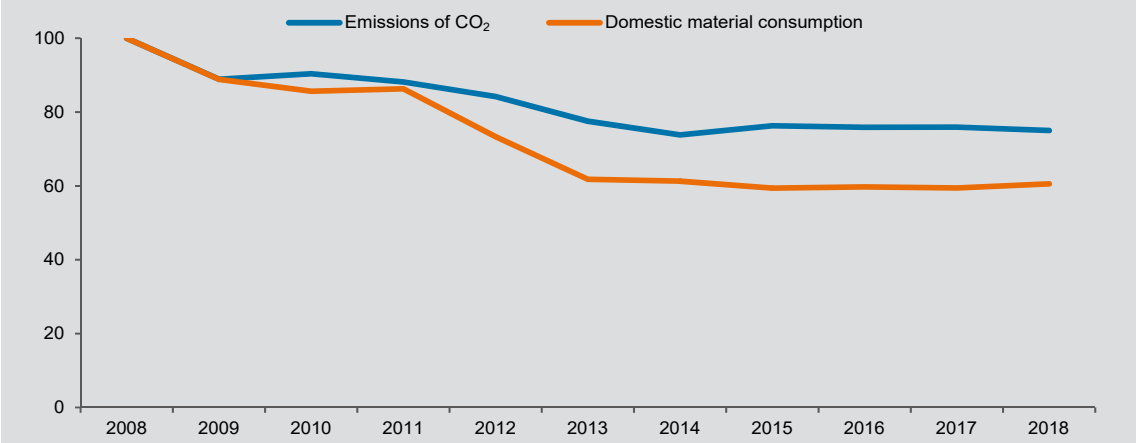
Figure 10. Domestic material consumption per hectare and per capita by geographic area. Year 2017. Tonnes per hectare and per capita



Source: Istat, Material flow accounts

A comparison of the trends of the two pressure indicators by index numbers (year 2008=100) allows us to observe how, since 2013, our economic system has failed to take further steps towards sustainability, by appreciably reducing the direct extraction of domestic resources and the emissions of climate-changing gases (Figure 11).

Figure 11. Domestic material consumption and emissions of CO_2 and other greenhouse gasses. Years 2010-2018. Indexes of per capita values, year 2008 = 100

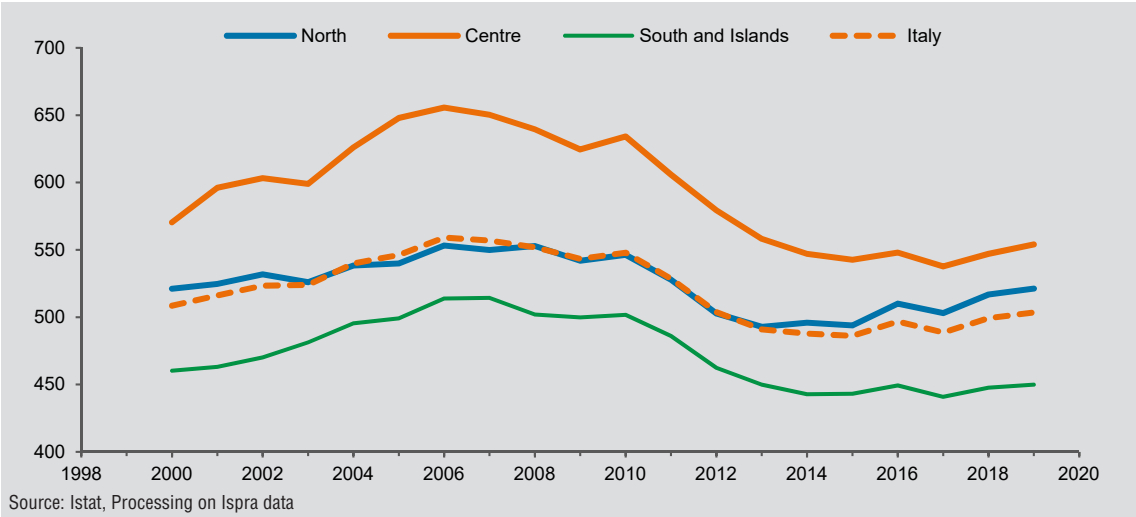


Source: Istat, Material flow accounts; Istat-Ispra, Air emissions inventory and accounts

Stable annual municipal waste production

The production of waste has an important impact on the environment, at every stage of its chain (collection, disposal, incineration, recycling, recovery), and therefore on human health (urban hygiene, soil pollution, emissions from incinerators/ incineration plants, emissions from transport/processing/storage).
The reduction of municipal waste production can also be considered the outcome of policies and consequent actions aimed at improving the environmental quality and reducing the consumption of natural resources.

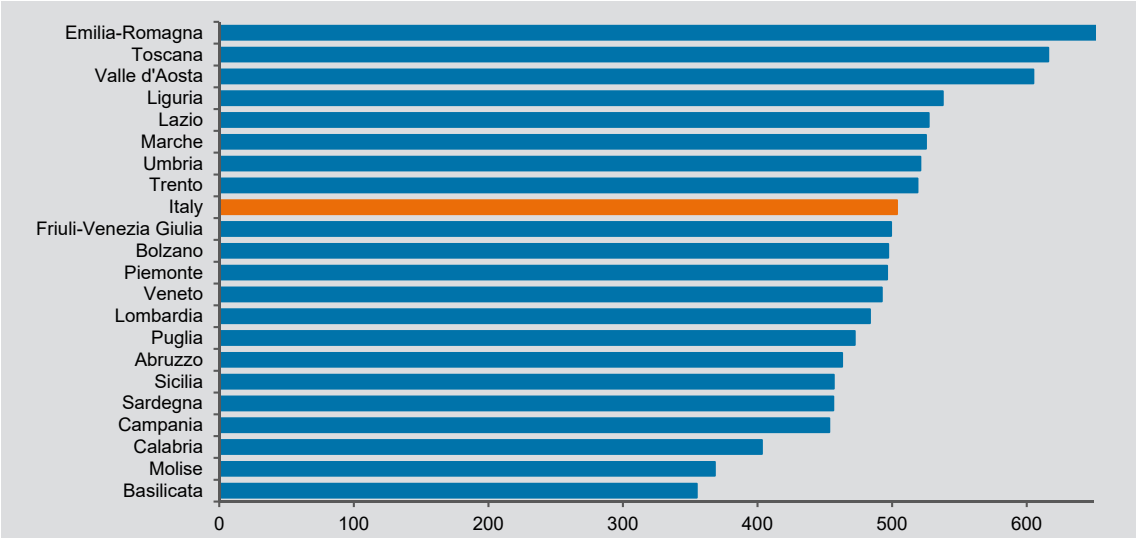
Figure 12. Municipal waste collected by geographic area. Years 2000-2019. Kg per capita



Source: Istat, Processing on Ispra data

In 2019, the production of municipal waste in Italy stands at 30.1 million tonnes, equal to 503.6 kilograms per capita, a value that is almost stable compared to 2018, but increasing compared to 2017 (+15 kilograms per capita), when one of the lowest values in the production of municipal waste in the last twenty years was recorded (Figure 12).
From 1996 to 2006, an increase is observed, reaching a maximum value of 559.1 kilograms, and then falling to a minimum of 486.2 kilograms per capita in 2015. In the period 2006-2019, there was a per capita decrease of about 10%, although since 2017 the value has started to increase slightly again.
The North produces almost half of the municipal waste and contributes more than other areas of the country to the increase recorded since 2017, although in per capita terms values are similar to the national average. The regions of the Centre produce the highest value (554.1 kilograms per capita), which is more than 100 kilograms higher than in the South and Islands.
Emilia-Romagna has the highest per capita values (661 kilograms per inhabitant), while Basilicata has the lowest, with 353 kilograms per capita (Figure 13).

Figure 13. Municipal waste collected by region. Year 2019. Kg per capita



Source: Istat, Processing on Ispra data

Landfill of waste

Waste that cannot be further valorised is disposed of in landfills, which is in theory the last option in the hierarchy of waste management. The Eu target is to landfill no more than 10% of municipal waste by 2035.
Since the early 2000s, there has been a gradual reduction in this type of treatment of municipal waste, which has a high impact on the environment and human health.
In Italy, in 2019, 20.9% of the total amount of municipal waste was sent to landfill, marking a strong reduction compared to the past, due to material and energy recovery operations. In the North, the figure was 10%, while it exceeded 30% in the South and Islands.
The percentages recorded in the different territories are the result of regional waste management policies and the effect of extra-regional waste inflows and outflows. In particular, the

low value of the phenomenon for Campania (1.3%) depends largely on the export of waste outside the region. On the contrary, the high percentage value of Molise is due to the quantities imported from other regions and it does not depend on the low values of domestic production.

During the lockdown, there was a reduction in municipal waste production

In the months marked by the lockdown, the closure of the majority of production activities affected the total production of municipal waste, resulting in a clear reduction.
The Utilitalia foundation estimates that, from February 21st to August 8th of 2020, the overall municipal waste decreased by 16% compared to the same period in 2019, both for separate and mixed waste collection (-15%)[6].

Complete overview of contaminated sites still difficult

In 2019, in Italy, sites contaminated by substances such as asbestos, dioxins, hydrocarbons, pesticides, PFAS (perfluoroalkyl substances) are 31,686, of which 31,645 are of regional competence and 41 of national competence[7].
Contaminated areas amount to 242,026 hectares, distributed over all Italian regions, although the phenomenon tends to polarise in the North (152,235 hectares) and in South and Islands (69,778 hectares). In absolute terms, Piemonte is the region with the largest extension of contaminated surface area (108,207 hectares), followed by Sardegna, Lombardia, Puglia and Friuli-Venezia Giulia, which have contaminated surfaces of more than 10,000 hectares. In relative terms, however, while Piemonte is the region with the highest percentage of contaminated land in relation to the total surface area (4.26%), significant portions of contaminated areas are also found in Friuli-Venezia Giulia (1.92%), Sardegna (1.24%) and Puglia (0.93%), all above the national average (0.80%).
There are currently 41 sites of national interest in Italy, covering 171,198 hectares of contaminated land area, and they are present in all regions except the Autonomous Province of Bolzano and Molise. In most cases, these are areas affected by the impacts of pre-existing or still active industrial and mining activities. The sites of national interest are concentrated in the North and South of the country, respectively with 20 sites and 116,234 hectares of surface area and 16 sites and 45,509 hectares of contaminated surface area, including the asbestos site at Casale Monferrato (73,895 hectares) in Piemonte and the Sulcis-Iglesiente-Guspinese mining district (19,751 hectares) in Sardegna. The indicator analysed does not provide a complete description of the national situation due to the still partial information provided by the regional registers. It makes possible, however, an initial assessment of the quality of the environment and of the regional areas potentially at risk for community well-being and local economic development.

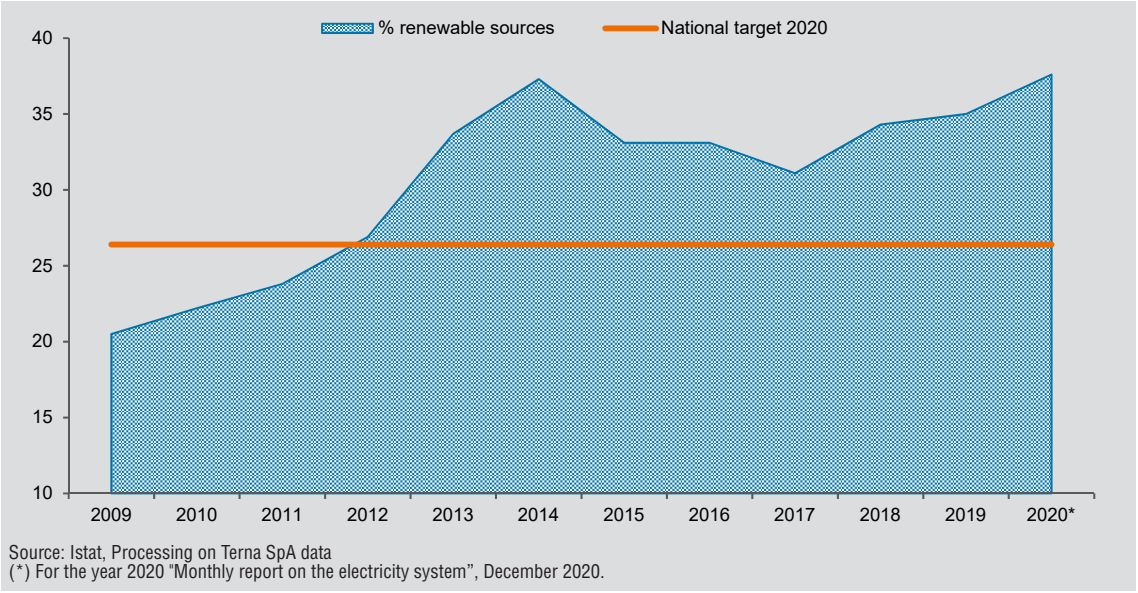
6 Green Book “I dati sulla gestione dei rifiuti urbani in Italia” 2020.

7 The Sites of National Interest (Sin) and Sites of Regional Interest (Sir) for the purposes of remediation are identified by Article 252, paragraph 1 of Legislative Decree 152/06 and subsequent amendments and additions. The identification, definition of the perimeters and remediation of contaminated sites are the responsibility of the regions, the competence of the sites defined as of "national interest" is delegated to the Ministry of Environment in relation to the characteristics of the area, the quantity and danger of pollutants and the importance of the impact on the surrounding environment in terms of health and ecological risk.

Energy consumption reduces in 2020, as the share of renewable energy increases

The share of electricity consumption generated from renewable energy sources (hydroelectric, biomass thermal, geothermal, wind and photovoltaic) has been growing steadily since 2017, reaching values of over 37% in 2020, an increase of about 3 points in the last three years. These values are well above the 26.4% target set for 2020[8] (Figure 14).

Figure 14. Electricity from renewable sources. Years 2009-2020. Percentage values on the the gross domestic consumption of electricity

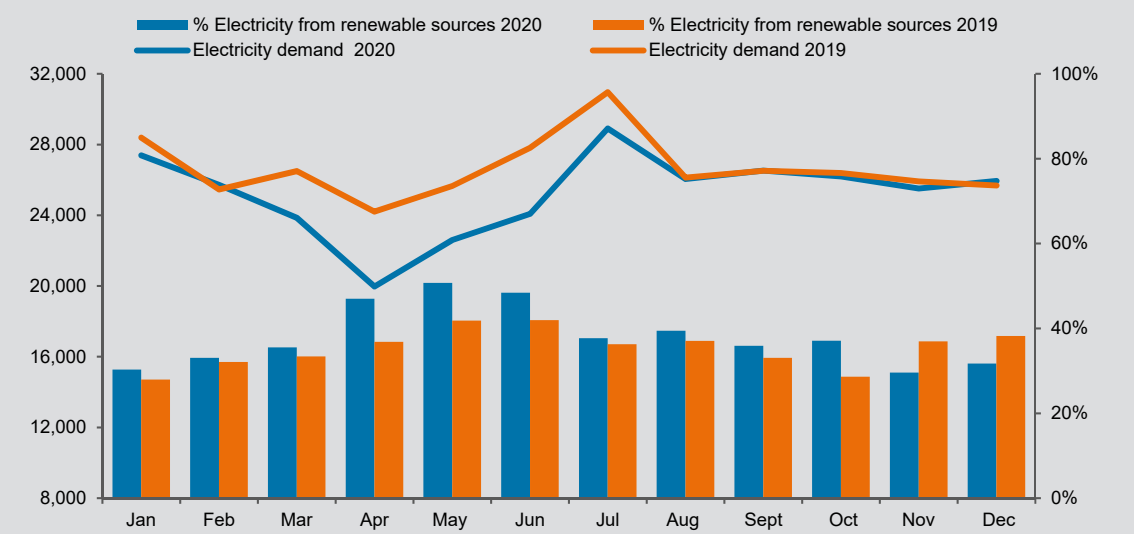


Source: Istat, Processing on Terna SpA data
(*) For the year 2020 "Monthly report on the electricity system", December 2020.

In 2020, the overall electricity demand (302.7 TWh) was lower (-5.3%) than in 2019[9]. In the months from March to July, coinciding with the lockdown set for the COVID-19 health emergency, the values of electricity consumption were always lower than the corresponding monthly values for 2019, reaching a reduction of over 17% in April. The highest consumption was recorded in July (28.9 TWh), but this was about 7% lower than the corresponding monthly value of the previous year (Figure 15).
In 2020, production from renewable sources increased by approximately 1%, mainly due to the increase in photovoltaic energy production. In May, renewable sources contributed more than 53%, exceeding the share generated by thermoelectric power plants powered by the more polluting fossil fuels.

8 The target is set out in the National Renewable Energy Action Plan (NREAP), in accordance with Directive 2009/28/EC.
9 Terna S.p.A. - Monthly electricity system report, December 2020.

Figure 15. Electricity demand and consumption from renewable energy sources per month. Years 2019 and 2020. GWh and percentage values



Source: Istat, Processing oni Terna SpA data - Monthly electricity system report

Reduction of some pollution during the lockdown[10]

Based on the observations of the National System for Environmental Protection (SNPA) available for the year 2020, in the lockdown period, a general reduction in the concentrations of nitrogen oxides11, carbon monoxide and benzene is registered in the whole Country.

This reduction (around 50%, on avergage, for NO_2), varies over the observed period from less than 10% to over 70% at the monitoring stations located near the major roads (classified as 'urban traffic')[12].

The situation for particulate matter (PM_{10}, $PM_{2.5}$), which is a complex mixture of solid and liquid particles dispersed in the atmosphere, is less clear.

In March and April 2020, there was a reduction in electricity demand and industrial production compared to the same period in 2019. As for house heating[13], no special reductions were observed during the lockdown; on the contrary, in some areas, partly due to a colder than usual month of March, there was a moderate increase in emissions compared to the average for the period.

Moreover, the lockdown did not affect ammonia emissions[14] produced by agricultural and livestock activities, which were not concerned by the COVID-19 related limitation measures.

10 The section on the air quality dimension was carried out in collaboration with Ispra - Silvia Brini and Giorgio Cattani.

11 Nitrogen oxide (NO) is the predominant form emitted directly; nitrogen dioxide (NO_2) is partly emitted directly and partly formed in the atmosphere.

12 As road transport is the main anthropogenic source of nitrogen oxides (on a national basis, more than 50% of emissions are attributable to vehicle traffic) and one of the main sources of benzene and carbon monoxide, this contraction is largely explained by the significant reductions in traffic flows which, on a national basis, reached around -70% for light vehicles and -38% for heavy vehicles from mid-March onwards, before gradually returning to previous levels in the first half of June.

13 This includes emissions from biomass combustion, which are an important contributor to primary PM concentrations.

14 Important precursor of secondary particulate matter.

The comparison with previous years should be interpreted with caution due to the variability of meteorological conditions that can occur from one year to another. Periods with higher PM_{10} values are often periods of atmospheric stagnation and reduced recirculation, and coincide with high $PM_{2.5}$ values; they are particularly frequent in the Po valley, in the flat inland areas, and in the subalpine and sub-Apennine valleys during the winter months. The lockdown has only marginally affected the most critical period of the year for the accumulation of pollutants. As a result, in 2020, according to a preliminary estimate of SNPA, about 29% of the monitoring stations located throughout the national territory have detected exceedances of the threshold values, confirming the difficulty to comply with the legal limits set, despite the long-term trend of decreasing concentrations of particulate matter.

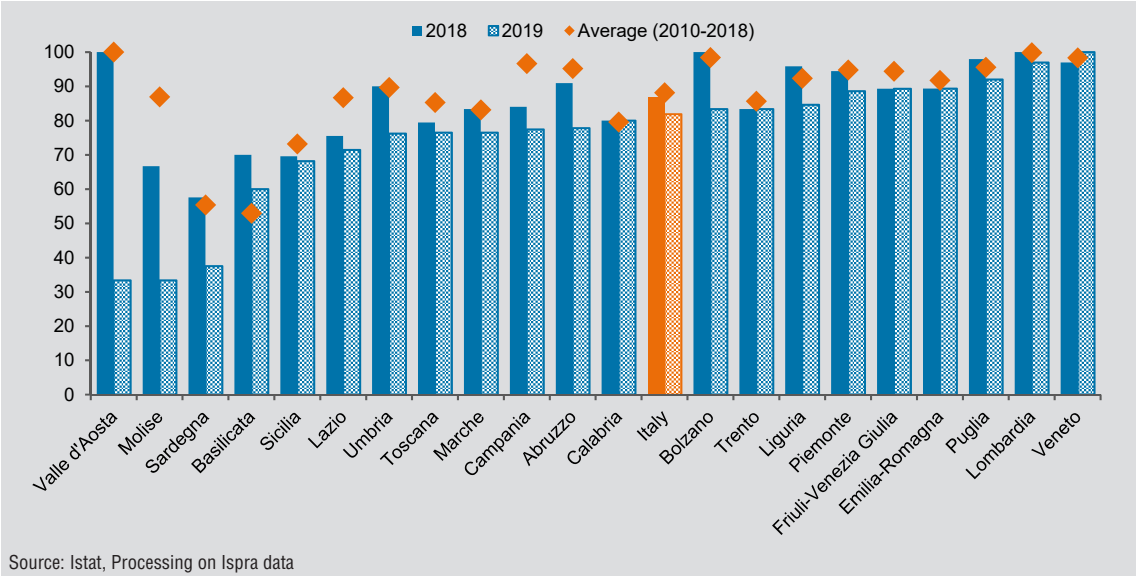
$PM_{2.5}$ air pollution: severe situation especially in the North

Air pollution caused by human activities is a degradation factor for air quality, and a risk factor for human health and the ecosystems. It occurs when gases, dust and smoke are released into the air. The World Health Organisation (WHO) classifies air pollution as the main environmental health risk, especially in Europe.
Air pollution depends in a complex way on multiple factors, which can be observed more effectively at a micro scale than at a local or regional scale. This makes the selection of meaningful air quality indicators difficult. Generally, we focus on those for which a link between exposure and short- and long-term health effects is recognised. Of these, particulate matter ($PM_{2.5}$ and PM_{10}), Nitrogen dioxide (NO_2) and ground-level Ozone (O_3) are the preferred components for monitoring. The WHO considers $PM_{2.5}$ to be the most harmful air pollutant to health. Air concentrations of these substances reflect, at least in part, the levels and temporal variability of concentrations of other pollutants. The $PM_{2.5}$ indicator, which is suitable for assessing air pollution in urban, suburban and rural areas, is defined with reference to the percentage of valid measurements above the WHO health threshold value (10 µg/m^3) out of the total number of valid measurements of annual average $PM_{2.5}$ concentrations for all station types, stratified by main source of pollution (traffic, background and industrial) and location (urban, suburban and rural). Given the widespread distribution of regional monitoring stations, the indicator is representative of the situation over the entire territory of the regions and autonomous provinces[15].
In Italy, since 2010, exceedances of the WHO reference values were always detected in over 80% of the measurements made. However, there has been a slight trend of improvement over the last ten years, from 92.9% in 2010 to 81.9% in 2019.
The indicator reaches the highest percentages in the northern regions, especially those in the Po valley, with an average ranging from 97.5% in 2010 to 91.2% in 2019. In the Centre, a more marked improvement trend is observed (from 92.2% in 2010 to 74.4% in 2019). In the South and Islands, on the other hand, the trend is more attenuated and slowly improving, from 84.6% in 2010 to 73.4% in 2019, with values below 70% in the two-year period 2016-2017.

15 The representativeness of the indicator was also strengthened by estimating $PM_{2.5}$ concentrations at monitoring stations that only measured PM_{10}.

The regional detail of the indicator in 2019, compared to the previous year and to the average of the period 2010-2018, shows an improvement in all territories, with the exception of Veneto, where the exceedances increase, compared both to 2018 (+3 percentage points) and to the 2010-2018 average (+1.7).
In 2019, besides Veneto (100% exceedances per 100 valid measurements), all other regions with the highest $PM_{2.5}$ pollution (over 80%) are in the North, with the exception of Puglia (95.6%). In addition, most regions in central and southern Italy also show significantly high values of the indicator (between 60 and 80%) (Figure 16).

Figure 16. Percentage of valid measurements above the WHO health reference value (10 µg/m) out of the total number of valid measurements of annual average $PM_{2.5}$ concentrations by region. Years 2018, 2019 and 2010-2018 average. Per 100 valid measurements

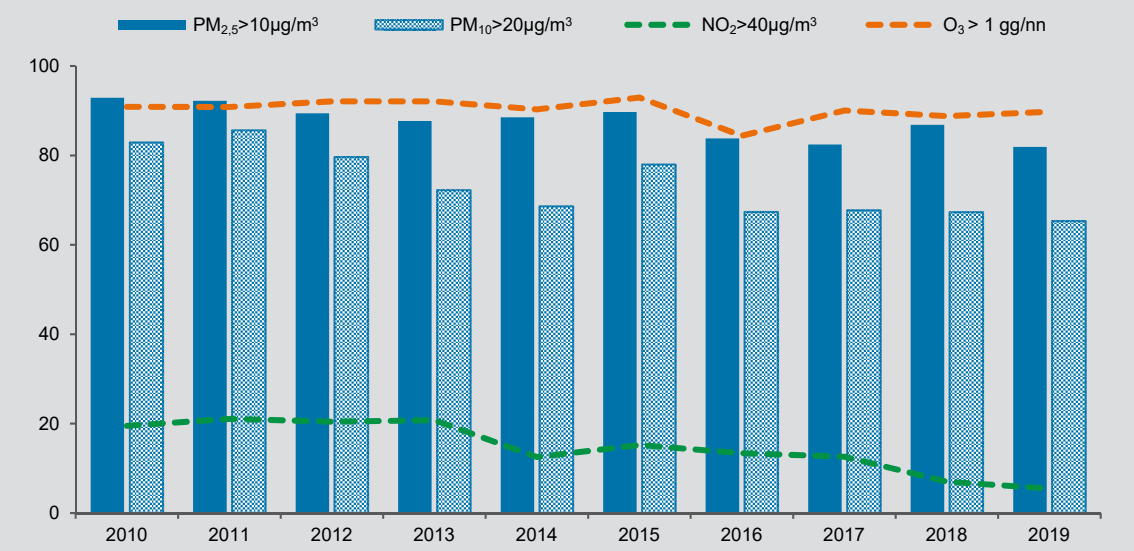


Source: Istat, Processing on Ispra data

Other pollutants also exceeding limits

$PM_{2.5}$ is strongly correlated with PM_{10} (which partially includes it), as well as with NO_2 and O_3, which are produced by chemical transformations in the atmosphere involving similar precursors. The relevance of the indicator is evident when comparing its trend with those of PM_{10} exceedances above the WHO reference value, NO_2 exceedances of the EU limit, which coincides with the WHO limit, and the failure to achieve the long-term objective for Ozone (Figure 17). It is significant, in fact, that at a regional level in all the most critical situations for $PM_{2.5}$ exceedances is also observed the highest percentage of non-compliance with the long-term objective for Ozone. In Lazio, Campania and Molise, however, at values below 80% of the $PM_{2.5}$ indicator, correspond high percentages of exceedances for PM_{10} and NO_2.

Figure 17. Percentage of valid measurements of yearly average concentration of $PM_{2.5}$ and PM_{10} above the WHO health reference value (10 and 20 µg/m³ respectively), EU statutory limits of NO_2 (40 µg/m³) and failure to meet the long-term target for O_3 (>1 day/year of exceedance of daily average limit set at 120 µg/m³). Years 2010-2019. Per 100 valid measurements



Source: Istat, Processing on Ispra data

Due to the repeated exceeding of the limits set for PM_{10}, NO_2 and $PM_{2.5}$, Italy is the object of several infringement procedures under the European Directive 2008/50/EC[16]. One of the first infringement procedures opened by the European Commission versus Italy was initiated in 2014 due to the systematic and continuous exceeding of these limits in various areas of the Country. Moreover, according to the Commission, the measures envisaged by Italy are not yet sufficient to reduce the exceedance periods and to ensure compliance to norms. Human well-being and the stability of local communities strongly depend on climate change, both locally and globally, and on the effects of extreme weather events. Climate change affects human health in multiple and complex ways, putting pressure on health systems that are often fragile and unable to deal with continuous and overlapping emergencies. Families and livelihoods are put at risk by the increase in frequency and severity of extreme weather conditions. The distribution, exposure and effect of weather and such events do not affect them in the same way everywhere, but the vulnerability of different contexts can amplify or mitigate the impacts.

Average temperatures and heavy rainfall increase in 2020[17]

In meteorological and climatic terms, 2020, compared to the 1981-2010 period, confirms the gradual increase in minimum and maximum temperatures, respectively by +0.9 °C and +1.3 °C on national average. Increases are higher in the Centre (minimum temperature = +0.9 °C and maximum temperature = +1.4 °C) and in the North (minimum temperature =

16 Despite the fact that the $PM_{2.5}$ and PM_{10} limits set by European Directive 2008/50/EC (25 and 40 µg/m³ respectively) are higher than the WHO reference values (10 and 20 µg/m³ respectively), Italy is in the infringement procedure.

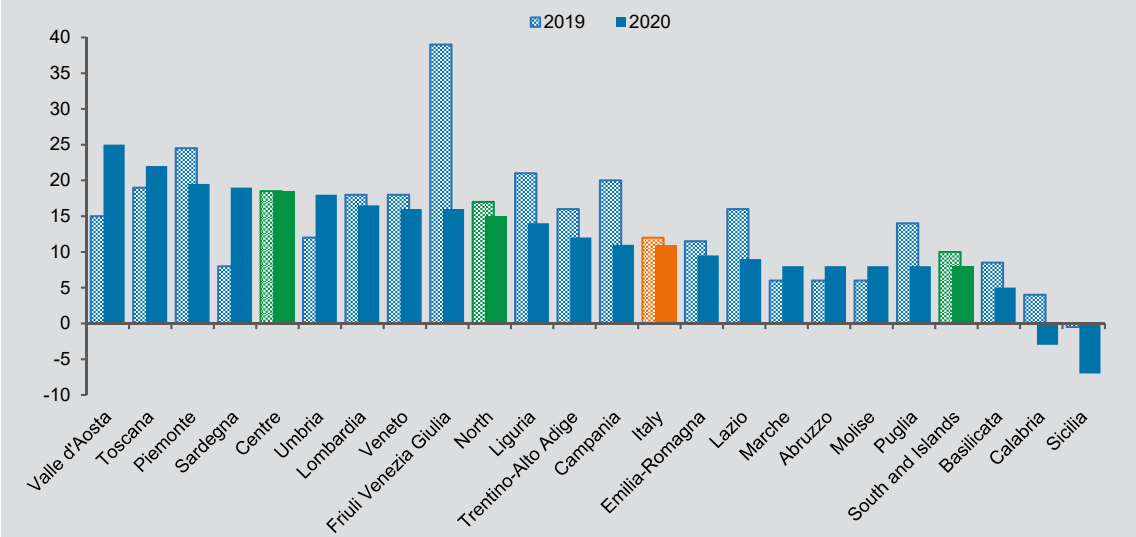
17 The analysis of weather and climate events was carried out in collaboration with Crea Agriculture and Environment - Roberta Alilla, Flora De Natale, Barbara Parisse.

+1.3 °C and maximum temperature = +1.6 °C). Precipitation also is on the raise (+1%), although with differences over the territory, with considerable increases concentrated mainly in the North-East (with peaks of +19.3% in Trentino-Alto Adige) and reductions of more than 7% in most of the South. The 2020 rainfall figure differs sharply from that recorded in 2019, where the difference at national level reached +21%.
In order to look more specifically at these variations, which are also a source of discomfort for the population, new indicators have been included in the Bes framework, measuring variations in frequency and intensity of extreme events[18].

Increasing duration of warm spells

The Warm Spell Duration Index (WSDI), which represents the number of days in the year when the maximum temperature is above the 90th percentile of the distribution over the reference climate period (1981-2010), for at least six consecutive days, is used to identify prolonged and intense periods of heat. Unlike indices based on a fixed threshold value, this index is representative of local climate variations. The WSDI identifies heat periods in a relative sense, which can occur at any time of the year. For each geographic area, the index is calculated annually as an areal median.

Figure 18. Warm spell duration index (WSDI): deviations from the climatic median (reference period 1981-2010) by region and geographic area. Years 2019 and 2020



Source: Copernicus - European Union's Earth Observation Programme - Gridded dataset of climate reanalysis, ERA5 hourly data

In the last two years (2019-2020), the variations with respect to the climate value are always positive in all regions, except Calabria and Sicilia. Overall, 2020 shows a lower incidence of heat waves than 2019 (Figure 18). At the national level and in the areas of the North and the South, there was a slight decrease in the index, while in the Centre the situation remained unchanged. Overall, the phenomenon is less pronounced in the South.

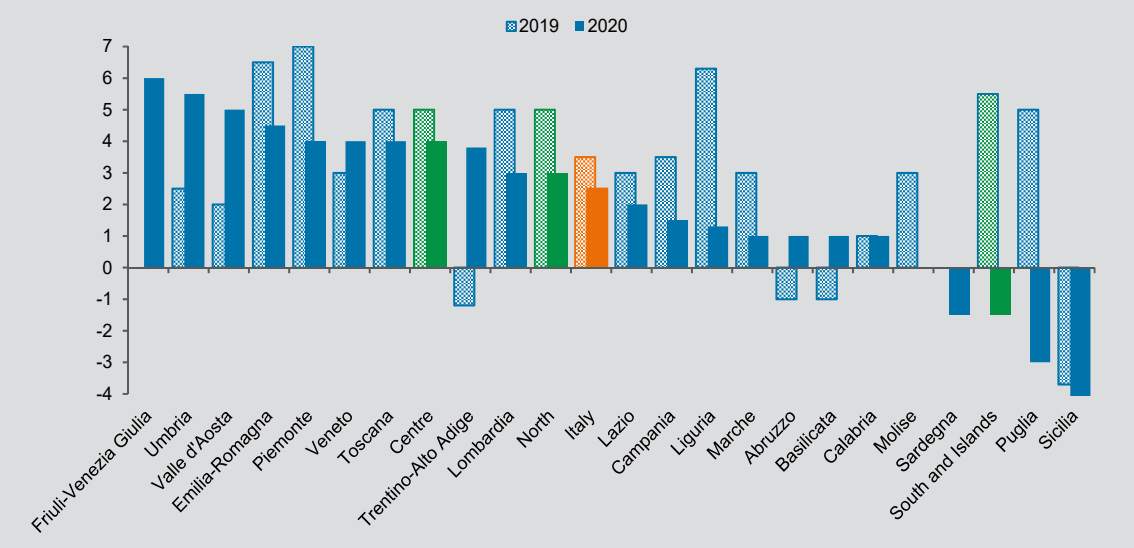
18 The source of the data is the gridded climate reanalysis dataset ERA5 hourly data on single levels from 1979 to present, from the EU Copernicus Programme.

At the national level, the worst years were 2011 and 2015, with differences of +26 and +21 days, respectively. The North (+37 and +29 days) and the Centre (+32 and +23 days) also experienced the greatest differences in these years, with the Centre also being particularly affected in 2012 (+24 days). The phenomenon is slightly less pronounced in the South, where the highest values were recorded in 2015 (+21 days) and 2017 (+19 days), and a downward trend can be seen from 2017 onwards.

Increased number of dry days in 2020

The Consecutive Dry Days (CDD) index represents the maximum number of consecutive days in a year with daily precipitation of less than 1 mm.
It is one of the most widely used indicators of extreme events to describe dry periods, the effects of which also affect the quality of the environment and thus people's health, by degrading air quality and reducing water supplies.
In the last two years, the number of consecutive days without rain was higher than the climatological median (1981-2010). The phenomenon was less pronounced in 2020 than in 2019. In the South, in particular, it is lower than the climatological median (Figure 19). The territorial variability is remarkable: especially in the North-East and in some internal peninsular areas, the index values increased in 2020, up to a variation of +6 days for Friuli-Venezia Giulia. On the contrary, in Puglia from 2019 to 2020 the CDD index decreased by 8 days.

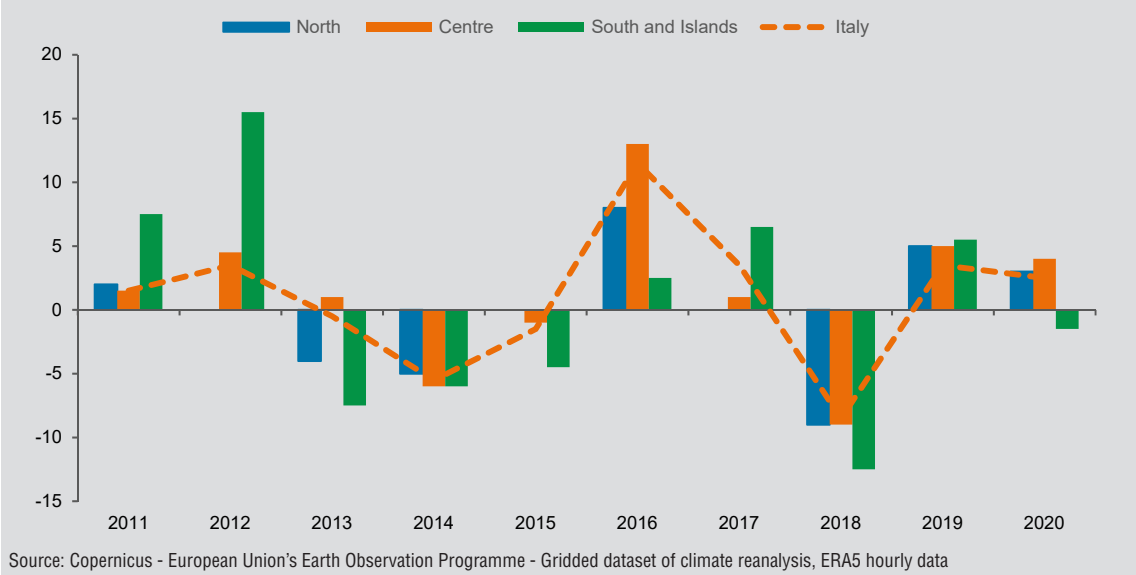
Figure 19. Consecutive Dry Days (CDD): deviations from the climatic median (reference period 1981-2010) by region and geographic area. Years 2019 and 2020



Source: Copernicus - European Union's Earth Observation Programme - Gridded dataset of climate reanalysis, ERA5 hourly data

Figure 20 shows the cyclical trend for the decade 2011-2020, with maximum positive differences for the South and Islands and the Centre, respectively in 2012 (+16 days) and 2016 (+13 days), and peaks of negative changes in 2018 for all geographical areas (down to -13 days for the South and Islands).

Figure 20. Consecutive Dry Days (CDD): deviations from the climatic median (reference period 1981-2010) by geographic area. Years 2011-2020



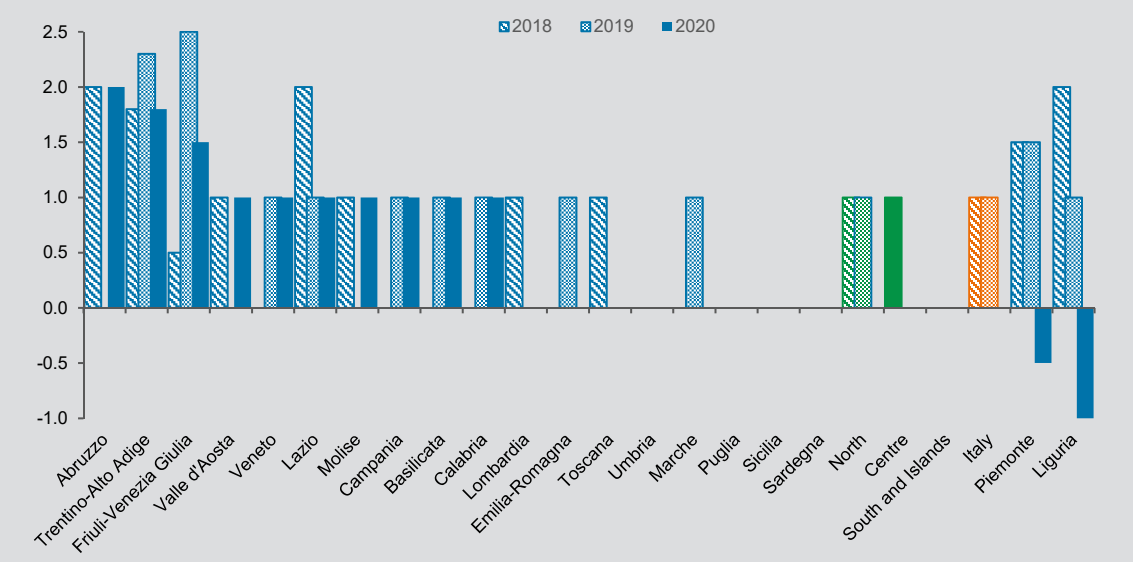
Source: Copernicus - European Union's Earth Observation Programme - Gridded dataset of climate reanalysis, ERA5 hourly data

High variability of extreme precipitation events

The R50mm index (number of severe rain days) represents the number of days in a year when the total daily precipitation is 50 mm or more. It is an index of extreme weather and climate events, measuring days of very heavy rainfall[19], that have an impact on people's well-being and health. In particular, floods or landslides are often associated with such events in our Country. Actually, most of the floods occurred in our Country coincided with similar events. For instance, the flood of Florence in November 1966 came after the falling, over the entire Arno river basin, of 160 mm of rain in 24 hours, with peaks of 250-300 mm. In Italy, the R50 mm index shows a positive variation (+1 day) in 6 of the 10 years observed. The index does not show negative variations, except for the North in 2015.
In 2020, in about half of the regions, the index variations were positive, while in Piemonte and Liguria they were negative. In the remaining regions, the index value coincides with the climate median. Considering the three geographic breakdowns and the whole Country, 2020 data show no change, while the South stands out for the absence of changes in all three years.

19 The precipitation value of 50 mm in one day is very high, corresponding to 50 litres of water poured on one square metre of surface, the effects of which can be disastrous.

Figure 21. Extreme precipitation events (R50mm): deviations from the climatic median (reference period 1981-2010) by region and geographic area. Years 2018-2020



Source: Copernicus - European Union's Earth Observation Programme - Gridded dataset of climate reanalysis, ERA5 hourly data

The trend of the absolute values of the R50mm index in the last ten years locates the most intense phenomena in Friuli-Venezia Giulia, Liguria and the Autonomous Province of Trento. Friuli-Venezia Giulia stands out for exceeding the climatic median value (2.5 days) over the whole period, except for the year 2015, with a peak in 2014, with 6 days of very intense rain. In the Autonomous Province of Trento, variations were positive for 6 out of 10 years, with a peak of 4 days in 2020, 3 more than the median value, and a general upward trend over the observed period. The maximum value in Liguria was recorded in 2018 (4 days, twice the climatic median). In 2019, positive deviations were detected in the three territorial units.

Indicators

1. **Emissions of CO_2 and other greenhouse gasses:** Tonnes of CO_2 equivalent per inhabitant.
   Source: Istat-Ispra, Air emissions inventory and accounts.
2. **Domestic material consumption:** Domestic material consumption measures the apparent consumption of materials in a national economy, i.e. materials that are used in economic processes in a given year. It is calculated as direct imports (IM) of material plus domestic extraction (DE) of materials minus direct exports (EX).
   Source: Istat, Material flow accounts.
3. **Water losses in urban supply system:** Percentage of the total volume of water losses in municipal drinking water supply networks (difference between volumes fed into the network and supplied authorised volumes).
   Source: Istat, Urban Water Census.
4. **Landfill of waste:** Percentage of municipal waste sent to landfill (including municipal waste streams into and out of other regions) on total municipal waste collected.
   Source: Ispra, Waste statistics.
5. **Air quality - $PM_{2.5}$:** Percentage of valid measurements above the WHO health reference value (10 µg/m^3) out of the total number of valid measurements of annual average $PM_{2.5}$ concentrations for all station types (urban and suburban traffic, urban and suburban industrial, urban and suburban background, rural).
   Source: Istat, Processing on Ispra data.
6. **Coastal bathing waters:** Percentage of authorized coastal bathing waters on the total of the coastal line in accordance with the regulations in force. The indicator is calculated by subtracting from the bathing waters the stretches of coast forbidden for bathing during the entire bathing season due to levels of contaminants beyond the thresholds of health risk.
   Source: Istat, Processing on Ministry of Health data.
7. **Urban green:** Square meters of urban parks and gardens per inhabitants in provincial capital Municipalities.
   Source: Istat, Survey on urban environmental data.
8. **Satisfaction for the environment:** Percentage of people aged 14 and over very or quite satisfied of the environmental situation (air, water, noise) of the area where they live.
   Source: Istat, Survey on Aspects of daily life.
9. **Concern for biodiversity loss:** Percentage of people aged 14 and over who believe that biodiversity loss is among the five most important environmental problems.
   Source: Istat, Survey on Aspects of daily life.
10. **Concern for climate change:** Percentage of people aged 14 and over who believe that climate change, greenhouse effect and ozone hole are among the five most important environmental problems.
    Source: Istat, Survey on Aspects of daily life.
11. **Contaminated sites:** Size of contaminated sites.
    Source: Istat, Processing of data from Ministry of Environment, Land and Sea and Ispra.
12. **Population at risk of landslides:** Percentage of population living in areas subject to landslide on total population. The population considered is that of the 2011 Census. The Indicator is calculated on the basis of the ISPRA National Mosaicature of the Hydrogeological Plans (PAI). The areas considered also include the areas of possible evolution of current phenomena and those susceptible to new landslides.
    Source: Ispra, Hydrogeological instability in Italy: hazard and risk indicators.
13. **Population at risk of flood:** Population at flood risk resident in medium flood hazard zones (Return period 100-200 years; D. Lgs. 49/2010). The population considered is that of the 2011 Census. The Indicator is calculated on the basis of the ISPRA National Mosaicature of the Hydrogeological Plans (PAI), with reference to risk scenario P2.
    Source: Ispra, Hydrogeological instability in Italy: hazard and risk indicators.
14. **Sewage treatment:** Percentage of polluting loads collected in secondary or advanced plants, in equivalent inhabitants, compared to the total urban loads (Aetu) generated.
    Source: Istat, Urban Water census; Survey on urban environmental data.
15. **Protected natural areas:** Percentage share of terrestrial protected natural areas included in Italian Official List of Protected Areas (Euap) and Natura 2000 Network.
    Source: Istat, Processing on Ministry of the Ecological Transition data.
16. **Electricity from renewable sources:** Percentage of energy consumption provided by renewable sources on gross electricity consumption.
    Source: Terna S.p.A., Annual statistics of electricity production and consumption in Italy.
17. **Soil sealing from artificial land cover:** Percentage of soil sealed following a change from non-artificial to artificial coverage.
    Source: Ispra, Soil consumption, territorial dynamics and ecosystem services.
18. **Municipal waste collected:** Municipal waste per capita (in Kg).
    Source: Istat, Processing on Ispra data.
19. **Warm Spell Duration Index:** Warm spell duration index (WSDI) is defined as annual or seasonal count of days with at least 6 consecutive days when the daily maximum T exceeds the 90th percentile in the calendar 5-day window for the base period 1979-2009.
    Source: Copernicus - European Union's Earth Observation Programme - Gridded dataset of climate reanalysis, ERA5 hourly data.
20. **Extreme precipitation events:** Frequency of daily rainfall exceeding 50 mm/day.
    Source: Copernicus - European Union's Earth Observation Programme - Gridded dataset of climate reanalysis, ERA5 hourly data.
21. **Consecutive Dry Days:** Maximum number of consecutive dry days per time period with daily precipitation amount of less than 1 mm.
    Source: Copernicus - European Union's Earth Observation Programme - Gridded dataset of climate reanalysis, ERA5 hourly data.

Indicators by region and geographic area

REGIONS AND GEOGRAPHIC AREAS	Emissions of CO_2 and other greenhouse gases (a) 2019 (*)	Domestic material consumption (b) 2019	Water losses in urban supply system (c) 2018	Landfill of waste (d) 2019	Air quality - $PM_{2.5}$ (e) 2019	Coastal bathing waters (f) 2019	Urban green (g) 2018	Satisfaction for the environment (h) 2020 (*)	Concern for biodiversity loss (h) 2020 (*)
Piemonte	....	....	36.0	12.0	88.6	-	25.7	70.7	26.0
Valle d'Aosta/Vallée d'Aoste	....	....	22.1	39.5	33.3	-	18.9	84.2	24.2
Liguria	....	....	40.6	36.9	84.6	57.4	7.2	78.9	28.0
Lombardia	....	....	29.8	4.2	97.0	-	28.2	69.5	25.2
Trentino-Alto Adige/Südtirol	....	....	31.1	11.5	83.3	-	222.9	89.5	28.0
Bolzano/Bozen	....	....	*26.9*	*1.3*	*83.3*	-	*21.5*	*87.9*	*31.7*
Trento	....	....	*33.9*	*20.9*	*83.3*	-	*406.2*	*91.0*	*24.3*
Veneto	....	....	40.9	14.4	100.0	64.2	30.1	73.1	25.2
Friuli-Venezia Giulia	....	....	45.7	7.8	89.3	42.2	67.3	85.3	27.3
Emilia-Romagna	....	....	31.2	9.4	89.4	61.7	43.1	72.8	27.9
Toscana	....	....	42.8	33.8	76.5	71.3	23.2	79.0	26.3
Umbria	....	....	54.6	41.1	76.2	-	98.6	77.9	24.2
Marche	....	....	33.9	42.8	76.5	73.2	31.4	80.7	22.5
Lazio	....	....	53.1	20.2	71.4	69.5	21.3	64.7	25.6
Abruzzo	....	....	55.6	34.4	77.8	75.5	27.2	74.6	23.6
Molise	....	....	45.6	90.0	33.3	71.9	12.4	81.2	26.4
Campania	....	....	45.5	1.3	77.4	70.0	13.4	56.4	20.7
Puglia	....	....	45.1	36.0	92.0	74.7	9.4	65.9	22.2
Basilicata	....	....	45.1	26.0	60.0	90.8	555.5	78.1	17.5
Calabria	....	....	44.9	40.3	80.0	85.3	60.7	69.7	19.0
Sicilia	....	....	50.5	58.5	68.2	50.8	15.9	64.1	19.3
Sardegna	....	....	51.2	22.4	37.5	64.9	40.5	76.2	27.2
North	....	....	34.3	10.6	91.2	56.9	36.7	72.9	26.1
Centre	....	....	48.7	29.1	74.4	71.1	26.7	72.2	25.3
South and Islands	....	....	47.9	31.2	73.4	65.8	32.9	65.1	21.2
Italy	**7.1**	**484.5**	**42.0**	**20.9**	**81.9**	**65.5**	**32.8**	**70.1**	**24.3**

(a) Tonnes of CO_2 equivalent per capita.
(b) Million tonnes.
(c) Percentage of volumes fed into the network.
(d) Percentage of total municipal waste collected.
(e) Percentage of valid measurements above the WHO defined reference value (10 µg/m³) of total valid measurements of annual average concentrations of $PM_{2.5}$.
(f) Percentage of authorized bathing waters on the total of the coastline.
(g) Sq.m per capita.
(h) Per 100 persons aged 14 and over.

Concern for climate change (h)	Contaminated sites (i)	Population at risk of landslides (l)	Population at risk of flood (l)	Sewage treatment (m)	Protected natural areas (n)	Electricity from renewable sources (o)	Soil sealing from artificial land cover (n)	Municipal waste collected (p)	Warm Spell Duration Index (q)	Extreme precipitation events (q)	Consecutive Dry Days (q)
2020 (*)	2019	2017	2017	2015	2017	2018	2019	2019	2020	2020	2020
70.8	42.6	1.6	4.8	69.7	16.7	41.8	6.7	496	21.0	1.0	25.0
66.3	0.7	12.1	10.2	66.0	30.3	297.2	2.2	605	31.0	2.0	20.0
70.9	5.3	5.8	17.5	61.2	27.2	8.5	7.2	483	20.0	1.0	22.5
72.0	7.8	0.5	4.4	62.9	16.1	24.0	12.1	538	22.5	1.0	25.0
70.1	0.4	2.2	1.4	78.9	26.4	146.9	3.2	508	18.0	2.0	23.0
67.6	*0.2*	*1.6*	*2.0*	*99.7*	*24.5*	*180.7*	*2.8*	*497*	*17.0*	*2.0*	*20.0*
72.5	*0.5*	*2.9*	*0.8*	*63.6*	*28.7*	*113.2*	*3.7*	*519*	*23.5*	*4.0*	*26.0*
72.3	1.7	0.1	9.5	49.4	23.0	25.0	11.9	492	23.0	2.0	26.0
69.7	19.2	0.4	7.3	50.7	19.3	29.4	8.0	499	23.0	4.0	26.0
75.5	1.6	2.2	63.7	67.7	12.2	19.7	8.9	664	16.0	-	26.0
71.4	5.0	3.8	26.0	49.5	15.2	39.4	6.2	616	28.0	-	26.0
66.3	0.8	1.9	6.3	68.7	17.5	45.1	5.3	521	24.0	-	26.0
69.7	0.1	2.1	4.3	48.5	18.8	26.7	6.9	525	8.0	-	20.0
71.4	4.2	1.6	3.5	67.0	27.9	15.6	8.1	527	15.0	1.0	26.0
70.9	0.6	5.8	6.1	63.9	36.6	51.0	5.0	463	8.0	2.0	19.0
77.4	0.3	6.5	1.4	58.0	26.4	89.2	3.9	368	8.0	1.0	20.0
65.9	5.6	5.3	4.6	60.5	35.3	27.9	10.3	453	11.0	1.0	27.5
64.7	9.3	1.3	2.7	68.3	24.5	48.5	8.1	472	8.0	-	26.0
70.8	4.0	5.8	0.7	67.2	22.8	96.3	3.2	355	6.5	1.0	28.0
62.2	0.6	4.5	4.0	46.0	26.6	79.2	5.0	403	0.0	1.0	30.0
70.9	3.2	1.1	0.1	43.9	20.2	27.2	6.5	457	0.0	-	43.0
70.2	12.4	1.4	7.1	58.8	19.9	34.2	3.3	456	19.0	-	47.0
72.2	12.7	1.3	15.6	62.4	18.8	32.3	8.6	521	21.5	-	26.0
70.8	3.4	2.4	10.9	58.5	19.9	28.6	6.7	554	21.0	1.0	25.0
67.5	5.6	3.2	3.2	56.7	25.2	42.4	5.9	450	8.0	-	30.0
70.3	**8.0**	**2.2**	**10.4**	**59.6**	**21.6**	**34.3**	**7.1**	**504**	**17.0**	**-**	**26.0**

(i) Land area affected, values per 1,000.
(l) Percentage on total population.
(m) Percentage of the polluting loads generated.
(n) Percentage of land area.
(o) Percentage of total internal consumption. Italy data for 2019 is 35%.
(p) Kilograms per capita.
(q) Number of days.
(*) Provisional data.