Istat
Istituto Nazionale di Statistica

2023 SDGs REPORT

STATISTICAL INFORMATION FOR 2030 AGENDA IN ITALY

2023 SDGs REPORT.
STATISTICAL INFORMATION FOR 2030 AGENDA IN ITALY

The report was edited by Paola Ungaro. The Goal managers are: Domenico Adamo (Goal 11); Barbara Baldazzi (Goals 3 and 4); Carmen Federica Conte (Goal 5); Luigi Costanzo (Goals 2 and 15); Lorenzo Di Biagio (Goals 1 and 10); Antonino Laganà (Goal 14); Leopoldo Nascia (Goals 9 and 17); Simona Ramberti (Goal 6); Giovanna Tagliacozzo (Goal 13); Paola Ungaro (Goals 7, 8 and 12); Alberto Violante (Goal 16). Vincenzo Spinelli is in charge of the information system.
The English version of the Report was edited by Paola Ungaro.
Thanks to Stephen Conway for collaborating in the revision of the English text.

Editorial activities: Nadia Mignolli (coordinator), Claudio Bava, Alfredina Della Branca, Marco Farinacci, Alessandro Franzò and Manuela Marrone.

Responsible for graphics: Sofia Barletta.

ISBN 978-88-458-2136-3

Istituto nazionale di statistica
Via Cesare Balbo, 16 - Roma

INDEX

FOREWORD

The 2030 Agenda for Sustainable Development is built around five interlinked thematic areas, symbolised by five "Ps": People, Planet, Prosperity, Peace, and Partnership.

The People Area calls for a global commitment to end poverty and hunger, in all their forms and dimensions, and to ensure that all human beings can realise their potential in dignity, equality and in a healthy environment.

The Planet area summarises the will to protect the planet from degradation, through sustainable consumption and production, the sustainable management of natural resources, and the adoption of urgent measures against climate change, to meet the needs of present and future generations.

The Prosperity Area describes the commitment to ensuring that all human beings can enjoy a prosperous and fulfilling life and that economic, social and technological progress takes place in harmony with nature.

With the area entitled Peace, the Agenda highlights the determination to promote peaceful, just and inclusive societies, free from fear and violence. There can be no sustainable development without peace and there is no peace without sustainable development.

Finally, the Partnership area concerns the instruments to implement the Agenda, and the mobilisation of the necessary means through a strengthened global partnership, focusing on the needs of the poorest and most vulnerable, with the participation of all countries, stakeholders and people.

The thematic areas are translated into a strategy, which has established seventeen Sustainable Development Goals, divided into 169 targets. Each of these is accompanied by indicators to ensure that, year after year, the process of achievement is tracked, at different scales, from global to national. As every year, the Istat Sustainable Development Goals Report presents the public with the road travelled in Italy over the last year, Goal by Goal, measure by measure, territory by territory, taking into account geographical, regional and, where possible, also sub-regional breakdowns.

The pandemic has left its scars everywhere, but the period described through the many indicators collected in this volume, on the whole, has to its credit, also thanks to the advance of the National Recovery and Resilience Plan interventions, the resumption of some processes that had slowed down and some recoveries where there had been setbacks.

Some, however, not all. Structural weaknesses, already apparent before the syndemic, have widened and worsened for children, young people, women and people in poverty and marginality, especially in inland areas and in the South and Islands.

The consequences of the war in Ukraine have been significant on all the areas of the Agenda, and in 2022 deeply affected the social and economic life of our country, with repercussions on migration, energy security and the cost of living.

The picture remains complex, multidimensional, articulate and contradictory. This is why it can only be adequately and respectfully described with diverse, careful, fine, and expert

tools that capture all its fundamental components. This year, there are 372 statistical measures presented in our Report.

The Agenda 2030 indicators in Italy, at the choice of Istat, engage with other exercises that are conceptually and methodologically just as refined, such as the system of Equitable and sustainable well-being measures and the NRRP framework.

Each year, the Report writes an intense page in the statistical history of the country's progress and keeps track of the medium- and long-term developments in the phenomena observed. Theme by theme, target by target, indicator by indicator, the data also quantify in a detailed and concrete manner the divergences between territories, at different scales, and their trends.

The resulting broad dashboard of variables lends itself to a plurality of uses, in addition to its primary purpose as a source of evidence for policies.

In terms of knowledge and its promotion, which are an integral part of Istat's mission, the SDG measures in Italy in 2022 set out the coordinates of our country and show where it is on the road to sustainable development.

Francesco Maria Chelli
Acting President
of the Italian National Institute of Statistics

1. INDICATORS FOR SUSTAINABLE DEVELOPMENT: GENERAL FRAMEWORK[1]

1.1 Introduction

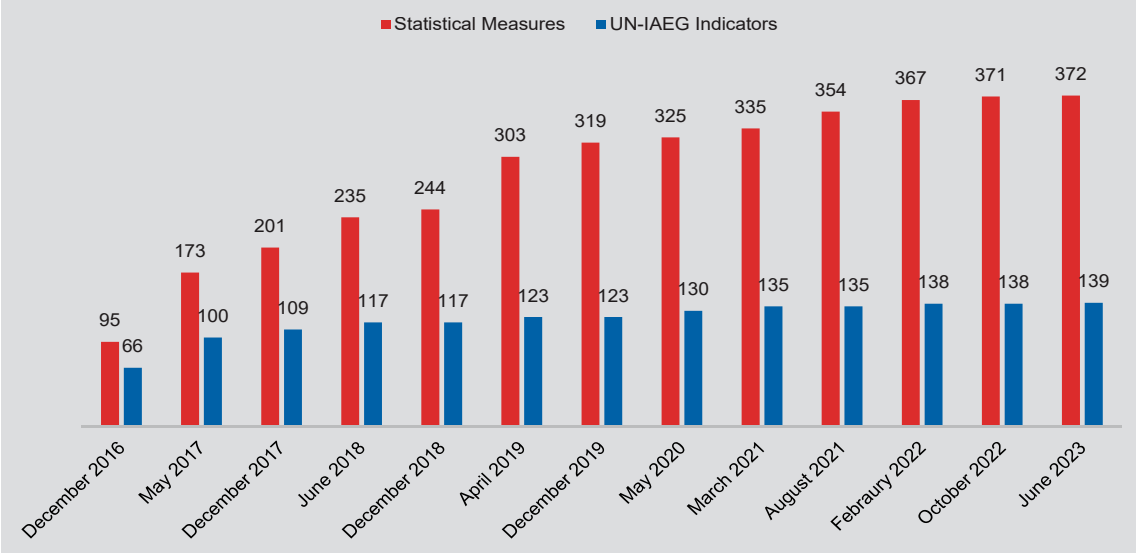
The sixth edition of the Sustainable Development Goals (SDGs) Report makes available 372 statistical measures (including 342 single measures, i.e. not repeated in different Goals), corresponding to 139 indicators proposed by the Inter Agency Expert Group on SDGs (UNIAEG-SDGs) to monitor progress on the 2030 Agenda at global level (Figure 1.1).

Since its launch in December 2016, the Istat-SDGs system has been constantly evolving, improving the availability of statistical measures within the National Statistical System (Sistan)[2], as well as taking into consideration methodological advancements within the activities of the UN-IAEG-SDGs context. Compared to the February 2022 edition, this thirteenth issue updates 223 statistical measures and introduces 5 new measures.

1 This Chapter was edited by Barbara Baldazzi, Lorenzo Di Biagio, Stefania Rossetti and Paola Ungaro.

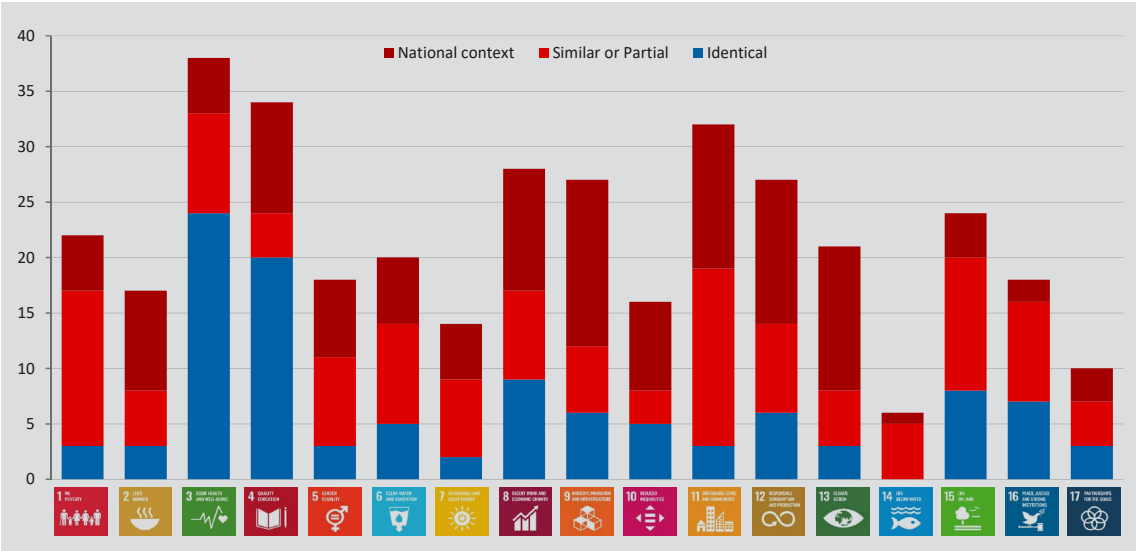
2 The Istat-SDGs statistical measures have been edited by: Domenico Adamo, Marina Attili, Barbara Baldazzi, Ciro Baldi, Tiziana Baldoni, Alessandra Battisti, Eugenia Bellini, Donatella Berna, Elisa Berntsen, Danilo Birardi, Emanuela Bologna, Silvia Bruzzone, Alessandra Burgio, Claudia Busetti, Alessandra Capobianchi, Tania Cappadozzi, Raffaella Cascioli, Cinzia Castagnaro, Raffaella Chiocchini, Carmen Federica Conte, Cinzia Conti, Luigi Costanzo, Stefania Cuicchio, Daniela De Francesco, Viviana De Giorgi, Elisabetta Del Bufalo, Clodia Delle Fratte, Valeria de Martino, Andrea De Panizza, Alessia D'Errico, Lorenzo Di Biagio, Claudia Di Priamo, Silvia Di Sante, Mascia Di Torrice, Gabriella Donatiello, Alessandro Faramondi, Aldo Femia, Angela Ferruzza, Luisa Frova, Flora Fullone, Lidia Gargiulo, Silvana Garozzo, Roberto Gismondi, Francesco Gosetti, Donatella Grassi, Valentina Joffre, Antonino Laganà, Sandra Lalli, Francesca Lariccia, Marzia Loghi, Silvia Lombardi, Renato Magistro, Cecilia Manzi, Sandra Maresca, Valeria Mastrostefano, Maria Liviana Mattonetti, Manuela Michelini, Giulia Milan, Costantino Milanese, Silvia Montecolle, Maria Giuseppina Muratore, Leopoldo Nascia, Alessandra Nurra, Sante Orsini, Monica Pace, Fernanda Panizon, Claudio Paolantoni, Federica Pintaldi, Ilaria Piscitelli, Maria Elena Pontecorvo, Sabrina Prati, Gaetano Proto, Simona Ramberti, Chiara Rossi, Mariangela Sabato, Maria Teresa Santoro, Miria Savioli, Giovanni Seri, Silvia Simeoni, Sabrina Sini, Vincenzo Spinelli, Carmela Squarcio, Simona Staffieri, Ilaria Straccamore, Giovanna Tagliacozzo, Stefania Taralli, Stefano Tersigni, Alessandra Tinto, Azzurra Tivoli, Caterina Torelli, Francesco G. Truglia, Angelica Tudini, Franco Turetta, Paola Ungaro, Giusy Vetrella, Donatella Vignani, Alberto Violante, Laura Zannella, Silvia Zannoni.
The statistical measures have been developed by collaborations set up in the National Statistical System (Sistan) and with institutions outside the Sistan. In particular: ASviS, Bank of Italy, Consob, CREA, Enea, FAO, GSE S.p.A, Inail, Invalsi, Italian Institute for Environmental Protection and Research, Italian National Institute of Health, Ministry of Agriculture of Food Sovereignty and Forestry, Ministry of Economy and Finance, Ministry of Education and Merit, Ministry of the Environment and Energy Security, Ministry of Foreign Affairs and International Cooperation, Ministry of Health, Ministry of Justice, Ministry of the Interior, Ministry of Labour and Social Policy, Ministry of University and Research, National Institute of Geophysics and Volcanology, Presidency of the Council of Ministers - Equal Opportunities Department, Terna S.p.A.

Figure 1.1 - Istat-SDGs statistical measures and UN-IAEG-SDGs indicators, by date of dissemination



110 statistical measures are identical to UN-IAEG-SDGs indicators, 132 are proxy or partial and 130 are national context specific (Figure 1.2).

Figure 1.2 - Istat-SDGs statistical measures, by taxonomy compared to SDGs indicators



In order to detail the statistical information disseminated as much as possible, there is a special focus on the development of breakdowns of statistical measures (Figure 1.3), as requested by the United Nations.

Figure 1.3 - Istat-SDGs statistical measures, by breakdown

Dimension	Istat-SDGs Statistical measures	Goal
Degree of urbanization / Municipality / Municipality type	76	
Region	210	
Province	15	
Gender	123	
Age class	81	
Citizenship / Nationality	54	
Presence of disability	17	

The Istat-SDGs statistical measures show complementarities and interconnections with the Equitable and Sustainable Wellbeing (BES)[3] indicators and with the BES indicators for the Economic and Financial Document (DEF)[4]. 62 Istat-SDGs statistical measures are in common with the BES system (Figure 1.4).

3 See https://www.istat.it/en/well-being-and-sustainability/the-measurement-of-well-being/indicators.
4 See https://www.istat.it/en/well-being-and-sustainability/the-measurement-of-well-being/bes-in-the-economic-and-financial-document.

Figure 1.4 - Istat-SDGs statistical measures, by breakdown

BES		SDGs	
1. Health	4 indicators	4 in Goal 3	
2. Education and training	8 indicators	7 in Goal 4 1 in Goal 8	
3. Work and life balance	10 indicators	2 in Goal 5 8 in Goal 8	
4. Economic well-being (a)	5 indicators	3 in Goal 1 3 in Goal 10	
5. Social relationships			
6. Politics and Institutions (a)	8 indicators	4 in Goal 5 5 in Goal 16	
7. Security	3 indicators	1 in Goal 5 2 in Goal 16	
8. Subjective well-being			
9. Landscape and cultural heritage	2 indicators	1 in Goal 11 1 in Goal 13	
10. Environment (b)	11 indicators	1 in Goal 1 2 in Goal 6 1 in Goal 7 1 in Goal 8 3 in Goal 11 2 in Goal 12 2 in Goal 13 1 in Goal 14 2 in Goal 15	
11. Innovation, research and creativity	3 indicators	3 in Goal 9	
12. Quality of services(a)	8 indicators	1 in Goal 1 3 in Goal 3 1 in Goal 6 1 in Goal 9 2 in Goal 11 1 in Goal 16	

(a) 1 indicator is in more than one Goal.
(b) 4 indicators are in more than one Goal.

Compared to previous editions, the overall picture of the SDGs is treated in more detail (paragraph 1.2), taking into consideration both the time evolution with respect to the 2030 Agenda and the territorial convergences or divergences, so as to expand on the usual regional analysis presented in paragraph 1.3.

The analysis presented in this Chapter is accompanied by detailed analyses for each of the Goals reported in Chapter 2. Once again this year, after the fruitful experience of last year's edition, Chapter 2 offers in-depth analyses by researchers and representatives of (Sistan and extra-Sistan) institutions that contribute to the production of statistical information for the measurement of sustainable development. Chapter 3 deals with inequalities at the territorial level, proposing new tools for analysing their evolution over time. Finally, Chapter 4 presents an update of the international and national processes of the statistical information systems dedicated to the SDGs.

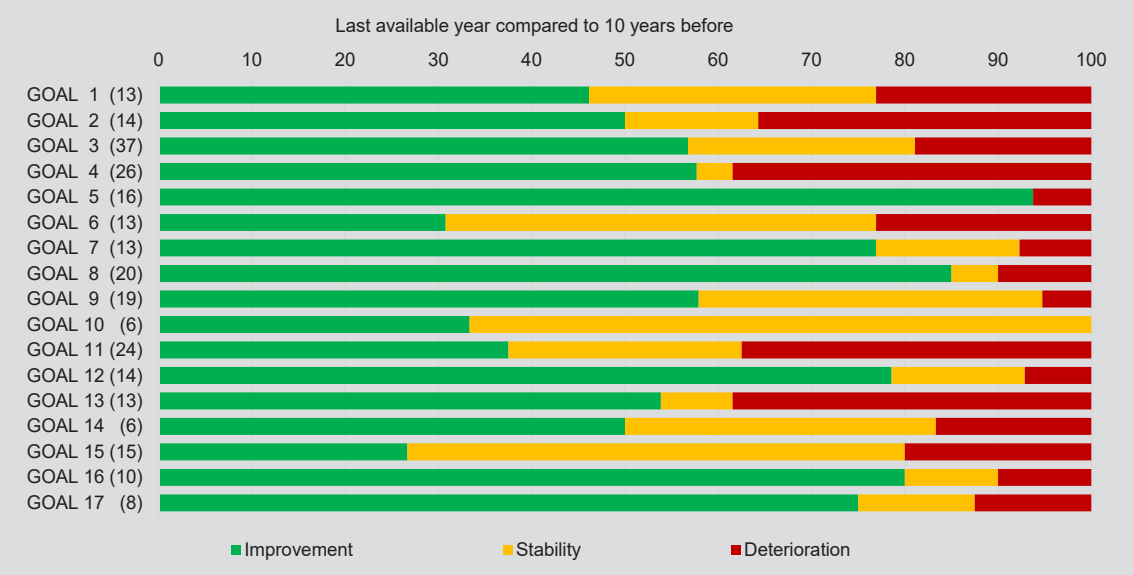
The Report is accompanied by an infographic, a dashboard that enables navigation among the indicators, the dissemination of data and metadata files. All the documentation is available online at https://www.istat.it/en/well-being-and-sustainability/sustainable-development-goals.

1.2 Progress towards sustainable development

The analysis of the time evolution of Istat-SDGs statistical measures has been carried out only for the measures available in time series, comparing the last year available (usually 2021 or 2022) to the previous year and to 10 years before.

The trends over the last year show a varied picture: 42.6% of the measures improve on the target defined by the 2030 Agenda, 24.6% are steady and 32.8% record a deterioration[5]. The percentage of measures with positive time evolution is significantly high for Goal 17 (Partnerships), for which all measures concerning the use of ICT improved, except for the percentage of people using the web to purchase goods or services, which receded after the highs reached in 2021, coinciding with the lockdown (Figure 1.5).

Figure 1.5 - Time evolution of the Goals: last available year compared to the previous year, by Goal (a) (percentage values)



(a) For each Goal, the number of statistical measures used for the calculation is indicated in brackets.

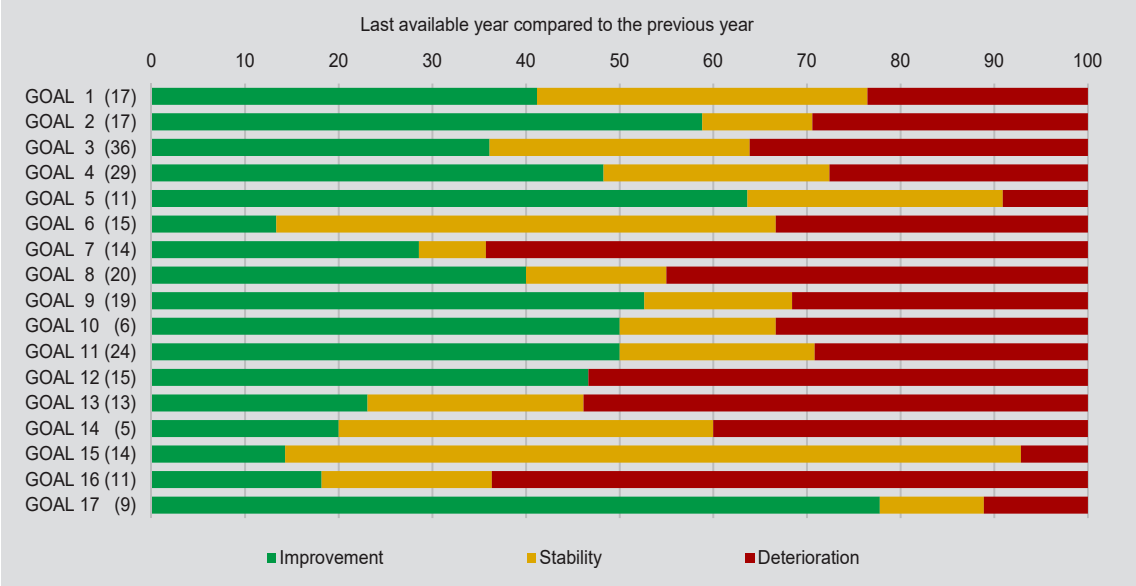
Goal 5 (Gender equality) also shows a high share of improving measures, particularly those measuring the presence of women in management positions.

5 The synthetic representation of the trends of the statistical measures has been obtained by calculating their changes in the short term (usually *t* over *t-1*) and in the long term (usually *t* over *t-10*). The changes have then been classified according to the values of a Compound Annual Growth Rate (CAGR), computed as $\text{CAGR} = \left(\frac{y_t}{y_{t_0}}\right)^{\frac{1}{t-t_0}} - 1$, where t_0 is the base year, *t* is the year under consideration and *y* is the value of the indicator in the two years. For indicators with a positive direction (*i.e.* those whose increase indicates convergence towards the objectives), the long-term trend is assessed as: improving, if CAGR>0.5%; stable, if -0.5%≤CAGR≤0.5%; and deteriorating, if CAGR<-0.5%. For the short term, thresholds are equal to ± 1%. For indicators with a negative direction the classification is reversed.

Goal 7 (Energy) has the highest number of worsening indicators, due to the notable upswing in energy consumption following the pandemic and, at the same time, not as strong growth in consumption from renewable sources. For Goal 16 (Peace, justice and institutions) the percentage of worsening measures is also substantial, due to worsening prison crowding conditions and lower satisfaction with public services.

Compared to the previous 10 years, there are many positive signals: 58.6% of the measures show an improvement, 21.3% remain stationary and only 20.1% report a worsening. In Goals 5, 7, 8 (Work and economic growth), 12 (Responsible consumption and production), 16 and 17, three quarters or more of the measures show a positive change, while in Goals 2 (Zero hunger), 4 (Education), 11 (Sustainable cities) and 13 (Climate action) more than one third of the indicators worsen (Figure 1.6).

Figure 1.6 - Time evolution of the Goals: last available year compared to 10 years before, by Goal (a) (percentage values)



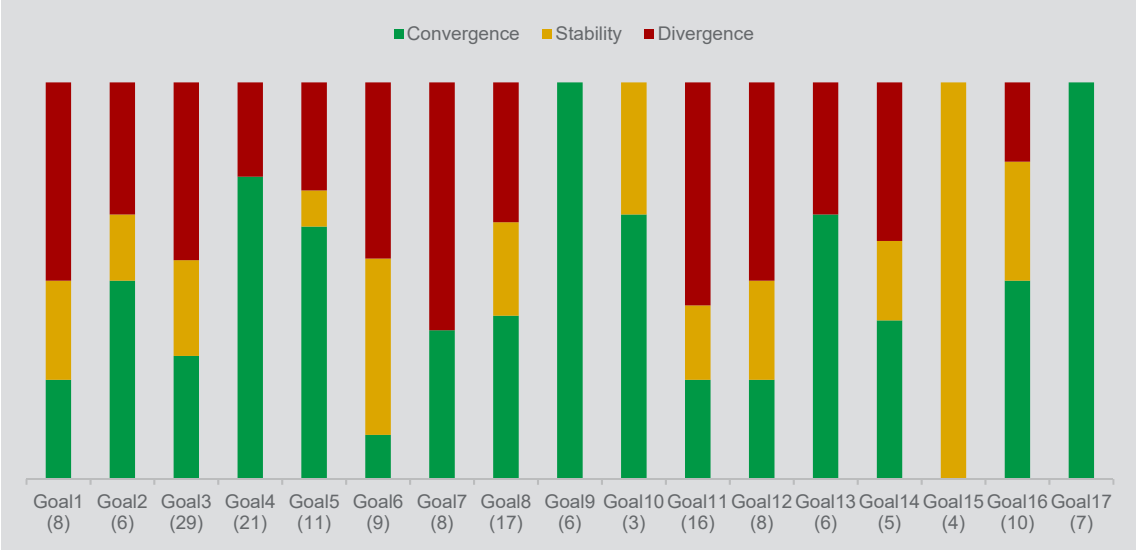
(a) For each Goal, the number of statistical measures used for the calculation is indicated in brackets.

In line with the key principle of the 2030 Agenda of "leaving no one behind", it is necessary to monitor the objective of reducing disparities over time. To measure the trend of inequalities at an interregional level, the SDGs Report proposes specific measures of convergence over time between regions in the Goal tables (see Chapter 2). For each statistical measure at regional level, and available in time series, the ratio between the coefficient of variation CV_t of regional values at time *t* and that 10 years before (CV_{t-10}) has been calculated[6]. The arrows in the last column of the tables indicate improving (green), stability (yellow) or deteriorating (red) in the process of convergence among regions.

6 The measure of change in relative inequality (given by the ratio between CV_t and CV_{t-10}) is averaged over the period and changed in sign to take into account the negative polarity of the coefficient of variation (the smaller it is, the lower the regional inequality), thus obtaining the Annualized Rate of Convergence (ARC). Relative inequality is then classified as improving (convergence among regions, decrease in inequality), if ARC>0.5%; stable, if -0.5%≤ARC≤0.5%; and deteriorating (divergence among regions, increase in inequality), if ARC<-0.5%. For the computation of relative inequality values, a few precautions apply: (a) in case of missing values for the Autonomous Provinces of Trento or Bolzano, the data for the Trentino-Alto Adige region have been entered (if available); (b) in case of missing values for some (but not all) regions, the coefficient of variation has been calculated only for available regional data.

Overall (Figure 1.7), over the last 10 years, almost half (47.8%) of the 159 statistical measures analysed indicate convergence between regions, 17.6% are stable and 34.6% show regional divergence. Goals 9 (Industry, innovation and infrastructure) and 17 (Partnerships) are the only ones in which all statistical measures show a reduction in territorial gaps, thanks to territorial convergence in the field of digitalisation, research and development. Goals 4, 10 (Reduced inequalities) and 13 are characterised by a prevalence of converging measures: Goal 4 due to a lower territorial disparity in student competences; Goal 10 due to a more equitable distribution of income and Goal 13 as a result of an increased territorial balance in the number of people exposed to the risk of natural disasters. On the contrary, in Goals 7 and 11, more than half of the measures considered are characterised by divergence. This occurs, for Goal 7, due to the increase in distances between regions in the renewable energy share and in the energy intensity of the industry sector; for Goal 11, for gaps in access to public transport.

Figure 1.7 - Convergence among regions: last available year compared to 10 years before, by Goal (a) (percentage values)



(a) For each Goal, the number of statistical measures used for the calculation is indicated in brackets

The combination of the time evolution of the statistical measures with respect to the objectives of the 2030 Agenda (improvement versus stability/deterioration) and the convergence between the regions (convergence versus stability/divergence) offers a summary of the overall trend of the last 10 years of each Goal.

In Figure 1.8 Goals are represented, on the x-axis, based on the share of improving statistical measures and, on the y-axis, based on the share of converging statistical measures. The origin of the axes represents 50% of the improving measures and 50% of the converging measures.

At the top right are the Goals with more than half of the statistical measures improving and more than half of the measures converging among regions. These are the Goals towards which progress is most accentuated (4, 5, 9, 13 and 17). At the bottom left, we find the Goals with less than half of the measures improving and less than half of the measures converging: here are the Goals towards which progress has been made with greater difficulty (1, 6, 11 and 15 - Life on land).

Figure 1.8 - Goals by time evolution (x-axis) and convergence among regions (y axis): last available year compared to 10 years before (a) (percentage values)

(a) Goals are represented, on the x-axis, based on the share of improving statistical measures and, on the y-axis, based on the share of converging statistical measures.

A positive correlation tendency is observed between the number of measures with an improving time evolution and the number of measures that converge at the territorial level. This represents a virtuous aspect of progress towards sustainable development. Among the exceptions, there are Goal 10 and Goal 12. For Goal 10, a substantial stability of the measures on inequality and income is accompanied by closer regional values. In the case of Goal 12, most measures (such as those of material consumption) have improved over the decade, but only a minority shows a reduction in regional inequalities.

The integration of the reading of territorial imbalances with that of time evolution, both at the Goal level and at the level of single statistical measures, represents a useful tool for monitoring, which allows to isolate, in particular, cases in which the convergence is accompanied by a progressive deterioration of the more virtuous regions, or vice versa.

1.3 Sustainable development at regional level

The differences among regions were analysed by distributing the levels of the measures they obtained in the last available year into five homogeneous groups representing as many levels of sustainable development, from low (first group) to high (fifth group; Figure 1.9). This makes it possible to assess the relative position of each region with respect to the set of indicators.

The regional map at the latest available data shows a difference in sustainable development in favour of the north-eastern regions (almost 62% of the indicators in the fourth and fifth groups, the most virtuous), compared to the South and the Islands (for which more than 50% of the indicators are in the two lowest levels).

In the Autonomous Provinces of Bolzano and Trento, over 40% of the indicators are in the fifth group, in Valle d'Aosta 33.8%, followed by Lombardia, with 24.8% of measures reaching the highest level.

In the central regions, almost 18% of the measures of Lazio and Marche are in the fifth group, while most of their indicators are distributed between the third and fourth groups.

In the southern regions, the indicator values are among the lowest, with Campania (33.6%), Calabria (36.4%) and Sicilia (39.5%) predominating in the first group. Puglia, Basilicata, Molise and Sardegna are mainly concentrated in the second group, and Abruzzo in the third (with 40.8% of measures falling within the medium level of sustainable development).

Figure 1. 9 - Istat-SDGs statistical measures, by region, geographic area and level of sustainable development: last available year (percentage values)

REGIONS AND GEOGRAPHIC AREAS	Level of sustainable development					Total available measures
	low	medium low	medium	medium high	high	
Piemonte	3.4	14.8	32.9	36.9	12.1	149
Valle d'Aosta/Vallée d'Aoste	14.5	15.9	12.4	23.4	33.8	145
Liguria	7.9	14.5	33.6	32.9	11.2	152
Lombardia	8.7	10.7	19.5	36.2	24.8	149
Bolzano/Bozen	12.2	15.0	17.7	15.0	40.1	147
Trento	6.1	12.2	15.0	26.5	40.1	147
Veneto	6.6	14.6	29.8	29.8	19.2	151
Friuli-Venezia Giulia	3.9	15.8	21.1	34.9	24.3	152
Emilia-Romagna	6.6	15.1	17.1	38.2	23.0	152
Toscana	2.6	15.1	36.8	31.6	13.8	152
Umbria	4.7	15.4	30.9	32.2	16.8	149
Marche	5.9	13.8	29.6	32.9	17.8	152
Lazio	7.3	17.2	35.1	22.5	17.9	151
Abruzzo	5.3	25.7	40.8	21.1	7.2	152
Molise	10.7	30.0	27.3	14.7	17.3	150
Campania	33.6	27.0	13.8	14.5	11.2	152
Puglia	13.8	44.1	20.4	15.1	6.6	152
Basilicata	20.4	25.7	23.0	15.8	15.1	152
Calabria	36.4	21.2	17.9	13.2	11.3	151
Sicilia	39.5	25.7	10.5	17.1	7.2	152
Sardegna	13.8	34.2	23.7	13.8	14.5	152
North-West	*1.6*	*15.1*	*27.8*	*34.1*	*21.4*	*126*
North-East	*0.0*	*15.9*	*22.2*	*39.7*	*22.2*	*126*
Centre	*0.7*	*9.8*	*37.8*	*39.2*	*12.6*	*143*
South	*7.9*	*44.4*	*25.4*	*14.3*	*7.9*	*126*
Islands	*16.7*	*36.5*	*19.8*	*18.3*	*8.7*	*126*

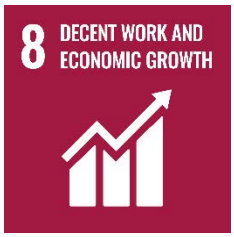
1.4 Summary of main results by Goal

	In 2022, one fifth of the Italian population was at risk of poverty, a proportion higher than the European average and substantially stable in the last five years. Between 2021 and 2022, the share of people in severe material and social deprivation decreased (-1.4 percentage points), as well as the proportion of people living in households with very low work intensity (-1.0 p.p.). In 2022, almost a quarter of the Italian population was at risk of poverty or social exclusion. The considerable territorial differences remained unchanged: in the North less than 15% of the population was at risk, in the South and Islands over 40%. In 2022, around 2.7 million people (11.5%), despite working, were at risk of poverty. The situation was more serious for foreign workers: almost a quarter of them were at risk of poverty.
	Households with signals of food insecurity slightly decreased (from 1.7% in 2021 to 1.3% in 2022), but the gap between South and the Islands and the rest of the country widened. Overweight children and adolescents on the rise: in 2021, they were 33.3% in the 3-5 years age group (+2.5 p.p. since 2017) and 27% in the 3-17 years age group. Economic indicators of small farms improved in 2021. In 2021, no significant progress was observed in the reduction of fertilisers and pesticides. Quantities distributed per hectare were far higher in the North. Italy achieved the objective set for 2020 on reduction of ammonia emissions and is well on track towards the objective set for 2030. The undeclared work rate in agriculture is still on the rise (24.4% in 2020, +3.7 p.p. since 2010). Input of undeclared work remains larger in the South and Islands, but significant all over the country.
	In 2022, there were 713.499 deaths in Italy, around 12 thousand more than in 2021, and higher even than the pre-pandemic average. In the first six months of 2022, there was a clear upturn in mobility and, as a consequence, in road accidents, which, however, remained at lower levels than before the pandemic. From 2010 to 2020, there was a slow but steady decrease in mortality due to the most common causes of death (cardiovascular diseases, cancer, diabetes, or chronic respiratory diseases): from 10.2% to 8.6% for people aged 30-69. In 2022, the share of overweight people remained stable; among males, alcohol abuse and smoking habits increased. Flu vaccination coverage decreased in the 2021/2022 winter season: 58.1% of the elderly vaccinated, a percentage still far from the WHO recommended threshold value (75%).

	In 2020/2021, Italy still far from European targets for early childhood services: 28.0% of seats available compared to the number of children aged 0-2. The share of 5-year-olds enrolled in pre-primary schools or the first year of primary school declines. In 2022, 11.5% of 18-24 year-olds left – with no diploma - the education and training system. Italy lags behind Europe also in terms of the number of young people with a tertiary degree (29.2% among 25-34 year-olds) Participation in life-long learning was stable in 2022 (9.6%), at higher levels than the pre-pandemic period. In 2021, about half of individuals aged 16-74 had at least basic digital skills.
	After the peak of the pandemic, in 2022, the number of calls to the 1522 helpline against violence and stalking decreased. Anti-violence centres and women's shelters increased in number in 2021, for a total of 2.39 services per 100,000 women aged 14 and over. In 2022, 119 women were murdered (3 more than in 2021). 84% of the murders took place at home. Female representation in the national parliament fell to 33.7% in 2022 (-1.7 percentage points), but increased at the regional level (+1.2 percentage points in the regional councils renewed in 2023). The share of women grew on the boards of directors of listed companies also (42.9%; +1.7 percentage points) and in decision-making bodies (21%; +1.9 percentage points).
	In 2015-2019, due to a greater water withdrawal for agricultural purposes, the level of water stress was higher in the Po River basin district compared to other districts. In 2020, Italy ranked second in the EU27 countries for freshwater withdrawal for public water supply per capita (155 cubic metres). In 2020, critical conditions in the urban water supply network were confirmed: efficiency level, stable compared to 2018, stood at 57.8%. In 2021, the number of provincial or metropolitan capitals subjected to rationing of domestic water supply increased from 11 of 2020 to 15 (2 of them in the Centre-North). In 2020, approximately 7 million inhabitants were without a public sewage system. In 2022, almost one in three households did not trust drinking tap water and nearly one in ten complained of irregularities in water supply in their home.

After the drop recorded in 2020, energy consumption rose sharply in 2021; Italy (+9.8%) grew more than the EU27 average and the main European economies. The energy intensity increased in 2021 (+1.4%) for the second year in a row. Despite the negative trend of the last year, Italy remained in fifth place in the European ranking.

In 2021, the residential sector recorded a significant increase in final consumption per capita (+5.0%), regaining the standards of ten years ago. In 2021, the overall contribution from renewable sources to gross final energy consumption (19.0%) decreased compared to the previous year. In 2022, for the first time since 2012, the percentage of the population who cannot afford to adequately heat the house (8.8%) increased.



The recovery of economic activity slowed down in 2022: annual growth rates of GDP in volume (+3.7%), per capita (+4.0%), and per person employed (+1.9%) were lower than in 2021. 2022 marked an important recovery of the Italian labour market. The employment rate of 20–64 year-olds (64.8%) rose and fully recovered pre-pandemic levels, but the gap with Europe remained very high. In 2022, the unemployment rate fell by 1.4 percentage points, with greater progress for young people. Territorial, gender, and generational differentials remained wide. After the intense development recorded in the emergency phase, people working from home dropped to 12.2% in 2022; almost a third of graduates worked remotely. Slight reduction in non-regular employment, but more than half of domestic staff and one in four agricultural workers were still employed non-regularly. In 2021, the rate of injuries and injuries leading to permanent disability was stable (10.2 per 10,000 employed).

In 2021, air and rail transport passengers increased by 52.4% and 26.1% as compared to 2020. In 2021, CO_2 emissions reached 157.9 tonnes per million euro, in 2020 they were 154.1 tonnes per million euro. In 2020, the intensity of researchers per 10,000 inhabitants recorded a slight decline, falling to 26.3 compared to 26.9 in 2019. In 2022, the percentage of employed in positions specialised in ICT grew by two percentage points compared to 2021, reaching 3.9% of the total employed. Between 2021 and 2022, the share of knowledge workers fell to 17.8% from 18.2%. The percentage of households in an area with a very high-capacity next-generation connection rose from 23.9% in 2018 to 53.7% in 2022.

	In 2022, the disposable income of households increased (+6.5% compared to 2021), but the purchasing power decreased (-1.2%), due to the increase in consumer prices (+8.1%). Slight improvement in inequalities in income distribution: between 2020 and 2021, the per capita household income of the poorest 40% of the population increased more (+5.7%) than that of the total population (+3.6%). In 2021, income inequality decreased in the South and Islands, while it remained effectively stable in the North and in the Centre. At the end of December 2022, there were more than 145,000 Ukrainians in Italy with a temporary protection residence permit.
	In 2022, the share of population complaining of structural or dampness problems in the home decreased (16.6%), approaching the pre-pandemic level (14%). In 2022, the share of students who travel to their study place only by public transports increased (25.1%) after the sharp drop in 2020-2021. After the sharp reduction in 2020 (-18.7 % compared to 2019), in 2021, the supply of local public transport increased to 4,740 seat-km. Municipal waste generation grew in 2021 in 83.5% of provincial capitals; 51.6 % of them recovered or exceeded the 2019 level. In 2021, meteoclimatic extremes increased in regional capitals compared with 1981-2010 climate values. PM2.5 pollution continued to decrease in 2021 but remained at levels largely above the WHO benchmarks to reduce health damage.
	In 2021, domestic material consumption returned to growth in relation to both population and GDP. Nevertheless, Italy remained at the top of the European ranking. In 2021, the increase in municipal waste generation (+14 kg per capita) brought Italy back to the pre-pandemic situation. In the past year, progress in waste cycle management and conversion into new resources slowed down. However, Italy maintained a virtuous position in Europe, benefiting from the advantage gained over the last decade. The recycling rate of municipal waste (54.4% in 2020) and the percentage of separate collection of municipal waste (64.0% in 2021) increased only marginally (+1.1 and +1.0 percentage points, respectively, compared to the previous year). In 2021, the circular material use rate contracted by 2.2 percentage points. However, Italy still ranked fourth in the European ranking.

	Greenhouse gas emissions - sharply fallen in 2020 in Italy (-10.6%) and in Europe (-10.2%) - in 2021 rose again (+6.2% for Italy), because of the recovery of production activities and mobility. In 2021, emissions from productive activities grew more intensively than household emissions (+6.4% vs +5.7%). Forest fires have become more frequent: between 2020 and 2021, the number of fires increased by 23.1% and the forest area involved more than doubled. In 2022, 71.0% of people aged 14 and over indicated climate change and greenhouse effect among the top five environmental concerns.
	In 2021, beached marine litter decreased to 273 items per hundred meters of beach, still far from the EU recommendations (20 litter items/100 m beach). In 2022, 13.4% of the marine area was protected by the Natura 2000 Network. In 2022, 10.6% of marine areas were protected, in line with the SDGs target 14.5 and the Aichi Biodiversity Targets. In 2020, fish stocks were at their limit of sustainability (80.4%). At the same time, landed fish suffered a significant reduction in activity; catches and revenues decreased by more than 25%. In 2021, 88.1% of bathing waters were of excellent quality and 97.4% met the minimum standards, defined by the EU Bathing Directive.
	In 2022, protected areas covered 21.7 percent of the national territory and included only part (on average, 75.9 percent) of the 172 Key Biodiversity Areas. Between 2012 and 2021, the green cover of mountain areas decreased by 0.3 p.p. (about 4,600 hectares per year). The losses were concentrated in the Islands and in the North-West, especially in the area below 1,000 m above sea level, which was most affected by land consumption. In 2021, certified forest areas increased by 0.8% (+18.8% since 2011). Despite this, Italy remained among the EU countries where sustainability certification is less in use in relation to the extent of forest areas. The spread of alien species - a major threat to biodiversity - showed signs of slowing down for the first time: an average of 11.5 new species per year were identified in the decade 2012-2021, compared to 12.4 in the previous decade.

	In 2021, 304 intentional homicides were committed in Italy: a marginal increase compared to 2020, but not compared to 2019. In 2022, prison density index slightly increased compared to 2021, reaching 110 detainees for 100 available places. In 2022, the percentage of unsentenced detainees decreased: from 15.8% to 15.1% of the overall prison population. In 2022, as in the previous year, the length of civil proceedings in ordinary courts increased by 7 days. In 2022, trust in the Police and Fire Brigade slightly decreased, recording a score of 7.4 out of 10. Stable – but low (4.8 out of 10) – the trust in the judicial system.
	In 2022, Italy was third in the EU27 ranking on tax revenue relative to GDP (more than 2 percentage points above the European average). The ratio of public administration tax revenues to GDP remained stable at 43.5% compared to 2021. Official Development Assistance (as a percentage of gross national income) in Italy grew in 2021, both overall (+0.7 p.p.) and as a share allocated to less developed countries (+0.2 p.p.). In 2022, remittances abroad exceeded 8 billion euro for the first time, an increase of 6.1% compared to 2021. Increasingly more Italians use the Internet (in 2022, 77.5% of people compared to 74.9% in 2021), although the territorial, gender and, above all, education gaps are still wide. In 2022, e-commerce declined: 37 out of every 100 people bought goods or services on the Internet, compared to 40 in 2021, although E-banking has spread rapidly (almost half of Internet users).

GOAL 1

END POVERTY
IN ALL ITS FORMS
EVERYWHERE[1]

In brief

- In 2022, one fifth of the Italian population was at risk of poverty, a proportion higher than the European average and substantially stable in the last five years.
- Between 2021 and 2022, the share of people in severe material and social deprivation decreased (-1.4 percentage points), as well as the proportion of people living in households with very low work intensity (-1.0 p.p.).
- In 2022, almost a quarter of the Italian population was at risk of poverty or social exclusion. The considerable territorial differences remained unchanged: in the North less than 15% of the population was at risk, in the South and Islands over 40%.
- In 2022, around 2.7 million people (11.5%), despite working, were at risk of poverty. The situation was more serious for foreign workers: almost a quarter of them were at risk of poverty.

The statistical measures released by Istat for Goal 1 are twenty-three and refer to eight UN-IAEG-SDGs indicators (Table 1.1).

1 This section was edited by Lorenzo Di Biagio with contributions by Clodia Delle Fratte, Valeria de Martino and Francesca Lariccia.

Table 1.1 - Statistical measures released by Istat, taxonomy compared to SDGs indicators, variations compared to the previous year and to 10 years before and convergence among regions

Ref. SDG	INDICATOR	Compared to SDG indicator	Value	VARIATIONS		CONVERGENCE AMONG REGIONS compared to 10 years before
				Compared to the previous year	Compared to 10 years before	
1.1.1	Proportion of population below the international poverty line, by sex, age, employment status and geographical location (urban/rural)					
In-work at-risk-of-poverty rate (Istat, 2022, percentage values)		National context	11.5			--
1.2.1	Proportion of population living below the national poverty line, by sex and age					
Absolute poverty (incidence) (Istat, 2021, percentage values)		Identical	9.4			--
1.2.2	Proportion of men, women and children of all ages living in poverty in all its dimensions according to national definition					
At risk of poverty or social exclusion (AROPE) - Europe 2030 (Istat, 2022, percentage values)		Identical	24.4		--	--
Severe material and social deprivation rate - Europe 2030 (Istat, 2022, percentage values)		Partial	4.5		--	--
Very low work intensity - Europe 2030 (Istat, 2022, percentage values)		Partial	9.8		--	--
People at risk of poverty (Istat, 2022, percentage values)		Partial	20.1			=
At risk of poverty or social exclusion (AROPE) - Europe 2030 - Number of people (Istat, 2022, thousand)		National context	14,304		--	--
People at risk of poverty - Number (Istat, 2022, thousand)		National context	11,797			--
1.3.1	Proportion of population covered by social protection floors/systems, by sex, distinguishing children, unemployed persons, older persons, persons with disabilities, pregnant women, newborns, work-injury victims and the poor and the vulnerable					
Population aged 16 and over reporting unmet needs for medical care due to being too expensive (Istat, 2022, percentage values)		National context	1.0			--
1.4.1	Proportion of population living in households with access to basic services					
Housing cost overburden rate (Istat, 2022, percentage values)		National context	6.6			=
Households very or fairly satisfied with the continuity of the service of electricity supply (Istat, 2022, percentage values)		Partial	92.2			⇐⇒
Inability to keep home adequately warm (Istat, 2022, percentage values)		Partial	8.8			--
Households with difficulties of connection with public transport (Istat, 2022, percentage values)		Partial	30.7			⇐⇒
Landfill of waste (ISPRA, 2021, percentage values)		Partial	19.0			⇐⇒
Irregularities in water supply (Istat, 2022, percentage values)		Partial	9.7			⇐⇒
Overall Fixed Very High Capacity Network (VHCN) coverage (Istat, processing of data from Agcom, 2022, percentage values)		Partial	53.7		--	--
People aged 6 and over who use their mobile phone every day, per 100 people with the same characteristics (Istat, 2022, percentage values)		Partial	84.4			⇒⇐
1.5.1	Number of deaths, missing persons and directly affected persons attributed to disasters per 100,000 population					
Deaths and missing persons for landslides (ISPRA, 2020, N.)		Partial	6	--	--	--
Deaths and missing persons for floods (ISPRA, 2020, N.)		Partial	11	--	--	--
Injured persons for landslides (ISPRA, 2020, N.)		Partial	22	--	--	--
Injured persons for floods (ISPRA, 2020, N.)		Partial	-	--	--	--
1.a.1	Total official development assistance (ODA) grants from all donors that focus on poverty reduction as a share of the recipient country's gross national income					
Proportion of bilateral ODA spending on essential services for developing countries (education, health and social protection) (Ministry of Foreign Affairs and International Cooperation, 2020, percentage values)		Proxy	43.6	--	--	--
1.a.2	Proportion of total government spending on essential services (education, health and social protection)					
Proportion of total government spending on essential services (education, health and social protection) (Istat, 2021, percentage values)		Identical	63.415	--	--	--

Legend

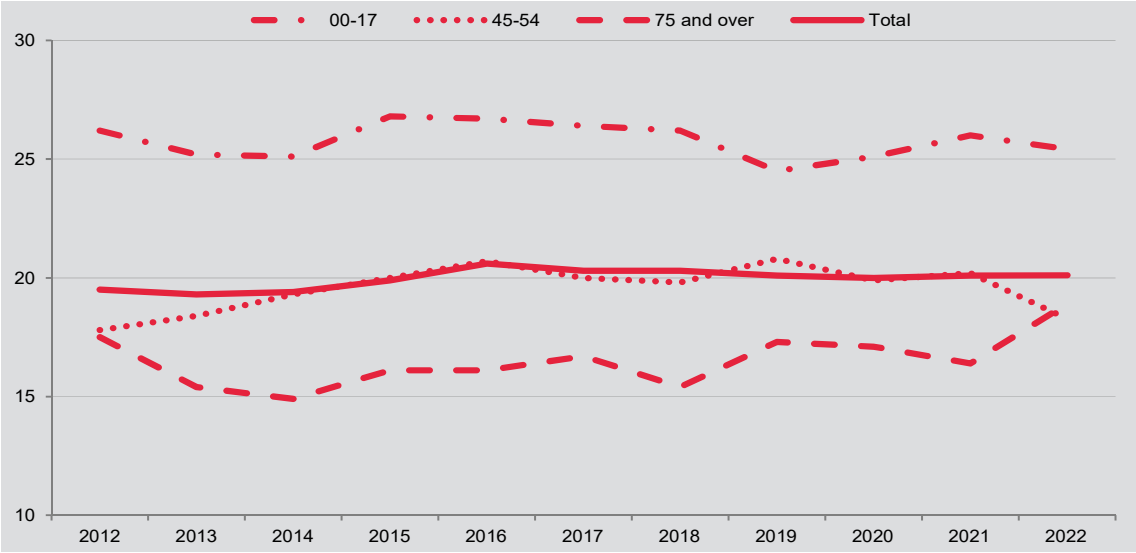
	IMPROVEMENT	⇒⇐	CONVERGENCE
	STABILITY	=	STABILITY
	DETERIORATION	⇐⇒	DIVERGENCE
--	NOT AVAILABLE / NOT SIGNIFICANT		

The incidence of people at risk of poverty in Italy remained stable compared to previous years, but above the EU27 average

In 2022, around 11.8 million people living in Italy – one fifth (20.1%) of the population – were at risk of poverty[2]. This figure was stable compared to previous years, despite the pandemic, but it remained high by European standards: the EU27 average in 2021[3] was 16.8%, which puts Italy in the 22nd place in the ranking of EU countries.

The indicator by age group shows that the youngest were at higher risk of poverty (25.4% in 2022) than the national average, again highlighting the economic difficulties of households with children who have not reached full legal age (Figure 1.1). On the contrary, the risk of poverty for the elderly (18.9% in 2022) since 2010 has been consistently lower than the national average, confirming the economic protection role played by pension transfers. However, in the last year, the risk of poverty decreased for people up to 34 years (in particular for the 18-24 age group, by as much as 3.2 percentage points, from 25% in 2021 to 21.8% in 2022), while it increased for those aged 55 and over (particularly for those over 75 years, for which it increased from 16.4% in 2021 to 18.9% in 2022).

Figure 1.1 - People at risk of poverty, by age class. Years 2012-2022 (percentage values)



Source: Istat, Eu-Silc

A composite indicator is used to describe the multiple dimensions of poverty, which, in addition to income poverty, considers severe material and social deprivation and very low

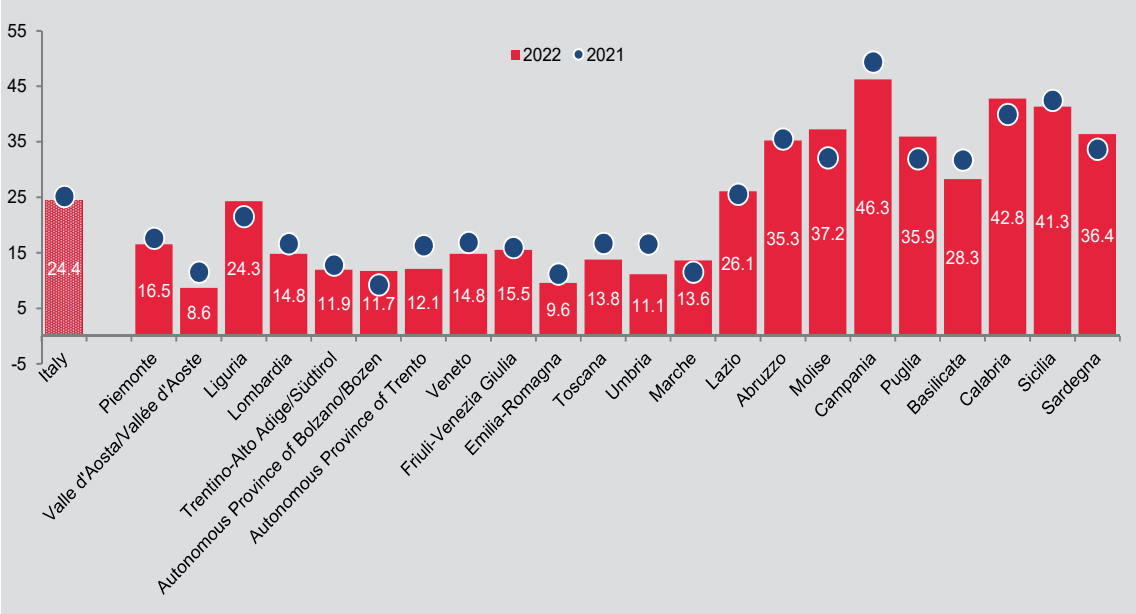
2 The risk of poverty is calculated on previous year's incomes (2021), based on data from the Survey on Income and Living Conditions (Eu-Silc), as a percentage of people living in households with a net equivalised income below an at-risk-of-poverty threshold, set at 60% of the median individual distribution of equivalent net income. Unlike in previous editions, as data up to 2022 are not currently available, this edition of the SDG Report does not release the estimation of absolute poverty, from the household budget survey, calculated as the ratio of individuals belonging to households with total consumption expenditure at or below the absolute poverty threshold over total residents. Due to the changes in Istat Household Budget Survey and the revision of the methodology for estimating absolute poverty, Istat's dissemination of the estimates of absolute poverty for 2022 is postponed to the end of October 2023 (See https://www.istat.it/it/archivio/283615).

3 For some countries, data for 2022 are not yet available. See http://ec.europa.eu/eurostat

work intensity, indicators recently revised by Eurostat[4]. In 2022 – with the same calculation methodology – there was an improvement in the measures compared to 2021: the share of people experiencing severe material and social deprivation dropped by 1.4 percentage points to 4.5%; the share of people living in households with very low work intensity dropped by 1 percentage point (to 9.8 %); overall, the share of people at risk of poverty or social exclusion dropped by 0.8 p.p. (to 24.4%, around 14.3 million people)[5].

The incidence of the risk of poverty or social exclusion varies widely across the territory (Figure 1.2). In Valle d'Aosta and in Emilia-Romagna, less than 10% of the resident population was at risk, while in Campania, Calabria and Sicilia more than 40%. Among the northern regions, Liguria showed higher values (24.3%), almost 10 percentage points higher than the average of the population resident in the North and up from 2021 (+ 2.7 p.p.). Among the Central regions, Lazio (26.1%) was higher than the national average and worse than in 2021 (+ 0.5 p.p.), while Umbria (11.1%) improved (-5.5 p.p.). Among the regions in the South and Islands, we note the sharp deterioration in Molise (+ 5.0 p.p. compared with 2021) and the most virtuous situation of Basilicata (12.3 p.p. lower than the average for the South and Islands).

Figure 1.2 - At risk of poverty or social exclusion (AROPE), by region. Years 2021 and 2022 (percentage values)



Source: Istat, Eu-Silc

4 Since 2021, Eurostat and Istat have made significant changes to these two indicators. The measure of severe material deprivation has been replaced with a measure of severe material and social deprivation, where 13 possible elements of deprivation are considered instead of the previous 9. Some elements have remained unchanged (e.g. "not being able to pay unforeseen expenses"), others have been updated (e.g. "cannot afford a telephone" is replaced by "cannot afford an Internet connection"), others have been excluded (e.g. "cannot afford a colour TV") and others have been added (e.g. "regular recreational activities" or "getting together with friends/family for a drink/meal at least once a month"). In this way, the new indicator is expected to be more responsive and to provide more details on the composition and intensity of deprivation. With regard to very low work intensity, the reference age and the definition of pensioners (who are excluded from the calculations) have been changed to reflect more precisely the current socio-demographic structure of European countries.

5 The changes were calculated with respect to the estimates obtained for 2021 using the new methodology: 5.9% of people are in severe material and social deprivation, 10.8% live in households with very low work intensity, and the overall share of the population at risk of poverty or social exclusion is 25.2%.

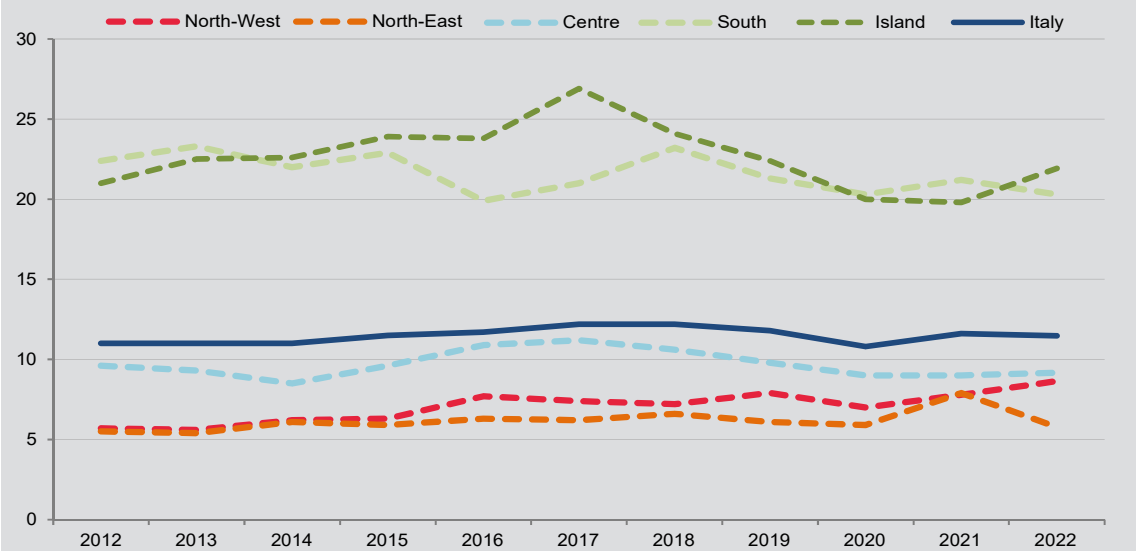
The share of working poor was still high, but stable

Unemployment is one of the main causes of income poverty. In Italy, however, there is also a high proportion of workers who, despite being employed, are at risk of falling into poverty due to low hourly wages, or because they are in precarious or part-time jobs (the 'working poor').

To measure this phenomenon, Istat compiles an indicator that measures the percentage of employed people aged 18 and over who are at risk of poverty[6].

In 2022, based on 2021 incomes, out of a total of 23.3 million people aged 18 and over, the working poor in Italy were around 2.7 million. The in-work at-risk-of-poverty rate is thus 11.5% (Figure 1.3), stable compared to the previous year and slightly better if compared to the peaks of 2017-2018 (12.2%), but still far from the lows in 2005 (8.7%). Wide territorial differences persisted: North-West (8.6%), North-East (5.8%) and the Centre (9.2%) were below the Italian average, while the South (20.3%) and the Islands (21.9%) were almost twice as high as the average. More than one fifth of the workers in the South and Islands were thus classified as at risk of poverty. There were also time-lags related to the impact of the pandemic: the North-East was hit first and more intensely, however it recovered in 2022 the pre-pandemic values, while for the Islands, between 2021 and 2022, the indicator rose by 2.1 percentage points.

Figure 1.3 - In-work at-risk-of-poverty rate, by geographical area. Years 2012-2022 (percentage values)



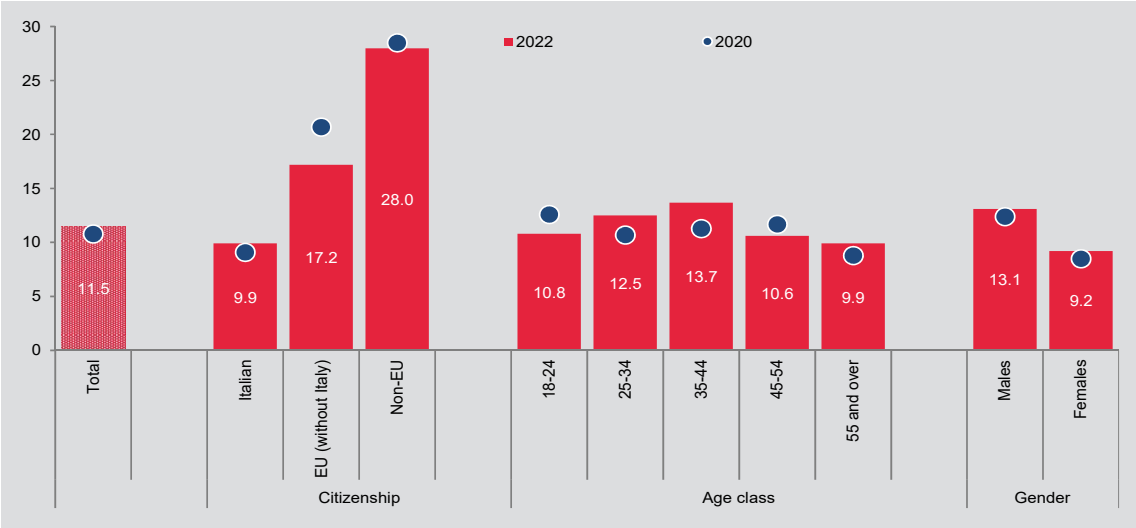
Source: Istat, Eu-Silc

Interesting differences in the in-work at-risk-of-poverty rate emerge when comparing data by citizenship, age and gender (Figure 1.4). There were large gaps between Italian citizens, for whom the in-work at-risk-of-poverty rate was around 10%, and foreign citizens, for whom, overall, this figure stood at 24.7%, still down from the pre-pandemic figures (26%). Citizens from non-EU countries (28.0%) were particularly affected, with the reduction

6 The in-work at-risk-of-poverty rate indicator is calculated as the percentage of employed adults living in households with an equivalised net income below the at-risk-of-poverty threshold (a relative threshold, set at 60% of the median of the individual distribution of net equivalised income). The income reference year is the calendar year preceding the survey year.

compared to the pre-pandemic figure being smaller (-0.5 p.p.). As regards age, the risk of poverty increased in the last year for 25-34 year-olds, 35-44 year-olds and the over-55 year-old class, reaching its highest level in the last ten years. In particular, the at-risk-of-poverty rate for older age groups (55+) remained the lowest, but reached its peak over the whole period, with an increase of 1.1 percentage points in the post-pandemic period. Regarding gender, the difference between males and females, 3.9 percentage points in favour of females, remained unchanged between 2020 and 2022.

Figure 1.4 - In-work at-risk-of-poverty-rate, by citizenship, age class, gender. Years 2020 and 2022 (percentage values)



Source: Istat, Eu-Silc

In 2021[7], in terms of the risk of poverty among employed people, Italy was worse than the EU27 average (8.9%) and ranked 24th in the ranking of European countries: only Spain (12.7%), Luxembourg (13.5%) and Romania (15.5%) showed higher values. The three best-performing countries are Finland (2.8%), the Czech Republic (3.5%) and Belgium (3.8%). The Netherlands (5.2%) and France (6.9%) were lower than the European average, while Germany (8.7%) and Poland (8.9%) were close to the average.

7 For some countries, EU data for 2022 are not yet available.

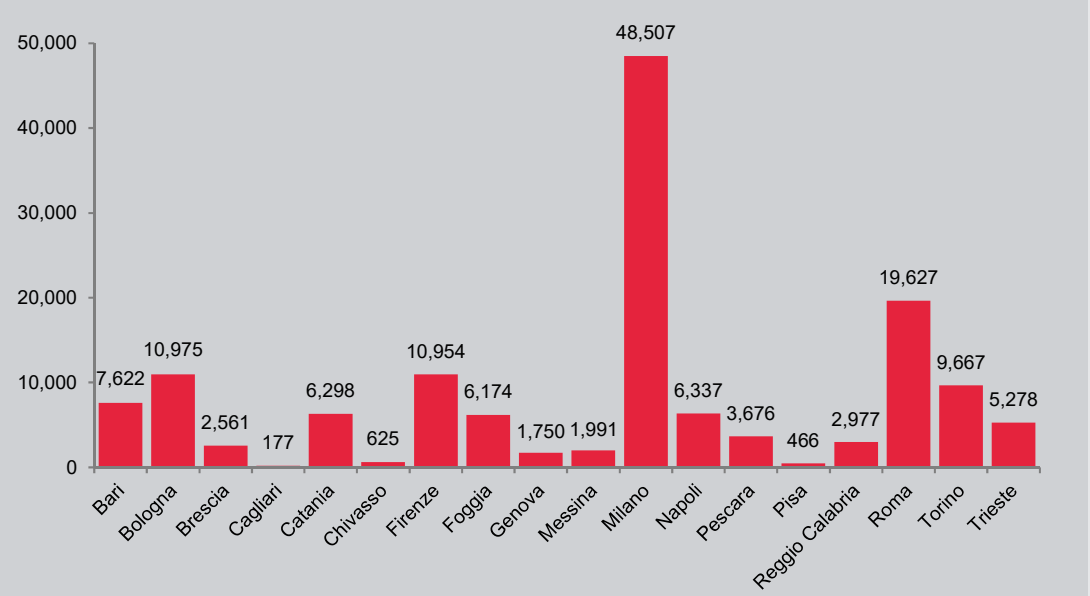
Fight against poverty and territory: the contribution of the Help Centres of the National Observatory Solidarity in Railway Stations[1]

The National Observatory Solidarity in Railway Stations (ONDS) is a network of third sector bodies which, in cooperation with Ferrovie dello Stato Italiane and the Italian National Association of Cities (ANCI), manage 20 Help Centres (HCs) in as many railway stations[2]. HCs are listening, orientation and reception facilities for homeless people that operate in premises granted on free loan from Ferrovie dello Stato Italiane and, in most cases, are supported by institutional funding or local foundations.

ONDS is also a statistical observatory, which over the years has developed a data collection system that captures in real time the situation of marginalised people who live around railway stations.

Data on the activities of the network, which has been in operation since 2002 (opening date of the first HC in Roma Termini), have been made available since 2016, using an interactive dashboard published on the ONDS website (https://rapporto.onds.it/)[3].

Figure 1 - Total number of users taken care of, by Help Centres of the ONDS network (a)**. Years 2016-2022** (N.)



Source: Europe Consulting Onlus, processing of data from the National Observatory Solidarity in Railway Stations
(a) Only HCs that contributed to data collection during the period are considered.

1 This section was edited by Alessandro Radicchi, Francesco Accattapà, Franca Iannaccio and Gianni Petiti (Europe Consulting Onlus) with contributions by Lorenzo Di Biagio and Barbara Baldazzi.

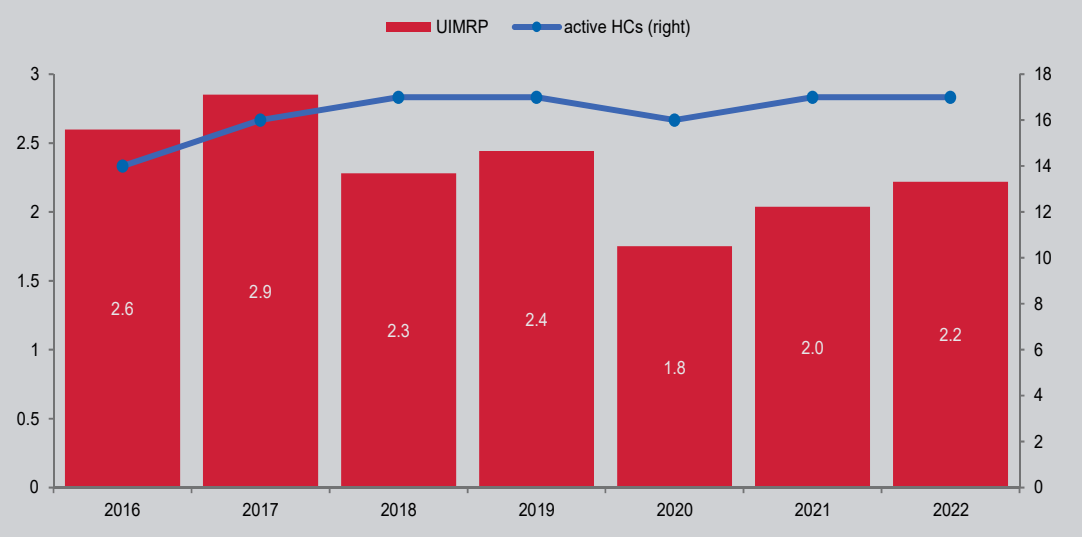
2 Currently, the Help Centres in Bari, Bologna, Brescia, Cagliari, Catania, Chivasso, Firenze, Foggia, Genova, Grosseto, Messina, Milano, Napoli, Pescara, Pisa, Reggio Calabria, Roma, Rovereto, Torino, Viareggio are part of ONDS.

3 The data are collected by interview or through the Anthology database, which is made available to the Help Centresby Europe Consulting Onlus (the network coordinator), which records in real time information on the persons intercepted and the actions carried out on them. For those who do not use the database, a form is provided to collect key data such as nationality, gender, age of intercepted persons, types of requests. There are currently 11 HCs of the ONDS network using Anthology as the standard for recording data of the people they take care of. Since 2016, an application from the same platform has also been used by the Municipality of Roma to manage over 150 affiliated services for migrants or homeless people (www.osservatorio.roma.it).

From 2016 to 2022, the Help Centres network met over 145 thousand fragile, migrant or homeless people (Figure 1), providing around 3.3 million social interventions, of which around 2.7 million "low threshold" (such as: providing meals, showers and clothing), which do not necessarily imply systematic identification of the user, and more than 500 thousand social inclusion actions on users whose identity is registered in the database. Men account for 80.8% of assisted people, women for 18.8%; there is also a share of around 0.4 transgenders. 63.8% of people come from outside the EU, 12.7% from EU countries, with Italians accounting for the remaining 23.5%. The most common age class is 18-29 (28.8%), followed by 30-39 (25.3%) and 40-49 (21.1%).

Depending on the availability of space, but also on funding by local governments, the number of HCs in railway stations may vary over time. For this reason, in order to provide a consistent measure of the development of the network's activities, ONDS has recently defined the UIMRP indicator (User Indicator for Municipal Resident Population), which was constructed by dividing the number of users taken in charge by each Help Centre by the number of persons residing in the reference municipalities. This makes it possible to standardise the activities of the network according to the number of active centres and the relative size of the population resident in the municipality concerned[4] and consequently to plan any actions to remodulate the interventions of the services or the national strategy of the network.

Figure 2 - Help Centre activity indicator UIMPR (a) **and active HCs of the ONDS network. Years 2016-2022** (value and number)



Source: Europe Consulting Onlus, processing of data from the National Observatory Solidarity in Railway Stations
(a) Only HCs that contributed to data collection during the period are considered.

The UIMRP indicator (Figure 2) showed a substantial reduction between 2019 and 2020 (-25.0%): with the pandemic and the closure of several reception services, users decreased by almost 7 thousand, with significant reductions for the HCs in Milano and

4 The UIMRP indicator is computed by dividing the number of users per Help Centre by the municipal resident population on 1 January each year (source Istat) and multiplying the result by 1,000. For the years 2016-2018, the value of the population on 1 January 2019 was assumed.

Firenze and the closure of the HC in Trieste, which in 2019 had recorded one of the highest indicator values of the entire network. However, although some centres reduced their activity during that period, others increased it, such as Torino, Roma, Bologna, Foggia, Pescara and Reggio Calabria. In more recent years (2021, 2022), the indicator tends to rise again, although it has not yet returned to pre-pandemic levels.

GOAL 2

END HUNGER, ACHIEVE FOOD SECURITY AND IMPROVED NUTRITION AND PROMOTE SUSTAINABLE AGRICULTURE[1]

In brief

- Households with signals of food insecurity slightly decreased (from 1.7% in 2021 to 1.3% in 2022), but the gap between South and the Islands and the rest of the country widened.
- Overweight children and adolescents on the rise: in 2021, they were 33.3% in the 3-5 years age group (+2.5 p.p. since 2017) and 27% in the 3-17 years age group.
- Economic indicators of small farms improved in 2021.
- In 2021, no significant progress was observed in the reduction of fertilisers and pesticides. Quantities distributed per hectare were far higher in the North.
- Italy achieved the objective set for 2020 on reduction of ammonia emissions and is well on track towards the objective set for 2030.
- The undeclared work rate in agriculture is still on the rise (24.4% in 2020, +3.7 p.p. since 2010). Input of undeclared work remains larger in the South and Islands, but significant all over the country.

The statistical measures released by Istat for Goal 2 are seventeen and refer to seven UN-IAEG-SDGs indicators (Table 2.1).

1 This section was edited by Luigi Costanzo with contributions by Emanuela Bologna, Clodia Delle Fratte, Roberto Gismondi, Giovanni Seri and Francesco G. Truglia.

Table 2.1 - Statistical measures released by Istat, taxonomy compared to SDGs indicators, variations compared to the previous year and to 10 years before and convergence among regions

Ref. SDG	INDICATOR	Compared to SDG indicator	Value	VARIATIONS		CONVERGENCE AMONG REGIONS compared to 10 years before
				Compared to previous year	Compared to 10 years before	
2.1.2	Prevalence of moderate or severe food insecurity in the population, based on the Food Insecurity Experience Scale (FIES)					
Prevalence of moderate or severe food insecurity (FAO, 2020, percentage values)		Identical	6.3		--	--
Prevalence of severe food insecurity (FAO, 2020, percentage values)		Identical	1.9		--	--
Households with signals of food insecurity (Istat, 2022, percentage values)		National context	1.3			--
2.2.2	Prevalence of malnutrition (weight for height >+2 or <-2 standard deviation from the median of the WHO Child Growth Standards) among children under 5 years of age, by type (wasting and overweight)					
Overweight or obesity among children from 3 to 5 years of age (Istat, 2021, percentage values)		Proxy	33.3			--
Overweight or obesity among minors from 3 to 17 years of age (Istat, 2021, percentage values)		National context	27.0			=
2.3.1	Volume of production per labour unit by classes of farming/pastoral/forestry enterprise size					
Production per labour unit of farms below 15,000 euros of annual turnover (Istat-Crea, processing of Crea data, 2021, euros at current prices)		Proxy	16,361			--
2.3.2	Average income of small-scale food producers, by sex and indigenous status					
Earnings before interest, taxes, depreciation and amortization of farms (EBITDA) below 15,000 euros of annual turnover (Istat-Crea, processing of Crea data, 2021, euro at current prices)		Proxy	1,737			--
2.4.1	Proportion of agricultural area under productive and sustainable agriculture					
Share of utilized agricultural land under organic farming (Ministry of Agriculture, Food Sovereignty and Forestry, 2021, percentage values)		Proxy	17.4			⇒⇐
Growth rate of organic crops (Ministry of Agriculture, Food Sovereignty and Forestry, 2021, percentage values)		National context	2.2			⇒⇐
Ammonia emissions from agriculture (ISPRA, 2020, thousand tonnes)		National context	345.0			--
Fertilizers distributed in agriculture (Istat, 2021, Kg per hectare)		National context	631.9			⇒⇐
Plant protection products distributed in agriculture (Istat, 2021, Kg per hectare)		National context	13.0			⇐⇒
Share of employed persons not in regular occupation in agriculture, forestry and fishing (Istat, 2020, percentage values)		National context	24.4			=
2.a.1	The agriculture orientation index for government expenditures					
Agriculture orientation index for government expenditures (Istat, 2021, index)		Identical	0.25			--
Share of public expenditure on agriculture (Istat, 2021, percentage values)		National context	0.53			--
Proportion of the value added of agriculture, forestry and fishing to the GDP (Istat, 2021, percentage values)		National context	1.88			--
2.a.2	Total official flows (official development assistance plus other official flows) to the agriculture sector					
Bilateral ODA in agriculture (Ministry of Foreign Affairs and International Cooperation, 2020, million euro at current prices)		Identical	95.95		--	--

Legend

IMPROVEMENT

STABILITY

DETERIORATION

-- NOT AVAILABLE / NOT SIGNIFICANT

⇒⇐ CONVERGENCE

= STABILITY

⇐⇒ DIVERGENCE

Notes

Food insecurity stable, but inequalities increased

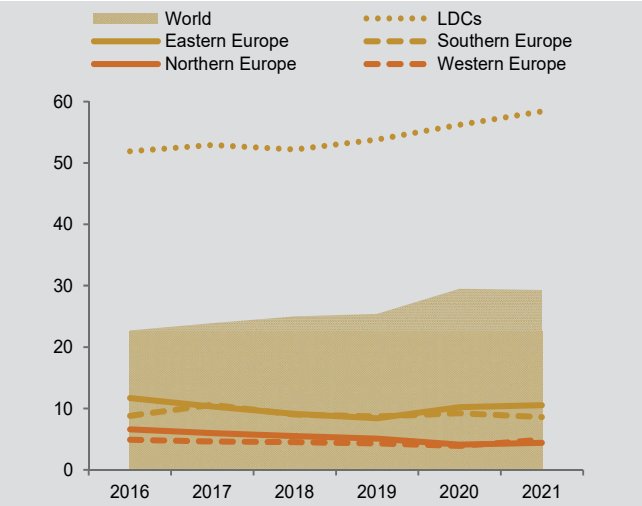
In 2021, according to FAO estimates, 29.3% of the world population and 58.4% of the population of the least developed countries (LDCs) was affected by moderate or severe food insecurity[2]. After the sharp acceleration observed in 2020, the prevalence of food

2 Moderate insecurity is associated with inability to eat regularly and to maintain a healthy, balanced diet; severe insecurity is associated with high probability of not being able to consume enough food for one's vital needs. In 2021,

insecurity has stabilised globally, but in the LDCs it has continued to grow at the same pace as in previous years, indicating an increase in inequality with regard to the access to food (Figure 2.1).

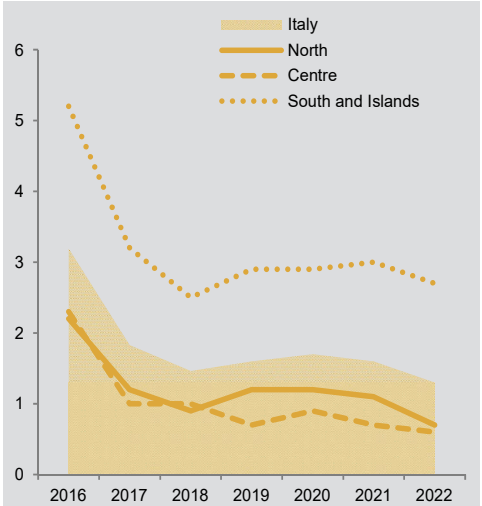
In Italy, the share of households with signals of food insecurity[3] decreased (from 1.7% of 2020 to 1.3% of 2022). However, the gap between the South and Islands (2.7% in 2022) and the rest of the country (0.6% in the Centre, 0.7% in the North) continued to widen (Figure 2.2).

Figure 2.1 - Prevalence of food insecurity in European regions, the World and the Least developed countries (LDCs), according to the *Food Insecurity Experience Scale*. Years 2016-2021 (percentage values, 3-year moving averages)



Source: FAO, Gallup World Poll

Figure 2.2 - Households with signals of food insecurity, by geographical area. Years 2016-2022 (a) (percentage values)



Source: Istat, Eu-Silc
(a) 2022 data are provisional.

More and more children and adolescents are overweight

In developed countries, malnutrition is manifested – especially among the most deprived population strata – in the prevalence of overweight, linked to a sedentary lifestyle and poor eating habits. In 2020, the prevalence of overweight among children under five was 5.7% worldwide (stable since 2018), but reached 8.3% in Europe, where it had been steadily decreasing since 2010, when it was 9.9%[4].

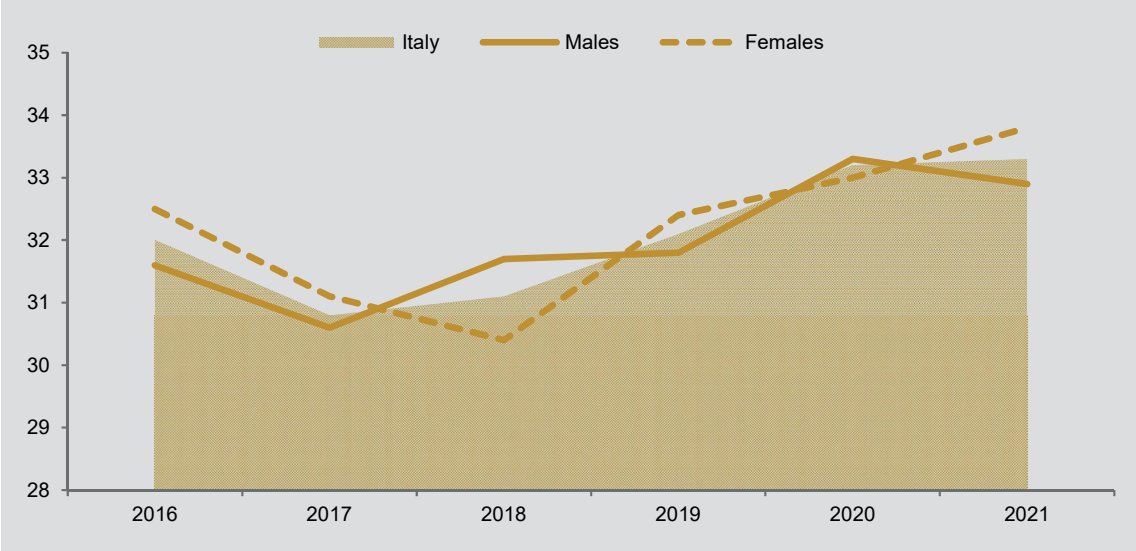
the prevalence of severe food insecurity was 11.7% all over the world (+0.8 percentage points compared to previous year) and 24.6% in the least developed countries (+1.6 percentage points). Estimates are based on the application of the Food Insecurity Experience Scale (FIES), a standard module included in the Gallup World Poll on behalf of FAO in about 150 countries since 2014.

3 Households that declare not to have had enough money, in some periods of the year, to buy food and not to be able to afford a protein meal at least twice a week. This indicator is not comparable with the FIES-based estimates, but it allows a breakdown by geographical areas, which is particularly relevant in Italy because of the wide regional diversity in economic conditions. The FIES module was implemented in the 2022 edition of the Survey on Income and Living Conditions (Eu-Silc) and will allow the calculation of FIES indicators for Italy with a regional detail.

4 UNICEF, WHO, World Bank Group. 2021, *Joint Child Malnutrition Estimates*. Geneva, Switzerland: World Health Organization. Children are considered overweight if the product of body weight times height is greater than +2 standard deviations from the median of the WHO Child Growth Standards.

On the contrary, the estimates available for Italy, based on a different methodology[5], describe, over the latest years, a worrying upward trend in the share of overweight children. In 2021, the share of overweight or obese 3- to 5-year-olds reached 33.3%: almost unchanged from the previous year, but up by 2.5 percentage points from 2017 (Figure 2.3). The share rose to 35.1% among the children aged 6 to 10 years, then decreased with age (23.3% among 11-13 year-olds, 16.8% among 14-17 year-olds). For the entire population of children and adolescents (3-17 years), the prevalence was 27% (+1.5 percentage points from 2017), with significantly higher values among the males (29.8%, compared to 24% of females) and among those residents in the South and Islands (33%, with a maximum of 37.6% in Campania).

Figure 2.3 - Overweight or obesity (a) **among children from 3 to 5 years of age, by gender. Years 2016-2021**
(percentage values, 2-year moving averages)



Source: Istat, Survey on Aspects of daily life
(a) According to the criteria adopted by the International Obesity Task Force.

Progress towards economic sustainability for the small farms

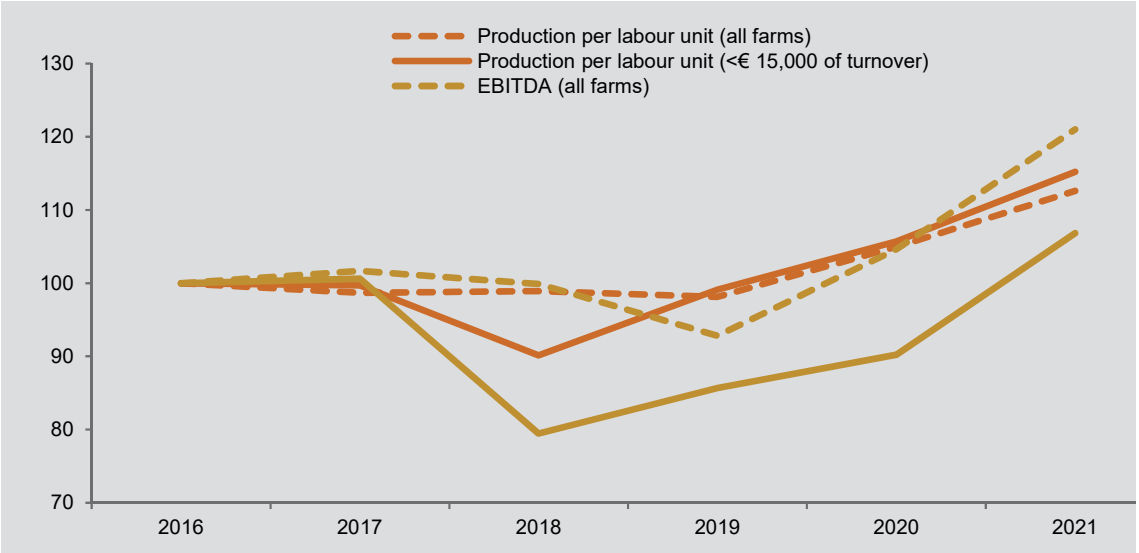
In the Italian context, small farms play a key role in combating land abandonment and degradation in inland areas, and in preserving the characteristic diversity of our agri-food production. In 2021, Italian farms with an annual turnover below 15,000 euro were estimated to have realised a production value of 16,361 euro per labour unit (+9% compared to previous year), and an EBITDA margin of 1,737 euro per farm (+18.4%)[6]. Both indicators

5 Italian estimates are 2-year moving averages (t, t-1), based on the results of the survey on Aspects of daily life, and refer, for the definition of overweight in children and adolescents, to the threshold values adopted by the International Obesity Task Force, instead of the WHO Child Growth Standards. Besides, for children, they refer to the 3-5 age group, instead of the 0-5 age group adopted for the Joint Child Malnutrition Estimates. For a comparison between the two methods, see the paragraph *Measuring overweight among children and adolescents by the BMI: cut-offs and methodologies in comparison*.

6 A labour unit is equal to 280 working days of at least 8 hours actually performed on the farm. The EBITDA margin (Earnings Before Interest, Taxes, Depreciation and Amortisation) is a measure of the economic outcome of operating management, net of fiscal and financial costs, calculated at current prices.

were on the rise for the third year in a row, realigning with the trend of average values for the whole sector (Figure 2.4), and the targets of improving productivity and increasing income of small producers, set by the 2030 Agenda.

Figure 2.4 - Production per labour unit and EBITDA (a) **of farms (all farms and farms below 15,000 euro of annual turnover). Years 2016-2021** (fixed base index numbers, 2016=100)

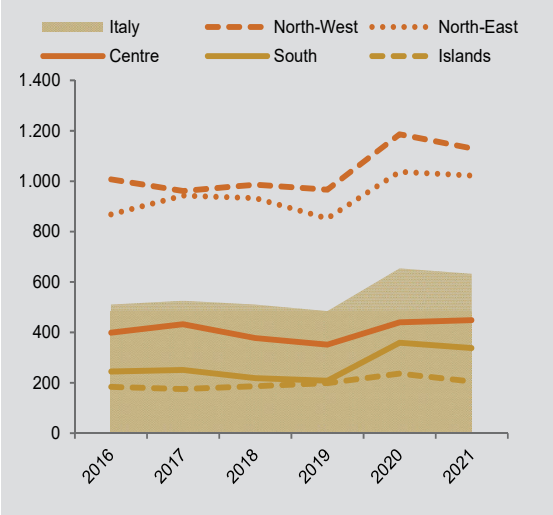


Source: Istat-Crea, processing of data from Crea, Farm Accountancy Data Network (FADN)
(a) Earnings before interest, taxes, depreciation and amortisation.

No significant advancement in reducing fertilisers and pesticides

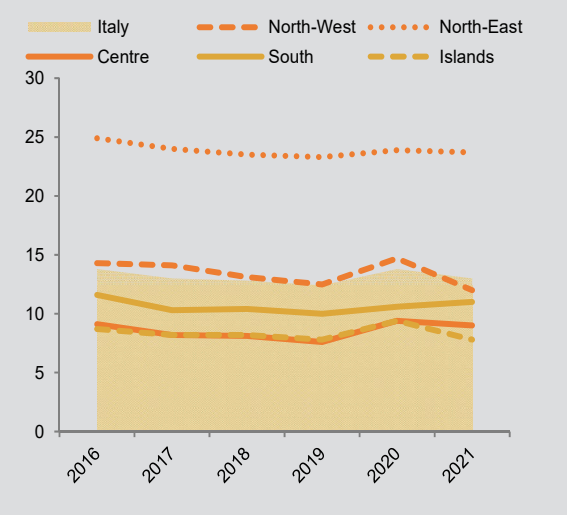
Italy is among the EU countries with the largest shares of utilised agricultural land under organic farming (17.4% in 2021, surpassed only by Austria, Estonia and Sweden). The fast growth of organic farming (+99.3% between 2011 and 2021, in terms of agricultural land) was not paired, however, by a significant reduction of the distributed amounts of fertilisers and plant protection products, whose overuse is harmful to human health and biodiversity. In 2021 were distributed, on average, 13 kg of plant protection products and 631.9 kg of fertilisers per hectare of treatable area. Although both values were lower than in the previous year (by 5.8% and by 3.4%, respectively), the amount of plant protection products distributed in 2021 was only 1.2% below the average of the previous five-year period, while the amount of fertilisers exceeded by 17.7% the average of the same period. A comparison between geographical areas showed, for both indicators, wide gaps, reflecting the diversity of agricultural systems and environmental conditions in our country. In 2021, the amount of fertilisers reached 1,130 kg per hectare in the North-West and 1,022 in the North-East, but dropped to 448 kg per hectare in the Centre, 337 in the South and 204 in the Islands. The distribution of plant protection products, on the other hand, was strongly concentrated in the North-East (23.7 kg per hectare), while in all other geographical areas it showed values well below the Italian average, with a minimum of 7.8 kg per hectare in the Islands (Figures 2.5 and 2.6).

Figure 2.5 - Fertilisers distributed in agriculture, by geographical area. Years 2016-2021 (kg per hectare)



Source: Istat, Survey on the supply of fertilisers for agricultural use (fertilisers, soil conditioners and improvers)

Figure 2.6 - Plant protection products distributed in agriculture, by geographical area. Years 2016-2021 (kg per hectare)



Source: Istat, Survey on plant protection products provided for agricultural use

The 2020 reduction target for ammonia emission achieved

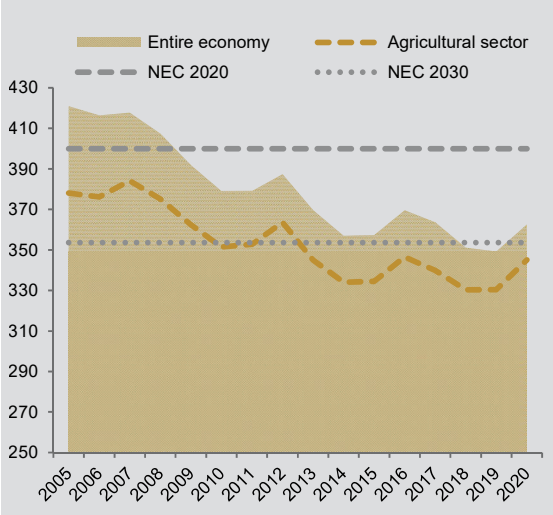
Ammonia emissions in the atmosphere, mainly produced by livestock breeding, represent another pressure factor on the environment that is generated by the agri-food system. The NEC Directive of 2016 set the national targets for the reduction of this pollutant, to be achieved by 2020 and by 2030: respectively, 5% less and 16% less than the baseline of 2005 emissions[7]. The emissions generated by Italy in 2020, despite an increase by 3.8% compared to the previous year, were 13.9% lower than in 2005. Therefore, the first target was achieved, and must be kept until 2029[8]. Further efforts will be necessary to achieve the 2030 target, which appears, however, within our country's reach (Figure 2.7). In 2020, the agricultural sector was responsible for the emission of 345 thousand tonnes of ammonia, equal to 95.1% of the national total. Compared to the previous year, emissions from agriculture grew by 4.4%, mostly due to an increase in the emissions generated by the use of fertilisers (+21.4%)[9].

7 Directive 2016/2284/Ue (National Emission Ceilings), transposed in Italy by the Legislative Decree no. 81/2018.

8 In 2020, national ammonia emissions were equal to 362,631 tonnes, below the "ceiling" of 399,930 tonnes (95% of 2005 emissions), that must not be exceeded until 2029. In 2030, the ceiling will lower to 353,622 tonnes, equal to 84% of 2005 emissions. See ISPRA, 2023. *Environmental Data Yearbook*. https://indicatoriambientali.isprambiente.it/sites/default/files/pdf/2022/Ambiente%20in%20Italia%20Annuario%202022.pdf.

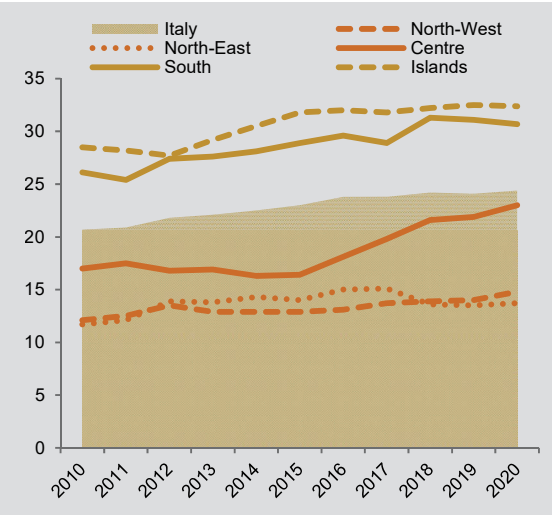
9 In 2020, emissions generated by crops treated with fertilisers were equal to 17.7% of ammonia emissions from agriculture, against 15.2% of the previous year. The share of emissions generated by livestock breeding, on the contrary, reduced from 59.2% to 56.7%. See ISPRA, *ibid*.

Figure 2.7 - Ammonia emissions from the agricultural sector and the entire economy, and national ceilings set by the NEC Directives. Years 2005-2020 (thousand tonnes)



Source: Istat, processing of data from ISPRA

Figure 2.8 - Share of employed persons not in regular occupation in agriculture, forestry and fishing, by geographical area. Years 2010-2020 (percentage values)



Source: Istat, National Accounts

Employment of irregular labour force in agriculture keeps growing

The social sustainability profile of Italian agriculture is seriously compromised by the widespread use of irregular labour force. In 2020, the share of employed persons not in regular occupation in the agricultural sector reached 24.4%, more than double the value estimated for the entire economy (12%; see Goal 8). Besides, it is of particular concern that over the latest ten years, while the general employment irregularity rate has remained fairly stable, the irregularity rate in the agricultural sector has risen by 3.7 percentage points[10] (Figure 2.8). Finally, while being significantly higher in the South and Islands (where almost one in three agricultural workers was not in regular employment), the input from the irregular workforce was significant in all geographical areas (about one in seven workers in the North, almost one in four in the Centre). The social costs are very high, due to the direct fallout on living and working conditions of the agricultural labour force and the spreading of illicit practices such as illegal day-by-day hiring, in open contrast to the goals of improving the quality of employment (Goal 8) and strengthening legality (Goal 16).

10 Estimates referring to the entire branch of Agriculture, forestry and fishing (NACE Rev2).

Measuring overweight among children and adolescents by the BMI: cut-offs and methodologies in comparison[1]

Since 2010, Istat has been disseminating data on the overweight and obesity of children from 6 to 17 years, collected annually by the Survey on Aspects of Daily Life, and, from 2019, also data on children aged 3 to 5 years. The availability of these statistics makes possible to monitor the evolution of the phenomenon, which is a risk factor for the early onset of many chronic diseases. Several studies recognise childhood obesity as a predictive factor for obesity in adulthood: in particular, it has been calculated that more than one third of children and about half of adolescents that are overweight maintain this condition even as adults[2].

To estimate the prevalence of overweight among children and adolescents, Istat calculates the Body Mass Index (BMI) for the individuals of a representative sample of the analysed population[3], which is a tool of easy application in analyses involving large population groups, and commonly used at international level. For the estimation of overweight and obesity, the BMI is compared with the threshold system defined in 2000 by Cole et al.[4], based on reference growth curves, assumed as a reference by the International Obesity Task Force (IOTF)[5] and widely used in several national and international studies[6]. This standard, however, differs from that proposed by the WHO, and adopted by the UN-IAEG for SDG indicator 2.2.2, which is based on a sample of children that can be considered a standard population in all respects[7].

The comparison between the application of the Cole/IOTF standard, currently used by Istat, and that proposed by the WHO shows significant differences. In particular, with reference to the 2020-2021 data available for Italy, the compliance between the two standards is 93.1% (25.7% of subjects considered overweight and 67.4% of subjects considered of normal weight or underweight according to both standards), while the remaining 6.9% are considered overweight according to the WHO standard, but not according to the Cole/IOTF standard (Table 1).

---

1 This section was edited by Emanuela Bologna with contributions by Luigi Costanzo.

2 Rolland-Cachera M.F., Deheeger M., Bellisle F., Semp M., Guilloud-Bataille M. and Patois E. 1984. "Adiposity Rebound in Children: A Simple Indicator for Predicting Obesity". *American Journal of Clinical Nutrition*, 39: 129-135.

3 The BMI is the ratio between the weight (in kg) e and the square of height (in metres). Weight and height data are self-reported (directly for subjects aged 14-17, by a proxy for subjects aged 3-13).

4 Cole T.J., Bellizzi M.C., Flegal K.M. and Dietz W.H. 2000. "Establishing a Standard Definition for Child Overweight and Obesity Worldwide: International Survey". *British Medical Journal*, 320: 1240-1243. See also: Cole T.J. e Lobstein T. 2012. "Extended International (IOTF) Body Mass Index Cut-Offs for Thinness, Overweight and Obesity". *Paediatric Obesity*, 7: 284-294.

5 The IOTF was established in 1994 to define new growth curves, specific to children and adolescents living in different parts of the world, adopting the BMI as a measurement tool, and the growth curves proposed by Cole et al., 2000.

6 In Italy, for instance, the Cole/IOTF standard is used by the National Institute of Health within the monitoring system "OKkio alla salute". See: Spinelli A., Nardone P., Buoncristiano M., Lauria L., Andreozzi A., Galeone D. (eds.). 2014. "Il sistema di sorveglianza OKkio alla salute: risultati 2012". Ministry of Health, National Health Institute. *ISTISAN Report*, 14/11.

7 While a reference population describes the actual growth state of a given group (with which to compare possible other groups), a standard population describes an "optimum" growth state. Therefore, to obtain a standard population, the WHO study was carried out on a highly selected sample of children: without any health issue, in socio-economic conditions favouring growth, breast-fed for at least one year (with breast-feeding exclusive or predominant for at least 4 months) and sons of non-smoking mothers (before and after pregnancy).

Table 1 - Children and adolescents aged 3-17, classified by the BMI, according to the Cole/IOTF and WHO cut-offs. Year 2021 (sample percentage values, 2-year moving averages)

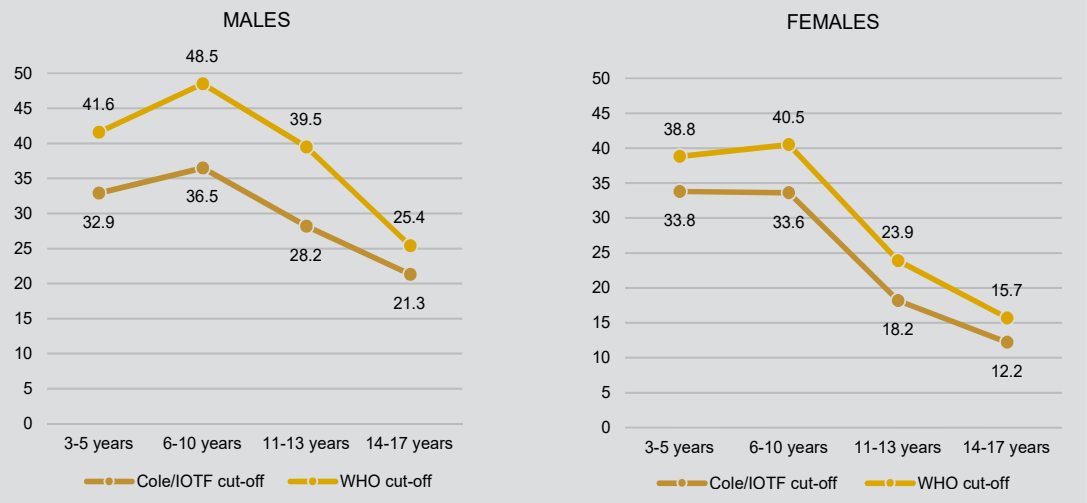
Cole/IOTF Standard	WHO standard		
	Overweight	Not overweight	**Total**
Overweight	25.7	-	25.7
Not overweight	6.9	67.4	74.3
Total	**32.6**	**67.4**	**100.0**

Source: Istat, Survey on Aspects of Daily Life

Comparing the results determined by the application of the two methodologies for the age group 3-17 years, the share of overweight individuals is 34.2% according to the WHO standard, compared to 25.7% of the Cole/IOTF standard[8]. It is also noted that the difference between the shares of overweight individuals estimated according to the two methods is wider among males (8.9 percentage points, compared to 5.3 for females). In addition, with regard to age groups, the differences are wider among children aged 6 to 10 years, and are gradually reduced in the subsequent age groups (Figure 1).

The prevalence of overweight, therefore, appears to be very sensitive to the chosen method. The adoption of the Cole/IOTF standard by ISTAT dates back to 2010 and is harmonised with the Italian context, where the same standard is adopted by the National Institute of Health. Regardless of the limitations and advantages of the two methodologies, the adoption of the WHO standard as a reference for the SDG 2.2.2 indicator by the UN-IAEG calls for a reflection – which certainly needs further analysis – on the appropriateness of complementing the current production of Istat, in accordance with a standard shared within the Sistan, with the dissemination of estimates that can be used internationally to monitor the objectives of the 2030 Agenda.

Figure 1 - Prevalence of overweight among children and adolescents aged 3-17, by gender and age group. Comparison between Cole/IOTF and WHO cut-offs. Year 2021 (percentage values, 2-year moving averages)



Source: Istat, Survey on Aspects of daily life

8 The measurement is carried out on sample data not extrapolated to the population. For this reason, the sum of the percentages of non-concordant cases does not coincide with the estimates of the overweight prevalence.

GOAL 3

ENSURE HEALTH
AND WELL-BEING FOR ALL AND ALL AGES[1]

In brief

- In 2022, there were 713.499 deaths in Italy, around 12 thousand more than in 2021, and higher even than the pre-pandemic average.
- In the first six months of 2022, there was a clear upturn in mobility and, as a consequence, in road accidents, which, however, remained at lower levels than before the pandemic.
- From 2010 to 2020, there was a slow but steady decrease in mortality due to the most common causes of death (cardiovascular diseases, cancer, diabetes, or chronic respiratory diseases): from 10.2% to 8.6% for people aged 30-69.
- In 2022, the share of overweight people remained stable; among males, alcohol abuse and smoking habits increased.
- Flu vaccination coverage decreased in the 2021/2022 winter season: 58.1% of the elderly vaccinated, a percentage still far from the WHO recommended threshold value (75%).

The statistical measures released by Istat for Goal 3 are thirty-seven and refer to seventeen UN-IAEG-SDGs indicators (Table 3.1).

1 This section was edited by Barbara Baldazzi with contributions by Silvia Bruzzone and Silvia Simeoni.

Table 3.1 - Statistical measures released by Istat, taxonomy compared to SDGs indicators, variations compared to the previous year and to 10 years before and convergence among regions

Ref. SDG	INDICATOR	Compared to SDG indicator	Value	VARIATIONS		CONVERGENCE AMONG REGIONS compared to 10 years before
				Compared to the previous year	Compared to 10 years before	
3.2.1	Under-five mortality rate					
	Under-five mortality rate (Istat, 2022, per 1,000 live births)	Identical	2.85			=
3.2.2	Neonatal mortality rate					
	Neonatal mortality rate (Istat, 2020, per 1,000 live births)	Identical	1.78			⇐⇒
3.3.1	Number of new HIV infections per 1,000 uninfected population, by sex, age and key populations					
	Number of new HIV infections per 100,000 (Italian National Institute of Health - ISS, 2021, per 100,000 inhabitants)	Identical	3.0		(a)	⇐⇒
3.3.2	Tuberculosis incidence per 100,000 population					
	Tuberculosis incidence per 100,000 population (Ministry of Health, 2020, per 100,000 inhabitants)	Identical	3.8			--
3.3.4	Hepatitis B incidence per 100,000 population					
	Hepatitis B incidence per 100,000 population (European Centre for Disease Prevention and Control - ECDC; Ministry of Health, 2020, per 100,000 inhabitants)	Identical	0.3		(b)	--
3.4.1	Mortality rate attributed to cardiovascular disease, cancer, diabetes or chronic respiratory disease					
	Probability of dying between ages 30 and 69 years from cardiovascular diseases, cancer, diabetes, or chronic respiratory diseases (Istat, 2020, percentage values)	Identical	8.62			⇐⇒
	Healthy life expectancy at birth (Istat, 2022, average number of years)	National context	60.1			⇒⇐
	Overweight or obesity (standardised rates) (Istat, 2022, standardised rates per 100 persons)	National context	44.5			=
3.4.2	Suicide mortality rate					
	Age standardised suicide mortality rate (Istat, 2020, per 100,000 inhabitants)	Identical	5.6			⇐⇒
	Number of deaths attributed to suicide (Istat, 2020, N.)	Identical	3,650			--
3.5.2	Alcohol per capita consumption (aged 15 years and older) within a calendar year in litres of pure alcohol					
	Litres of pure alcohol per capita (WHO, 2019, litre per capita)	Identical	7.65			--
	Alcohol consumption (standardised rates) (Istat, 2022, standardised rates per 100 persons)	National context	15.5			=
3.6.1	Death rate due to road traffic injuries					
	Age standardised death rate due to road traffic injuries (Istat, 2021, per 100,000 inhabitants)	Identical	4.7			⇐⇒
	Number of road traffic fatal injuries (Istat, 2021, N.)	National context	2,875			--
	Serious injury rate in road accidents (Ministry of Health, 2021, per 100,000 inhabitants)	National context	27.0		(a)	⇒⇐
3.7.1	Proportion of women of reproductive age (aged 15-49 years) who have their need for family planning satisfied with modern methods					
	Demand for family planning satisfied with modern methods (Istat, 2019, percentage values)	Proxy	64.5	--	(c)	⇐⇒
3.7.2	Adolescent birth rate (aged 10-14 years; aged 15-19 years) per 1,000 women in that age group					
	Age-specific fertility rates for 1,000 women aged 10-14 (Istat, 2021, per 1,000 inhabitants)	Identical	0.025			⇐⇒
	Age-specific fertility rates for 1000 women aged 15-19 (Istat, 2021, per 1,000 inhabitants)	Identical	14.5			⇐⇒

Table 3.1 continued - **Statistical measures released by Istat, taxonomy compared to SDGs indicators, variations compared to the previous year and to 10 years before and convergence among regions**

Ref. SDG	INDICATOR	Compared to SDG indicator	Value	VARIATIONS		CONVERGENCE AMONG REGIONS compared to 10 years before
				Compared to the previous year	Compared to 10 years before	
3.8.1	Coverage of essential health services					
Hospital beds (Istat processing on Ministry of Health Open Data, 2020, per 10,000 inhabitants)		Partial	31.0		(d)	⇒⇐
Day-hospital beds in public and private care institutions (Istat processing on Ministry of Health Open Data, 2020, per 10,000 inhabitants)		Partial	3.4		(d)	⇐⇒
Beds in the residential social-healthcare and social-welfare facilities (Istat, 2020, per 10,000 inhabitants)		Partial	69.6			⇒⇐
Persons on antiretroviral therapy (ART) (UNAIDS, 2020, percentage values)		Partial	91.0			--
Proportion of deliveries with more than 4 check up visits during pregnancy (Ministry of Health, 2021, percentage values)		Proxy	91.0		(c)	⇒⇐
Hypertension (standardised rates) (Istat, 2022, standardised rates per 100 persons)		Proxy	18.8			=
Diabetes (standardised rates) (Istat, 2022, standardised rates per 100 persons)		Proxy	6.7			⇒⇐
3.8.2	Proportion of population with large household expenditures on health as a share of total household expenditure or income					
Population aged 16 and over reporting unmet needs for medical care due to being too expensive (Istat, 2022, percentage values)		Proxy	1.0			--
3.9.3	Mortality rate attributed to unintentional poisoning					
Unintentional poisoning standardised mortality rate (Istat, 2020, per 100,000 inhabitants)		Identical	0.45			⇒⇐
3.a.1	Age-standardized prevalence of current tobacco use among persons aged 15 years and older					
Smoking (standardised rates) (Istat, 2022, standardised rates per 100 persons)		Identical	20.2			⇐⇒
3.b.1	Proportion of the target population covered by all vaccines included in their national programme					
Influenza vaccination coverage age 65+ (Ministry of Health, 2021/2022, per 100 inhabitants)		Identical	58.1			⇐⇒
Pediatric vaccination coverage: polio (Ministry of Health, 2021, per 100 inhabitants)		Identical	94.0		(c)	⇐⇒
Pediatric vaccination coverage: measles (Ministry of Health, 2021, per 100 inhabitants)		Identical	93.9		(c)	=
Pediatric vaccination coverage: rubella (Ministry of Health, 2021, per 100 inhabitants)		Identical	93.9		(c)	=
3.b.2	Total net official development assistance to medical research and basic health sectors					
Total net official development assistance to medical research and basic health sectors (Ministry of Foreign Affairs and International Cooperation, 2020, million euro, current prices)		Identical	68.13		(c)	--
3.c.1	Health worker density and distribution					
Physicians (IQVIA ITALIA, 2022, per 1,000 inhabitants)		Identical	4.2			=
Nurses and midwives (Co.Ge.A.P.S. - Consorzio Gestione Anagrafica Professioni Sanitarie, 2021, per 1,000 inhabitants)		Identical	6.5		(c)	⇒⇐
Dentists (Co.Ge.A.P.S. - Consorzio Gestione Anagrafica Professioni Sanitarie), 2021, per 1,000 inhabitants)		Identical	0.8		(c)	⇒⇐
Pharmacists (Co.Ge.A.P.S. - Consorzio Gestione Anagrafica Professioni Sanitarie), 2021, 1,000 inhabitants)		Identical	1.3		(c)	⇐⇒

Legend

- IMPROVEMENT
- STABILITY
- DETERIORATION
- -- NOT AVAILABLE / NOT SIGNIFICANT
- ⇒⇐ CONVERGENCE
- = STABILITY
- ⇐⇒ DIVERGENCE

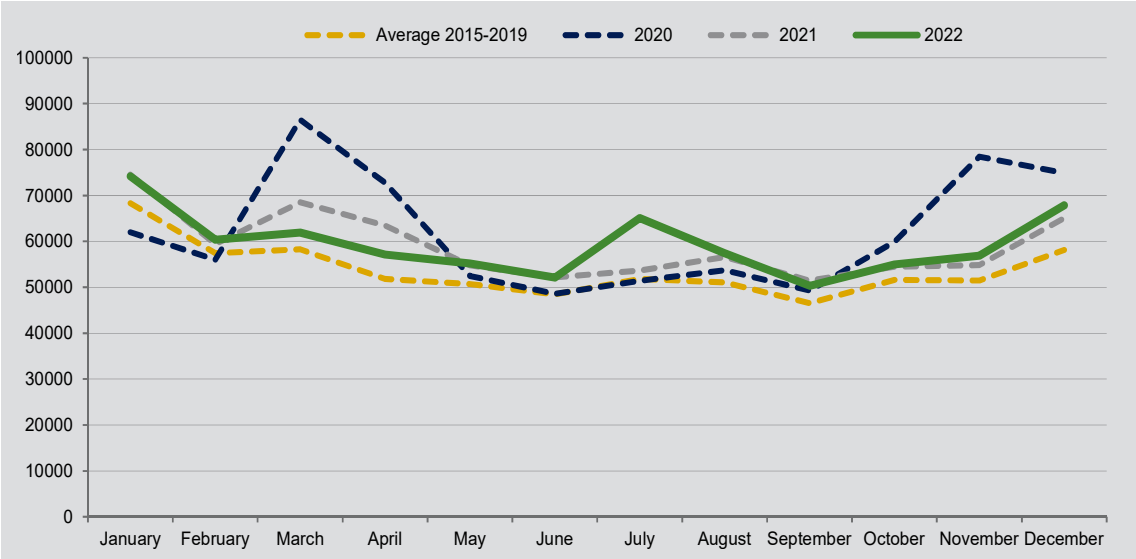
Notes

(a) Variation compared to 2012
(b) Variation compared to 2011
(c) Variation compared to 2013
(d) Variation compared to 2014

In 2022, mortality remained higher than the pre-pandemic average

In 2022, the total number of deaths in Italy was 713,499, about 12,000 more than in 2021, but down from 2020, the peak mortality year due to the pandemic. More than 606,000 deaths, 85% of the total, were aged 70 years or older. The coldest months - January and December - and the hottest months - July and August - saw the highest number of deaths (265 thousand, nearly 40 percent of the total) mainly due to adverse weather conditions in the context of a country with a considerably aging population (Figure 3.1).

Figure 3.1 - Total deaths, by month. Years 2020-2022 and average 2015-2019 (absolute values)



Source: Istat, Italian National Institute of Health (ISS)

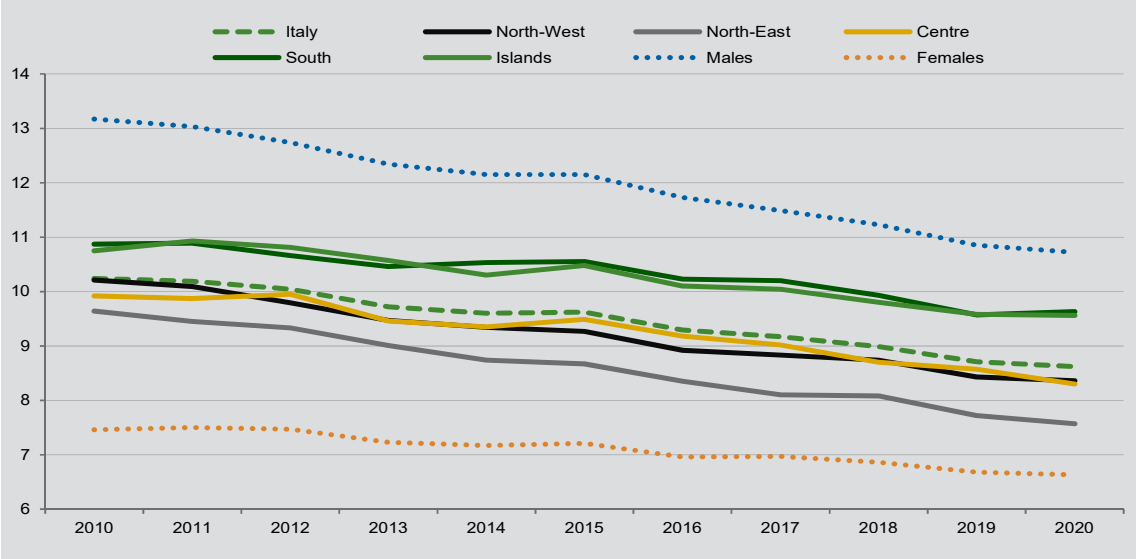
The first 6 months of 2022 saw a marked recovery in mobility and, consequently, in road accidents, which have nonetheless decreased compared to before the pandemic

The first six months of 2022 saw a marked recovery in mobility and, consequently, road accidents. According to preliminary estimates, there were 81,437 road accidents with personal injuries in the six-month period January-June 2022, (+24.7% compared to the same period in 2021), with 108,996 injuries (+25.7%) and 1,450 deaths (+15.3%). The road accident rate for this period has decreased compared to the first six months of 2019, with -2.6% road accidents, -6.8% injuries and -5.5% deaths (for an innovative approach to road accident analysis, see the paragraph *Road safety and new data sources: road accidents indicators based on big data use*).

Slow and steady decline in mortality from the most prevalent causes of death before COVID-19

Adequate and easily accessible health care accompanied by healthier lifestyles and a decrease in environmental risk factors can reduce the probability of premature death due to cancer, diabetes, cardiovascular and chronic respiratory disease among people aged 30-69 years. From 2010 to 2020, the decrease in premature mortality was about 1.6 percentage points (probability of death decreased from 10.2% to 8.6%). The largest progress was recorded among men (from 13.2% to 10.7%; -2.5 percentage points) and in the North-East (from 9.6% to 7.6%; -2.1 p.p.) and North-West (from 10.2% to 8.4%; -1.9 p.p.). As a result of these trends, the substantial gender gap has decreased (from 6 to 4 p.p. to the disadvantage of males), while the spatial gap between the North and the South and Islands has widened (from 1 p.p. to 2 p.p.; Figure 3.2).

Figure 3.2 - Probability of dying between ages 30 and 69 years from cardiovascular diseases, cancer, diabetes, or chronic respiratory diseases, by region. Years 2010-2020 (percentage values)



Source: Istat, Vital statistics on causes of death

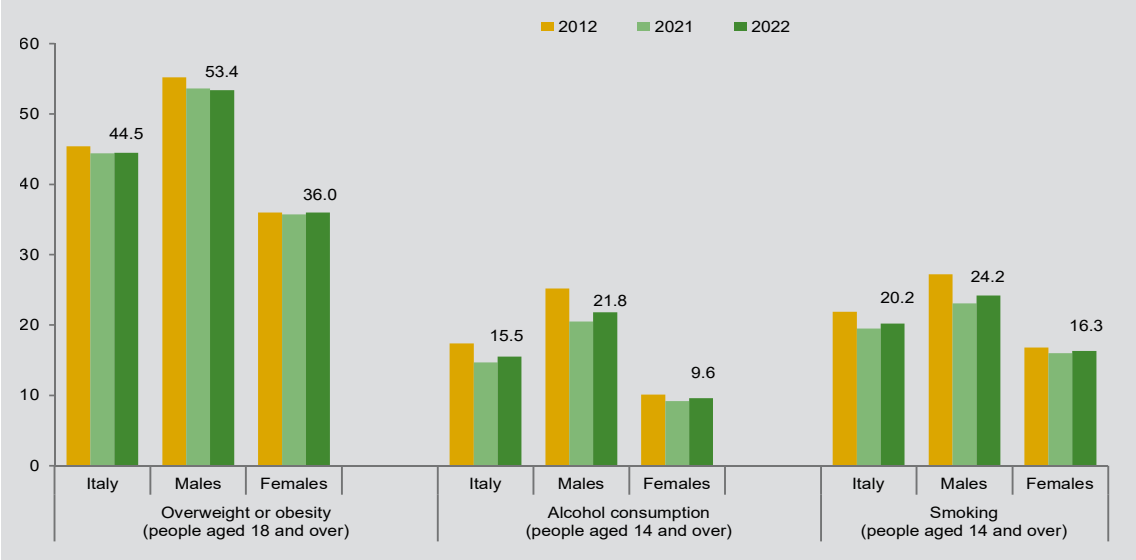
Share of overweight people stable in 2022; alcohol abuse and smoking habits increased among males

In 2022, 44.5 % of the population aged 18 and over was overweight or obese, a stable value compared to 2021, for both men (53.4%) and women (36.0%).

Among people aged 14 and older, 15.5 out of 100 misused alcohol in 2022. This was 21.8% of males and 9.6% of females. In the past year, the share of males increased by 1.3 percentage points (+0.8 for females).

Habitual smokers, among people aged 14 and older, 24.2 % of males and 20.2 % of females. Again, the largest increase over 2021 (+1.1 p.p.) was among men (Figure 3.3).

Figure 3.3 - Overweight or obesity, alcohol consumption and smoking, by gender. Years 2012, 2021 and 2022
(standardised rates per 100 persons)



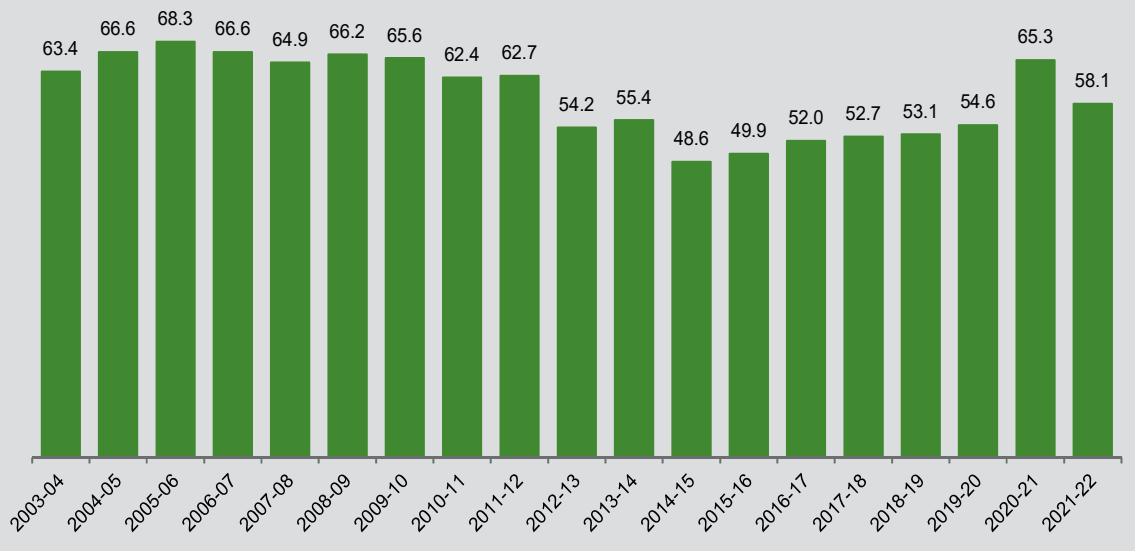
Source: Istat, Survey on Aspects of daily life

Flu vaccine coverage decreased in the 2021/2022 winter season

In the winter season 2020/2021, a period when COVID-19 was still widespread and vaccination information and education campaigns very active, flu vaccination coverage had significantly increased compared to previous periods, reaching 23.7% in the population as a whole, and 65.3% among the elderly (65 years and older), still far, however, from the WHO recommended threshold value (75%).

In the 2021/2022 winter season, the percentage of the elderly who have been vaccinated against influenza dropped to 58.1%, but remained at higher levels than before the pandemic. Regions where vaccination coverage for the over-65s exceeds 65% are Emilia-Romagna (68.8%), Basilicata (68.5%) and Umbria (65.1%). Below 50% of the elderly population vaccinated are Valle d'Aosta (49.3%), the Autonomous Province of Trento (46.5%), Sardegna (41.2%) and the Autonomous Province of Bolzano (36.1%).

Figure 3.4 - Influenza vaccination coverage age 65+. Winter seasons 2003/2004–2021/2022 (percentage values)



Source: Ministry of Health

Road safety and new data sources: road accidents indicators based on big data use[1]

Road Safety Performance Indicators (RSPI) give a multidimensional approach for accidents investigation concerning roads, vehicles and persons involved. Combining the use of statistical surveys, administrative geographical information systems (GIS) and Big Data (BD) sources, the result provides new elements towards planning road safety policies. Nowadays, there is a clear information bias as regards the appropriate denominators to be used in the construction of statistical indicators for road accidents. Resident population is used as a common proxy for those exposed to risk in a specific geographical area, but is not always an appropriate solution, especially in the light of the seasonal nature of road accidents. Vehicle fleet by province of registration (Automobile Club of Italy - ACI) provides more accurate information than the population source, but introduces a statistical bias into the indicators due to the mobility of road users. The length of the road network (from Open Street Map) provides consistent information concerning the different territories. This information is not available from official statistics at national level, and although there are archives and detailed road graphs for each municipality, province and region, a harmonised and systematic national road registry has not been established.

Using data from the Open Street Map source, new experimental statistics[2] on road mortality and injuries[3] have been calculated and a comparison with traditional rates, out of the resident population amount, has been done. The rates consist of a ratio between a numerator, based on data from road accidents occurring in 2021, and a denominator, given by the length of the road network, by type, reported in 2017 or the average resident population in Italy in 2021. The data, shown in the present section, represent a first result of a more ambitious Istat project, with the final aim to estimate the observed traffic flows (vehicles/Km) on the national road network. The value added should in fact be the probability calculation of being involved in an accident and the effective rates of exposure to the accident risk.

Crude road mortality rates by province per 100 km of national road length varied between 1.13 in Napoli, 0.91 in Roma and 0.86 in Venezia to 0.03 in Aosta, 0.11 in Campobasso and 0.15 in Massa-Carrara (Figure 1). Injury rates, for all road categories, reached the highest levels in Milano, Genova, Roma, Napoli and Trieste (values included in the range 126.71 - 78.93 injuries per 100 km of national road length) and lowest in Campobasso, Benevento, Isernia, Nuoro, and Potenza (from 6.83 up to 7.64).

The geography of road fatality and injury rates changes considerably if the average resident population is taken as the denominator (Figure 2). In this case, the highest mortality rates were recorded in Udine, Isernia, Ferrara, Rovigo and Latina (from 10.00 up to 9.35 fatalities per 100,000 inhabitants), the lowest in Aosta, Trieste, Lodi, Massa-Carrara, Monza and Brianza, and Verbano-Cusio-Ossola (from 0.81 up to 2.59). Road injury rates are above national average in the provinces of Genova, Livorno, Imperia, Rimini and Florence (from 642.04 to 534.52) and lower in some southern territories, such as Benevento, Avellino, Agrigento, Vibo Valentia and Cosenza (from 129.38 to 192.65).

1 This section was edited by Marco Broccoli and Silvia Bruzzone, with contributions by Barbara Baldazzi.

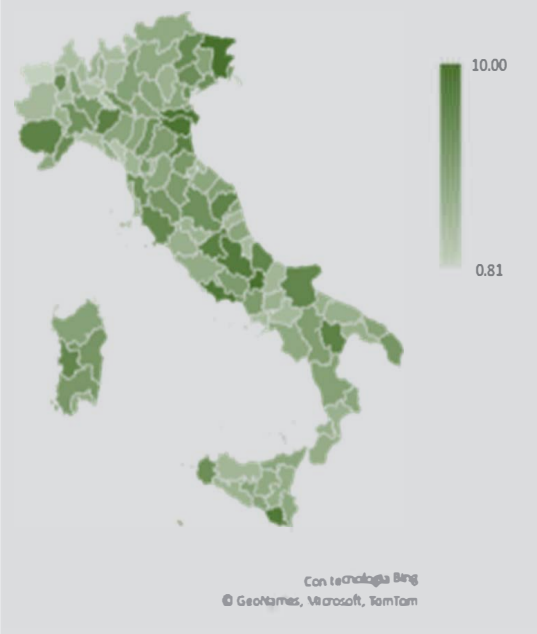
2 Istat 2017. Use of the Open Street Map to calculate indicators for road accidents on the Italian roads https://www.istat.it/en/experimental-statistics; Istat. 2017. Big data Committee Annual Report 2017, https://www.istat.it/en/archivio/221094; Istat. Incidenti stradali in Italia. Anno 2021 https://www.istat.it/it/archivio/275554.

3 Deaths and injuries in road accidents per km of roads in Italy (per 100) or average resident population (per 100,000 inhabitants).

Figure 1 - Road mortality rate per 100 km of national road length (all road categories). Year 2021 (rates per 100 km of road length)

Source: Istat, Survey on road accidents resulting in death or injury (2021), National road length in Italy by Open Street Map (2017))

Figure 2 - Road mortality rate per 100,000 resident inhabitants. Year 2021 (rates per 100,000 inhabitants)



Source: Istat, Survey on road accidents resulting in death or injury (2021), National road length in Italy by Open Street Map (2017)

The use of a more suitable denominator to represent the differences in road accident risks across the territory, related to the length of the road network (Motorways, Built up area Roads and Rural Roads) and indirectly also to the traffic flow, allows to highlight different characteristics in the counties, adjusted for population density and seasonality effect. In fact, a higher mortality risk emerges, for example, on rural roads, in the province of Napoli, in first place in the ranking of provincial mortality rates per 100 km of extra-urban roads (1.13) and 100th in the ranking of provincial rates (107 overall) of road mortality per 100,000 residents (0.74).

GOAL 4

QUALITY EDUCATION FOR ALL

PROVIDE QUALITY, EQUITABLE AND INCLUSIVE EDUCATION AND PROMOTE CONTINUOUS LEARNING OPPORTUNITIES FOR ALL[1]

In brief

- In 2020/2021, Italy still far from European targets for early childhood services: 28.0% of seats available compared to the number of children aged 0-2.
- The share of 5-year-olds enrolled in pre-primary schools or the first year of primary school declines.
- In 2022, 11.5% of 18-24 year-olds left – with no diploma - the education and training system.
- Italy lags behind Europe also in terms of the number of young people with a tertiary degree (29.2% among 25-34 year-olds).
- Participation in life-long learning was stable in 2022 (9.6%), at higher levels than the pre-pandemic period.
- In 2021, about half of individuals aged 16-74 had at least basic digital skills.

The statistical measures released by Istat for Goal 4 are thirty-five and refer to ten UN-IAEG-SDGs indicators (Table 4.1).

1 This section was edited by Barbara Baldazzi with contributions by Claudia Busetti, Raffaella Cascioli, Donatella Grassi, Giulia Milan, Azzurra Tivoli and Laura Zannella.

Table 4.1 - Statistical measures released by Istat, taxonomy compared to SDGs indicators, variations compared to the previous year and to 10 years before and convergence among regions

Ref. SDG	INDICATOR	Compared to SDG indicator	Value	VARIATIONS		CONVERGENCE AMONG REGIONS
				Compared to the previous year	Compared to 10 years before	Compared to 10 years before
4.1.1	Proportion of children and young people: (a) in grades 2/3; (b) at the end of primary; and (c) at the end of lower secondary achieving at least a minimum proficiency level in (i) reading and (ii) mathematics, by sex					
Inadequate level of literacy (15-year-old students) (Oecd-Invalsi, 2018, percentage values)		Identical	23.3	(a)	(b)	--
Inadequate level of mathematics (15-year-old students) (Oecd-Invalsi, 2018, percentage values)		Identical	23.8	(a)	(b)	--
Inadequate level of science (15-year-old students) (Oecd-Invalsi, 2018, percentage values)		Identical	25.9	(a)	(b)	--
Inadequate level of financial literacy (15-year-old students) (Oecd-Invalsi, 2018, percentage values)		National context	20.9	(a)	(c)	--
Inadequate level of literacy (students in grade 8) (Invalsi, 2021/2022, percentage values)		Identical	38.6		(d)	⇒⇐
Inadequate level of numeracy (students in grade 8) (Invalsi, 2021/2022, percentage values)		Identical	43.6		(d)	⇒⇐
Inadequate level of English listening competence (students in grade 8) (Invalsi, 2021/2022, percentage values)		Identical	37.6		(d)	⇐⇒
Inadequate level of English reading competence (students in grade 8) (Invalsi, 2021/2022, percentage values)		Identical	22.0		(d)	⇒⇐
Inadequate level of literacy (students in grade 10) (Invalsi, 2021/2022, percentage values)		Identical	34.1	(e)	(d)	⇒⇐
Inadequate level of numeracy (students in grade 10) (Invalsi, 2021/2022, percentage values)		Identical	45.6	(e)	(d)	⇒⇐
Inadequate level of literacy (students in grade 13) (Invalsi, 2021/2022, percentage values)		Identical	48.5		(e)	⇒⇐
Inadequate level of numeracy (students in grade 13) (Invalsi, 2021/2022, percentage values)		Identical	49.9		(e)	⇒⇐
Inadequate level of English listening competence (students in grade 13) (Invalsi, 2021/2022, percentage values)		Identical	61.5		(e)	⇐⇒
Inadequate level of English reading competence (students in grade 13) (Invalsi, 2021/2022, percentage values)		Identical	48.5		(e)	⇒⇐
Implicit Leavers from Education and Training (students in grade 13) (Invalsi, 2021/2022, percentage values)		National context	9.7		(e)	⇒⇐
4.1.2	Completion rate (primary education, lower secondary education, upper secondary education)					
Early leavers from education and training (Istat, 2022, percentage values)		Proxy	11.5		(f)	⇒⇐
4.2.1	Proportion of children aged 24–59 months who are developmentally on track in health, learning and psychosocial well-being, by sex					
Percentage of seats authorized in socio-educational services for early childhood (nurseries and supplementary services) on children aged 0-2 (Istat, 2021/2022, percentage values)		Proxy	28.0		(f)	⇒⇐
4.2.2	Participation rate in organized learning (one year before the official primary entry age), by sex					
Participation rate in organized learning (one year before the official primary entry age) (Processing of data from Ministry of Education and Merit, 2020/2021, percentage values)		Identical	93.6			⇐⇒
4.3.1	Participation rate of youth and adults in formal and non-formal education and training in the previous 12 months, by sex					
Participation rate of youth and adults (25-64) in formal and non-formal education and training in the previous 12 months (Istat, 2016, percentage values)		Identical	41.5	(g)		⇒⇐
Participation in life-long learning (Istat, 2022, percentage values)		Proxy	9.6		(f)	⇒⇐
Students with disabilities: Pre-primary (Information System of the Ministry of Education, and Merit (SIMPI), 2021, percentage values)		National context	2.4	--	--	--
Students with disabilities: Primary (Information System of the Ministry of Education, and Merit (SIMPI), 2021, percentage values)		National context	4.4	--	--	--
Students with disabilities: Lower secondary (Information System of the Ministry of Education, and Merit (SIMPI), 2021, percentage values)		National context	4.5	--	--	--
Students with disabilities: Upper secondary (Information System of the Ministry of Education, and Merit (SIMPI) 2021, percentage values)		National context	3.0	--	--	--
4.4.1	Proportion of youth and adults with information and communications technology (ICT) skills, by type of skill					
Individuals whit basic or above basic overall digital skills (Istat, 2021, percentage values)		Identical	45.7	--	--	--
Financial literacy score of adults (Bank of Italy, 2020, mean score)		Proxy	11.2	(h)	--	--

Table 4.1 continued - **Statistical measures released by Istat, taxonomy compared to SDGs indicators, variations compared to the previous year and to 10 years before and convergence among regions**

Ref. SDG	INDICATOR	Compared to SDG indicator	Value	VARIATIONS		CONVERGENCE AMONG REGIONS
				Compared to the previous year	Compared to 10 years before	Compared to 10 years before
4.5.1	Parity indices (female/male, rural/urban, bottom/top wealth quintile and others such as disability status, indigenous peoples and conflict-affected, as data become available) for all education indicators on this list that can be disaggregated (*)					
4.6.1	Proportion of population in a given age group achieving at least a fixed level of proficiency in functional (a) literacy and (b) numeracy skills, by sex					
	People having completed tertiary education (30-34 years old) (Istat, 2022, percentage values)	National context	29.2		(f)	⇒⇐
	STEM graduates (Istat, 2020, per 1,000 population aged 20-29)	National context	16.5		(j)	⇐⇒
4.a.1	Proportion of schools offering basic services, by type of services					
	Physically accessible schools (Istat, 2021/2022, percentage values)	Proxy	35.8		--	--
	Physically inaccessible schools (Istat, 2021/2022, percentage values)	Proxy	46.5		--	--
	Schools with pupils with disabilities by adapted computer workstations: Primary (Istat, 2022, percentage values)	Identical	74.5			⇐⇒
	Schools with pupils with disabilities by adapted computer workstations: Lower Secondary (Istat, 2022, percentage values)	Identical	78.5			⇒⇐
	Schools with pupils with disabilities by adapted computer workstations: Upper Secondary (Istat, 2022, percentage values)	Identical	76.3		(f)	⇒⇐
4.b.1	Volume of official development assistance flows for scholarships by sector and type of study					
	Volume of official development assistance flows for scholarships by sector and type of study (Ministry of Foreign Affairs and International Cooperation, 2020, million euro (current prices))	Identical	38.39		(i)	--

Legend

IMPROVEMENT
STABILITY
DETERIORATION
-- NOT AVAILABLE / NOT SIGNIFICANT

⇒⇐ CONVERGENCE
= STABILITY
⇐⇒ DIVERGENCE

Notes
(a) Variation compared to 2015
(b) Variation compared to 2009
(c) Variation compared to 2012
(d) Variation compared to 2017/2018
(e) Variation compared to 2018/2019
(f) Variation compared to 2018
(g) Variation compared to 2011
(h) Variation compared to 2017
(j) Variation compared to 2012
(i) Variation compared to 2013
(*) There are 34 parity indices in the database and they relate to 24 indicators in this Goal

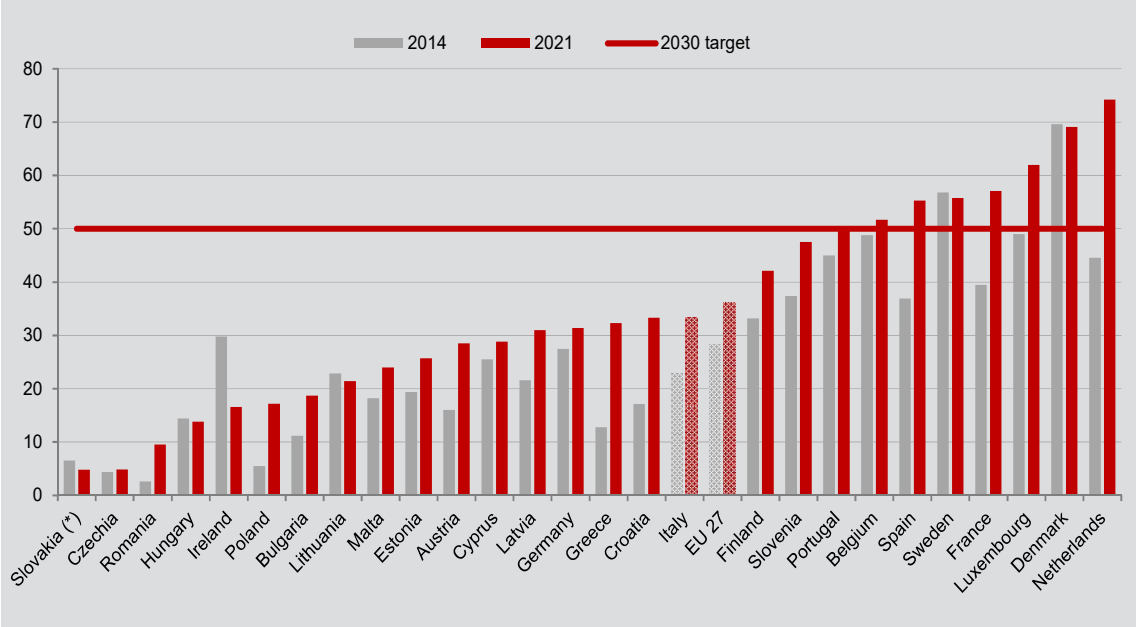
Italy still far from European targets for early childhood services

There were 13,542 public and private early childhood services active in Italy in the 2020/2021 educational year (300 fewer than the previous year), 49.1% of which were in public facilities. Despite the slight contraction in supply, available places served 27.2% of children up to 2 years of age, a value that has been almost stable over time due to the decline in births and the consequent reduction in potential beneficiaries of the service. This value is still below the benchmark set by the Barcelona European Council, which was to be reached by 2010, of 33% of places covered in relation to children.

Twenty years after this target, a European Commission Recommendation (COM(2022) 442 final, September 7, 2022) sets a new target for 2030 of 50% of children under 3 years of age included in educational services. The value for Italy, calculated, in this case, on children aged 0-2 years who attend early childhood education services or the first year of pre-primary school

(anticipatory children) was, in 2021, 33.4%. At the European level, the 27 countries of the Union together reach the 35.3% share of 0-2 year-olds attending (Figure 4.1), and some countries already far exceed the 50% target.

Figure 4.1 - Children aged 0-2 years enrolled in educational services per 100 children aged 0-2 years, by country. Years 2014 and 2021 (percentage values)



Source: Eurostat
(*) Year 2020.

The gap between Italian regions is still wide: seats in early childhood education services correspond to 4 in every 10 children in Umbria (44%), Emilia-Romagna (40.7%), and Valle D'Aosta (40.6%), while only 1 every 10 children in Campania (11%), Calabria (11.9%), and Sicilia (12.5%).

Participation of 5-year-olds in pre-primary school (or the first year of primary school) in the 2020/2021 school year was, on the other hand, declining, with 93.6% of 5-year-olds placed in school compared to 96.3% in the previous year (from the lowest value for Lazio, 89.5%, to the highest value for Basilicata, 99.0%)[2].

2 Spatial trends are also affected by a differentiated regional spread of parental and alternative education not counted by official statistics.

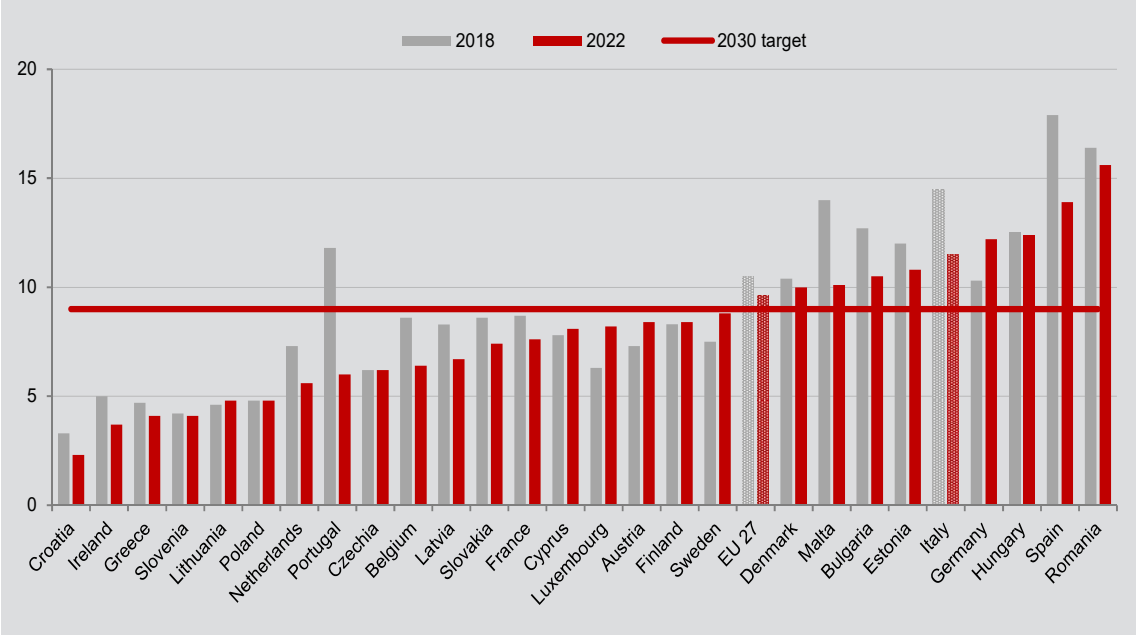
11.5% of 18-24 year-olds were without a diploma and no longer in the education and training system

In the 2021/2022 school year, the share of boys in the last year of secondary school who did not reach a sufficient level of literacy proficiency[3] was 48.5%, stable compared to the previous year (48.2%), but still much higher than the pre-pandemic results (35.7% in the 2018/2019 school year). The percentage of children with inadequate math proficiency is also high, 49.9% on average in Italy, with values similar to those of the previous school year (50.3%), but far from the levels found before the pandemic (39.3% in 2018/2019). Spatial differences to the disadvantage of southern regions remain wide.

Some students drop out of school without obtaining a high school diploma. In 2022, the share of young people aged between 18 and 24 who left the education and training system without obtaining a diploma or qualification is estimated at 11.5%, or about 465,000 young people, an improvement from the previous year (12.7%). Early school leaving involves more boys (13.6%) than girls (9.1%); regions in the South and Islands (15.1%) than those in the Centre (8.2%) and the North (9.9%)[4].

At the European level, despite showing a marked improvement, Italy still remains among the countries with the highest incidence of early school leavers, followed by Germany, Hungary, Spain and Romania (Figure 4.2).

Figure 4.2 - Early leavers from education and training, by country. Years 2018 and 2022 (percentage values)



Source: Eurostat

3 The results of the Italian and Mathematics tests are expressed by levels from 1 (the lowest) to 5 (the highest). Students who do not reach level 3 have inadequate skills for the school grade they are attending.

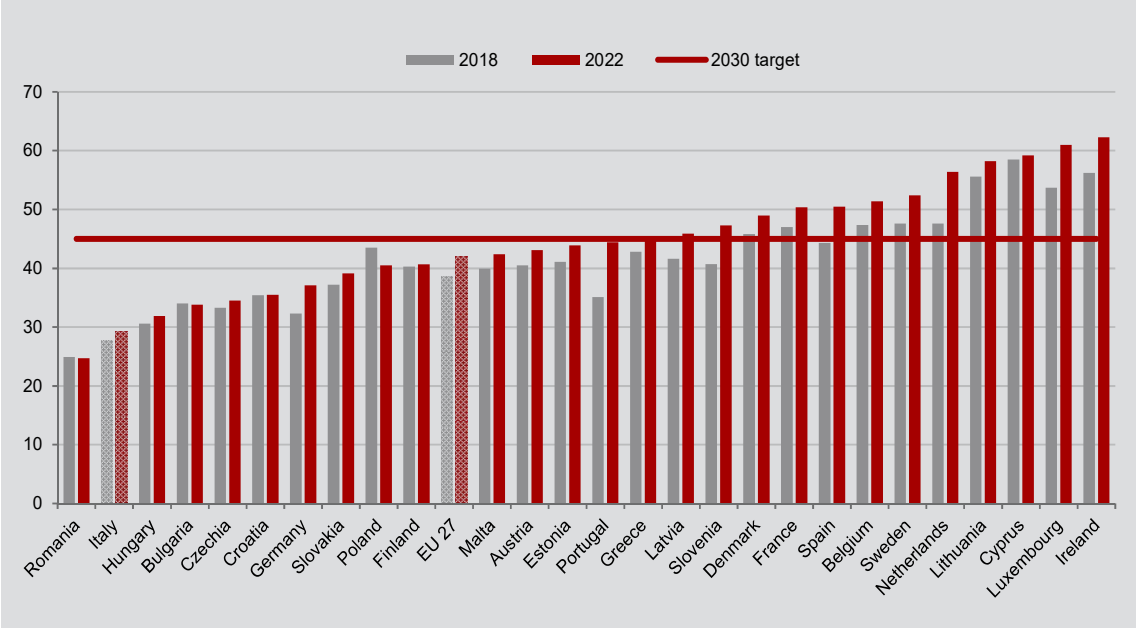
4 This indicator was one of the benchmarks of the Europe 2020 Strategy with a European target of 10%, lowered to 9% by 2030 in the new Strategic Framework for European Cooperation in Education and Training. See Council Resolution on a strategic framework for European cooperation in education and training towards a European education area and beyond (2021-2030), 2021/C 66/01 (OJ C, C/66, 26.02.2021, p. 1, CELEX: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32021G0226(01)).

Italy also lagged far behind Europe in the number of young people with a tertiary degree

In 2022, the share of the population aged 25 to 34 that completed tertiary education is 29.2%, significantly lower than the 45% target for 2030 set by the Strategic Framework for European Cooperation in Education and Training[5] and with a large gender gap in favour of women (35.5% versus 23.1% for men). The gap to be closed, even compared to the European average (42% in the EU27) and the main EU countries (50.5% Spain, 50.4% France and 37.1% Germany) is very wide and unchanged over the years (Figure 4.3).

The differences on the territory are also marked, favouring the South and Islands (21.7%) compared to the North (31.4%) and the Centre (31%).

Figure 4.3 - Graduates and other tertiary degrees (25-34 year-old), by country. Years 2018 and 2022 (percentage values)



Source: Eurostat

STEM disciplines (Science, Technology, Engineering and Mathematics) offer the most opportunities to find good employment. Italy has a low level of incidence of graduates in these disciplines: in 2021, only 16.5 per thousand of all individuals aged 20-29 had a degree in STEM disciplines, compared to 20.9 per thousand on average in EU27 countries. The gender gap is to the disadvantage of women (13.2 per thousand versus 19.6 per thousand among men), albeit smaller than found in most European countries.

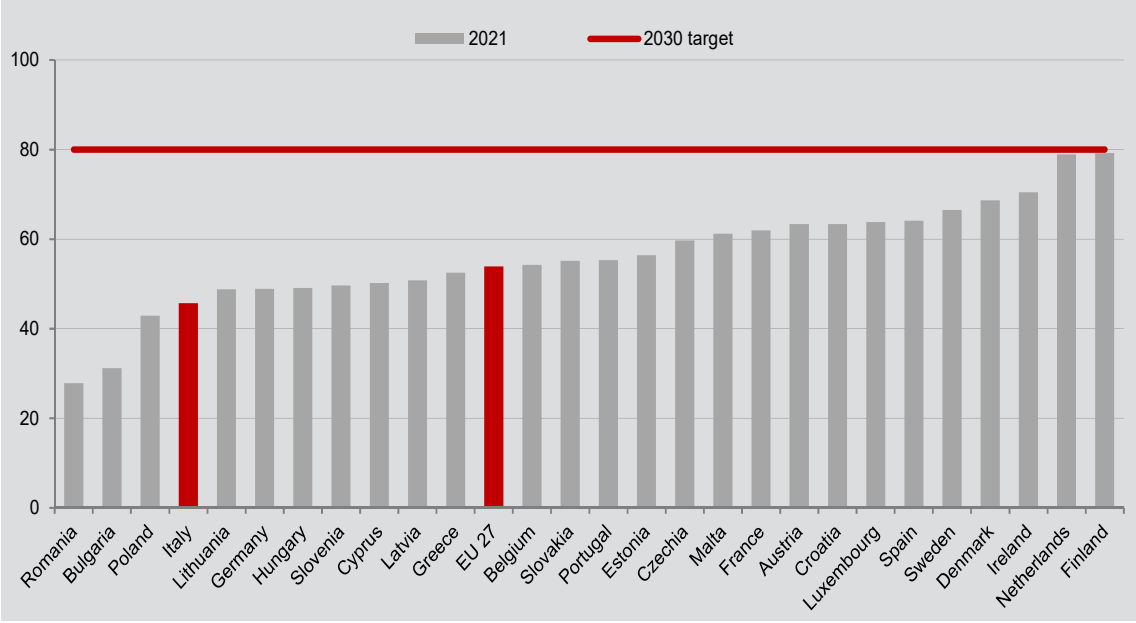
5 See note 4

Just under half of people aged 16-74 have at least basic digital skills

In 2021, 53.9% of people aged 16-74 living in Europe who had used the Internet in the past 3 months had basic digital skills[6]. In our country, the share stops at 45.6%. Both values are thus far from the targets set for 2030. However, some northern European countries, such as the Netherlands and Finland, had rates close to 80% as early as 2021 (Figure 4.4).

In addition, a strong Centre-North/South and Islands gradient is observed. The most virtuous regions are Lazio (52.9%), followed by Friuli-Venezia Giulia (52.3%) and the Autonomous Province of Trento (51.7%). At the opposite end are Calabria (33.8%), Sicilia (34%) and Campania (34.2%). Looking at the characteristics of the individual, higher percentages are found among men (48.3%), among young people aged 20-34 (about 61%), and among those with tertiary education (75.9%).

Figure 4.4 - Population aged 16-74 with at least basic digital skills by country, Year 2021 (percentage values)



Source: Eurostat

6 The indicator on digital skills comes from the Aspects of Everyday Life Sample Survey and is constructed according to Eurostat methodology. In 2021, to better reflect the Digital Skills Framework 2.0, Eurostat changed the methodology substantially, as a result the new indicator is calculated from 2021

Stable participation in training in 2022, but at higher levels than the pre-pandemic period

In 2022, 9.6% of individuals aged 25-64 participated in continuing education in Italy, stable compared to 2021 (9.9%), but up from the pre-pandemic period (it was 8.1% in 2018). The trend is confirmed in almost all European countries except France, Finland, Luxembourg, Ireland, Greece, and Bulgaria. Participation is increasing in all regions and breakdowns, with varying intensities, leading to a convergence between areas: in 2022, 10.3% of individuals aged 25-64 in the North (it was 9.6% in 2018), 11.2% in the Centre (it was 8.8%), and 7.8% in the South and Islands (it was 5.9%) are participating in training.

Top performers in mathematics and choice of STEM pathways at university[1]

The term STEM was first used in 2001 during a conference of the National Science Foundation to indicate the set of all science subjects whose greater diffusion was expected to be more widespread in order to deal with the changes in the employment system related to the ongoing technological-digital revolution. The term spread rapidly in schools and universities, hand in hand with a renewed focus towards these subjects, also determined by a renewed teaching approach aimed at reducing negative attitudes toward scientific subjects and overcoming gender stereotypes. More than 20 years later, several studies focus on the comparison of university performance and employment outcomes of STEM and non-STEM graduates, paying attention to the main differences by gender and disciplinary group. Even INVALSI, through its own data, combined with university careers data, has started a study to trace the "profiles" of students who choose to enrol in STEM degree programmes, in relation to their mathematical skills, measured through the scores and levels achieved in the INVALSI national tests and also by other variables potentially influencing their choice of university career. Then so-called top-performers, those who in the 2018/19 school year achieved at least the fourth level of proficiency[2] in mathematics in the INVALSI tests administered in the last year of upper secondary school, were considered as a baseline. Such students are considered the preferred group of those expected to pursue a STEM path. The combination with university data made it possible to investigate the distribution of these students in the enrolments of the following academic year, (2019/20).

The issue was studied by simultaneously considering some background variables: gender, type of high school attended and socioeconomic and cultural background of student's family. Although the target population is top-performers in mathematics in their final year of upper secondary school enrolling in an Italian university in the following academic year (68,499 students), only 45.8% of these boys and girls choose a STEM field (Figure 1).

The gender difference is very marked, with 33.7% girls choosing a STEM path rather than 56.6% of boys, a gap that also remains constant by school type even in the high school, which is considered the most suitable path of choice for a highly scientific career. The technical path for boys represents a valid alternative to high school as a steppingstone to STEM degrees (62% of top-performers enrolled), while for girls the same field of study has a lower impact on their choice of STEM degrees (slightly less then 28%). The differences may be mostly due to the different technical study courses followed by students ("electronics," "mechanics and mechatronics," or "administration, finance and marketing") compared to female students.

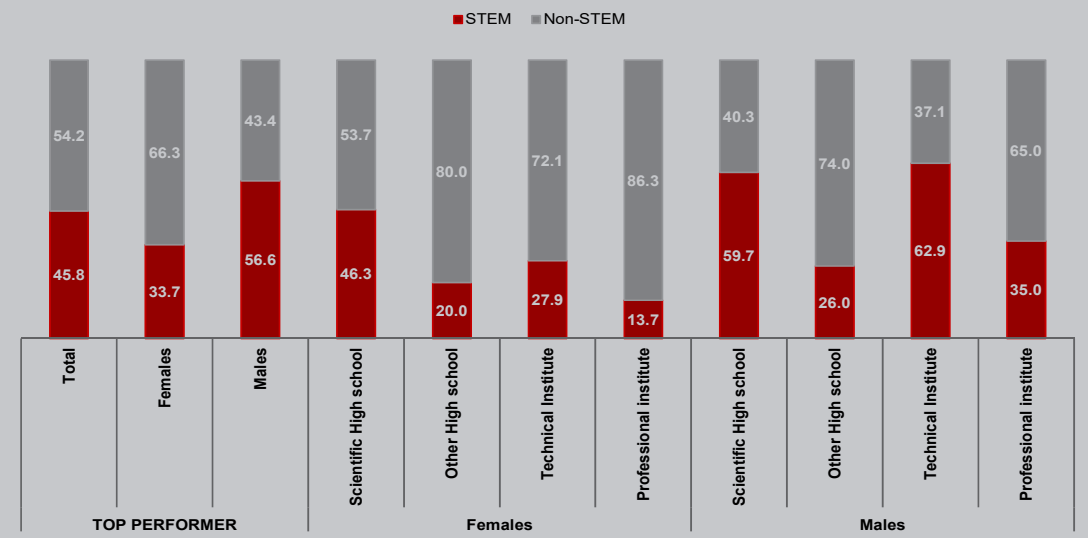
Given the same performance, girls seem significantly more constrained by low socioeconomic status[3] than boys. Girls' preference for humanities/arts/career disciplines in settings characterised by low sociocultural backgrounds could indicate the greater presence of gender stereotypes in these environments. For boys, on the other hand, enrolment rates

1 This section was edited by Patrizia Falzetti and Patrizia Giannantoni (INVALSI) with contributions by Barbara Baldazzi.

2 For a more detailed analysis related to level construction, see https://invalsi-areaprove.cineca.it/docs/2018/Livelli_INVALSI_g8.pdf.

3 Family background is measured through a synthetic indicator called SES that simultaneously takes into account various social, cultural and economic aspects of the student's family. For more on the SES indicator see https://www.invalsi.it/download/wp/wp02_Ricci.pdf

Figure 1 - Enrollment in STEM degrees of top performing students in mathematics, by gender, type of high school. Academic year 2019/2020 (percentage values)

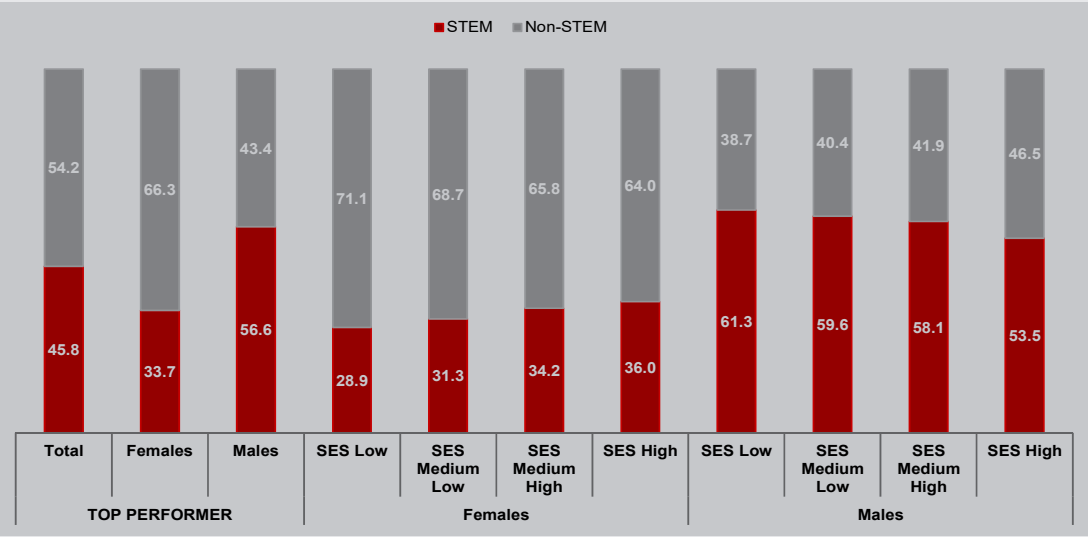


Source: INVALSI

are higher in less advantaged socioeconomic categories (61.3% for low SES vs. 53.5% for high SES; Figure 2), shaping a greater propensity to consider STEM as an opportunity for social uplift because of its ability to offer better job opportunities and social mobility, influenced by inverse gender stereotypes than for girls.

The results obtained so far provide an indication of how the choice of STEM paths is still strongly linked to students' backgrounds and social and demographic characteristics, therefore providing space, with appropriate counselling interventions and overcoming stereotypes, for a potential and desirable increase in STEM degrees enrolment in the years to come.

Figure 2 - Enrollment in STEM degrees of top performing students in mathematics, by gender, socioeconomic background. Academic year 2019/2020 (percentage values)



Source: INVALSI

GOAL 5

ACHIEVE GENDER EQUALITY AND EMPOWER ALL WOMEN AND GIRLS[1]

In brief

- After the peak of the pandemic, in 2022, the number of calls to the 1522 helpline against violence and stalking decreased.
- Anti-violence centres and women's shelters increased in number in 2021, for a total of 2.39 services per 100,000 women aged 14 and over.
- In 2022, 119 women were murdered (3 more than in 2021). 84% of the murders took place at home.
- Female representation in the national parliament fell to 33.7% in 2022 (-1.7 percentage points), but increased at the regional level (+1.2 percentage points in the regional councils renewed in 2023).
- The share of women grew on the boards of directors of listed companies also (42.9%; +1.7 percentage points) and in decision-making bodies (21%; +1.9 percentage points).

The statistical measures released by Istat for Goal 5 are eighteen and refer to seven UN-IAEG-SDGs indicators (Table 5.1).

1 This section was edited by Carmen Federica Conte with contributions by Alessandra Capobianchi, Francesco Gosetti, Maria Giuseppina Muratore, Miria Savioli, Stefania Taralli and Alberto Violante.

Table 5.1 - Statistical measures released by Istat, taxonomy compared to SDGs indicators, variations compared to the previous year and to 10 years before and convergence among regions

Ref. SDG	INDICATOR	Compared to SDG indicator	Value	VARIATIONS		CONVERGENCE AMONG REGIONS compared to 10 years before
				Compared to the previous year	Compared to 10 years before	
5.2.1	Proportion of ever-partnered women and girls aged 15 years and older subjected to physical, sexual or psychological violence by a current or former intimate partner in the previous 12 months, by form of violence and by age					
	Proportion of women aged 16-70 subjected to physical or sexual violence by a partner or previous partner in the previous 12 months (Istat, 2014, percentage values)	Identical	2.0	--	(a)	--
	Intimate partnership violence rate (Istat, 2014, percentage values)	Proxy	4.9	--	(a)	⇐⇒
	Proportion of women aged 16-70 subjected to psychological violence by a current partner in the previous 12 months (Istat, 2014, percentage values)	Proxy	9.2	--	(a)	--
	Women victims of violence reported to the 1522 helpline (Istat, 2022, per 100.000 women)	National context	38.2		(b)	⇒⇐
	Murders of women committed by partners, ex-partners or other relatives (per 100 women murdered) (Istat-Ministry of the Interior, 2021, percentage values)	National context	84	--	--	--
	Anti-violence centres and women's Shelters: rate per 100,000 women aged 14 and over (Istat, 2021, per 100.000)	National context	2.39			⇒⇐
5.2.2	Proportion of women and girls aged 15 years and older subjected to sexual violence by persons other than an intimate partner in the previous 12 months, by age and place of occurrence					
	Proportion of women aged 16-70 subjected to sexual violence by a man other than intimate partner in the previous 12 months (Istat, 2014, percentage values)	Identical	1.6	--	(a)	--
	Proportion of women aged 16-70 subjected to physical or sexual violence by a man other than intimate partner in the previous 5 years (Istat, 2014, percentage values)	Proxy	7.7	--	(a)	⇐⇒
5.4.1	Proportion of time spent on unpaid domestic and care work, by sex, age and location					
	Ratio of employment rate for women aged 25-49 with at least one child aged 0-5 to the employment rate of women 25-49 years without children (Istat, 2022, percentage values)	National context	72.4		(c)	⇒⇐
	Proportion of time spent on unpaid domestic and care work (Istat, 2014, percentage values)	Identical	13.5	--	--	⇒⇐
	Household workload inequality index (Istat, 2021/2022, percentage values)	National context	61.6			--
5.5.1	Proportion of seats held by women in (a) national parliaments and (b) local governments					
	Women and political representation in parliament (Istat, processing of data from Italian parliament, 2022, percentage values)	Proxy	33.7		(d)	=
	Women and political representation at regional level (Istat, processing of data from individual regional councils, 2023, percentage values)	Proxy	23.5		(e)	⇐⇒
5.5.2	Proportion of women in managerial positions					
	Women in decision-making bodies (Istat, processing of data from various sources, 2023, percentage values)	Proxy	21.0		(b)	--
	Women in the boards of companies listed on the stock exchange (Consob, 2022, percentage values)	Proxy	42.9			--
5.6.1	Proportion of women aged 15-49 years who make their own informed decisions regarding sexual relations, contraceptive use and reproductive health care					
	Voluntary abortion rate of women aged 15-49 years for 1,000 women (standardised rates) (Istat, 2020)	National context	5.3			⇒⇐
5.b.1	People aged 6 and over who use their mobile phone every day, per 100 people with the same characteristics					
	Proportion of individuals who own a mobile telephone, by sex (Istat, 2022, percentage values)	Proxy	84.4			⇒⇐
	People aged 16-74 who used internet once a week (including every day) in the last 3 months (Istat, 2022, percentage values)	National context	83.5			⇒⇐

Legend

- IMPROVEMENT
- STABILITY
- DETERIORATION
- -- NOT AVAILABLE / NOT SIGNIFICANT
- ⇒⇐ CONVERGENCE
- = STABILITY
- ⇐⇒ DIVERGENCE

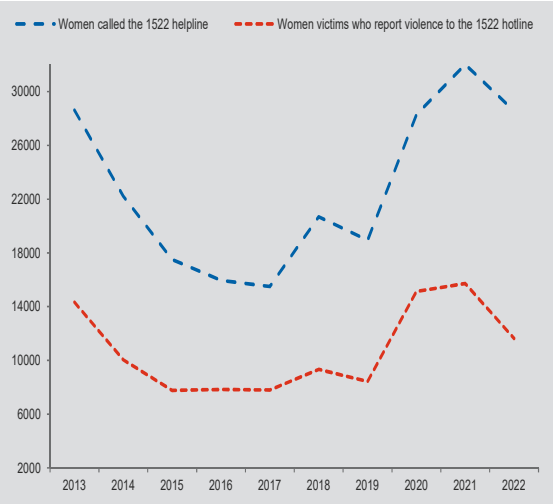
Notes

(a) Variation compared to 2006
(b) Variation compared to 2013
(c) Variation compared to 2018
(d) Variation compared to 2008
(e) Variation compared to 2012

The number of women turning to the number 1522 decreased, but the number of women killed in the home remained high

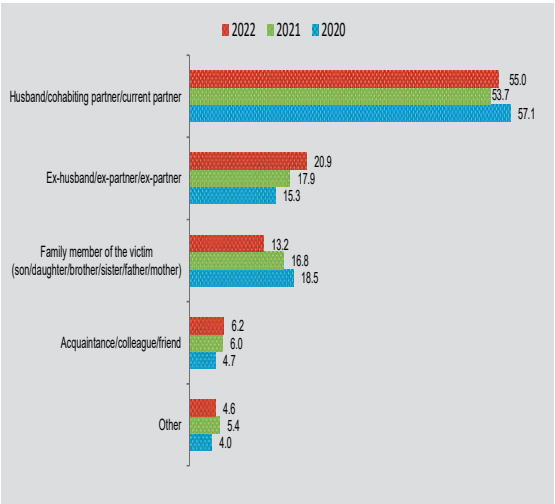
In 2022, after the peak reached in the two years of the pandemic, there was a reversal in the number of women turning to the public utility telephone line 1522 against violence and stalking for support or information (28,567 valid calls compared to 32,017 in 2021 and 28,276 in 2020). The number of women victims of violence who turned to online help also decreased (11,632 reports; 15,720 in 2021 and 15,128 in 2020; Figure 5.1). In relative terms, considering only the calls of women victims of violence, the rate has decreased over the past year from 51.9 women per 100,000 in 2021 to 38.2 in 2022 (-26.4%). The reduction was widespread throughout the country, with the exception of Valle d'Aosta (22.3 women per 100,000 in 2022; more than doubled compared to 2021) and the Autonomous Province of Trento (15.3 women every 100,000; + 10.7% compared to 2021). There was a significant fall in the number of victims in Lazio (down to 52.7 per 100,000 women; -23.8% compared to 2021), which remained the region with the highest rate of female victims of violence.

Figure 5.1 - Women who call 1522 and women victims who report violence to 1522. Years 2013-2022 (a) (N.)



Source: Istat-Department for Equal Opportunities; 1522 helpline against violence and stalking
(a) 2022 data are provisional.

Figure 5.2 - Women victims who report violence to 1522, by relationship with the perpetrator. Years 2020-2022 (percentage values)



Source: Istat-Department for Equal Opportunities; 1522 helpline against violence and stalking
(a) 2022 data are provisional.

In 2022, around a quarter (24.8%) of women victims of violence turning to the public utility telephone line were 35-44 year-old and just over a fifth (21.6%) 45-54 year old. The share of women aged 18-24 (11.7% in 2022 and 8.6% in 2019) and under the age of 17 (2.4% in 2022 compared to 1.2% in 2019) increased compared to the pre-pandemic period. The most frequently type of violence reported[2] in 2022 was psychological violence (36.1% in 2022), in line with previous years' data, followed by threats (24.9%), physical violence (23.9%), economic violence (9.6%) and sexual violence (3.7%).

2 For each individual call you can indicate more than one violence.

In 2022, in almost 90% of cases, the perpetrator of the violence was a person with whom the victim had, or had had, a sentimental relationship or a close family relationship. In 55% of cases, the perpetrators were husbands, cohabitants or current partners. Former husbands, ex-cohabitants or ex-partners were perpetrators in 20.9% of cases, up from 2020 (15.3%), while in 13.2% of cases (18.5% in 2020) the perpetrator of the violence was a close relative of the victim (child, brother/sister or father/mother; Figure 5.2).

Anti-violence centres and women's shelters on the rise

In 2021, there were 307 anti-violence centres (263 in 2020) and 337 women's shelters (242 in 2020). The average national coverage rate is 2.39 services in total per 100,000 women aged over 14 (1.87 in 2020). Higher service coverage was observed in the North (2.88 per 100,000 women) and in particular in the North-West (3.84) compared to the Centre (2.09) and the South and Islands (1.9). Friuli-Venezia Giulia was the region with the highest number of services active on the ground, with a coverage rate of 4.17 per 100,000 women.

The distribution of workload for family care between men and women did not improve, but education remained a protective factor for the employment of women with small children

In 2022, the employment rate of women aged 25-49 with children under the age of 6 was 55.5% (+1.6 percentage points. compared to 2021), while that of women of the same age without children was 76.6% (+2.7 p.p. compared to 2021). Their ratio remained broadly stable compared to the previous year (72.4%; -0.6 p.p.). However, over the past year, there were significant falls in the indicator in the regions of the Centre (79.8%; -4.7 p.p. compared to 2021), in particular in Lazio (76.1%; - 8.2 p.p.), and in the Islands (60.9%; -5.2 p.p.). The ratio improved in southern regions (69.9%; +5.2 p.p.), particularly in Calabria (80.8%; + 11.2 p.p.), Campania, Basilicata and Puglia (between + 5.3 and + 5.9 p.p.). In the northern regions, the increase in Friuli-Venezia Giulia was significant (79.6%; + 8.0 p.p.; Figure 5.3). The employment gap between mother and non-mother status reduces with a higher level of education[3], with an indicator value of 91.5%. The ratio reduced to 69.3% for upper-secondary school graduates and stood at just over 50% for women with a lower educational level[4]. The ratio was also worse for women of foreign nationality (48.2%) than for Italian women (77.4%). Over the past year, there was an improvement for the EU citizens (61.4%; + 9.2 percentage points compared to 2021).

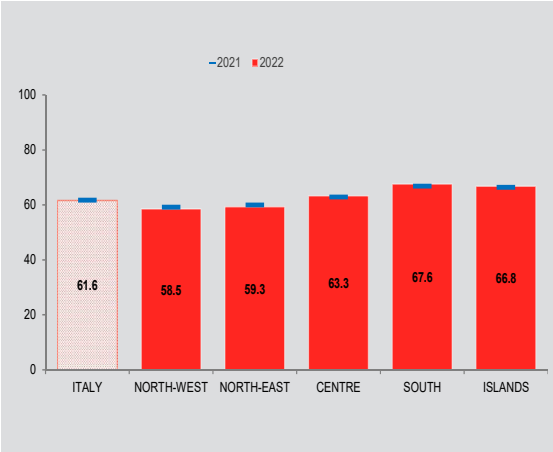
3 Tertiary degrees: its higher level technical education degree; higher education in fine arts, drama, dance and music degree; university degree and PhD (ISCED 5-8)

4 Lower secondary school, primary education and no education (ISCED 0, 1, 2).

Figure 5.3 - Ratio of employment rate for women aged 25-49 with at least one child aged 0-5 to the employment rate of women 25-49 years without children, by geographical area. Years 2021 and 2022 (percentage values)

Source: Istat, Labour force survey

Figure 5.4 - Share of household work time carried out by women in a couple on the total of the household work time. Years 2021 and 2022 (percentage values)



Source: Istat, Time use survey; Survey on Aspects of daily life

In the last year, the household workload inequality index[5], which measures the distribution of the family care workload within the couple aged 25-44, showed no signs of improvement (61.6% in 2022; 61.8% in 2021). There still remained territorial differences between the South and Islands (67.5%), Centre (63.3%) and North (58.8%; 58.5% in North-West and 59.3% in North-East; Figure 5.4).

Women's presence fell in the national parliament, while increased in regional institutions and boards of publicly listed companies

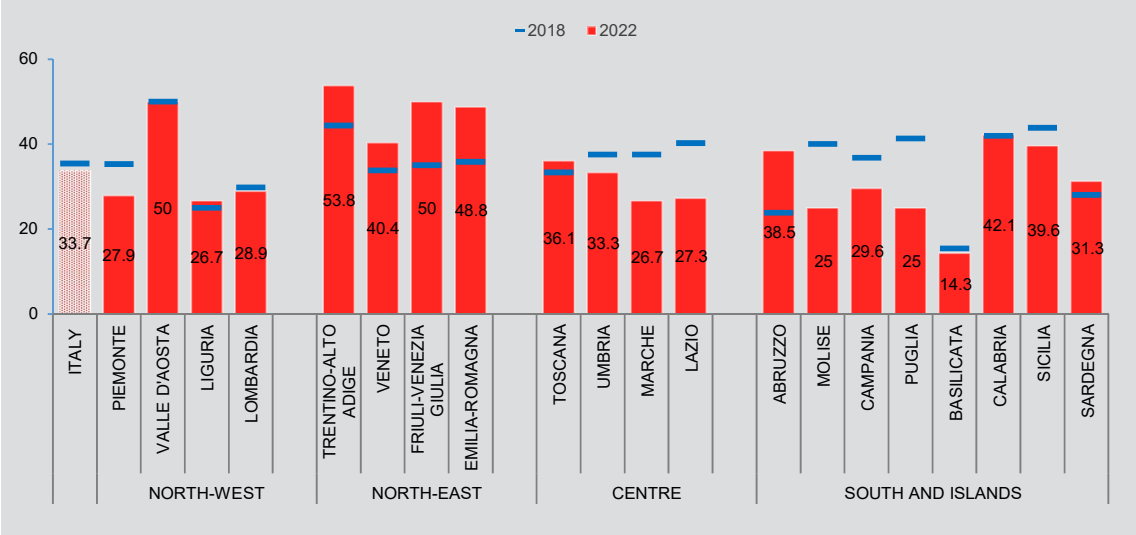
In the elections for the appointment of senators and deputies of the national parliament (XIX parliamentary term)[6] of September 2022, the share of women elected fell from the previous parliamentary term from 35.4% in 2018 to 33.7%. Values decreased also at European level: in 11 of the 27 EU countries, the number of women in national parliaments fell compared to 2021, with an average presence in EU27 of 32.5% (-0.6 percentage points). Significant declines were observed in Portugal (35.7%;-5.2 p.p.), France (36.6%; -2.5 p.p.), Greece (19%; -2.3 p.p.). The largest increases were however, in Malta (27.8%; +14.4 p.p.) and Slovenia (29.5%; + 7.4 p.p.). The reduction in the proportion of women elected in the new national parliament took place throughout the country, with some exceptions, which were mainly concentrated in the North. Valle d'Aosta, Friuli-Venezia Giulia (50%; for both) and, more generally, the North-East regions (46.1% in 2022; + 10.3 p.p.) represent contexts where the proportion of women

5 Values above 50% show a higher burden of domestic and care work for women, below the threshold the burden is higher for men.

6 As is known, the last elections were marked by the introduction of two major constitutional reforms (Constitutional Law No 1 of 19 October 2020). The first concerned the amendment of Articles 56, 57 and 59 regarding the reduction of the number of members of parliament. The number of senators increased from 315 to 200, while the number of deputies from 630 to 400. The second, concerning Article 58 of the Constitution on the electorate for the election of the Senate of the Republic, harmonised the active electorate of the two branches of parliament by reducing the age limit (from 25 to 18 years) for Senate voters.

elected was equal or almost equal to that of men. Trentino-Alto Adige was the only region where the share of women (53.8%) was higher than that of men. The regions in the Centre (30.4%; - 7.1 p.p. compared to 2018) and those of the South and Islands (32.3 %; - 5.1 p.p.) declined. In Basilicata, the lowest share of women elected in parliament was reached (14.3%; -1.1 p.p.) while Puglia and Molise recorded the most significant decrease (-16.3 and - 15 p.p. respectively).

Figure 5.5 - Women and political representation in parliament, by geographical area and region. Years 2018 and 2022
(percentage values)



Source: Istat, processing of data from the Chamber of Deputies and the Senate

In 2023, Lombardia, Lazio and Friuli-Venezia Giulia renewed their regional council. The proportion of women elected was 23.5% (+1.2 percentage points compared to 2022). In Lazio, the number of women on boards increased from 31.4% in 2018 to 41.2% in 2023, while in Lombardia it stood at 28.1% (+3.4 percentage points compared to 2018). In Friuli-Venezia Giulia, the percentage, which was 14.3% in 2018, stood at 19.1% in 2023. The share of women in the boards of companies listed on the stock exchange continued to increase in 2022 (42.9%; + 1.7 p.p. compared to 2021), approaching the target set by the National Gender Equality Strategy 2021-2026 (45%). The number of women in decision-making bodies such as the Constitutional court, the Magistrates' Governing Council and some Independent administrative authorities also increased (21%; + 1.9 p.p. compared to June 2022), but remained far from the target of the 2021-2026 Strategy (35%).

The Italian experience of State Gender Budgeting[1]

Italy's experience of gender budgeting of the State started in 2016 with the completion of the State Budget Reform[2].

Gender budgeting[3] is composed of:

- an analysis of the main gender gaps in the economy and society;
- an analysis of the existing gaps within the staff of the central government departments of the State and the Presidency of the Council of Ministers;
- an overview of the legislation introduced to promote gender equality or to act on some known inequalities;
- an analysis of the impact of taxation on gender and of the main tax policies and of some specific benefits;
- a reclassification of expenditure in the State Budget Account according to a gender perspective, a summary of the sectoral policies implemented by the administrations, and some insights into off-budget expenditure.

The report on the gender budgeting of the State is coordinated by the Ministry of Economic Affairs and Finance – General National Accounts Department (RGS) and contributes by the Department of Finance and the Department of General Affairs. The contributions of the central State registers (through their respective centres of responsibility, including any local branches) and the Prime Minister's Office as active players in the interventions financed by the State budget are crucial.

To monitor the main gender gaps in the economy and society, the RGS cooperates with Istat, which provides a wide range of gender-disaggregated statistics, which, together with data from other statistical and administrative sources[4], are used to update the indicators also presented in a processable format on the RGS website, accompanying the report to parliament. Over the years, the set of indicators has been enriched, from 39 measures in the 2016 Report to 164 in 2021, organised in eight areas[5].

For each area, the most recent evidence is examined, using comparisons with other European countries or further analysis of the different dimensions of gender gaps in Italy by geographical macro-area or by age group of the population.

Gender budgeting is a tool that makes it possible to read a significant part of Italy's information stock from a gender perspective and to reclassify public expenditure according to the philosophy

1 This section was edited by Daniela Collesi (Ministry of Economic Affairs and Finance – General National Accounts Department – Inspectorate General of the Budget - I.G.B. - Office XV) with contributions by Carmen Federica Conte.

2 Introduced by Legislative Decree No 90/2016 (Article 38-septies), the first gender balance was drawn up in the General Report of the State for 2016, developed in accordance with the methodological guidelines of the Decree of the President of the Council of Ministers, in agreement with the Minister for Economic Affairs and Finance of 16 June 2017. Subsequent more detailed criteria were gradually identified in the annual circulars of the General National Accounts Department.

3 For further details, see https://www.rgs.mef.gov.it/VERSIONE-I/attivita__institutional/formation_e_gestione_of_budget/account/budget_di_genere/

4 The other national sources are: the Prime Minister's Office – Department of Equal Opportunities, the Ministry of the Interior, the Ministry of Health, the Ministry of Education, Universities and Research, and the INPS (National Social Security Institute). International data from Eurostat, the European Institute for Gender Equality (EIGE) and OECD are also used.

5 The areas examined are: labour market; reconciliation of private and professional life; employment protection, social security and assistance; education and action against gender stereotypes; participation in economic, decision-making, political and administrative processes; combating gender-based violence; health, lifestyle and safety.

of satellite accounts definition. The reclassification of expenditure in the State budget provides for the breakdown of government expenditure into three categories, depending on the type of impact on gender equality:

a. 'direct' expenditure, i.e. expenditure which is directly aimed at reducing gender inequalities or at promoting equal opportunities;
b. 'sensitive' expenditure, which has or could have an impact, including indirect, on inequalities between men and women;
c. 'neutral' expenditure, for which neither direct nor indirect impacts on gender equality have been identified.

Compared to 2020, in 2021, within the framework of a reduction of the overall expenditure (-2.1%), probably due to the higher pandemic-related commitments in 2020, the expenditure directly allocated to the reduction of gender inequalities, although representing a very small share of the state budget (0.57 % in 2021), decreased by only 1.1 %, while the expenditure classified as gender-sensitive increased significantly (+14.9%; Table 1).

Table 1 - Central government expenditure, net of staff expenditure, from a gender perspective. Committed to accounting. Years 2020 and 2021 (million euro and percentage values)

Code	Reclassification of State Expenditure by Gender	2020		2021	
		Milion of euro	%	Milion of euro	%
0	Gender-neutral	835,407.3	85.8	795,833.0	83.5
1	Aimed at reducing gender inequalities	5,469.3	0.6	5,411.2	0.6
2	Gender-sensitive	132,342.2	13.6	152,004.8	16.0
	Total	**973,218.8**	**100.0**	**953.249.0**	**100.0**

Source: Ministry of Economy and Finance - General Accounting Department, General Budget Inspectorate

For the future, the National Recovery and Resilience Plan requires, in Mission 1, component 1-110, that the 2024 budget law includes a reclassification of expenditure according to the criteria underlying the SDGs and Agenda 2030, with regard to gender budgeting and environmental budgeting. Achieving this goal would offer both the opposition to a refinement of the methodology and the success of the current ex-post experimentation and, above all, the start of the integration of the gender perspective into the budgeting process, strengthening its potential impact.

GOAL 6

ENSURE AVAILABILITY AND SUSTAINABLE MANAGEMENT OF WATER AND SANITATION FOR ALL[1]

In brief

- In 2015-2019, due to a greater water withdrawal for agricultural purposes, the level of water stress was higher in the Po River basin district compared to other districts.
- In 2020, Italy ranked second in the EU27 countries for freshwater withdrawal for public water supply per capita (155 cubic metres).
- In 2020, critical conditions in the urban water supply network were confirmed: efficiency level, stable compared to 2018, stood at 57.8%.
- In 2021, the number of provincial or metropolitan capitals subjected to rationing of domestic water supply increased from 11 of 2020 to 15 (2 of them in the Centre-North).
- In 2020, approximately 7 million inhabitants were without a public sewage system.
- In 2022, almost one in three households did not trust drinking tap water and nearly one in ten complained of irregularities in water supply in their home.

The statistical measures released by Istat for Goal 6 are twenty, and refer to nine UN-IAEG-SDGs indicators (Table 6.1).

1 This section was edited by Simona Ramberti with contributions by Tiziana Baldoni, Giovanna Tagliacozzo and Stefano Tersigni.

Table 6.1 - Statistical measures released by Istat, taxonomy compared to SDGs indicators, variations compared to the previous year and to 10 years before and convergence among regions

Ref. SDG	INDICATOR	Compared to SDG indicator	Value	VARIATIONS		CONVERGENCE AMONG REGIONS compared to 10 years before
				Compared to the previous year	Compared to 10 years before	
6.1.1	Proportion of population using safely managed drinking water services					
	Water supplied per capita (Istat, 2020, litre per inhabitant per day)	National context	215	(a)	(b)	⇐⇒
	Households that do not trust drinking tap water (Istat, 2022, percentage values)	National context	29.4			=
	Irregularities in water supply (Istat, 2022, percentage values)	National context	9.7			⇐⇒
	Rationing of domestic water supply for part or all of the municipality (Istat, 2021, number of municipalities)	National context	15		(c)	--
6.3.1	Proportion of domestic and industrial wastewater flow safely treated					
	Sewage treatment (Istat, 2015, percentage values)	Partial	59.6	(d)	(e)	=
	Urban wastewater safely treated with secondary or advanced treatment (Istat, 2018, N.)	National context	7,877	(a)	(b)	⇐⇒
	Public sewage coverage (Istat, 2020, percentage values)	National context	88.7	(a)	--	--
6.3.2	Proportion of bodies of water with good ambient water quality					
	Coastal bathing waters (Istat, processing of data from Ministry of Health data, 2019, percentage values)	Partial	65.5		(f)	⇒⇐
	Percentage of rivers and lakes with good chemical quality and high or good ecological quality (ISPRA, processing of data from Regioni and AdBD for Reporting WFD, SINTAI, 2010-2015, percentage values)	Partial	(*)	--	--	--
	Percentage of groundwater water bodies with good quality of chemical status (SCAS) and good quantitative status (SQUAS) (ISPRA, processing of data from Districts under the Directive 2000/60/CE, Reporting 2016, 2010-2015, percentage values)	Partial	(*)	--	--	--
	Percentage of transitional waters with good quality of ecological and chemical status (ISPRA, processing of data from the Reporting II RBMP provided by Autorità di Bacino, 2010-2015, percentage values)	Partial	(*)	--	--	--
	Percentage of coastal marine waters with good quality of ecological and chemical status (ISPRA, processing of data from the Reporting II RBMP provided by Autorità di Bacino, 2010-2015, percentage values)	Partial	(*)	--	--	--
	Percentage of water bodies that have achieved the objective of ecological quality (high or good) on the total water bodies of surface waters (rivers and lakes) (ISPRA, processing of data from Regioni and AdBD for Reporting WFD, SINTAI, 2010-2015, percentage values)	Proxy	(*)	--	--	--
6.4.1	Change in water-use efficiency over time					
	Urban water supply network efficiency (Istat, 2020, percentage values)	Proxy	57.8	(a)	(b)	⇐⇒
6.4.2	Level of water stress: freshwater withdrawal as a proportion of available freshwater resources					
	Level of water stress: freshwater withdrawal as a proportion of available freshwater resources (Processing of data from Istat, ISPRA, FAO, 2019, percentage values)	Identical	37.1		(g)	--
	Freshwater withdrawal for public water supply (Istat, 2020, million m^3)	National context	9,189.1	(a)	(b)	=
6.5.1	Degree of integrated water resources management					
	Degree of integrated water resources management (ISPRA, 2020, index)	Identical	77.0	(h)	--	--
6.5.2	Proportion of transboundary basin area with an operational arrangement for water cooperation					
	Proportion of transboundary basin area with an operational arrangement for water cooperation (Istat, processing of data from Ministry of Environment and Energy Security data, 2022, percentage values)	Identical	100.0		(h)	--
6.6.1	Change in the extent of water-related ecosystems over time					
	Wetlands of International Importance (ISPRA, 2021, hectares)	Identical	79,826	(a)	(f)	=
6.a.1	Amount of water- and sanitation-related official development assistance that is part of a government-coordinated spending plan					
	Amount of water- and sanitation-related ODA that is part of a government-coordinated spending plan (Ministry of Foreign Affairs and International Cooperation, 2020, million euro current prices)	Identical	23.68		(f)	--

Legend

- IMPROVEMENT
- STABILITY
- DETERIORATION
- -- NOT AVAILABLE / NOT SIGNIFICANT
- ⇒⇐ CONVERGENCE
- = STABILITY
- ⇐⇒ DIVERGENCE

Notes

(a) Variation compared to 2018
(b) Variation compared to 2008
(c) Variation compared to 2014
(d) Variation compared to 2012
(e) Variation compared to 2005
(f) Variation compared to 2013
(g) Variation compared to 2015
(h) Variation compared to 2017
(*) Refer to the table on www.istat.it

The highest level of water stress in the North-West

In Italy, the level of water stress, calculated for the first time for the period 2015-2019 to meet the requirements of the UN-SDG 6.4.2[2] indicator, was equal to 38.3% on average per year at the national level, a value classified as "low"[3]. The indicator, which assesses the stress to which water bodies are subject due to water withdrawals, had a "low" level in all years considered, with the minimum in 2018 (37.0%) and the maximum in 2017 (40.8%), a year affected by significant drought (about 30% of the national territory affected by severe and extreme drought on an annual scale[4]), that above all involved the Centre and North of Italy in terms of drought severity.

The Po River basin district was the only one, throughout the five years, to be in a state of "medium" water stress, affected by the higher abstraction for agriculture than the other districts, with the maximum in 2017 (70.8%), close to the lower limit of "high" stress. In the period 2015-2019, a level of "low" water stress was in the river basin districts of Appennino Centrale, Sardegna and Sicilia, while there was no stress for the districts of Alpi Orientali and Appenino Settentrionale (Figure 6.1).

From the assessments on the national water budget, carried out in the context of the Istat-ISPRA collaboration, the decisive role of water withdrawals from water bodies emerges, in that, even in non-drought years and with water availability higher than the climatic value, they can generate conditions of seasonal and local[5] water stress.

The state of conservation and the management asset of the water infrastructure, alongside water use patterns, are further factors which, beyond the actual water availability, can determine conditions of vulnerability in the territories and in the water bodies present.

Italy still leading among EU27 countries in the water withdrawal for public water supply

In 2020, the volume of water withdrawn for public water supply amounted to 9.19 billion cubic metres in Italy (422 litres per inhabitant per day)[6]. Although the volume dropped by 0.4% compared to 2018, Italy has been in first place among the EU countries for over twenty years for the amount, in absolute value, of freshwater abstracted for public water supply from surface or ground water bodies. In per capita terms, Italy (155 cubic metres per inhabitant) was in second position in Europe, preceded only by Greece (158 m^3).

The largest amount of water was abstracted in the Po river basin (2.80 billion cubic metres, 30.5% of the national value) and, among regions, in Lombardia (1.44 billion cubic metres; 15.6%).

2 The indicator is obtained by comparing the annual volume of total freshwater withdrawal for the main economic sectors (civil, industrial and agricultural) to the average availability of the water resources in the thirty-year period 1991-2020, net of environmental flow requirements.

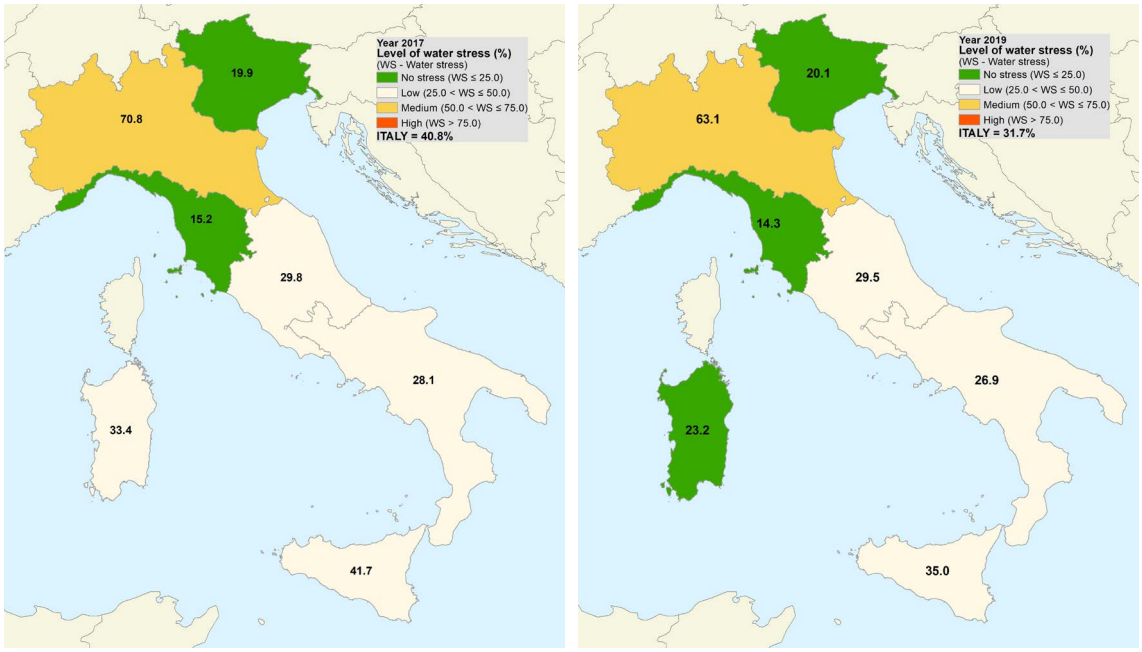
3 The sub-national assessment of the indicator SDG 6.4.2, of which FAO is custodian agency, has been developed on occasion of an agreement between FAO and ISPRA, with the support of Istat (See AA.VV. 2023, *A disaggregation of indicator 6.4.2 "Level of water stress: freshwater withdrawal as a proportion of available freshwater resources" at river basin district level in Italy*. FAO. https://www.fao.org/3/cc5037en/cc5037en.pdf).

4 SO3-1 Indicator "Trends in the proportion of land under drought over the total land area" of the 2023 national reporting of the implementation of the United Nations Convention to Combat Desertification (UNCCD) PRAIS4, https://reporting.unccd.int/country/ITA/report/national_report/pdf.

5 See AA.VV. 2023. "Il Water Exploitation Index Plus in Italia". *Blue Book 2023*. Fondazione Utilitatis: https://www.utilitatis.org/wp-content/uploads/2023/04/BLUE-BOOK-2023.pdf.

6 See Istat. 2023. "Le statistiche dell'Istat sull'acqua. Anni 2020-2022". *Statistiche report*. Rome: Istat. https://www.istat.it/it/archivio/282387.

Figure 6.1 - Level of water stress, by river basin district. Years 2017 and 2019 (percentage values)



Source: Istat-ISPRA-FAO (provisional data)

Critical conditions persisted in the public water supply networks

In 2020, the volume of water supplied for authorised uses amounted to 4.7 billion cubic metres (215 litres per inhabitant per day), despite 8.1 billion cubic metres input into the public water supply network.

The daily volume supplied per capita was higher in the North, with the highest volume in the North-West (253 litres per inhabitant per day) and in the Po River basin district (241), and the regional maximum value in Valle d'Aosta (438)[7]. Minimum volume was recorded in the Islands (186 litres), even if the regional lowest levels were in Umbria (166) and in Puglia (155).

In 2020, the degree of efficiency of the public water supply (namely the percentage of the water input into the network that is supplied to end users) stood at 57.8% at the national level (58.0% in 2018), confirming the persistence of criticalities mainly due to physical losses. Compared to 2018, the efficiency was reduced in 14 out of 21 regions and 5 out of 7 river basin districts.

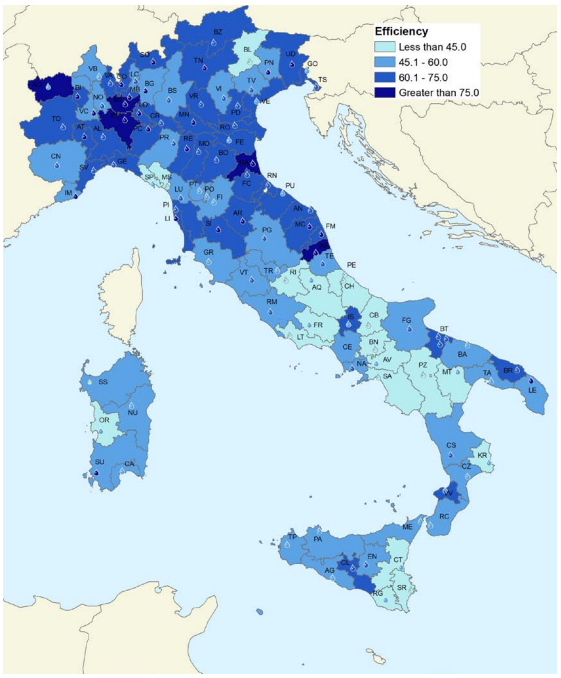
In 9 regions, the efficiency was less than 55%, while in almost one in four regions it exceeded 65%. The most critical areas were in the Centre and South and Islands, in the river basin districts of the Apennine and insular belt.

Almost one province/metropolitan city in two had a lower level of efficiency than the national average (Figure 6.2a).

7 The spread of springs, especially in mountainous areas, can result in significant volumes of water supplied.

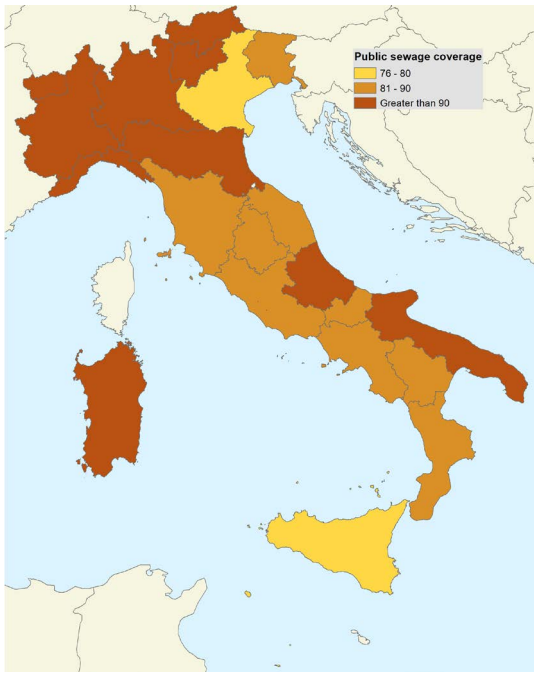
In 2021, in 15 out of 109 provincial and metropolitan capital cities water rationing measures were adopted in the public water supply (+4 cities compared to 2020). For many years, rationing was an exclusive prerogative of the capitals of the South and Islands, but in 2021 it also involved a capital of the North (this had not happened since 2010) and one of the Centre (since 2018).

Figure 6.2a - Urban water supply network efficiency, by province/metropolitan city and provincial or metropolitan capital. Year 2020 (percentage values)



Source: Istat, Urban water census

Figure 6.2b - Public sewage coverage, by region. Year 2020 (percentage of resident population)



Source: Istat, Urban water census

About 7 million inhabitants not connected to the public sewerage system

In 2020, about 9 out of 10 inhabitants (88.7%) were connected to the public sewerage system, regardless of the availability of subsequent wastewater treatment plants (Figure 6.2b); 6.7 million of inhabitants were not connected to the public sewerage network[8].

North-West was the area with the highest level of public sewerage coverage (94.4%). The lowest coverage was in the Islands (81.5%), on which the figure for Sicilia (77.2%) weighed heavily; the coverage is less than 80% also in Veneto (79.0%).

8 386 thousand inhabitants reside in 40 municipalities (located overall in Sicilia) where the public sewerage service is completely absent (each dwelling is generally equipped with independent wastewater treatment systems).

Pollutant load treated mainly by secondary or advanced urban wastewater treatment plants

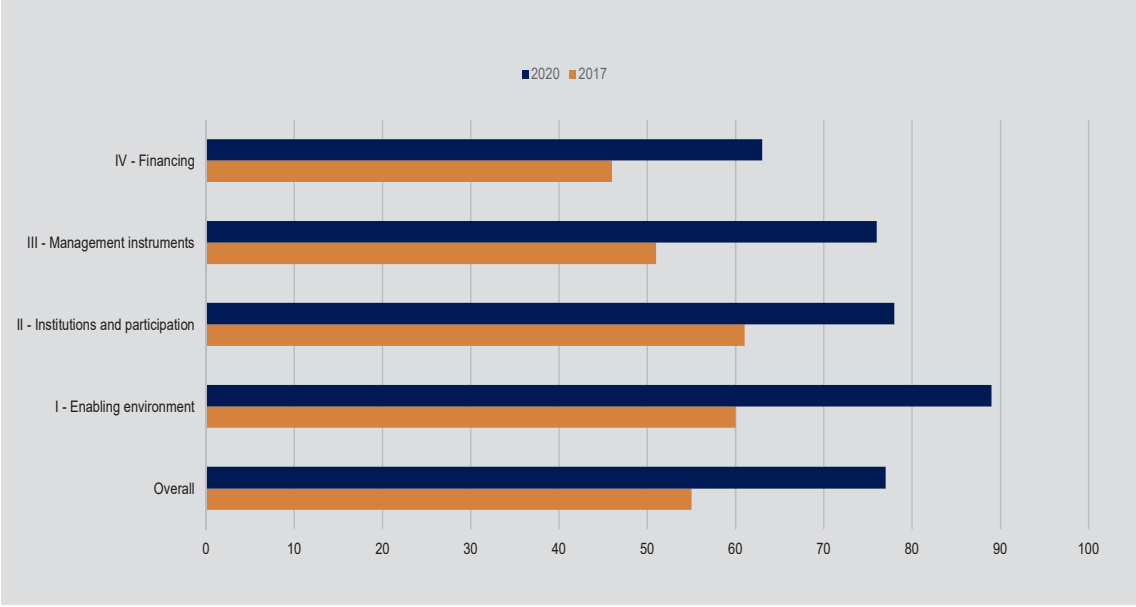
In 2020, the public urban wastewater treatment service was carried out by 18,042 plants, of which 10,165 were primary plants and public Imhoff tanks[9] and 7,877 adopted secondary or advanced treatments. In 96.3% of municipalities, urban wastewater was fully or partially treated[10]. The service was entirely absent in 296 Italian municipalities (201 in the South and Islands), where 1.3 million inhabitants live.

The average annual pollutant load treated by urban wastewater treatment plants[11] amounted to 67 million population equivalent[12], of which 94.4% was treated by secondary and advanced plants.

The degree of integrated water resources management implementation has increased

Integrated water resources management (IWRM) contributes to balance the competition in the water uses, from across society and the economy, without compromising the sustainability of ecosystems, by coordinating policies and the regulatory framework, the management and financial structure. In this edition, Istat has introduced a new statistical measure, identical to the UN-IAEG request to monitor target 6.5, on a scale from zero to 100[13]. Between 2017 and 2020, Italy saw a progress, with a score ranging from 55 (medium level) to 77 (high level).

Figure 6.3 - Degree of integrated water resources management. Years 2017 and 2020 (index)



Source: ISPRA

9 Septic tanks for the treatment of urban sewage from civilian settlements.

10 The coverage, in terms of resident population, is highly diversified across territories; autonomous forms of sewage collection and treatment are frequent in areas sparsely populated or far from the urban centre.

11 There are also plants that treat mostly industrial and to a small extent civilian wastewater.

12 Measurement unit of the organic biodegradable pollutant load entering the wastewater treatment plant: 1 population equivalent = 60g of oxygen per day of BOD_5 (five-day biochemical oxygen demand).

13 For this purpose, a self-assessment questionnaire containing questions at national and sub-national level is used, compiled by ISPRA on behalf of the Ministry of Environment and Energy Security.

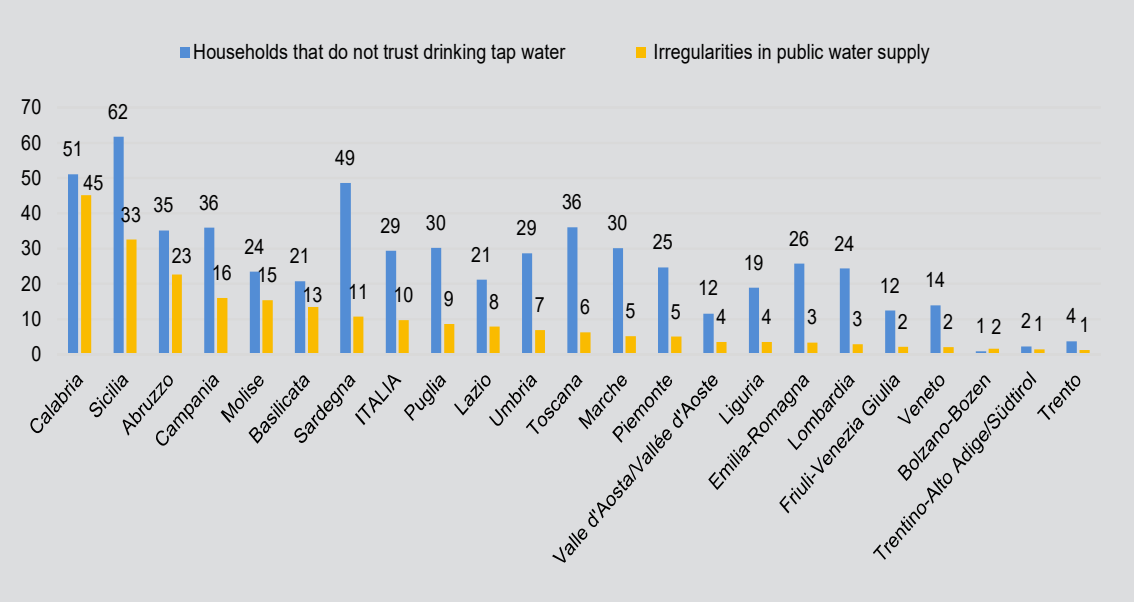
In 2020, the score of the 4 main dimensions of IWRM (Figure 6.3) ranged from 63 for Management instruments (medium-high) to 89 for Enabling environment (high).

Households still expressed little confidence in drinking tap water and report irregularities in water supply, especially in the South and Islands

In 2022, 29.4% of households did not trust drinking tap water, a percentage showing no significant change compared to 2021 (Figure 6.4). A significant territorial spread persisted, with the minimum of the indicator in the North-East (17.3%) and the maximum in the Islands (58.3%).

In 2022, 9.7% of households complained about irregular water supply in their houses, a figure remaining almost stable over the last three years (9.4% in 2021). This problem involved about 2.5 million households; 1.7 million of them (about 70%) in the South and Islands.

Figure 6.4 - Households that do not trust drinking tap water and irregularities in water supply, by region. Year 2022 (percentage values)



Source: Istat, Survey on Aspects of daily life

Wastewater reuse: a valuable practice in times of water scarcity[1]

In the present scenario of climate change and water scarcity, reusing treated wastewater is an ever-growing practice able to assure a constant availability of significant non-conventional resources. Re-use applications might be adopted in agriculture for fertigation purposes, in the industrial and civil sectors (non-drinking uses) as well as for environmental purposes. Agriculture is by far the most water-intensive sector, with a demand characterised by high seasonal variability and peaks during the spring and summer seasons to support crop vegetative stages. In Italy, according to Istat data, in the five-year period 2015-2019, the total volume of water withdrawn for the main sectors (civil, irrigation, industrial) averaged about 30.4 billion cubic metres per year. Irrigation accounted for about 56% of this volume. With the purpose of tackling periods of water scarcity, the EU has proposed and issued the Regulation 741/2020 on minimum requirements for water reuse in agriculture. The normative act is aimed at boosting the treated wastewater reuse in agriculture and aligning the regulations among the Member States at the EU level.

According to Istat data, in 2020 the total amount of wastewater treated in the Italian urban wastewater treatment plants was approximately 9.5 billion cubic metres. By considering the more than 2 thousand plants with advanced treatment, the volume of high quality treated effluent amounts to approximately 4 billion cubic metres (Figure 1). On the other hand, in Italy, the reuse practices implemented in accordance with the current national regulation (Ministerial Decree 185/2003) are much more limited if compared to the overall availability, with percentages of 4.7% in the agricultural sector and 4.9% in the industrial sector. The share of reuse for alternative uses, such as environmental ones, is even lower.

Taking into account the effluent amounts from advanced treatment plants and the water withdrawals for agricultural use, equal to about 17 billion cubic metres per year, the implementation of water reuse practices would potentially be able to cover about 24% of the needs, thus offering a significant alternative potential supply, to date little exploited and limited only to a few territories, mostly located in the northern areas.

Given the high losses in public water supply networks, the implementation of reuse practices would also contribute to protecting the qualitative and quantitative state of the water resources, helping to reduce the drawing on primary resources. Moreover, the framework emerging from the sector analysis shows a marked disparity in the quality of water service between the southern regions and the rest of the country (so-called “water service divide”).

1 This section was edited by Luigi Petta and Gianpaolo Sabia (Enea) with contributions by Simona Ramberti.

Figure 1 - Irrigation water requirements that could be met through the complete reuse of treated wastewater from urban plants with advanced treatments, by river basin district. Year 2020 (percentage values on total withdrawn)

Source: Istat-Enea, processing of data from Istat Urban water census and Istat Use of water resources data

To protect water resources, the implementation of practices for the reuse of non-conventional water sources should therefore be increasingly promoted in the various water-demanding sectors. At the same time, the resilience of drinking water supply systems should be strengthened, by making processes more efficient, especially in the regions that are more vulnerable to water scarcity.

GOAL 7

ENSURE ACCESS
TO AFFORDABLE, RELIABLE, SUSTAINABLE AND MODERN ENERGY FOR ALL[1]

In brief

- After the drop recorded in 2020, energy consumption rose sharply in 2021; Italy (+9.8%) grew more than the EU27 average and the main European economies.
- The energy intensity increased in 2021 (+1.4%) for the second year in a row. Despite the negative trend of the last year, Italy remained in fifth place in the European ranking.
- In 2021, the residential sector recorded a significant increase in final consumption per capita (+5.0%), regaining the standards of ten years ago.
- In 2021, the overall contribution from renewable sources to gross final energy consumption (19.0%) decreased compared to the previous year.
- In 2022, for the first time since 2012, the percentage of the population who cannot afford to adequately heat the house (8.8%) increased.

The statistical measures released by Istat for Goal 7 are fourteen and refer to five UN-IAEG-SDGs indicators (Table 7.1).

1 This section was edited by Paola Ungaro with contributions by Luigi Costanzo.

Table 7.1 - Statistical measures released by Istat, taxonomy compared to SDGs indicators, variations compared to the previous year and to 10 years before and convergence among regions

Ref. SDG	INDICATOR	Compared to SDG indicator	Value	VARIATIONS		CONVERGENCE AMONG REGIONS compared to 10 years before
				Compared to the previous year	Compared to 10 years before	
7.1.1	Proportion of population with access to electricity					
	Households very or fairly satisfied with the continuity of the service of electricity supply (Istat, 2022, percentage values)	Proxy	92			⇐⇒
	Inability to keep home adequately warm (Istat, 2022, percentage values)	National context	8.8			--
7.1.2	Proportion of population with primary reliance on clean fuels and technology					
	Share of new registered electric or hybrid passenger cars (ACI, 2022, percentage values)	National context	42.6		--	--
	Electric or hybrid passenger cars (ACI, 2022, N.)	National context	1,714,751		(a)	--
7.2.1	Renewable energy share in the total final energy consumption					
	Renewable energy share in the gross final energy consumption (GSE S.p.A. - Gestore dei Servizi Energetici, processing of data from GSE, Terna S.p.A., Enea, Ministry of the Environment and Energy Security, 2021, percentage values)	Proxy	19.0	(b)		⇐⇒
	Renewable energy share (transport sector excluded) in the gross final energy consumption (GSE S.p.A. - Gestore dei Servizi Energetici, processing of data from GSE, Terna S.p.A., Enea, Ministry of the Environment and Energy Security, 2021, percentage values)	National context	17.7	(c)		⇐⇒
	Renewable energy share in thermal sector (in the gross final energy consumption (GSE S.p.A. - Gestore dei Servizi Energetici, processing of data from GSE, Terna S.p.A., Enea, Ministry of the Environment and Energy Security, 2021, percentage values)	Partial	19.7	(b)		⇒⇐
	Electricity from renewable sources in the gross electricity consumption (Terna Spa, 2021, percentage values)	Partial	35.1			⇒⇐
	Renewable energy share in transport sector (in the gross final energy consumption) (GSE S.p.A. - Gestore dei Servizi Energetici, processing of data from GSE, Terna S.p.A., Enea, Ministry of the Environment and Energy Security, 2021, percentage values)	Partial	10.0	(b)		⇐⇒
7.3.1	Energy intensity measured in terms of primary energy and GDP					
	Energy intensity (Enea, processing of data from Eurostat and Istat, 2021, tonnes of oil equivalent (Toe) per million euro)	Identical	92.77			⇒⇐
	Energy intensity of industry sector (Enea, processing of data from Eurostat and Istat, 2021, tonnes of oil equivalent (Toe) per million euro)	Partial	90.53			⇐⇒
	Energy intensity of services sector (Enea, processing of data from Eurostat and Istat, 2021, tonnes of oil equivalent (Toe) per million euro)	Partial	15.77			--
	Final energy consumption in households per capita (Eurostat, 2021, kilogram of oil equivalent (KGOE))	National context	542			--
7.b.1	Installed renewable energy generating capacity in developing countries (in Watts per capita)					
	Net installed renewable energy generating capacity (Istat, processing of data from International Renewable Energy Agency and Istat, 2022, Watt per capita)	Identical	1,014.6			--

Legend

- IMPROVEMENT
- STABILITY
- DETERIORATION
- -- NOT AVAILABLE / NOT SIGNIFICANT
- ⇒⇐ CONVERGENCE
- = STABILITY
- ⇐⇒ DIVERGENCE

Notes

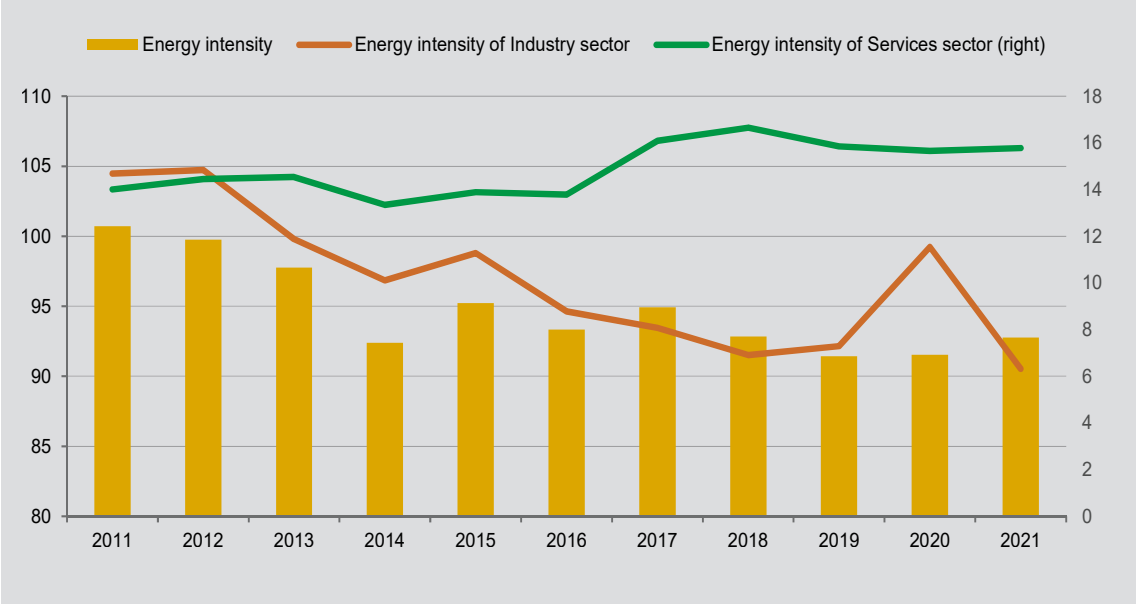
(a) Variation compared to 2013
(b) Variation calculated on a 2021 estimate based on the calculation criteria of Directive 2009/28/EC
(c) Variation compared to 2012

Energy intensity still on the rise

After the drop in 2020, due to restrictive measures related to the pandemic emergency, 2021 marked a broad recovery in energy consumption. The increase in final energy consumption for Italy (+9.8%[2]), appeared particularly intense when compared with the EU27 average (+6.2%) and Germany (+2.9%), and also slightly higher than in Spain and France (+8.7% and +9% respectively)[3]. Despite the impact of the last year, among the four largest European economies – which are responsible, overall, for 56.5% of European final consumption in 2021 – Italy remained at the forefront of progress over the last ten years, together with Spain. Between 2011 and 2021, consumption in Spain and Italy fell by 4.6% and 3.7% respectively, in France by 1%, while Germany and the EU27 in the last year reported slightly above 2011 levels.

Energy intensity – determined by the ratio of gross energy availability to GDP – is a proxy measure of the overall energy efficiency of an economy. In 2021, for the second year in a row, Italy recorded an increase in energy intensity from 91.5 to 92.8 tonnes of oil equivalent per million euro (TOE/M€; Figure 7.1). The increase in energy intensity was due to the combined effect of GDP dynamics (increased by 7.0%) and energy demand (+8.4%).

Figure 7.1 - Energy intensity, by sector. Years 2011-2021 (tonne of oil equivalent per million euro, chain linked volumes)



Source: ENEA, processing of data from Eurostat and Istat

In percentage terms, the variation (+1.4%) was slightly higher than that of France (+1.3%), Germany (+1.2%) and Spain (+1.0%) and more than twice the average of the 27 EU Member States (+0.6%). Over the last decade, Italy has made less progress, both compared to the

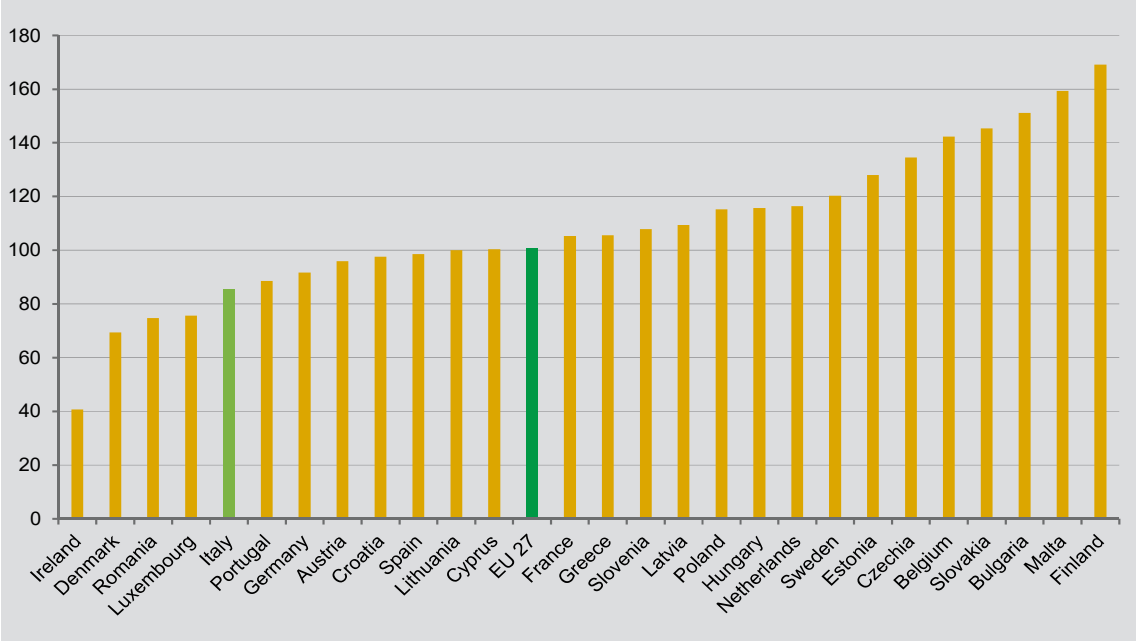
2 Final energy consumption increased most in the transport sector (+22% vs. +6% in industry and agriculture and forestry, +5% in services and residential sector), which was the most penalised during the lockdown, and, among the main energy sources, for petroleum products (+19%, against +8% for natural gas, +7% for renewables and bioliquids and +6 % for electricity), widely used in the transport sector itself.

3 See http://ec.europa.eu/eurostat.

average profile of the EU27 and our main economic partners, resulting in overall energy savings per unit of output of -7.9% (compared to -17.0% for Germany, -16.4% for France, -16.1% for the EU27 and -12.6% for Spain).

Despite the less intense dynamics over time[4] and negative developments in the last year, Italy confirmed its historic advantage in the European context also in 2021. With a value of 84.8% of the EU27 average, Italy ranked fifth in 2021 on the European energy intensity ranking, after Ireland, Denmark, Romania and Luxembourg (Figure 7.2).

Figure 7.2 - Energy intensity, by country. Year 2021 (tonne of oil equivalent per million euro at purchasing power standards)



Source: Eurostat

The energy intensity of the industrial sector decreased in 2021 to 90.5 TOE/M€ (-8.7 TOE/M€ compared to 2020, equal to -8.8%), ending the decade with a negative balance of 14 TOE/M€ (-13.4%) and an average annual variation rate of -1.4% (Figure 7.1). The services sector – with significantly lower energy intensity levels than industry (15.8 TOE/M€ in 2021) – increased again in the last year (+0.1 TOE/M€, equal to +0.7%). Over the period 2011-2021, energy intensity increased in services by 12.6%, equivalent to an average annual variation rate of +1.2%, also due to the substantial increase in 2017-2018.

In 2021, the residential sector recorded a significant increase in final consumption per capita: +26 kg of oil equivalent per inhabitant compared to 2020, equal to +5.0%, returning to the levels observed ten years ago (545 in 2011). The growth in household final energy consumption over the last year was a widespread phenomenon across Europe, affecting all Member States except Ireland, Luxembourg, Cyprus and Portugal. Again in 2021, Italy achieved per capita consumption below EU27 (586), Germany (706) and France (623), albeit well above Spain (311)[5].

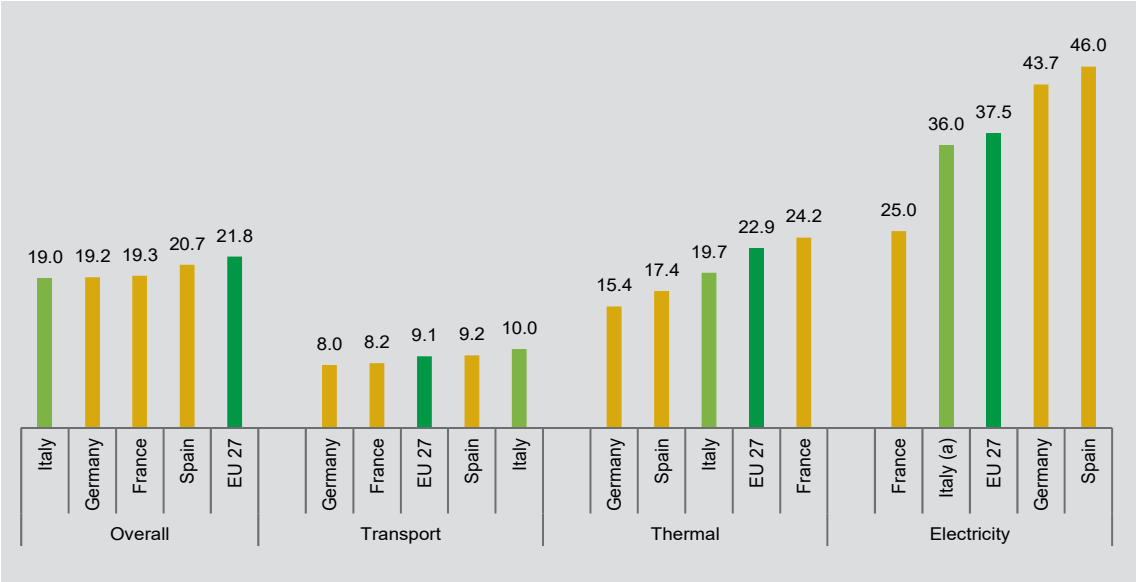
4 Between 2011 and 2021, the average annual variation rate in energy intensity, which was -0.8% for Italy, was lower than in Spain (-1.3%), France and Germany (-1.8%), and in the EU27 (-1.7%).

5 The discontinuity over time in household consumption, as well as cross-country differentials, is affected by climate seasonality, which influences thermal consumption.

Italy towards the new 2030 renewable energy targets: further impetus needed for RES production

In 2021, the share of energy from renewable sources (electricity, thermal and transport sectors) in gross final energy consumption (GFC) – the so-called overall target - was 19.0% in Italy, slightly below the trajectory defined by the 2019 Integrated National Energy and Climate Plan (INECP)[6] for 2021 (19.9%). The decline observed in comparison with last year was largely driven by the post-pandemic recovery in overall energy consumption, which increased, in percentage terms, more strongly than the increase in consumption from renewable energy sources (RES). However, account should be taken of the effect of the EU's adoption of new methods of calculation on this and other measures to monitor the development of RES at European level[7] (see the paragraph *The role of renewable sources in energy consumption: a sectoral analysis*). However, the comparison between 2020 and 2021, on the basis of the same methodology, shows that the overall target fell by around 1.4 percentage points[8].

Figure 7.3 - Share of renewable energy in gross final energy consumption, by country and sector. Year 2021
(percentage values)



Source: Eurostat
(a) The data in the graph differ from that provided by the Istat-SDGs system, as it is calculated in accordance with the criteria set out in the RED II Directive, for the purposes of monitoring the European renewable energy targets for 2021.

The dynamics of the last year have led to a repositioning of Italy in the ranking of the EU27 countries with which we usually compare (Figure 7.3). The differences between the four main Member States are not large, especially when compared to the large gap with

6 The 2019 INECP, which is currently in force, provides for an overall renewable energy target of 30% by 2030, setting targets and development trajectories, including at sectoral level.

7 The entry into force of Directive (EU) 2018/2001 (RED II), which replaced Directive 2009/28/EC (RED I), led to changes in accounting methodologies from 2021 onwards, for example, for renewable sources for cooling (heat pumps, cooling-only air conditioners, etc.) and biomass.

8 See Gestore dei Servizi Energetici – GSE. 2023. *Energia da fonti rinnovabili in Italia - Rapporto Statistico 2021*. Roma: GSE. https://www.gse.it/dati-e-scenari/statistiche.

countries with a more established tradition in renewable energy use[9]. However, in 2021, Italy recorded an overall RES contribution to final consumption below the EU27 average (21.8%) of almost 3 percentage points and below Spain (20.7%) of almost 2, close to Germany and France. The sectoral analysis shows a comparatively more advanced situation in the renewable production in transport sector (in which Italy ranked first), in electricity (with Italy only slightly below the EU27 level), and thermal sector (in which Italy performed better than Germany and Spain).

The results are due to a higher rate of growth of renewable sources in the transport (biofuels and renewable share of electricity consumed in transport) and electricity than in the thermal (heating and cooling) sector, which is also influenced by climate variability. In transport, the share of consumption met by RES has more than doubled between 2010 and 2020, benefiting from a slight improvement also in the last year (+0.3 percentage points, using the same calculation methodology) and reaching 10.0%, in line with the INECP target (9.9%). In the electricity sector, RES in total gross domestic consumption increased by 15.2 p.p. between 2010 and 2020. The last year was characterised by a decrease of 2.3 percentage points, bringing the level back to 35.1%. The thermal sector describes a more moderate temporal dynamic, with a change in the period 2010-2020 of +4.3 p.p. and a slight decrease in the last year (-0.4 p.p., using the same methodology), which brought the share of renewables to 19.7% (against 22.1% defined by the INECP for 2021).

The successful process undertaken by Italy in the production of energy from renewable sources has enabled our country to increase its net installed renewable energy generation capacity from 777.3 watts per capita in 2012 to 1014.6 in 2022 (+30.5%). The development of renewable sources has also contributed to the progressive reduction of energy import dependence for fossil fuels, reducing the disadvantage compared to the average European profile. Although remaining at high levels, the share of net imports of energy products in gross available energy decreased in Italy between 2011 and 2021 from 81.4% to 73.5% (-7.8 percentage points), compared to an average decrease in the EU27 of less than 1 percentage point (from 56.4% to 55.5%[10]), and remained stable over the past year, also against the background of a significant increase in consumption, in particular of some fossil sources.

Nevertheless, the increasingly ambitious commitments at both national and international level – further under review[11] – call for more impetus to be given to RES production, so that the transition to alternative to fossil fuels sources can be achieved.

9 In 2021, the overall share of RES in the total consumption was 63% in Sweden, above 40% in Finland and Latvia, between 30% and 40% in Estonia, Austria, Denmark, Portugal and Croatia. Italy ranked 12th in the growing ranking of overall target (see http://ec.europa.eu/eurostat).

10 In 2021, Italy had the highest energy import dependency among the largest European economies (44.2% for France, 63.5% for Germany and 69.1% for Spain) and one of the highest in Europe (after Malta, Luxembourg, Cyprus, Ireland and Greece; see http://ec.europa.eu/eurostat).

11 In view of the completion of the Fit for 55 legislation to realise the Green Deal and achieving the REPowerEU objectives, a provisional agreement was reached at the EU level on 30 March 2023 which revised the binding European target for 2030 to 42.5% (compared to the current 32%; (see https://ec.europa.eu). Raising European targets will, of course, entail a revision of current national development plans.

The percentage of population with inability to keep home adequately warm slightly increased

In 2022, for the first time since 2012, the share of people reporting difficulties to keep their home adequately warm increased, albeit slightly, compared to the previous year, at 8.8% (8.1% in 2021), interrupting the phase of gradual improvement started in 2013 after the peak of 2012 (21.3%). The largest increases were recorded in the Islands (13.7%; +3.7 p.p.) and in the Centre (9.6%; +3.3 p.p.), while the North showed a reduction (5.2%; -0.8%), driven by North-West trend (5.7%; -2.8 p.p.). The percentage of people who complain of difficulties in heating their homes was highest among foreign citizens (19.7% vs. 8.1% for Italians) and in the South and Islands (13.4%).

In 2021 (the latest year available for European comparison), Italy was close to the EU27 average (6.9%)[12]. In all Member States, the share of people with difficulties was higher in the economically most vulnerable population groups, with varying degrees of intensity between countries. In Italy, the proportion of people who cannot afford to heat their homes among people at risk of poverty[13] was 2.9 times that of the rest of the population (17.0% vs. 5.9%). In the EU27 the ratio rose to 3.3 and was particularly high in Croatia (6.7), Latvia, the Netherlands, Slovakia, Denmark and Slovenia (between 4.5 and 5).

12 See: http://ec.europa.eu/eurostat

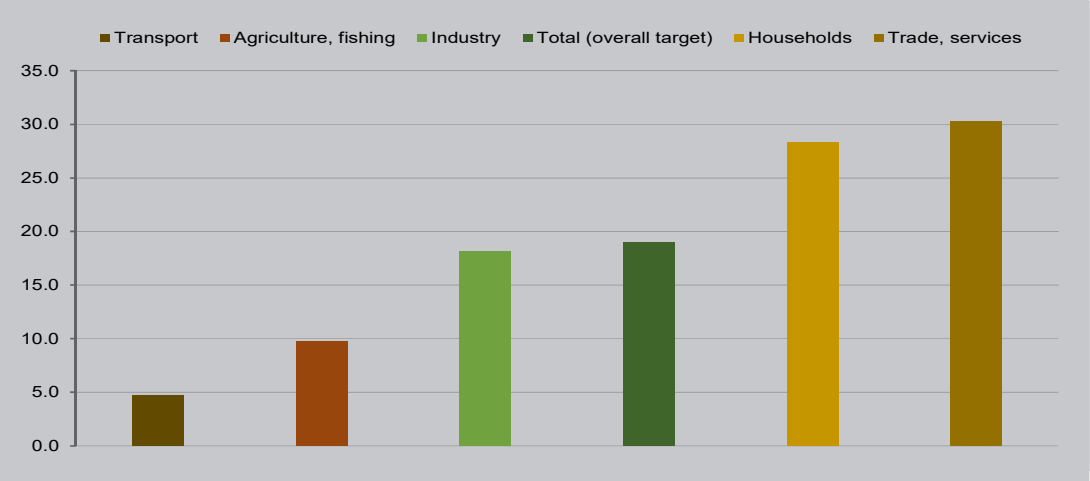
13 Persons living in households with an equivalised disposable income below 60 % of the median income.

The role of renewable sources in energy consumption: a sectoral analysis[1]

The share of renewable energy in gross final energy consumption is an indicator that aims to measure and monitor the progress of EU Member States in supporting RES consumption. It was introduced by the first European regulatory act specifically dedicated to the promotion of RES (Directive 2009/28/EC, or RED I) and confirmed by the following Directive (EU) 2018/2001, or RED II. In Italy, these indicators are calculated by Gestore dei Servizi Energetici – GSE Spa, which annually produces the official data on RES share at overall level (the relative indicator is called overall target) and in the three macro-sectors of energy consumption identified by the two Directives (electricity, heating and cooling, transport).

In this analysis, we propose the results of an elaboration that integrates the information provided by GSE for Goal 7 monitoring with new indicators relating to the share of renewable energy in the main economic sectors.

Figure 1 - Share of renewable energy in gross final energy consumption, by sector. Year 2021 (percentage values)



Source: GSE S.p.A. - Gestore dei Servizi Energetici

In 2021, the sectors with highest contribution of RES to overall energy consumption were trade and services and households. Compared to others, these sectors had higher electricity consumption, and in Italy RES currently ensure electricity production for about a third of the total (the average value of the share of RES on gross inland consumption of electricity over the last 10 years is just under 34%).

In addition to traditional electrical uses and applications (lighting, power supply of machines and appliances, etc.), trade and services and households are also characterised by a large use of air conditioning systems and heat pump appliances that support or replace traditional heating systems powered by natural gas.

Furthermore, in the residential sector, direct use of solid biomass for thermal purposes is relevant: the latest Istat Survey on energy consumption in households shows that in 2020, 17.0% of households used firewood and 7.3% used pellets in autonomous systems or single appliances[2].

1 This section was edited by Paolo Liberatore, Martino dal Verme and Duilio Lipari (GSE, Statistical Office) with contributions by Paola Ungaro.

2 Istat. 2022. "Consumi energetici delle famiglie. Anni 2020 e 2021". Statistiche Report. Rome: Istat. https://www.istat.it/it/archivio/279160.

In the industrial and agricultural sectors, the share of RES was lower: in this case, electricity, as well as the direct uses of RES, play a smaller role, compared to a still significant use of plants powered by fossil fuels (gas, oil products) for process uses.

Considering under the heading of transport all energy consumption for transport, regardless of the economic activity sector of actual consumption, the contribution of RES was limited, both because the share of biofuels (biodiesel, biomethane, etc.) on the total fuels released for consumption is below 5% and the incidence of electricity consumption is lower compared to other sectors. However, it is important to point out that this indicator should not be confused with the sectoral one established by the RED I and RED II directives previously illustrated, the monitoring of which requires applying ad hoc accounting criteria and specific multiplication factors that lead to higher values[3].

Table 1 - Share of renewable energy in gross final energy consumption, by sector. Years 2017-2021 (percentage values)

Sector	2017 (a)	2018 (a)	2019 (a)	2020 (a)	2021 (b)
Agriculture, fishing	9.0	8.4	9.2	9.8	9.8
Industry	16.6	16.7	17.7	19.4	18.1
Transport	3.7	4.0	4.1	5.2	4.8
Trade, services	30.4	29.1	29.4	30.8	30.3
Households	27.6	27.0	27.8	28.1	28.3
Total (overall target)	**18.3**	**17.8**	**18.2**	**20.4**	**19.0**

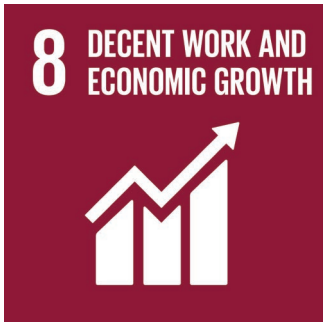
Source: GSE S.p.A. - Gestore dei Servizi Energetici
(a) Data calculated according to Directive RED I methodologies.
(b) Data calculated according to Directive RED II methodologies.

Table 1 shows the trend of sectoral RES shares in the last 5 years. Note that 2021 data are not perfectly comparable with previous years: starting from this year, the RED II monitoring methodology must be applied, while the one fixed by RED I is applied until 2020[4].

In 2017-2021, rather linear trends can be observed; the main variations are associated with phenomena that characterised single years. In 2020, in particular, all values were higher due to the effects of the COVID-19 pandemic, which caused significant reductions in energy consumption, and particularly in those with strong connections with fossil energy sources (for example, transport sector), while RES consumption had a substantial stability.

3 Gestore dei Servizi Energetici – GSE. 2022. *Energia nel settore Trasporti*, Rome. GSE: https://www.gse.it/dati-e-scenari/statistiche.

4 Note that some simplifications and assumptions were made to develop the indicators, for which the weighted average of the indicators presented here would not exactly return the value of the overall target. For further information on the construction of indicators for monitoring EU targets on RES, see Chapter 2 of Gestore dei Servizi Energetici – GSE. 2023, *Energia da fonti rinnovabili in Italia 2021* (https://www.gse.it/dati-e-scenari/statistiche).



GOAL 8

PROMOTE SUSTAINED, INCLUSIVE AND SUSTAINABLE ECONOMIC GROWTH, FULL AND PRODUCTIVE EMPLOYMENT AND DECENT WORK FOR ALL[1]

In brief

- The recovery of economic activity slowed down in 2022: annual growth rates of GDP in volume (+3.7%), per capita (+4.0%), and per person employed (+1.9%) were lower than in 2021.
- 2022 marked an important recovery of the Italian labour market. The employment rate of 20–64 year-olds (64.8%) rose and fully recovered pre-pandemic levels, but the gap with Europe remained very high.
- In 2022, the unemployment rate fell by 1.4 percentage points, with greater progress for young people. Territorial, gender, and generational differentials remained wide.
- After the intense development recorded in the emergency phase, people working from home dropped to 12.2% in 2022; almost a third of graduates worked remotely.
- Slight reduction in non-regular employment, but more than half of domestic staff and one in four agricultural workers were still employed non-regularly.
- In 2021, the rate of injuries and injuries leading to permanent disability was stable (10.2 per 10,000 employed).

The statistical measures released by Istat for Goal 8 are twenty-eight and refer to twelve UN-IAEG-SDGs indicators (Table 8.1).

1 This section was edited by Paola Ungaro with contributions by Gaetano Proto and Chiara Rossi.

Table 8.1 - Statistical measures released by Istat, taxonomy compared to SDGs indicators, variations compared to the previous year and to 10 years before and convergence among regions

Ref. SDG	INDICATOR	Compared to SDG indicator	Value	VARIATIONS		CONVERGENCE AMONG REGIONS compared to 10 years before
				Compared to the previous year	Compared to 10 years before	
8.1.1	Annual growth rate of real GDP per capita					
	Annual growth rate of real GDP per capita (Istat, 2022, percentage values)	Identical	4.0	--	--	--
8.2.1	Annual growth rate of real GDP per employed person					
	Annual growth rate of real GDP per capita (Istat, 2022, percentage values)	Identical	1.9	--	--	--
	Annual growth rate of value added in volume per employed person (Istat, 2022, percentage values)	National context	2.1	--	--	--
	Annual growth rate of real value added per worked hour (Istat, 2022, percentage values)	National context	0.0	--	--	--
8.3.1	Proportion of informal employment in total employment, by sector and sex					
	Share of employed person not in regular occupation (Istat, 2020, percentage values)	Proxy	12.0			⇒⇐
8.4.2	Domestic material consumption, domestic material consumption per capita, and domestic material consumption per GDP					
	Domestic material consumption per capita (Istat, 2021, tonne per capita)	Identical	8.6			⇐⇒
	Domestic material consumption per GDP (Istat, 2021, tonne per 1,000 euro)	Identical	0.30			⇐⇒
	Domestic material consumption (Istat, 2021, million tonnes)	Identical	505.4			=
8.5.1	Average hourly earnings of employees, by sex, age, occupation and persons with disabilities					
	Hourly earnings (Istat, 2018, euro)	Identical	15.6	(a)	(b)	--
	Gender pay gap (Eurostat, 2021, percentage values)	National context	5.0			--
	Share of employees with below 2/3 of median hourly earnings (Istat, 2020, percentage values)	National context	10.1			⇒⇐
8.5.2	Unemployment rate, by sex, age and person with disabilities					
	Unemployment rate (Istat, 2022, percentage values)	Identical	8.1			=
	Non-participation rate (Istat, 2022, percentage values)	National context	16.2		(c)	⇐⇒
	Employment rate (20-64) (Istat, 2022, percentage values)	National context	64.8			⇒⇐
	Involuntary part time (Istat, 2022, percentage values)	National context	10.2		(c)	⇐⇒
	Share of employed persons with temporary jobs since at least 5 years (Istat, 2022, percentage values)	National context	17.0		(c)	=
	Employed persons working from home (Istat, 2022, percentage values)	National context	12.2		(c)	⇐⇒
8.6.1	Proportion of youth (aged 15-24 years) not in education, employment or training					
	People not in education, employment, or training (NEET) (aged 15-24) (Istat, 2022, percentage values)	Identical	15.9		(c)	⇒⇐
	People not in education, employment, or training (NEET) (aged 15-29) (Istat, 2022, percentage values)	National context	19.0		(c)	⇒⇐
8.8.1	Fatal and non-fatal occupational injuries per 100,000 workers, by sex and migrant status					
	Rate of fatal occupational injuries or injuries leading to permanent disability (INAIL, 2021, per 10,000 employed)	Proxy	10.2		(c)	⇒⇐
8.9.1	Tourism direct GDP as a proportion of total GDP and in growth rate					
	Tourism direct GDP as a proportion of total GDP (Istat, 2019, percentage values)	Proxy	6.2	--	--	--
	Number of jobs in tourism industries as a proportion of total jobs (Istat, 2019, percentage values)	National context	15.5	--	--	--
8.10.1	(a) Number of commercial bank branches per 100,000 adults and (b) number of automated teller machines (ATMs) per 100,000 adults					
	Number of branches per 100,000 inhabitants (Istat, processing of data from Bank of Italy, 2022, per 100,000 inhabitants)	Proxy	35.6			=
	Number of ATM per 100,000 inhabitants (Istat, processing of data from Bank of Italy, 2022, per 100,000 inhabitants)	Proxy	63.3			⇒⇐
	Number of institutions per 100.000 inhabitants (Istat, processing of data from Bank of Italy, 2022, per 100,000 inhabitants)	Proxy	0.7			⇐⇒
8.a.1	Aid for Trade commitments and disbursements					
	Aid for trade (Ministry of Foreign Affairs and International Cooperation, 2020, million euro current prices)	Identical	(*)	--	--	--
8.b.1	Existence of a developed and operationalized national strategy for youth employment, as a distinct strategy or as part of a national employment strategy					
	Total government spending on employment programmes and social protection for unemployed as a proportion of the national budgets (Istat, 2021, percentage values)	Proxy	3.40			--
	Total government spending on employment programmes and social protection for unemployed as a proportion of GDP (Istat, 2021, percentage values)	Proxy	1.88			--

Legend

- IMPROVEMENT
- STABILITY
- DETERIORATION
- -- NOT AVAILABLE / NOT SIGNIFICANT
- ⇒⇐ CONVERGENCE
- = STABILITY
- ⇐⇒ DIVERGENCE

Notes

(a) Variation compared to 2014
(b) Variation compared to 2010
(c) Variation compared to 2018

(*) Refer to the table on www.istat.it

The recovery of economic activity slowed down in 2022

In 2022, the recovery in economic activity of the previous year slowed down. The gross domestic product grew by 3.7% in Italy (7.0% the previous year), slightly above both the EU27 and the euro area (+3.5% for both) and higher than Germany (+1.8%) and France (+2.6%), but below Spain (+5.5%). Last year's economic cycle trend, although weakened, contributed to a recovery of pre-pandemic levels for the EU27 (+3.0% compared to 2019) and the euro area (+2.3%), and for the four main European countries (+0.6% for Germany, +1.0% for Italy and France), excluding Spain (-1.3%)[2]. In Italy, economic activity has been supported mainly by the recovery in household consumption and by the dynamics of investment, driven by spending on machinery and construction[3].

In 2022 in Italy, GDP per capita grew by 4.0%, which is higher than GDP per person employed (+1.9%). Labour productivity – measured as value added per employed person – grew by 2.1%[4]. Within an average increase in services of 3.2%, the most dynamic sectors were: transport and storage, which grew more than the previous year (+16.4% compared to +11.1% in 2021), accommodation and food service activities (+15.7%) and arts, entertainment and recreation, repair of household goods and other services (+10.7%). On the other hand, financial and insurance activities (-4.1%) and real estate activities (-2.3%) declined. In the industry as a whole, there was a decline (-1.2%) identical to that of its most important component, manufacturing (-1.2%). Construction bucked the trend (+2.8%), which continued to benefit from building renovation incentives.

In 2022 the employment rate fully recovered the pre-crisis levels, but the gap with Europe was still very high

2022 marked an important recovery of the Italian labour market. The employment rate of 20-64 year-olds increased by 2.1 percentage points to 64.8% and fully recovered pre-pandemic levels (it was 63.5% in 2019). The rise in the 2022 employment rate is broadly based in the European Union context, with Italy recording one of the best performances[5], above the EU27 average (+1.5 p.p.) and Spain (+1.8), Germany (+1.3) and France (+0.8). The positive trend of the last year, however, only marginally reduces the wide gap between our country and the Union (the EU27 average value was 74.6%), which, still in 2022, amounted to -9.8 p.p. (Figure 8.1), and, for the female component, was greater (-14.3 p.p.) than for the male component (-5.3). Over the last decade, the share of the employed in the population aged 20-64 – which increased in the EU27 by 7.7 percentage points – rose in Italy by only 4.6 p.p., an increase slightly higher than in France (+4.3 p.p.), but lower than in Germany (+4.9 p.p.) and Spain (+9.9). In 2022, Italy fell to last place in the European ranking of the employment rate.

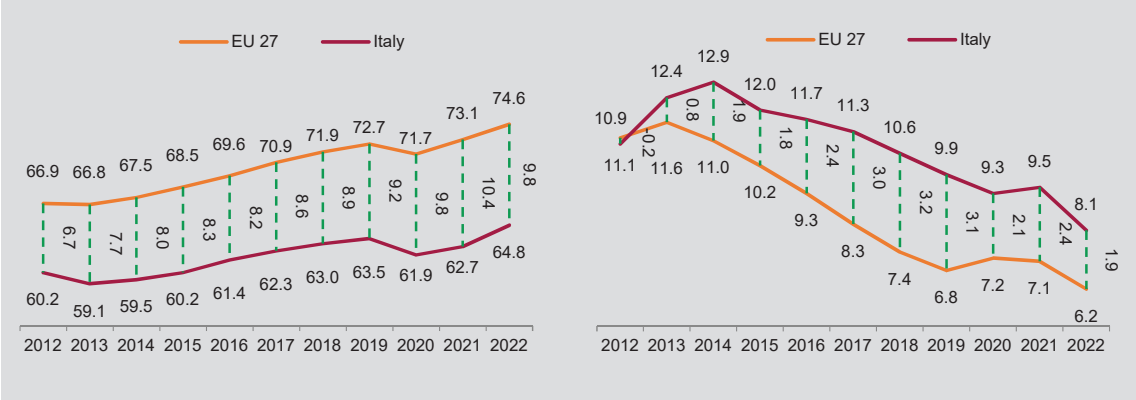
2 See http://ec.europa.eu/eurostat.

3 See Istat. 2022. "GDP and general government net borrowing – Year 2022". *Statistics Flash*. Roma: Istat. https://www.istat.it/en/archivio/281417.

4 When measured in terms of value added per worked hour, productivity was stable compared to 2021, as a result of a labour input dynamic characterised, as last year, by an increase in hours worked (+3.9%) higher than that of the number of employees (+1.7%).

5 Higher employment rate increases than in Italy are only observed in Greece (+3.7 p.p.), Ireland (+3.3), Estonia (+2.6) and Bulgaria (+2.5), while Slovakia recorded the same change as our country (see http://ec.europa.eu/eurostat).

Figure 8.1 - Employment rate (20-64 year-olds) and unemployment rate. Years 2012-2022 (percentage values)



Source: Istat, Labour Force Survey, Eurostat

Last year's recovery involved employment more than self-employment, affecting industry, especially construction, and market services to an above average extent. Men (+2.3 points vs. +1.8 for females), young people (+3.8 p.p. for 20-24 year-olds and +3.5 for 25-34 year-olds) and foreigners (+2.8 vs. +2.0 for Italians) benefited from a more robust expansion in the employment rate. The gender gap, which had narrowed last year, rose again (with a share of employed at 75% among men and 55% among women) and reached 19.7 p.p., a level almost twice as high as in that of the EU27 (10.7). The 20-24 year-olds reduced the gap with the older population groups, but continued to record an employment rate (35.3%) just over half the national average. The dynamics of recent years have resulted in a slight reduction in territorial imbalances to the disadvantage of the South and Islands, which restored pre-pandemic employment levels since last year and grew in 2022, together with the Centre, to a greater extent than the other geographical areas (+2.0 and +2.5 p.p. respectively compared to +1.8 in the North). However, the gaps remained wide, with an employment rate of 51.1% in the South and 49.3% in the Islands compared to the Centre (69.7%) and the North (North-West 72.6% and North-East 74.1%).

Unemployment fell again, with higher benefits for young people, but confirming wide territorial and generational differentials

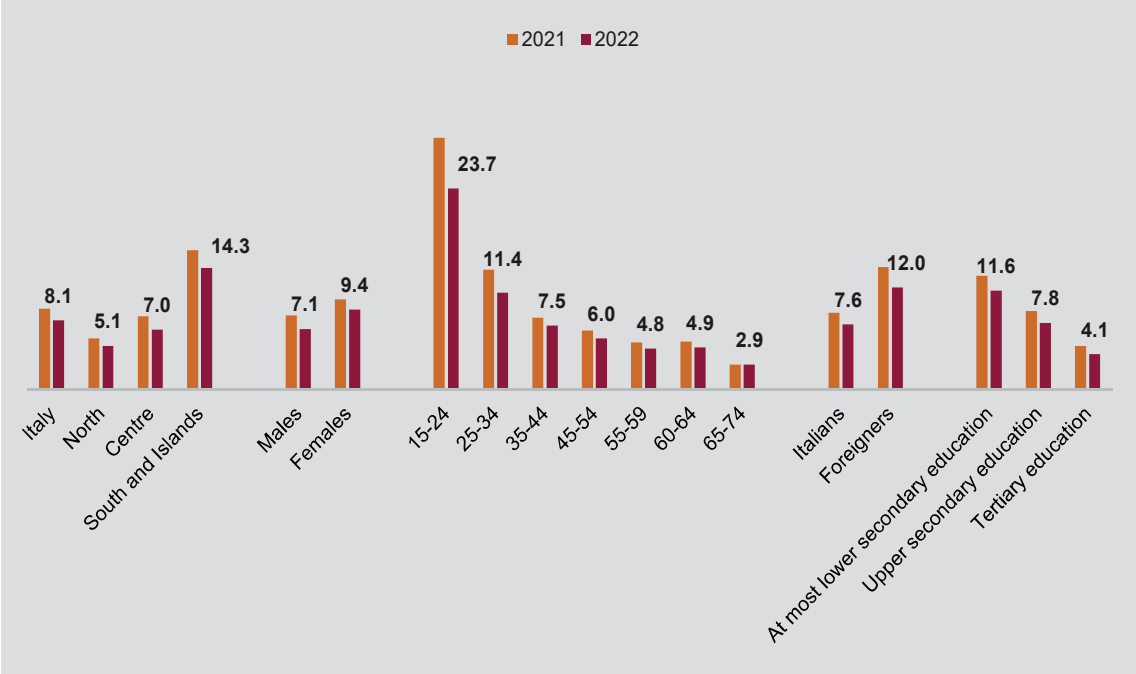
In 2022, the unemployment rate stood at 8.1% in our country, 1.4 percentage points lower than in the previous year and 2.8 points than ten years ago. The dynamics of unemployment are correlated with those of inactivity[6]. The non-participation rate – which ratios to the labour force, in addition to the unemployed, those who have not looked for a job in the past four weeks but declare themselves available for work, representing a measure of the unmet labour supply – contracted even more sharply than the unemployment rate (-3.2 percentage points), settling at 16.2%.

6 The inactivity rate, which, after the sharp increase in 2020 (+2.2 percentage points), had already fallen in 2021, recorded a further decrease (-1.1) to 33.9%, the lowest level registered in the last ten years.

Over the past year, Italy's unemployment rate was also characterised by greater progress than both the average of the 27 Member States (-0.9 p.p.) and the main economies of the Union (-0.6 p.p. for Germany and France), excluding Spain (-1.9). The gap with the average European profile narrowed from 2.4 to 1.9 points (Figure 8.1), but our country still ranked second only to Greece and Spain in the unemployment rate ranking in 2022.

Last year's trends have left deep territorial, gender and generational gaps and, in some cases, have reinforced them (Figure 8.2). This is the case for the gender gap, which rose from 1.9 points in 2021 to 2.3 in 2022. The share of jobseekers remained significantly higher in the South and Islands (13.9% in the South and 15.1% in the Islands) – with particularly pronounced difficulties in Campania (17.1%), Sicilia (16.6%) and Calabria (14.6%) – compared to the Centre (7.0%) and the North (4.5% in the North-East and 5, 5% in the North-West), in the population groups with the lowest level of education (11.6% for those with at most a lower secondary school attainment against 4.1% for those with a tertiary attainment) and among the youngest (23.7% for 15-24 year-olds and 11.4% for 25-34 year-olds, improved compared to the previous year). The employment difficulties experienced by young people are also reflected in the proportion of NEETs ("Not in Education, Employment or Training"): the 15-29 year-olds who do not work and do not participate in the education and training system were 19 out of 100. Despite the considerable decrease over the last year (-4.1 percentage points), the incidence of NEETs remained higher than the EU27 average (around 11%).

Figure 8.2 - Unemployment rate, by geographical area, gender, age, citizenship, highest level of education attained. Years 2021 and 2022 (percentage values)



Source: Istat, Labour Force Survey

Slight improvement in quality of work

The employment recovery over the last year was associated with a slight improvement in the incidence of "non-standard" workers in vulnerable conditions. The number of involuntary part-time workers (in part-time work due to a lack of full-time job opportunities) fell from

11.3% to 10.2%; that of persons employed in fixed-term work for at least five years[7] from 17.5% to 17.0%. Non-full work intensity compared to the availability of the workers and the precarious nature of the contract are confirmed as prevailing problems in the southern and central labour markets (14% and 11% involuntary part-time workers and 23% and 17% temporary workers respectively, compared to 8% and 12% in the North), for foreigners (18% and 19% compared to 9% and 17% for Italians), for the less-educated segments of the population (13% and 24% for those with at most a lower secondary education compared to 6% and 16% for those with tertiary education). Involuntary part-time work mainly affected women (17% versus 6% for men) and young people (19% for 15-24 year-olds and 12% for 25-34 year-olds). This is not the case for the share of fixed-term workers for more than five years, which is very similar between men and women (17.4% versus 16.5%) and higher among older people (35% among 55-59 year-olds and 42% among 60-64 year-olds).

Work from home declined, but almost a third of graduates still carried out remote work

In 2020, during the most intense phase of the pandemic, the percentage of employed persons working from home out of the total number of employed persons had almost tripled compared to the previous year. By 2021, growth had slowed down (+1 percentage point). In 2022, the growth trend reversed (-2.6 percentage points) and the share stood at 12.2%. Participation in remote work remained higher for women (13.8% compared with 11.0% for men), despite the more intense contraction in the last year (-3.5 p.p. vs. -2.0 p.p.) and for higher education attainments (28% among university graduates against 10.2% for upper secondary school graduates and 2.2% among those with at most a lower secondary education), also in relation to the "teleworkability" of the work performed (see the paragraph *Remote work, time porosity and autonomy: the case of teleworkable occupations*). The decline in work affected the territory evenly, confirming a larger diffusion in the Centre (14.9%) and in the North (13.3%; 14.5% in the North-West) than in the South and Islands (7.8%).

Irregular employment has still slightly decreased, but more than half of domestic workers and one in four agricultural workers were employed on a non-regular basis

In 2020, the steady, albeit slow, process of reduction in the share of non-regular employment[8] in total employment continued, reaching 12.0% (-0.6 percentage points), also as a result of a particularly pronounced impact of the socio-economic crisis on the non-observed economy[9]. The decline over the last year particularly affected arts, entertainment and recreation, repair of household goods and other services (-2.7) and, more specifically, household services (-4.7 p.p.), but both sectors remained as those with the highest rate of non-regular employment (40.3% and 52.3%, respectively). Agriculture, where almost a quarter of the employed are non-regular, recorded a further increase (see Goal 2).

7 Temporary employees and term-contract workers who began their current job at least 5 years ago on total temporary employees and term-contract workers.

8 Employment that does not comply with work, fiscal and pension laws.

9 In 2020, the value added of the non-observed economy decreased by 14.1 %, twice as much as GDP (see Istat. 2022. "L'economia non osservata nei conti nazionali. Anni 2017-2020". *Statistiche Report*. Roma: Istat. https://www.istat.it/it/files//2022/10/ECONOMIA-NON-OSSERVATA-NEI-CONTI-NAZIONALI-ANNO-2020.pdf).

Non-regular employment remained more widespread among employees than among the self-employed and in the South and Islands (16.7%) and the Centre (12.4) than in the North (9.7 for the North-West and 8.9 for the North-East).

Government spending on social protection for the unemployed fell in the second year of the pandemic

In 2021, after the significant increase brought about by government measures to contain the effects on employment of the crisis in the previous year, government expenditure on employment programmes and social protection for the unemployed fell, but remained at levels above the pre-pandemic phase. The incidence on gross domestic product fell from 2.7% to 1.9 (-0.8 p.p.); that on total public expenditure from 4.8% to 3.4% (-0.6 p.p.). The decade ended with a positive balance of expenditure for employment and unemployment protection of 0.9 p.p., relative to GDP, and 1.4 p.p., in relation to total public expenditure.

Stable rate of fatal occupational injuries or injuries leading to permanent disability

After the sharp decrease in 2020, linked to the partial closure of production activities and the increase in work from home, in 2021 the rate of fatal occupational injuries and permanent disabilities remained broadly stable at 10.2 per 10,000 employed, down by 10.5% compared to 2019. The frequency of fatal injuries and disabilities as a percentage of the employed remained higher than average in the Centre (10.7) and, even more, in the South and Islands (12.0), and lower in the North (8.0). Despite a trend towards convergence over time, regional differentials were still substantial: the region with the highest risk of injuries (Basilicata, with 18.9 per 10,000 employees) was 2.5 times the level of lowest risk regions (Piemonte, Lazio and Friuli Venezia-Giulia, with 7.5). The injury rate – much higher among men than among women (13.7 versus 5.3) – increased as the age of workers rises: from 5.4 for 15-34 year-olds to 22.4 for the over 64-year-olds. These trends are also affected by the different relative weight of these categories of workers in the occupational sectors with the highest risk of accidents and by the different economic structure of the geographical areas.

Remote work, time porosity and autonomy: the case of teleworkable occupations[1]

Telework can be an important instrument in supporting sustainable work: it guarantees employees benefits such as an increased autonomy in carrying out activities, a better work-life balance and less money and time spent on commuting. Moreover, it can increase employers' productivity and reduce their operating costs[2]. However, this kind of work can be applied in the right way only to some jobs, the so-called "teleworkable" occupations, and it needs to be regulated and used properly, in order to avoid the risks that come with time porosity[3].

In 2021, the Inapp Survey on the quality of work in Italy[4] explored the topic of remote work thoroughly, addressing questionnaires to both employees and employers. The same year remote work began to lose its previous emergency connotation: the share of those working remotely on a regular basis decreased while the occasional component increased[5]. In addition, the coherence between teleworkable occupations and jobs carried out remotely has become clearer: 81.3% of remote workers performed a theoretically teleworkable job (compared with 38.3% of all dependent workers, i.e., employees and dependent contractors)[6].

Among remote workers who carried out a teleworkable occupation (11% of the total of dependent workers, the subject of the following analyses), women seem to benefit from less flexibility in working times management: they chose less frequently than men when to disconnect or to take a break and they had to comply more often with a compulsory connection time (Figure 1). Men, on the other hand, seem to benefit from greater flexibility which, however, leads to a higher risk of time porosity: in fact, to a greater extent, they declared that with remote working they are more likely to work in the evening and especially during weekends. The lower levels of autonomy at work – which characterise women's work in general – are also confirmed concerning the lower possibility that women have in choosing work strategies and objectives, working methods and techniques, scheduling of activities, as well as work rhythms and order of tasks.

Employers who have used remote working (13.3% of establishment, here referred to as smart establishment) seem to have fully taken hold of the opportunities that it offers: in all instances, they intended to keep using it. 55% of them declared they would like to keep unchanged the share of employees involved, 4% to increase it and 41% to decrease it. Compared to those who have not tried remote working, the smart establishment expressed more positive judgments on the main advantages (Figure 2): they recognised its value, both in terms of work well-being (for 72% of employees it improves the work-life balance and increases organisational well-being) and in terms of business results.

---

1 This section was edited by Tiziana Canal and Francesca della Ratta-Rinaldi (Inapp) with contributions by Paola Ungaro.

2 Inapp, Canal T. 2022, *Attualità e prospettive dello smart working. Verso un nuovo modello di organizzazione del lavoro?*, Roma, Inapp.

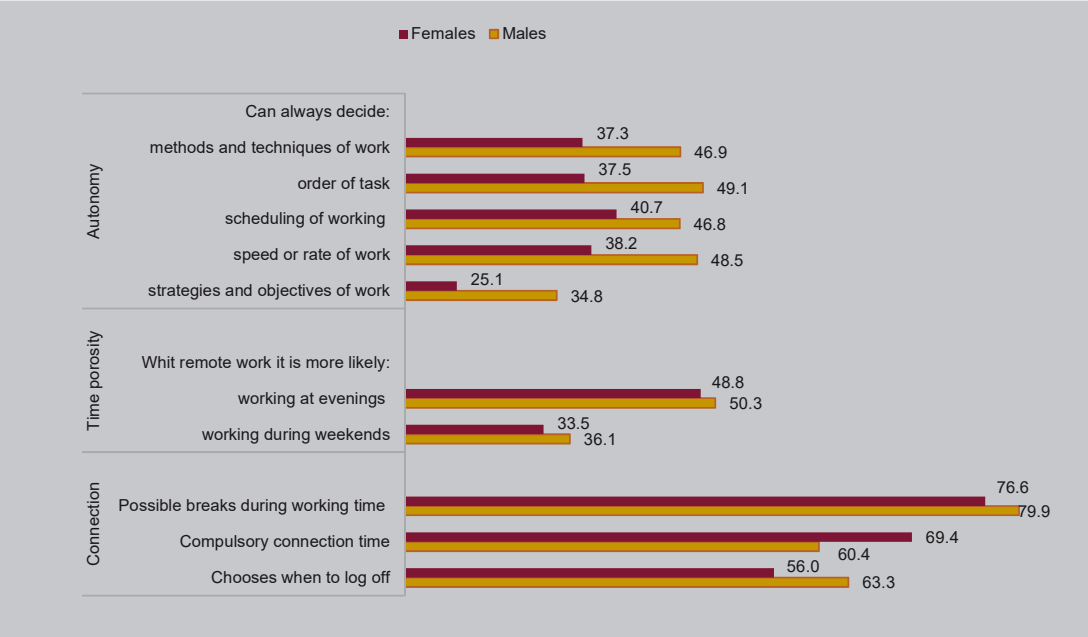
3 The "time-porosity" refers to all possible forms of interference or contamination between working time and free time. See Genin E. 2016. "Proposal for a Theoretical Framework for the Analysis of Time Porosity", *International Journal of Comparative Labour Law and Industrial Relations*, vol.32 n.3.

4 The Inapp survey on the quality of work in Italy takes the employed as its reference population. It monitors and evaluates the quality of work of employees and the self-employed, detects trends and changes taking place in the labour market and it is addressed to a sample of 15,000 employed. Since 2015, the survey also covers a sample of 5,000 companies/establishments operating in all sectors of the Italian economy excluding the public and agricultural sectors. The last survey (workers and company/establishment) was conducted in 2021, using the CATI technique.

5 See Istat. 2023. 2022 *SDGs Report. Statistical information for 2030 Agenda in Italy*. Roma: Istat. https://www.istat.it/en/archivio/284043.

6 Teleworkable occupations are closely associated with the positive assessment of the experience of remote work: 66.4% of those who had a teleworkable job said they are satisfied, compared to 28.9% of those who had a non-teleworkable job.

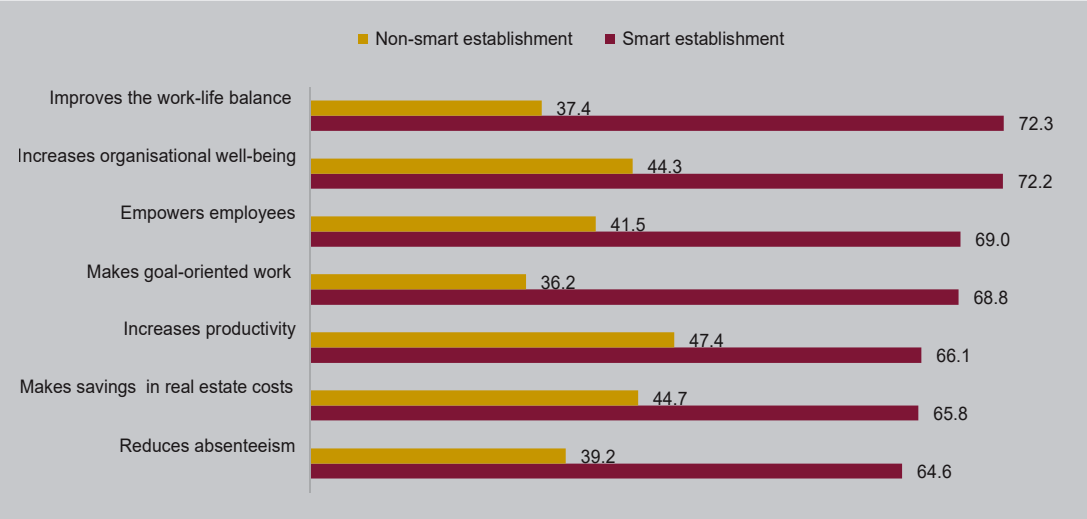
Figure 1 - Teleworkers with teleworkable occupations, by characteristics of remote work and gender. Year 2021 (percentage values)



Source: Inapp

Moreover, 66.1% of the smart establishment said that telework increases productivity (compared to 47.4% of non-smart establishment), 65.8% said it saves costs of real estate and 64.6% appreciated the effect it can have in terms of reducing absenteeism.

Figure 2 - Employers' opinions on the advantages of remote work, by smart and non-smart establishments. Year 2021 (percentage values)



Source: Inapp

GOAL 9

BUILD A RESILIENT INFRASTRUCTURE AND PROMOTE INNOVATION AND FAIR, RESPONSIBLE AND SUSTAINABLE INDUSTRIALISATION[1]

In brief

- In 2021, air and rail transport passengers increased by 52.4% and 26.1% as compared to 2020.
- In 2021, CO_2 emissions reached 157.9 tonnes per million euro, in 2020 they were 154.1 tonnes per million euro.
- In 2020, the intensity of researchers per 10,000 inhabitants recorded a slight decline, falling to 26.3 compared to 26.9 in 2019.
- In 2022, the percentage of employed in positions specialised in ICT grew by two percentage points compared to 2021, reaching 3.9% of the total employed.
- Between 2021 and 2022, the share of knowledge workers fell to 17.8% from 18.2%.
- The percentage of households in an area with a very high-capacity connection rose from 23.9% in 2018 to 53.7% in 2022.

The statistical measures released by Istat for Goal 9 are twenty-seven and refer to ten UN-IAEG-SDGs indicators (Table 9.1).

1 This section was edited by Leopoldo Nascia.

Table 9.1 - Statistical measures released by Istat, taxonomy compared to SDGs indicators, variations compared to the previous year and to 10 years before and convergence among regions

Ref. SDG	INDICATOR	Compared to SDG indicator	Value	VARIATIONS		CONVERGENCE AMONG REGIONS compared to 10 years before
				Compared to the previous years	Compared to 10 years before	
9.1.2	Passenger and freight volumes, by mode of transport					
Passenger volumes, by mode of transport (Istat, 2021, thousand)		Proxy	(*)	-- (*)	--	--
Freight volumes, by mode of transport (Istat, 2021, thousand)		Proxy	1,494,301			--
Kilometers of railways per 10,000 inhabitants (MIT - RFI, 2018, per 10,000 inhabitants)		National context	3.3	-- (a)		--
Kilometers of railways per 10,000 hectare (MIT - RFI, 2018, per 10,000 hectare)		National context	6.7	-- (a)		--
Double and multiple track railway out of total railway (MIT - RFI, 2018, %)		National context	40.4	-- (a)		--
High speed railway out of total railway (MIT - RFI, 2018, %)		National context	3.6	-- (a)		--
Electrical railway out of total railway (MIT - RFI, 2018, %)		National context	67.0	-- (a)		--
9.2.1	Manufacturing value added as a proportion of GDP and per capita					
Manufacturing value added per capita (Istat, 2022, euro per capita)		Identical	4,321.8			--
Manufacturing value added as a proportion of total value added (Istat, 2022, %)		Proxy	15.7	-- (*)	--	--
9.2.2	Manufacturing employment as a proportion of total employment					
Manufacturing employment as a proportion of total employment (Istat, 2022, %)		Identical	15.3			--
9.3.1	Proportion of small-scale industries in total industry value added					
Share of small manufacturing enterprises value added to total value added of manufacturing (Istat, 2019, %)		Proxy	41.3	(*)	--	--
9.3.2	Proportion of small-scale industries with a loan or line of credit					
Percentage of small scale enterprises with a least one line of credit (Istat, 2018, %)		Proxy	42.1	(*)	--	--
9.4.1	CO2 emission per unit of value added					
CO2 emission per unit of value added (Istat, 2021, tonn/mil euro)		Identical	157.9			--
9.5.1	Research and development expenditure as a proportion of GDP					
R&D intensity (Istat, 2020, %)		Identical	1.51			⇒⇐
Product and/or process innovative enterprises (per 100 enterprises) (Istat, 2018/2020, %)		National context	50.9			⇒⇐
Investment in ICT machinery out of total investment (Istat, 2022, %)		National context	4.9			--
Intellectual property rights investment out of total investment (Istat, 2022, %)		National context	19.0			--
Investment in R&D out of total investment (Istat, 2022, %)		National context	9.2			--
Software investment out of total investment(Istat, 2022, %)		National context	9.3			--
Enterprises that have introduced innovation with positive impact on environment (per 100 enterprises)		National context	37.0	-- (*)	--	--

Table 9.1 continued - **Statistical measures released by Istat, taxonomy compared to SDGs indicators, variations compared to the previous year and to 10 years before and convergence among regions**

Ref. SDG	INDICATOR	Compared to SDG indicator	Value	VARIATIONS		CONVERGENCE AMONG REGIONS compared to 10 years before
				Compared to the previous years	Compared to 10 years before	
9.5.2	Researchers (in full-time equivalent) per million inhabitants					
Researchers (in full time equivalent) (Istat, 2020, per 10,000 inhabitants)		Identical	26.3			⇒⇐
Impact of knowledge workers out of employment (Istat, 2022, %)		National context	17.8	(*)	--	--
ICT specialists in employment (Istat, 2022, %)		National context	3.9	(*)	--	--
9.b.1	Proportion of medium and high-tech industry value added in total value added					
Proportion of medium and high-tech industry value added in total value added (Istat, 2019, %)		Identical	31.5	(b)		⇒⇐
9.c.1	Proportion of population covered by a mobile network, by technology					
Overall Fixed Very High Capacity Network (VHCN) coverage(Agcom, 2022, %)		Proxy	53.7	(*)	--	--
Enterprises with at least 10 persons employed with web sales to end customers (Istat, 2022,%)		National context	13.3	(c)		⇒⇐
Enterprises with at least 10 persons employed with web sales in the previous year to firms and public institutions (Istat, 2022, %)		National context	9.0	(c)		⇒⇐

Legend

- IMPROVEMENT
- STABILITY
- DETERIORATION
- -- NOT AVAILABLE / NOT SIGNIFICANT
- ⇒⇐ CONVERGENCE
- = STABILITY
- ⇐⇒ DIVERGENCE

Note

(a) Variation compared to 2010
(b) Variation compared to 2012
(c) Variation compared to 2013
(*) Refer to the table on www.istat.it

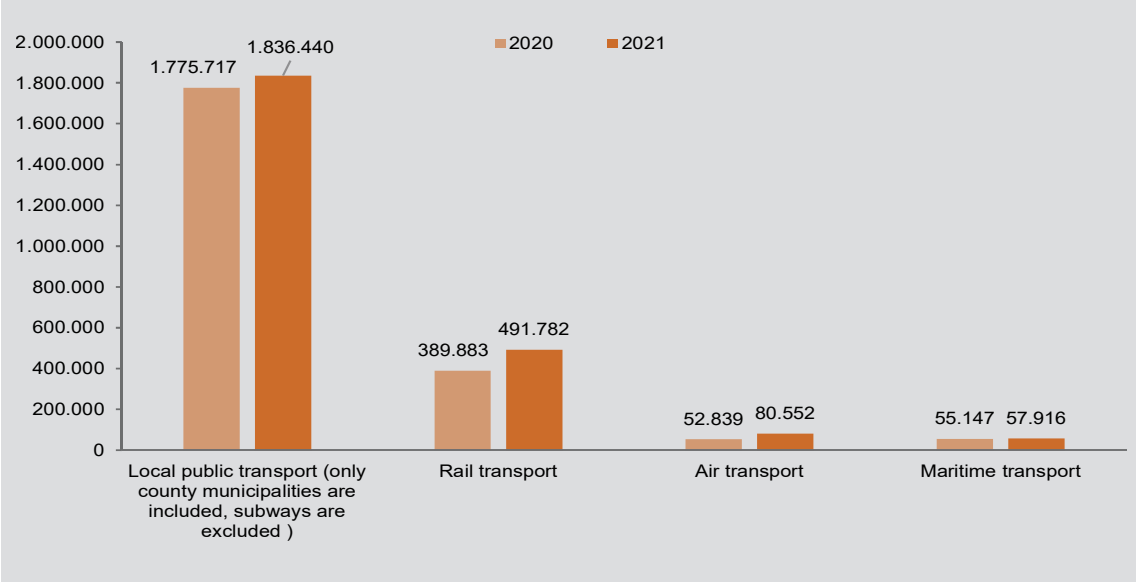
In 2021 passenger and freight transport grew again

In 2020, restrictions on the mobility of people and production deeply affected the transport of people and goods. In the following year, transport recorded a growth, supported by the economic recovery too.

In 2021, passenger transport slightly increased after the drop in 2020. Nevertheless, they have not yet reached pre-2020 volume. Air and rail transport, which had suffered more than the other transport modalities in 2020 during lockdown, recorded the most substantial increases of 52.4% and 26.1%. Local public transport and maritime transport, although recovering, have achieved much smaller increases (Figure 9.1).

Logistics, after the drop in 2020, recorded a quick growth. Freight transport by rail and by road reached above 2019 volume; goods by air and sea were still slightly below the 2019 volume.

Figure 9.1 - Passenger volumes, by mode of transport. Years 2020 and 2021 (thousand)



Source: Istat, Air transport Survey; Maritime transport Survey; Rail transport Survey; Survey on urban environmental data

In 2021 CO_2 emission per value added increased

After the end of production restrictions, emissions intensity has risen, especially in high-intensity sectors, such as transport and energy production. In 2021, CO_2 emissions stood at 157.9 tonnes per million euro (they were 154.1 tonnes per million euro in 2020), an increase of 2.3%, although still 1.7% lower than in 2019. The increase in emissions did not originate from the mining sector or from manufacturing, which have continued the reduction trajectory, but came from services, which rose from 50.9 tonnes of CO_2 per million euro in 2020 to 54.8 in 2021 (+7.7%). Especially transport and storage services increased the emission intensity, from 485.1 tonnes of CO_2 per million euro in 2020 to 496.2 in 2021 (+2.3%).

Moreover, the supply of electricity, gas, steam and air conditioning increased CO_2 intensity by 4.1%, from 2,629.9 tonnes per million euro in 2020 to 2,738.8 in 2021.

In 2022, the value added of the manufacturing industry confirmed a growing trend

In 2021, after the drop in 2020, production recorded a major recovery in GDP (7% in real terms). Production growth continued in 2022 (3.7% in real terms; see Goal 8), with a slowdown in the second half of the year due to the energy crisis resulting from the war in Ukraine.

Manufacturing industry indicators were widely influenced by the macroeconomic framework. Production growth in 2022 reinforced the growth of value added per inhabitant of the manufacturing sector, in real terms, which in 2022, reaching 4,321.8 euro per capita, exceeded the value of 2021 (4,296.6), and the value of 2019 (4,305.2).

The recovery in production in the two-year period 2021-2022 was not equal across sectors of activity. Year 2021 recorded a significant increase in the share of manufacturing value added of the whole economy (16.9%; equal to +0.8 percentage points compared to 2020), followed by a decline in 2022 (15.7%). Employment in 2022 showed a decrease of the share of the manufacturing sector on the total economy (15.3%) of 0.1 p.p. compared to 2021 and 0.2 p.p. compared to 2020.

The reduction of the share of the manufacturing sector in 2022 was due to the growth in value added of construction (+10.2%) and services (+4.8%), which overcompensated the stagnation of manufacturing (+0.1%).

Investment in R&D, software and intellectual property rights increased, although their share on total investment has reduced

Year 2022 showed a wide recovery of business investment, well above the pre-pandemic volume. Among investment, R&D, software, intellectual property rights increased although their share on total business investment has reduced, standing respectively at 7.6%, 7.7% and 15.7%, with a share decrease of 0.2, 0.4 and 0.7 percentage points compared to 2021.

The intensity of researchers per inhabitant showed a setback in 2020. There was still a deep gap between the South and Islands and the rest of the country

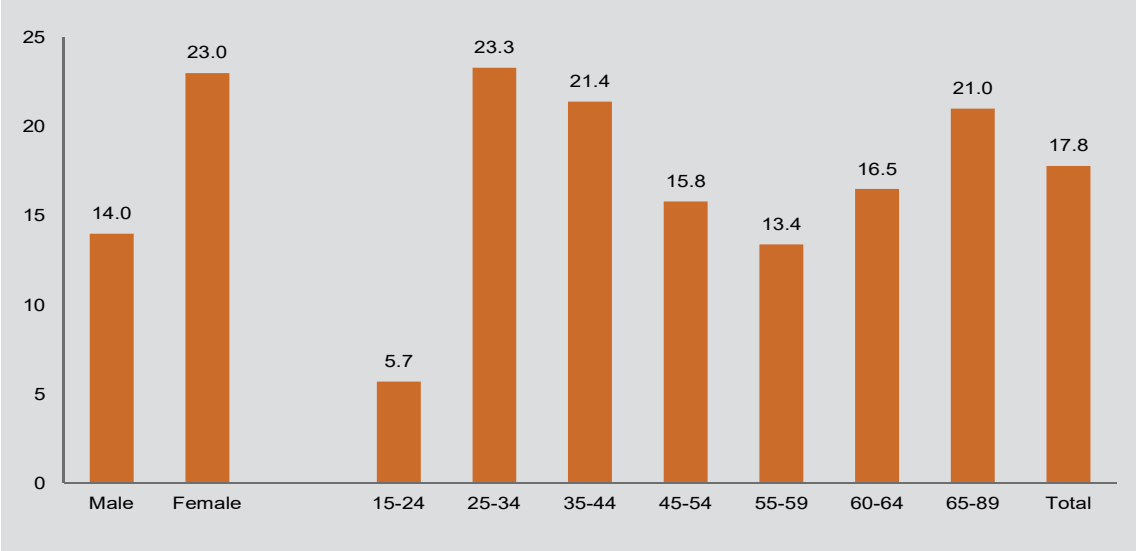
Employment in research, ICT and, in general, in knowledge activities has recorded uneven variations not necessarily positive, despite the success of digital technologies and the importance of R&D for growth. R&D employment indicators of Goal 9 have shown that there are still gender and territorial imbalances of varying intensity.

In 2020, the number of researchers per 10,000 inhabitants recorded a slight setback for the first time after years, standing at 26.3 (it was 26.9 in 2019). The distribution of researchers in the country confirmed a persistent territorial gap between the South and the Islands and the rest of the country. Since 2012, the gender gap for this indicator has widened from 11.8 percentage points to 18.1 points in 2019, before returning to 17.1 in 2020. Job positions specialised in ICT, although not yet widespread, have grown slowly and steadily over the years, (3.9% of employees in 2022; equal to +0.2 percentage points compared to 2021), for the increasing demand of human capital holding specialised digital skills in an increasingly wide range of activities. ICT specialised positions were more prevalent among males (5.6% compared to 1.4% of females) and among the employed with a high degree of education (6.3%).

Knowledge workers fell in 2022

Knowledge workers measured by the proportion of employed with university education in scientific and technological professions on total employment fell from 18.2% in 2021 to 17.8% in 2022. This category of workers, differently from researchers and ICT specialists, did not show wide territorial gaps. Unlike ICT professions, knowledge workers had a wide gender gap in favour of women (23%, compared to 14% of men). The distribution by age group indicates a higher prevalence of this category among workers aged 25-44[2]. It suggests how the scientific and technological professions are more successful among young people (Figure 9.2).

Figure 9.2 - Knowledge workers, by gender,age group. Year 2022 (per 100 employed)



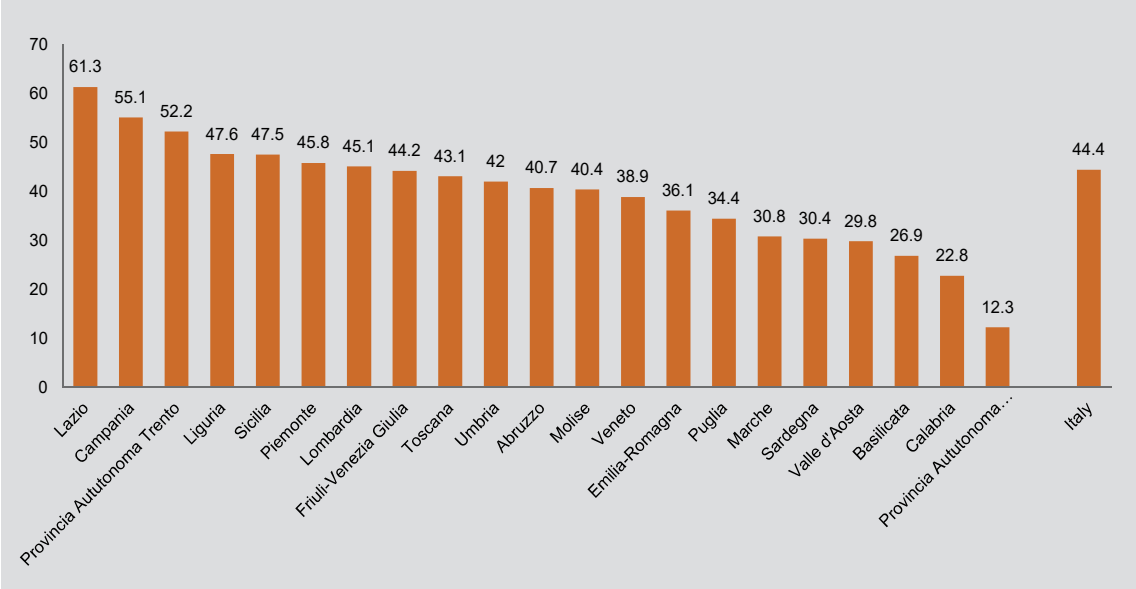
Source: Istat, Labour Force Survey

2 Knowledge workers were also frequent in the over 65 age group, although only 700 thousand workers were active in this age group, much less than in other age groups, which accounted for about a total of 22.5 million workers. Detailed data about employees per age group are available on http://dati.istat.it/?lang=en.

The supply of very high-capacity connections spread quickly in the country

The proportion of households living in an area served by a new, very high-capacity connection rose from 23.9% in 2018 to 53.7% in 2022. The rapid diffusion of the supply of very high-capacity connections recorded wide regional disparities across the country, without a North-South divide as for many other indicators (Lazio and Campania provided the highest coverage of a high-capacity network, respectively with 61.3% and 55.1% of households served). Neighbouring regions had a very unequal infrastructure allocation. There was a wide gap between the two Autonomous Provinces of Trento and Bolzano in the North with 52.2% and 12.3% respectively of households covered by a very high-capacity network, another gap between Umbria and Marche at the Centre with 42% and 30.8% and between Sicilia and Calabria in the South with 47.5% and 22.8% (Figure 9.3).

Figure 9.3 - Overall Fixed Very High-Capacity Network (VHCN) coverage, by region. Year 2022 (percentage values)



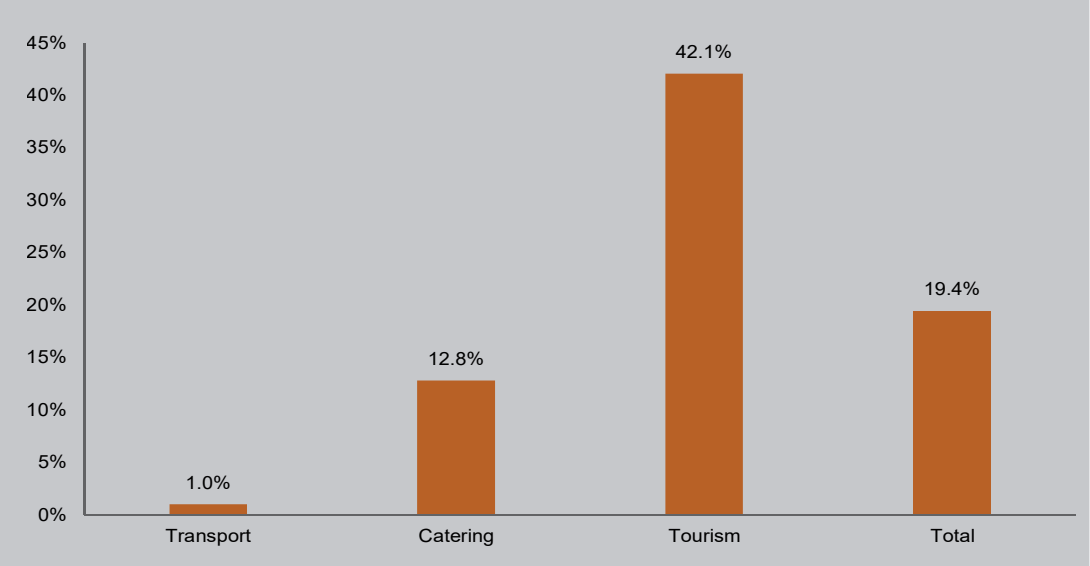
Source: Istat, processing of data from Agcom

The digital platform economy[1]

The National Institute for the Analysis of Public Policies (Inapp), between March and September 2022, conducted the Digital Platform Survey (DPS), on the digital platform economy in Italy, to shed light on the characteristics of businesses using digital platforms for the sale of goods and services in the tourism, catering and land transport sectors. The survey uses a sample of about 40 thousand businesses, representative of approximately 300 thousand enterprises with at least one employee active in the survey sectors.

In 2022, there were 58.092 tourism, catering and land transport companies using platforms to sell their products, representing 19.4% of the total (Figure 1).

Figure 1 - Businesses using digital platforms for selling goods and services, by sector. Year 2022 (percentage values)



Source: Inapp

Tourism showed the highest penetration rate of digital platforms, with 42.1% of businesses, a share that reached 76.9% and 74.6% among guesthouses, bed and breakfasts and hotels. In the catering sector, only 12.8% of businesses used platforms. In transport, the spread of platforms was minimal.

In all the survey sectors, the share of businesses with their own digital channel (e.g. website, app) to trade their goods and services was still a minority. On average, 15.2% of enterprises used only their own digital channel[2], 12.9% used both platforms and their own digital channel and 6.6% were exclusively on platforms. If both platforms are considered, it is among hotels and guesthouses that around 90% of digital tools for the sale of products and services is reached.

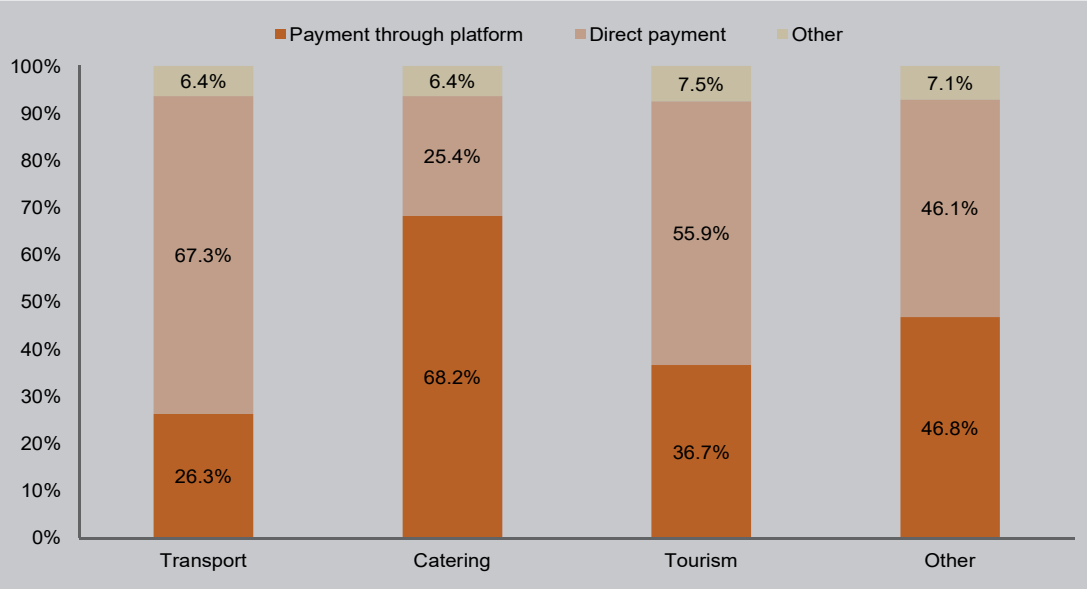
In 2020-21, revenues from digital platforms accounted for almost one-fifth of the revenues of catering and transport sectors and reached almost half of tourism's turnover. In 2021 the intermediation fees charged by digital platforms amounted on average to 16.7% of the turnover they intermediated. In catering, fees were higher (35.7% of businesses paid intermediation fees higher than 20% of turnover). In tourism, 41.8% of businesses declared

1 This section was edited by Massimiliano Deidda and Francesca della Ratta (Inapp) with contributions by Leopoldo Nascia.
2 Their own channel is usually the company's e-commerce-enabled website.

intermediation fees between 15 and 20%. In the transport sector intermediation fees were lower.

The contracts signed with platforms envisage in 46.8% of cases clauses of dependence of the business on the platform for the collection of payments (payment through the platform) and in 46.1% of cases direct collection by customers (direct payment; Figure 2).

Figure 2 - Payment management by platform, by sector. Year 2022 (percentage values)



Source: Inapp

GOAL 10

REDUCE INEQUALITY
WITHIN AND AMONG COUNTRIES[1]

In brief

- In 2022, the disposable income of households increased (+6.5% compared to 2021), but the purchasing power decreased (-1.2%), due to the increase in consumer prices (+8.1%).
- Slight improvement in inequalities in income distribution: between 2020 and 2021, the per capita household income of the poorest 40% of the population increased more (+5.7%) than that of the total population (+3.6%).
- In 2021, income inequality decreased in the South and Islands, while it remained effectively stable in the North and in the Centre.
- At the end of December 2022, there were more than 145,000 Ukrainians in Italy with a temporary protection residence permit.

The statistical measures released by Istat for Goal 10 are sixteen and refer to six UN-IAEG-SDGs indicators (Table 10.1).

1 This section was edited by Lorenzo Di Biagio with contributions by Eugenia Bellini, Cinzia Conti, Stefania Cuicchio, Clodia Delle Fratte, Francesca Lariccia and Carmela Squarcio.

Table 10.1 - Statistical measures released by Istat, taxonomy compared to SDGs indicators, variations compared to the previous year and to 10 years before and convergence among regions

Ref. SDG	INDICATOR	Compared to SDG indicator	Value	VARIATIONS		CONVERGENCE AMONG REGIONS compared to 10 years before
				Compared to the previous year	Compared to 10 years before	
10.1.1	Growth rates of household expenditure or income per capita among the bottom 40 per cent of the population and the total population					
Growth rates of household income per capita among the bottom 40 per cent of the population (Istat, 2021, percentage values)		Identical	5.66	--	--	--
Growth rates of household income per capita among the total population (Istat, 2021, percentage values)		Identical	3.60	--	--	--
Disposable income inequality (Istat, 2021, pure number - income ratio)		Proxy	5.6			⇒⇐
Adjusted gross disposable income per capita (Istat, 2022, euro (current prices))		National context	25,370			--
Gross disposable income per capita (Istat, 2021, euro (current prices))		National context	19,753			⇒⇐
Purchasing power (Istat, 2022, million euro (chain linked))		National context	1,103,099			--
10.2.1	Proportion of people living below 50 per cent of median income, by sex, age and persons with disabilities					
People at risk of poverty (Istat, 2022, percentage values)		Identical	20.1			=
People at risk of poverty - Number (Istat, 2022, thousand)		Identical	11,797			--
10.4.1	Labour share of GDP					
Labour share of GDP (Istat, 2022, percentage values)		Identical	52.72	--	--	--
10.7.2	Number of countries with migration policies that facilitate orderly, safe, regular and responsible migration and mobility of people					
Non EU citizens holding a long-term residence permit (Istat, processing of data from Ministry of the Interior, 2022, N.)		National context	3,561,540	--	--	--
Percentage of Non EU citizens holding a long-term residence permit (Istat, processing of data from Ministry of the Interior, 2022, percentage values)		National context	65.8	--	--	--
New permits (Istat, processing of data from Ministry of the Interior, 2021, N.)		National context	241,595	--	--	--
Number of acquisitions of citizenship (Istat, 2021, N.)		National context	121,457	--	--	--
Percentage of new permits issued for asylum and other humanitarian reasons (Istat, processing of data from Ministry of the Interior, 2021, percentage values)		National context	12.8	--	--	--
10.7.4	Proportion of the population who are refugees, by country of origin					
Residence permits for asylum (Istat, processing of data from Ministry of the Interior, 2022, per 1,000 permits)		Proxy	13.4	--	--	--
10.b.1	Total resource flows for development, by recipient and donor countries and type of flow (e.g. official development assistance, foreign direct investment and other flows)					
Total net bilateral ODA to Africa, LDCs, SIDS and Landlocked (Ministry of Foreign Affairs and International Cooperation, 2020, million euro (current prices))		Partial	(*)	--	--	--

Legend

- IMPROVEMENT
- STABILITY
- DETERIORATION
- -- NOT AVAILABLE / NOT SIGNIFICANT
- ⇒⇐ CONVERGENCE
- = STABILITY
- ⇐⇒ DIVERGENCE

Note

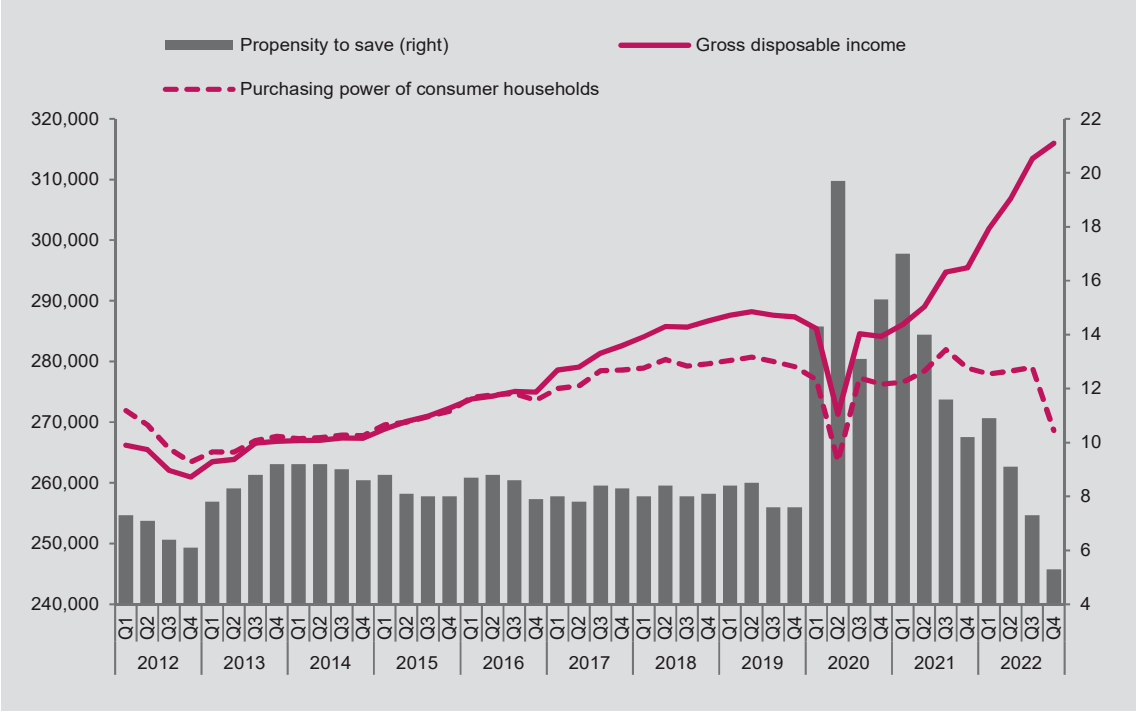
(*) Refer to the table on www.istat.it

Disposable income rose but purchasing power declined

In 2022, the adjusted gross disposable income per capita[2] (including the value of in-kind services provided by public administrations and public and non-profit institutions) increased by 6.5%, from 23,831 euro in 2021 to 25,370 euro. Despite this, the purchasing power of consumer households, which in 2021 was still lower than 20 years earlier, fell further by 1.2%, due to the increase in consumer prices (+8.1% during 2022), mainly due to higher energy prices and, secondly, food prices (see the paragraph *Household income and purchasing power*).

The propensity to save, which had already declined in the course of 2021, continued to drop in 2022, reaching 5.3% in the fourth quarter (Figure 10.1) and falling below pre-pandemic levels. This decline was the result of stronger growth in final consumption expenditure than in gross disposable income.

Figure 10.1 - Gross disposable income, purchasing power of consumer households (a) and propensity to save of consumer households. Quarterly data 2012-2022 (seasonally adjusted data in millions of euro and percentage values)



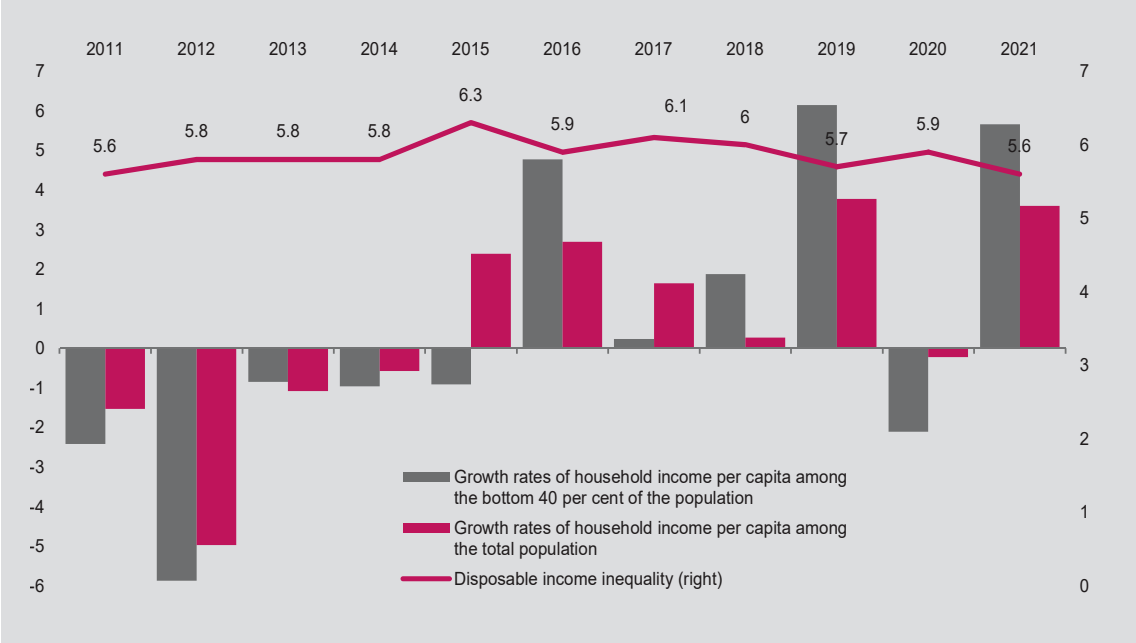
Source: Istat, National Accounts
(a) Gross disposable income of consumer households in real terms, obtained using the deflator of household final consumption expenditure (chain linked values with reference year 2015).

2 The gross disposable income per capita is measured for all households to allow international comparisons; conversely, Figure 10.1 shows the gross disposable income of consumer households only, in order to make it comparable with the purchasing power (see also the paragraph *Household income and purchasing power*).

Income inequality decreased in Italy and in the South and Islands

In 2021, the household income per capita among the bottom 40% of the population increased more (+5.7%) than the household income per capita among the total population (+3.6%; Figure 10.2), suggesting a fairer distribution of income. Indeed, between 2020 and 2021, disposable income inequality, measured as the ratio of the total equivalised income received by the top 20% of the population to that received by the 20% of the population with the lowest income (the s80/s20 ratio), fell from 5.9 to 5.6, returning to 2011 levels.

Figure 10.2 - Growth rates of household income per capita among the bottom 40 per cent of the population and among the total population and disposable income inequality (s80/s20). Years 2011-2021 (percentage values and pure number)



Source: Istat, Eu-Silc

In the South and Islands, there was a significant decrease in income inequality (from 6.5 in 2020 to 5.6 in 2021), while the North (4.9) and the Centre (5.1) remained essentially stable, at lower values. Territorial differences remained (Figure 10.3): while in Lazio, in 2021, the income of the highest fifth of the distribution was 6.2 times the income of the lowest fifth (up from 6.0 in 2020), for Valle d'Aosta the ratio was 3.2, down from 4.0 in the previous year. The regions with values equal to or above the Italian average in 2021, in addition to Lazio, were Lombardia (5.6) and then some southern regions (Campania, Calabria, Sicilia, Sardegna) which, unlike Lazio and Lombardia, improved their situation compared to 2020.

Figure 10.3 - Disposable income inequality (s80/s20), by region. Year 2021 (pure number)

Source: Istat, Eu-Silc

In 2020[3], Italy had a higher income inequality value (5.9) than the EU27 average (5.0) and was 22nd in the ranking of the Member States, followed by Lithuania (6.1), Spain (6.2), Latvia (6.6), Romania (7.1) and Bulgaria (7.5), preceded by Greece (5.8), Portugal (5.7), Estonia, Malta and Germany (5.0). The most virtuous countries were Slovakia and Slovenia (3.2), Belgium and the Czech Republic (3.4), Finland (3.6), Ireland (3.8), the Netherlands and Denmark (3.9). All other countries had indicator values between 4 and 5 but were below the European average.

Inward migration flows returned to pre-pandemic levels

In 2021, 241,595 residence permits were issued, more than 135 thousand more than in 2020 (Table 10.2). Inflows have returned to pre-pandemic levels, but there has not been a full recovery. The number of new documents granted for asylum increased considerably (+129% compared to 2020): in 2021, almost 31 thousand were issued, even more than in 2019. However, in relative terms, asylum permits and other forms of protection had a smaller weight in total new releases than in 2019 (12.8% against 15.6%). As a result of the regularisation measure issued in 2020 (Article 103 of Decree-Law No. 34 of 2020), the number of work permits increased significantly (+394.5% compared to the previous year). In 2021, 51,019 new documents were issued for work, more than those issued in the whole of the previous four years, representing more than 21% of the new permits issued. A record, given that since 2015 they had never exceeded 10% of the total number of new releases.

Permits for study purposes doubled between 2020 and 2021 (17,603), but they still did not return to 2019 and 2018 levels, when they exceeded 20 thousand. The number of permits

3 For some countries, data for 2021 are not yet available. See http://ec.europa.eu/eurostat.

for family reasons also doubled, returning to over 122 thousand units and recording, in absolute terms, the highest peak since 2012.

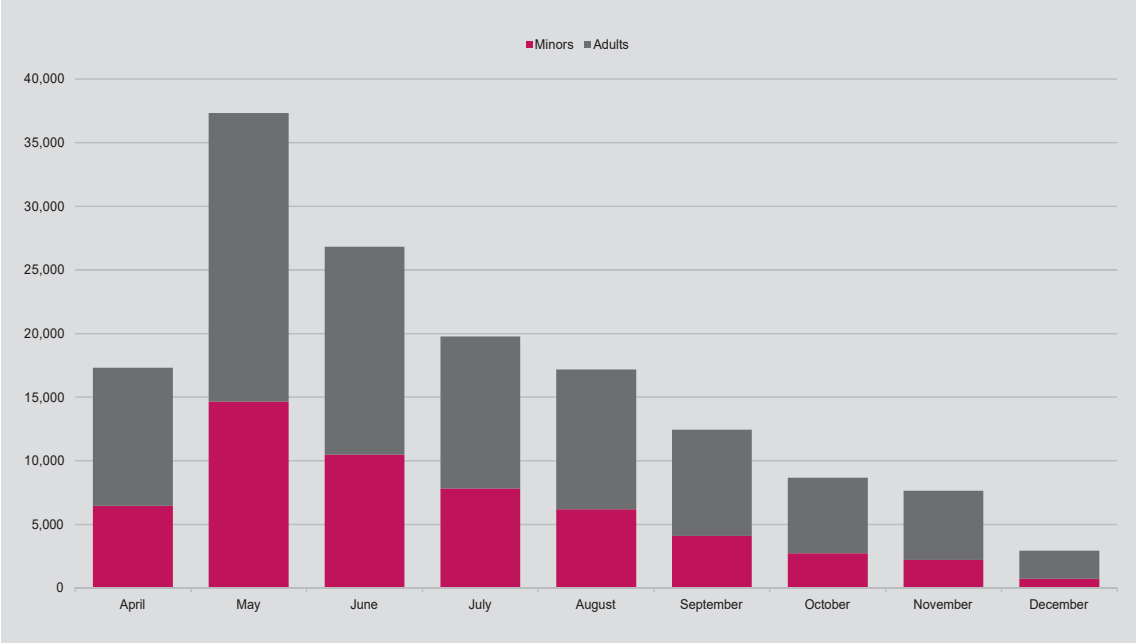
The community recording the highest growth in new entries between 2020 and 2021 was the Ukrainian community, with an increase of +209% (compared to an average increase of +127%). The number of Ukrainian citizens rose from 3,264 to 10,087. The new permits were largely issued for work purposes: they represented more than 52% of the total granted to Ukrainian people over the year.

Table 10.2 - Non-EU citizens who entered Italy, by citizenship and reason for permit. Years 2020 and 2021 (N. and percentage values)

Countries of citizenship	Total		Reason for permit - Year 2021				
	2021	2020	Work	Family	Study	Asylum/ Humanitarian	Other reasons
Albania	29,520	13,185	20.3	59.1	1.5	1.1	18
Marocco	23,460	10,266	20.8	72.9	1.2	2.1	2.9
Bangladesh	15,974	6,467	13	43.9	0.4	30.8	11.9
Pakistan	14,759	7,925	17.5	32.4	5.7	41.3	3.1
India	12,680	6,191	37.7	46.9	12.2	1	2.2
Egypt	11,550	4,740	10.1	65	2.7	15.1	7.1
Ukraine	10,087	3,264	52.4	33	2.2	3.5	8.9
United Kingdom (a)	9,748	-	0.7	98.3	0.8	.	0.2
China	8,686	4,731	30.6	36.3	29.8	1.3	2
Nigeria	7,799	3,911	5.8	44.4	1.6	39.2	9
Other countries	*97,332*	*45,823*	*21.6*	*44.8*	*11.4*	*14*	*8.1*
Total	**241,595**	**106,503**	**21.1**	**50.9**	**7.3**	**12.8**	**7.9**

Source: Istat, processing of data from Ministry of the Interior
(a) For 2020 there is no information.

Figure 10.4 - Ukranian citizens who entered Italy for temporary protection, by month of permit authorisation and age class. April-December 2022 (N.)



Source: Istat, processing of data from Ministry of the Interior

Emigration from Ukraine to Italy was already increasing before the onset of hostilities in 2022. With the outbreak of the conflict, which prompted many people to leave the country, the Ukrainian community in Italy has expanded further. At the end of December, 145,802 Ukrainians were accepted in Italy with a residence permit for temporary protection. The peak in new permits granted for this particular reason occurred between May and June, when more than 64 thousand people arrived (Figure 10.4). Most of the new arrivals following the conflict were women and children; the latter represented 37% of persons under temporary protection.

In 2021, acquisitions of citizenship decreased. They were 121,457, more than 10 thousand less than in the previous year. Several factors may have influenced this decline. Among these, some effects of the pandemic, such as those linked to the suspension of immigration and citizenship proceedings, cannot be ruled out. These effects have not been felt immediately, but only after some time, given the long processing times involved.

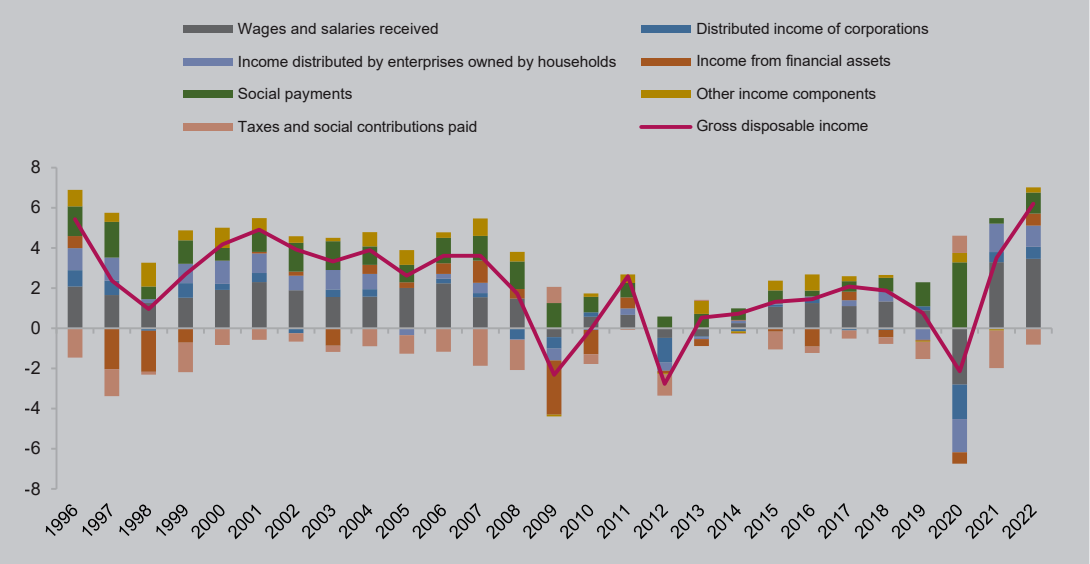
Household income and purchasing power[1]

National accounts include, in the household sector, individuals and groups of individuals, whose main function is consumption activity, and small enterprises, for which it is not possible to distinguish their assets from that of the owners that derive an income from their management. Separate household accounts are compiled in Italy, one which considers them as consumers and one as entrepreneurs, creating the two sub-sectors of consumer households (CHs) and producer households (PHs). The composite nature of the sector is relevant for analyses of household behaviour and international comparisons. For the latter, reference should be made to the household sector as a whole, using international definitions and standards; by contrast, in national studies, it is possible to represent in a more specific way the dynamics that characterised the choices of households in their activity of consumption and accumulation of wealth in the period considered.

In 2022, the disposable income of consumer households increased in nominal terms by 6.2%[2], the highest growth since 1995 (Figure 1). The positive dynamics of consumer households was mainly driven by wages and salaries and distributed income of companies and small owned businesses, the trend of which explains, respectively, 3.3 and 1.7 percentage points of the annual rate of change in disposable income. Wages received by resident households increased as a result of employment growth (+3.6%, measured in unit of work) and average values per unit of work (+3.3% in agriculture, +3.7% in industry excluding construction, +5.2% and +3.7% in services).

The contribution of social benefits, which contributed 1.1 percentage points to the growth in the disposable income, continued to be significant in 2022. Lastly, the impact of tax and social security contributions has been smaller, subtracting only 0.8 percentage points from the growth in disposable income. The significant decrease in substitute taxes paid by households on financial earnings limited the growth in current taxes, which increased by only 1.8% in 2022.

Figure 1 - Dynamics of the disposable income of consumer households and contributions to the growth by the main income components. Years 1995-2022 (percentage rates of change and percentage points)



Source: Istat, National Accounts

1 This section was edited by Stefania Cuicchio with contributions by Lorenzo Di Biagio.

2 This analysis refers to the disposable income of consumer households only, in order to make it comparable with their purchasing power.

The purchasing power of consumer households expresses the amounts of goods and services that can be purchased by households. In 2022, despite the substantial growth in nominal income, purchasing power declined by 1.2% due to the sharp and sudden increase in the prices of goods and services that started at the end of 2021 (Figure 2). Looking at the consumption functions for the last year, there was a significant increase in implicit prices for housing and utilities for electricity, gas and water (more than 14%), food and beverages and transport (more than 9% for both). These consumption categories, which together account for around 60% of total household final consumption expenditure, drove the strong increase in consumer prices (+8.1% on average in 2022) and the household final consumption expenditure deflator (+7.4%). The marked rise in inflation was mainly driven by the trends in prices of goods (in particular energy) rather than services. Since goods, compared to services, have a greater impact on the expenses of less well-off families (often representing expenses that are difficult to reduce, such as utility bills), it can be inferred that the negative effects of inflation on purchasing power have been more pronounced precisely for those households that already had a lower spending capacity. In particular, for the 20% of households with the lowest monthly expenditure[3], annual average inflation (as measured by the HICP index) was +12.1% in 2022, while inflation for the 20% of households with the highest monthly expenditure was +7.2%, a full 4.9 percentage points lower than for the poorest families.

Figure 2 - Dynamics in the disposable income and purchasing power of consumer households. Years 1995-2022 (percentage rates of change)

Source: Istat, National Accounts

3 The expenditure of families of different sizes is made comparable through a specific equivalence scale.

GOAL 11

MAKE CITIES AND HUMAN SETTLEMENTS INCLUSIVE, SAFE, RESILIENT AND SUSTAINABLE[1]

In brief

- In 2022, the share of population complaining of structural or dampness problems in the home decreased (16.6%), approaching the pre-pandemic level (14%).
- In 2022, the share of students who travel to their study place only by public transports increased (25.1%) after the sharp drop in 2020-2021.
- After the sharp reduction in 2020 (-18.7 % compared to 2019), in 2021, the supply of local public transport increased to 4,740 seat-km.
- Municipal waste generation grew in 2021 in 83.5% of provincial capitals; 51.6 % of them recovered or exceeded the 2019 level.
- In 2021, meteoclimatic extremes increased in regional capitals compared with 1981-2010 climate values.
- $PM_{2.5}$ pollution continued to decrease in 2021 but remained at levels largely above the WHO benchmarks to reduce health damage.

The statistical measures released by Istat for Goal 11 are thirty-two, and refer to nine UN-IAEG-SDGs indicators (Table 11.1).

1 This section was edited by Domenico Adamo with contributions by Luigi Costanzo, Silvana Garozzo, Valentina Joffre, Antonino Laganà and Donatella Vignani.

Table 11.1 - Statistical measures released by Istat, taxonomy compared to SDGs indicators, variations compared to the previous year and to 10 years before and convergence among regions

Ref. SDG	INDICATOR	Compared to SDG indicator	Value	VARIATIONS		CONVERGENCE AMONG REGIONS compared to 10 years before
				Compared to previous year	Compared to 10 years before	
11.1.1	Proportion of urban population living in slums, informal settlements or inadequate housing					
	Share of total population living in a dwelling with a leaking roof, damp walls, floors or foundation, or rot in window frames of floor (Istat, 2022, percentage values)	Proxy	16,6			⇐⇒
	Overcrowding rate (Istat, 2022, percentage values)	Proxy	25,1			⇒⇐
	Noise from neighbours or from street (Istat, 2022, percentage values)	Proxy	13,4			⇐⇒
11.2.1	Proportion of population that has convenient access to public transport, by sex, age and persons with disabilities					
	Households with difficulties of connection with public transport (Istat, 2022, percentage values)	Proxy	30,7			⇐⇒
	Students who travel to their study place, only by public transport (Istat, 2022, percentage values)	National context	25,1			=
	Employed who travel by private means of transport (Istat, 2022, percentage values)	National context	76,0			⇐⇒
	Seat-Km of public transport networks (Istat, 2021, values per inhabitant)	National context	4.748			⇐⇒
	Frequent users of public transport (Istat, 2022, percentage values)	National context	11,8			⇐⇒
11.3.1	Ratio of land consumption rate to population growth rate					
	Soil sealing from artificial land cover per capita (ISPRA, 2021, m2 per inhabitant)	Proxy	363		(a)	⇐⇒
	Illegal building rate (Cresme, 2021, per 100 building permits issued)	National context	15,0			⇒⇐
11.4.1	Total expenditure per capita on the preservation, protection and conservation of all cultural and natural heritage, by source of funding (public, private), type of heritage (cultural, natural) and level of government (national, regional, and local/municipal)					
	Public expenditure per capita spent on the preservation of the cultural and natural heritage (Istat, 2021, Euro (current prices))	Proxy	38,2			--
11.5.1	Number of deaths, missing persons and directly affected persons attributed to disasters per 100,000 population					
	Population at risk of flood (ISPRA, 2020, percentage values)	National context	11,5		(b	⇒⇐
	Population at risk of landslides (ISPRA, 2020, percentage values)	National context	2,2		(b	⇒⇐
	Deaths and missing persons due to floods (ISPRA, 2020, N.)	Partial	11	--	--	--
	Deaths and missing persons due to landslides (ISPRA, 2020, N.)	Partial	6	--	--	--
	Injured persons due to floods (ISPRA, 2020, N.)	Partial	-	--	--	--
	Injured persons due to landslides (ISPRA, 2020, N.)	Partial	22	--	--	--
11.6.1	Proportion of municipal solid waste collected and managed in controlled facilities out of total municipal waste generated, by cities					
	Landfill of waste (ISPRA, 2021, percentage values)	Proxy	19,0			⇐⇒
	Municipal waste generated (Istat, processing of data from ISPRA, 2021, Kg per inhabitant)	National context	501			=
11.6.2	Annual mean levels of fine particulate matter (e.g. PM2.5 and PM10) in cities (population weighted)					
	Urban population exposure to air pollution by particulate matter - PM2.5 (Eurostat, 2020, micrograms per m3)	Identical	15			--
	Urban population exposure to air pollution by particulate matter - PM10 (Eurostat, 2019, micrograms per m3)	Identical	25,5			--
	Air quality - PM2.5 (Istat, processing of data from ISPRA, 2021, percentage values)	Proxy	71,7			⇐⇒
	PM10 daily limit exceeds in provincial capitals (Istat, processing of data from ISPRA, 2021, number of days)	Proxy	30			--
	PM10 Annual mean concentration in provincial capitals (Istat, processing of data from ISPRA, 2021, microgram per m3; Italy value indicates the number of municipalities with a value above the limit)	Proxy	80		(c	--
	PM2.5 Annual mean concentration in provincial capitals (Istat, processing of data from ISPRA, 2021, microgram per m3; Italy value indicates the number of municipalities with a value above the limit)	Proxy	83			--
	NO2. Nitrogen dioxide. Annual mean concentration in provincial capitals (Istat, processing of data from ISPRA, 2021, microgram per m3; Italy value indicates the number of municipalities with a value above the limit)	National context	10		(c	--
	O3 Ozone daily limit exceeds in provincial capitals (Istat-ISPRA, 2021, number of days)	National context	85		(c	--
	Number of Summer days (anomalies with respect to Climatic Normal 1971-2000 in regional and metropolitan city capitals) (Istat, 2021, N.)	National context	(*)	--	--	--
	Number of Tropical nigths (anomalies with respect to Climatic Normal 1971-2000 in regional and metropolitan city capitals) (Istat, 2021, N.)	National context	(*)	--	--	--
	Number of Dry days (anomalies with respect to Climatic Normal 1971-2000 in regional and metropolitan city capitals) (Istat, 2021, N.)	National context	(*)	--	--	--
11.7.1	Average share of the buil-up area of cities that is open space for public use for all, by sex, age and persons with disabilities					
	Incidence of urban green areas on urbanized area of the cities (Istat, 2021, m^2 per 100 m^2 of urbanized areas)	Proxy	8,6			=
11.7.2	Proportion of persons victim of physical or sexual harassment, by sex, age, disability status and place of occurrence, in the previous 12 months					
	Persons aged 14-65 years old victims of at least one form of sexual harassment in the last 12 months (Istat, 2015/16, percentage values)	Identical	5,1	--	--	--

Legend

- IMPROVEMENT
- STABILITY
- DETERIORATION
- -- NOT AVAILABLE / NOT SIGNIFICANT
- ⇒⇐ CONVERGENCE
- = STABILITY
- ⇐⇒ DIVERGENCE

Notes

(a) Variation compared to 2012
(b) Variation compared to 2015
(c) Variation compared to 2013
(*) Refer to the table on www.istat.it

The number of people complaining of structural or damp problems reduced

In 2022, after the significant increase in 2020 (+5.6 percentage points compared to 2019), the share of people reporting living in dwellings with structural or damp problems continued to fall, to 16.6%, approaching the pre-pandemic level (it was 14% in 2019). This trend may be linked to a return to a more normal perception of the part of the population that reported more difficulties during the pandemic period, when they were confined to their homes for longer periods.

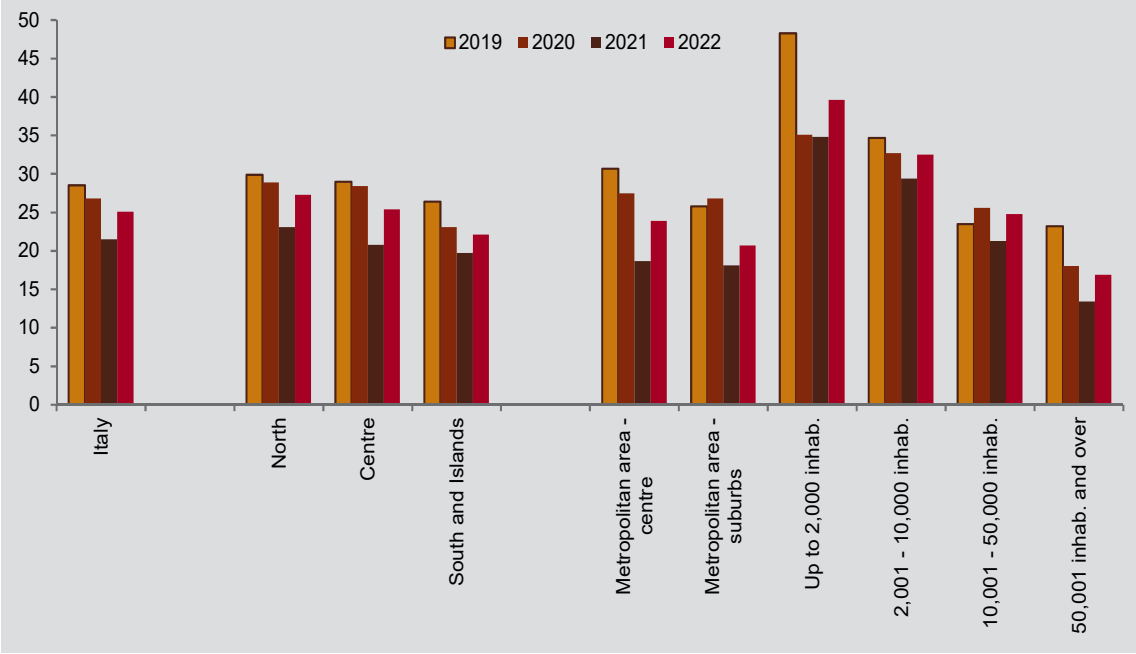
Such problems were more likely to be reported by residents of the South (18.8% in 2022), with no significant differences between urban and suburban areas.

The use of public transport by students on the rise again

Sustainable mobility is a key theme for urban regeneration, and increasing the use of public transport, particularly in large urban centres, is essential to promote it.

In 2022, after the decline recorded over the three-year period 2019-2021, the use of public transport by students increased from 21.5% in 2021 to 25.1%. The largest recovery took place in the central municipalities of metropolitan areas (23.9%), in municipalities with up to 2,000 inhabitants (39.6%) and in the central and northern areas (25.4% and 27.3% respectively; Figure 11.1). On the other hand, the use of cars and scooters to get to work was more stable and only decreased significantly in municipalities with up to 2,000 inhabitants, from 82.2% in 2021 to 77.9% in 2022.

Figure 11.1 - Students who travel to their study place only by public transport, by geographical area, municipality of residence. Years 2019-2022 (percentage values)



Source: Istat, Survey on Aspects of daily life

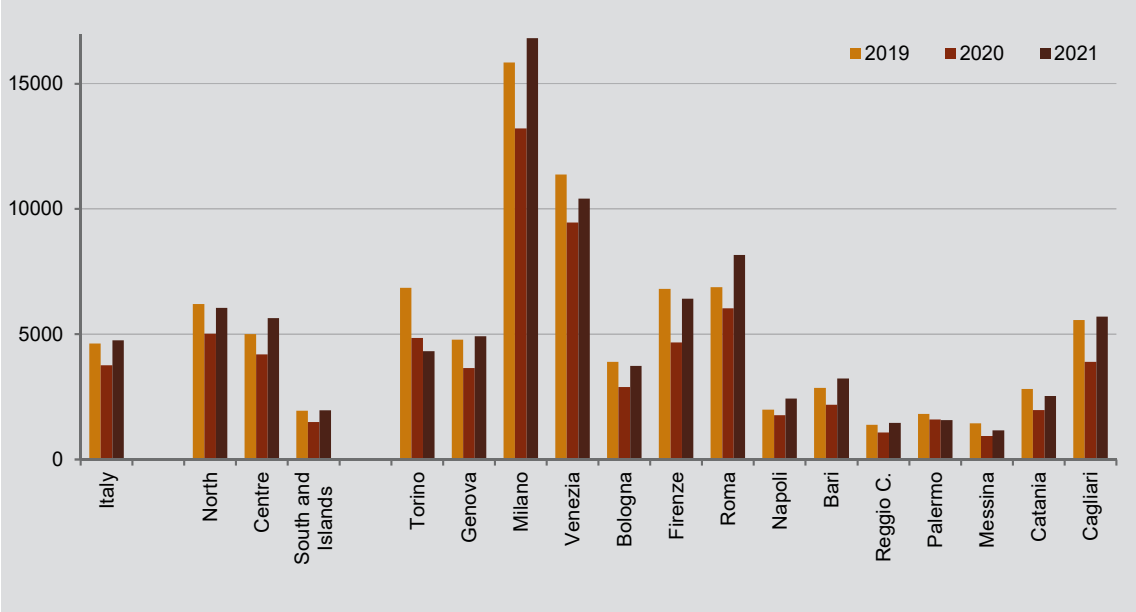
Local public transport supply grew in provincial capitals, exceeding pre-pandemic levels

In 2021, after the sharp decline in 2020 (which brought the supply down to 3,763 seat-km per inhabitant), there was a significant increase in local public transport (LPT) supply, which reached 4,740 seat-km per inhabitant, slightly above the pre-pandemic level (4,626). However, this was not accompanied by a similar increase in the number of frequent users of public transport. In particular, in 2022, in the central municipalities of the agglomerations, the number of frequent users stood at 26.3%, an increase of 3.9 percentage points compared to 2021, but still well below the pre-pandemic level (34% in 2019).

The recovery of the LPT supply was homogeneous throughout the country and the distribution maintained the large differences between the South and Islands and the rest of the country: 6,048 seat kilometres per inhabitant in the cities of the North, 5,653 in the Centre and 1,932 in the South and Islands (Figure 11.2).

In all metropolitan areas, with the exception of Torino and Palermo, there was a recovery in the LPT supply. This increase was higher than the average increase in provincial capitals (around +26% compared to 2021) in all major cities except Venezia.

Figure 11.2 - Seat-Km of public transport networks in the provincial capitals, by geographical area and seat-Km of public transport networks in the metropolitan capitals. Years 2019 and 2021 (seat-km per inhabitant)



Source: Istat, Survey on urban environmental data

Municipal waste landfilling decreased

In 2021, the share of municipal waste going to landfills, which have a high impact on the environment and human health, decreased to 19.0%. Since 2004, the first year the indicator was available, this pressure factor has decreased by two thirds (from 59.8% to 19.0%). Although the rate of reduction has slowed down over the last five years (-5.7 percentage points), Italy appeared to be within reach of the EU target[2].

2 Directive 2018/851/EU sets an EU target of landfilling no more than 10% of municipal waste by 2035.

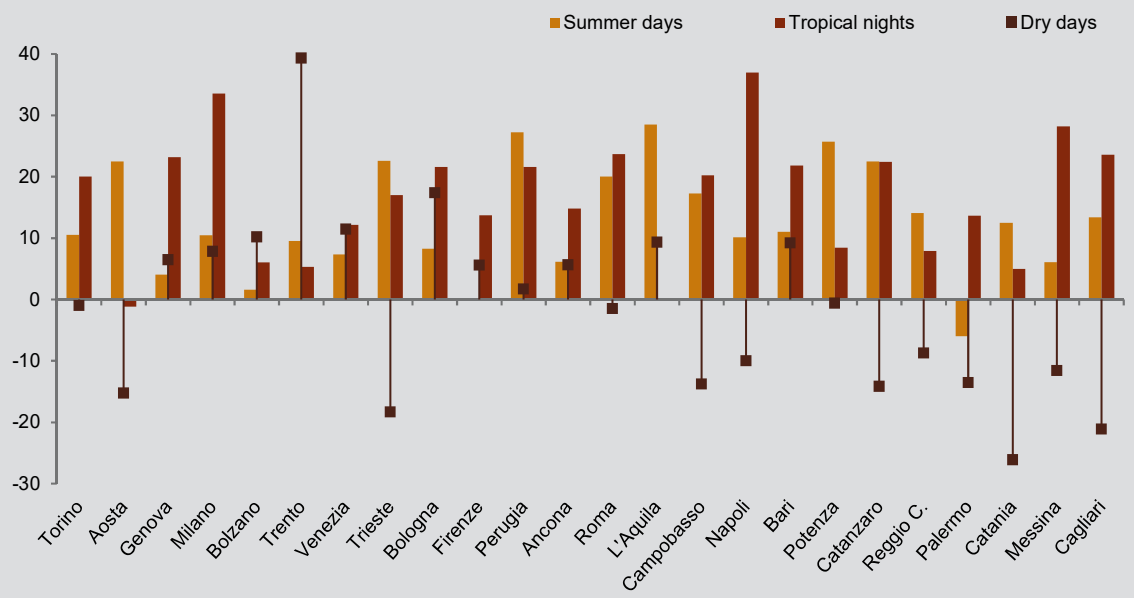
Municipal waste generation in provincial capitals on the rise

In 2021, compared to the previous year, municipal waste production in Italy increased again to 501 kg per inhabitant (see Goal 12). The increase was recorded in 91 out of 109 main cities, 47 of which reached or exceeded the production level of 2019. Increases in municipal waste production were recorded in all metropolitan capitals, with the exception of Bologna and Bari. Reggio di Calabria (+15.7% compared to 2020), Napoli (+5.2%), Genova (+4.5%) and Messina (+4.1%) were all above pre-pandemic levels.

Meteoclimatic extreme index anomalies in large cities increased

The indices of temperature and precipitation extremes[3] for provincial capitals, which describe high-intensity phenomena with major impacts on cities, appear to be increasing. In the period 2006-2021, regional capitals recorded an average of 112 summer days (with a maximum temperature above 25°C) and 46 tropical nights (with a temperature not below 20°C), an increase of 11 and 10 units respectively compared to the thirty-year climate period 1981-2010 (CLINO), with more significant deviations in recent years. At the same time, the number of dry days decreased: the deviations from the 1981-2010 CLINO annual averages (anomalies) mainly showed negative variations.

Figure 11.3 - Anomalies of summer days, tropical nights and dry days compared to climatological values (1981-2010), by regional capital/metropolitan city (a), Year 2021 (number of days)



Source: Istat, Survey on Meteoclimatic and hydrological data
(a) For Reggio di Calabria, Catania and Messina, the 2021 values are compared with the average values for the period 2006-2015, as the climatic value 1981-2010 is not available.

3 See UN-WMO (United Nations - World Meteorological Organization) ETCCDI index methodology, https://community.wmo.int/en/climate-change-detection-and-indices.

The average annual temperature of the regional capitals shows an increasing trend over time compared to the 1981-2010 climate averages, marking an anomaly of +0.6°C in 2021 (15.5°C). In the last year, heat extremes increased by 13 summer days and 17 tropical nights compared to the 1981-2010 CLINO (Figure 11.3). The cities with the highest anomalies were, for summer days, L'Aquila (+29 days), Perugia (+27) and Potenza (+26), and, for tropical nights, Napoli (+37 nights), Milano (+34), Roma and Cagliari (+24). The increase in the number of days without rain (an average of 285 in 2021) affected more than half of the regional capitals, with the highest increase in Trento (+39 days), followed by Bologna (+17) and Venezia (+11). For the metropolitan capitals of Reggio di Calabria, Catania and Messina, comparing 2021 with the average for the decade 2006-2015 (based on data availability), there was a decrease in the number of days without rain, together with an increase in summer days and tropical nights.

Gradual decline in $PM_{2.5}$ continued

Throughout Italy, the gradual trend of improvement in ambient concentrations of $PM_{2.5}$ continued. The percentage of exceedances of the 10 micrograms per cubic metre of all valid measurements - the WHO interim target (IT4) for $PM_{2.5}$ (see the paragraph *Population weighted exposure to $PM_{2.5}$: new estimation methodologies based on machine learning*) - was 71.7% in 2021 (77.4% in 2020), while it remained stable above 80% until 2019. Taking into account all 96 agglomerations for which valid monitoring is available, 86.5% exceeded the interim target. A slight improvement was reported in the capital cities, but pollution levels were still high.

Population weighted exposure to $PM_{2.5}$ new estimation methodologies based on machine learning[1]

Target 11.6 aims to reduce the negative environmental impact per capita of cities by 2030, particularly regarding air quality and waste management. The most accredited health estimates attribute a significant portion of premature deaths and reduced life expectancy to exposure to air pollutants[2]. The populations exposure assessment to ambient outdoor air pollution, as well as the relative spatial and temporal variability, represent a key tool for this kind of study[3].

To this end, a modelling framework[4] based on a machine learning algorithm[5] was developed and validated. The methodological approach adopted allows the calculation of an innovative indicator to monitor progress on the target 11.6 achievement[6]. The average annual population weighted exposure (PWE) was calculated by weighing the concentrations, estimated at the level of a single 1-km^2 cell, for the resident population[7] within the cell itself.

The WHO (2021 update of the guidelines) does not establish an exposure threshold, below which there is no risk, but identifies the value of 5 micrograms per cubic metre ($\mu g/m^3$) for $PM_{2.5}$ as the lower long-term exposure above which there is, with a 95% confidence level, an increase of total mortality, mortality from cardiopulmonary causes and lung cancer mortality, called "Air quality guideline level".

WHO has also defined some "interim targets", i.e. higher reference levels, to be considered as intermediate objectives (IT4, IT3, IT2 and IT1), to be achieved through the implementation of action plans aimed at improving air quality. In the observed period, from 2016 to 2020, it emerges that the PWE to $PM_{2.5}$ were practically everywhere above the WHO guideline, updated in 2021. 90% of the population was exposed to levels above the interim target IT4 (10 $\mu g/m^3$); 46% was exposed to levels above the IT3 (15 $\mu g/m^3$). The PWE did not exceed the IT1 (35 $\mu g/m^3$). The PWE averaged over the whole country was 14.4 $\mu g/m^3$ (4.9 – 31.3 $\mu g/m^3$). The five-year average PWE for the 14 metropolitan cities (Figure 1) and the situation in 2020 for all municipalities (Figure 2) clearly show that the problem of $PM_{2.5}$ exposure is not only characteristic of large urban areas, but represents a widespread concern.

The municipalities of the entire Po basin, of the large urban agglomerations of Roma and Napoli, of the Valle del Sacco in the province of Frosinone and the Piana Lucchese were those where highest exposures greater than 15 $\mu g/m^3$, were observed. On average, lower levels and close to the WHO guide value (between 5 and 10 $\mu g/m^3$) were instead found in the municipalities of

1 This section was edited by Massimo Stafoggia, Federica Nobile (Dipartimento di Epidemiologia del Servizio Sanitario Regionale Regione Lazio Asl Roma 1), Massimiliano Bultrini, Simona Buscemi, Giorgio Cattani, Alessandra Gaeta, Maria Antonietta Reatini (ISPRA) with contributions by Domenico Adamo.

2 See European Environment Agency. 2021. "Health risk assessments of air pollution". *Eionet Report – ETC/ATNI 2021/10*. Kjeller, Norway: Norwegian Institute for Air Research. World Health Organization - WHO. 2021. *Global Air Quality Guidelines. Particulate matter (PM_{10}, $PM_{2.5}$), ozone, nitrogen dioxide, sulfur dioxide and carbon monoxide*. Geneva, Switzerland: WHO.

3 Istituto Superiore di Sanità – ISS. 2021. "Mitigation of climate change and health prevention in Italy: the cobenefits policy". *Rapporti ISTISAN* 21/20. Rome, Italy: Istituto Superiore di Sanità.

4 Stafoggia, M., G. Cattani, C. Ancona, e A. Ranzi. 2020. "La valutazione dell'esposizione della popolazione italiana all'inquinamento atmosferico nel periodo 2016-2019 per lo studio della relazione tra inquinamento atmosferico e COVID-19". *Epidemiologia & Prevenzione*, N. 5-6 Anno 44 settembre-dicembre Suppl. 2: 161-168.

5 This algorithm, called random forest, relates daily concentrations measured at monitoring stations distributed throughout the country to spatial (population density, road network, land cover, altitude, artificial surfaces, etc.) and spatio-temporal (dispersion patterns, meteorological variables) predictors in order to estimate daily average levels of $PM_{2.5}$ and other pollutants for each km^2 of the Italian territory.

6 The exposure estimate thus obtained also represents the basis for developing one of the indicators useful for monitoring progress on target 3.9 ("By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination").

7 Source: Istat, General census of population and housing 2011.

the Alpine and Apennine and in Sardegna. Overall, in the five years taken into consideration, a moderate PWE decreasing trend was observed, with some fluctuations mainly associated with the year-by-year meteorological conditions variability[8].

As observed in several studies, during the lockdown period in 2020 there was a moderate reduction in $PM_{2.5}$ levels, much less marked than observed for nitrogen dioxide and for pollutants linked mainly to vehicular traffic emissions. This has not however influenced the average values extended to the entire year, which are therefore comparable with those of other years. The population grid for 2021 will soon be available and it will be useful to continue analysing these data.

Figure 1 - Population-weighted average $PM_{2.5}$ exposure in metropolitan cities (a). Average 2016-2020 (μ/m^3)

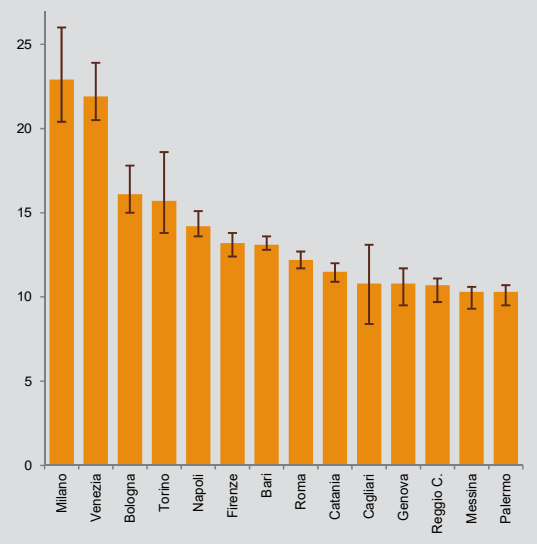
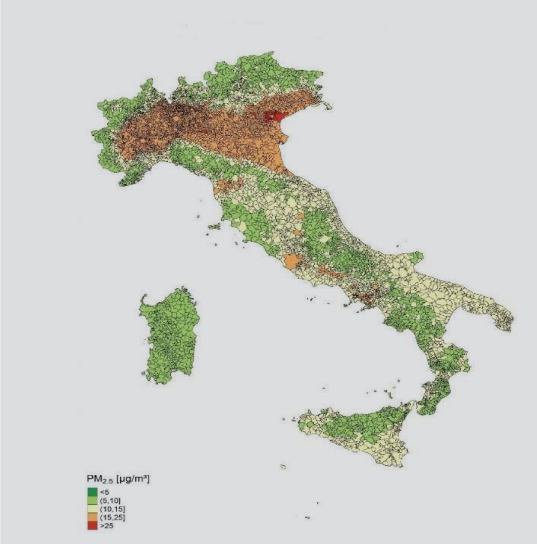


Figure 2 - Population-weighted average $PM_{2.5}$ exposure on a municipal basis. Year 2020 (μ/m^3)



Source: ISPRA, processing of data from the Department of Epidemiology of the Lazio Regional Health Service Asl Roma 1
(a) The error bars represent the lowest and highest values recorded in the 5 years (2016-2020).

8 From this viewpoint, 2017 was the most critical year, with higher average exposure levels than the others.

GOAL 12

ENSURING SUSTAINABLE PRODUCTION AND CONSUMPTION PATTERNS[1]

In brief

- In 2021, domestic material consumption returned to growth in relation to both population and GDP. Nevertheless, Italy remained at the top of the European ranking.
- In 2021, the increase in municipal waste generation (+14 kg per capita) brought Italy back to the pre-pandemic situation.
- In the past year, progress in waste cycle management and conversion into new resources slowed down. However, Italy maintained a virtuous position in Europe, benefiting from the advantage gained over the last decade.
- The recycling rate of municipal waste (54.4% in 2020) and the percentage of separate collection of municipal waste (64.0% in 2021) increased only marginally (+1.1 and +1.0 percentage points, respectively, compared to the previous year).
- In 2021, the circular material use rate contracted by 2.2 percentage points. However, Italy still ranked fourth in the European ranking.

The statistical measures released by Istat for Goal 12 are twenty-seven and refer to eight UN-IAEG-SDGs indicators (Table 12.1).

1 This section was edited by Paola Ungaro with contributions by Aldo Femia, Flora Fullone, Claudio Paolantoni, Silvana Garozzo and Angelica Tudini

Table 12.1 - Statistical measures released by Istat, taxonomy compared to SDGs indicators, variations compared to the previous year and to 10 years before and convergence among regions

Ref. SDG	INDICATOR	Compared to SDG indicator	Value	VARIATIONS		CONVERGENCE AMONG REGIONS compared to 10 years before
				Compared to the previous year	Compared to 10 years before	
12.2.2	Domestic material consumption, domestic material consumption per capita, and domestic material consumption per GDP					
	Domestic material consumption per capita (Istat, 2021, tonne per capita)	Identical	8,6			⇐⇒
	Domestic material consumption per GDP (Istat, 2021, tonne per 1,000 euro)	Identical	0,30			⇐⇒
	Domestic material consumption (Istat, 2021, million tonnes)	Identical	505,4			=
12.4.2	(a) Hazardous waste generated per capita; and (b) proportion of hazardous waste treated, by type of treatment					
	Amount of hazardous waste generated (ISPRA, 2020, tonne)	Proxy	9.848.216	--	--	--
	Hazardous waste sent to the recovery operations (ISPRA, 2020 tonne)	Proxy	4.425.343	--	--	--
	Hazardous waste disposed of (ISPRA, 2020, tonne)	Proxy	5.013.591	--	--	--
12.5.1	National recycling rate, tons of material recycled					
	National recycling rate (ISPRA, 2020, percentage values)	Proxy	54,4			--
	Separate collection of municipal waste (ISPRA, 2021, tonne)	Proxy	18.954.934			--
	Separate collection of municipal waste (Istat, processing of data from ISPRA, 2021, percentage values)	Proxy	64,0			⇒⇐
	Municipal waste collected (Istat, processing of data from ISPRA, 2021, Kg per inhabitant)	National context	501,0			=
	Circular material use rate (Eurostat, 2021, percentage values)	National context	18,4			--
12.6.1	Number of companies publishing sustainability reports					
	Percentage of enterprises with at least 3 persons employed drafting environmental and sustainability reports and/or accounts (Istat, 2016/2018, percentage values)	Proxy	2,5	--	--	--
	Percentage of enterprises with at least 3 persons employed acquiring voluntary environmental certification of product or process (Istat, 2016/2018, percentage values)	National context	8,2	--	--	--
	Public Institutions that adopt forms of social and/or environmental reporting (Istat, 2019/2020, percentage values)	Proxy	15,6	(a)	(b)	⇒⇐
	Number of organizations/enterprises with EMAS registration (ISPRA, 2022, N.)	National context	1.093	--	--	--
	Number of local units with UNI EN ISO 14001 Environmental management system Certification (Istat, processing of data from Accredia, 2021, N.)	National context	26.483	--	--	--
	Number of local units with UNI CEI EN ISO 50001 Energy management system Certification (Istat, processing of data from Accredia, 2021, N.)	National context	2.809	--	--	--
	Enterprises that have introduced innovation with positive impact on environment (Istat, 2020, percentage values)	National context	37,0	--	--	--
12.7.1	Degree of sustainable public procurement policies and action plan implementation					
	Public institutions that purchase goods and/or services by adopting minimum environmental criteria (CAM), in at least one purchase procedure (Green purchases or Green Public Procurement) (Istat, 2020, percentage values)	National context	26,7	(c)	--	--
12.a.1	Installed renewable energy generating capacity in developing countries (in Watts per capita)					
	Net installed renewable energy generating capacity (Istat, processing of data from International Renewable Energy Agency and Istat, 2022, Watt per capite)	Identical	1.014,6			--
	Total net official development assistance (ODA) gross deliveries for research in the different areas of intervention (Ministry of Foreign Affairs and International Cooperation, 2020, million euro, current prices)	National context	6.17		(d)	--
12.b.1	Implementation of standard accounting tools to monitor the economic and environmental aspects of tourism sustainability					
	Implementation of standard accounting tools to monitor the economic and environmental aspects of tourism sustainability (Istat, 2019, N.)	Identical	(*)	--	--	--
	Impact of tourism on waste (ISPRA, 2021, kg per equivalent inhabitant)	National context	4,9			⇐⇒
	Tourism intensity index (ISPRA, 2021, per 1,000 inhabitants)	National context	4.882	--	--	--
	Nights spent in open-air accommodation, agritourism and mountain refuges out of total nights spent in accommodation establishments (Istat, 2021, percentage values)	National context	23,2		(e)	⇐⇒
	Tourism trips in Italy by type of trip and main means of transport (Istat, 2022, percentage values)	National context	(*)	--	--	--
12.c.1	Amount of fossil-fuel subsidies (production and consumption) per unit of GDP					
	Fossil-fuel subsidies as a percentage of GDP (Ministry of the Economy and Finance, processing of data from Ministry of the Economy and Finance, Ministry of the Environment and Energy Security, OECD and Istat, 2020, percentage values)	Identical	0.68		(f)	--

Legend

- IMPROVEMENT
- STABILITY
- DETERIORATION
- -- NOT AVAILABLE / NOT SIGNIFICANT
- ⇒⇐ CONVERGENCE
- = STABILITY
- ⇐⇒ DIVERGENCE

Notes

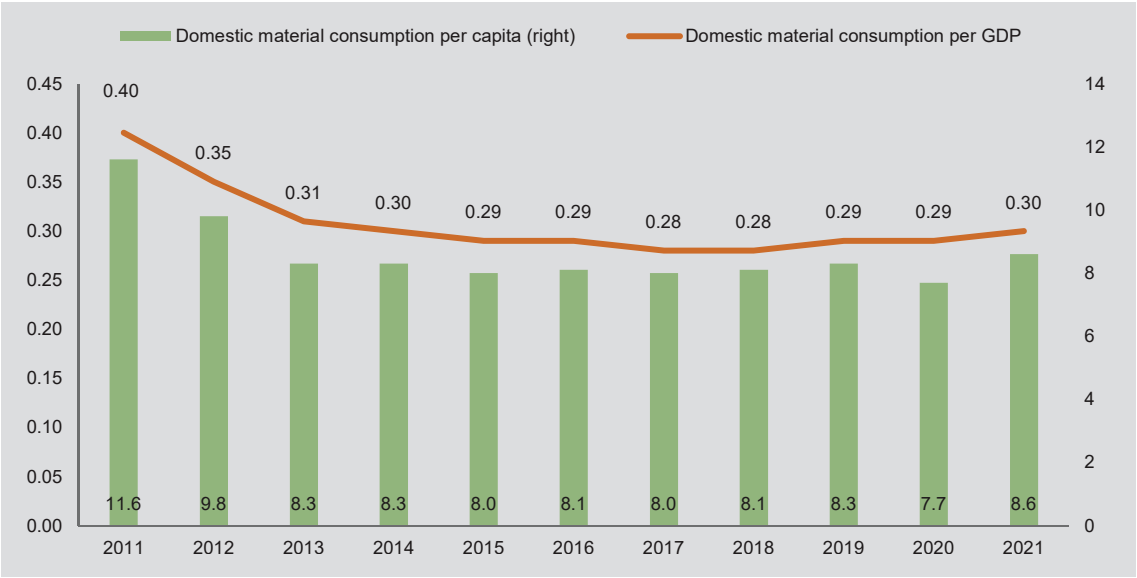
(a) Variation compared to 2016/2017
(b) Variation compared to 2012/2015
(c) Variation compared to 2017
(d) Variation compared to 2013
(e) Variation compared to 2012
(f) Variation compared to 2016
(*) Refer to the table on www.istat.it

In 2021, domestic material consumption returned to growth relative to both the population and GDP

After the decrease in 2020 as a result of the partial closure of production activities, domestic material consumption (DMC)[2], rose again in 2021, reaching 505,4 million tonnes (+46.4 tonnes compared with the previous year, equal to a percentage increase of 10.1%). The DMC was not only above pre-pandemic levels (499,5 million tonnes), but has not been recorded in Italy since 2012 (592).

Between 2020 and 2021, the ratio of material consumption to population increased from 7.7 tonnes to 8.6 tonnes per inhabitant (+11.7%). This increase was only partly due to the recovery in economic activity after the lockdown, as shown by the DMC/GDP ratio, which rose, albeit slightly, from 0.29 tonnes to 0.30 tonnes for 1,000 euro (Figure 12.1).

Figure 12.1 - Domestic material consumption per capita and per GDP. Years 2011-2021 (a) (tonne per capita and tonne per 1,000 euro, chain-linked volumes)



Source: Istat, Material flow accounts
(a) 2021 data are provisional.

The decoupling between the economic cycle and environmental pressures process therefore seems to be a setback, compared with the large improvements recorded in the past. The reduction in the DMC/ GDP ratio, which was particularly intense during the second phase of the economic crisis (2012-2013), continued during the recovery of the business cycle, confirming the ratio below pre-crisis levels (the DMC/Pil was 0.46 tonnes per unit of GDP in 2007). However, since 2016, there has been a substantial stagnation in material consumption per unit of output .

2 Domestic material consumption is a measure of the quantity of matter, other than water and air, used annually by the socio-economic system and released into the environment (incorporated into emissions or effluents) or accumulated in new anthropogenic stocks (both capital goods and other durable goods and waste).

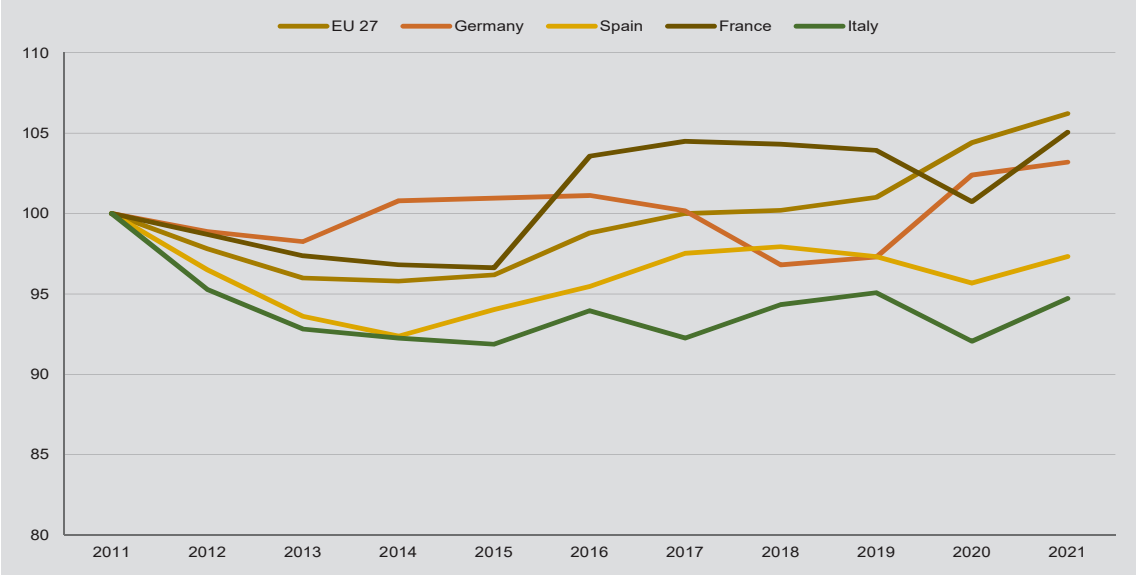
Nevertheless, in the European context, Italy's progress still shows a more advanced decoupling between economic growth and resource use. While taking into account the different national production structures and the different impact of transformations in European economies to the benefit of less material-consuming sectors, over the last decade the DMC per unit of output in Italy has fallen by 25%, which is higher than both the average change in EU27 (-15%) and that of the main European partners (-16.1% for France, -18.1 for Germany and -20.2% for Spain)[3]. In 2021, Italy ranked fourth in the descending DMC/GDP ratio ranking and second in the material consumption per capita ranking, with a value, for both indicators, of just over 60% of the EU27 average (0.48 tonnes for 1,000 euro and 14.1 tonnes per inhabitant).

The Italian territory is characterised, also in relation to the heterogeneity of production settlements, by very different levels of material consumption. The Centre has lower consumption (6.7 tonnes per inhabitant and 0.23 per 1,000 euro, in 2020) than the North (8.6 and 0.27). In the South, together with a per capita consumption of 7.2 tonnes, there is the highest CMI per unit of output (0.41 per 1,000 euro).

In 2021, the increase in per capita municipal waste generation brought Italy back to the pre-pandemic situation

In 2021, following the post-pandemic recovery in consumption, municipal waste (MW) generation in Italy increased again to 29.6 million tonnes (+2.3% compared to 2020). At a per capita level, the increase (by 14 kilograms) almost fully compensated for the drop recorded in 2020 due to the lockdown, bringing MW production to 501 kg per inhabitant (it was 503 in 2019).

Figure 12.2 - Generation of municipal waste per inhabitant. Years 2011-2021 (fixed base index numbers 2011=100)



Source: Eurostat; Istat, processing on ISPRA data

3 See http://ec.europa.eu/eurostat.

However, the amount of MW produced per inhabitant remains at lower levels than 10 years ago (-4.2%). The Italian trend contrasts with the EU27 average trend, which over the last decade has shown an increase in MW per capita of 6.2% (Figure 12.2), but also compared to the main European economies (+3.2% for Germany and +5.1% for France), with the exception of Spain, which, nevertheless, recorded a smaller decrease (-2.7%). Thanks to Italy's broader progress in the last decade, in 2021, it recorded a production of MW per capita lower than the EU27 average (530 kg per inhabitant) and the levels of Germany (646 kg) and France (561 kg), although higher than those of Spain (472 kg).

The largest increase in MW per capita was recorded in the South (+3.6% compared to 2020), where, however, the smallest amount of MW was produced (458 kg per inhabitant). This is followed by the Central (+2.9% and 537 kg) and Northern (+2.4% and 516 kg) areas.

In the past year progress in waste cycle management slowed down

The reduction of natural resource withdrawals due to the growth in efficiency of production and consumption processes is only one of the two key aspects of the circular economy. The return of waste from anthropogenic activities into the economic cycle is in fact crucial to further curbing resource consumption, as well as to reduce the waste load on the environment and to protect human and ecosystems health.

Over the past year, there have been only marginal improvements in the management of municipal waste treatment.

In 2020, the percentage of MW recycling - which had increased by 17.7 p.p. between 2010 and 2019, with an average annual variation rate of +4.1 p.p. - slowed down its expansion process (+1.1 p.p.) and reached 54.4% (Figure 12.3), slightly below the 55% target set by the European Union for 2025[4].

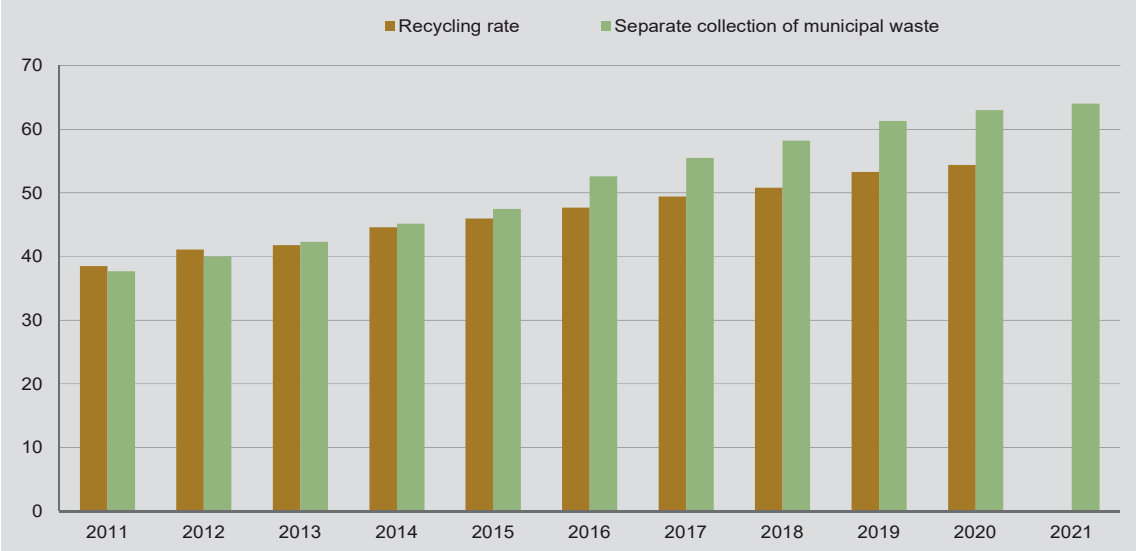
In 2021, as a result of the overall increase in MW, the separated fractions also increased to 18.9 million tonnes (+0.7 million tonnes compared to 2020; +3.9%). The percentage of separate collection in the total increased by 1 point to 64%, slowing down the growth of the last decade (+26.3 points compared to 2011). Despite coming close, in 2021 Italy still did not reach the 65% target set by the regulations for 2012.

The share of separate collection on the total amount of MW reached 71% in the northern area (69.1% in the North-West and 73.3% in the North-East), 60.4% in the Centre and 55.7% in the South and Islands (56.5% in the South and 54% in the Islands). The territorial differentials therefore remain high, although they tend to narrow over time, thanks to the most intense progress in the last ten years in the South (+31.8 percentage points compared to 2011 and +2.2 in the last year) and in the Centre (respectively +30.2 and +1.2), compared to the North (+19.9 and +0.2). The incidence of differentiated waste on the total exceeded 70% in the Autonomous Province of Trento, Veneto, Sardegna, Lombardia, Emilia-Romagna and Marche, but it is Basilicata that registered the largest increase (+6.3 percentage points), followed by Sicilia (+4.6). The persistence of significant inter-regional gaps is demonstrated by the gap between the Autonomous Province of Trento, where the highest rate of separate collection is reached, and Sicilia, with the lowest, a difference that,

4 Directive (EU) 2018/851 sets targets by 2025 (55%), 2030 (60%) and 2035 (65%).

still in 2021, amounted to 30 percentage points. At the provincial level, Treviso, Mantova, Belluno, Reggio nell'Emilia, and Pordenone maintained the lead, with an incidence of separated MW above 80%.

Figure 12.3 - Recycling rate and separate collection of municipal waste (a). Years 2011-2021 (percentage values)



Source: ISPRA; Istat, processing on ISPRA data.
(a) Data from 2016 to date are only partially comparable with previous years due to a variation in the calculation criteria of production and collection data.

As a result of the general slowdown in progress in municipal waste management in the last year, the share of MW sent to landfill - indicative of the capacity to convert consumer waste into new resources - showed a decrease which, although in line with the trend over the last five years, is also below the average pace of the decade (see Goal 11).

In 2021 the circular material use rate decreased significantly

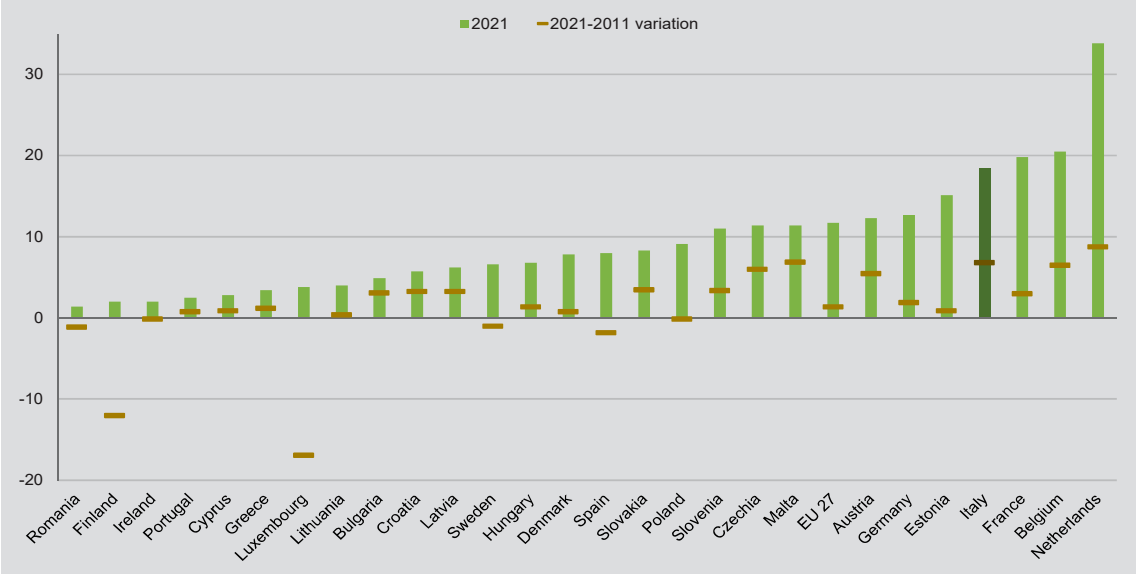
The circular material use rate[5] (CMUR) - the share of material recovered and returned to the economy in overall material use - reversed in 2021 compared to the positive trend of the last ten years, falling to 18.4% (-2.2 percentage points compared to 2020) and returning to the values observed in 2017. This was due in particular to the decline in the reused component of metal ores (-13.1 p.p.) and non-metallic minerals (-3.3 p.p.), while biomass and fossil fuels were characterised by greater stability (see the paragraph *The circular use of material*).

Italy's performance over the last year is one of the lowest in the European context, where, against the improvements recorded in circular material use rate by ten out of twenty-seven Member States, Italy, together with Slovakia, registered a decline lower only than Luxembourg (-6.1 p.p.) and Finland (-3.9). Nevertheless, Italy remains among the most virtuous countries, confirming its fourth place in the EU27 ranking, after the Netherlands (33.8%), Belgium (20.5%) and France (19.8%), with a share of the rate almost 7 percentage points

5 Ratio of the circular use (material recovered and fed back into the economy) and the overall use of materials (sum of the domestic material consumption and the circular use of materials).

higher than the EU27 average (11.7%; Figure 12.4). This is due to our country's positive performance in the last decade, which, although partly mitigated by the trend in 2021, has confirmed a growth of 6.8 percentage points for Italy, well above the EU27 average (+1.4) and second only to the Netherlands and Malta.

Figure 12.4 - Circular material use rate, by country. Year 2021 and 2021-2011 variation (pertentage values and pertentage points)

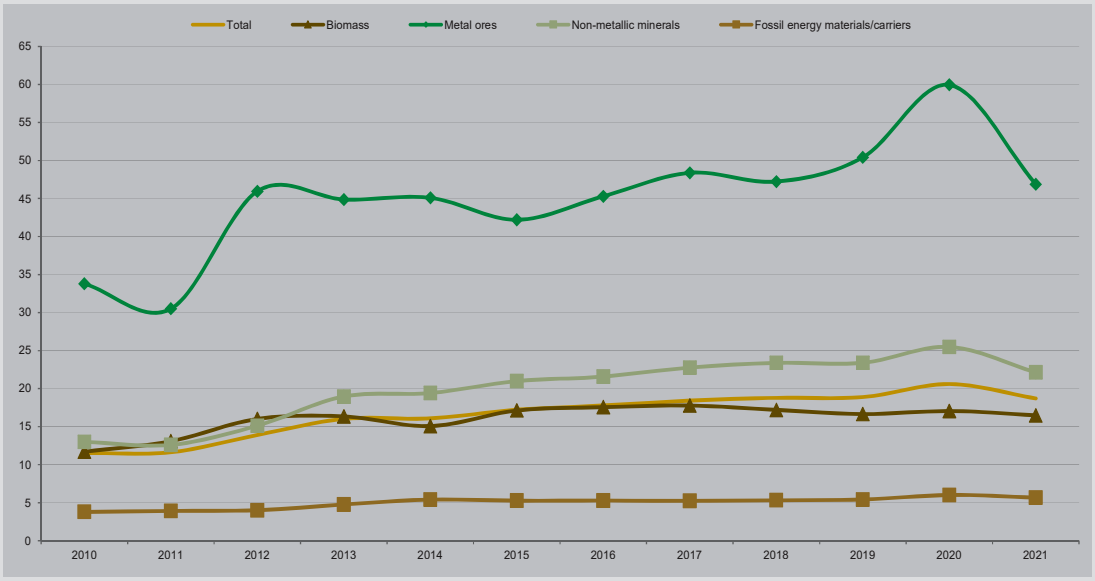


Source: ISPRA; Istat, processing on ISPRA data.

The circular use of materials[1]

The circular material use rate by material category – biomass, metal ores, non-metallic minerals, and fossil energy carriers/materials – showed upward trends for all categories in the period 2010-2021. However, different recycling levels do have an effect on CMUR values for the different material categories: the highest for metal ores[2], followed by non-metallic minerals, and the lowest for fossil fuels[3], followed by biomass (Figure 1).

Figure 1 - Circular material use rate, by material category. Years 2010-2021 (percentage values)



Sourse: ISPRA

The following three scenarios explore for Italy what would be needed to achieve the non-legally binding target of doubling the CMUR set by the European Circular Economy Action Plan by 2030[4], which for Italy would mean moving from 18.7% to 37.4%. For this purpose, the three scenarios investigate how circular economy and climate measures impact on the Italian CMUR components, with a 2030 and a 2050 perspective:

1 This section was edited by Renato Marra Campanale (ISPRA) with contributions by Paola Ungaro.

2 From 2010 to 2021, metallic materials' circularity rate fluctuated wildly. It accounted on average for about 45% and increased by 13 percentage points. It should be noted from a life-cycle perspective that the indirect/direct ratio for traded flows of metal ores and products derived therefrom is very high. Thus, in a life-cycle perspective, the circularity rate of metal resources would be just under 20% on average from 2010 to 2021, if their consumption (denominator of the ratio giving rise to the rate) included all quantities of matter taken from the natural environment globally (equal to the sum of direct and indirect flows) to be incorporated into products.

3 Fossil fuels' circularity rate increased by some 2 percentage points from 2010 to 2021, up to 5.7% at the end of the period. Energy uses hinder closing the loop of this material category, which is limited to non-energy uses, e.g. production of plastics.

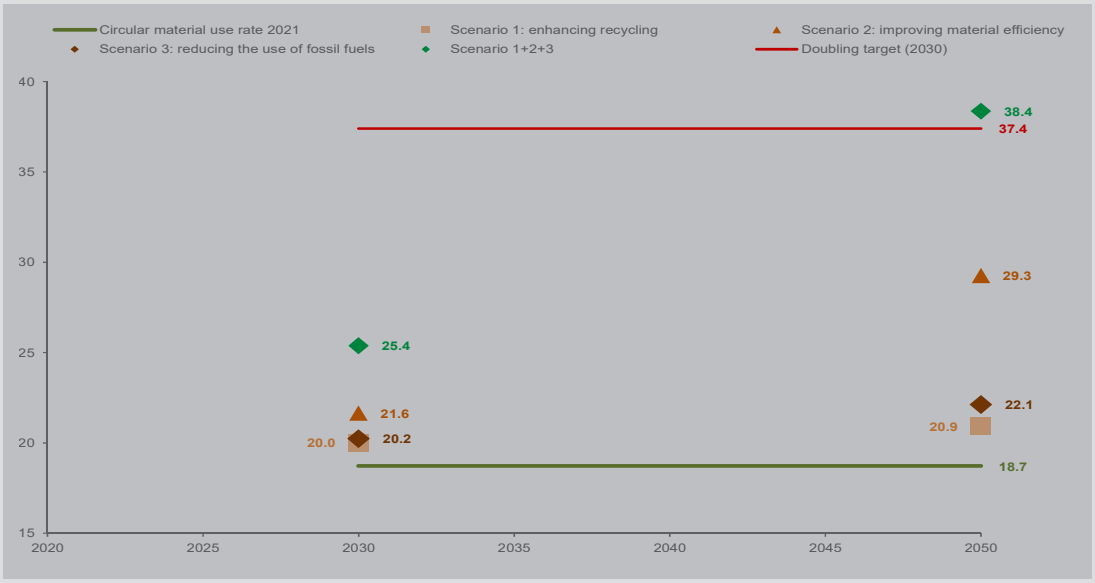
4 European Commission (2020) A new Circular Economy Action Plan. For a cleaner and more competitive Europe. The plan does not set a base year for this target, which is established for the EU as a whole only. The analysis presented in this section builds on scenarios at EU level published by the European Topic Centre on Circular economy and resource use (see M. Christis, A. Vercalsteren, P. Nuss, R. Marra Campanale, S. Steger. 2023. Analysis of the circular material use rate and the doubling target).

i. Enhancing of recycling of products when they reach their end-of-life. This first scenario assumes that the share of waste that is recycled is increased to 90% (intermediate target) in 2030 and to 95% (ambitious target) in 2050[5] (it should be noted that Italy already recycles more than four fifths of total treated waste, the highest percentage among the 27 EU countries);

ii. Improving material efficiency and reducing material consumption, by a 20% (2030 intermediate target) and 90% (2050 ambitious target) increase of resource productivity compared to the 2021 level;

iii. Reducing the use of fossil fuels via a reduction of 50% compared to the 2021 level (2030 intermediate target) and by 100% (2050 ambitious target), following the assumptions in the impact assessment of the Fit for 55 policy package.

Figure 2 - Changes in the Italian circular material use rate according to three different scenarios and their combination. Years 2021-2050 (percentage values)



Source: ISPRA, processing on ISPRA and Istat data

Figure 2 shows results for the three scenarios as well as for the combination of all the scenarios to get an indication on the potential they provide to achieve the doubling target.

The results from this simplified scenario exploration indicate that none of the single scenarios alone would achieve the doubling target by 2030 and 2050. Achieving the ambition to double the CMUR would thus require implementing a combination of the above changes within 2050 (38.4%). This requires a coordinated effort by different policy areas such as circular economy and climate policy. Enhanced waste recycling alone will not allow Italy to achieve the doubling target.

5 Such high recovery rates can potentially result in just as many secondary raw materials that replace the extraction of natural resources. However, caution is required with this substitution effect. The circular economy rebound effect and downcycling provide two examples of potential consequences that diminish the full environmental potential of an increased CMUR. For example, the use of construction and demolition waste as a filler material in construction cannot be interpreted as a (full) one-to-one substitute for primary raw materials due to downcycling.

GOAL 13

TAKE URGENT ACTIONS TO COMBAT CLIMATE CHANGE AND ITS IMPACTS[1]

In brief

- Greenhouse gas emissions - sharply fallen in 2020 in Italy (-10.6%) and in Europe (-10.2%) - in 2021 rose again (+6.2% for Italy), because of the recovery of production activities and mobility.
- In 2021, emissions from productive activities grew more intensively than household emissions (+6.4% vs +5.7%).
- Forest fires has become more frequent: between 2020 and 2021, the number of fires increased by 23.1% and the forest area involved more than doubled.
- In 2022, 71.0% of people aged 14 and over indicated climate change and greenhouse effect among the top five environmental concerns.

The statistical measures released by Istat for Goal 13 are twenty-one and refer to three UN-IAEG-SDGs indicators (Table 13.1).

1 This section was edited by Giovanna Tagliacozzo, Tiziana Baldoni, Elisabetta Del Bufalo and Silvia Zannoni.

Table 13.1 - Statistical measures released by Istat, taxonomy compared to SDGs indicators, variations compared to the previous year and to 10 years before and convergence among regions

Ref. SDG	INDICATOR	Compared to SDG indicator	Value	VARIATIONS		CONVERGENCE AMONG REGIONS
				Compared to the previous year	Compared to 10 years before	Compared to 10 years before
13.1.1	Number of deaths, missing persons and directly affected persons attributed to disasters per 100,000 population					
	Population at risk of flood (ISPRA, 2020, percentage values)	National context	11.5	(a)	(b)	⇒⇐
	Population at risk of landslide (ISPRA, 2020, percentage values)	National context	2.2	(a)	(b)	⇒⇐
	Resident population in flood risk areas per km^2 (ISPRA, 2020, inhabitants per km^2)	National context	22.57	(a)	(b)	⇒⇐
	Resident population in landslide risk areas per km^2 (ISPRA, 2020, inhabitants per km^2)	National context	4.32	(a)	(b)	⇒⇐
	Number of deaths and missing persons due to floods (ISPRA, 2020 N.)	Partial	11	--	--	--
	Number of deaths and missing persons due to landslides (ISPRA, 2020, N.)	Partial	6	--	--	--
	Number of people injured by floods/flooding (ISPRA, 2020, N.)	Partial	-	--	--	--
	Number of people injured by landslides (ISPRA, 2020, N.)	Partial	22	--	--	--
	Global average temperature anomalies on land and in Italy, compared to normal climatological values 1991-2020 (ISPRA, 2021, degree Celsius)	National context	0.41 Global 0.23 Italy	--	--	--
	Impact of forest fires (Istat, Processing of data from Carabinieri Command of Units for Forestry, Environmental and Agri-food protection, 2021, per 1,000 km^2)	National context	5.0			⇐⇒
	Number of the seismic movements (>= 4.0) by magnitude class (National Institute of Geophysics and Volcanology (Ingv), National Earthquake Centre, 2021, N.)	National context	11	--	--	--
13.2.2	Total greenhouse gas emissions per year					
	Greenhouse gas emissions (GHG) inventory totals (UNFCCC) (ISPRA, 2021, tonne CO_2 equivalent)	Identical	404,849,368			--
	Balance between the emissions caused by transport activities carried out by residents in the Rest of the World (+) and in Italy by non-residents (-)	Identical	11,292,725	--	--	--
	Total greenhouse gases according to national air emission accounts (Istat, 2021, tonne CO_2 equivalent)	Identical	416,142,093			--
	Emissions of CO_2 and other greenhouse gasses (Istat-ISPRA, 2021, tonne per inhabitant)	National context	7.0			--
	National PM2.5 emissions (ISPRA, 2020, thousand tonnes)	National context	133.2			--
	National SOx emissions (ISPRA, 2020, thousand tonnes)	National context	81.9			--
	National NOx emissions (ISPRA, 2020, thousand tonnes)	National context	570.6			--
	National NH3 emissions (ISPRA, 2020, thousand tonnes)	National context	362.6			--
	National COVNM emissions (ISPRA, 2020, thousand tonnes)	National context	885.4			--
13.3.1	Extent to which (i) global citizenship education and (ii) education for sustainable development are integrated into (a) national education policies, (b) curricula, (c) teacher training and (d) student assessment					
	Concern for climate change and greenhouse effect (Istat, 2022, percentage values)	Proxy	71.0	--	--	⇐⇒

Legend

- IMPROVEMENT
- STABILITY
- DETERIORATION
- -- NOT AVAILABLE / NOT SIGNIFICANT
- ⇒⇐ CONVERGENCE
- = STABILITY
- ⇐⇒ DIVERGENCE

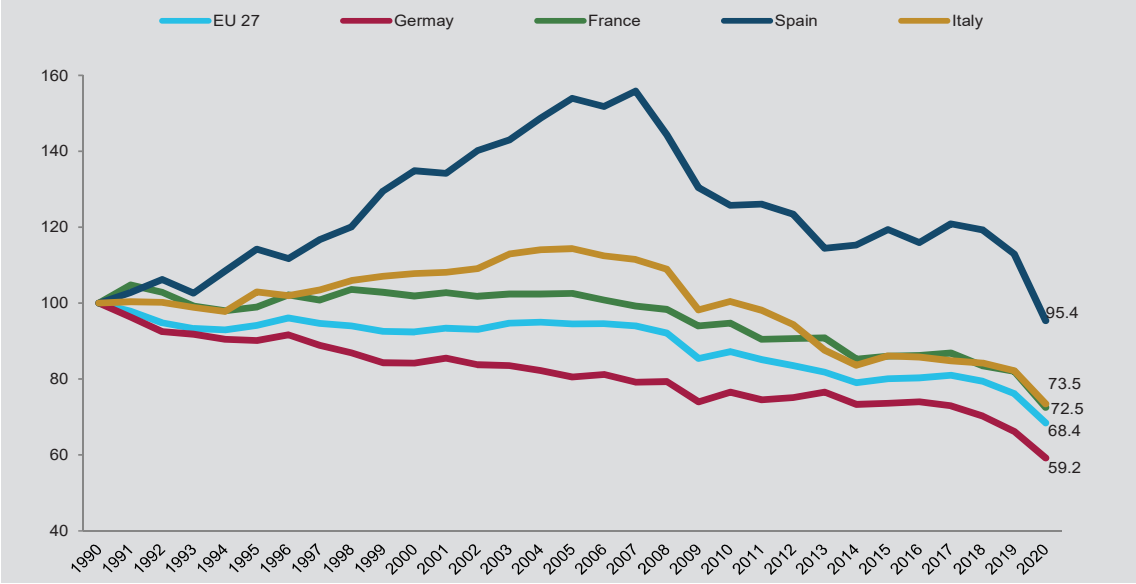
Notes

(a) Variation compared to 2017
(b) Variation compared to 2015

First estimates show a rise in greenhouse gas emissions for 2021, although they did not reach the pre-pandemic level

In 2020, greenhouse gas emissions in Europe amounted to 3.4 billion tonnes of CO_2 equivalent[2], 31.6% less than in 1990, the reference base year for monitoring the objectives established by international agreements (Figure 13.1). Between 2019 and 2020, the pandemic and the consequent measures to prevent the spread of COVID-19 led to a 10.2% reduction in greenhouse gas emissions, the highest recorded in the entire period. All countries generally contributed to this reduction, while more than half (6.2 percentage points) was due to the four largest countries (Germany, France, Spain and Italy). In particular Spain, which has been showing constant improvement since 2008, only in 2020 achieved, for the first time, a level of emissions lower than that of 1990.

Figure 13.1 - Greenhouse gas emissions (a) CO_2 equivalent, by country. Years 1990-2020 (fixed base index numbers, 1990=100)



Source: Eurostat
(a) Including international aviation.

In the EU27 countries, greenhouse gas emissions in 2020 were equal to 8.4 tonnes of CO_2 equivalent per inhabitant, down by 0.9 tonnes compared to 2019[3]. All EU27 countries reduced their per capita value: Germany dropped in the last year from 10.0 to 8.9 tonnes of CO_2 equivalent, Spain from 7.1 to 5.9 and France from 6.7 to 5.9. Italy dropped from 7.2 to 6.5 tonnes of CO_2 equivalent in 2020, while the provisional estimate for 2021[4], equal to 7.0 tonnes per inhabitant, shows a recovery in emissions with levels, that however do not reach those of the pre-pandemic period.

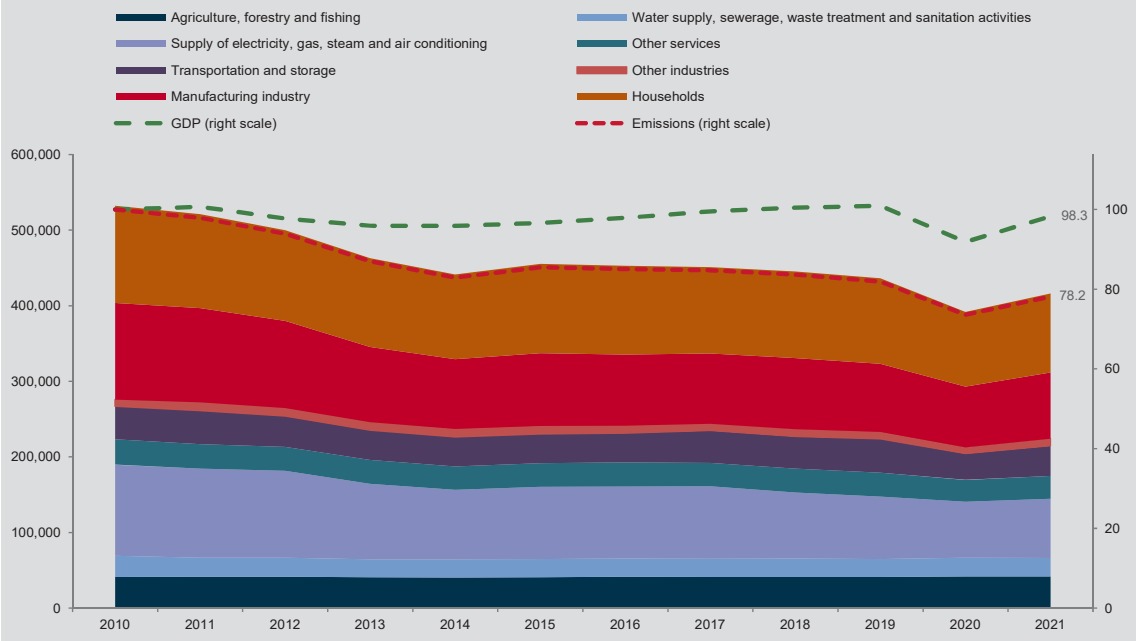
2 Measure used for monitoring Goal 13 in Europe (https://ec.europa.eu/eurostat/web/sdi/database/climate-action). The greenhouse gas emissions used for this purpose exclude "Land Use, Land Use Change and Forestry" (LULUCF) and international shipping and include international aviation.

3 See http://ec.europa.eu/eurostat.

4 Provisional data for 2021 according to Istat's accounts of atmospheric emissions (September 2022 edition).

In 2021, greenhouse gas emissions in Italy amounted to 404,849 thousand tonnes of CO_2 equivalent[5], 6.2% more than the previous year. In line with this variation was the increase in the quantity of greenhouse gases emitted into the atmosphere by production units and households residing in Italy, which went from 391,781 thousand tonnes of CO_2 equivalent in 2020 to 416,142 in 2021 (Figure 13.2). The recovery of emissions from resident units (+6.2%) followed the economic recovery, with GDP increasing by 7.0% in 2021 compared to 2020[6].

Figure 13.2 - Total greenhouse gases (GHG) according to national air emissions accounts, by industry and households, and Greenhouse gas emissions and GDP. Years 2010-2021 (a) (thousands of tonnes of CO_2 equivalent and fixed base index numbers 2010=100)



Source: Istat, Air emissions accounts
(a) 2021 data are provisional.

In 2021, emissions from production activities grew by 6.4% compared to 2020, 0.7 percentage points more than the change recorded by households (+5.7%). Manufacturing activities, transport and activities related to the supply of electricity mainly contributed to the growth in emissions from production activities, following the gradual easing of travel restrictions and the recovery of production activities.

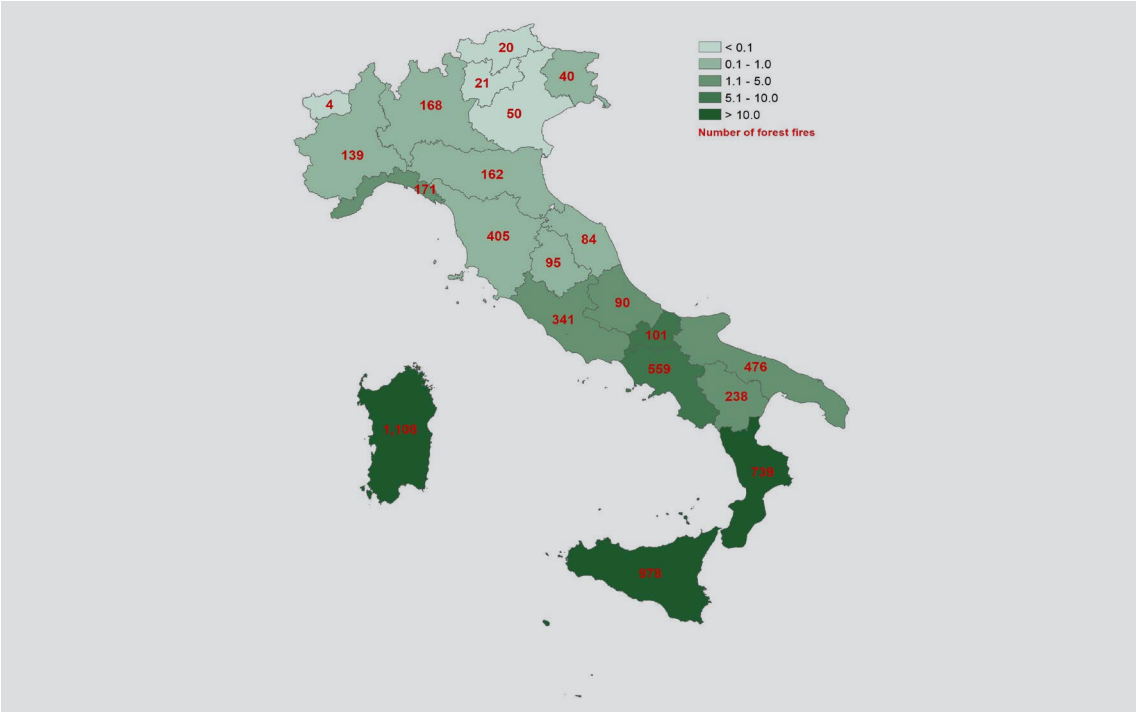
5 Total greenhouse gases according to the national inventory of emissions, produced by ISPRA and consistent with the communication for Italy under the United Nations Framework Convention on Climate Change (UNFCCC). This measure of emissions, which excludes "Land Use, Land Use Change and Forestry" (LULUCF), shipping and international aviation, responds to the land principle.

6 Data from Istat's atmospheric emissions accounts, consistent with the principles and standards of national economic accounts and referring to resident units. The difference between the two measurements (Istat - greenhouse gas according to the national accounts of atmospheric emissions and ISPRA - greenhouse gas according to the national inventory of emissions) is due to the balance between the emissions of resident units operating abroad for transport by road, air and sea (which are included in the calculation of Italy's GDP even when carried out abroad) and the emissions of non-resident units operating on the national territory for the same activities (which are excluded).

Increasingly frequent forest fires

Forest fires are becoming more frequent each year, aided by prolonged drought periods associated with particularly windy days, and are affecting ever larger areas, with fires more difficult to extinguish, both due to increasingly extreme weather conditions by climate changes and due to the still too widespread intentional origin or in any case caused by man. In 2021, compared to the previous year, the number of wildfires grew by 23.1% and the number of hectares burnt by fire more than doubled. 151,964 hectares of arson, negligence and generic fires were affected, of which 77,027 wooded (50.7%) and 74,937 non-wooded, for a total number of 5,989 fires (Figure 13.3).
The forest fire impact indicator corresponded to 5.0 per thousand of Italy's land area, with more than double the concentration of fire-affected area in the South and Islands (11.3 per thousand). The South and Islands was the most affected geographical area, both in terms of the number of events (about 72% of the total) and in terms of the size of the surface burned down (92.4%). Sicilia, Calabria and Sardegna were the most covered by fire regions, due to adverse climatic conditions (high temperatures, strong winds and prolonged drought), which favour fires and make extinguishing operations more difficult.

Figure 13.3 - Impact of forest fires and number of forest fires, by region. Year 2021 (wooded and non-wooded burnt forest area per 1,000 sq.km and number of forest fires)

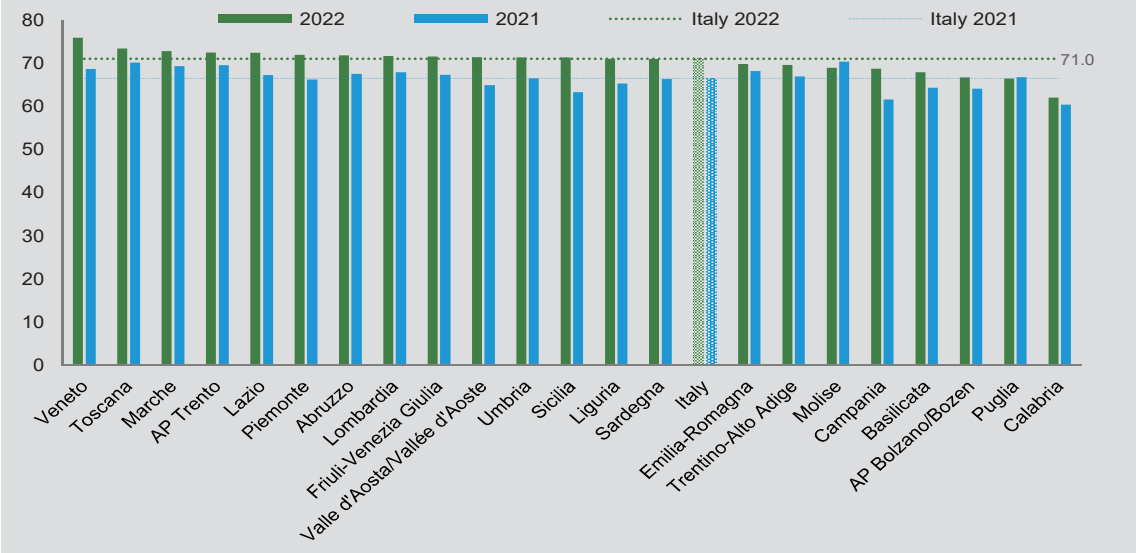


Source: Istat, processing of data from Carabinieri Command of Units for Forestry, Environmental and Agri-food protection

After the pandemic crisis, concern about climate change and the greenhouse effect rose

In 2022, 71.0% of people aged 14 and over indicated the climate change and greenhouse effect among the top five environmental concerns (Figure 13.4). After a drop in 2021, the indicator returned to 2019 levels in the last year: the share of people who claim to be concerned about climate change and the greenhouse effect, 71.0% in 2019 and 70.0% in 2020, had fallen to 66.5% in 2021. The overcoming of the health and economic crisis linked to the pandemic has evidently brought attention back to issues related to climate change.

Figure 13.4 - Concern for climate change and greenhouse effect (a), by region. Years 2021 and 2022 (percentage values)



Source: Istat, Survey on Aspects of daily life.
(a) Percentage of people aged 14 and over who believe that climate change, greenhouse effect and ozone hole are among the five most important environmental concerns.

In the geographical area of the Southern Italy and Islands, concern for climate change and the greenhouse effect was less widespread than in the North and Centre, 68.6%, 72.1% and 72.7% respectively. Veneto was the region with the highest share (75.9%), followed by Toscana (73.4%) and Marche (72.8%). The lowest shares of people were observed in Calabria (62.0%), Puglia (66.4%) and in the Autonomous Province of Bolzano (66.7%). Age differences have narrowed over the years; however, older people (over 75) were less concerned (67.3%). A higher educational level was associated with the higher value of the indicator, equal to 76.7%, a value that decreased among those who have an average (72.7%) or low (67.4%) educational level.

Adaptation to climate change at a local scale[1]

Adaptation, together with mitigation, is one of the two fundamental approaches towards coping with the impacts of climate change. Mitigation refers to all actions aimed at setting policies and instruments capable of reducing greenhouse gas (GHG) emissions, which require globally established targets (such as those coming from the Conference of the Parties (COP) - convened by the United Nations Framework Convention on Climate Change). The development of adaptation strategies and measures, intended as planning actions aimed at reducing the expected negative effects of future climate change impacts (heat waves, urban flooding, etc.), must consider local-scale characteristics and then fit into a regional, national, EU and international perspective. This is primarily because the factors underlying risk assessment - climatic hazard, exposure, and vulnerability - vary with respect to the geographical context of reference and regarding the availability and accessibility of data on which to base the analyses.
In Italy, a combination of different climate models estimated a temperature increase of up to 2°C for the period 2021-2050 compared to the 30 years 1981-2010, using one of the scenarios defined by the IPCC (Intergovernmental Panel on Climate Change) and called RCP4.5, which envisages a limited implementation of climate protection measures. The highest temperature changes have been reported for the Alpine zone in the summer season. Over the same period, the models reported a substantial decrease in annual rainfall in the southern areas and an increase in the Alpine areas. There are very different variations on a seasonal scale between the different Italian areas and a general increase in extreme rainfall events over the entire Peninsula[2].
Climate change analyses provide a starting point to characterise the expected climate hazards, perform related risk analyses, and define appropriate adaptation policies. Such analyses also support identifying sectors and segments of the population most vulnerable to the impacts of climate change.
Among the advancements in research, there is the enhanced ability to investigate very localised contexts. A recent report published by the CMCC Foundation analysed the climate risk for Roma, Milano, Napoli, Torino, Venezia and Firenze[3]. In Roma, since the mid-century, the occurrence of heat waves have shown increasing values, differentiated according to two different scenarios (Figure 1), based on the Warm Spell Duration Index (WSDI)[4]. These scenarios are confirmed by the Copernicus Data Store, which estimated an increase in the number of expected heatwave days in the median scenario (RCP 4.5) of approximately +18 in a year around 2040 and +28 days in a year around 2080 (compared to the period 1976-2005). In the most pessimistic scenario among those defined by the IPCC from the CMIP5 project experiments[5], known as RCP 8.5, the estimates increased to about +21 days around 2040 and +54 days around 2080[6]. In the Italian context, studies on the evolution of climate risk indicated the need to deepen the inter-urban variation, defining “how” it will be distributed, “who” will be most impacted and “where” the

1 This section was edited by Marta Ellena, Alfredo Reder, Giuliana Barbato, Mario Raffa and Paola Mercogliano (Fondazione Centro Euro-Mediterraneo sui Cambiamenti Climatici (CMCC)) with contributions by Giovanna Tagliacozzo.

2 Carraro, C. (a cura di). 2022. Cambiamenti climatici, infrastrutture e mobilità. Roma, Italia: Ministero delle Infrastrutture e della Mobilità Sostenibili - MIMS.

3 Spano, D., V. Mereu, V. Bacciu, G. Barbato, M. Buonocore, V. Casartelli, M. Ellena, E. Lamesso, A. Ledda, S. Marras, P. Mercogliano, L. Monteleone, J. Mysiak, R. Padulano, M. Raffa, M.G.G. Ruiu, V. Serra, e V. Villani. 2021. *Analisi del rischio. I cambiamenti climatici in sei città italiane*. Lecce, Italia: Fondazione Centro Euro-Mediterraneo. sui Cambiamenti Climatici – CMCC. DOI: https://www.doi.org/10.25424/cmcc/analisi_del_rischio_2021.

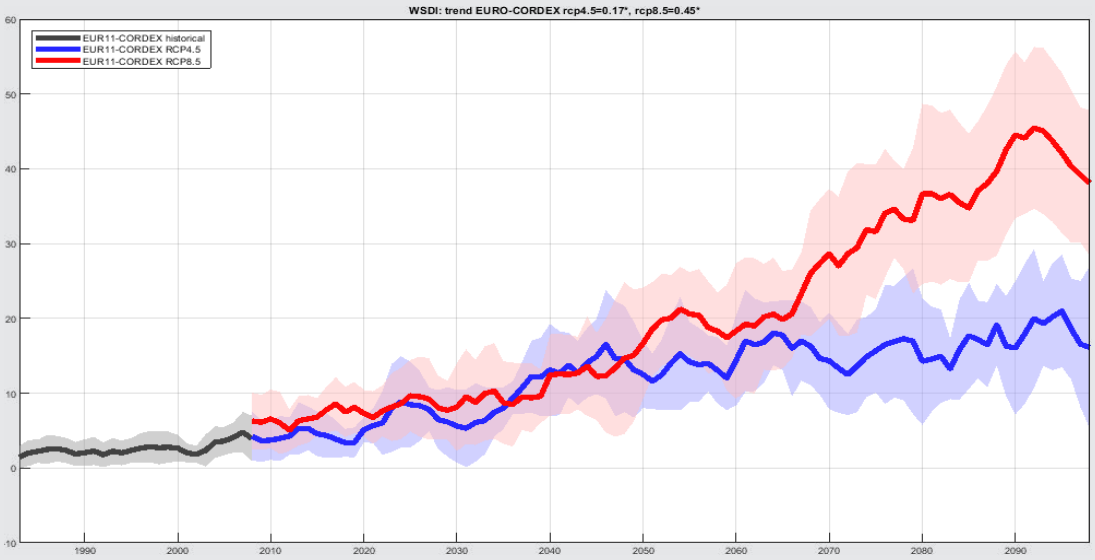
4 The Warm Spell Duration Index (WSDI) calculated over the summer months is used as a proxy for the number of expected heatwave days.

5 https://data.europa.eu/data/datasets/de-dkrz-wdcc-iso3012228/?locale=it

6 European Commission, Copernicus Climate Change Service - C3S, and European Centre for Medium-Range Weather Forecasts - ECMWF. 2021. *Heat wave days and heat related mortality for nine European cities derived from climate projections*. https://cds.climate.copernicus.eu/cdsapp#!/software/app-health-urban-heat-relatedmortality-projections?tab=app.

most affected areas will be localised[7]. The Torino case study examined the relationship between extreme temperatures and mortality in the recent past to establish a basis on which future scenario studies could be compared. Demographic, socio-economic and built environment (indoor and outdoor) variables that contribute to aggravating or alleviating heat stress in cities have been considered, as well as mortality data (1982-2018) by demographic (age, gender) and socio-economic (marital status, education, number of flat occupants) classes, according to geographic location[8]. The analysis allowed to determine the 'who', *d*, the target population most at risk[9], and the 'how', *i.e.* how the most vulnerable are affected and how this risk has evolved by socio-economic category[10]. The results indicated that women, the elderly, and those living more in social isolation (widowed, unmarried, etc.) are the most at-risk groups and that this risk has remained constant (if not worsened in some cases) over time. Based on socio-economic and health indicators combined with built environment factors, it has been possible to identify[11] 'where' the areas most at risk are located. All these analyses support determining the adaptation strategies for risk reduction by the public decision-maker.

Figure 1 - Expected heat waves in the city of Rome - observed period and Euro Cordex RCP4.5 RCP8.5 scenarios. Years 1981-2050 (number of days) (a)



Source: CMCC

(a) Time trend over the reference period for different climate scenarios of the WSDI indicator (heat waves, https://annuario.isprambiente.it/sys_ind/report/html/773) in the summer period (June-August) with the EURO-CORDEX models. The thick line indicates the average value among the different models used for the same scenario. The red and lighter blue area defines the dispersion of the EURO-CORDEX models used around their average value for the same scenario. The line and area in grey represent the value of the same set of models over the reference period 1981-2010.

7 Pörtner, H.-O., D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, and B. Rama (*eds.*). 2022. *Climate Change* 2022: *Impacts, Adaptation and Vulnerability. Working Group II Contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge, UK, and New York, NY, U.S.: Cambridge University Press.

8 Ellena, M., M. Breil and S. Soriani. 2020. "The heat-health nexus in the urban context: A systematic literature review exploring the socio-economic vulnerabilities and built environment characteristics". *Urban Climate*, Volume 34, 100676: 1-20.

9 Ellena, M., J. Ballester, P. Mercogliano, E. Ferracin, G. Barbato, G. Costa, and V. Ingole, 2020. "Social inequalities in heat-attributable mortality in the city of Turin, northwest of Italy: a time series analysis from 1982 to 2018". *Environmental Health*, Volume 19, Article N. 116: 1-14.

10 Ellena, M., J. Ballester, G. Costa, and H. Achebak. 2022. "Evolution of temperature-attributable mortality trends looking at social inequalities: an observational case study of urban maladaptation to cold and heat". *Environmental Research*, Volume 214, Part 3, 114082.

11 Ellena, M. G., Melis, N. Zengarini, E. Di Gangi, G. Ricciardi, P. Mercogliano, and G. Costa, 2023. "Micro-scale UHI risk assessment on the heat-health nexus within cities by looking at socio-economic factors and built environment characteristics: The Turin case study (Italy)". *Urban Climate*, 49, 101514: 1-15.

GOAL 14

CONSERVE AND SUSTAINABLY USE THE OCEANS, SEAS AND MARINE RESOURCES FOR SUSTAINABLE DEVELOPMENT[1]

In brief

- In 2021 beached marine litter decreased to 273 items per hundred meters of beach, still far from the EU recommendations (20 litter/100 m).
- In 2022, 13.4% of the marine area was protected by Natura 2000 Network.
- In 2022, 10.6% of marine areas were protected, in line with the SDGs target 14.5 and the Aichi Biodiversity Targets.
- In 2020, fish stocks were at their limit of sustainability (80.4%). At the same time, landed fish suffered a significant reduction in activity; catches and revenues decrease by more than 25%.
- In 2021, 88.1% of bathing waters were of excellent quality and 97.4% met the minimum standards, defined by the EU Bathing Directive.

The statistical measures released by Istat for Goal 14 are six and refer to two UN-IAEG-SDGs indicators (Table 14.1).

1 This section was edited by Antonino Laganà with contributions by Tiziana Baldoni.

Table 14.1 - Statistical measures released by Istat, taxonomy compared to SDGs indicators, variations compared to the previous years and to 10 years before and convergence among regions

Ref. SDG	INDICATOR	Compared to SDG indicator	Value	VARIAZIONI		CONVERGENCE AMONG REGIONS compared to 10 years before
				Compared to the previous year	Compared to 10 years before	
14.1.1	Beached marine litter					
Beached marine litter (ISPRA, 2021, N. per 100 metres beach length)		National contest	273		(a)	⇐⇒
14.4.1	Proportion of fish stocks wirthin biologically sustainable levels					
Fish stock in over exploitation (Ministry of Agriculture, Food Sovereignty and Forestry, 2020, percentage value)		Proxy	80.4		(b)	--
14.5.1	Coverage of protected areas in relation to marine areas					
Bathing sites with excellent water quality (European Environment Agency, 2021, percentage value)		National contest	88.1			⇒⇐
Coastal bathing waters (Istat, processing of Ministry of Health data, 2019, percentage values)		Partial	65.5		(c)	⇒⇐
Marine protected areas EUAP (Ministry of the Environment and Energy Security, 2019, km2)		Partial	3,076	--	(d)	=
Marine areas included in the network Natura 2000 (Ministry of the Environment and Energy Security, 2022, km2)		Partial	20,717		(b)	⇐⇒

Legend

	IMPROVEMENT	⇒⇐	CONVERGENCE
	STABILITY	=	STABILITY
	DETERIORATION	⇐⇒	DIVERGENCE
--	NOT AVAILABLE / NOT SIGNIFICANT		

Notes

(a) Variation compared to 2015
(b) Variation compared to 2014
(c) Variation compared to 2013
(d) Variation compared to 2012

Marine litter decreased, but still far from EU recommendations

The protection of marine habitats and the reduction of marine litter play an important role in policies to safeguard the seas, as specified by the Marine Strategy Framework Directive (MSFD[2]), the Protection of the High Seas[3], and the NRP. The MSFD requires Member States to achieve the Good Environmental Status (GES[4]) target for their marine waters by 2020 for the eleven descriptors, the tenth of which addresses marine litter[5]. Internationally, agreement has been reached toward the protection of 30 percent of the oceans (currently the values are 1%). In Italian NRRP[6], 400 million euro have been allocated for seabed protection.

In 2021, marine litter arriving on beaches averaged 273 items per 100 meters, (in 2020 it was 311), a density above the threshold[7] set by the European Commission. A slight decrease

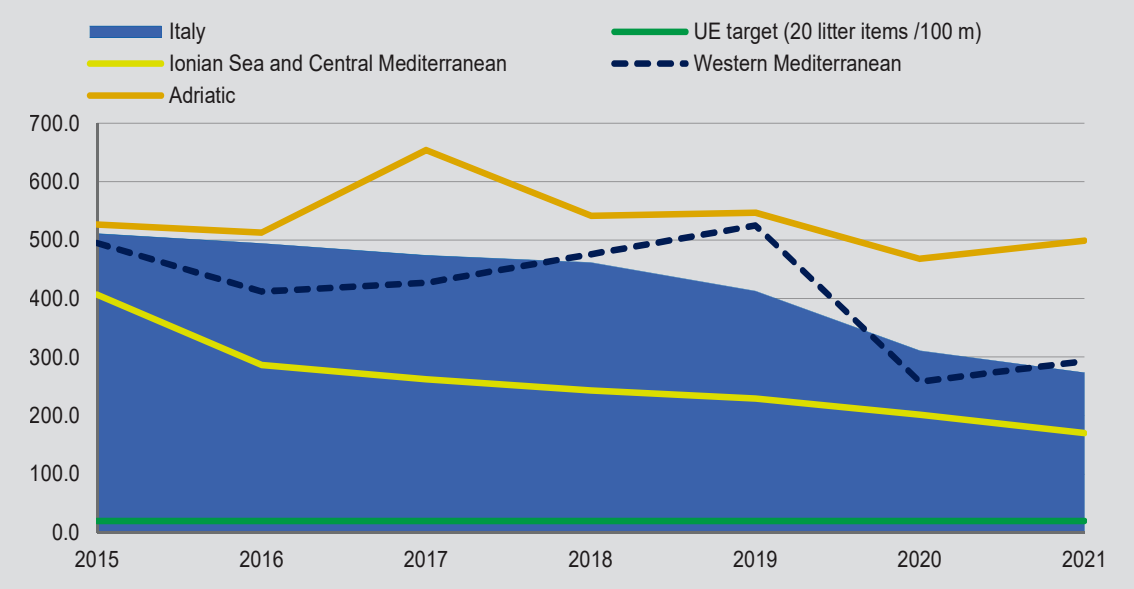
2 Cf. Marine Strategy Framework Directive 2008/56/CE: https://www.mase.gov.it/pagina/la-direttiva-europea-sulla-strategia-marina, transposed in Italy by Legislative Decree N. 190/2010.
3 The High Sea is defined as the sea area beyond 200 miles from the coast, covering two thirds of the ocean.
4 Good Environmental Status, preserve the ecological diversity, and vitality of the seas and oceans so that they are clean, healthy and productive, by protecting the marine environment at a sustainable level for present and future generations.
5 In Descriptor 10 of the Marine Strategy, marine waste is defined as any solid material that is persistent, manufactured, or processed, and subsequently discarded, disposed of, abandoned, or lost in the marine and coastal environment.
6 Measure 3 (investment line 3.5) provides for the restoration and protection of seabed and marine habitats, by 2025.
7 To consider a beach in good environmental status, the threshold value recommended by the EU is 20 litter items/100 m, corresponding to the 15th percentile of the total marine litter of the 21 European countries analysed.

in the indicator is observed between 2015 and 2018, with a larger decrease between 2019 and 2020 (-101 waste/100 m), linked, on the one hand, to the implementation of plastic reduction measures and, on the other, to the decrease in activities due to the pandemic. Fluctuating trends are observed for the sub-marine regions of the Adriatic Sea (from 527 litter items/100 m in 2015 to 499 in 2021) and the Western Mediterranean Sea (495 to 293), while the Ionian and Central Mediterranean Sea area (407 to 170) is in sharp decline (Figure 14.1).

More than 13% of the marine area protected by the Natura 2000 Network

By 2022, the marine area of the Natura 2000 Network[8] covered 20,717 km^2, which corresponds to 13.4 percent of Italy's territorial sea. Between 2021 and 2022, three Special Protection Zones in the Friuli-Venezia Giulia region (Posidonia Wrecks, Trezze San Pietro and Bardelli, and the Miramare Area) have been expanded for a total of 24.1 km^2. Toscana leads in biodiversity conservation of marine areas, with 27.1 percent of protected waters, amounting to 41,426 km^2 (Capraia and Montecristo Islands among the largest), followed by the Puglia region (21.8 percent). The lowest shares are observed in Marche (0.3 percent; Figure 14.2). Italy's average, although stable over the past year, is now consistent with the European Commission's recommendations, thanks in part to the efforts made by our country, which tripled its protected waters between 2018 and 2020 (from 3.8 percent in 2018 to 13.4 in 2020).

Figure 14.1 - Beached marine litter, by marine sub-region. Years 2015-2021 (number per 100 metres of beach)



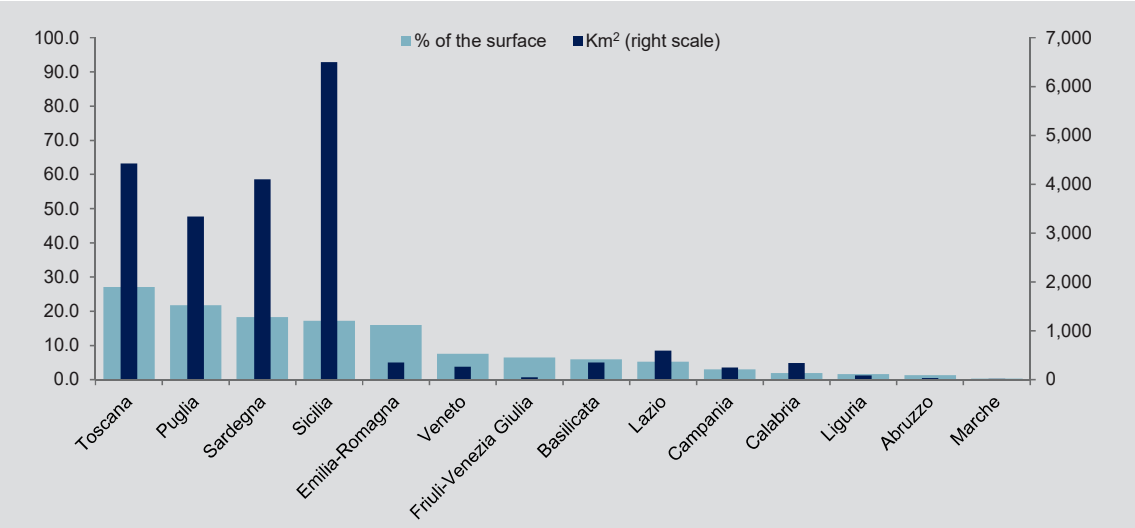
Source: Istat, processing of data from ISPRA

8 The Natura 2000 Network is an ecological network established for the territory of the European Union under the Habitats Directive 92/43/EEC for the conservation of biodiversity and to ensure the long-term maintenance of natural habitats and threatened or rare species of flora and fauna at the Community level, and includes Sites of Community Importance (SCI)/Special Areas of Conservation (SACs) and also Special Protection Areas (SPAs), established under the Birds Directive 79/409/ EEC and subsequent Directive 147/2009/EC.

Achievement of SDGs 14.5 target on the protection quota of Marine Areas in 2020

In 2022, the area of total marine protected areas (national, regional, and Natura 2000 Network) was stable[9], net of their spatial overlaps[10]. These areas total 57,181 km^2, accounting for 10.6% of Italy's marine coastal waters, in line with the target 14.5[11] of the SDGs and with 11 of the Aichi Biodiversity Targets[12].

Figure 14.2 - Marine protected areas included in the Natura 2000 Network, by region. Year 2022 (Km^2, percentage values)



Source: Istat, processing of data from Ministry of Environment and Energy Security

80.4% of Italy's fleet overfished fish stocks

Reducing overfishing, restoring fish stocks, and eliminating destructive and illegal fishing practices are among the main strategies to be implemented to contribute to the sustainability of the seas to ensure the "Blue Transition". National and international directives moving in this direction are: the Common Fisheries Policy[13] (CFP), the Marine Strategy Framework Directive[14] (MSFD), the National and European Biodiversity Strategy[15], The European Strategy for Plastics in the Circular Economy and Combating Climate Change[16].

9 Data from World Database on Protected Areas were used to verify the achievement of target 11 of the Aichi Biodiversity Targets and 14.5 of the (SDGs). Italy has 431 marine protected areas, (12 international, 62 national, and 357 regional).
10 Marine protected areas can have different spatial overlaps between them (from partial/total overlap to complete separation); in the case of overlap, the joining of areas is considered.
11 The target is to preserve at least 10 percent of coastal and marine areas by 2020, consistent with national and international law and based on the best available scientific information.
12 The Aichi Biodiversity targets, adopted in 2010 by the United Nations on biodiversity, called for the protection of at least 17% of terrestrial and inland waters and 10% of coastal and marine areas by 2020.
13 Regulation (UE) N.1380/2013 of the European Parliament and of the Council of December 11, 2013.
14 See note 2.
15 See Ministry of Environment and Energy Security – Mise 2021. "Fourth Report on the State of Natural Capital in Italy".
16 See Intergovernmental Panel on Climate Change – IPCC. 2023 – Report 2023 IPCC. "AR6 Synthesis Report: Climate Change 2023", Switzerland, March 20, 2023.

In 2021, the Italian fishing fleet consisted of 11,870[17] vessels, more than one-sixth of the EU fleet divided into six fishing systems[18], for a volume of 137,067 tonnes of fish caught (down 5.4% from 2020), corresponding to a value of 741.6 million[19] (-15.4%). During the partial shutdown in 2020, the fishing sector suffered a sharp decline in catch (-26.4 %) and revenue (-27.9%). Despite the decreases in fleet numbers (-9.1%), catches (-35.6%) and revenues (-32.8%) that have taken place over the past decade, 80.4% of the fleet would overexploit fish stocks in 2020[20] (Figure 14.3). In 2020, fleet inactivity increased from 9.1 percent to 14.4 percent, and vessel underutilisation from 36.1 percent to 58.8 percent. Overfished fleet segments show a fluctuating trend, ranging from 69.2% in 2014 to more than 80% in 2020 (Figure 14.4).

Figure 14.3 - Fishing fleet catches, and revenues. Years 2011-2021 (index numbers 2011=100)

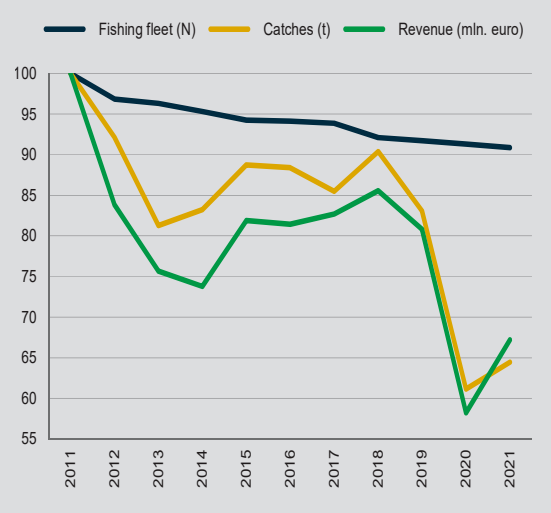
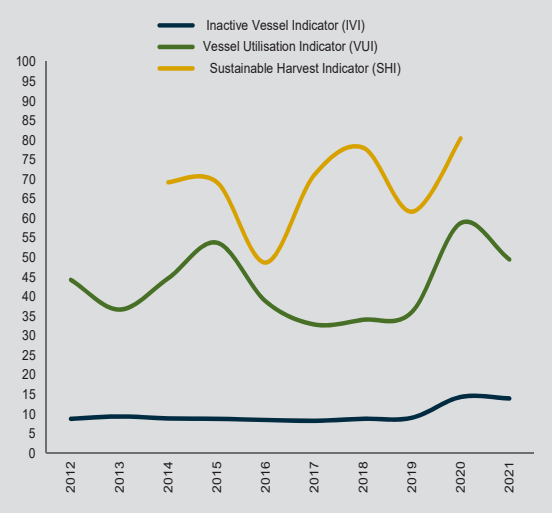


Figure 14.4 - Fishing sustainability indicators. Years 2012-2021 (percentage values)



Source: Istat, processing of data from Ministry of Agriculture, food Sovereignty and Forestry

88.1% of marine coastal bathing water sites with excellent quality

The analysis of marine coastal and transitional bathing waters[21], according to the Bathing Water Directive[22], plays an important role in protecting public health and preserving the marine environment and provides a useful framework for assessing the State of Italy's

17 11,864 from the Mediterranean fleet and 6 ocean-going. In 2021, 3 ocean-going vessels were exported to non-EU countries.

18 The six fishing systems are: Circumvention (8.85 %) and BFT Circumvention (2.97 %), Hydraulic Dredges (15.40 %), Longlines (1.75 %), Small Fisheries (17.79 %), Bottom Trawl and Rapido (33.15 %), and Volante (20.07 %).

19 See Ministry of Agriculture and Food Sovereignty and Forestry - Masaf 2021. "Annual report on Italy's efforts in fisheries in 2021". Report Masaf 2021. Rome.

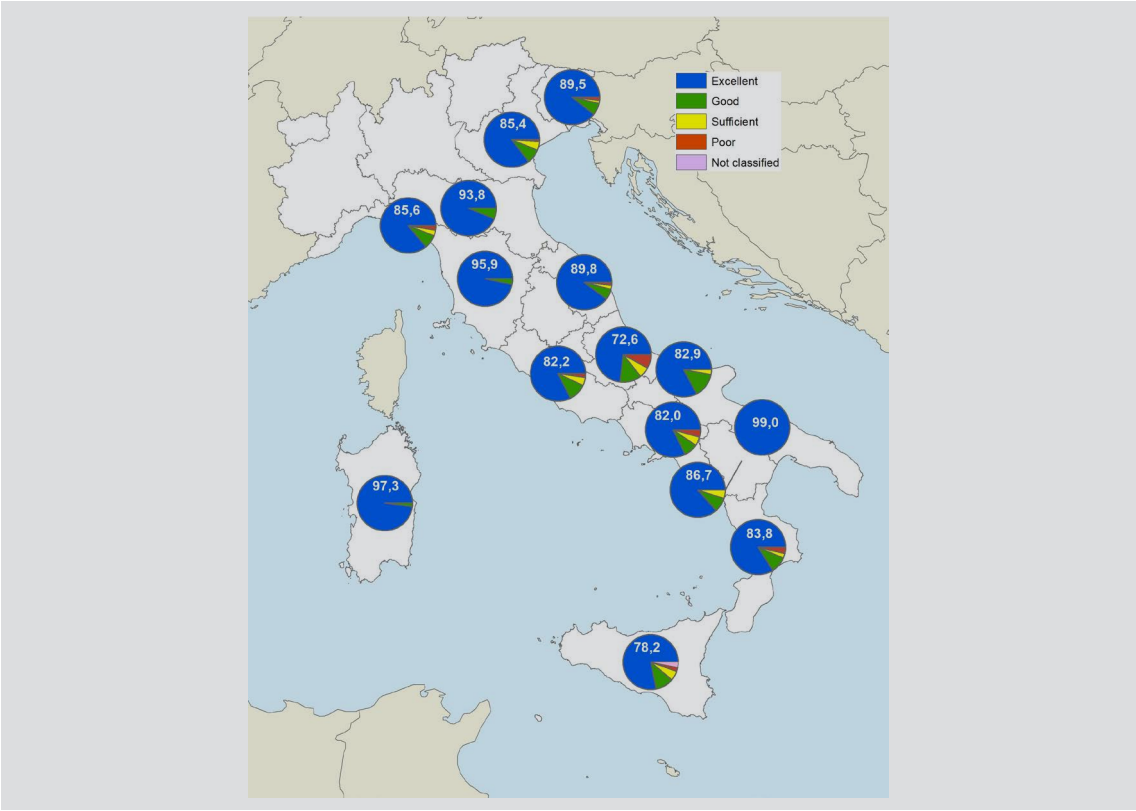
20 The Sustainable Harvest Indicator (SHI), calculated as the ratio of current fishing mortality (CF) to maximum sustainable fishing mortality (FMSY) is defined as being out of balance if overall greater than one and with a threshold above 0.4 for at least two out of three years during 2018-2020.

21 For bathing waters, only coastal and transitional marine waters (brackish waters such as lagoons, coastal ponds, and estuarine delta areas) were considered, excluding inland waters.

22 The Bathing Water Directive defines bathing waters as "areas in which the competent authorities provide for an adequate number of people to bathe and where there are no permanent prohibitions" (Directive 2006/7/EC). The subsequent Implementation Decree of 30 March 2010 classifies water quality as "excellent", "good", "sufficient" and "poor", depending on the presence of microbiological parameters (intestinal enterococci and escherichia coli). There are also other factors of health concern that may lead to preventive measures in the case of the presence of values considered to be a health risk.

coastline[23]. In 2021, Italy was the country, in the Ue27, with the highest number of bathing waters classified as being of excellent quality (4,272), more than a third of European waters with the same status (14,471). 4,850 bathing sites were monitored, of which 4,272 were of excellent quality (88.1%), in line with the EU27 average value (88.3%), 319 as good quality (6.6%), 135 sufficient (2.8%), 92 poor (1.9%) and 32 with insufficient sampling (0.6%). With 97.4% of bathing water sites of at least sufficient quality, Italy was very close to reaching the target set by the Directive. The region that met the strictest standards (excellent quality) was Puglia (99.0%), followed by Sardegna (97.3%), conversely Abruzzo recorded the lowest share (72.6%). Compared to the previous year, except for Marche, Puglia and Molise, all coastal regions showed a decrease in sites with excellent quality in 2021 (from 4,299 in 2020 to 4,272) in favour of other classes (good, sufficient and poor; Figure 14.5).

Figure 14.5 - Marine-coastal waters, by water quality status. Year 2021 (percentage values)



Source: Istat, processing data from EEA

23 See Istat. 2023. Istat water statistics. Years 2020-2022· Statistiche Report. Rome: Istat. https://www.istat.it/it/archivio/282387. In 2020, 96.3% of municipalities were purified fully or partially by urban wastewater treatment plants. There are 296 municipalities completely without urban wastewater treatment (1.3 million residents), of which 40 (386 thousand residents) are also without public sewage service.

Floating Marine Macro Litter in the Italian context[1]

For the implementation of the EU Marine Strategy Framework Directive MSFD, the Ministry of the Environment and Energy Security (Mase) and the National System for Environmental Protection (SNPA) have set up national monitoring programmes to cover the 587,152 km^2 of Italian sea areas[2]. Italy conducted a first evaluation phase to collect baseline data on floating marine macro-litter (FMML), stratified by three main compartments: river mouths, coastal and offshore areas.

Since 2019, three standard programmes have been defined to enable the implementation of time series. The applied methodologies are derived from those developed within the RIMMEL (EU-JRC, Joint Research Centre) and MEDSEALITTER Interreg Med projects.

No threshold has yet been established at the European level, for the floating macro-litter indicator, neither in the marine (coastal/offshore), nor in the riverine sector.

As regards descriptor 10 and related indicators, the data collected at European scale are spatially limited and discontinuous in time. It is therefore necessary to extend the monitoring in order to define the thresholds and the objectives to be achieved within the scope of the Directive. Despite this, even with differences in the areas or time periods investigated, the data analysed within this study for the offshore sector are consistent with those presented in the 2022 ETC/ICM report[3]. On the other hand, no density data of floating macro-litter in coastal areas or at the mouths of European rivers are available for comparison. The only available document, published by the JRC, reports on the percentage composition of the litter detected in the riverine environment but not the relative densities[4].

For the monitoring of floating macro-litter in the coastal and offshore compartments, the surface layer of the water column is investigated with 3-5 surveys per season along fixed sampling transects that are perpendicular to the main expected gradients and homogeneously distributed within each Sub-region (Figure 1).

Dedicated observers carried out the visual census monitoring within a defined strip from vessels (medium size for coastal, large vessels for offshore) under optimal meteorological conditions (Beaufort status <3).

The observation track is continuously recorded and all the observed macro litter items are georeferenced and catalogued according to the Joint List standard (Ed. 2021). The parameters analysed are: composition, amount and distribution of macro litter.

In 2019-2020, 1,081 surveys were carried out in the coastal environment along 31 fixed transects, with an average of 35 surveys per year per transect. 836 items of floating marine litter were recorded, belonging to 8 material categories, most of which were artificial polymers (96%). In the offshore areas, 62 surveys were carried out along 5 fixed transects, covering 314 km^2 of sea surface over 6,488 linear km 1,414 items of 8 different materials were recorded, 86% of which consisted of artificial polymers (Figure 2).

In the 10 monitored rivers, more than 80% of the fraction of objects were made of artificial polymers. The highest litter density values were observed at the mouth of the Tiber River and at the mouth of the Sarno River.

1 This section was edited by Antonella Arcangeli, Roberto Crosti, Elena Santini and Eugenia Pasanisi (ISPRA) with contributions by Antonino Laganà.

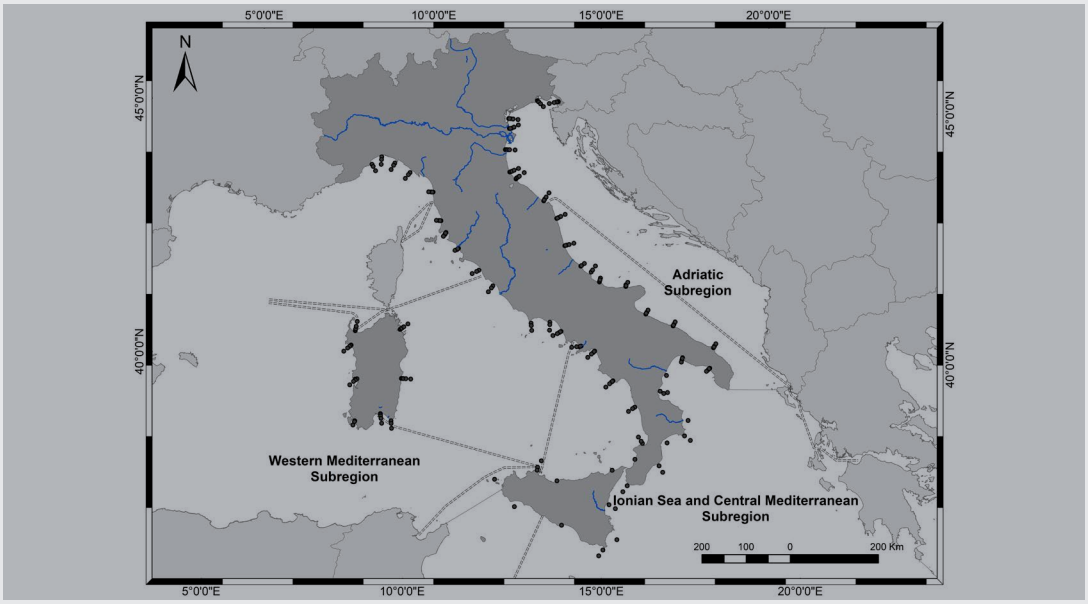
2 The three marine subregions investigated are the Western Mediterranean, Ionian and Central Mediterranean, and the Adriatic Sea.

3 See Veiga, J.M et al. 2022, Marine litter in Europe, An integrated assessment from source to sea. Technical Report European Topic Centre on Inland, Coastal and Marine Waters, Magdeburg 05/2022.

4 See González-Fernández, D., Hanke, G., and the RiLON network, Floating Macro Litter in European Rivers, Luxembourg, 2018.

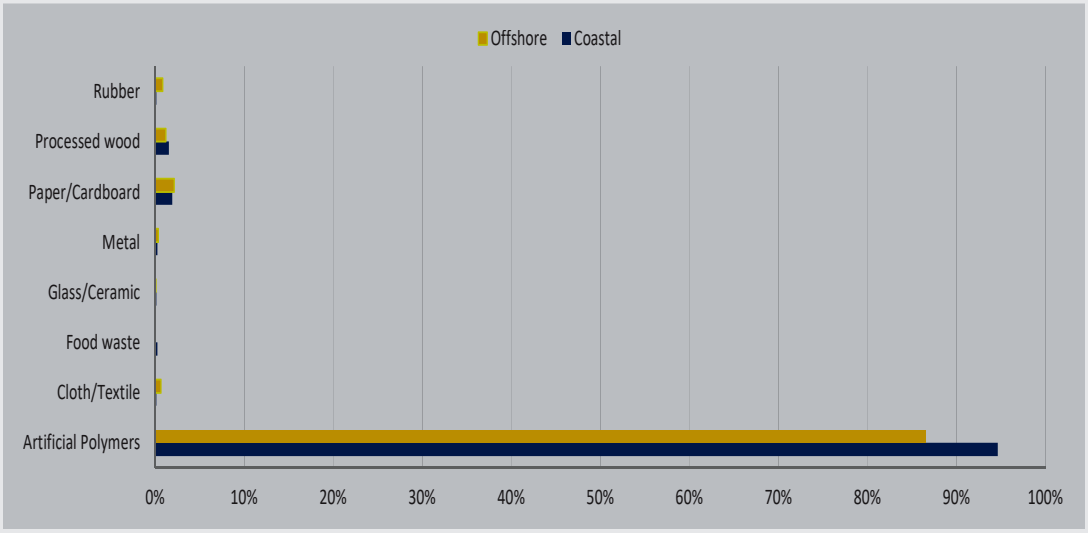
In both coastal and offshore environments, more than 70% of the macro-litter items were found in the form of fragments (mostly unidentifiable). The top ten identifiable objects or fragments include litter generated by industrial packaging, food consumption, personal hygiene, and fishing activities[5]. Of the identified objects, the disposables items are 10% in coastal environments and 17% in offshore.

Figure 1 - Map of the fixed transects monitored in coastal and offshore environments. Year 2022 (a) (N)



Source: ISPRA
(a) In blue, the river monitored at the river-mouth, results not reported in this document.

Figure 2 - Percentage of floating marine macro litter in the coastal and offshore environments of the Italian waters. Year 2019-2020 (percentage values)



Source: ISPRA

5 Mostly referring to aquaculture activities in the coastal environment and fish boxes in the offshore environment.

GOAL 15

PROTECT, RESTORE AND PROMOTE SUSTAINABLE USE OF TERRESTRIAL ECOSYSTEMS[1]

In brief

- In 2022, protected areas cover 21.7 percent of the national territory and include only part (on average, 75.9 percent) of the 172 Key Biodiversity Areas.
- Between 2012 and 2021, the green cover of mountain areas decreased by 0.3 p.p. (about 4,600 hectares per year). The losses are concentrated in the Islands and in the North-West, especially in the area below 1,000 m above sea level, which is most affected by land consumption.
- In 2021, certified forest areas increased by 0.8% (+18.8% since 2011). Despite this, Italy remains among the EU countries where sustainability certification is less in use in relation to the extent of forest areas.
- Spreading of alien species - a major threat to biodiversity - shows signs of slowing down for the first time: an average of 11.5 new species per year were identified in the decade 2012-2021, compared to 12.4 in the previous decade.

The statistical measures released by Istat for Goal 15 are twenty-two and refer to ten UN-IAEG-SDGs indicators (Table 15.1).

1 This section was edited by Luigi Costanzo.

Table 15.1 - Statistical measures released by Istat, taxonomy compared to SDGs indicators, variations compared to the previous year and to 10 years before and convergence among regions

Ref. SDG	INDICATOR	Compared to SDG indicator	Value	VARIATIONS		CONVERGENCE AMONG REGIONS compared to 10 years before
				Compared to previous year	Compared to 10 years before	
15.1.1	Forest area as a proportion of total land area					
	Forest area as a proportion of total land area (FAO-INFC, 2020, percentage values)	Identical	31.7			--
	Forest area index (Istat-ISPRA, processing of data from FAO and National Forest and Carbon Sink Inventory, 2020, percentage values)	National context	37.8			--
15.1.2	Proportion of important sites for terrestrial and freshwater biodiversity that are covered by protected areas, by ecosystem type					
	Average proportion of Terrestrial Key Biodiversity Areas (KBAs) covered by protected areas (BirdLife International, IUCN and UNEP-WCMC, 2022, percentage values)	Identical	75.9			--
	Average proportion of Freshwater Key Biodiversity Areas (KBAs) covered by protected areas (BirdLife International, IUCN and UNEP-WCMC, 2022, percentage values)	Identical	85.2			--
	Protected natural areas (Istat, processing of data from Ministry of the Environment and Energy Security, 2022, percentage values)	National context	21.7			=
15.2.1	Progress towards sustainable forest management					
	Forest area net change rate (FAO, 2020, percentage values)	Identical	0.57	--		--
	Above-ground biomass in forest (FAO, 2015, tonne per hectare)	Identical	110.6	--		--
	Proportion of forest area within legally established protected areas (FAO, 2020, percentage values)	Identical	35.1			--
	Forest area certified under an independent verification scheme (Istat-ISPRA, processing of data from FSC Italy and PEFC Italy, 2021, thousand hectares)	Identical	930			--
15.3.1	Proportion of land that is degraded over total land area					
	Soil sealing from artificial land cover (ISPRA, 2021, percentage values)	Proxy	7.21		(a)	=
	Fragmentation of natural and agricultural land (ISPRA, 2021, percentage values)	National context	44.7		(a)	=
15.4.1	Coverage by protected areas of important sites for mountain biodiversity					
	Average Proportion of Mountain Key Biodiversity Areas (KBAs) covered by protected areas (BirdLife International, IUCN and UNEP-WCMC, 2022, percentage values)	Identical	75.5			--
15.4.2	Mountain Green Cover Index					
	Mountain Green Cover Index (ISPRA, 2020, percentage values)	Proxy	90.2		(a)	=
15.5.1	Red List Index					
	Proportion of species threatened with extinction, by level of the threat: Vertebrates, terrestrial species (ISPRA, 2013, percentage values)	Proxy	24.3	--	--	--
	Proportion of species threatened with extinction, by level of the threat: Dragonflies (Odonata) (ISPRA, 2014, percentage values)	Proxy	11.2	--	--	--
	Proportion of species threatened with extinction, by level of the threat: Saproxylic Beetles (ISPRA, 2014, percentage values)	Proxy	21.0	--	--	--
	Proportion of species threatened with extinction, by level of the threat: Butterflies (Lepidoptera Ropalocera) (ISPRA, 2015, percentage values)	Proxy	6.3	--	--	--
	Proportion of species threatened with extinction, by level of the threat: Bees (ISPRA, 2018, percentage values)	Proxy	13.9	--	--	--
	Proportion of species threatened with extinction, by level of the threat: Birds (ISPRA, 2019, percentage values)	Proxy	26.1	--	--	--
15.7.1 15.c.1	Proportion of traded wildlife that was poached or illicitly trafficked					
	Checks done in application of the CITES (ISPRA, processing of data from CFS and CUTFAA, 2016, N.)	Proxy	67,683		--	--
	Offences detected in application of the CITES (ISPRA, processing of data from CFS and CUTFAA, 2021, N.)	Proxy	546			--
15.8.1	Proportion of countries adopting relevant national legislation and adequately resourcing the prevention or control of invasive alien species					
	Spread of alien animal and plant species (ISPRA, 2021, N.)	National context	674			--

Legend

- IMPROVEMENT
- STABILITY
- DETERIORATION
- -- NOT AVAILABLE / NOT SIGNIFICANT
- ⇒⇐ CONVERGENCE
- = STABILITY
- ⇐⇒ DIVERGENCE

Notes

(a) Variation compared to 2012

Coverage of protected areas to be increased in view of the 2030 target

In 2022, the Italian system of natural protected areas covered 21.7% of national territory[2] and included, on average, 75.9% of the 172 Key Biodiversity Areas (KBAs) surveyed in our country (Figure 15.1)[3].

Figure 15.1 - Key Biodiversity Areas. Year 2022

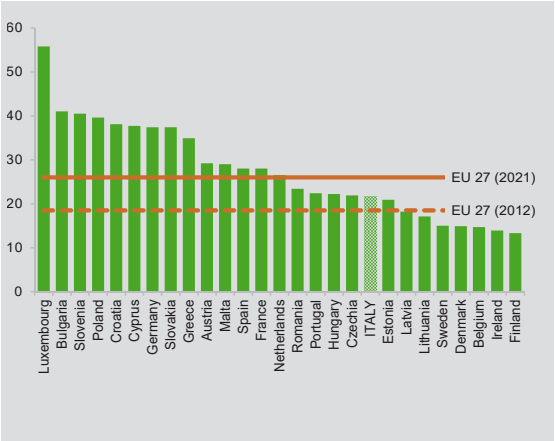
Fonte: World Database of Key Biodiversity Areas

2 Total land area, net of overlapping, of the sites included in the Official list of protected natural areas (EUAP, G.U. no.125 of 31/5/2010) and/or belonging to the Natura 2000 network (Sites of Community importance and Special areas of conservation according to the Directive 92/43/CEE "Habitat"; Special protection areas according to the Directive 2009/147/CE "Birds").

3 The KBAs, surveyed by a network of academic institutions and governmental and non-governmental organisations (KBA Partnership), are defined as "sites contributing significantly to the global persistence of biodiversity" (IUCN. 2016. *A Global Standard for the Identification of Key Biodiversity Areas*. Gland, Switzerland: IUCN). The overall coverage rate of the KBAs from protected areas is the average of the rates of the individual areas, not weighted by their area.

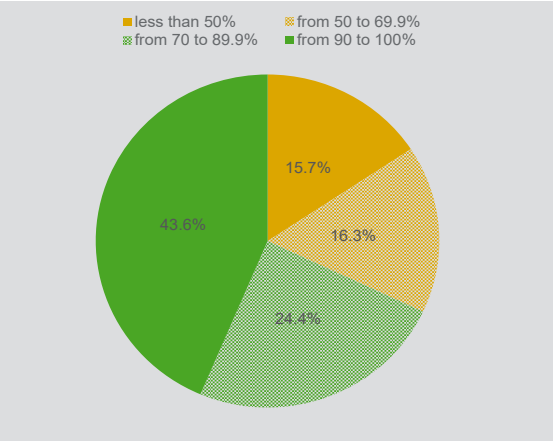
The territorial coverage of protected areas, however, has remained substantially unchanged over the last ten years and is proportionally lower than the EU27 average, which rose from 18.5% in 2012 to 26% in 2021 (Figure 15.2). Besides, in Italy only 43.6% of the KBAs fell within a protected area for at least 90% of their area (Figure 15.3). In accordance with the European Biodiversity Strategy, Italy plans to expand the network of protected areas to cover at least 30% of the national territory by 2030.

Figure 15.2 - Protected natural areas, by country. Year 2021 and comparison between 2012 and 2021 average values (percentage of land area)



Source: European Environment Agency (Italy: Istat, processing of data from Ministry of the Environment and Energy Security)

Figure 15.3 - Key Biodiversity Areas, by degree of coverage by protected areas. Year 2022 (percentage values)



Source: World Database of Key Biodiversity Areas

Declining vegetation cover in mountain areas

The Mountain green cover index, which monitors the changes in vegetation cover in six elevation bands over 300 m above sea level (a.s.l.), was 90.2% in 2021, decreasing by 0.3 percentage points compared to 2012. This equals an average loss of about 4,600 hectares per year of vegetated areas over the period, albeit such dynamic has significantly slowed down after 2018 (Figure 15.4). Losses concentrated in the Islands (-0.8 p.p.) and in the North-West (-0.5 p.p.), were milder in the South and nearly null in the North-East and the Centre (Figure 15.5). A breakdown by altitude bands shows that about 80% of the loss of vegetation cover occurred in the lowest band (up to 1,000 m a.s.l.), which is most affected by land consumption[4].

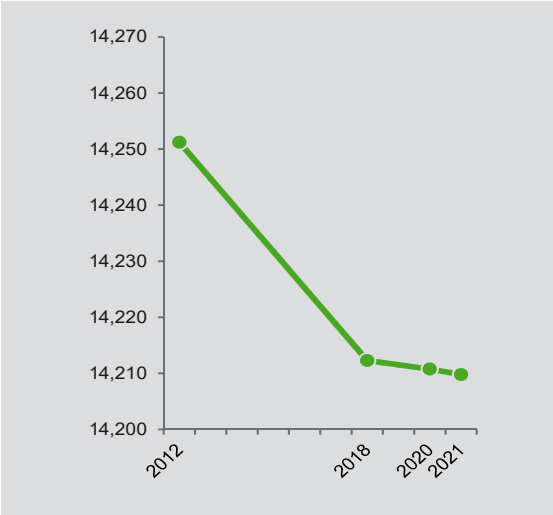
Italy ranked among the last in the EU for forest area certification

Certified forest areas in Italy were estimated to cover about 930 thousand hectares in 2021, marking a growth by 0.8% compared to previous year, and by 18.8% compared to 2011[5].

4 See ISPRA. 2023. *Environmental Data Yearbook*: https://indicatoriambientali.isprambiente.it/sys_ind/1030.

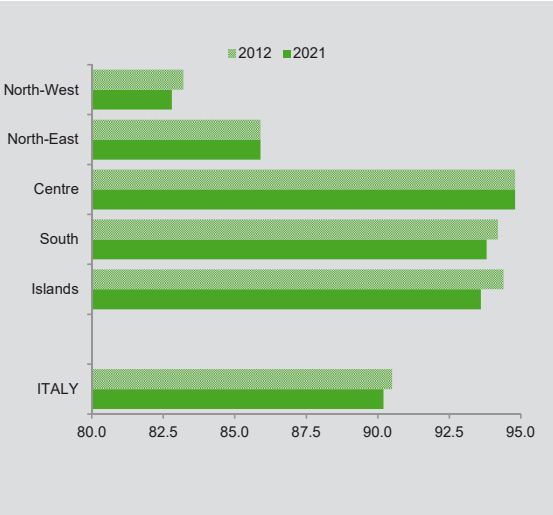
5 Forest certification is a voluntary process, through which forestry companies are allowed by accredited bodies to use a logo, certifying that their production processes meet some standards of environmental protection, social equity and economic efficiency. Two certification bodies operate in Italy, applying different schemes: the Programme for Endorsement of Forest Certification schemes (PEFC) and the Forest Stewardship Council (FSC).

Figure 15.4 - Vegetation cover in mountain areas. Years 2012-2021
(thousand hectares)



Sourse: ISPRA

Figure 15.5 - Mountain green cover index, by geographical area. Years 2012 and 2021
(percentage of land area)



Sourse: ISPRA

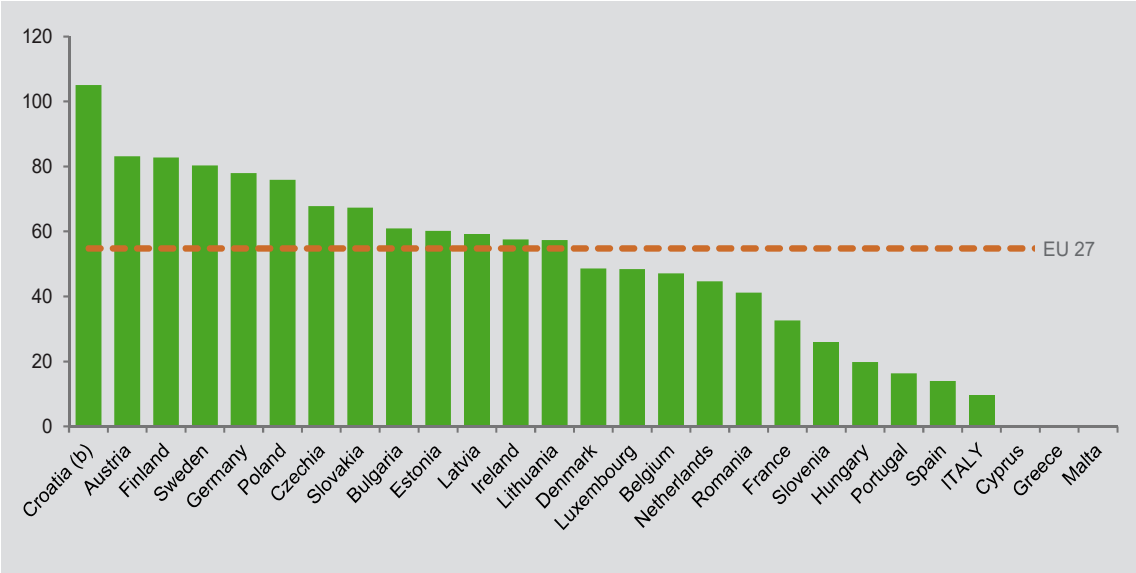
Despite such increase, their area remained modest in relation to the overall forest area, at least in the European context (about 10 hectares every 100, while the EU27 average was 54.8; Figure 15.6). An increase in domestic timber production, in areas managed according to sustainability criteria, may contribute to both a recovery of degraded woods and semi-natural areas, and a reduction in imports of wood and wood products (increased by 11.5% between 2016 and 2019)[6], through which Italy transfers abroad part of the pressure on forest resources generated by its own economic system[7].

First signs of a slowdown in the spread of alien species

According to ISPRA estimates, in 2021 the invasive alien species present over the national territory, introduced intentionally or accidentally by man since 1900, were 674: a number that doubled in the past thirty years[8]. However, the spread of these species, posing a major threat to biodiversity, shows for the first time some signs of a slowdown. In 2021, in fact, only three new species were detected in Italy: the lowest number since 1968. Relatively low numbers (from eight to nine species per year) had been recorded also in the previous three years. Therefore, the average of the decade 2012-2021 stood at 11.5 new species per year, against 12.4 of the previous decade (Figure 15.7). This is undoubtedly good news, even though the impact on ecosystems is measured in terms of species present (whose numbers keep rising, albeit by a few units per year).

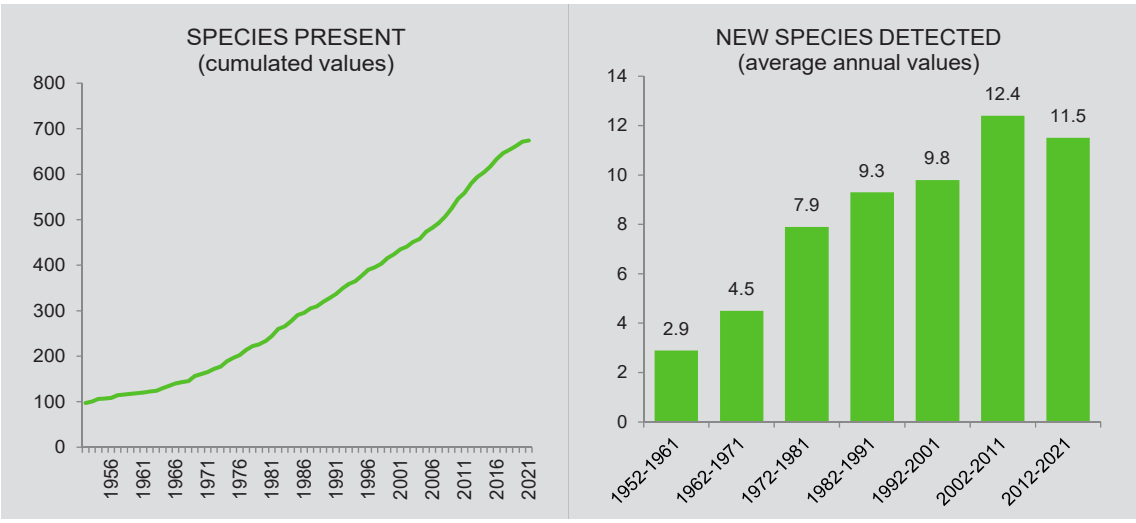
6 Direct input of materials from the rest of the world. Source: Istat, *Material Flow Accounts*.
7 See Istat. 2023. *2022 SDGs Report*. Roma: Istat, Goal 5, paragraph *The growth of woodlands in Italy: a problem of adapting global indicators to the national context* (p. 165). https://www.istat.it/en/archivio/284043.
8 In 1991, the alien species present in Italy were 337. Source: ISPRA, *Environmental Data Yearbook*. Data refer only to the species for which the year of introduction is known, thus providing an estimate by default.

Figure 15.6 - Forest area certified under an independent verification scheme, by EU27 country. Year 2021 (per 100 hectares of forest area) (a)



Source: Istat, processing of data from FAO, FSC-Italy and PEFC-Italy
(a) The indicator is not a composition ratio, as certified areas may include areas used for timber production that are not classified as forest areas. Forest areas used for calculation refer to 2020.

Figure 15.7 - Spread of alien animal and plant species (a). Years 1952-2021 (number of species present and average annual number of new species detected)



Source: ISPRA
(a) Only species for which the year of introduction (after 1900) is known are considered.

Assessing land degradation: towards the implementation of a composite indicator according to the UNCCD methodology[1]

Land degradation is an extremely complex phenomenon, affected by many interdependent factors. The quality of a soil can be represented through physical, chemical or biological parameters, but a universal scientific consensus on its measurement has not yet been reached. The UN Statistical Commission has defined SDG indicator 15.3.1 as a percentage of degraded areas over the national territory, based on the methodology proposed by the United Nations Convention to Combat Desertification (UNCCD), the international reference body for target 15.3. The UNCCD methodology provides for the combined use of three sub-indicators: land cover and its changes over time, soil productivity and organic carbon content. Individual countries are allowed to integrate these measures with other sub-indicators, considered relevant at the local level.

At present, indicator 15.3.1 is partially covered for Italy by two statistical measures, referring to some aspects of land degradation: soil sealing from artificial land cover (partially included in land consumption) and the fragmentation of natural and agricultural land. Both measures are produced by ISPRA, which is also implementing an overall indicator according to the UNCDD methodology, adapted to the Italian context, using as a source of information for the three sub-indicators:

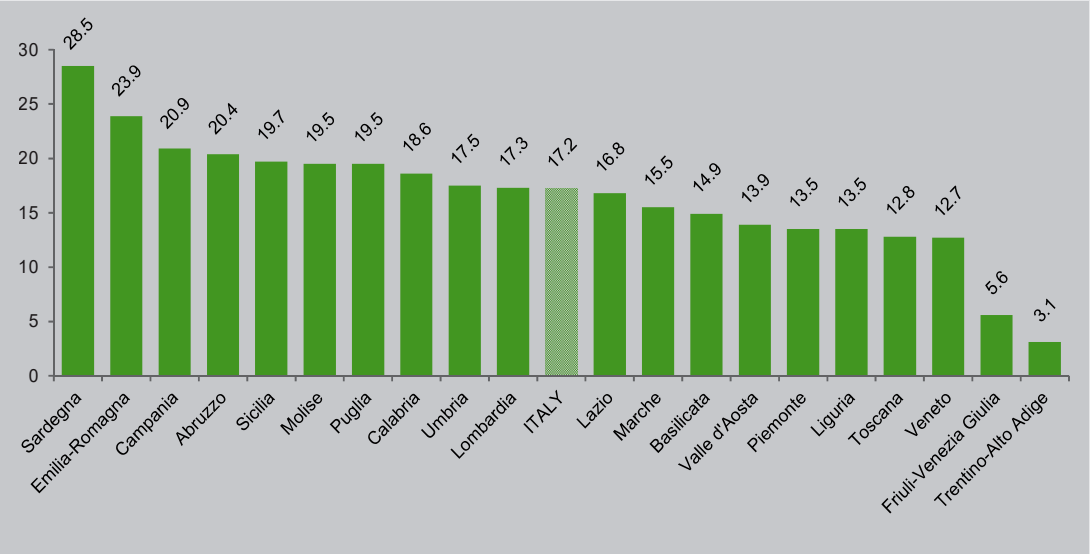
- Land use changes over the period 2000-2018[2] and soil sealing over the period 2006-2021[3];
- Soil productivity trends, estimated through the Water use efficiency index[4], integrated with a comparison between recent and past productivity and a further comparison with values obtained in bioclimatic areas characterised by similar soil types and vegetation coverage[5];
- Changes in carbon stock, estimated through the land use changes, based on the mapping developed within the Global Soil Partnership[6].

The indicator quantifies the areas degraded during a baseline period (2000-2015), and a following reporting period (2016-2019), by at least one of the three sub-indicators examined (according to the so-called "one out, all out" criterion)[7]. The first results provide, at national level, an estimated percentage of degraded land of 17.2%, net of water bodies, with regional values particularly high in Sardegna (28.5%) and Emilia-Romagna (Figure 1).

The methodology proposed for indicator 15.3.1 has been supplemented, for the Italian territory, with some additional measures, detected during the reporting period and mainly linked to anthropogenic activities and indirect effects of land consumption. Six indicators were considered: land fragmentation, potential impact of land consumption (60 m buffer around the soil sealed during the reference period), loss of habitat quality, areas with high and medium density of artificial coverage, increase of non-sealed spaces with an area of less than 1.000 m², presence of areas covered by forest fires.

1 This section was edited by Marco Di Leginio, Michele Munafò and Nicola Riitano (ISPRA) with contributions by Luigi Costanzo.
2 ISPRA, *Corine Land Cover, Years* 2000, 2012 and 2018.
3 ISPRA-SNPA. 2022. *Carta nazionale del consumo di suolo.*
4 Ratio of the Normalised difference vegetation index to the evapotranspiration.
5 Processing of Copernicus data.
6 FAO-ITPS. 2018. *Global Soil Organic Carbon Map.*
7 According to this criterion, even the negative assessment of only one of the *n* indicators considered, entails the negative assessment of the state of the observation unit. Therefore, the state of a unit gets a positive assessment only if assessment is positive for all the indicators considered.

Figure 1 - Share of degraded land, net of water bodies, according to the UNCCD methodology for SDG indicator 15.3.1, by region. Year 2019 (a) (percentage values)



Sourse: ISPRA
(a) Areas degraded over the 2000-2015 period + areas degraded over the 2016-2019 period by at least one sub-indicator.

All degradation factors were analysed through a spatial overlap, to obtain an overall estimate of the area where land degradation increased due to one or more causes over the period 2016-2019. The results show an increase of about 33,400 km², equal to about one-tenth of the national territory, although most of the degradation was caused by only one factor. The area affected by two or more degradation factors was about 2.300 km².

The methodology proposed by the United Nations must necessarily follow a universal approach, using global datasets with a high degree of comparability. However, it considers only the most macroscopic aspects of the phenomenon (such as soil productivity, changes in land use/cover and soil organic matter), neglecting other site-specific factors, such as salinisation, compaction and soil contamination processes, on which information is often lacking. The trade-off between global comparability and comprehensiveness/accuracy could be overcome with the combined use of multiple synthetic indices, representative of both soil health and existing pedo-climatic conditions, and land use management. With this in mind, and pending a national soil monitoring network, ISPRA is working on the development of other indicators based on remote sensing, aimed at improving, in particular, soil productivity evaluation, in order to provide a better assessment of land degradation over the national territory.

GOAL 16

PROMOTE PEACEFUL AND INCLUSIVE SOCIETIES FOR SUSTAINABLE DEVELOPMENT; MAKE ACCESS TO JUSTICE AVAILABLE TO ALL AND CREATE EFFECTIVE, ACCOUNTABLE AND INCLUSIVE BODIES AT ALL LEVELS[1]

In brief

- In 2021, 304 voluntary intentional homicides were committed in Italy: a marginal increase compared to 2020, but not compared to 2019.
- In 2022, prison density index slightly increased compared to 2021, reaching 110 detainees for 100 available places.
- In 2022 the unsentenced detainees decreased: from 15.8% to 15.1% of the overall prison population.
- In 2022, as in the previous year, the length of civil proceedings in ordinary courts increased by 7 days.
- In 2022, trust in police and fire brigade slightly decreased, recording a score of 7.4 out of 10. Stable – but low (4.8 out of 10) – the trust in the judicial system.

The statistical measures released by Istat for Goal 16 are eighteen and refer to nine UN-IAEG-SDGs indicators (Table 16.1).

1 This section was edited by Alberto Violante with contributions by Giovanna Tagliacozzo, Barbara Baldazzi, Maria Giuseppina Muratore and Franco Turetta.

Table 16.1 - Statistical measures released by Istat, taxonomy compared to SDGs indicators, last available value and variations compared to the previous year and to 10 years before and and convergence among regions

Ref. SDG	INDICATOR	Compared to SDG indicator	Value	VARIATIONS		CONVERGENCE BETWEEN REGIONS compared to 10 years before
				Compared to the previous years	Compared to 10 years before	
16.1.1	Number of victims of intentional homicide per 100,000 population, by gender and age					
	Intentional homicide rate (Ministry of the Interior, 2021, Number of intentional homicide on total population per 100,000)	Identical	0.5			=
16.1.3	Proportion of population subjected to (a) physical violence (b) psychological violence and (c) sexual violence in the previous 12 months.					
	Proportion of persons victims of robbery in the previous 12 months (Istat, 2015/16, percentage values)	Partial	0.2	--	--	--
	Proportion of persons victims of physical assault in the previous 12 months (Istat, 2015/16, percentage values)	Partial	1.2	--	--	--
16.1.4	Proportion of population that feel safe walking alone around the area they live					
	Perception of safety walking alone in the dark (Istat, 2022, percentage values)	Identical	60.6		(a)	⇒⇐
16.2.3	Proportion of young women and men aged 18-29 years who experienced sexual violence by age 18					
	Proportion of young women and men aged 18-29 years who experienced sexual violence by age 18 (Istat, 2015/16, percentage values)	Identical	Women 4.1 Men 0.7	--	--	--
16.3.1	Proportion of victims of violence in the previous 12 months who reported their victimization to competent authorities or other officially recognized conflict resolution mechanism					
	Reporting rate of physical assault on population aged 14-65 years old (Istat, 2015/16, percentage values)	Partial	27.0	--	--	--
16.3.2	Unsentenced detainees as a proportion of overall prison population					
	Percentage of adult unsentenced detainees out of overall prison population (Ministry of Justice - Department of prison administration, 2022, percentage values)	Identical	15.1			=
	Juveniles and young adults unsentenced detainees in detention centres for juveniles and young adults (Ministry of Justice - Department of juvenile justice, 2021,percentage values)	Identical	73.2		(a)	--
	Prison density (Istat processing on data of Ministry of Justice - Department of prison administration, 2022, percentage values)	Context indicator	109.5			⇒⇐
16.5.1	Proportion of persons who had at least one contact with a public official and who paid a bribe to a public official, or were asked for a bribe by those public officials, during the previous 12 months					
	Households that received requests for money, favours or other in exchange for facilities or services: at least one case of corruption in their lifetime (Istat, 2015/16, percentage values) (Istat, 2015/16, percentage values)	Proxy	7.9	--	--	--
	Households that received requests for money, favours or other in exchange for facilities or services: at least one case of corruption in the last 3 years (Istat, 2015/16, percentage values)	Proxy	1.7	--	--	--
	Households that received requests for money, favours or other in exchange for facilities or services: at least one case of corruption in the last 12 months (Istat, 2015/16, percentage values)	Proxy	1.2	--	--	--
16.6.2	Proportion of population satisfied with their last experience of public services					
	Trust in judicial system (Istat, 2022, mean score)	Partial	4.8			⇒⇐
	Trust in Police and Fire Brigades (Istat, 2022, mean score)	Partial	7.4			⇒⇐
	Composite index of service accesibility (Istat, 2019-2021, percentage values)	Partial	5.7			⇐⇒
	Length of civil proceedings (Ministry of Justice - Judicial organization Department, 2022, number of days)	Context indicator	433			⇒⇐
16.7.1	Proportions of positions in national and local institutions, including (a) the legislatures; (b) the public service; and (c) the judiciary, compared to national distributions, by sex, age, persons with disabilities and population groups					
	Women and political representation in Parliament (Istat processing on data from Chamber of Deputies and Senate, 2022, percentage value)	Identical	33.7	(b)	(c)	=
	Youth and political representation in Parliament (Istat processing on data from Chamber of Deputies and Senate, 2022, percentage value)	Identical	23.5	(b)	--	⇐⇒

Legend

- IMPROVEMENT
- STABILITY
- DETERIORATION
- -- NOT AVAILABLE / NOT SIGNIFICANT
- ⇒⇐ CONVERGENCE
- = STABILITY
- ⇐⇒ DIVERGENCE

Notes

(a) Variation compared to 2013
(b) Variation compared to 2018
(c) Variation compared to 2014

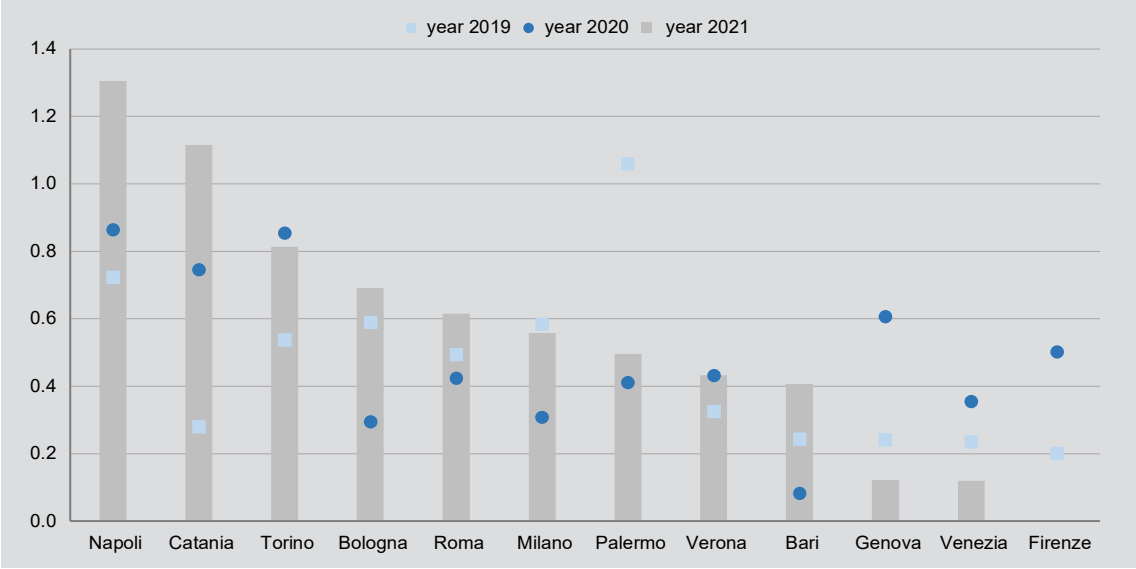
The number of homicides was stable

In 2021, in Italy, there were 304 intentional homicides, 0.5 per 100,000 inhabitants. The number of homicides was 15 units higher than the previous year. It is the first time since the mid-2000s that an increase in the number of homicides has been recorded, but it should be considered that 2020 was a year affected by mobility restrictions related to the pandemic, with a decrease of 56 homicides.

In international comparisons, the homicide rate per population in Italy is among the lowest in Europe, which is already the continent (after Asia) with the fewest voluntary homicides. In 2021, the component of homicides attributable to criminal organisations (0.04) is also very low, and only marginally higher than the Spanish one (0.01) and lower than France (0.09).

In 2021, the homicide rate was higher than the national average in 6 out of the 12 provinces surrounding the 12 cities classified by Istat as major municipalities (with over 250,000 residents). In Napoli, Catania, Bologna, Roma, and Bari, 2021 was characterised by a higher rate of victims per population compared to both 2019 and 2020 (Figure 16.1). In Genova and Venezia, the phenomenon decreased even compared to the year of the pandemic, and it is absent in Firenze and the municipalities of the province.

Figure 16.1 - Intentional homicide rate, by metropolitan area. Year 2020 (per 100,000 inhabitants)



Source: Ministry of the Interior

In 2021, the homicide rate for male victims (0.6) was higher than that for female victims (0.4). Homicides of men have decreased by two-thirds compared to the first year available in the historical series (2004), going from 1.8 to 0.6. Homicides of women, primarily occurring in domestic settings (see Goal 5), have only decreased by one-third in the same period, going from 0.6 to 0.4, indicating a greater persistence of the phenomenon.

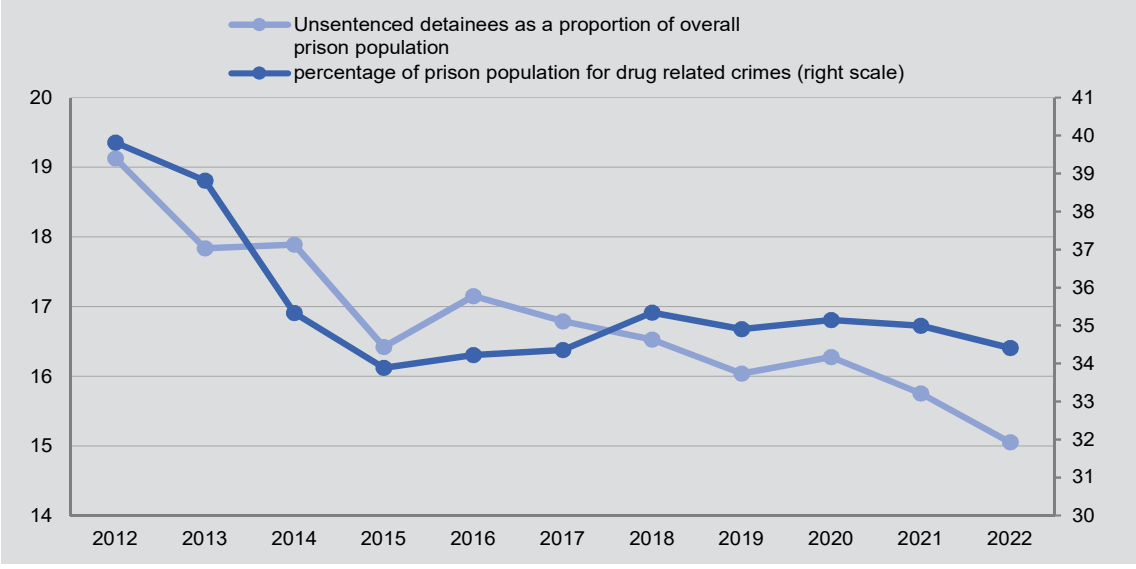
Marginal reduction in prison attendance of unsentenced detainees

As of 31 December 2022, the Ministry of Justice recorded 56,196 people detained in adult correctional institutions (in 2021 they were 54,134), of whom 53,831 were men and 2,365 were women. The increase of prison population was 3.8%, but the increase of female inmates was 5.4% There were 8,458 inmates awaiting first trial, equal to 15.0% of the whole convicted population, which was marginally lower - for the second consecutive year - than in 2021.

After the pandemic, the prison population rose again, due to an increase of people entering the prison from freedom (+4.3%). In 2022, in fact, 38,125 people entered prison from freedom2. Despite this, the weight of unsentenced detainees has decreased, because the numbers of admissions do not take into account those entering home detention directly (3,983 in 2022, 35.6% of the population detained under house arrest), relieving Italian penitentiaries from a more serious overcrowding.

The trend in the number of unsentenced detainees is historically correlated to the presence of prisoners arrested for violation of the Consolidated Law on narcotics, representing about a third of the prison population (34.4% in 2022). It can be seen that as the use of pre-trial detention diminishes, in 2021-2022 unsentenced detainees declined while imprisonment for drug offences remains relatively important (Figure 16.2).

Figure 16.2 - Unsentenced detainees as a proportion of overall prison population, by age class. Year 2021
(percentage values)



Source: Ministry of Justice

In 2022 the crowding index, calculated as the average number of prisoners present per 100 regulatory places, was equal to 109.5 (it was 106.5 in 2021). This is the second consecutive year that an increase was recorded, even if the value remained lower than the years immediately before the pandemic.

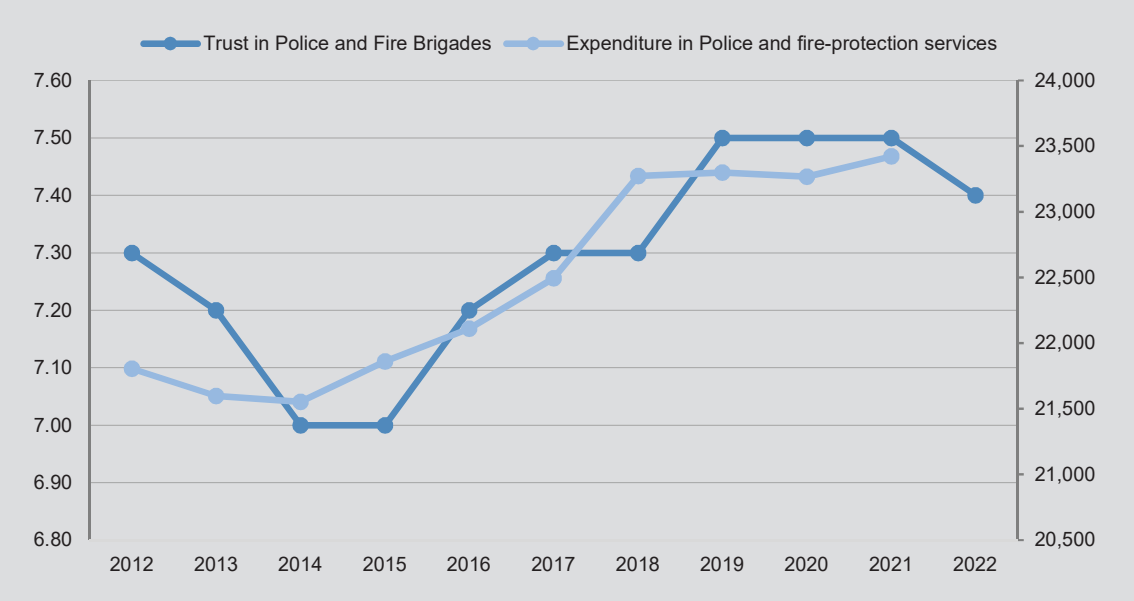
2 Source: Ministry of Justice: Department of Prison administration.

Slight increase in the duration of trials. Trust in the justice system remained low

After ten years of constant improvement, the pandemic has reversed the process of reducing the length to complete civil proceedings by ordinary courts. The average trial duration in 2022 was 433 days, 7 days more than the previous year.

As is often the case when the data is worsening, regional disparities widened, in 2022 just as in 2021, between the North and South and Islands, which suffered a higher increase in the duration (+13 days compared to 2021), compared to the northern regions having a stable duration and the Central regions (+5 days).

Figure 16.3 - Trust in the Police and Fire Brigade and spending on Police services. Years 2012-2022
(number of days)



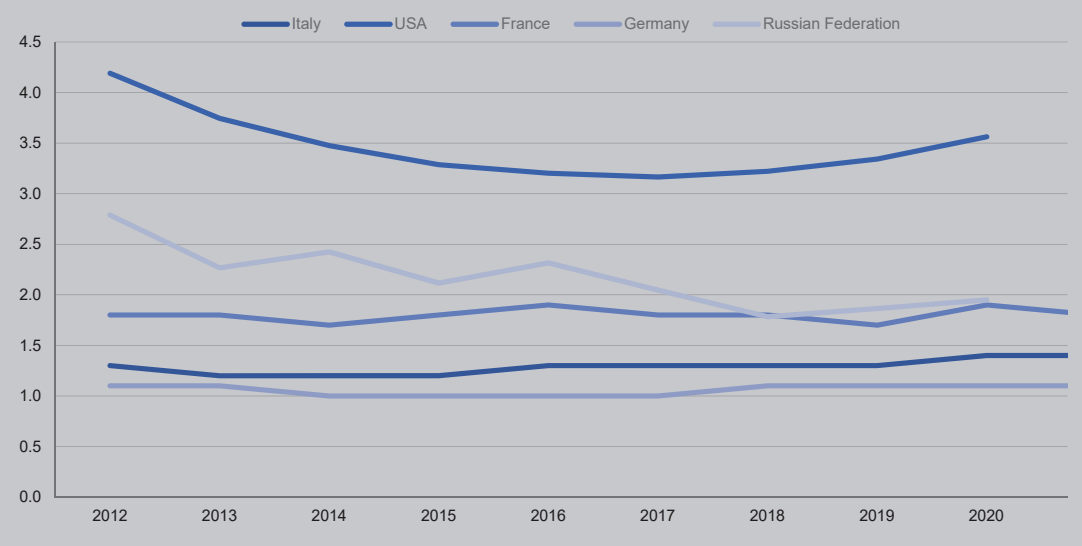
Source: Istat,

Trust in the judicial system remained stable, at a low level (4.8 out of 10); on the other hand, trust in the Police and Fire Brigade decreased slightly, starting from a high score (from 7.5 to 7.4). In general, trust in public security organs after showing a negative trend at the beginning of the past decade, has grown again. Such trend is associated with a similar one, followed by spending on Police services and fighting fires (Figure 16.3).

Defence related to public expenditure[1]

Goal 16 is dedicated to defending human rights and building strong institutions able to guarantee peace and eradicate all forms of violence. Target 16.6 deals with developing effective, accountable and transparent institutions at all levels, while target 16.4 is dedicated to significantly reduce, by 2030, the flow of arms on the planet. The amount of military expenditure made each year by governments is a relevant figure for both of these objectives: its transparency is, in fact, a milestone for which the United Nations has been striving for many years. An annual report from the Secretary General has been published since 1981, in order to monitor the trend of expenditure on armaments. A relatively small number of Member States on that occasion communicate their accounts about defence and other military expenses, but several NGOs and research centres operating nationally and internationally publish updated estimates on the trend of military spending.
In this section, a comparative analysis of the military expenditure trend is proposed in recent years through the Classification of public expenditure by function (Cofog). The Cofog is a classification system that allows sorting the expenses of the Public Administrations (PA) according to the purpose for which they are carried out[2].
If defence spending is analysed as share of the GDP in a comparative framework, it becomes clear that the different economic weight of the countries is not sufficient to explain the difference (Figure 1).

Figure 1 - Defence expenditure as a share of GDP. Years 2012-2021 (percentage values)



Source: Eurostat and International Monetary Found

The United States, first, and then the Russian Federation and France showed the greatest incidence of defence expenditure compared to the other two European countries, due to maintenance of nuclear arsenals. Italy has been slightly above Germany since 2016. The last decade, consistently with a more general containment of public spending, have been years of overall disinvestment in military spending. Since 2018, to a varying extent, an increasing trend is noted, both for the United States and the Russian Federation, as much for Italy and France (Figure 1).

1 This section was edited by Maria Liviana Mattonetti with contributions by Alberto Violante.
2 It is organised into three levels: divisions, groups and classes. The divisions represent the main purposes, the groups and the classes represent the ways in which these aims are to be achieved. Defence, in which military expenditures are recorded, is one of the divisions of public expenditure.

In Italy, the defence spending of the Public Administrations is mainly concentrated in personnel expenses (for about three quarters in the first part of the considered decade; Table.1). During the decade, however, the investment trend absorbs a growing share, arriving at representing 46% of personnel expenses in 2021. If the information provided by Cofog is juxtaposed with the details of PA investments broken down by investment goods (Table 1), it can be seen that the overwhelming part of investment expenditure is armament expenditure, the amount of which has never fallen below 80% since 2015. After a slowdown in 2020, in the following year the expenditure for investments in armaments in absolute value reached the maximum, in line with the increase in arms expenditure that occurred worldwide in 2021[3].

Table 1 - Expenditure on compensation of employees and investments in the defence and armaments divisions. Years 2012-2021 (millions of euro and percentage values)

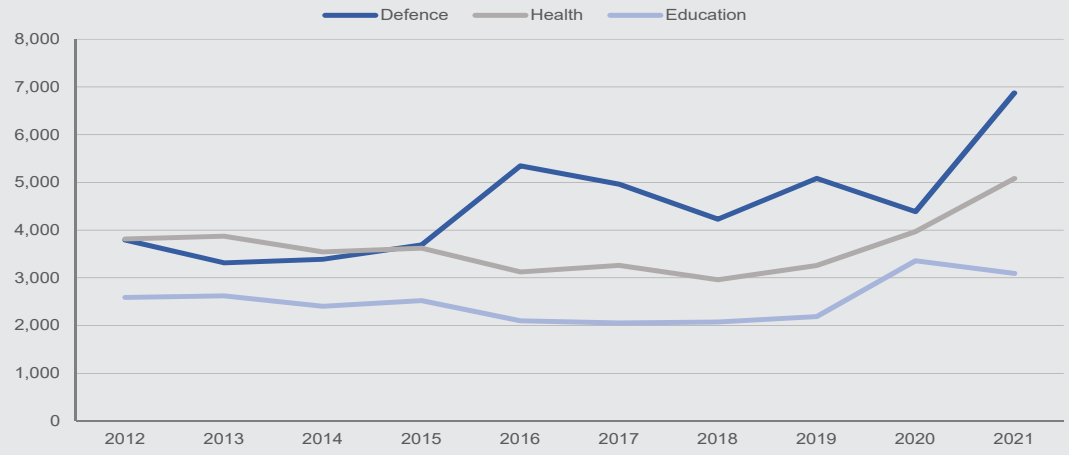
YEARS	Totale expenditure in Defence	Expenses for the employee's wages	Expenditure for investments in Defence	Investiments in arms	Percentual share of the investiments in defence on the expenses for employee's wages	Percentual share of expenses in Investiments in arms on the whole Investments in defence
2012	20837	14222	3793	2948	26.7	77.7
2013	19732	13935	3314	2189	23.8	66.1
2014	19342	13572	3388	2641	25.0	78.0
2015	19710	13659	3690	3168	27.0	85.9
2016	21975	14254	5345	4496	37.5	84.1
2017	22280	14583	4962	4050	34.0	81.6
2018	22193	15135	4230	3621	27.9	85.6
2019	22677	14988	5084	4261	33.9	83.8
2020	22581	14811	4386	3672	29.6	83.7
2021	24794	14983	6873	5652	45.9	82.2

Source: Istat National Accounts

Armaments therefore drove the growth in absolute expenditure for the defence division of Cofog. It should be noted that the trend of the share of public expenditure on defence is important because, given a certain ceiling expenditure, each unit used in a certain function cannot be used for another purpose, and represents, from the perspective of the entire public budget, an opportunity cost. The trend of expenditure for investments of several Cofog divisions (Figure 2), illustrates how a break is recognisable since 2016 (the year in which a slight recovery was observed in the portion of defence expenditure on the GDP). Investments in defence, not only have become clearly pre-eminent compared to those of the health function (they were already compared to those of the education function), but in the last year they have further increased their weight in public spending.

3 See SIPRI. 2022. SIPRI Yearbook 2022. https://www.sipri.org/yearbook/2022.

Figure 2 - Public investment in defence, education and health. Years 2012-2021 (millions of euro)



Source: Istat National Accounts

GOAL 17

STRENGTHENING MEANS OF IMPLEMENTATION AND RENEWING THE GLOBAL PARTNERSHIP FOR SUSTAINABLE DEVELOPMENT[1]

In brief

- In 2022, Italy was third in the EU27 ranking on tax revenue relative to GDP (more than 2 percentage points above the European average). The ratio of public administration tax revenues to GDP remained stable at 43.5% compared to 2021.
- Official Development Assistance (as a percentage of gross national income) in Italy grew in 2021, both overall (+0.7 p.p.) and as a share allocated to less developed countries (+0.2 p.p.).
- In 2022, remittances abroad exceeded 8 billion euro for the first time, an increase of 6.1% compared to 2021.
- Increasingly more Italians use the Internet (in 2022, 77.5% of people compared to 74.9% in 2021), although the territorial, gender and, above all, education gaps are still wide.
- In 2022, e-commerce declined: 37 out of every 100 people bought goods or services on the Internet, compared to 40 in 2021, although E-banking has spread rapidly (almost half of Internet users).

The statistical measures released by Istat for Goal 17 are ten and refer to five UN-IAEG-SDGs indicators (Table 17.1).

1 This section was edited by Leopoldo Nascia with contributions by Paola Ungaro.

Table 17.1 - Statistical measures released by Istat, taxonomy compared to SDGs indicators, variations compared to the previous year and to 10 years before and convergence among regions

Ref. SDG	INDICATOR	Compared to SDG indicator	Value	VARIATIONS		CONVERGENCE AMONG regions compared to 10 years before
				Compared to the previous years	Compared to 10 years before	
17.1.1	Total government revenue as a proportion of GDP, by source					
	Total government revenue as a proportion of GDP, by source (Istat, 2022, percentage values)	Proxy	43,5			--
17.2.1	Net official development assistance, total and to least developed countries, as a proportion of the Organization for Economic Cooperation and Development (OECD) Development Assistance Committee donors' gross national income (GNI)					
	Official Development Assistance as a proportion of gross national income (Ministry of Foreign Affairs and International Cooperation, 2022, percentage values)	Identical	0,3		(a)	--
	Official Development Assistance to Least Developed Countries as a proportion of gross national income (Ministry of Foreign Affairs and International Cooperation, 2021, percentage values)	Identical	0,04		(a)	--
17.3.2	Volume of remittances (in United States dollars) as a proportion of Total GDP					
	Foreign workers' remittances (Istat processing on Bank of Italy data, 2022, Millions euro (current prices).	Proxy	8.211,9			⇒⇐
	Foreign workers' remittances (Istat processing on Bank of Italy data, 2021, percentage values)	Proxy	(*)	--	--	⇒⇐
17.6.1	Fixed Internet broadband subscriptions per 100 inhabitants, by speed					
	Overall Fixed Very High Capacity Network (VHCN) coverage (Agcom, 2022, %)	Proxy	53,7		--	⇒⇐
	Households with Internet access (Istat, 2022, percentage values)	National context	91,5			⇒⇐
17.8.1	Proportion of individuals using the Internet					
	Individuals aged 6 years and over who used the Internet in the last 3 months (Istat, 2022, percentage values)	Identical	77,5			⇒⇐
	People who have ordered/purchased goods or services for private use on the internet in the last 3 months (Istat, 2022, percentage values)	National context	37,3			⇒⇐
	People who have carried out online banking transactions (internet banking) in the last 3 months (Istat, 2022, percentage values)	National context	48,4			⇒⇐

Legend

- IMPROVEMENT
- STABILITY
- DETERIORATION
- -- NOT AVAILABLE / NOT SIGNIFICANT
- ⇒⇐ CONVERGENCE
- = STABILITY
- ⇐⇒ DIVERGENCE

Notes

(a) Variation compared to 2013
(*) Refer to the table on www.istat.it

The ratio of public government tax revenues to GDP was stable compared to 2021

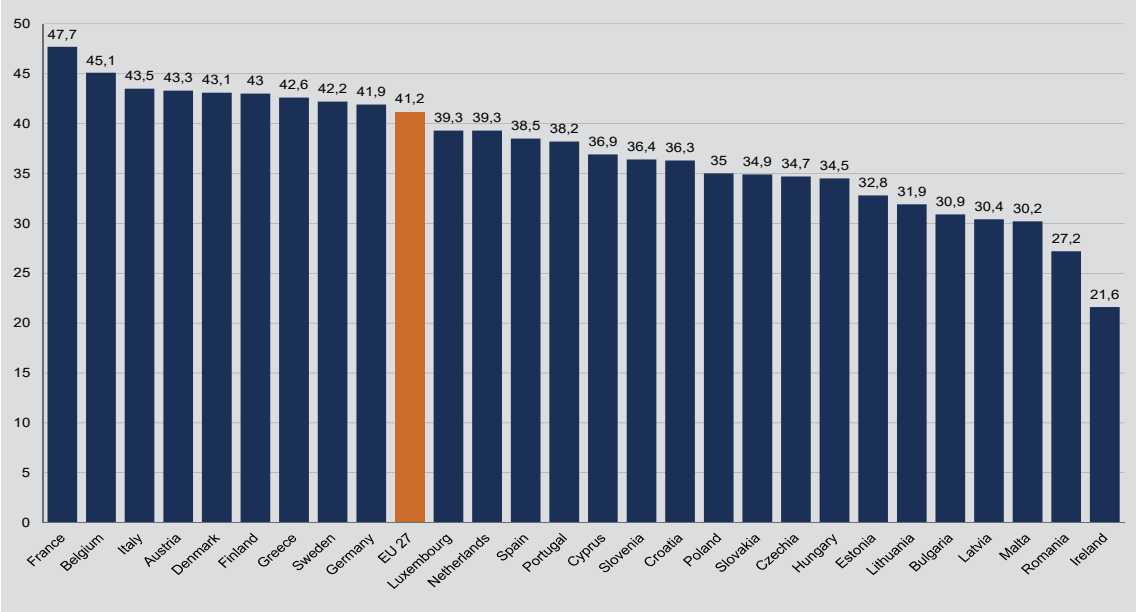
In 2022, public government revenues accounted for 43.5% of GDP, a stable value compared to 2021 (43.4%) higher than 2.2 percentage points compared to ten years ago. Since 2019, direct taxes were slightly higher than indirect taxes. They accounted jointly for most of the revenue of public administrations. Despite the reduction in excise duties on fuels and VAT on some energy raw materials, indirect taxes in 2022 remained stable at 14.5% of GDP.

After a decade of slight growth, social contributions remained stable too. In 2022, the sum of actual and figurative contributions reached 13.7% of GDP, lower than 0.1 percentage points compared to 2021 and higher than 0.4 percentage points compared to 2012.

Italy was the third country in the European Union for tax revenues compared to GDP

In 2022, for EU27 countries, the average share of public government tax revenues on GDP was 41.2%, lower than 2021 (-0.3 p.p.). Italy was among the countries of the European Union with the highest share of tax revenues on GDP, ranking in third position after France and Belgium, respectively with 47.7% and 45.1% of average share of public government tax revenues on GDP. (Figure 17.1).

Figure 17.1 - Total government revenue as a proportion of GDP, by country . Year 2022 (percentage values)



Source: Eurostat; Istat, National Accounts

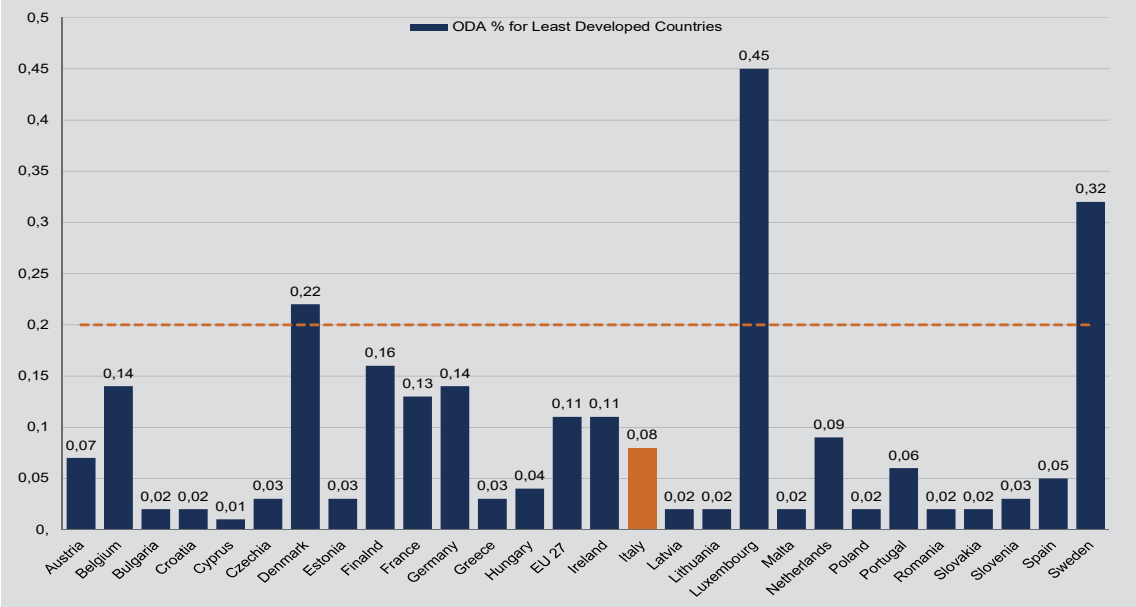
In 2021 and 2022 Official Development Assistance on gross national income grew

In Italy, the share of official development assistance (ODA) on gross national income (GNI) increased from 0.22% to 0.29%, but remained well below the EU27 average of 0.49%. This indicator continued to grow in 2022 to 0.32% of GNI. In 2021, only Luxembourg (0.99%), Sweden (0.91%), Germany (0.76%) and Denmark (0.71%) exceeded the required share of the 2030 Agenda adopted by the European Union (0.7%). In 2021, Italy recorded a share of ODA for the least developed countries on GNI of 0.08%, 2 percentage points higher than the previous year and below the EU27 average (0.11%; Figure 17.2). Only Luxembourg, 0.45%, Sweden, 0.32%, Denmark, 0.22%, and Finland, 0.16%, were above the European Union's required short-term share[2] for ODA for the least developed countries.

The flow of foreign workers' remittances has exceeded 8 billion euro

In 2022, foreign workers' remittances[3] in Italy exceeded 8 billion euro for the first time, an increase of 6.1% compared to 2021. More than half of foreign remittances (55.7%) came from the four regions with the largest number of immigrants: Lombardia (22.7%), Lazio (14.6%), Emilia-Romagna (10.2%) and Veneto (8.2%). A wide range of countries received foreign workers' remittances. Bangladesh (14.6%), Pakistan (8.5%) and the Philippines (7.6%) were the major destinations. Moreover, these countries have received a larger share of remittances compared to the previous year, 26.6% in 2021 and 30.7% in 2022 (see the paragraph *Remittances abroad during and after the pandemic*).

Figure 17.2 - ODA to Least Developed Countries to GDP, by country. Year 2021 (percentage values)



Source: Eurostat

2 The European Union's transposition of the Agenda 2030 share of ODA for Least Developed Countries has set a threshold target of 0.15-0.20% (on GNI) in the short term and 20% in 2030. Target 17.2 of the 2030 Agenda requires a threshold of 0.15-0.20% and an "encouragement" to reach 0.20% of GDP.

3 Foreign workers' remittances are the share of income saved by the foreign worker and delivered abroad to his family in his country of origin.

Increasingly more people have used Internet

In 2022, people using Internet continued to grow, confirming that the huge increase associated to the pandemic lockdown was not purely cyclical. The percentage of people aged 6 and over who have used the Internet in the last 3 months increased compared to the previous year. They amounted to 74.9% in 2021 and 77.5% in 2022. The gap between the South and Islands and the rest of the country persisted; nonetheless, it decreased compared to 2012; southern regions accounted for 72.6% of Internet users, compared with 80.4% in the northern regions and 78.4% of central regions. In 2022, the gender gap, which is unfavorable to women, was less pronounced than previous years. The gender gap has more than halved from 2012, 11.1 percentage points in 2012 and 5.7 p.p. in 2022. Among minors, Internet surfing reached very high percentages: 83.8% in the 6-10 age group and 97.9% in the 15-17 age group. Only 65 and older people recorded a share lower than 60% browsing on the Internet, although that percentage has constantly grown. By contrast, the older population continued to make little use of the Internet, accessed by 20.9% of residents over 75. The indicator still shows wide gaps by level of education. People with low educational attainment (64.1%) were well below average; conversely, high-education users reached 94.3%.

In 2022 E-commerce decreased

Internet has become a widespread channel for providing services and selling goods. In 2022, 37.3% of people purchased goods or services for private use in the last 3 months on Internet, a slightly lower share than 2021 (39.8%) and with a wide gap between the South and Islands and the rest of the country. E-commerce was more popular among people under the age of 45, and it declined with increasing age classes. This indicator shows a positive correlation by education. High education users into E-commerce were 58.4%, low education users were 20%.

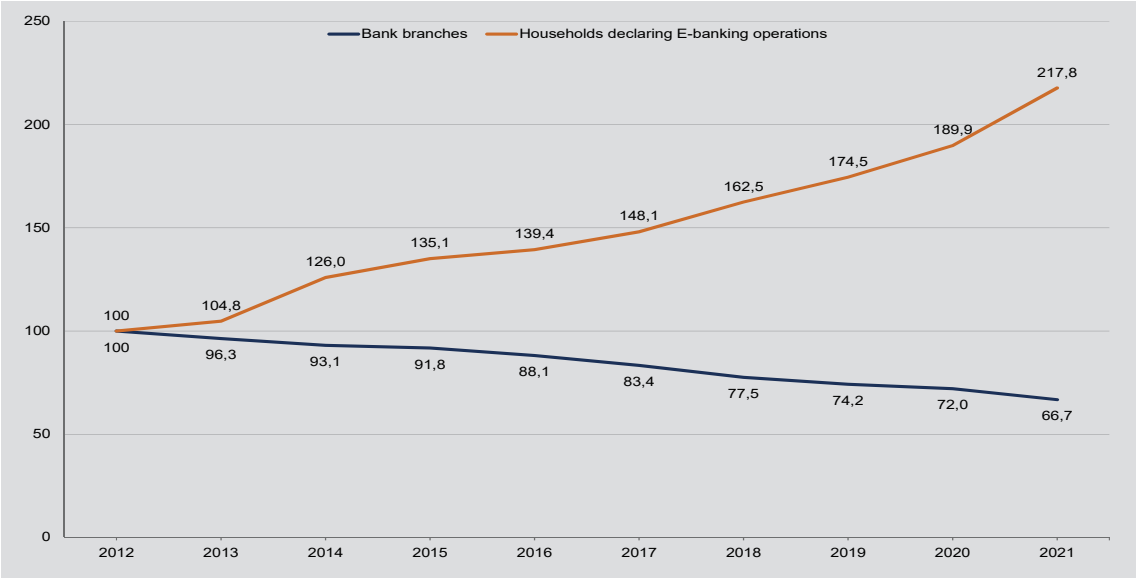
E-banking has spread rapidly

E-banking has become increasingly widespread over the years. In 2022, almost half of Internet users (48.6%) declared to have carried out online banking operations in the last 3 months.

With the increasing spread of online banking, bank branches in the territory have decreased sharply (see Goal 8). In relation to the population, bank branches operating in Italy fell from 54.7 per 100,000 inhabitants in 2012 to 35.7 in 2022. The downturn of bank branches per 100,000 inhabitants and the upswing of people into E-banking show the progressive virtualisation of banking operations (Figure 17.3). The pandemic has accelerated this process. In 2021, after the first phase of the pandemic, e-banking users increased by 14.7% and bank branches decreased by 7.8%.

In 2022, 74.4% of people with a high level of education used Internet to carry out banking operations, compared with 25.9% of people with a low level of education. E-banking was more widespread for people between 20 and 64 years old with percentages between 43% and 61%.

Figure 17.3 - People who carried out online banking transactions in the last 3 months and number of bank branches per 100,000 inhabitants. Years 2012-2022 (fixed base index numbers 2012=100)

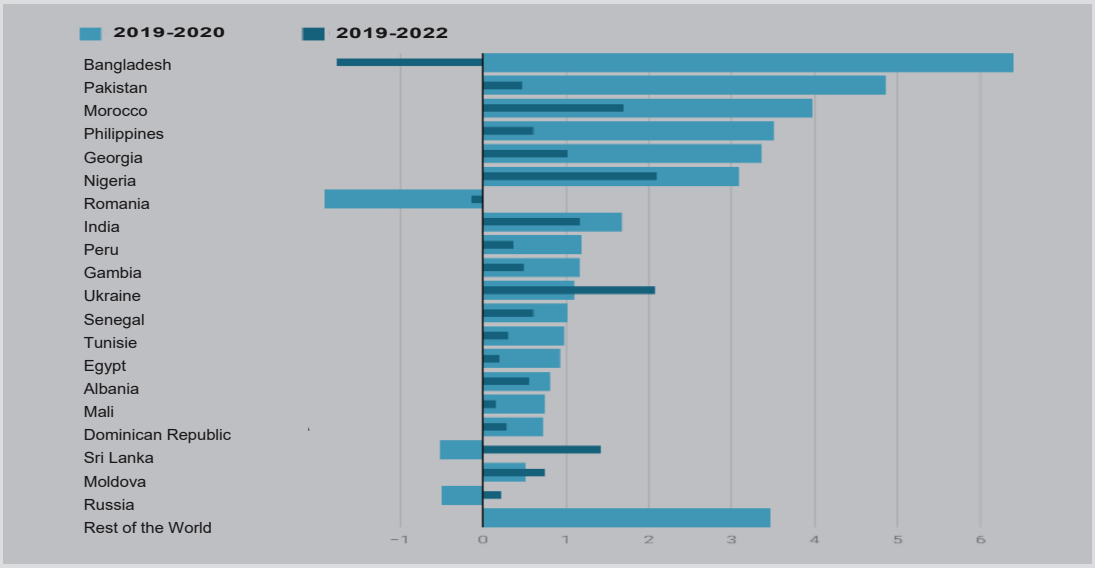


Source: Istat, Survey on Aspects of daily life; processing of data from Bank of Italy

Remittances abroad during and after the pandemic[1]

Year 2020 was unprecedented for the global economy. Pandemic mitigation measures have had adverse effects on GDP and employment in almost all major advanced economies. In accordance with this situation, expectations for migrants' remittances foresaw a sharp fall that did not occur. The global fall of migrants' remittances was only 1.5%, followed by a 9.9% recovery in 2021[2]. In some countries, such as Italy, in 2020 migrants' remittances recorded a positive sign: remittances by resident foreigners increased by 12.5%, and continued to grow in the following two years (+14.4% and +6.1%, respectively, in 2021 and 2022). In 2022, remittance flows increased mainly towards Bangladesh, Pakistan, Morocco and the Philippines (Figure 1). Among the largest receiving countries, only those to Romania and Sri Lanka experienced a significant fall. The growth of remittance outflows from Italy in the three-year period 2020-2022 occurred during a substantial stability of the resident foreign population. It resulted in a huge increase of per capita average values. Remittances increased from around 1,200 euro to more than 1,600 euro during the period 2019-2022.

Figure 1 - Contribution to remittance growth, by recipient country. Years 2019, 2020 and 2022 (a) (percentage values)



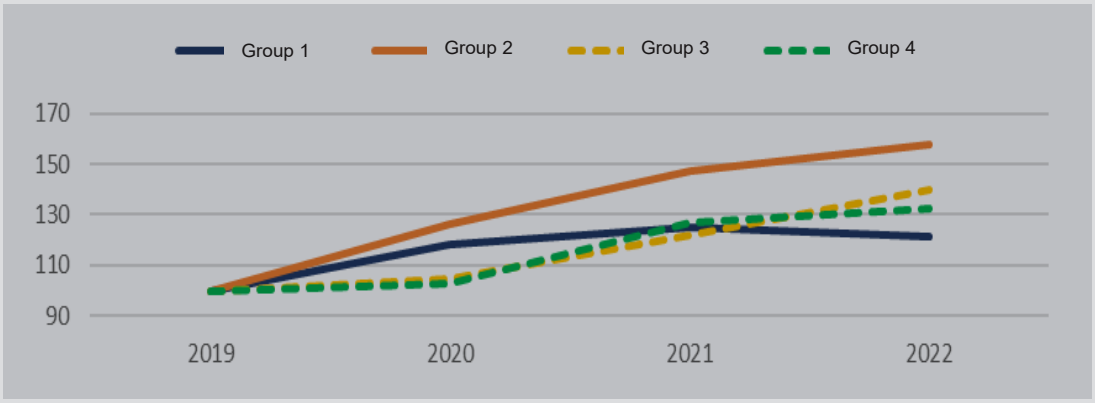
Source: Processing of data from Bank of Italy
(a) The sum of contributions to growth equals the change from 2019: 36.6% in 2022 (12.5% in 2020).

There are several reasons that may explain the growth recorded during the pandemic. Foreign residents may have used their savings to send more money to provide an extraordinary support to their families abroad. The combination of mobility restrictions and the closure of many business activities have reduced the consumption of services, with more liquidity for remittances. The joint travel restrictions and social distancing measures may have led to a wider usage of regulated payment instruments with a reduction of informal (undetectable) channels.

1 This section was edited by Giacomo Oddo and Giacomo Romanini (Bank of Italy) with contributions by Leopoldo Nascia.
2 Ratha, D., Ju Kim, E., Plaza, S., Riordan, E., Chandra, V., e Shaw. W., 2022. Migration and Development Brief 37: Remittances Brave Global Headwinds. Special Focus: Climate Migration." KNOMAD-World Bank, Washington, DC.

In this regard, grouping the target countries according to the distance from Italy, it emerges that the growth of remittances per capita in 2020 was largely due to two groups of countries, which include those geographically closer. This increase did not stop in 2021, and extended to remittances to the furthest countries. In 2022, remittances from the first group of countries declined slightly (Figure 2).

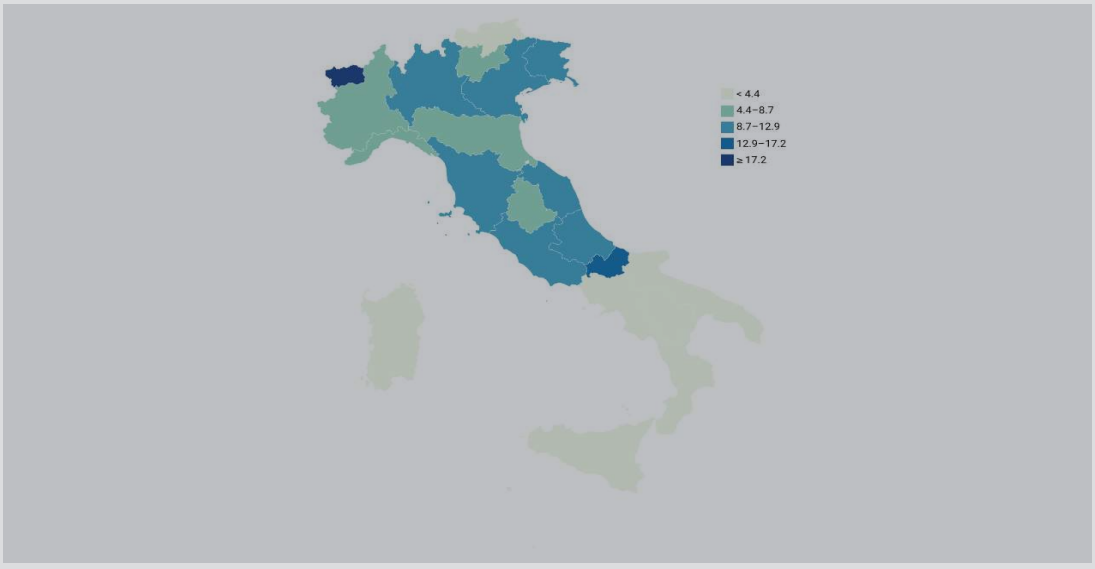
Figure 2 - Remittances per capita, by group of countries according to increasing distance from Italy (a)**. Years 2019-2022**
(fixed base index numbers 2019 = 100)



Source: Processing of data from Bank of Italy, Istat and CEPII
(a) Group 1: Albania, Morocco, Moldova, Romania, Tunisia, Ukraine. Group 2: Egypt, Gambia, Georgia, Mali, Nigeria, Russia, Senegal. Group 3: Bangladesh, Dominican Republic, India, Pakistan, Sri Lanka. Group 4 Philippines and Peru.

Regional analysis also confirms that in the regions of the Centre and North, the growth of remittances to the closest countries, for which the informal channel is likely to be concentrated due to the greater ease of travel, was more intense. Conversely, in the South and Islands the growth of remittances in 2020 took place with the same intensity, both for close countries as well as for far countries (Figure 3).

Figure 3 - Growth gap of remittances between far and close countries (a)**, by region. Year 2020**
(percentage values)



Source: Processing of data from Bank of Italy
(a) Close countries are those in group 1 in Figure 2 (Albania, Morocco, Moldova, Romania, Tunisia, Ukraine). Far countries are those in group 4 in Figure 2 (Philippines and Peru).

ISTAT-SDGS STATISTICAL MEASURES BY TARGET AND TYPOLOGY

Goal 1

	TARGET	STATISTICAL MEASURES		
		Identical	Proxy /Partial	Nationalcontext
1.1	By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than $1.25 a day.			
1.2	By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions.			
1.3	Implement nationally appropriate social protection systems and measures for all, including floors, and by 2030 achieve substantial coverage of the poor and the vulnerable.			
1.4	By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance.			
1.5	By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters.			
1.a	Ensure significant mobilization of resources from a variety of sources, including through enhanced development cooperation, in order to provide adequate and predictable means for developing countries, in particular least developed countries, to implement programmes and policies to end poverty in all its dimensions.			
1.b	Create sound policy frameworks at the national, regional and international levels, based on pro-poor and gender-sensitive development strategies, to support accelerated investment in poverty eradication actions.			

Goal 2

	TARGET	STATISTICAL MEASURES		
		Identical	Proxy / Partial	National context
2.1	By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round.			
2.2	By 2030, end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5 years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons.			
2.3	By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment.			
2.4	By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality.			
2.5	By 2020, maintain the genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at the national, regional and international levels, and promote access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge, as internationally agreed.			
2.a	Increase investment, including through enhanced international cooperation, in rural infrastructure, agricultural research and extension services, technology development and plant and livestock gene banks in order to enhance agricultural productive capacity in developing countries, in particular least developed countries.			
2.b	Correct and prevent trade restrictions and distortions in world agricultural markets, including through the parallel elimination of all forms of agricultural export subsidies and all export measures with equivalent effect, in accordance with the mandate of the Doha Development Round.			
2.c	Adopt measures to ensure the proper functioning of food commodity markets and their derivatives and facilitate timely access to market information, including on food reserves, in order to help limit extreme food price volatility.			

Goal 3

	TARGET	STATISTICAL MEASURES		
		Identical	Proxy / Partial	National context
3.1	By 2030, reduce the global maternal mortality ratio to less than 70 per 100,000 live births.			
3.2	By 2030, end preventable deaths of newborns and children under 5 years of age, with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1,000 live births and under-5 mortality to at least as low as 25 per 1,000 live births.			
3.3	By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases.			
3.4	By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being.			
3.5	Strengthen the prevention and treatment of substance abuse, including narcotic drug abuse and harmful use of alcohol.			
3.6	By 2020, halve the number of global deaths and injuries from road traffic accidents.			
3.7	By 2030, ensure universal access to sexual and reproductive health-care services, including for family planning, information and education, and the integration of reproductive health into national strategies and programmes.			
3.8	Achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all.			
3.9	By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination.			
3.a	Strengthen the implementation of the World Health Organization Framework Convention on Tobacco Control in all countries, as appropriate.			
3.b	Support the research and development of vaccines and medicines for the communicable and non-communicable diseases that primarily affect developing countries, provide access to affordable essential medicines and vaccines, in accordance with the Doha Declaration on the TRIPS Agreement and Public Health, which affirms the right of developing countries to use to the full the provisions in the Agreement on Trade-Related Aspects of Intellectual Property Rights regarding flexibilities to protect public health, and, in particular, provide access to medicines for all.			
3.c	Substantially increase health financing and the recruitment, development, training and retention of the health workforce in developing countries, especially in least developed countries and small island developing States.			
3.d	Strengthen the capacity of all countries, in particular developing countries, for early warning, risk reduction and management of national and global health risks.			

Goal 4

	TARGET	STATISTICAL MEASURES		
		Identical	Proxy / Partial	National context
4.1	By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes.			
4.2	By 2030, ensure that all girls and boys have access to quality early childhood development, care and pre-primary education so that they are ready for primary education.			
4.3	By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university.			
4.4	By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship.			
4.5	By 2030, eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations.	 (a)		
4.6	By 2030, ensure that all youth and a substantial proportion of adults, both men and women, achieve literacy and numeracy.			
4.7	By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culturès contribution to sustainable development.			
4.a	Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all.			
4.b	By 2020, substantially expand globally the number of scholarships available to developing countries, in particular least developed countries, small island developing States and African countries, for enrolment in higher education, including vocational training and information and communications technology, technical, engineering and scientific programmes, in developed countries and other developing countries.			
4.c	By 2030, substantially increase the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially least developed countries and small island developing States.			

(a) The parity indices are 21 and refer to 15 statistical measures of Goal 4.

Goal 5

	TARGET	STATISTICAL MEASURES		
		Identical	Proxy / Partial	National context
5.1	End all forms of discrimination against all women and girls everywhere.			
5.2	Eliminate all forms of violence against all women and girls in the public and private spheres, including trafficking and sexual and other types of exploitation.	⚥⚥	⚥⚥⚥	⚥⚥⚥
5.3	Eliminate all harmful practices, such as child, early and forced marriage and female genital mutilation.			
5.4	Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate.	⚥		⚥⚥
5.5	Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life.		⚥⚥⚥⚥	
5.6	Ensure universal access to sexual and reproductive health and reproductive rights as agreed in accordance with the Programme of Action of the International Conference on Population and Development and the Beijing Platform for Action and the outcome documents of their review conferences.			⚥
5.a	Undertake reforms to give women equal rights to economic resources, as well as access to ownership and control over land and other forms of property, financial services, inheritance and natural resources, in accordance with national laws.			
5.b	Enhance the use of enabling technology, in particular information and communications technology, to promote the empowerment of women.		⚥	⚥
5.c	Adopt and strengthen sound policies and enforceable legislation for the promotion of gender equality and the empowerment of all women and girls at all levels.			

Goal 6

	TARGET	STATISTICAL MEASURES		
		Identical	Proxy / Partial	National nazionale
6.1	By 2030, achieve universal and equitable access to safe and affordable drinking water for all.			●●●●
6.2	By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations.			
6.3	By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally.		●●●●●●	●●
6.4	By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity.	●	●	●
6.5	By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate.	●●		
6.6	By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes.	●		
6.a	By 2030, expand international cooperation and capacity-building support to developing countries in water-and sanitation-related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies.	●		
6.b	Proportion of local administrative units with established and operational policies and procedures for participation of local communities in water and sanitation management.			

Goal 7

	TARGET	STATISTICAL MEASURES		
		Identical	Proxy / Partial	National context
7.1	By 2030, ensure universal access to affordable, accessible, reliable and modern energy services.		☉	☉☉☉
7.2	By 2030, increase substantially the share of renewable energy in the global energy mix.		☉☉☉☉	☉
7.3	By 2030, double the global rate of improvement in energy efficiency.	☉	☉☉	☉
7.a	By 2030, enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology.			
7.b	By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States and landlocked developing countries, in accordance with their respective programmes of support.	☉		

Goal 8

	TARGET	STATISTICAL MEASURES		
		Identical	Proxy / Partial	National context
8.1	Sustain per capita economic growth in accordance with national circumstances and, in particular, at least 7 per cent gross domestic product growth per annum in the least developed countries.			
8.2	Achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value added and labour-intensive sectors.			
8.3	Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services.			
8.4	Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-year Framework of Programmes on Sustainable Consumption and Production, with developed countries taking the lead.			
8.5	By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value.			
8.6	By 2020, substantially reduce the proportion of youth not in employment, education or training.			
8.7	Take immediate and effective measures to eradicate forced labour, end modern slavery and human trafficking and secure the prohibition and elimination of the worst forms of child labour, including recruitment and use of child soldiers, and by 2025 end child labour in all its forms.			
8.8	Protect labour rights and promote safe and secure working environments for all workers, including migrant workers, in particular women migrants, and those in precarious employment.			
8.9	By 2030, devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products.			
8.10	Strengthen the capacity of domestic financial institutions to encourage and expand access to banking, insurance and financial services for all.			
8.a	Increase Aid for Trade support for developing countries, in particular least developed countries, including through the “Enhanced Integrated Framework for Trade-related Technical Assistance to Least Developed Countries”.			
8.b	By 2020, develop and operationalize a global strategy for youth employment and implement the “Global Jobs Pact of the International Labour Organization”.			

Goal 9

	TARGET	STATISTICAL MEASURES		
		Identical	Proxy / Partial	National context
9.1	Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all.			
9.2	Promote inclusive and sustainable industrialization and, by 2030, significantly raise industry's share of employment and gross domestic product, in line with national circumstances, and double its share in least developed countries.			
9.3	Increase the access of small-scale industrial and other enterprises, in particular in developing countries, to financial services, including affordable credit, and their integration into value chains and markets.			
9.4	By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities.			
9.5	Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending.			
9.a	Facilitate sustainable and resilient infrastructure development in developing countries through enhanced financial, technological and technical support to African countries, least developed countries, landlocked developing countries and small island developing States.			
9.b	Support domestic technology development, research and innovation in developing countries, including by ensuring a conducive policy environment for, inter alia, industrial diversification and value addition to commodities.			
9.c	Significantly increase access to information and communications technology and strive to provide universal and affordable access to the Internet in least developed countries by 2020.			

Goal 10

	TARGET	STATISTICAL MEASURES		
		Identical	Proxy / Partial	National context
10.1	By 2030, progressively achieve and sustain income growth of the bottom 40 per cent of the population at a rate higher than the national average.	● ●	●	● ● ●
10.2	By 2030, empower and promote the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status.	● ●		
10.3	Ensure equal opportunity and reduce inequalities of outcome, including by eliminating discriminatory laws, policies and practices and promoting appropriate legislation, policies and action in this regard.			
10.4	Adopt policies, especially fiscal, wage and social protection policies, and progressively achieve greater equality.	●		
10.5	Improve the regulation and monitoring of global financial markets and institutions and strengthen the implementation of such regulations.			
10.6	Ensure enhanced representation and voice for developing countries in decision-making in global international economic and financial institutions in order to deliver more effective, credible, accountable and legitimate institutions.			
10.7	Facilitate orderly, safe, regular and responsible migration and mobility of people, including through the implementation of planned and well-managed migration policies.		●	● ● ● ● ●
10.a	Implement the principle of special and differential treatment for developing countries, in particular least developed countries, in accordance with World Trade Organization agreements.			
10.b	Encourage official development assistance and financial flows, including foreign direct investment, to States where the need is greatest, in particular least developed countries, African countries, small island developing States and landlocked developing countries, in accordance with their national plans and programmes.		●	
10.c	By 2030, reduce to less than 3 per cent the transaction costs of migrant remittances and eliminate remittance corridors with costs higher than 5 per cent.			

Goal 11

	TARGET	STATISTICAL MEASURES		
		Identical	Proxy / Partial	National context
11.1	By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums.			
11.2	By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons.			
11.3	By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries.			
11.4	Strengthen efforts to protect and safeguard the world's cultural and natural heritage.			
11.5	By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations.			
11.6	By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management.			
11.7	By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities.			
11.a	Support positive economic, social and environmental links between urban, peri-urban and rural areas by strengthening national and regional development planning.			
11.b	By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all levels.			
11.c	Support least developed countries, including through financial and technical assistance, in building sustainable and resilient buildings utilizing local materials.			

Goal 12

	TARGET	STATISTICAL MEASURES		
		Identical	Proxy / Partial	National context
12.1	Implement the 10-Year Framework of Programmes on Sustainable Consumption and Production Patterns, all countries taking action, with developed countries taking the lead, taking into account the development and capabilities of developing countries			
12.2	By 2030, achieve the sustainable management and efficient use of natural resources.	∞∞∞		
12.3	By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses.			
12.4	By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment.		∞∞∞	
12.5	By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse.		∞∞∞	∞∞
12.6	Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle.		∞∞	∞∞∞ ∞∞
12.7	Promote public procurement practices that are sustainable, in accordance with national policies and priorities.			∞
12.8	By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature.			
12.a	Support developing countries to strengthen their scientific and technological capacity to move towards more sustainable patterns of consumption and production.	∞		∞
12.b	Develop and implement tools to monitor sustainable development impacts for sustainable tourism that creates jobs and promotes local culture and products.	∞		∞∞∞ ∞
12.c	Rationalize inefficient fossil-fuel subsidies that encourage wasteful consumption by removing market distortions, in accordance with national circumstances, including by restructuring taxation and phasing out those harmful subsidies, where they exist, to reflect their environmental impacts, taking fully into account the specific needs and conditions of developing countries and minimizing the possible adverse impacts on their development in a manner that protects the poor and the affected communities.	∞		

Goal 13

	TARGET	STATISTICAL MEASURES		
		Identical	Proxy / Partial	National context
13.1	Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries.			
13.2	Integrate climate change measures into national policies, strategies and planning.			
13.3	Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning.			
13.a	Implement the commitment undertaken by developed-country parties to the United Nations Framework Convention on Climate Change to a goal of mobilizing jointly $100 billion annually by 2020 from all sources to address the needs of developing countries in the context of meaningful mitigation actions and transparency on implementation and fully operationalize the Green Climate Fund through its capitalization as soon as possible.			
13.b	Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities.			

Goal 14

	TARGET	STATISTICAL MEASURES		
		Identical	Proxy / Partial	National context
14.1	By 2025, prevent and significantly reduce marine pollution, in particular from land-based activities, including marine debris and nutrient pollution.			
14.2	By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans.			
14.3	Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels.			
14.4	By 2020, effectively regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices and implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics.			
14.5	By 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on the best available scientific information.			
14.6	By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, eliminate subsidies that contribute to illegal, unreported and unregulated fishing and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the World Trade Organization fisheries subsidies negotiation.			
14.7	By 2030, increase the economic benefits to small island developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism.			
14.a	Increase scientific knowledge, develop research capacity and transfer marine technology, taking into account the Intergovernmental Oceanographic Commission Criteria and Guidelines on the Transfer of Marine Technology, in order to improve ocean health and to enhance the contribution of marine biodiversity to the development of developing countries, in particular small island developing States and least developed countries.			
14.b	Provide access for small-scale artisanal fishers to marine resources and markets.			
14.c	Enhance the conservation and sustainable use of oceans and their resources by implementing international law as reflected in the United Nations Convention on the Law of the Sea, which provides the legal framework for the conservation and sustainable use of oceans and their resources, as recalled in paragraph 158 of “The future we want”.			

Goal 15

	TARGET	STATISTICAL MEASURES		
		Identical	Proxy / Partial	National context
15.1	By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements.			
15.2	By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally.			
15.3	By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world.			
15.4	By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development.			
15.5	Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species.			
15.6	Promote fair and equitable sharing of the benefits arising from the utilization of genetic resources and promote appropriate access to such resources, as internationally agreed.			
15.7	Take urgent action to end poaching and trafficking of protected species of flora and fauna and address both demand and supply of illegal wildlife products.		 (b)	
15.8	By 2020, introduce measures to prevent the introduction and significantly reduce the impact of invasive alien species on land and water ecosystems and control or eradicate the priority species.			
15.9	By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts.			
15.a	Mobilize and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems.			
15.b	Mobilize significant resources from all sources and at all levels to finance sustainable forest management and provide adequate incentives to developing countries to advance such management, including for conservation and reforestation.			
15.c	Enhance global support for efforts to combat poaching and trafficking of protected species, including by increasing the capacity of local communities to pursue sustainable livelihood opportunities.		 (b)	

(b) The measures referred to target 15.7 and those referred to target 15.c are the same.

Goal 16

	TARGET	STATISTICAL MEASURES		
		Identical	Proxy / Partial	National context
16.1	Significantly reduce all forms of violence and related death rates everywhere.	●●	●●	
16.2	End abuse, exploitation, trafficking and all forms of violence against and torture of children.		●	
16.3	Promote the rule of law at the national and international levels and ensure equal access to justice for all.	●●	●	●
16.4	By 2030, significantly reduce illicit financial and arms flows, strengthen the recovery and return of stolen assets and combat all forms of organized crime.			
16.5	Substantially reduce corruption and bribery in all their forms.		●●●	
16.6	Develop effective, accountable and transparent institutions at all levels.		●●●	●
16.7	Ensure responsive, inclusive, participatory and representative decision-making at all levels.	●●		
16.8	Broaden and strengthen the participation of developing countries in the institutions of global governance.			
16.9	By 2030, provide legal identity for all, including birth registration.			
16.10	Ensure public access to information and protect fundamental freedoms, in accordance with national legislation and international agreements.			
16.a	Strengthen relevant national institutions, including through international cooperation, for building capacity at all levels, in particular in developing countries, to prevent violence and combat terrorism and crime.			
16.b	Promote and enforce non-discriminatory laws and policies for sustainable development.			

Goal 17

	TARGET	STATISTICAL MEASURES		
		Identical	Proxy / Partial	National context
17.1	Strengthen domestic resource mobilization, including through international support to developing countries, to improve domestic capacity for tax and other revenue collection.		●	
17.2	Developed countries to implement fully their official development assistance commitments, including the commitment by many developed countries to achieve the target of 0.7 per cent of gross national income for official development assistance (ODA/GNI) to developing countries and 0.15 to 0.20 per cent of ODA/GNI to least developed countries; ODA providers are encouraged to consider setting a target to provide at least 0.20 per cent of ODA/GNI to least developed countries.	●		
17.3	Mobilize additional financial resources for developing countries from multiple sources.		●	
17.4	Assist developing countries in attaining long-term debt sustainability through coordinated policies aimed at fostering debt financing, debt relief and debt restructuring, as appropriate, and address the external debt of highly indebted poor countries to reduce debt distress.			
17.5	Adopt and implement investment promotion regimes for least developed countries.			
17.6	Enhance North-South, South-South and triangular regional and international cooperation on and access to science, technology and innovation and enhance knowledge-sharing on mutually agreed terms, including through improved coordination among existing mechanisms, in particular at the United Nations level, and through a global technology facilitation mechanism.		●	●
17.7	Promote the development, transfer, dissemination and diffusion of environmentally sound technologies to developing countries on favourable terms, including on concessional and preferential terms, as mutually agreed.			
17.8	Fully operationalize the technology bank and science, technology and innovation capacity-building mechanism for least developed countries by 2017 and enhance the use of enabling technology, in particular information and communications technology.	●		●
17.9	Enhance international support for implementing effective and targeted capacity-building in developing countries to support national plans to implement all the Sustainable Development Goals, including through North-South, South-South and triangular cooperation.			
17.10	Promote a universal, rules-based, open, non-discriminatory and equitable multilateral trading system under the World Trade Organization, including through the conclusion of negotiations under its Doha Development Agenda.			
17.11	Significantly increase the exports of developing countries, in particular with a view to doubling the least developed countries' share of global exports by 2020.			
17.12	Realize timely implementation of duty-free and quota-free market access on a lasting basis for all least developed countries, consistent with World Trade Organization decisions, including by ensuring that preferential rules of origin applicable to imports from least developed countries are transparent and simple, and contribute to facilitating market access.			
17.13	Enhance global macroeconomic stability, including through policy coordination and policy coherence.			
17.14	Enhance policy coherence for sustainable development.			
17.15	Respect each country's policy space and leadership to establish and implement policies for poverty eradication and sustainable development.			

Goal 17 follow

	TARGET	STATISTICAL MEASURES		
		Identical	Proxy / Partial	National context
17.16	Enhance the Global Partnership for Sustainable Development, complemented by multi-stakeholder partnerships that mobilize and share knowledge, expertise, technology and financial resources, to support the achievement of the Sustainable Development Goals in all countries, in particular developing countries.			
17.17	Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships.			
17.18	By 2020, enhance capacity-building support to developing countries, including for least developed countries and small island developing States, to increase significantly the availability of high-quality, timely and reliable data disaggregated by income, gender, age, race, ethnicity, migratory status, disability, geographic location and other characteristics relevant in national contexts.			
17.19	By 2030, build on existing initiatives to develop measurements of progress on sustainable development that complement gross domestic product, and support statistical capacity-building in developing countries.			

3. "NO ONE LEFT BEHIND": A CLOSER LOOK AT THE TOPIC OF TERRITORIAL INEQUALITY THROUGH ISTAT-SDGS MEASURES[1]

3.1 Introduction

Tackling inequality has been high on the international political agenda for a few decades now, as part of a process that culminated in the adoption of the 2030 Agenda for Sustainable Development. In fact, the Agenda combines the achievement of the SDGs with the commitment to pursue an indispensable principle of equity: "As we embark on this collective journey, we pledge that no one will be left behind"[2]. The 2030 Agenda not only dedicates specific areas - Goal 10 (Reduced inequalities) and Goal 5 (Gender equality) - to this objective, but is entirely supported by constant attention to the reduction of disparities "between countries and within countries", which runs through all its Goals and targets, recalling the value of intergenerational and intragenerational equity.

At the level of statistical measurement, in accordance with the methodological directives established by the Inter Agency and Expert Group on SDGs (see Chapter 4), this commitment translates into the expansion of the production of statistical data that is as disaggregated as possible - especially with reference to the territory - which represents a useful information base to monitor inequalities.

In its thirteenth edition, the Istat-SDGs system can now count on a wealth of information for the analysis of inequalities in the social, economic and environmental domains of sustainable development (see Chapter 1).

After the first analytical experience of the last edition of the Istat Report on Sustainable Development Goals[3], this Chapter proposes an in-depth analysis of the theme of inequalities, with reference to the territorial dimension. In fact, in the aftermath of the repeated shocks that have hit Italy and the entire world in a relatively limited period of time - from the double economic-financial crisis, through the pandemic, to the crisis triggered by the conflict between Russia and Ukraine - the issue of territorial imbalances is extremely topical, and at the same time calls for the opportunity to take stock of the historic gap between the South and Islands and the rest of the country.

Furthermore, the National Recovery and Resilience Plan (NRRP) also identifies equal territorial opportunities among the transversal priorities on the basis of which to evaluate the set of Missions and Reforms envisaged.

This year's analysis presents new elements compared to the past: in this edition of the Report, in addition to monitoring the current levels of disparities between Italian regions

1 This Chapter was edited by Barbara Baldazzi, Lorenzo Di Biagio, Paola Ungaro and Alberto Violante.
2 See United Nations General Assembly. 2015. *Transforming our world: the 2030 Agenda for Sustainable Development*. A/RES/70/1 (https://undocs.org/en/A/RES/70/1).
3 Istat.2022. 2022 SDGs Report. *Statistical Information for 2030 Agenda in Italy*. Roma, Istat. (https://www.istat.it/it/archivio/284043).

and Autonomous Provinces with respect to the achievement of the Goals and targets of the 2030 Agenda, we focus on the temporal evolution of Italian territories, with the aim of highlighting their different rates of advancement over time.

The methodological framework of this study necessarily has to be compared with the universality of the 2030 Agenda, whose global objectives need to be placed in the national context. Only a small part of the Agenda's sub-objectives is in fact based on clear quantitative targets.

In continuity with last year's analyses, territorial trends are therefore analysed in terms of distance, not from a predetermined target, but rather with respect to the best performance (bp), *i.e.*, the best outcome achieved by one or more Italian regions/Autonomous Provinces since 2010 to the present.

The distance has been calculated for each Istat-SDGs statistical measure for which regional detail is available[4].These are 152 measures, covering all the 17 Goals.

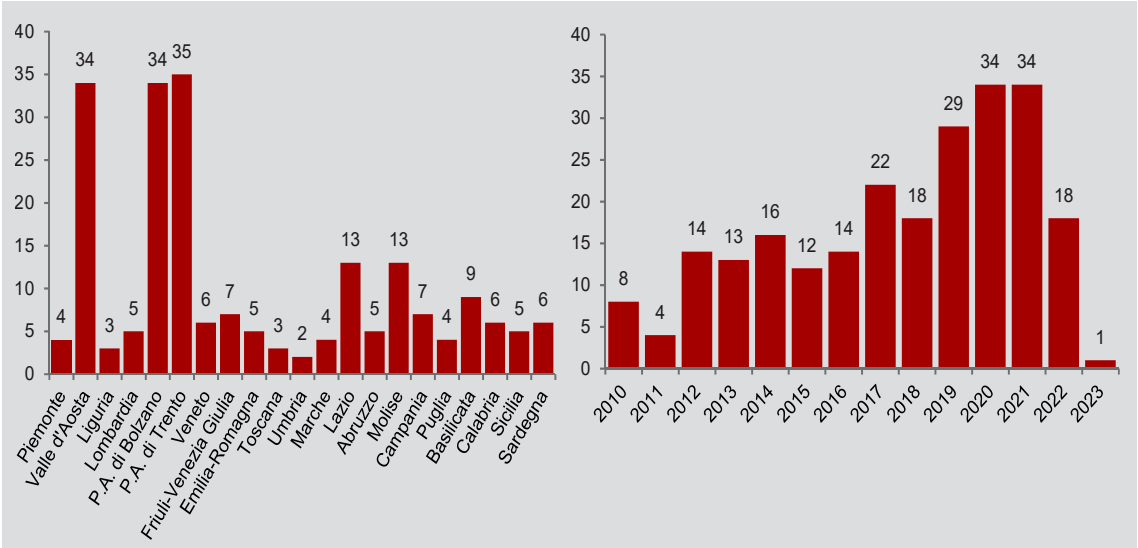
For each statistical measure (with j from 1 to 152) the best performance value is defined as:

$$bp_j = \max_{i \in Reg, t \geq 2010} \{x_{j,i,t}\},$$

where $x_{j,i,t}$ is the value of measure j for region i at time t. The set of the regions Reg includes the two Autonomous Provinces of Trento and Bolzano, but not Trentino-Alto Adige. For negative measures (*i.e.* where an increase indicates a deviation from the targets) the minimum, rather than the maximum, is considered.

For many of the measures considered, the best-performing region(s)/Autonomous Province(s) are Valle d'Aosta, Trento and Bolzano (Figure 3.1). Overall, almost two thirds of the bps have been achieved in the North; over 50% have been achieved over the last 6 years.

Figure 3.1 - Number of best performances, by region and year



4 The following were excluded from the analysis: statistical measures that do not have a clear direction of improvement, those that are not available in time series or that have been updated at the latest in 2017 or before, measures which report absolute values and those which represent rates of change.

For each measure *j*, the distance $d_{j,i,t}$ of each region i from the best performance is calculated for each year t (from 2012) and normalised by a traditional standardisation (z-score)[5], to allow comparisons and aggregations of different measures. The distance $d_{j,i,t}$ can be interpreted as the distance from bp according to a standardised unit of measure (s.u., or unit of standard deviation)[6].

For each Goal, to calculate the overall distance of Italy and the regions from the best performance (*i.e.* from the overall performance of an ideal region that reaches the bp in each measure), the distances of the various statistical measures have been aggregated[7] by applying an arithmetic average[8].

3.2 Trends in inequality over time

Starting from the Istat-SDGs historical data series available for each region, the detailed evolution over time of each region in relation to the best performance for each Goal is presented in Figures 3.2-3.5. In these graphs, the Goals are grouped according to the traditional "5P" of the Agenda 2030 (People; Prosperity; Planet; Peace and Partnership). Within each Goal, for each region or Autonomous Province, for each year (from 2012 to 2022), the distance from the best performance is represented by a colour that ranges from the deepest green (mini-

5 In particular $d_{j,i,t} = \frac{|x_{j,i,t} - bp_j|}{s_{j,t}}$, where $s_{j,t} = \sqrt{\frac{1}{\#Reg}\sum_{i \in Reg}(x_{j,i,t} - \mu_{j,t})^2}$ is the standard deviation of the $x_{j,i,t}$'s (with $\mu_{j,t}$ average over i of the $x_{j,i,t}$'s). In case of missing values for the Autonomous Provinces of Trento or Bolzano, data for the Trentino-Alto Adige region were entered (if available); in case of missing values for some (but not all) regions, the standard deviation has been calculated using only available regional data.On the measurement of distances see Gennari, P., e M. D'Orazio, 2020, "A statistical approach for assessing progress towards the SDG targets". Statistical Journal of the IAOS, Volume 36, Issue 4:1129-1142. https://doi.org/10.3233/SJI-200688 and OECD, 2022, The Short and Winding Road to 2030: Measuring Distance to the SDG Targets. Paris, France: OECD Publishing, https://doi.org/10.1787/af4b630d-en.

6 Considering the tertiles of the distribution of regional distances, a distance can be considered small if it is less than 1.4 s.u., medium if between 1.4 and 2.9 s.u., large if greater than 2.9 s.u. About 90% of the distances are less than 4.

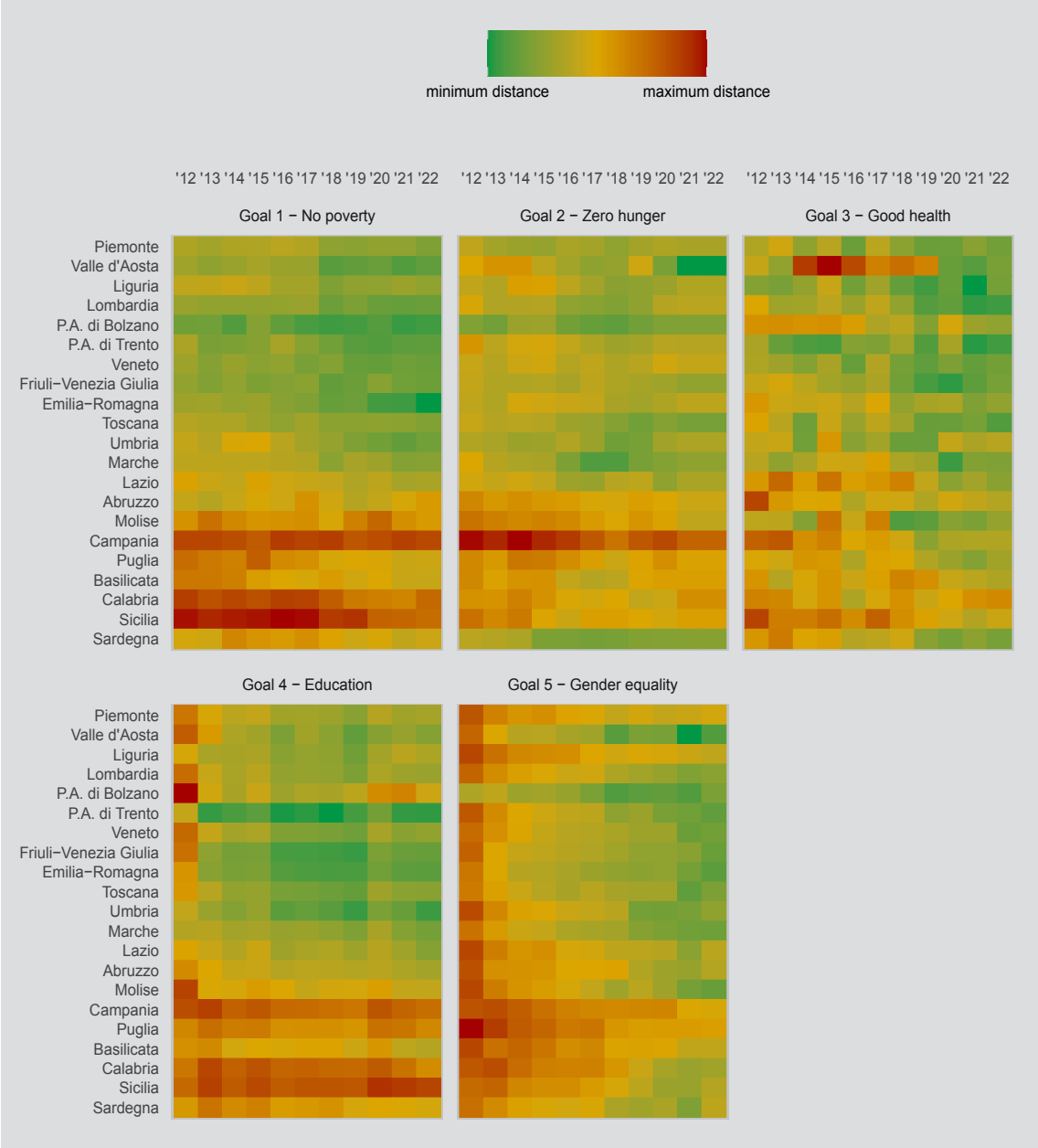
7 If for every Goal k, with $k = 1, \ldots, 17$, we consider the set $\mathcal{H}_k$ of the UN-IAEG-SDGs indicators associated with the Goal, and each $H \in \mathcal{H}_k$ is in turn the set of all statistical measures (for which the regional detail is av ailable) associated with indicator H, then the overall distance $D_{k,i,t}$ of the region i for Goal k at time t is defined as $D_{k,i,t} = \sum_{H \in \mathcal{H}_k} \frac{1}{\#\mathcal{H}_k} \sum_{j \in H} \frac{1}{\#H} d_{j,i,t}$. Note that by this way each UN-IAEG-SDGs indicator has the same weight, so that the "dimensionality" effect is kept under control and the relevance of the indicator does not depend on the number of statistical measures associated with it, measure that are often also highly correlated. Moreover, subjective choices about the relative importance of the indicators within the same Goal are avoided. See Gennari, P., and M. D'Orazio, 2020, "A statistical approach for assessing progress towards the SDG targets". Statistical Journal of the IAOS, Volume 36, Issue 4:1129-1142. https://doi.org/10.3233/SJI-200688; Chelli, F.M., B. Ermini, M. Gallegati, e A. Gentili. 2022. "Investigating Regional Disparities in Italy's Well-Being Since Unification (1871–2011)". Ital Econ J. https://doi.org/10.1007/s40797-022-00206-2.

8 The arithmetic mean is widely used in the literature both for the sake of simplicity and for the clarity in the readability of the results. In particular, the arithmetic mean is used by the OECD to calculate the distances from the targets, by Bertelsmann Stiftung and Sustainable Development Solutions Network for the calculation of the SDG Index and Dashboards, by Eurostat for the calculation of the status score of each country. See. EUROSTAT, 2023, Sustainable development in the European Union – Monitoring report on progress towards the SDGs in an EU context – 2023 edition. Luxembourg: Publications Office of the European Union, https://ec.europa.eu/eurostat/web/products-flagship-publications/w/ks-04-23-184; OCSE, 2022, The Short and Winding Road to 2030: Measuring Distance to the SDG Targets. Paris, France: OECD Publishing, https://doi.org/10.1787/af4b630d-en; Sachs, J., C. Kroll, G. Lafortune, G. Fuller, e F. Woelm, 2022, Sustainable Development Report 2022. Cambridge, UK: Cambridge University Press, https://www.sdgindex.org/reports/sustainable-development-report-2022/; Schmidt-Traub, G., C. Kroll, K. Teksoz, D. Durand-Delacre, e J.D. Sachs, 2017, "National baselines for the Sustainable Development Goals assessed in the SDG Index and Dashboards". Nature geoscience,Volume 10, Issue:8: 547-555, https://www.nature.com/articles/ngeo2985.

mum distance of the region in the considered Goal) to the darkest red (maximum distance), passing through yellow. These 'heat maps', while concise, provide an immediate and easily interpretable visual representation of the progress in territorial disparities within each Goal.

The People area (Figure 3.2) outlines a moderate improvement over time, although with some significant setbacks, especially in certain geographical areas. For example, Goal 4 (Education) shows a worsening of almost all indicators related to skills during the year of distance learning, with an uneven recovery in the post-pandemic period across the territory, putting a stop to restoring pre-pandemic levels, particularly in southern regions. Across all Goals, there is a clear and persistent North-South territorial disparity, except for Goal 3 (Good health), which sees a reduction in the gap over time, and to a lesser extent, Goal

Figure 3.2 - Distance of Italian regions from the best performance for the People area Goals. Years 2012-2022 (a)



(a) The minimum distance and the maximum distance are calculated with respect to each Goal.

5 (Gender equality), which shows overall improvement fairly evenly across all regions. For the Goals in the People area, the maximum distances from the best performance are concentrated in the first five-year period from 2012 to 2016. On the contrary, the minimum distances are observed in the last five-year period from 2018 to 2022.

The Planet area includes many indicators that measure the state of the planet and its anthropogenic impact, which have less frequent updates and lower medium-term dynamism (Figure 3.3). Goals 6 (Water), 13 (Climate action), and 15 (Life on land), in particular, are characterised by enduring territorial heterogeneity, which does not follow the classic North-South gradient typical of the People or Prosperity area Goals. Additionally, significantly and consistently higher distances from the best performance are measured for Sicilia in Goal 6, Emilia-

Figure 3.3 - Distance of Italian regions from the best performance for the Planet area Goals. Years 2012-2022 (a)

(a) The minimum distance and the maximum distance are calculated with respect to each Goal.

Romagna in Goal 13, and Lombardia in Goal 15. In the case of Sicilia, the wide gap is caused by relatively low and unimproved percentages of public sewage service coverage and the extent of bathing sea coasts. For Emilia-Romagna, indicators related to the risk of floods have a particular impact, and for Lombardia, the disadvantage depends on the overall effect of all the measures considered. The relatively low dynamism affecting the Goals in the Planet area is not only due to sporadic updates of indicator values but also to the actual stability of inter-regional distances from the best performance (such as public sewage service coverage, population exposed to landslide risk, or mountain vegetation coverage index). Goal 12 records a general deviation over time from the best regional performance, with central regions among the most virtuous. In Goal 14, Toscana, Puglia, Basilicata and Calabria exhibit a significant advantage compared to Friuli-Venezia Giulia, Marche, Lazio, Abruzzo and Sicilia.

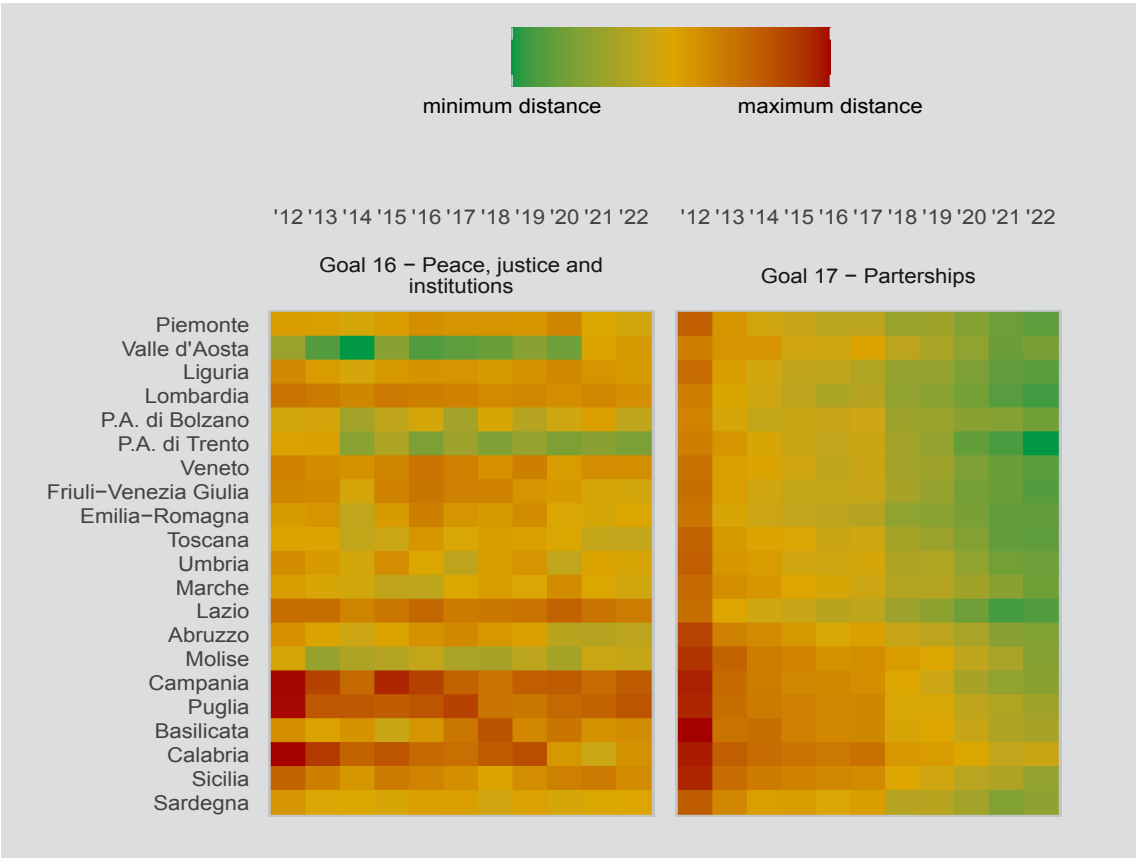
Figure 3.4 - Distance of Italian regions from the best performance for the Prosperity area Goals. Years 2012-2022 (a)

(a) The minimum distance and the maximum distance are calculated with respect to each Goal.

In the Prosperity area (Figure 3.4), we observe different patterns. In Goals 8 (Work and economic growth) and 10 (Reduced inequalities), there is no reduction in regional disparities, and the South and Islands remain considerably less developed than the Centre-North. However, Goals 7, 9, and 11 show a progressive convergence of geographical units towards the best performance, with less pronounced geographic polarisation. The most notable progress is in Goal 7 (Energy), thanks to the increasing consumption of energy from renewable sources, and particularly in Goal 9 (Industry, innovation and infrastructure), which sees a significant and continuous improvement in indicators related to digitalisation and business innovation. In Goal 11 (Sustainable cities), it is above all the indicators of habitability (the percentage of people living in overcrowded, noisy, or humid and structurally problematic housing) that yield positive results. For Goal 7, Valle d’Aosta, Trento, and Bolzano stand out, maintaining their advantage over time, while Puglia, Sicilia, and Sardegna record the greatest distances from the best performance.

In the Peace and Partnership area (Figure 3.5), for Goal 16 (Peace, justice and institutions), the distances remain fairly stable over time, with some exceptions, such as the progress in Trento and the setback in Valle d’Aosta. Goal 17 (Partnerships) shows a widespread improvement, particularly evident after 2017, primarily driven by the increase in remittances from immigrants and, to a lesser extent, by favourable results in indicators related to ICT usage. Nevertheless, differences between the central-northern regions and the southern regions persist.

Figure 3.5 - Distance of Italian regions from the best performance for the Peace and Partnerships area Goals. Years 2015-2022 (a)



(a) The minimum distance and the maximum distance are calculated with respect to each Goal.

3.3 Territorial inequalities: a focus on the last year

An overall examination of the distances from the bps, for the last year available, shows how the regions behave more or less heterogeneously, considering different Goals. The Goals with lower variability are 3 (Good health), 11 (Sustainable cities) and 12 (Responsible consumption and production): the regions rank close to the Italian average, and no major inter-regional deviations are found. Goal 1 (No poverty), Goal 8 (Work and economic growth), Goal 10 (Reduced inequalities) and Goal 17 (Partnerships), are instead those where the variability is widest: in these cases, there are regions that take a position far from the average and are characterised by large deviations from other regions.

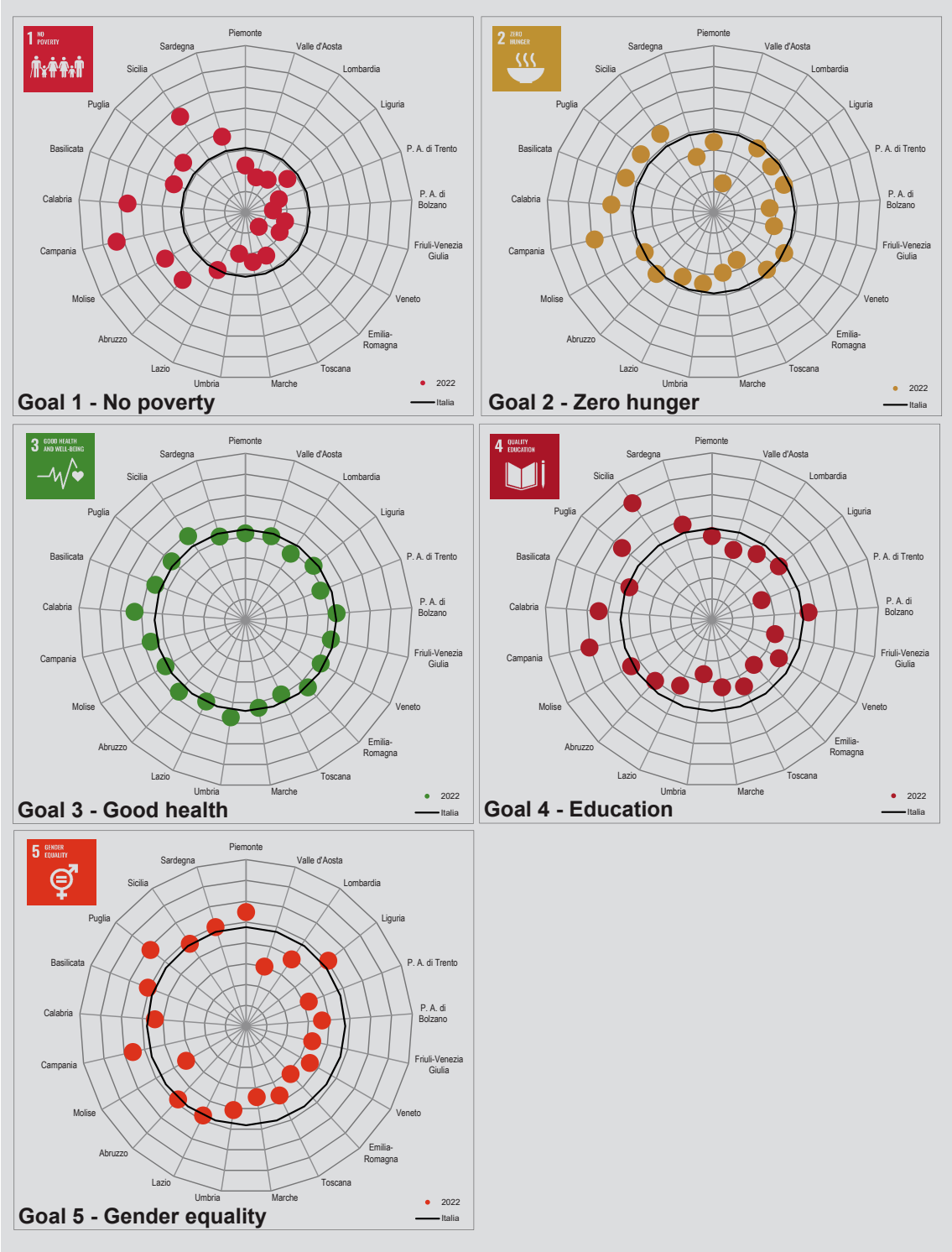
The details of the positioning of each region in relation to the best performance are illustrated by the radar charts in Figures 3.6-3.9: in the charts, the bp is represented by the central point, the average distance of Italy from the bp by the circle in bold and the distances of the regions by the coloured points.

In the People area (Figure 3.6), Goal 3 (Good health) stands out for a similar distance from best performance for all regions, which approximates the average distance calculated for Italy (circle in bold). Greater variability is instead found in Goal 1 (No poverty): the eight southern regions perform worse than the Italian average, being outside the bold circle, with Sicilia and Campania furthest behind, while almost all other regions are inside the bold circle, closer to best performance. Measures on risk of poverty and severe material deprivation have the greatest impact, reaching much higher values in southern regions than in northern ones.

For Goal 2 (Zero hunger), five southern regions also show higher-than-average distances from bp (influenced by the index on childhood obesity and overweight), as well as for Goal 4 (Education). In the latter case, however, Basilicata, Molise and Abruzzo are comparable with the Italian average performance (especially for the measures on early leavers from the education and training system and the number of tertiary graduates), while the Autonomous Province of Bolzano shows a greater distance than its geographically neighbouring regions. More varied, finally, is the profile of Goal 5 (Gender equality), in which Piemonte, Campania and Puglia lag furthest behind the best performance (especially for measures on national and local political representation of women), while many regions record distances below the Italian average (they are inside the bold circle).

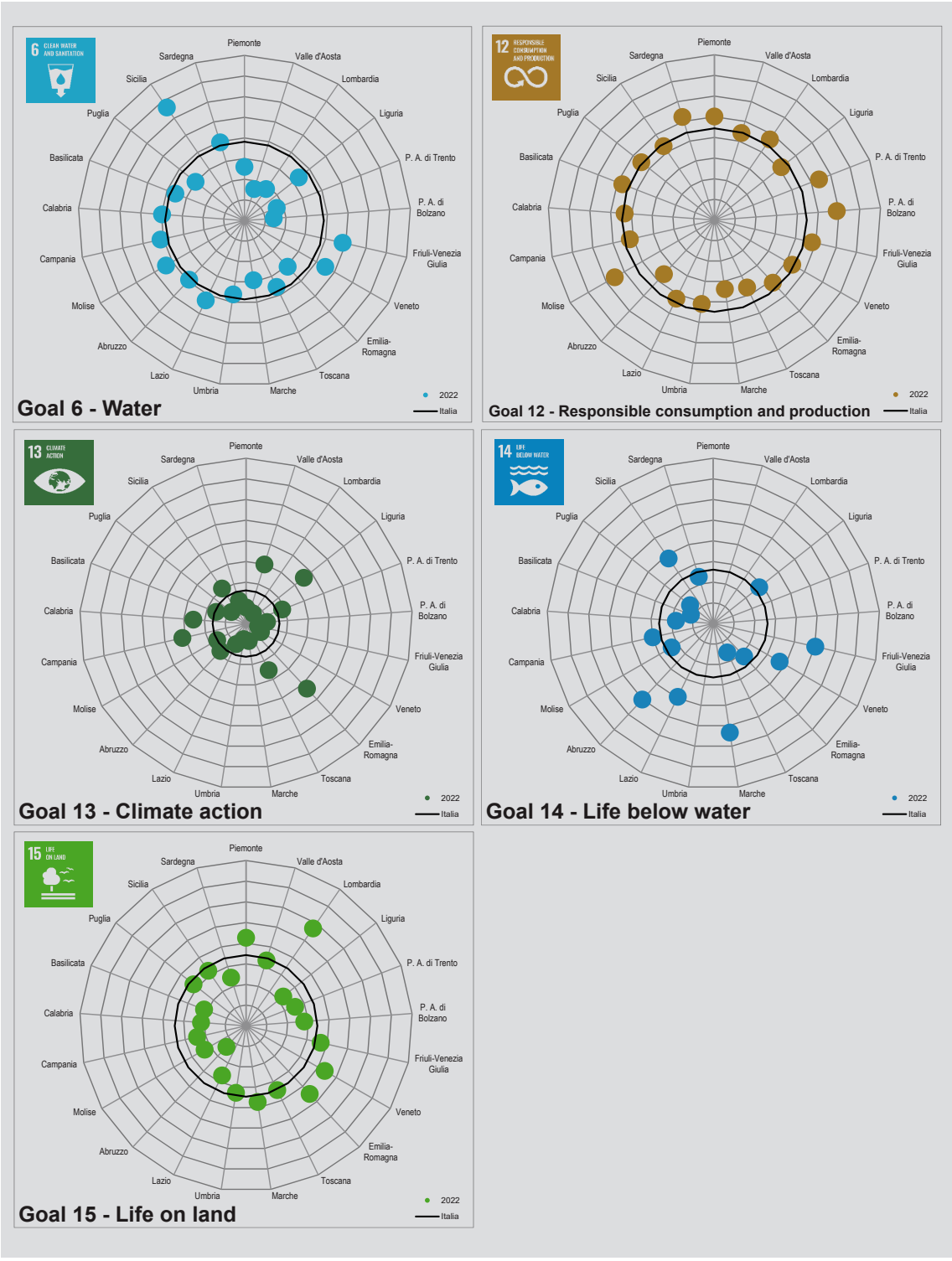
For the group of Goals in the Planet area (Figure 3.7), the regional rankings are very varied, confirming, even in the last year, the absence of a clear North-South and Islands divide. Goal 12 (Responsible consumption and production) is the most homogeneous, with values furthest from bp for the Autonomous Provinces of Bolzano and Trento and Molise. For Goal 6 (Water), Sicilia is the region furthest from the Centre and the Italian average, mainly because of the greater difficulties encountered with respect to the irregularity and efficiency of water distribution. The radar chart of Goal 14 (Life below water) shows that only Sicilia and Abruzzo are the southern regions outside the bold circle representing the Italy average, while other southern regions, some of which are also very close to the centre point, such as Puglia, Calabria and Basilicata, are placed internally, favoured by the low number of beached marine litter and excellent bathing water quality. For Goal 15 (Life on land), the southern regions are also more virtuous, while Piemonte, Lombardia, Veneto and Emilia-Romagna are the furthest from the centre: Lombardia, in particular, is in the furthest position from the bp, due to the high values recorded with respect to soil sealing by artificial cover and the fragmentation of natural and agricultural land.

Figure 3.6 - Overall distance of Italian regions from the best performance in the People area, by Goal (a), last year available



(a) The central point of the radar chart represents the best performance and the circle in bold represents the Italian average (scale from 0 to 4).

Figure 3.7 - Overall distance of Italian regions from the best performance in the Planet area, by Goal (a), last year available



(a) The central point of the radar chart represents the best performance and the circle in bold represents the Italian average (scale from 0 to 4).

Figure 3.8 - Overall distance of regions from the best performance in the Prosperity area, by Goal (a), last year available

(a) The central point of the radar chart represents the best performance and the circle in bold represents the Italian average (scale from 0 to 4).

In the Prosperity area (Figure 3.8), the North-South and Islands divide appears pronounced for Goals 8 (Decent work and economic growth) and 10 (Reduced inequalities): regions in the South and Islands are distant from the best performance and outside the Italy circle, and regions in the Centre -North are closer to the Italian average, with the exception of Umbria for Goal 8. The push toward bp for the North-Central regions comes from the better performance of measures on employment for Goal 8 and income for Goal 10. In Goal 7 (Energy), measures on renewables help place the Autonomous Provinces of Trento and Bolzano and Valle d'Aosta close to bp. Goal 11 (Sustainable cities) appears rather homogeneous, with almost all regions around the Italian average, with the exceptions of Valle d'Aosta, Molise, Puglia and Sicilia, which record values just below the average with respect to frequent users of public transportation and, for the regions of South and Islands, very high values of illegal building rate. Goal 9 (Industry, innovation and infrastructure) has many points close to or overlapping with the bold circle. However, above-average results are recorded for Piemonte, Emilia-Romagna and Lazio, driven, the first two, by the higher number of firms with innovative product and/or process activities and researchers, Lazio, by the high number of knowledge workers.

Goals 16 and 17, which contribute to the Peace and Partnership area (Figure 3.9), present different situations. Goal 17 (Partnerships) depicts the different speed of different areas of the country regarding technological innovation, with all regions in the South and Islands lagging behind. In Goal 16 (Peace, justice and institutions), which is very homogeneous in representation, the best results are found in smaller regions, such as the Autonomous Provinces of Trento, Molise and Abruzzo, due to a higher perception of security and the lower percentage of adult detainees awaiting first trial.

Figure 3.9 - Overall distance of Italian regions from the best performance in the Peace and Partnerships area, by Goal (a)**, last year available**

(a) The central point of the radar chart represents the best performance and the circle in bold represents the Italian average (scale from 0 to 4).

4. NATIONAL AND INTERNATIONAL PROCESSES FOR SDGS STATISTICAL INFORMATION[1]

4.1 The implementation process of the 2030 Agenda

The 2030 Agenda for Sustainable Development considers human well-being intrinsically linked to ecosystem health and is based on the integration of all 17 objectives and on the interconnection between sustainability well-being and climate change.

The High Level Group for Partnership, Coordination and Capacity Building for Statistics for the 2030 Agenda (UN-HLG-PCCB-2030), which aims to strengthen partnerships to build the best possible statistical information for the monitoring of the SDGs, has[2] been activated over the years by promoting several UN-World Data Forums, the last of which took place in April 2023 and produced the "Hangzhou Declaration: Accelerating progress in the implementation of the Cape Town Global Action Plan for Sustainable Development Data"[3]. In this context, the focus is on the need to increase investment to fill the lack of necessary statistical information, such as those relating to contexts of particular economic crisis, climate change and increased food insecurity. The new thematic structure focuses on the following areas: 1) innovation and partnerships for better and more inclusive data, 2) maximising the use of data for decisions, 3) building data ethics, 4) developing partnerships to implement data ecosystems.

While maintaining the spirit of full adherence to the Fundamental Principles of Official Statistics of the United Nations, there is a need to accelerate action on statistical measurement and to work in terms of the "global data ecosystem", also expanding collaborations and coordination to design a programme of innovative activities that considers citizen-generated data, so that individuals and communities can participate and contribute to the production of data.

4.2 Indicators defined by the United Nations in the Inter Agency and Expert Group on SDGs

The Inter Agency and Expert Group on SDGs (UN-IAEG-SDGs), established by the Statistical Commission – in which Istat participates as an expert representative country for Western and Southern Europe – has over the years defined a shared framework of statistical information, as a tool for monitoring and analysing sustainability. Statistical measurement is, in fact, the indispensable tool for the construction of the common language advocated internationally.

1 This Chapter was edited by Angela Ferruzza with the collaboration of Assunta Sera for section 4.3.
2 See https://unstats.un.org/sdgs/files/HLG-PCCB-TOR-UNSC53.pdf
3 See https://unstats.un.org/sdgs/hlg/Hangzhou_declaration.pdf

The programme of activities includes the continuous methodological development of indicators and metadata: the current March 2023 version proposed by UN-IAEG-SDGs[4] has 231 indicators, although the total number considered is 248, since some are repeated in multiple targets[5]. These are currently classified according to two levels: more than half (148) are Tier I[6], 77 are Tier II, and 6 indicators are based on multiple components of different Tiers. The latest update reclassified 12 indicators from Tier II to I[7]:

After the 2020 review, initiatives are underway that will lead to the review, planned for 2025, which should seek not to increase the statistical burden. In principle, the assumption of adding an indicator will only be considered in exceptional cases, when a crucial aspect of the target to which it relates is not monitored by the current indicator or if the Goal has few tier I indicators. Adjustments or replacements will be taken into account if the existing indicators do not comprehensively cover what the targets require. Should this be necessary, the proposed new indicators should be based on an agreed methodology and already available data. The revision should not significantly alter the composition of the current framework that has already been implemented in the statistical systems of many countries.

Currently, there are four specific working groups dedicated to: Statistical Data and Metadata Exchange (SDMX)[8], Geospatial information[9], Measurement of development support[10], Sustainable tourism indicators[11].

The work plan provides that particular attention should be paid to increasing the use of administrative data and further activities on possible breakdowns of indicators[12], in particular with regard to the territory, in accordance with the "No one left behind principle".

The IAEG-SDGs Working Group on Geospatial Information has prepared the "Geo White Paper on disaggregation by geographic location" and the Statistical Commission has adopted the "SDGs Geospatial Roadmap". Both documents reiterate that the territorial breakdown alone or together with the other possible breakdowns of the indicators makes it possible to highlight social inequalities and to carry out analyses of vulnerable population segments and marginalised areas. The geostatistic approach is, therefore, one of the essential keys, useful for ensuring the harmonisation of information, promoting comparisons and analysis of trends that cannot be developed by considering aggregate data, facilitating a more

4 The Global Indicator Framework was adopted by the General Assembly in resolution 71/313 and proposed for revisions at the 51st session of the Statistical Commission in 2020 and the 56th session in 2025. The official indicator list includes the global indicator framework as contained in A/RES/71/313, the refinements agreed by the Statistical Commission at its 49th session in March 2018 (E/CN.3/2018/2, Annex II) and 50th session in March 2019 (E/CN.3/2019/2, Annex II), changes from the 2020 Comprehensive Review (E/CN.3/2020/2, Annex II) and refinements (E/CN.3/2020/2, Annex III) from the 51st session in March 2020, refinements from the 52nd session in March 2021 (E/CN.3/2021/2, Annex) finements (E/CN.3/2022/2, Annex I) and decision (53/101) by the 53rd United Nations Statistical Commission (E/2022/24-E/CN.3/2022/41), and by the 54th United Nations Statistical Commission.

5 See https://unstats.un.org/sdgs/indicators/indicators-list/

6 The first level is for indicators with established methodology and standards, and regularly produced by the countries; in the second level are the indicators that despite having established methodology and standards, are not regularly produced. The remaining indicators belong to several levels, given the heterogeneity of their components.

7 These are the following indicators: 1.5.2/11.5.2, 5.6.2, 8.b.1, 10.2.1, 10.7.2, 11.2.1, 11.5.3, 16.1.1, 16.2.2, 16.5.1, 16.6.1 and 17.7.1.

8 See https://unstats.un.org/sdgs/iaeg-sdgs/sdmx-working-group/.

9 See https://ggim.un.org/UNGGIM-wg6/.

10 See https://unstats.un.org/sdgs/iaeg-sdgs/working-group-on-measurement-of-development-support/.

11 See https://unstats.un.org/sdgs/iaeg-sdgs/task-team-sustainable-tourism/.

12 See https://www.adb.org/publications/guidebook-data-disaggregation-sdgs.

detailed visualisation of information, allowing to consider statistical information also for variable and modifiable geographical areas, which are essential for monitoring actions.

The concreteness of the SDGs therefore depends not only on the statistical system of data, but also on the availability of an adequate geographical breakdown. The documents recommend that statistical data refer to the most detailed geographical scale possible, to geographical coordinates, and at least to polygonal geometry, stressing that the geocoding of data allows for the geographical analysis of phenomena and facilitates possible integrations of indicators. It also reiterates the importance of geographical grids that can be aimed at integrated statistical analysis of SDGs statistical measures.

The UN-IAEG-SDGs programme of activities includes, in addition to the implementation of indicators based on current methodologies and traditional data sources (including administrative archives), the development of innovative elements that include non-traditional data sources. The usefulness of "citizen-generated data" has been reaffirmed as complementary information sources to try to remedy some of the information gaps. The insights, also carried out with the active participation of Istat, aim to consider the different ways in which citizens can contribute, the challenges and opportunities in the close collaboration between civil society and the different stakeholders within the National Statistical System and the mechanisms that can be identified to increase the possible contributions of citizens. In these developments the role of the national statistical offices or institutes remains central, as guarantors of the quality of statistical information and coordinators of the National Statistical System.

In July 2022, a report was issued based on data available to the United Nations on global dynamics[13]; the Global SDGs Indicators Database is also available[14], which collects statistical information and is updated every six months. In addition, documents related to the "Sustainable Development Goals Progress Chart 2022"[15] and "Progress on the Sustainable Development Goals: The Gender Snapshot 2022"[16] have been released.

4.3 European initiatives to deliver on the 2030 Agenda

The European Green Deal (EGD), aimed at building an economy that must leave no one behind in the green transition, the development of the resulting National Recovery and Resilience Plans (NRRPs) in line with the need to ensure a transition to a clean, circular, competitive and climate neutral economy, are constitutive for achieving climate neutrality by 2050 and reducing greenhouse gas emissions by 2030 by 55% (compared to 1990) within the European Union.

The "European Statistical System Action Plan therefore retains priorities for the production of statistical information on energy, environment, climate change, transport and geolocalised statistics.

13 See https://unstats.un.org/sdgs/report/2022/.
14 See https://unstats.un.org/sdgs/dataportal.
15 See https://unstats.un.org/sdgs/report/2022/progress-chart.
16 See https://unstats.un.org/sdgs/gender-snapshot/2022.

Eurostat annually produces the report "Sustainable development in the European Union – Monitoring report on progress towards the SDGs in an EU context" which reports on the update of the EU situation in relation to the objectives of the 2030 Agenda, through the selection of 100 indicators[17]. These have recently been amended to take account of the requirements related to the production of qualified statistical information for the ecological transition.

4.4 Statistical measures for the monitoring of the National Sustainable Development Strategy

The first version of the National Sustainable Development Strategy (NSSD) was implemented in 2017 by the Ministry of the Environment and the Protection of Land and Sea (current MEES – Ministry of Environment and Energy Security) and the Ministry of Foreign Affairs and International Cooperation (MFAIC), in coordination with the Presidency of the Council of Ministers. The proposal for the new Strategy[18] has been prepared thanks to the involvement of all stakeholders – businesses, institutions, citizens and associations – in order to promote the transition to an economy in which the management, conservation and sustainable use of resources is ensured. This proposal has been submitted to the Voluntary National Review (VNR)[19] and approved.

The SDGs statistical measures made available constitute the necessary input for the measurement of NSSD. With regard to the first version of the Strategy[20], a narrow and representative core of 43 monitoring indicators was selected[21].

Subsequently, using the same methodological approach as in the first selection[22], this subset of statistical measures was updated and expanded in order to consider: the ongoing review of the NSSD; information requests highlighted by all stakeholders involved in the review of the Strategy; the greater information abundance of the SDGs Statistical Platform made available and different from the one initially used. An enrichment of the statistical measures previously considered was therefore carried out on an experimental basis (Figure 4.1).

17 See https://ec.europa.eu/eurostat/en/web/products-flagship-publications/w/ks-04-23-184.

18 See https://www.mite.gov.it/pagina/sviluppo-sostenibile-e-rapporti-internazionali.

19 See https://hlpf.un.org/countries/italy

20 During 2018, on the initiative of the Ministry of the Ecological Transition, the Working Table on Indicators for the implementation of the National Sustainable Development Strategy was established. Representatives of MEES, Ministry of Economy and Finance, MFAIC, Presidency of the Council, ISPRA and Istat participated in the activities of the table. The Table defined and agreed on the criteria for the selection of indicators and the methodological approach needed to identify a set of indicators relevant for SNSvS monitoring.

21 See Istat. 2022. 2021 SDGs Report. Statistical information for 2030 Agenda in Italy. Roma: Istat. https://www.istat.it/it/files//2022/02/2021-SDGS-Report_Inglese.pdf.

22 It has been decided to use statistical measures derived from the Istat-Sistan Platform, preferably identical to UN-IAEG-SDGs indicators and consistent with the Equitable and sustainable wellbeing (BES) indicators, also in order to ensure that the measures comply with the statistical eligibility requirements. In addition, the criteria of parsimony, feasibility, timeliness, extent and frequency of time series, sensitivity to public policies, territorial dimension have been used, focusing on statistical measures that have the best possible territorial breakdown.

Table 4.1 - Istat-SDGs System for the National Sustainable Development Strategy

Goal 1 – No poverty			
BES DEF	Absolute poverty (incidence), 2021		9.4%
BES	Severe material deprivation rate, 2021		5.6%
Goal 2 – Zero hunger			
BES DEF	Overweight or obesity among minors from 3 to 17 years of age, 2021		27.0%
	Share of utilised agricultural land under organic farming, 2021		17.4%
Goal 3 – Good health			
BES DEF	Healthy life expectancy at birth, 2022		60.1 anni
Goal 4 - Education			
BES DEF	Early leavers from education and training, 2022		11.5%
BES	People having completed tertiary education (30-34 years old), 2022		27.4%
	Inadequate level of literacy (students in grade 10), 2022		34.1%
	Inadequate level of numeracy (students in grade 10), 2022		45.6%
	Physically accessible schools, 2022		35.8%
Goal 5 – Gender equality			
BES DEF	Ratio of employment rate for women aged 25-49 with at least one child aged 0-5 to the employment rate of women 25-49 years without children, 2022		72.4%
BES	Women and political representation at regional level, 2023		23.5%
	Proportion of women aged 16-70 subjected to physical or sexual violence by a man other than intimate partner in the previous 5 years, 2014		7.7%
Goal 6 - Water			
BES	Sewage treatment, 2015		59.6%
	Urban water supply network efficiency, 2020		57.8%
Goal 7 – Energy			
	Renewable energy share in the gross final energy consumption, 2021		19.0%
BES	Electricity from renewable sources, 2021		35.1%
	Energy intensity, 2021		92.8%
	Share of new registered electric or hybrid passenger cars, 2022		42.6%
Goal 8 - Work and economic growth			
	Annual growth rate of real GDP per capita, 2022		-8.5%
BES DEF	Non-participation rate, 2022		16.2%
BES	Employment rate (20-64 years old), 2022		64.8%
BES	NEET - People not in education, employment, or training (aged 15-24), 2022		19.0%
BES	Share of employed persons not in regular occupation, 2020		12.0%
	Employment rate (20-64 years old), 2022		64.8%
Goal 9 - IIndustry, innovation and infrastructure			
	CO2 emission per unit of value added, 2021		157.9 t/milion euro
BES	R&D intensity, 2020		1.51%
	Researchers (in full time equivalent), 2020		26.3 per 10,000 inhabitants
	Freight volumes, by mode of transport, 2021		1593953 thousand
	Passenger volumes, by mode of transport, 2021		The total is not available for road trasport data are missing
Goal 10 - Reduced inequalities			
BES DEF	Disposable income inequality 2021		5.6
BES DEF	Adjusted gross disposable income per capita, 2022		25370 euro pro capite
BES	People at risk of poverty, 2022		20.1%
Goal 11 – Sustainable cities			
	Public expenditure per capita spent on the preservation of the cultural and natural heritage, 2021		38.2 euro
BES	Landfill of waste, 2021		19.0%
BES DEF	Illegal building rate, 2022		15.1%
	Incidence of urban green areas on urbanised area of the cities, 2021		8.6%
	Population at risk of flood, 2020		11.5%
	Population at risk of landslides, 2020		2.2%
Goal 12 - Responsible consumption and production			
BES	Domestic material consumption per capita, 2021		8.6 t/inhab.
BES	Domestic material consumption per GDP, 2021		0.30 t/1000 euro
	Separate collection of municipal waste, 2021		64.0%
	Circular material use rate, 2021		18.4%
Goal 13 - Climate action			
BES DEF	Emissions of CO2and other greenhouse gases, 2021		7.0 t eq./inhab
Goal 14 – Life below water			
	Marine protected areas EUAP, 2019		3,076,2 km^2
Goal 15 – Life on land			
BES	Protected natural areas, 2022		21.7%
BES	Soil sealing from artificial land cover, 2021		7.2%
	Fragmentation of natural and agricultural land, 2021		44.7%
Goal 16 - Peace, justice and institutions			
BES	Intentional homicide rate, 2021	Males	0.6 /100,000 inhab.
		Females	0.4 /100,000 inhab.
	Unsentenced detainees as a proportion of overall prison population, 2022		15.1%
BES DEF	Length of civil proceedings, 2022		433 Days
BES	Prison density, 2022		109.5%
Goal 17 – Partnerships			
	Official Development Assistance as a proportion of gross national income, 2022		0.32%

In the case of using statistical measures for the NSSD monitoring, it is essential to have not only regional, but also municipal and sub-municipal territorial breakdowns in order to carry out analysis and monitoring for regional and urban strategies.

Istat is enhancing the dissemination of statistical information of high territorial detail and the use of geographical statistical data from statistical registers. The use of such geostatistic data will allow building statistical measures with a territorial detail that is useful for analysis and monitoring; it will enhance analyses that can be a factor of integration regarding social, environmental, economic and institutional issues, ensuring a gradually richer statistical and informative mosaic, attentive to the interconnections between sustainability and climate change, in full compliance with what has been established and desired at international level.

Statistical measures are, in fact, a crucial element in ensuring a community language and a shared culture and are a constant reminder of the need for concreteness. Much has been done and much is still to be developed; it will be important to do so by keeping active all the partnerships involved in the National Statistical System and by increasing collaboration with civil society.