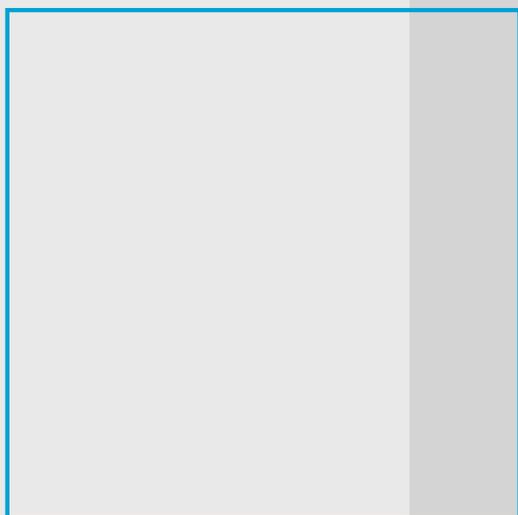
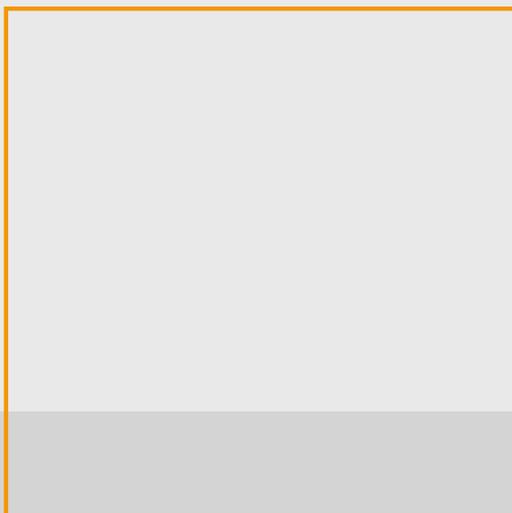




ARERA

Autorità di Regolazione
per Energia Reti e Ambiente



**ANNUAL
REPORT ON
THE STATE OF
SERVICES
AND REGULATORY
ACTIVITIES 2022**

SUMMARY



Note to the 2022 edition

The elements contained in the two volumes of the ARERA Annual Report on Regulatory Activities and the State of Services cover the 12 months of the 2021 calendar year. For ease of reference, tables and figures in this summary show the numbering and references of the two full volumes of the 2021 Annual Report, which can be downloaded at https://www.arera.it/it/relaz_ann/22/22.htm. This edition was distributed on the occasion of the Annual Report to Parliament on **15 July 2022**.

Table of contents

- **Presentation**
- **National and international context**
- **Electricity**
- **Natural gas**
- **District heating**
- **Water services**
- **Waste cycle**
- **Customer protection**
- **Supervision and litigation**
- **Implementation of regulation,
communication, organisation and resources**

PRESENTATION

The Italian Regulatory Authority for Energy, Networks and Environment (ARERA), established by Law no. 481 of 1995 and fully operational since 1997, carries out regulation and control activities in the sectors of electricity, natural gas, water services, district heating and waste cycle. The Authority operates with full autonomy and with an independent judgement within the framework of the general policy guidelines formulated by the Government and Parliament and of the regulations of the European Union. It is a collegial body, the five members of which are chosen from among persons of high and recognised professionalism and competence. To safeguard its independence, the Board's appointment procedure provides for a Broad institutional consensus: the members are appointed by decree of the President of the Republic, upon resolution of the Council of Ministers, following a recommendation by the Minister for Economic Development and the Minister for Ecological Transition, and with a binding opinion expressed by a qualified majority of the competent committees of the Chamber of Deputies and the Senate. Board members hold office for a term of seven years and may not be reappointed.



With Presidential Decree of 9 August 2018, Gianni Castelli (from left), Andrea Guerrini, Stefano Besseghini (Chairman), Clara Poletti and Stefano Saglia were appointed as members of the ARERA Board

At an **international level**, the Authority participates in the work of the Agency for the Cooperation of Energy Regulators (ACER), which currently chairs the Board of Members, and it is a founding member of the Council of European Energy Regulators (CEER). It is the main initiator of the Association of Mediterranean Energy Regulators (MEDREG), of which it is appointed as permanent Deputy Chair and plays a leading role in the Energy Community Regulatory Board (ECRB). It also supports the International Confederation of Energy Regulators (ICER) and promoted the launch of the European Water Regulators (WAREG), a network for cooperation between water regulators, which it currently chairs.

As the owner of the ADR Conciliation Service Entity, the Authority is a member of NEON (National Energy Ombudsmen Network), a European non-profit association network.

As part of the activities related to the Western Balkans area, the Authority participates in the Know Exchange Programme (KEP) project "Central European Initiative (CEI) - Support for strengthening energy regulatory authorities in the Western Balkans". Finally, the Authority's involvement in the OECD continued in 2021, within the Network of Economic Regulators (NER), the forum that promotes dialogue between the authorities of member countries and the Organisation's observers, who are responsible for economic regulation in multiple sectors.

FOCUS ON 2021 ACTIVITIES**Approval of the 2022-2025 Strategic Framework**

The Regulation on the Organisation and Operation of the Authority¹ stipulates that the Authority shall establish priorities and strategic objectives for its regulatory activities and update them periodically. According to the aforementioned regulation, and as the previous 2019-2021 Strategic Framework was about to expire², in October 2021 the Authority initiated the proceeding for the adoption of the 2022-2025 Strategic Framework, putting document 465/2021/A out for consultation and ordering its publication on the institutional website.

The training process for the 2022-2025 Strategic Framework consisted of the following phases:

- October 2021: approval and publication of the Authority's orientation on strategic guidelines and related objectives (consultation document);*
- November 2021: regular hearing of stakeholders on the orientations expressed in the consultation document;*
- January 2022: assessment of the responses and comments received and finalisation of the Strategic Framework.*

As in the previous Strategic Framework, the need to address regulatory issues with a convergent approach across the various regulated sectors was emphasised.

This implied that, alongside the Environment and Energy Strategic Areas, a transversal Strategic Area was also identified, whose strategic guidelines concern, among others, the strengthening of customer awareness, system innovation and the promotion of the environmental and socio-economic sustainability dimensions of the regulation.

¹ Article 8(4), resolution 57/2018/A of 2 February 2018.

² Adopted by resolution 242/2019/E/eel of 18 June 2019.

NATIONAL AND INTERNATIONAL CONTEXT

After the major recession in 2020 caused by the Covid-19 pandemic (-3.1% worldwide and -5.9% in Europe), 2021 saw a significant growth in the economy: +6.1% globally, with the European Union recording +5.4% (Italy +6.6%).

The United States of America recorded +5.7% (-3.4% in 2021). The growth rates of the major Asian economies, such as China (+8.1%, but +2.3% in 2020) and India (+8.9%, -8% in 2020) are even higher.

The economic recovery can be attributed to the exceptional tax and monetary support measures and the sustained recovery of demand after the pandemic; however, some factors hindered a recovery that could have been broader: bottlenecks in supply chains (clogged ports, land-side bottlenecks), supply/demand imbalances, shortages of commodities, and the rise in their costs, particularly those of energy products.

In the wake of the Russian invasion of Ukraine, the global economic outlook worsened significantly compared to forecasts at the beginning of 2022: in April this year, the International Monetary Fund estimated an annual global growth rate of 3.6%, revising the figure communicated in January by -0.8%.

International oil market

2021 was a year of restart and change for the oil markets: the global economic recovery and the gradual normalisation of demand for mobility led to a significant increase in oil consumption while supply struggled to keep pace (also due to the slowdown in upstream investments), contributing to a tense market characterised by a fragile balance. **Global oil demand increased by +6% compared to 2020** to 97.5 mln barrels per day (91 mln bbl/d in 2020) still below the near 100 mln bbl/d levels reached in 2019, which are estimated to be reached in 2022.

Crude oil supply was 95.2 million bbl/d (+1.5% compared to 2020) but below the pre-Covid level of 5 million bbl/d.

In 2021, the average Brent price stood at \$ 70.7/bbl (+70% compared to 2020), also surpassing the annual average level of \$ 64.3/bbl in 2019 (pre-Covid). At the end of 2021, quotations were hovering around \$ 80/bbl, while current values in June 2022 stood at around \$ 120/bbl.

The price of crude oil in euros, with a largely stable exchange rate, shows a trend in line with the dollar-denominated price in 2021: there was a 64% increase, from 37 €/bbl in 2020 to 59.9 €/bbl, whereas the value in 2019 had been 57 €/bbl.

57 €/bbl.

International gas market

2021 saw a major upswing in global gas consumption to over 4,000 billion m³ (+4.5% compared to 2020), with levels higher than pre-Covid, driven by consumption in Asia (+8.7% Eurasia and +6.4% Asia-Pacific) and, especially, China (+12%). Growth of demand in Russia has also been very significant (+10.9%), while use in the United States of America has instead remained stable.

In the EU-27, after decreasing by almost 3% in 2020, demand grew by **17 bcm** to 412 bcm (+4.3%).

The reasons for these increases lie in the recovery of economic activities and greater use of methane in electricity production, also due to the reduction of wind power production in Northern Europe, to a lesser use of nuclear and coal in France and Germany and to a late arrival of spring that prolonged heating consumption across the continent.

Following the major recovery of consumption, the EU recorded a 3% increase in imports, going from 326.7 to 337.5 bcm. Although with declining volumes³, **the main supplier was Russia with 45.3% of the total**, followed by Norway with 23.6%, Algeria with 12.6%, the United States of America with 6.6%, and Qatar with 4.9%; the remaining 7.1% came from other suppliers, including Azerbaijan (about 2%) and Libya (1%). **About 24% of the imported gas** came to Europe in the form of **LNG** from: the United States of America (22.3 bcm), Qatar (16.3 bcm), Russia (16 bcm), Nigeria (11.2 bcm), Algeria (8.5 bcm), Trinidad Tobago (2 bcm) and other Countries (3.7 bcm). The EU's needs were also met through heavy reliance on storage, with a change in the injection/withdrawal balance of about -23 bcm (-33 in 2020)⁴.

2021 saw an **extraordinary rise in Asian and European prices, the latter more than quadrupling on average year-on-year**. The **TTF**, Europe's leading hub in terms of trading size, liquidity, and significance of values, rose from 19.3 €/MWh at the beginning of the year to 106.1 €/MWh at the end of 2021 (annual average 44 €/MWh), while at the **PSV** Italian hub, prices rose from 19.8 €/MWh in January to 109.5 in December (annual average 44.6 €/MWh). A similar trend has been seen in the other main European exchange points.

International LNG market

In 2021, international LNG trade grew by 4.5% to a volume of 372.3 Mt. However, this is a lower increase compared to 2019 (+13%) and the average annual growth rate of 8% over the 2015-2019 period. On the demand side, at the regional level, the recovery was uneven and mainly affected Asia, which recorded +7%, absorbing a 73.2% share of international trade, while Europe (about -8%) suffered from JKM/TTF price differentials in favour of the Asian benchmark, which made the shores of this market more attractive to exporters.

³ In Q4 of 2021, direct pipe volumes to Europe fell by 25% compared to the same period in 2020. Nord Stream 2, from Russia to Germany, with a capacity of 55 bcm, was expected to go into operation by the end of the year, but in mid-November, the German Federal Network Agency (Bundesnetzagentur) announced the temporary suspension of the approval process due to a legal obstacle.

⁴ European storage started autumn disbursement with a low filling level, equal to 77%, and closed the year at 54%, as compared respectively with 95% and 75% in 2020.

Prices of spot or short-term traded LNG also reached record levels worldwide during 2021, beginning a continuous upward race since March.

In Asia, on an annual average, the price of imported LNG was 54 €/MWh, four times higher than in 2020, while the price of LNG supplied in South-Western Europe was 48 €/MWh, up 400% year-on-year. The average price differential between the two markets widened from 2.4 €/MWh in 2019 to 3.4 €/MWh in 2020 and to 6.2 €/MWh in 2021.

International coal market

By 2021, the growth in coal demand was around +4.5%, to around 7,800 million tonnes and back to levels above 2019 and the highest since 2014. From a regional point of view, in 2021 once again China is the main market player (+4.6%). The reference prices of the main coals, European, Chinese and American ones, rose sharply in 2021 compared to the previous year. For Europe and China, the rise is in triple digits, of +149% and +134% respectively.

EU ETS: the European Emissions Trading Scheme

In 2021, the total emissions of operators under ETS increased by 7.3% compared to 2020 but decreased compared to pre-pandemic levels. The increase was the result of 8.3% growth in emissions from the electricity sector, 5.2% growth in the main industrial sectors and 8.7% growth in aviation. The increase in the thermoelectric sector is mainly attributable to the switch from gas to coal and higher electricity demand in the context of post-pandemic recovery.

Rising as early as April 2020, the carbon price continued to rise in 2021, closing at an annual average of 53.18 €/tonne, up 115% compared to 2020 (24.7 €/tonne) and 114% compared to 2019 (24.8 €/tonne).

Electricity and natural gas prices in the UE⁵

Electricity prices for households

In 2021, average electricity prices for Italian households will overall maintain the relative position of 2020 compared to other countries of the Euro area in terms of prices before charges and taxes but worsen in terms of net prices.

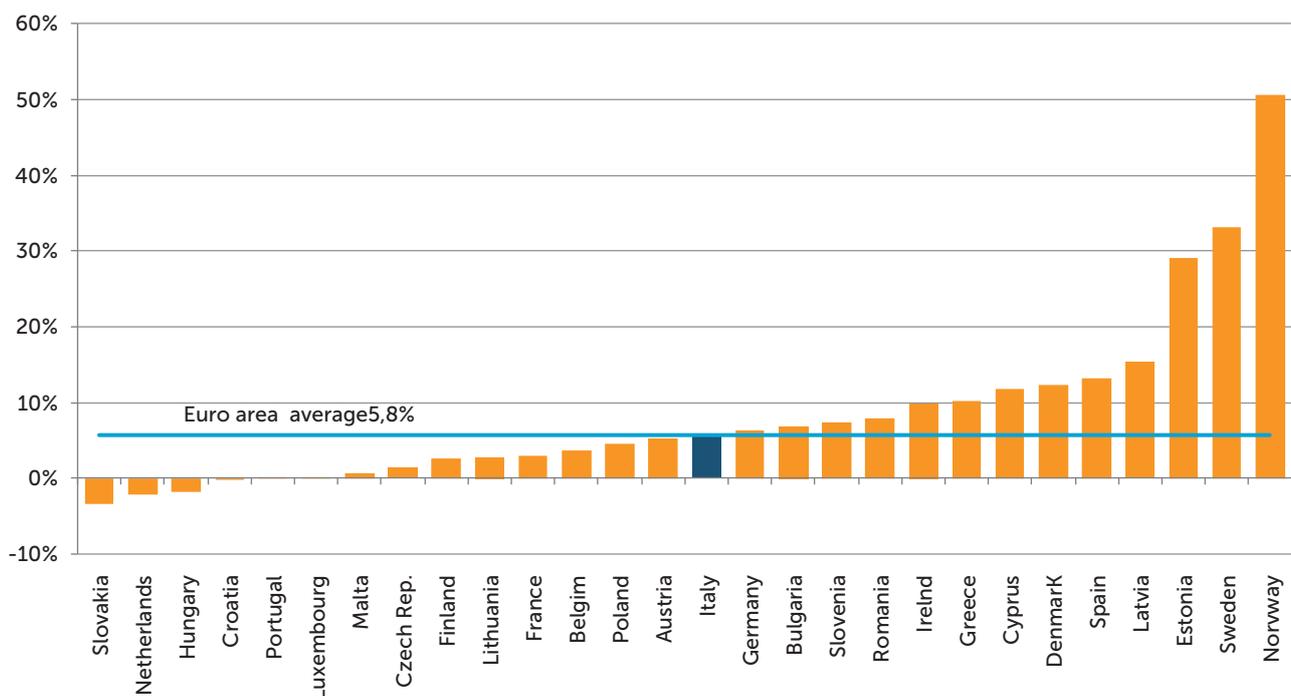
⁵ The comparison of the average electricity and natural gas prices charged in 2021 in the different Countries for the various consumption classes and types is made on the basis of the data resulting in Eurostat on 5 May 2022. Due to Brexit, data from the United Kingdom, which, due to the size and importance of the electricity and gas market, had been until now one of the countries against which price comparisons were traditionally made, no longer appear in Eurostat statistics.

In 2021, **the gross price differential** remains high for the first consumption class with +21% in 2021 (+18% in 2020) while it becomes positive again, albeit slightly, for the last consumption class with +1% in 2021 (-6% in 2020). The differentials of the three central consumption classes at -3%, -4% and -2%⁶ remained almost unchanged from the previous year and were negative.

In terms of **net prices**, however, for the first time ever positive differences are seen with respect to the Euro Area for all consumption classes, above 10% for the first and last classes and just below 10% for the three central consumption classes.

The trend in the tax component, which continues to show a non-digressive structure unlike in the rest of the continent, is in line with that of the Euro area, with much more marked changes in Italy than in the other Countries. Looking at the incidence of the charge component, there is a share of between 26% of the second and 37% of the last consumption class, values not too dissimilar from the average of the Euro area.

FIG. 1.11 *Change in 2021 pre-tax electricity prices for households with consumption between 2,500 and 5,000 kWh/year*



Source: ARERA, processing of Eurostat data.

In 2021, Germany once again confirms its status as the country with the highest electricity prices for households, compared to which Italian customers continue to pay significantly lower final prices in line with 2020 values in the middle classes, while in the last class they lose part of the advantage achieved the year before (-28%) but still remain well below -19%.

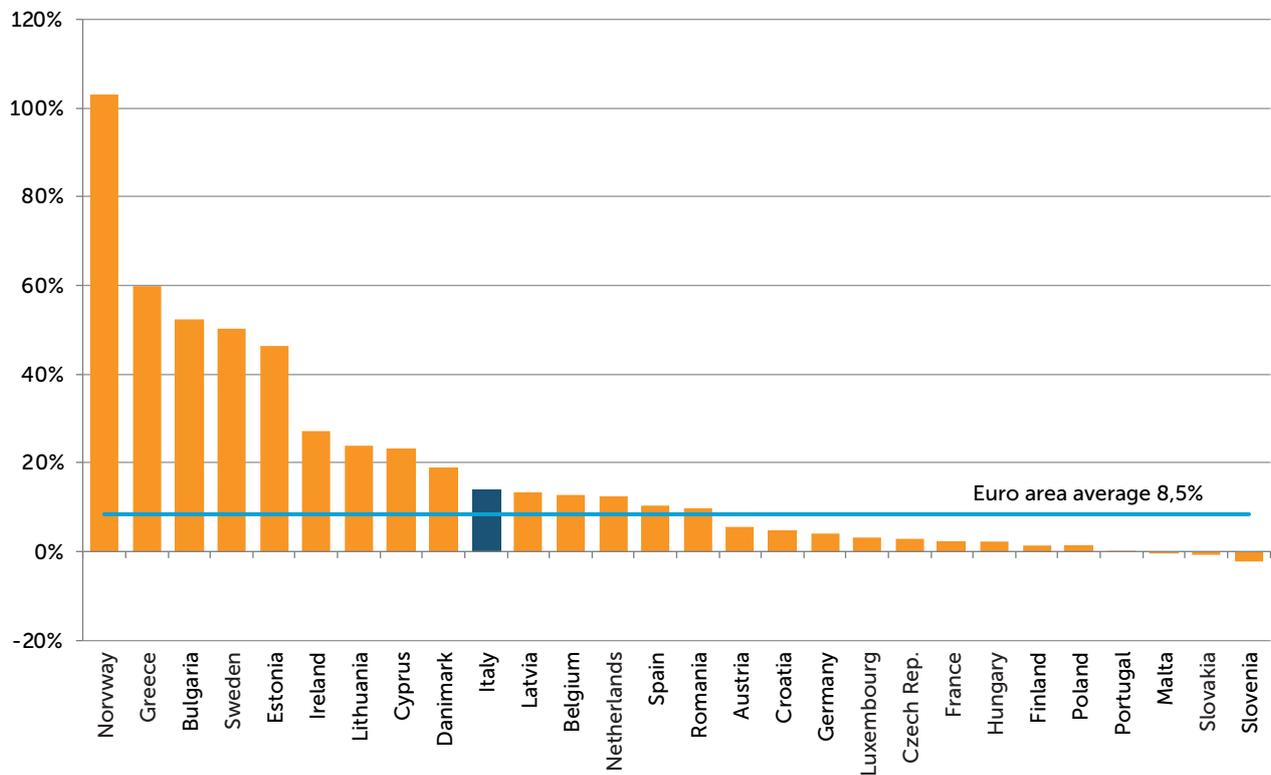
⁶ The first consumption class has a consumption of less than 1,000 kWh/year. The following classes are: between 1,000 kWh/year and 2,500 kWh/year; between 2,500 kWh/year and 5,000 kWh/year; between 5,000 kWh/year - 15,000 kWh/year; above 15,000 kWh/year. The second and third classes are those where the highest consumption is concentrated in our Country, covering in one case 38% and in the other 42% of the total electricity billed to the household sector in 2021.

Electricity prices for industrial customers

In 2021, the gradual narrowing of the gap between the gross average electricity prices for the industrial sector in our Country and the cheapest prices paid in the Euro area was reversed, marking a worsening of the situation for all classes except for the first one⁷.

Italian prices for the first class remain the highest by 21% (+27% in 2020), while for the other three classes the positive differential widens (from +5% to +13%, from +9% to +14% and from +7% to +8%). This growth is entirely due to net price increases (which contribute with a +25% share), against a contraction of the tax component (which is responsible for an average price decrease of -3%). By contrast, the Euro area saw an average price growth of +13%, which was due to a lower increase in net prices and substantial stability in tax components.

FIG. 1.13 *Change in 2021 pre-tax electricity prices for industrial customers with consumption between 500 and 2,000 MWh/year*



Source: ARERA, processing of Eurostat data.

⁷ The consumption bands for industrial customers are divided as follows: less than 20 MWh/year; between 20 and 500 MWh/year; between 500 and 2,000 MWh/year; between 2,000 and 20,000 MWh/year; between 20,000 and 70,000 MWh/year; between 70,000 and 150,000 MWh/year.

As has been the case for years now, average Italian prices gross of charges and taxes continue not to be amongst the highest in the major European countries. Indeed, industrial electricity customers in our Country continue to pay lower prices than their German counterparts with a negative differential averaging -10% (ranging from -7% in the second consumption class to -19% in the last one).

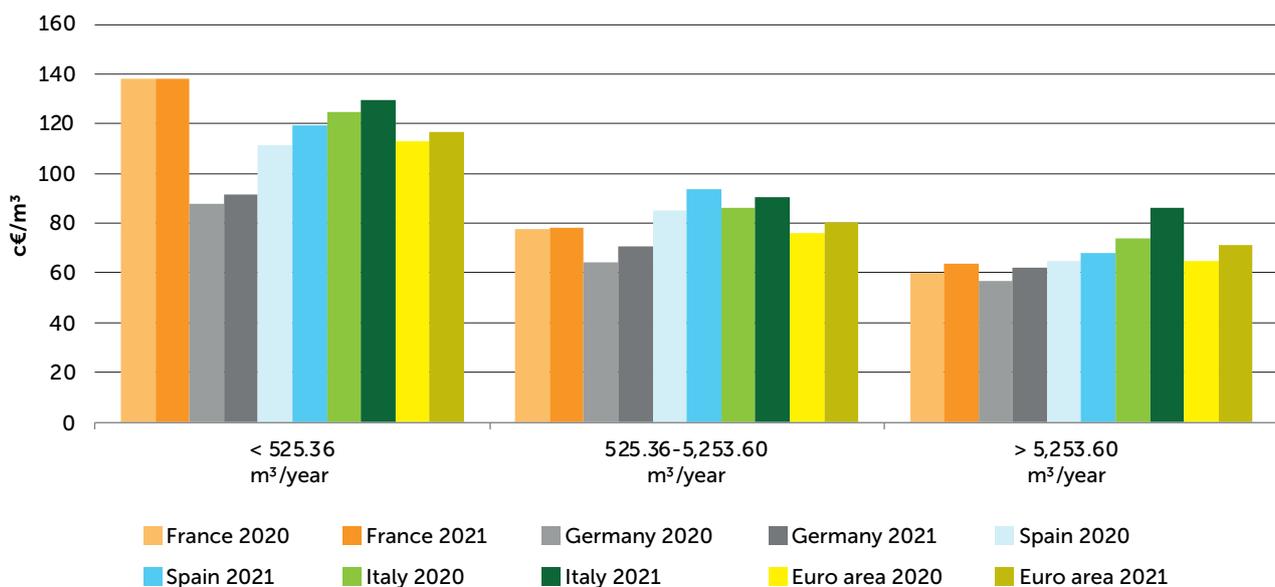
Natural gas prices for households

The prices of natural gas for Italian households, including charges and taxes, are confirmed as higher than the average prices of the Euro area for all consumption classes for 2021 too⁸.

For the first consumption class, the differential was +11%, in line with the previous year, while the upper consumption classes showed gaps of +12% (+13% in 2020) and +21% (+15% in 2020), respectively.

The charges and taxes component are confirmed to be higher in Italy than in the Euro area for the highest consumption classes (respectively +8% and +21%), although with a sharp drop in positive differentials (in 2020 they were +28% and +44%), especially compared to Germany, which in past years was the country with the lowest taxes and in 2021 is second only to Italy. On the other hand, the negative differential for the first class is confirmed, rising from -14% to -24%. These changes are mainly due to the dynamics of net price increases, both in Italy and in the Euro Area, which occurred, however, as already seen above for electricity, more markedly in Italy (on average +20% vs +7%), against a decrease in tax components in Italy (on average -8.4%), in contrast with the increases in the Euro Area (on average +7%).

FIG. 1.15 Natural gas prices for domestic use before taxes in the main European countries



Source: ARERA, processing of Eurostat data.

⁸ Eurostat consumption classes are expressed in GJ; the limits of the ranges given in the text have been translated into cubic metres on the basis of standard heat content for greater readability, are rounded to the nearest integer value and are broken down as follows: < 520 m³/year (mainly cooking and hot water uses); between 520 and 5,200 m³/year (this class has the largest share in total household consumption at about 72%); above 5,200 m³/year (mostly representative of central heating).

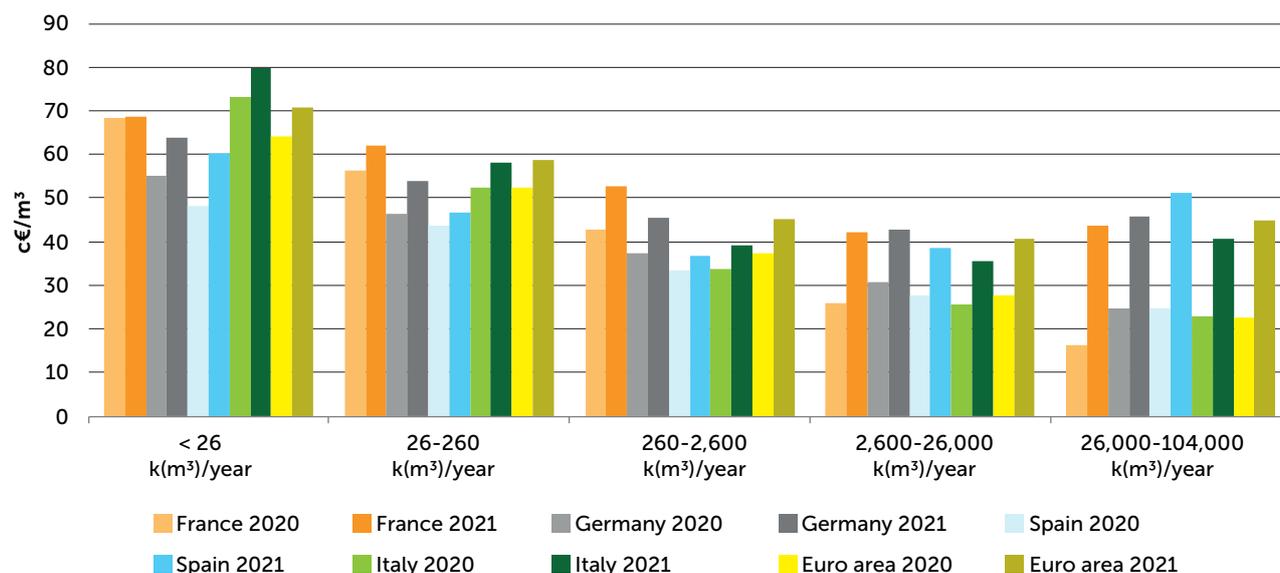
Turning to a comparison with the main European countries, the Italian price for households in the first two consumption classes is only lower than that paid by their French and Spanish counterparts, while it remains the highest for the last consumption class. The best prices, in all classes, remain the German ones.

Natural gas prices for industrial customers

In 2021, Italian gas prices for industrial customers were lower than those in the Euro area in all classes except for the first one⁹ (+13%, +14% in 2020), confirming the trend observed in recent years. The second consumption class saw the differential increase from 0 to -1%, while the second and third classes both marked -13% (-9% and -8% in 2020, respectively) and, finally, the highest consumption segment saw a reversal from +2% in 2020 to -9% last year.

In terms of taxation, the negative gap between Italian and Euro area taxes widens again for the last three classes, with the first class going from +22% in 2020 to +1% and the second from 0 to -22%. These changes are due to the fact that the tax components in Italy have either decreased to a greater extent than in the Euro area or grew with smaller increases.

FIG. 1.16 Natural gas prices for industrial use before taxes in the main European countries



Source: ARERA, processing of Eurostat data.

In price comparisons with the main European Countries, Italian industrial customers paid more in 2021 than German customers for the first two consumption classes (although positive differentials are decreasing: from +33% in 2020 to +25% in 2021 and from +13% to +8%) and paid less for the other classes with negative differentials widening and ranging from -11% to -17%.

⁹ Again, the Eurostat consumption classes (see footnote 6) were converted as follows: less than 26 thousand m³/year; between 26 and 260 thousand m³/year; between 260 thousand and 2.6 million m³/year; between 2.6 and 26 million m³/year; between 26 and 104 million m³/year.

Economic and climate trends in Italy in 2021

After the severe decline (-9%) recorded in 2020, the Italian economy achieved a significant growth in 2021: according to the latest ISTAT estimates, GDP grew by 6.6% net of price changes. However, growth has not been sufficient to recover pre-pandemic levels: the value of GDP at linked prices in 2021 is still three percentage points lower than in 2019.

The recovery in world trade and international tourist flows was favourably reflected in Italy's exports (+13.3%) and national consumption also showed a good recovery (+4%), mainly due to the increase in household spending (+5.2%).

As far as climate trends and their influence on energy consumption are concerned, according to ENEA¹⁰ the temperatures in the summer were overall higher than their respective 2020 levels, favouring an increase in electricity consumption for space cooling. Similarly, temperatures in January and February 2021 were about one degree colder than in the same months of 2020, just as April and May were about two degrees colder than the corresponding months of the year before, pushing up gas consumption for heating in particular. Finally, in the last quarter of the year, the pressure on gas consumption for heating was more modest, but still positive, considering December 2021 to be colder than December 2020.

Energy supply and demand in Italy

The economic recovery has brought with it growth in energy consumption: in 2021, gross domestic energy consumption rose from 141.6 to 150.5 mln toe, (+6.3%, a rate slightly lower than the rise in GDP). The energy intensity indicator remained broadly at 2019 levels with minimal fluctuations (-0.3%), confirming the complexity of the path needed to achieve the ambitious 2030 system efficiency objectives.

In 2021, final consumption reached 114.8 mln toe, up 11.4% from the previous year. The industrial sector (+6.7 %) and especially the transport sector (+22.1 %), which recovered after being the sector hardest hit by the pandemic (-19.2 % in 2020), were the drivers. Services (+6%) and residential (+8.2%) also increased, the latter mainly due to colder weather in winter-spring 2021.

The analysis of consumption by resource saw a generalised increase with **gas** growing by 7.2%, thanks to an increase in all uses (+5.8% thermoelectric, +10.9% residential and +9.7% industrial), **oil products** at +6.5%, coal which, bucking the trend of recent years, posted +9% and, finally, **renewable energy resources** (including bioliquids) with +1.5%.

¹⁰ ENEA. Quarterly analysis of the Italian energy system, no. 1/2022.

Electricity imports are also on the rise (+17%) and the overall dependence of our energy system on imports (net of exported products) has been around 76% in 2021.

Finally, the increase in total electricity consumption was slightly lower than GDP growth, thus leading to a reduction in electricity intensity (-0.6%).

TAB. 1.17 National energy balance in 2020 (in ktoe)

COUNTRIES	CUSTOMERS BY ANNUAL CONSUMPTION BAND (thousands of m ³)									
	<26		26-260		260-2,600		2,600-26,000		26,000-104,000	
	NET	GROSS	NET	GROSS	NET	GROSS	NET	GROSS	NET	GROSS
Austria	47.74	65.53	35.97	51.25	34.96	50.04	33.30	47.85	29.58	42.96
Belgium	45.67	57.68	35.91	45.55	27.94	35.72	27.58	34.79	34.75	42.73
Bulgaria	47.71	58.64	44.74	55.07	38.83	47.93	34.99	42.71	34.95	42.13
Czech Republic	31.83	38.96	28.80	35.36	29.27	35.86	32.25	39.19	39.03	46.92
Croatia	44.84	58.34	36.70	47.58	33.75	44.66	36.91	46.91	-	-
Denmark	56.22	112.63	54.80	110.85	50.35	105.30	50.91	106.00	57.31	113.99
Estonia	49.20	63.88	53.61	69.17	48.23	62.60	40.22	51.97	-	-
Finland	80.86	127.88	55.75	96.75	62.80	105.48	49.07	88.46	33.71	69.42
France	49.05	68.74	43.46	61.95	37.17	52.58	33.49	42.26	37.14	43.78
Germany	42.85	63.91	34.80	53.92	28.28	45.48	27.68	42.74	32.10	45.64
Greece	72.80	83.61	57.82	67.06	36.90	42.12	33.72	37.36	0.00	0.00
Ireland	51.82	65.12	49.97	62.85	42.06	51.65	36.07	41.00	27.71	31.86
Italy	55.81	79.80	41.77	57.99	31.80	39.13	30.64	35.42	36.00	40.76
Latvia	57.39	71.61	44.09	55.34	34.83	43.69	26.13	32.89	-	-
Lithuania	58.82	74.67	57.97	74.30	50.18	64.26	44.97	56.84	-	-
Luxembourg	47.80	57.40	44.29	52.79	36.83	44.35	-	-	-	-
Netherlands	-	-	29.16	92.07	30.23	55.72	30.71	45.31	39.44	52.89
Poland	58.80	73.61	39.50	49.88	35.59	45.05	34.66	43.54	37.47	46.77
Portugal	52.40	74.51	37.69	53.88	28.95	37.84	27.65	34.84	31.66	39.10
Romania	43.14	52.35	40.58	49.31	35.18	42.73	34.68	42.05	30.62	37.04
Slovakia	48.11	59.41	43.20	53.51	30.49	38.26	27.00	34.08	32.12	40.23
Slovenia	42.02	59.37	39.87	56.67	34.72	49.59	32.87	44.48	-	-
Spain	47.13	60.13	36.65	46.79	28.77	36.76	30.13	38.45	40.51	51.12
Sweden	109.33	137.80	82.42	101.64	65.55	81.55	61.41	77.99	19.54	25.81
Hungary	31.03	41.57	36.271	48.71	34.30	46.04	35.20	56.51	32.66	43.51
European Union	46.88	69.10	38.03	57.54	31.93	45.53	31.01	41.92	35.22	45.26
Euro area	46.90	70.62	37.79	58.60	31.23	45.21	30.11	40.71	35.07	44.93

(A) Data for Cyprus and Malta is not available and therefore it does not appear in the table.

Source: ARERA, processing of Eurostat data.

Water systems in europe

The European Environment Agency Water Exploitation Index is a measure of total freshwater use as a percentage of renewable freshwater resources (groundwater and surface water) at a given time and place: it quantifies how much water is abstracted and how much water is returned after use to the environment.

In general, values above 20% indicate mild water scarcity, while values of 40% or more indicate situations of severe water scarcity, where therefore the use of freshwater resources is clearly unsustainable. In the available data for 2017, Italy is below 20%, although the figure for the EU-27 average and other major European countries such as France and Germany is well below 10%, with Spain, on the other hand, above 20%.

Italy is the country with the highest consumption per person per day, about 220 litres per person per day compared to values below 150 l/inhabitant per day in all the other Countries (except France and Portugal).

Another interesting aspect in the comparison with the other Countries concerns the rate of compliance with European standards¹¹ regarding wastewater treatment: according to the Agency's data, in fact, only 4 Countries (Austria, Germany, Luxembourg and the Netherlands) treat 100% of their municipal wastewater in compliance with the requirements of the Directive and 10 other Countries have achieved a compliance rate of more than 90%. In 5 Countries (Ireland, Bulgaria, Romania, Hungary, and Malta), the rate of compliance with European standards is below 50%. In Italy, only 56% of treated wastewater complies with EU standards.

Municipal and similar or related waste in Europe

ARERA's processing of Eurostat and ISPRA data confirms the trend in Europe towards stability - if not towards an increase - in total and per capita municipal waste production, evidence of which only future observations will be able to establish the cyclical or structural nature.

In 2020, the EU-27 aggregate produced 225.7 million tonnes of municipal and similar or related waste, a slight increase over the previous year (+1%), corresponding to an average of 505 kg per inhabitant. Italy's production, which was not negligibly reduced compared to the previous year, confirming a multi-year trend, stood at 28.9 million tonnes equivalent (-3.6% compared to 2019) and 489 kg/inhabitant (-3%). The trend towards substantial stability in absolute production over time, at the EU level, is confirmed by the per capita waste generation figure (from 499 to 505 from 2011 to 2020): the declining trend recorded in some Member States (including Italy and Spain in the Countries included in the comparison) is more than compensated by growth in some large economies (France and Germany) and in part of the central-eastern area of the EU.

¹¹ Council Directive 91/271/EEC of 21 May 1991 concerning municipal wastewater treatment.

In terms of material recovery, the data show in particular the inhomogeneities still existing between the Member States with the virtuosity of some Countries (Germany is already in line with the 2035 objectives), while others are still a long way from the trend objectives of maximising recovery to reduce landfill.

In 2020, the figure for total waste recovered in the EU-27 was 241 kg per capita (151 kg recycling and 90 kg composting) or about 48% of the municipal waste per capita produced, which is below the programme objective of 50% of municipal waste going to material recovery set by the previous legislation (the Framework Directive revised in 2018).

ELECTRICITY

Consumption, production, facilities and markets

In 2021, electricity consumption grew by around 6%¹² to 300.6 TWh and returned to pre-pandemic levels, driven by all sectors. The national demand was met 86.5% by national production and the remainder by the foreign balance (+32.9% compared to 2020, when it had reached its lowest value in the last twenty years): imported energy increased by 17%, while exported energy, already of a limited amount, halved. The increased reliance on imports is attributable to the need to cover rising demand, in a year, moreover, of lower penetration of renewable energy resources, which, due to insufficient hydroelectric production, guaranteed a share of electricity production of around 40% (42% in 2020).

National production increased by 1.9% to 286.9 TWh, as a result of the growth in thermoelectric (+5.2%) and of the slight contraction in renewable energy resources (-1.9%), which was weighed down by the sharp drop in hydroelectric production (-6%). The contribution of the thermoelectric resource accounted for 59.3% of the total (+1.6% over 2020).

TAV. 2.3 Gross production by resource 2017-2021 (GWh)

SOURCE	2017	2018	2019	2020	2021 ^(A)
Thermoelectric production	190,106	173,578	176,171	161,673	170,077
Solids	32,627	28,470	18,839	13,380	14,595
Natural gas	140,349	128,538	141,687	133,683	142,062
Petroleum products	4,083	3,289	3,453	3,175	4,092
Other	13,047	13,281	12,192	11,436	9,328
Hydroelectricity from pumping	1,826	1,716	1,835	1,944	2,091
Production from renewable energy resources	103,898	114,415	115,847	116,915	114,737
Hydroelectric	36,199	48,786	46,319	47,552	44,740
Wind power	17,742	17,716	20,202	18,762	20,789
Photovoltaic	24,378	22,654	23,689	24,942	25,039
Geothermal	6,201	6,105	6,075	6,026	5,897
Biomass and waste	19,378	19,153	19,563	19,634	18,272
TOTAL PRODUCTION	295,830	289,709	293,853	280,532	286,905

(A) Provisional data.

Source: Terna.

In 2021, as in 2019, Eni confirmed its position as the leading operator in the thermoelectric generation, having produced more than Enel (15.7% vs 15.3%), albeit with less installed power.

¹² Source: Electricity Transmission Grid Operator.

The costs of incentivised energy (63 TWh) amounted to approximately € 10.5 billion (€ 11.5 bln in 2020), and we have to go back to 2013 (€ 10.7 billion) to find such a cost level again.

In 2021, the increase in volumes traded directly on the stock exchange continued (221.3 TWh), reaching 76.2% of total trades on the PGM (+1.3% compared to 2020), while the average annual electricity purchase price (PUN) jumped from the all-time low reached in 2020 (38.92 €/MWh) to the opposite record in 2021 (125.46 €/MWh, +222%), in line with the dynamics of the main European power exchanges (in Germany +218%, in Spain +230%, in France +239%, in Scandinavia +475%). The increase was supported not only by the recovery in electricity demand but also by the rise in thermoelectric generation costs, fuelled by record-high prices of natural gas, coal and CO₂. At the zonal level, the price increase was characterised by homogeneous rises in the various areas and values ranging from 123.46 €/MWh in the South to 129.02 €/MWh in Sicily (which recorded the highest zonal price for the 15th consecutive year). The price differential between Sicily and the North area has halved (3.8 €/MWh vs over 8 €/MWh in 2020), while the differential between Sardinia and the North area has reversed (-1.6 €/MWh), with the latter being more expensive on average.

On the **transmission** side, there were only slight changes in the lines in 2021, but these were higher than in 2020, with increases in lengths averaging 1%. The number of stations also increased year-on-year by 7 units (+4 in 2020).

In 2021, the top 10 **distribution** operators (with more than 100,000 users) served 98.1% of total customers and supplied 98% of the electricity drawn from the distribution networks, as in the previous year. e-distribuzione (Enel group) remains by far the largest operator, accounting for 85.5% of total volumes. A total of 263.65 TWh were supplied during the year, 15 TWh more than in 2020 when the lowest ever recorded since the mid-2000s was reached.

The increase in volumes affected both domestic (+1 TWh) and non-domestic (+14 TWh) uses, although the latter remained below pre-pandemic levels, unlike the former. This is because not all services and productive activities have been able to resume full operations after the closures due to the health crisis, while in the domestic sphere many people are still at home, also due to the continuation, in some sectors, of teleworking.

The number of users served in 2021 was 36.9 million (+0.3% compared to 2020): 29.8 million households (81%) and 7.2 million non-domestic points (19%) took 23% and 77% of the distributed energy respectively. 80% of households were found to be residents and consumed 88.5% of all the electricity distributed to households. According to the data collected by the Annual Survey on the Regulated Electricity and Gas Sectors, last year 253 TWh were sold to the end market to about 37 million customers (+5% compared to 2020): in detail, Italian households purchased a total of 60.7 TWh (59.8 TWh in 2020, +1.5%) while non-households purchased 191.9 TWh (181.2 TWh in 2020, +5.9%), a value that remains below pre-Covid levels (198 TWh in 2019).

In 2021, the number of households was 29.9 million: 12.4 served in greater protection and 17.5 million in the free market. Thus, the overtaking of the free market over the standard offer service, which began in 2020, continued. In particular, domestic points served in the free market rose to 58.5% from 54.3% in 2020 and volumes to 60.7% from 57.1% in the previous year.

The average unit consumption of households in the market with a reference price is still slightly lower than that of households purchasing energy in the free market (1,925 kWh/year versus 2,111 kWh/year), but the differential is narrowing over time. In the initial phases of market opening, the first households to move to the free market were those with large consumption; now, on the other hand, households with lower consumption are also moving. In 2021, the gap narrowed from 223 kWh to 186 kWh.

If the consumption of the domestic sector is added to the consumption of non-domestic, low voltage points for which price protection continues to be permitted¹³, the share of electricity sold in the standard offer service is now very small, amounting to just 11.2% of the volumes of the entire Italian electricity market (corresponding to 38.4% of the total withdrawal points).

Geographically, the share of the free market is now predominant almost everywhere, but the usual regional gaps remain: the portion of energy purchased on the free market is usually larger in the central and northern regions. In 2020, the regions where more than half of all households bought electricity in the free market numbered 17. In 2021, Sardinia was the only region in which the share of households purchasing electricity on the free market did not reach 50%; in all the other 19 regions, more than half of households purchase electricity on the free market.

In 2021, the number of electricity **supplier** companies registered in the Authority's Registry of Operators is 855¹⁴: 112 in the standard offer service, 4 in the gradual standard offer service, 3 in the safeguard service and 804 in the free market. In particular, the latter returned to a sustained growth (+65 units) after a slowdown in 2020 (+16 units) but without reaching the levels of 2019 (+88 units). Smaller suppliers, who, however, continue to have the same market share (14.7%), virtually unchanged from the previous two years, increased. The Enel group remains, as always, the dominant operator in the entire Italian electricity market, albeit with a slightly declining share over the past few years: in 2021 it fell to 34.5% from 35.6%. The A2A group has risen to second place, with 6.3% of sales, while the Edison group, which traditionally held second place, has dropped to third place, with a total share of 5.3 (5.9% in 2020). Despite changes in the rankings, the level of **concentration in the total market** remained largely unchanged last year: the share of the three top players (corporate groups) rose to 46.1% of total sales (46.9% in 2020).

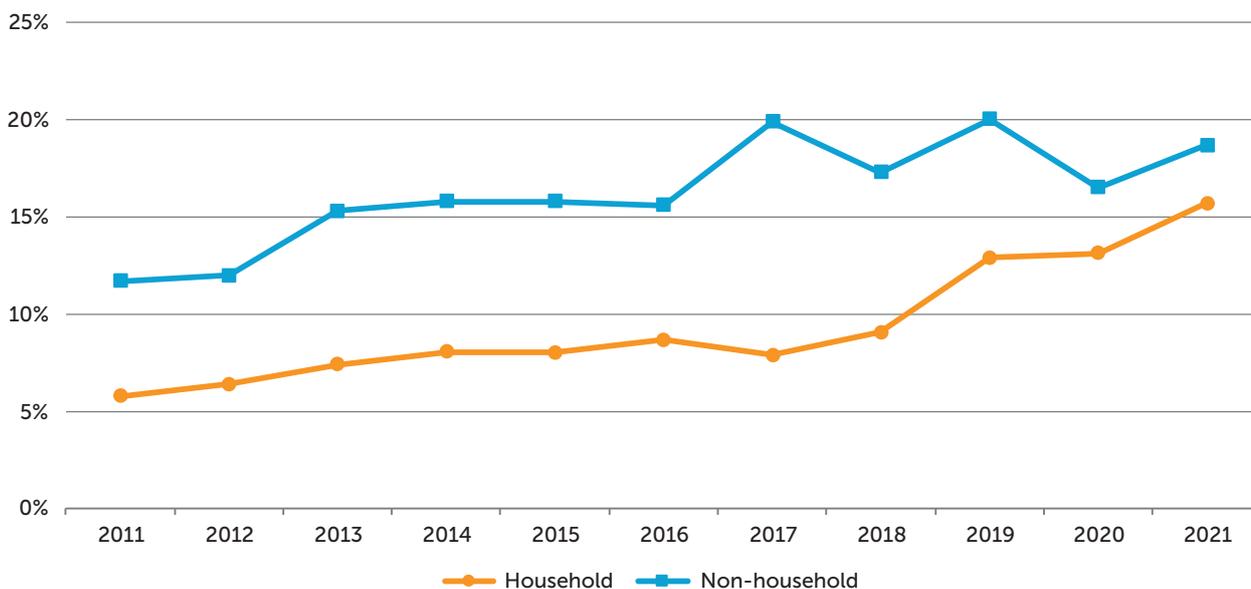
Household **switching**¹⁵ has further increased whether measured in terms of withdrawal points, as well as in terms of volumes: 15.7% of households switched at least once during the year (13.1% in 2020); the volumes corresponding to this portion of customers are about 17.9% (14.2% in 2020) of the total energy purchased by the domestic sector. The switching of non-households, especially of those excluded from the standard offer service since the beginning of the year, also proceeded at a rather high pace: 18.7% in terms of customers and almost 30% in terms of volume.

¹³ These are micro companies with a committed power of less than 15 kW. As of 1 January 2021, in fact, small and micro companies with a committed power of more than 15 kW had to leave the standard offer service. Those who have not chosen a supply in the free market are supplied under the Gradual standard offer service (see box at the end of the chapter).

¹⁴ The total of 855, of course, is not equivalent to the sum of the companies present in the individual segments, because there are companies operating in more than one market.

¹⁵ Change of supplier.

FIG. 2.16 Switching rates in the electricity sector since 2011



Source: ARERA, Annual survey on regulated sectors and processing on SII data.

In 2021, just over 1.2 million households were reported to have signed a dual fuel contract¹⁶ (+20%), their share of the total number of customers served in the free market increased to 7.2% from 6.5% last year and still half of the 13.4% in 2019.

Unlike in the standard offer service, where the two-tier tariff is largely prevalent as it is mandatory from a certain date onwards, free market customers continue to show a preference for the non-time-of-use price, which in 2021 was chosen by 63.5% of all customers (62.2% of volumes).

Both the average number of commercial offers proposed - 16.9 for households and 25.5 for non-households compared to 17.6 and 25.8 in the previous year - and the share of suppliers offering a relatively low number of offers (only one or up to 3) decreased slightly to 50% from 56% in 2020. Almost a third of the offers for households can only be subscribed to online (5.8 vs 4.5 in 2020) and the share of suppliers with at least one such offer has risen from 22.4% to 23.7%. The number of households choosing an online offer remains limited, although slightly increasing: 9.7% against 7.4% in 2020 and 4.4% in 2019.

The trend of households in the free market to sign up for fixed-price contracts is confirmed (81.4%), while the percentage (20%) of households who signed a contract providing a rebate or a discount of one or more free periods or a fixed sum in cash or in volume, one-off or permanent and possibly provided for where a certain condition is met, does not change significantly. In fixed-price contracts, the presence of an additional service is “historically” high (85%), as is the propensity to purchase electricity with a guarantee of production from renewable energy resources (41.5%) and participation in a points collection programme (30.2%).

This is followed by the opportunity to receive other products or services together with electricity (5.3%), the provision of auxiliary energy services (3.9%), the opportunity to have advantages on the purchase of other goods or services (2%) and receiving a free gift (1.4%).

¹⁶ Customers who receive the same bill for the supply of electricity and gas are considered dual fuel; customers who have a contract with the same supplier for both electricity and natural gas but receive separate bills for the two services are therefore excluded from the count.

In 2021, for the first time in the last three years, the **safeguard service** expanded again in terms of withdrawal points (9.7%) and energy consumed (7.4%) compared to the all-time low reached in 2020.

Prices and tariffs

At the end of 2021, the Authority updated the tariffs for the provision of electricity transmission, distribution and metering services for households and non-households to be applied in 2022. The national average tariff covering transmission, distribution and metering costs for 2022 is 2.753 c€/kWh (2.864 c€/kWh for 2021).

As of 1 January 2022, the price of electricity for a household customer within the standard offer service, with annual consumption of 2,700 kWh and 3 kW of power, is equal to 41.05 c€/kWh net of taxes and 46.04 c€/kWh before taxes: the fees covering the costs of electricity supply and marketing in the first quarter of 2022 have an incidence of 80.8%, almost doubled compared to a year earlier (46.1%); on the contrary, the items covering the costs of transport and metering represent 10.8% of the total gross price with an incidence almost halved compared to the start of 2021 (20%).

TAB. 2.68 Proceeds from general system charges accrued in 2021 (millions of euros)

ITEM	DESCRIPTION	ANNUAL REVENUE FROM CUSTOMERS	CONTRIBUTIONS FROM THE STATE BUDGET ^(A)
A _{SOS}	Charges for financing residual nuclear activities	208.08	45.73
A _{3*SOS} ^(B)	Charges related to production from non-biodegradable waste	—	—
A _{ESOS}	Special rail tariff schemes	219.89	37.11
A _{91/14SOS} ^(C)	Research financing	41.65	9.29
A _{RIM}	Social bonus	242.75	295.66
A _{2RIM}	Minor electricity companies	61.72	13.96
A _{3RIM}	Energy efficiency in end use	385.96	18.42
A _{4RIM}	Technological development	40.99	7.86
A _{5RIM}	Territorial countertrade measures	39.07	7.37
A _{SRIM}		9,147.73	3,863.90
A _{uc4RIM}	Imprese elettriche minori	61,72	13,96
A _{uc7RIM}	Efficienza energetica negli usi finali	385,96	18,42
A _{SVRIM}	Sviluppo tecnologico	40,99	7,86
A _{mctRIM}	Misure di compensazione territoriale	39,07	7,37
TOTAL		9.147,73	3.863,90

(A) Ordered by Decree Laws no. 41 of 22 March 2021, no. 73 of 25 May 2021 and no. 130 of 27 September 2021. The allocations of Decree Laws nos. 41/2021 and 73/2021 were assigned in part to cover discounts on transmission, distribution and metering tariffs for other uses low-voltage customers.

(B) Including discounts to energy-intensive companies.

(C) Element A91/14SOS is negative, as it concerns discounts granted to low- and medium-voltage users not included among electricity-intensive companies.

Source: ARERA, processing of CSEA (Energy and Environmental Services Fund) data.

As in the previous quarter, the general system charges (which twelve months earlier had accounted for about 21% of the total price) were reduced to zero by virtue of the measures adopted by the Government and by the Authority to partly neutralise the effects of the sharp increases in the commodity component and thus contain the increase in the final price.

In 2021, the free market was on average in line, if not cheaper (-1.7%) than the market with a reference price, reversing the situation from the previous year when the former was on average 57% more expensive¹⁷. This reversal was mainly due to the large number of locked-price contracts, which stemmed from the strong increases in the wholesale markets, particularly in the final part of the year.

In actual fact, while the cost of supply in the standard offer service has increased by an average of 75% on the previous year, in the free market, the increase was only 9%.

Quality of service

In 2021, the continuity of the **transmission service**¹⁸ improved again and, with a significant reduction compared to previous years, represents the lowest value to date (2,431 MWh/year). The average number of interruptions lasting more than one second per user for any cause, including not coming under the Electricity Transmission Grid Operator's responsibility, including major accidents, is slightly decreasing compared to the 2019-2020 two-year period and substantially in line with the average of the years 2014-2018.

With regard to the quality and continuity of the **distribution service**, although there was a slight deterioration in the average number of interruptions per user (3.23), there was a marked improvement in the duration (41 minutes) compared to the 2017-2019 three-year period, in which the dynamics of the interruptions had been altered by exceptional weather events. The gap between the Centre-North and the South of the Country (the latter with lower performance levels) is confirmed by the various detailed indicators.

With regard to the automatic compensation, distribution companies paid out to low- and medium-voltage users for exceeding the standards on the maximum duration of interruptions, regardless of what caused them: almost € 21 million were paid out to about 390,000 low-voltage users (on average about € 53 per user) and about € 3 million to about 4,500 medium-voltage users (on average € 647 per user).

Commercial quality

As far as **distribution and metering services are concerned**, the number of services requested by final customers (connections, activations, deactivations, estimates, technical verifications, responses to complaints for distribution and metering activities, etc.), which had fallen in 2020, returned last year in line with pre-pandemic average values. As a result, both the number of cases of non-compliance with standards subject to automatic compensation and the number of compensations paid increased.

¹⁷ Only the consumption classes between 1,000 and 2,500 kWh are still more onerous on the free market than on the market with a reference price, and in any case only to a limited extent (approximately +1%).

¹⁸ The continuity of the transmission service is measured by the indicator of energy not supplied (MWh/year).

Analysing data on the **commercial quality of the sales service**, average lead times (response to complaints, response to requests for information, execution of bill adjustments and double billing), declared by suppliers for 2021, were below the respective standard for all services, while the average time for execution of double bill adjustments was not in line with the standard in the previous year. Specifically, as regards complaints: 66.91% of complaints came from households, 24.71% from non-households, 7.36% from multi-site customers, and 1.02% from medium-voltage customers; 65.45% of complaints came from free market customers, 26.17% from customers within a market with a reference price. In line with last year, again in 2021, the main issues of complaints were: billing and everything related to billed consumption and fees, self-reading, billing periodicity, including the closing bill, making payments and refunds (39.7%); contracting issues, such as withdrawal, change of header, transfer and taking over (20.77%); connections, works and problems relating to technical quality (8.48%); the way new contracts are concluded, the timing of switching and the economic conditions proposed by the supplier in the offer compared to those provided for in the contract and actually applied (8.39%).

In 2021, automatic compensations of more than € 1.1 million (1.2 in 2020) were paid to electricity customers on their bills, 70.4% of which went to customers in the free market.

FOCUS ON 2020 ACTIVITIES

Gradual standard offer service for small companies

The deadline envisaged by Law no. 124/2017 for the end of the standard offer service - 1 July 2020 - has been subject to many postponements over time: the deadline for the end of the standard offer service was postponed to 1 January 2021 for small companies and to 1 January 2022 for households and micro companies, respectively; the latter deadline was further postponed to 1 January 2023 for micro companies and to January 2024 for households.

*The aforementioned law provided for the removal of the standard offer service, entrusting the Authority with the task of regulating a safeguard service, to be assigned through competitive procedures and to be provided under conditions that would encourage the transition of customers to the free market, aimed at customers without a supplier after the removal of the standard offer service. In implementing this regulatory provision, the Authority regulated the **Gradual standard offer service**, aimed at small companies and micro companies with at least one withdrawal point with contracted power greater than 15 kW, which as of 1 January 2021 do not have a contract with free market conditions, postponing the regulation of the service for the remaining micro companies and households to subsequent regulatory interventions.*

From 1 July 2021 and for three years, the service will be provided by suppliers selected through specific competitive procedures for each of the 4 specially defined territorial areas.

TAB. 2.40 Operators selected to provide the gradual standard offer service for the period from 1 July 2021 to 30 June 2024 in each territorial area

TERRITORIAL AREA	GRADUAL STANDARD OFFER SERVICE SUPPLIER
Lazio, Lombardy, Veneto, Liguria, Trentino	A2A Energia
Campania, Marche, Umbria, Abruzzo, Molise, Basilicata, Calabria, Sicily, Sardinia	Hera Comm
Friuli-Venezia Giulia, Aosta Valley, Apulia, Tuscany and the Municipality of Milan	Iren Market
Piedmont, Emilia-Romagna	Axpo Italia

Source: ARERA.

The first results of the Annual Survey show that in 2021, 4.6 TWh were sold in the gradual standard offer service to 226,000 withdrawal points. Within the service, the most numerous types of customer is that of non-households with consumption other than public lighting (hereafter, other uses customers), who consumed about 4.4 GWh and counted almost 212,000 withdrawal points, just under half the number of those who left the standard offer service at the beginning of the year (483,000), most of whom (272,000) then switched to the free market.

Approximately 70% of the withdrawal points for other uses fall into the four smallest size classes (up to 20 MWh/year), but together these classes account for only 19.3% of the category's consumption. Most of the consumption (79%) is concentrated in the three medium to large classes (20 to 500 MWh/year), while the subsequent classes have an almost insignificant incidence.

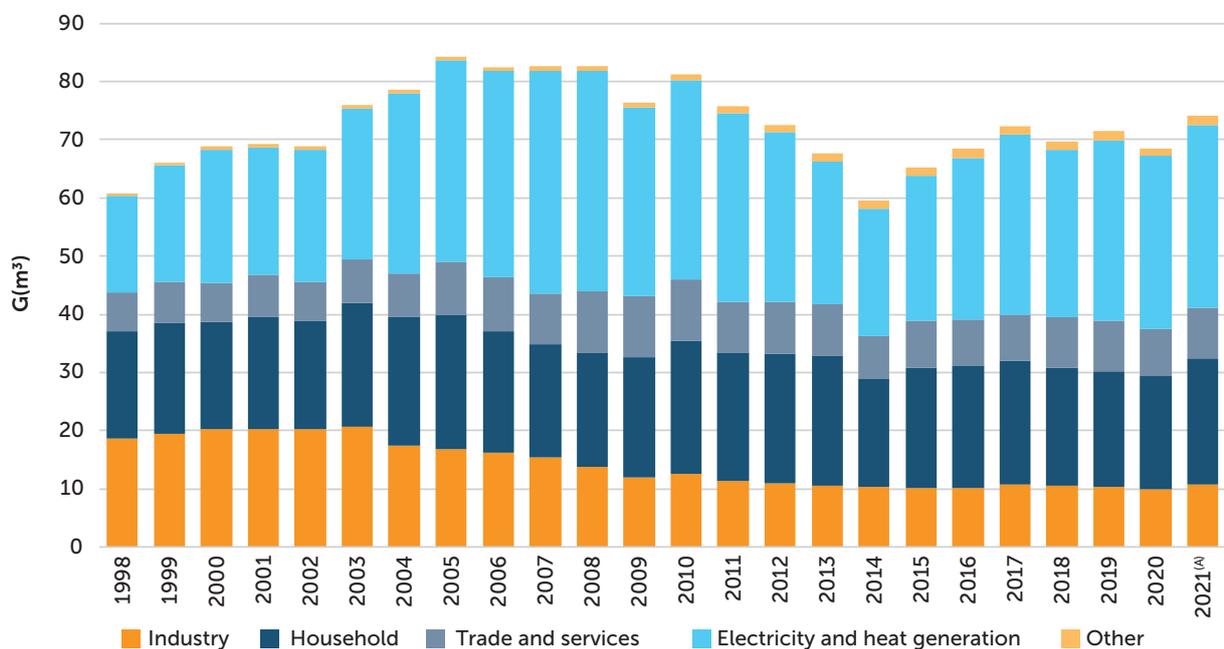


NATURAL GAS

Consumption, production, facilities and markets

In 2021, **net consumption of natural gas** grew by 5.6 billion cubic metres, coming in at 74.1 billion cubic metres (+8.1% compared to 2020). General growth affected all sectors: industrial (+9.7%), thermoelectric generation (+5.8%), trade and services (+6.3%), and residential (+10.9%). Transport, too, returned to pre-Covid levels of around 1.1 billion cubic metres after a slump in 2020 (-15.7%).

FIG. 3.1 Natural gas consumption by sector



(A) Provisional data.

Source: Ministry of Ecological Transition, National Energy Balance Sheet, various years.

In line with the previous year, national production again fell heavily (-16.7%). In 2021, a total of 3,499 million cubic metres of natural gas have been extracted: 1,869 mln m³ from the sea (-17.5%) and 1,630 mln m³ from land-based fields (-3%). Eni controls 69.5% of production (71.6% in 2020).

With consumption back on the rise and national production at an all-time low, imported gas volumes consistently showed an increase of 9.9%, approaching 73 bcm. **Storage** was also used: at the end of the year, withdrawals exceeded inputs by 1,591 bcm. The **degree of Italy's dependence** on foreign suppliers has risen to 93.5% (from 92.8% of the previous year).

The increase concerned only volumes from Algeria (+48.6%) and Russia (+2.4%), while volumes from all the other countries (Norway, Libya, the Netherlands, the United States of America and Qatar) decreased. What is new is the 7.2 billion cubic metres arriving from Azerbaijan, thanks to the commissioning of the Trans Adriatic Pipeline (TAP) in December 2020.

In 2021, Russia was confirmed as the leading exporter to Italy, although its contribution fell from 43% to 40%, followed by Algeria which rose from 22.8% to 30.8%. The third most important country has become Azerbaijan, from which 9.9% of the total gas imported to Italy arrives, surpassing Qatar at 9.4%. The fifth country is Libya with 4.4%, followed by Norway (2.7%) and by the United States of America at 1.5%. The incidence of imports from Northern Europe (i.e. from Norway and Holland together) has reduced to 3.1%.

2.8% of the total gas supplied abroad, i.e. about 2 bcm, is purchased on European stock exchanges.

In 2021, however, **exports** also grew strongly - especially in the latter part of the year - due to the abundance of volumes and a cheaper price compared to the FTT: exported gas increased fivefold compared to 2020, rising from 316 million cubic metres to 1.5 billion cubic metres. In terms of the structure of import contracts, the preponderance of long-term contracts with a duration of more than 20 years is confirmed in 2021 with a share of 66.2% (64.7% in 2020), while short-term imports (less than five years) account for 14.3% of the total (22.6% in 2020). In terms of residual life, 40% of the contracts in force today, totalling 33 billion cubic metres, have a residual life of more than 15 years. Eni remains the first importing company, with a market share of 48.4%.

Last year, the **wholesale market** moved 285.1 bcm: supplied 57.9% by pure wholesale suppliers (84) and the remaining 42.1% by mixed operators (115). Total deliveries to the PSV remained essentially unchanged at around 108 bcm. In the gas markets managed by the GME, total volumes of 131 TWh were traded in 2021 (+15% compared to 2020) as a result of the significant increase in national consumption, which reached its highest level in the last decade (around 807 TWh). The prices recorded on the various platforms can be traced back to an annual average of around 46 €/MWh, in line with the annual average spot price at PSV (47.20 €/MWh; +347%).

In 2021, totally **transported** volumes grew by 6.8% and returned to pre-pandemic levels, with 42.7% for the production sectors, compared to 35.6% for distribution plants and 21.7% for the remaining transport uses. 92.9% of the transport networks are controlled by Snam Rete Gas. A total of 454 players applied for and were granted transport capacity on the National and/or Regional Networks, compared to 401 in 2020.

In the thermal year 2021-2022¹⁹, the **storage** system offered a total space available for working gas amounting to 13.1 bcm of which 4.6 bcm was for strategic storage. The space offered at auction was allocated for 90%; as of 31 October 2021, the storage capacity was 11.3 bcm. The nominal peak delivery achieved during the year was 259.5 million standard cubic metres/day: 248 mln m³/day in Stogit storage, 9 mln m³/day in Edison storage and 2.5 mln m³/day in Ital Gas Storage storage.

In 2021, the 188 active operators **distributed** 32.3 billion cubic metres (+7.3% compared to 2020) to 24 million final customers. The service was operated through 6,495 concessions in 7,298 Municipalities.

According to the data provided by the distributors within the scope of the Authority's Territorial Gas Distribution Registry, 17 new locations were naturalised in 2021 and the length of the networks increased by 2,181 km compared to 2020 (+0.8%). 57.6% of the total networks are located in the North, 22.7% in the Centre and the remaining 19.7% are in the South and Islands.

In terms of uses, 55.1% of customers use gas for both heating and cooking and/or for the production of domestic hot water; this category, which takes 46.2% of the total gas distributed in Italy, has a unit consumption of 1,126 m³/year (+5% compared to 2020). The second most common type among customers (41.4%) is the use of gas for cooking and/or for hot water production; this is a purely domestic category that receives 6.2% of the total distributed for a unit consumption of 200 m³ (down 13% compared to 2020, which had suffered the effects of repeated lockdown periods). On the other hand, the consumption of gas users increased only for heating purposes, mostly central heating plants (2.1% of customers), which during 2021 absorbed one-fifth of the gas distributed with an annual per capita consumption of 13,274 m³, up (+7.7%) compared to the previous year also due to the weather trend.

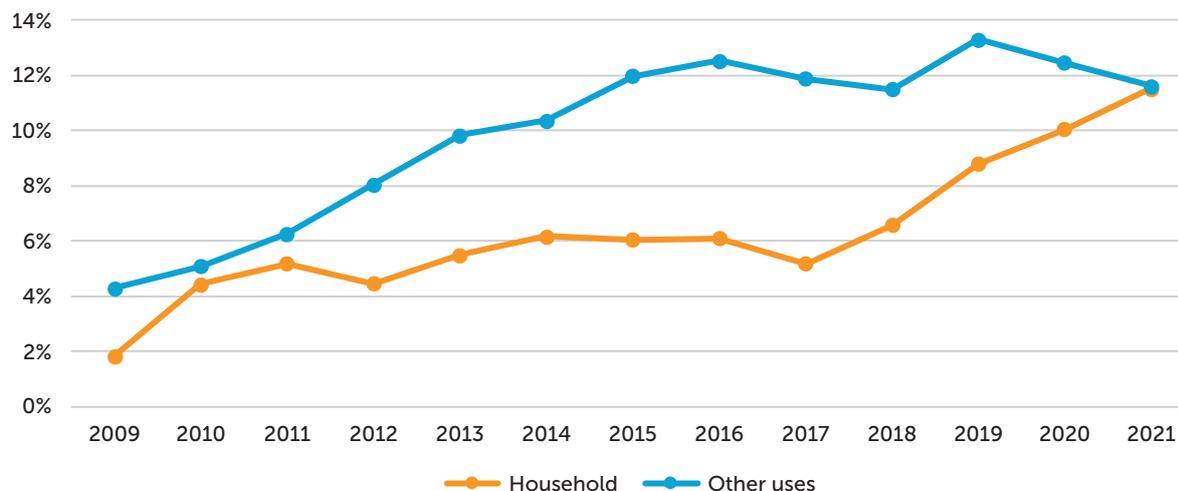
In 2021, there were 22.2 million households in the sector, who withdrew 15.5 billion m³ or 48% of all gas distributed. If the volumes of the domestic sector in the strict sense are added to those of domestic condominiums, the consumption of the "extended domestic" sector reaches the significant share of 55.7% of all gas distributed in Italy and 92.5% of total customers.

According to provisional data from the Annual Energy Sector Survey, some 57.3 billion cubic metres were sold in the retail market last year (including volumes for last resort and default services), an increase of 3.2% compared to 2020, and there were 485 active companies (+13). In 2021, the level of concentration decreased slightly: the top three groups control 43.4% of the market (compared to 43.7% in 2020), and the top five groups the remaining 53.9% (53.8%).

The Eni group's share went from 18.4% to 17.1%, because the group's sales fell by almost half a billion cubic metres (-4%). The gaps between the three top operators have shortened compared to 2020: in particular, the gap between Eni and Edison has narrowed to 3.2% (4.9% in 2020), and the gap between Edison and Enel has decreased to 1.5% (1.8% in 2020).

The average price charged to final customers by suppliers in the retail market was 52.28 c€/m³ (+33.5% compared to 2020), which was again higher than the price offered to the end market by wholesale suppliers of 49.77 c€/m³ (+81.3%), albeit with a lower differential than in the previous year: 2.5c€ versus 6.4 c€.

The share of final consumption purchased on the free market is 67.8 (68.4% in 2020), that of the market with a reference price is 7.8% (8.5% in 2020), while 24.4% is self-consumed (23% in 2020). Net of self-consumption, the share of volumes purchased on the free market in 2021 reached 63.9% for households and 85.2% for condominiums. In terms of withdrawal points, the share of households that acquired gas in the standard offer service dropped to 36.8% (39.6% in 2020).

FIG. 3.17 Switching rates of households and "other uses" customers since 2009

Source: ARERA, Annual survey on energy sectors and SII.

In 2021, the overall **switching** rate²⁰ was 11.6% (10.2% in 2020), accounting for 13.4% of volumes (20.4% in 2020). In the domestic sector, some 2.5 million customers switched at least once.

The **average of the commercial offers** that each gas supplier is able to propose to its potential customers is 11.8 for households, 5.8 for condo households and 13.8 for non-households. 15.6% of suppliers only submit their households one offer, 35.1% make up to three offers available and the remaining 49.4% propose a range of four offers or more. The number of suppliers offering at least one online offer remains stable, but although this type of contract is on the rise among the offers made available on average to households (6.1 compared to 4.6 in 2020), households' interest in this type of subscription has fallen slightly (7.2% compared to 7.9% in 2020).

72.7% of households signed a fixed-price contract in the free market, while 27.3% chose a variable-price contract²¹. The percentages are reversed in the case of condominiums, among which variable-price contracts are by far the most popular ones (72.1%), while less than a third of customers chose fixed-price contracts.

Non-households, on the other hand, are roughly divided in half between those who prefer variable-price contracts, which are slightly more numerous (56.3%), and those who, on the other hand, have signed a fixed-price contract (43.7%).

In 2021, variable-price contracts were cheaper for all types of customers, but the differential with a fixed-price contract was larger for condominiums and relatively small for households.

For all types of customers, the most frequent way of price indexing in variable-price contracts was linked to one of the components established by the Authority for the economic conditions of supply of the standard offer service; the other most common way of indexing was linked to the trend in the price of gas at TTF. In all cases, moreover, in 2021, the former was more convenient than the average of all variable-price contracts, while the latter led to a higher average value of the supply component than all indexed contracts.

²⁰ Change of supplier.

²¹ In fixed-price contracts, this does not change for at least one year from the time of signing; in variable-price contracts, on the other hand, it changes at a time and in a way determined by the contract itself.

35.1% of households signed a contract providing for a rebate or a discount of one or more free periods or a fixed sum in cash or volume, which may be one-off or permanent and possibly conditional on the occurrence of a certain circumstance (e.g. a discount for contracts signed by friends of the customer, a discount for bank account clearance, etc.). In more detail, it appears that on average, the discount was applied to 40.2% of customers who chose a fixed-price contract and to 21.4% of customers who chose a variable price. Lower percentages are to be found for other customers: 14% of condominiums have signed a contract with a discount (30.3% with the fixed price and 7.6% with the variable price), while in the case of non-households, those with a contract with a discount in any form are 14.4% of the total (19.2% with the fixed price and 10.7% with the variable price).

Prices and tariffs²²

As a result, the average unit amount of all transport fees charged by the main operator in 2020 is 3.01 c€/m³, up by 6% compared to 2.84 c€/m³ in 2019, due to the significant decrease in volumes transported (-7.2%), only partly offset by the decrease in the operator's revenue (-1.6%). The tariff recommendations for natural gas transmission charges submitted by the companies for the calendar year 2022 were approved in June 2021.

In the same month, the Authority also approved the tariff recommendations for the regasification service for 2022, submitted by the companies GNL Italia for the Panigaglia terminal, by Terminale GNL Adriatico for the Rovigo plant and by OLT Offshore LNG Toscana for the Livorno terminal.

An analysis of the data collected in the 2021 Authority Survey shows that last year, the average gas price (weighted by quantities sold), net of taxes, charged by sales companies to final customers was 52.3 c€/m³, a level unprecedented in the last decade. This price was 33.9 c€/m³ in 2020; therefore, there was an increase of 12.3 c€/m³ in the last year, equivalent to 54.4%.

The increase, which reflects the sharp rises in the cost of commodities in the wholesale markets, affects all customer classes, but to a greater extent larger customers, who are more sensitive to price fluctuations in international markets.

Finally, in 2021 a different trend of the two markets was noted: while in the protection service all the size classes show a fairly similar percentage increase and close to 20%, in the free market the evolution is clearly differentiated and included between 9% of smaller customers and + 31% of larger ones. The price differences found between the two markets may also depend on other factors, such as the presence of additional services in gas supply contracts.

As of 1 January 2022, the price for an Italian household consuming 1,400 cubic metres of gas and owning an individual heating plant is composed of 83.4% cost-covering components and the remaining 17.6% of taxes on the natural gas sector (duty, regional surtax and VAT). Expenditure for the commodity (including sales costs) accounts for 71.3% of the total gas price, the costs for the use of transport, distribution and metering facilities for 10.2%, while system charges account for 1%²³.

²² For the valuation of transport charges and regasification, storage and distribution tariffs, see chapter 3 of Volume I of the Annual Report.

²³ The composition takes into account the reductions in system charges and tax components adopted by the Government and the Authority to limit bill increases.

As far as LPG is concerned, on the same date, the price for an Italian household consuming 200 m³ of LPG is 419 c€/m³ (346 c€/m³ in 2020) and is made up of 73% cost-covering components and the remaining 27% taxes. The cost of the commodity accounts for 31.5% of the total price, retail marketing for 4.3%, distribution on the local network for 20.4%, and transport costs upstream of the distribution plant for 16.8%.

Security and quality of distribution service

In the distribution sector, arrival times at the call-out location continued to fall (36 minutes on a national average), while the number of leaks detected through planned facility inspections increased (around 75% of networks inspected), as did those reported by third parties.

Commercial quality

2021 saw an increase in both the cases of non-compliance with the standards set for the distribution service by the Authority and in the automatic compensation actually paid. Against 20,398 cases of non-compliance with specific standards, 27,138 automatic compensations were made to final customers, for a total amount paid of approximately € 1.36 million (€ 0.6 million in 2020 against a lower number of cases). The increases affected all services, with the exception of the supply deactivation and activation services: in particular, the service where non-compliance cases are the highest in the metering unit check (about 13% of the services are delivered in a longer time than the standard, i.e. 20 working days).

As far as **sales services** are concerned, on the other hand, the data communicated by the 380 suppliers shows an overall compliance with the minimum standards set by the Authority about the actual average times for services requested by customers, responses to complaints and bill adjustments, the average times for double bill adjustments and, finally, the average times for responses to requests for information. Compared to 2020, an increase is recorded in requests for information of 9.92%, while written complaints decreased by 9.06%.

Among the issues of complaint, the first three were: problems with billing and everything related to billed consumption and fees, self-reading, billing periodicity, including the closing bill, making payments and repayments (51.28%); events in the contract, such as termination, change of header, transfer and taking over (12.46%); non-payment of bills and disconnections (9.84%). The total compensation paid out amounted to more than € 785 thousand (+3.28% compared to 2020).

FOCUS ON 2021 ACTIVITIES

Strengthening the Code of Business Conduct

In 2021, the measures approved by the Authority to strengthen the information obligations of suppliers for the benefit of final customers in the pre-contracted and contracted phases came into force through the revision of the Code of Business Conduct for the sale of electricity and natural gas to final customers²⁴. The purpose of the interventions is twofold: to **improve the comprehensibility** of contracted information, including the economic conditions of offers, for the final customer, and to **increase the comparability** of offers proposed by suppliers, strengthening the complementarity of the information tools available to the final customer.

With regard to the **pre-contracted phase**, the Summary sheet²⁵ has been introduced, which summarises all the information obligations, incumbent on the supplier, relating to the offer, in a standardised and comprehensible format for the final customer. The Sheet also shows the estimated annual expenditure of the offer²⁶ and the synthetic price indicators. The latter are values relating to the economic conditions of the offer that standardise its presentation to the final customer, as they are calculated in compliance with the criteria defined in the Code of Business Conduct and are divided into "Fixed cost per year" (expressed in €/year), "Cost per consumption"²⁷ (expressed in €/kWh or €/S(m³)) and, for electricity only, "Cost per committed power" (€/kW).

With regard to the **contracted phase**, the already envisaged notice in the event of unilateral changes in the conditions has been made even more effective, which, again with 3 months' notice, must be supplemented with an estimate of the annual expenditure (net of taxes and duties) for the 12 months following the change, based on consumption levels and with a reference to the Portale Offerte. In addition, in the case of automatic evolutions in contracted conditions (any change in the economic conditions already provided for in the signed contract), a new obligation to notify is introduced in the case of supplier-determined increases, the expiry of discounts, or switches between fixed and variable prices. In the case of changes resulting from the expiry or reduction of discounts or from the increase of unit fees, which are not linked to the trends of wholesale markets, the notification must contain the monetary quantification. All information must be made available to both households and non-households covered by the Code of Business Conduct.

Automatic compensation was also introduced to be paid to the final customer in all cases of non-compliance with the automatic evolution notification procedure (similar to the compensation provided for unilateral changes).

The new obligations came into force in two phases:

- 1 July 2021, the provisions relating to the pre-contracted phase
- 1 October 2021, the provisions on the contracted phase and on automatic compensation

24 The Code of Business Conduct defines, in accordance with the provisions of the Consumer Code¹¹ and the EU energy directives, the rules of conduct to be observed by suppliers of electricity and/or natural gas (including their agents in any capacity) in their business relations with final customers (households and small non-households). The measures are contained in resolution 426/2020/R/com.

25 Replacing the previous Information note.

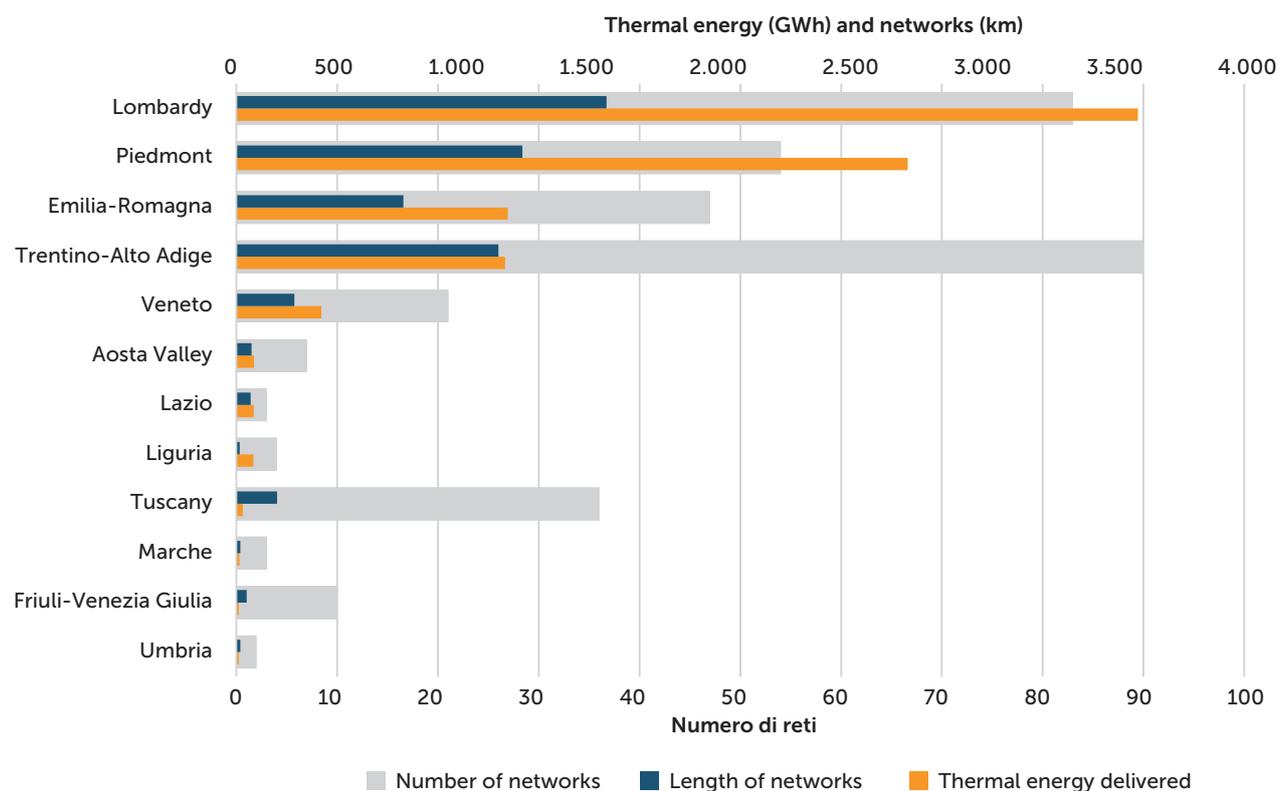
26 For households, the estimated annual expenditure is shown net of taxes and duties, presented for different consumption levels and customer profiles (committed power/residence).

27 In the case of variable-price offers, it also contains the description and update periodicity of the index, on the basis of which the price of the energy component varies, and the graph of the index's trend, if publicly disseminated (such as PUN and PSV), with a 12-month time span, based on the information conveyed in the Portale Offerte.

DISTRICT HEATING

In Italy, the diffusion of heating systems is limited but shows a historically growing trend, starting with the installation of the first plants in the 1970s: between 2000 and 2020, the volume connected increased at an average annual rate of 6.1% (from 117.3 to 375.2 million cubic metres) and the extension of the networks quadrupled, from approximately 1,091 to 4,666 km.

FIG. 4.2 Geographical distribution of district heating networks in 2020



Source: ARERA, registries and data collection.

However, both the increase in connected volume and the expansion of networks have slowed down compared to the average of previous years. The dissemination of the service remains mainly concentrated in North and Central Italy²⁸, where most of the demand to heat the buildings and the high living density make it possible to justify the significant investments in facilities necessary to ensure the use of the service for users.

28 Lombardy, Piedmont, Trentino-Alto Adige, Emilia-Romagna and Veneto alone represent 97% of the thermal energy dispensed by district heating systems.

In 2020, thermal power stations serving district heating networks produced 11,330 thermal GWh, 6,221 electric GWh and 122 refrigeration GWh. Among the energy resources used for the operation of district heating plants, natural gas remains the clearly predominant energy resource in 2020, accounting for 69.2% of total energy consumption, despite the growth of renewable energy resources, which now account for around 28% of the total. A significant contribution is made in particular by waste (15.8%) and bioenergy (biomasses, biogas and bioliquids, at 10.3%). Other energy resources make an overall marginal contribution.

The energy distributed by the district heating networks is mainly used for environmental climate control (heating and cooling) and the production of hot water for sanitary use, while use in industrial processes is only marginal. A significant share of the market in fact consists of residential and service users (respectively 65.3% and 31.9% of the total), while the demand of the industrial sector remains marginal (2.8%). 69% of users have a contracted power of 50 kW or less, while 24% have a capacity of more than 50 and up to 350 kW and only 7% have a capacity of more than 350 kW. Larger users, despite being relatively few, account for a large share of total consumption (over 50%).

In May 2022, the number of companies operating on district heating networks was 253: of these, 86% generally deal with activities that are strictly linked to the operation of networks and to the supply of thermal energy to users (distribution and/or metering and/or sale), while the remaining share only deals with the production of thermal energy.

The **supply price of the service** is freely defined by each operator on the basis of the features of its district heating system, its users and the territory served. The two main ways of determining the price are based on the costs incurred (the objective of ensuring the operator's economic and financial balance and guaranteeing an adequate return on the invested capital) or on the avoided cost (the objective of providing the user with an affordable price for the service compared to the cost he/she would have incurred by using an alternative air-conditioning technology).

Due to the increase in prices since the last quarter of 2021, the Authority launched a fact-finding investigation²⁹ to assess the appropriateness of the parameters adopted by the operators for the application of the avoided cost methodology, to verify the actual correspondence of the price of the district heating service with the cost that the user would incur by using an alternative air-conditioning system.

The most common **price structures** used by the operator are monomials on thermal energy (typically expressed in €/MWh or €/kWh) and binomials on contracted power and thermal energy, in which there is also a fixed component, generally dependent on the committed power (expressed in €/kW).

An analysis of the sector's prices shows a wide heterogeneity in the average prices applied by operators: in particular, 50% of the commercial offers were between 73 and 107 €/MWh, with an average value of 91 €/MWh.

²⁹ The investigation is still ongoing. In this context, a recommendation paper to the Government and Parliament to promote the introduction of a cost-reflective regulation of district heating service tariffs will also be considered.

FOCUS ON 2021 ACTIVITIES

In 2021, the Authority defined the regulation of commercial quality for the second regulatory period (1 January 2022-31 December 2025)³⁰. Compared to the previous regulatory period, the number of services subject to quality standards has been expanded to include some services that were previously subject only to monitoring.

To ensure the sustainability of the measures introduced, the exclusion of micro-operators (defined as those managers with total contracted power in 2017 of no more than 6 MW) from the regulation was confirmed also in the second regulatory period.

Quality standards are also not applied to larger users (with contracted power greater than 350 kW), as they possess a high level of knowledge and skills that do not require specific regulatory protection.

TAB. 7.1 Specific and overall quality standards

PERFORMANCE	STANDARD TYPE	OPERATOR TYPE	
		LARGE (>50 MW)	MEDIUM (>6 MW AND ≤ 50 MW)
Simple work estimate	General (90%)	10 working days	
Complex work estimate	General (90%)	30 working days	
Simple work execution	Specific	15 working days	
Complex work execution	Specific	By the agreed date	
Supply activation	Specific	7 working days	
Post non-payment of bills reactivation	Specific	2 working days	
Supply deactivation	Specific	5 working days	
Disconnection	Specific	By the agreed date	
Appointments	General (90%)	2-hour band	
Response to complaints	Specific	30 calendar days	
Response to requests for information	General (90%)	30 calendar days	

Source: ARERA

In the event of non-compliance with the specific standard for reasons attributable to the operator, automatic compensation is provided for, to be recognised in the first useful billing document and in any case within 180 days. Compensation was differentiated according to the type of user, except for that provided for responding to a user complaint (set at € 30 for both small and medium-sized users). In the case of prolonged delay in performance, there is, as in the other regulated sectors, a progressive increase in the applicable compensation (up to three times the value of the basic compensation).

For all the services subject to the standard, there are registration and reporting obligations to the Authority, with a simplified regime for medium-sized operators. Given the importance of the correct and timely management of service user complaints, the RQCT finally provides a reasoned response to such complaints for all district heating managers, including microoperators.

³⁰ Resolution of 23 November 2021, 526/2021/R/tr.

WATER SERVICES

Facility aspects of the service, technical quality and investments

As of 1 January 2018, a specific regulation on the technical quality of the integrated water service (RQTI) has been in force, which pursues the achievement of minimum service levels through the provision of automatic compensation to end users who suffer a service disruption in terms of continuity of the water supply network service, measured based on three indicators to which specific standards are associated; the introduction of a bonus-penalty mechanism in the event of failure to achieve the objectives set for some indicators to which overall quality standards, called "macro-indicators", are associated.

MACRO-INDICATORS DEFINED BY THE RQTI	
M1	Limitation of water leakage in water supply networks and plants
M2	Maintaining continuity of the drinking water service, based on the frequency of service interruptions
M3	Adequacy of supplied water quality
M4	Minimisation of the environmental impact of wastewater conveyance, measured by the degree of adequacy of the sewerage system
M5	Minimisation of the environmental impact related to wastewater treatment
M6	Minimisation of the environmental impact associated with high effluent disposal from water treatment

The 2021 data analysis suggests progress in the process of comprehensive improvement in the **technical quality** indicators identified by the Authority and slight but stable growth in the number of managers for which facility and quality data is periodically surveyed by the governing bodies, also with reference to the localised management teams in the geographical area of the South and islands.

More specifically, at the national level compared to the reading conducted for 2019,³¹ the average value of the percentage **water leakage** at the national level fell to 40.7% (41.2%) with lower values in the North and higher average values in the Centre and in the South and Islands, where slightly less than half of the water resource fed into the water supply network systems is lost. The same situation applies to **service interruptions**, whose average value is decreasing with respect to 2019 (-31%), but is strongly influenced by some critical situations at a territorial level (especially in the South and Islands), which show much higher values than the rest of the Country³². The average incidence of non-**potability** orders was also improved to 0.065% (0.079% in 2019), with a non-compliant sample rate of 3.68% (3.93%) and a non-compliant parameter rate of 0.22% (0.28%), all values generally improving compared to previous readings. Concerning the adequacy of the sewerage system, all parameters show a gradual overall improvement compared to the year of comparison, but the 20% (25% in 2019) of flood drains that

³¹ Unlike the first cycle of application of the incentive mechanism, the Authority has provided that, for the purposes of applying the bonus (or penalty) factors with reference to 2020 and 2021, the level reached cumulatively at the end of 2021 is an element of assessment. For this reason, the data for 2021 are analysed and compared to the last available year (2019), postponing the processing of the data for 2020 to subsequent documents.

³² Lower values are recorded in the North-West (0.71 hours/year) and in the North-East (0.64 hours/year) while higher values characterise the Centre (6.92 hours/year) and become even higher in the South and Islands¹³ (171.41 hours/year).

are not yet up to standard and the 14% (16%) that are not controlled show a rate of inadequacy that in the South and Islands is almost double that of the other areas of the Country.

Furthermore, in 2021, about 8.5% of **sewage sludge** in tonnes of dry matter was disposed of in landfills (the figure shows an improvement of 50% compared to 2019), but with very different levels between the different geographical areas: against a low average value in the North-West (1.7%) and an average value of 14% for the North-East and Centre (14.6%), in the South and Islands, landfilling stood at around 8.2%. Finally, the overshoot rate in discharged wastewater samples averaged 7.5% (-9.1% compared to 2019 data).

This confirms the existence of a **Water Service Divide** at a geographical level, as evidenced by the values of the technical parameters that represent more critical situations in the South and Islands area, although some indicators improvements are more pronounced in these areas than in the rest of the Country.

2021 was characterised by the **release of the first financing lines of the Next Generation EU package**, which concerned the integrated water service³³ and allowed the allocation of an initial share of resources to specific projects, contributing to the sector's investment spending of approximately € 1.5 billion (compared to a total allocated resources value of € 2.5 bln³⁴), while waiting for the release of a further € 1.5 billion destined to support interventions for the digitisation of networks and the reduction of water leakage and the modernisation of sewerage and water treatment facilities (also to overcome the EU infringement procedures). A special ruling of the Ministry of Infrastructure and Sustainable Mobility³⁵ approved the interventions eligible for financing for a financed amount of € 2 billion: there are 61 interventions attributed to integrated water service managers, absorbing resources for about € 843 million (42.2% of the total), with 39.8% of the resources allocated to the South and Islands, 34.6% to the Centre and 25.6% to the North, with the largest resources allocated, in order, to Lazio, Sicily and Piedmont.

During 2021, the Authority, with the support of the Energy and Environmental Services Fund (Csea), continued its monitoring activities on the progress of the interventions admitted for financing in the first part of the "**water supply networks**" section of the **National Plan of Interventions in the Water Sector**³⁶.

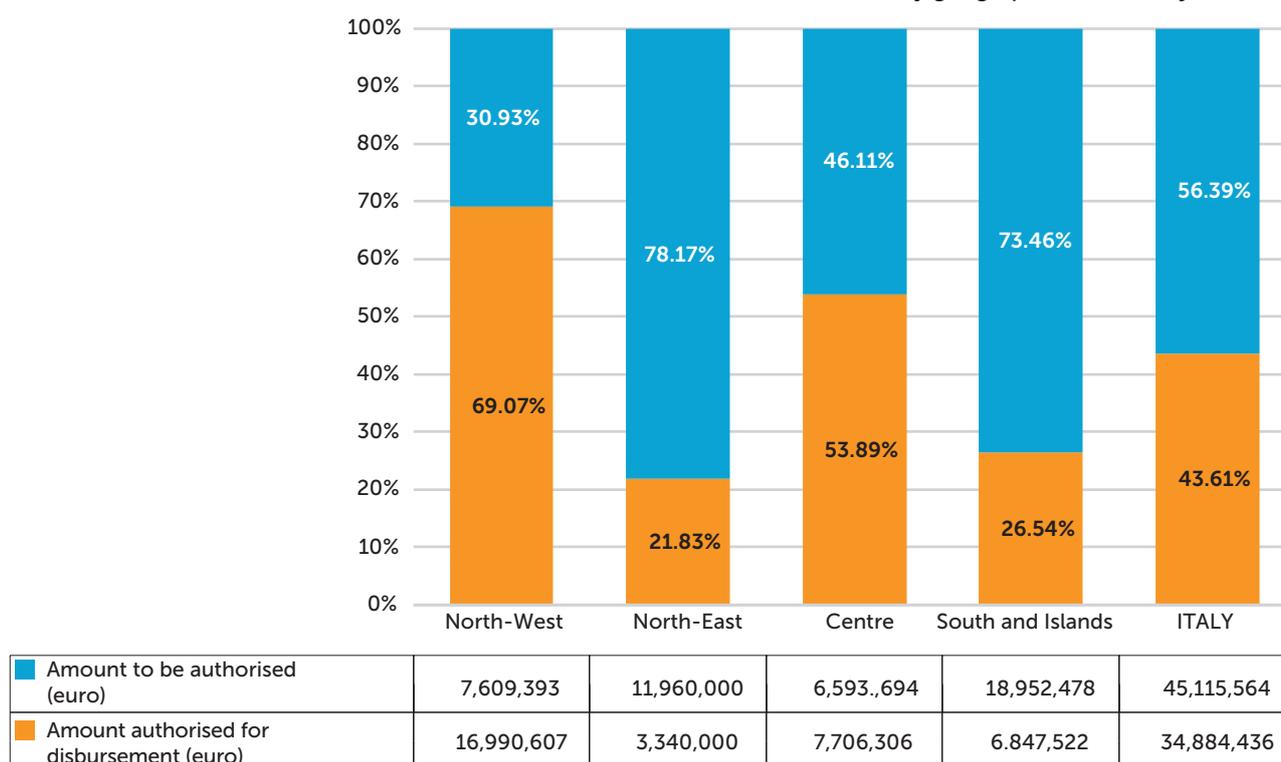
33 Specifically:

- the M2C4-I4.1 line of the National Recovery and Resilience Plan (NRRP), aimed at financing interventions in primary water facilities for the security of water supply;
- Axis IV of the National Operating Programme "Facilities and Networks" 2014-2020 (PON IeR), under the REACT-EU programme, concerning the "Reduction of leakage in water distribution networks, including network digitisation and monitoring", intended for a group of Regions located in Southern Italy and the Islands (Molise, Campania, Apulia, Calabria, Sicily), financed with the resources of the REACT-EU package.

34 Part of the resources are also earmarked for facilities of other water services, in particular irrigation services.

35 MD no. 517 of 16 December 2021.

36 Adopted by the Prime Ministerial Decree of 1 August 2019 pursuant to paragraph 516 of Law 205/2017.

FIG. 5.34 Status of authorisation for disbursement of National Plan resources by geographical area (May 2022)

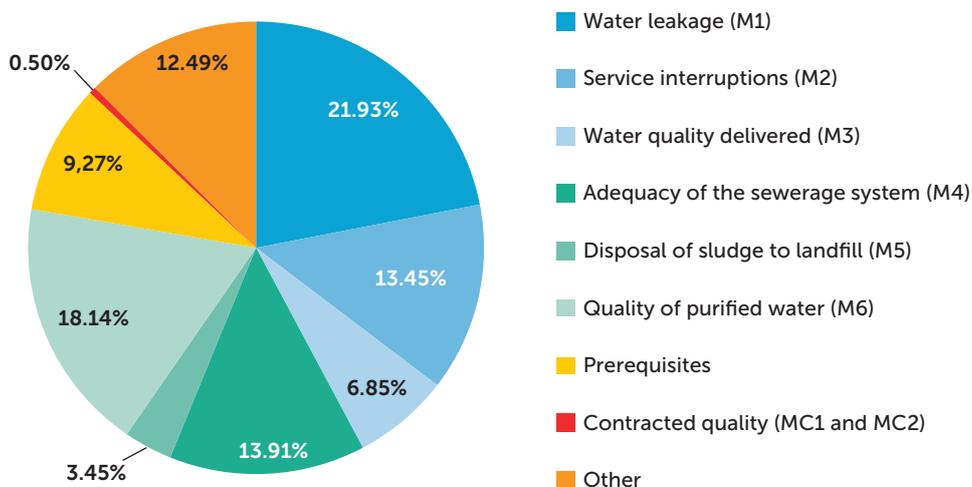
Source: ARERA processing.

The total amount of resources authorised by the Authority amounts to € 34,884,435.67 (43.6% of the total allocated financing). In particular, disbursements exceeded half of the allocated financing in North-West (69%) and Central Italy (53.9%). The latest authorisations resulted in the termination of financing for a further three interventions on the list, bringing the number of interventions that have exhausted their allocated resources to a total of 7 (out of a total of 26). Alongside the progress described (highlighted in the most recent monitoring, held between October and November 2021), there are still situations characterised by the continued delays already recorded in the previous months, mainly due to the Covid-19 health emergency, which were not recovered by the implementing parties in the past year³⁷.

Concerning the resources allocated by the **National Operational Programme for Facilities and Networks**, the first 7 interventions in the ranking (in Campania, Apulia and Sicily) were financed for a total amount of € 297 million (as compared with the 313 available), which will activate investments of almost 338 million (with a co-financing leverage of 88%). The next 13 interventions in the ranking list (expressing a total need of € 207 million) have been assessed as eligible but not eligible for financing due to the saturation of the available financial resources; some of these will benefit from the extension of resources made available by PON IeR, amounting to € 169 million, until the overall budget of the Axis is exhausted, redetermined as € 482 million.

³⁷ These delays resulted in the postponement until 2022 of a significant share of the resources foreseen in previous years, which is why a higher concentration of disbursement authorisations is expected in that year.

FIG. 5.28 Distribution of planned investments for 2020-2023



Source: ARERA, processing of data from the third regulatory period (resolution 580/2019/R/idr).

The analysis of investment needs (gross of contributions) for the 2020-2023 period at the national level confirms the concentration of the efforts of the managers to limit the level of water leakage, which absorbs around 22% of the total needs of the sample for the 2020-2023 four-year period³⁸.

Investments follow for the improvement of the quality of purified water (18.1%) and adjustments of the sewerage system (13.9%), while the incidence of the weight of interventions to reduce water interruptions³⁹ drops slightly, coming to 13.5% of the total needs.

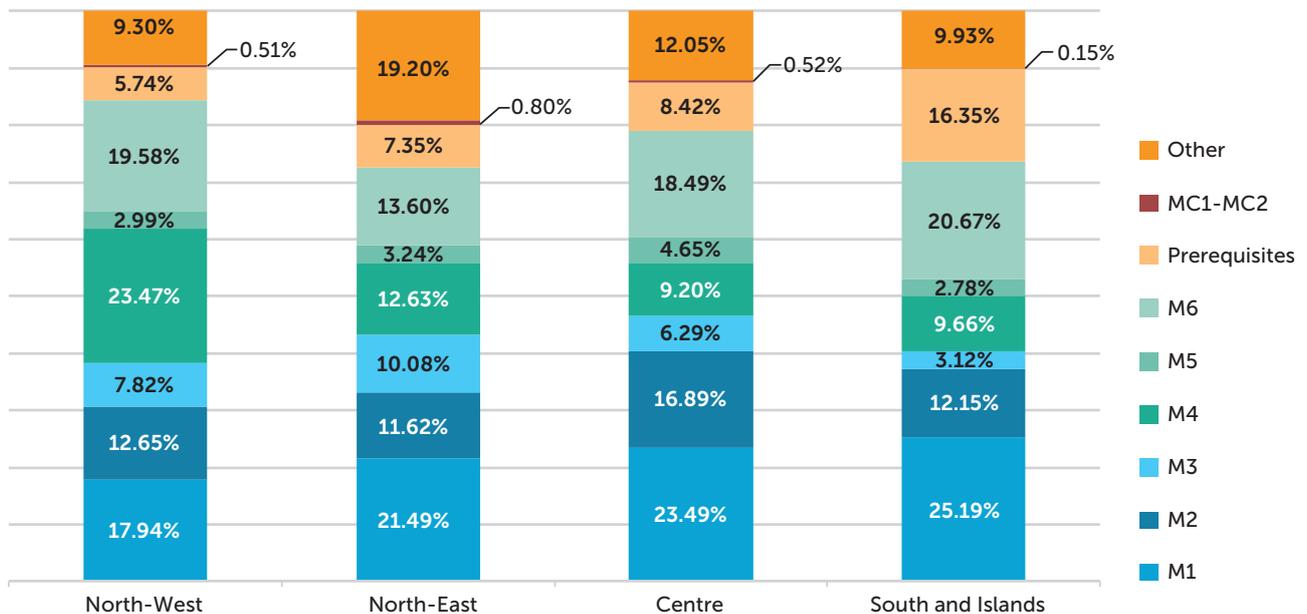
The share of investments in integrated water service facilities not directly related to the specific technical quality objectives set by the Authority (partly related to extensions of service coverage and energy efficiency of plants) continues to decrease. A share of these needs (mainly related to the improvement of services to users) can be found, albeit to a residual extent, in the contracted quality macro-indicators⁴⁰ (mostly in terms of adjustment of information systems).

The weight of the interventions aimed at overcoming critical situations in agglomerations subject to sentencing by the European Court of Justice for non-compliance with Directive 91/271/EEC grew, but also at preventing the possibility of further sentences in those agglomerations that are still subject to open Community infringements relating to the same directive.

38 The reference sample is made up of 141 management teams (providing service to 50,228,334 inhabitants) for which the Authority has already approved the specific regulatory schemes proposed by the competent bodies for the 2020-2023 regulatory period (pursuant to resolution 580/2019/R/idr), or for which the Authority is about to conclude the preliminary enquiries in order to assess the consistency between the investments contained in the intervention programmes, the envisaged technical quality objectives and the economic-financial plans submitted by the competent bodies.

39 For this indicator, the incentive mechanism had been suspended in the first 2018-2019 two-year period of application of the technical quality regulation.

40 See resolution 547/2019/R/idr.

FIG. 5.29 Distribution of planned investments in the third regulatory period by geographical area (in percent)

Source: ARERA, processing of data from the third regulatory period (resolution 580/2019/R/idr).

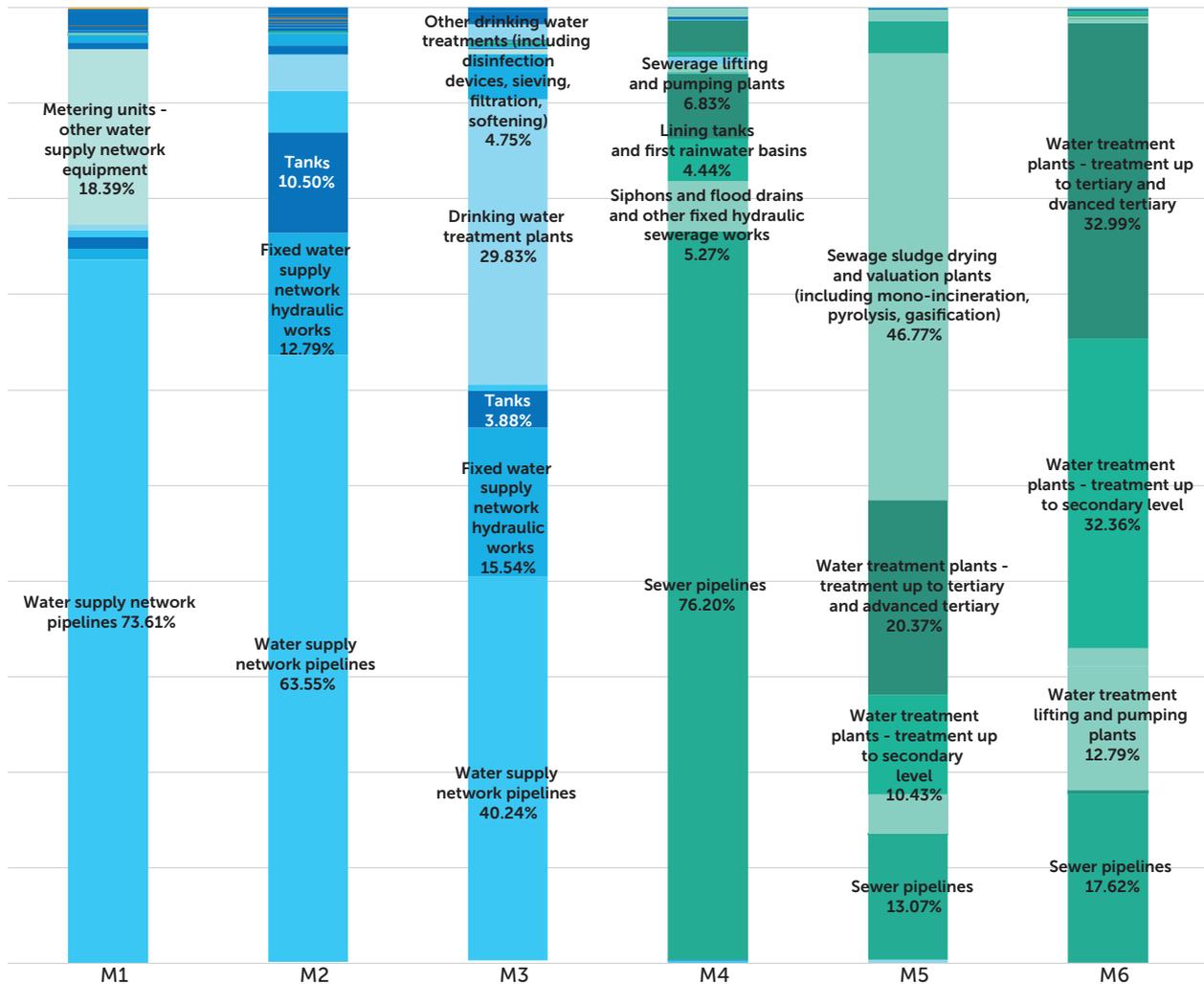
Analysing the **distribution of investments by geographical area**, the impact of the interventions aiming to overcome Community infractions in the sewerage and water treatment services can be seen in the South and Islands. In general terms of service, in the North-West and South and Islands, a greater need has been expressed in sewerage and water treatment, while in the North-East and Centre, there is a clear prevalence of investments in the water supply network business.

In preparing tariffs for the 2020-2023 period, the scope governing Bodies have qualified as "strategic" (within the relevant Strategic Works Plan - SOP, introduced by the Authority in 2019) in their respective planning acts a series of works mainly aimed at the securing and/or construction of water supply networks and new drinking water treatment plants; the construction of "over-bound" water adduction and distribution sections; the construction of sewage sludge drying and valuation plants; the construction of new water treatment plants and the replacement of outdated plants.

The total need for strategic works expressed in the analysed Plans amounts to approximately € 10.3 billion in the 2020-2027 period (205.7 €/inhabitant), of which slightly more than 4 billion (39%) are attributed to the first 2020-2023 four-year period and constitute almost one-third of the total need contained in the surveyed Pols. As already noted in the last Annual Report, in the Plan years coinciding with the regulatory period (2020-2023), needs are concentrated more on the sewerage and water treatment service (62% of the total), while in the following four-year period (2024-2027) there is a greater thrust of investments in the water supply network service (57% of the total), driven above all by interconnection and upgrading interventions in the supply and adduction phase of the water supply network systems.

From the analysis of the Programmes of Interventions (Pols) submitted to the Authority, almost 40% of the investments planned for the 2020-2023 period were valued as environmental and resource costs: 72.2% were qualified as investments attributable to environmental cost (or environmental cost, ENV component of the ERCs), while the remaining 27.8% were qualified as investments attributable to resource cost (RES component).

FIG. 5.33 Main interventions attributable to the macro-indicators of technical quality, by financial needs in the 2020-2023 period (as a percentage)



Source: ARERA, processing of data from the third regulatory period (resolution 580/2019/R/idr).

In terms of operating costs, the transposition of the technical quality obligations resulted in low tariff impacts: on average, the additional charges related to compliance with the technical quality standards set by the Authority amount to 0.8 €/inhabitant.

Tariffs and quantification of investments

During 2021, the preliminary enquiries continued for the approval of tariff preparations for the third regulatory period, which involved a total of 91 management teams (69 operators and 22 municipal operators from Calabria) for a total of 34,533,179 inhabitants served⁴¹. Among the rulings approved there are also the **first convergence regulatory schemes**⁴² relating to the 22 municipal management teams operating in Calabria (154,321 inhabitants) presented by the competent area governing Body, based on well-identified schedules of commitments both with regard to the completion of the aggregation process for the training of the single area manager, and about the obligations of technical quality, contracted quality, and the proper keeping of technical-accounting records.

Compared to 2020, the average change in user fees was +2.79% with a less uneven geographical distribution than in the past: +2.62% in the South and Islands, +3.28% in the Centre, +2.46% in the North-East and 2.82% in the North-West⁴³.

Based on the Pols transmitted to the Authority, for the 2020-2023 four-year period the planned investments (net of public contributions) stand at 200 €/inhabitant at a national level (corresponding to 50 €/inhabitant/year), with values of 278 €/inhabitant in the Centre and 199 €/inhabitant in the North-West, while in the South and Islands the value stops at 137 €/inhabitant⁴⁴.

The verifications carried out regarding the cost of fixed assets calculated in the tariff have confirmed the general improvements in the capacity to make the investments planned, already highlighted in the previous edition of the Annual Report. The development rate is in fact 100.8% for 2018 and 94.5% for 2019. Taking into account the forecasts for the availability of public funds, the **investment expenditure** in terms totals **€ 12.4 billion for the 2020-2023 four-year period** (€ 2.5 bln in 2020, € 3.2 bln in 2021, € 3.4 bln in 2022 and € 3.3 bln in 2023).

Extending the analysis on the basis of the Country's resident population, the investment needs for the water sector over the period under consideration can be estimated at € 15.6 billion.

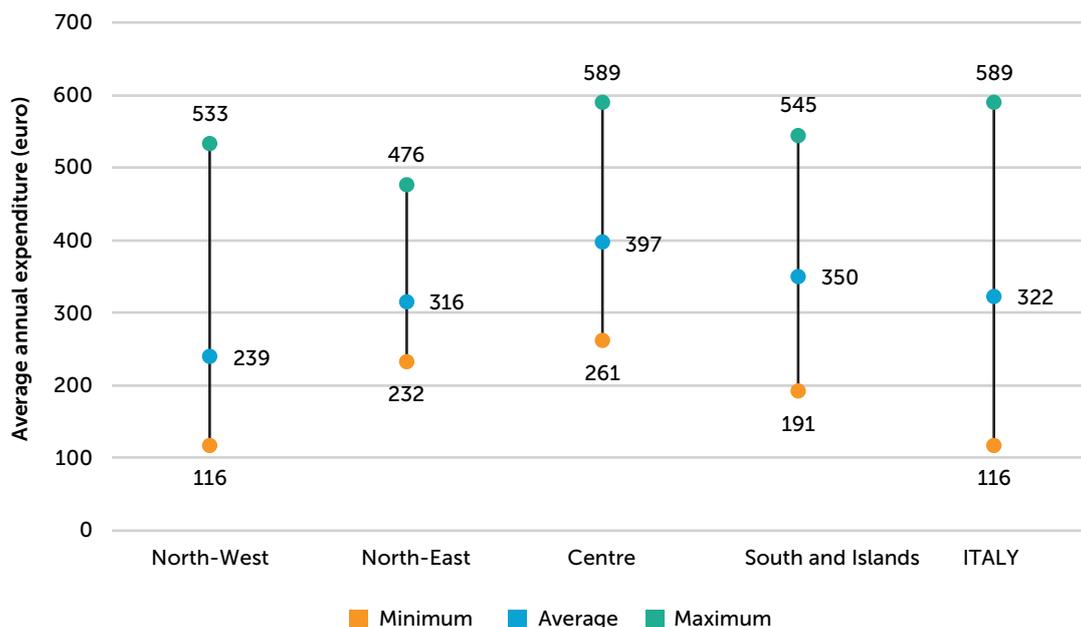
41 Updated to 30 April 2022.

42 With resolution 580/2019/R/idr, which approved the Water Tariff Method for the third MTI-3 regulatory period, the Authority provided for simplified forms of tariff regulation for those management teams for which in previous periods there had been a lack of the necessary documents and data for tariff purposes.

43 In this case, the sample consists of 99 managers (31 operators) serving 44,058,385 inhabitants.

44 The sample consists of 121 management teams serving 46,923,184 inhabitants.

FIG. 5.72 Change in average annual expenditure in 2021 (in euros for annual consumption of 150 m³)



Source: ARERA, processing of data from managers.

In 2021, the average annual spending by a typical residential household⁴⁵, amounts to 322 €/year at the national level, with a more limited value in the North-West (239 €/year) and higher in the Centre (397 €/year); in this latter area, the competent bodies have planned a greater spending per capita for the 2020-2023 period for investments to be financed through tariff. As repeatedly noted, the data for 2021 also confirm that the largest expenditure for typical households is to be found precisely in the macro-area of the Country in which the competent bodies have planned, for the 2020-2023 period, a higher per capita expenditure for investments to be financed through tariff.

Contracted quality

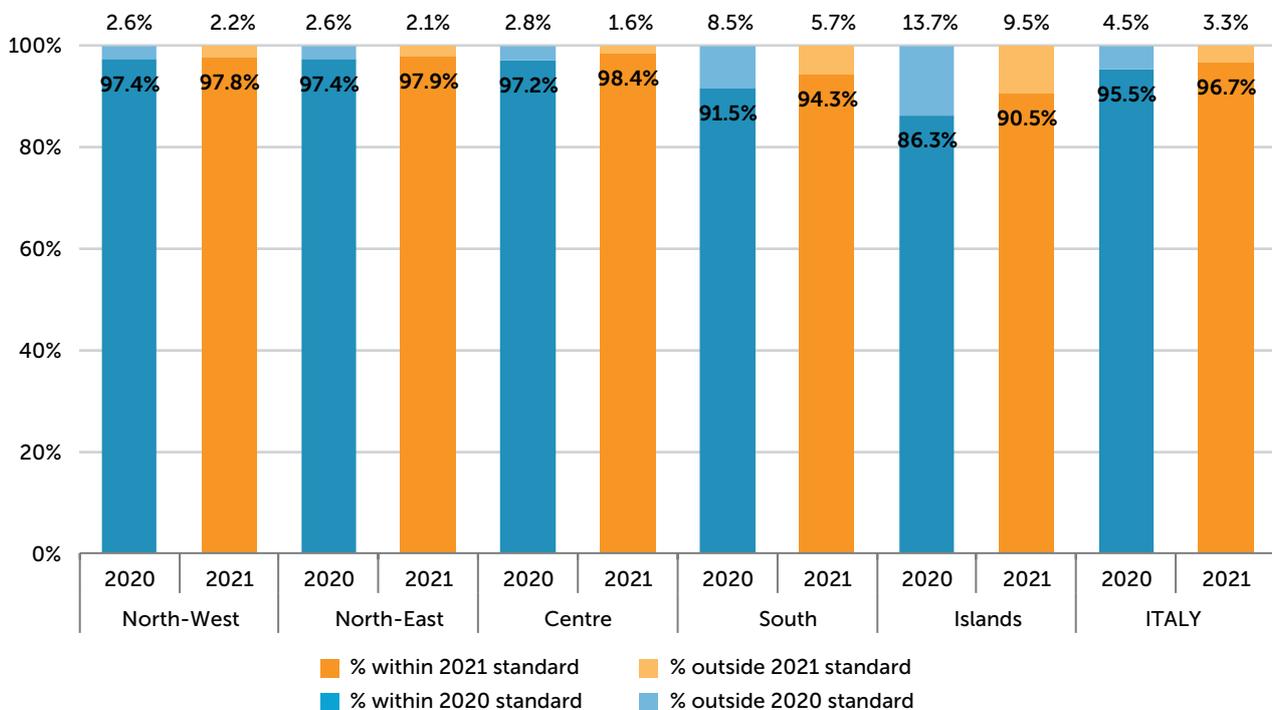
In May 2022, the sixth edition of the “contracted quality of the integrated water service” data collection was closed, aimed at allowing the Authority, as part of its regulatory and control functions, to acquire information on the services rendered during 2021. The analysis of the information transmitted⁴⁶ confirmed the lack of homogeneity at a geographical level in the fulfilment of the contracted quality data reporting obligations by operators, mainly due to the different features of the organisational structure of the management teams operating in the South and the Islands. As a result, these areas are less well represented than other areas of the Country (although there has been an improvement in recent years).

45 Household of 3 persons, with annual consumption of 150 m³

46 The sample consists of 272 management teams providing service to 52.3 million inhabitants.

An analysis of the data on 27 specific standards⁴⁷ set by the Regulation of the contracted Quality of the Integrated Water Service (RQSII)⁴⁸ shows, in 2021, a high level of contracted quality with an average standard non-compliance rate of 3.3% (4.5% in 2020) due to a generalised improvement in the performance recorded in all areas.

FIG. 5.75 Compliance with area-specific standards



Source: ARERA, processing of data communicated by managers pursuant to RQSII.

From the stated data, it emerges how, in the context of contracted quality regulation, the provision of automatic compensation in the bill by the manager in the event of failure to meet specific standards has strengthened the protection of users in the event of disservice: against a compensated total in Italy in the first half of 2016 amounting to € 0.15 million, with reference to 2017 (the first year of full application of the RQSII), compensations of more than € 8.79 million were paid out as at 31 December 2021.

Regarding compliance with the 14 general standards set by the RQSII - or with the improvement standards decided at a local level and set out in the Service Chart - while showing slightly lower levels than for the specific standards, a good level of compliance with the standard of at least 90% was recorded in 2021 for more than half of the indicators considered.

In the aforementioned Data collection, IIS managers were also requested to provide a summary of 2021 provisions in order to ensure the homogeneous application of incentive mechanism of bonuses and penalties⁴⁹ based on the performance of individual management teams with reference to two macro-indicators: "Initiation and

47 The standards "Periodicity of billing" and "Time to issue a bill" were excluded from the analysis because, with approximately 97% of the services performed (72.8 million in 2021), they would not allow an adequate representation of the other indicators.

48 Annex A to resolution 655/2015/R/idr.

49 The mechanism was introduced in resolution 547/2019/R/idr.

termination of the contracted relationship” (MC1) and “Management of the contracted relationship and accessibility of the service” (MC2). For both macro-indicators, against high national average values (96.5% MC1 and 95.7% MC) the existence of a Water Service Divide emerges once again, indicated by lower average values in the South and Islands area.

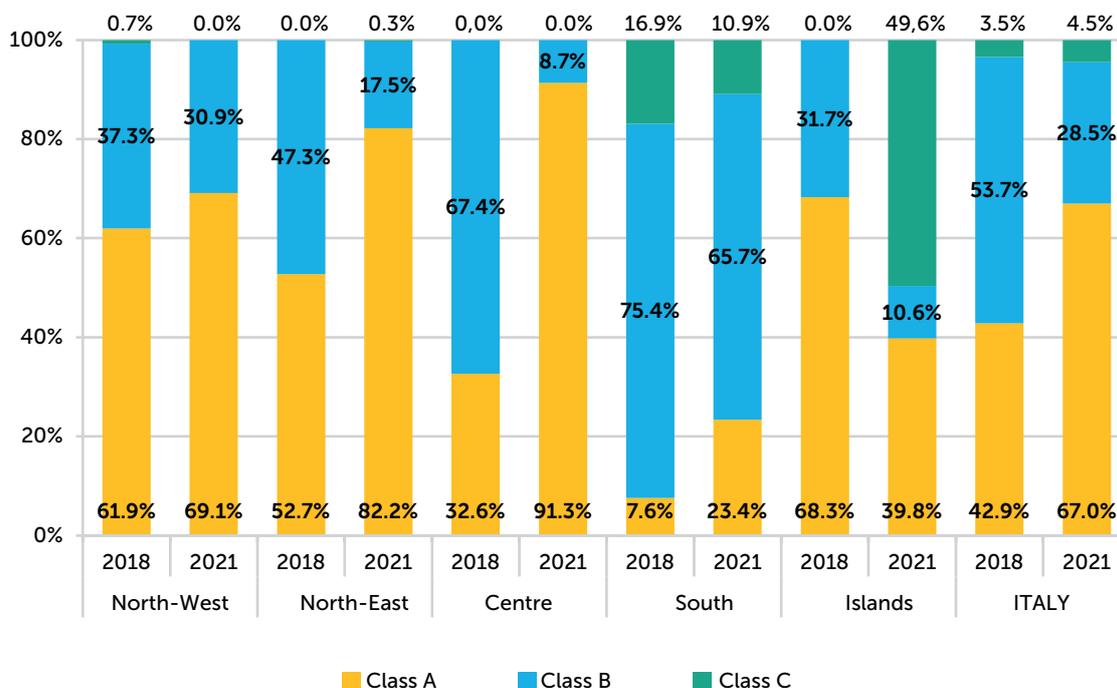
TAB. 5.21 *Classes and objectives by macro-indicator*

MACRO-INDICATOR	CLASS ID	CLASS	OBJECTIVE
MC1 “Commencement and termination of contracted relationship”	A	MC1 > 98%	Mantenimento
	B	90% < MC1 ≤ 98%	+1%
	C	MC1 ≤ 90%	+3%
MC2 “Management of the contracted relationship and accessibility of the service”	A	MC2 > 95%	Mantenimento
	B	90% < MC2 ≤ 95%	+1%
		MC2 ≤ 90%	+3%

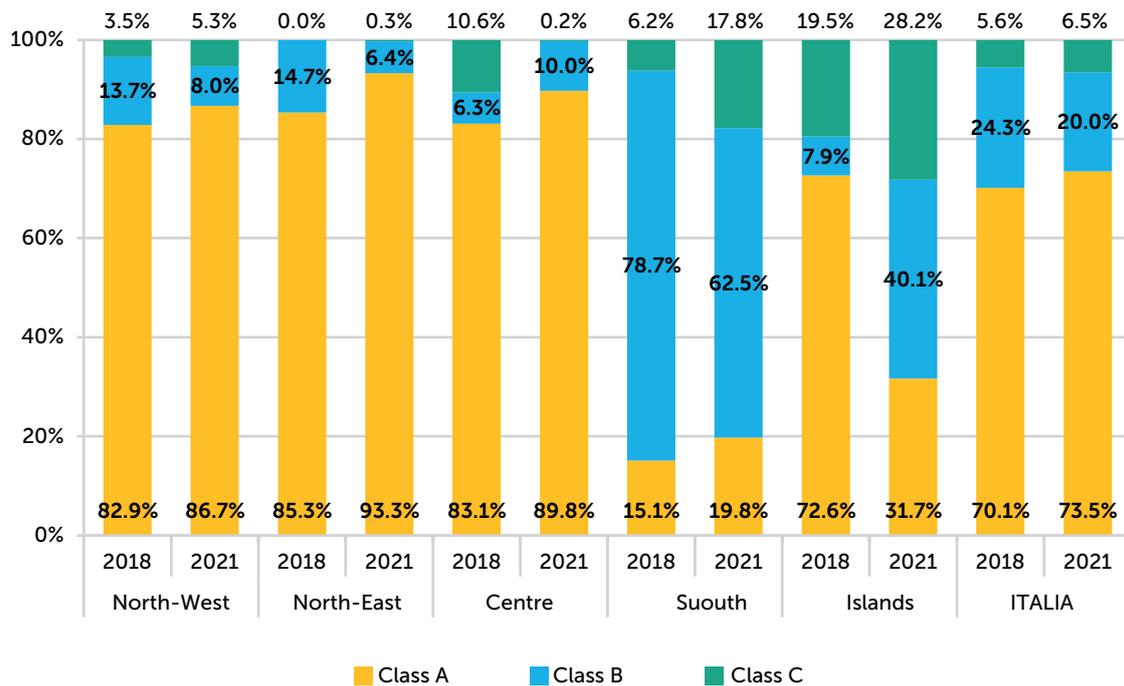
Source: ARERA, resolution 547/2019/R/idr

In addition, a trend analysis of the values of the macro-indicators of contracted quality between the starting level of 2018 and the level reached in 2021 (which is the reference year for the assessment of the attainment of the improvement or maintenance objectives set, precisely, based on the 2018 level) was carried out. The results are summarised in the figures below.

FIG. 5.86 *MC1 macro-indicator: panel population by area and class (2018-2021)*



Source: ARERA, processing of data communicated by managers pursuant to RQSII.

FIG. 5.87 MC2 macro-indicator: panel population by area and class (2018-2021)

Source: ARERA, processing of data communicated by managers pursuant to RQSII.

Against the improvement in the performance attributable to the start-up, management and termination phases of the contracted relationship, there are, however, limited tariff impacts: on average, the additional charges connected to the adjustment to the contracted quality standards set by the Authority are, for the 2020-2023 four-year period, equal to about 1 €/inhabitant/year.

BOX OF ACTIVITY CARRIED OUT

Publication of contracted quality and performance monitoring data for 2020

In February 2021, the "Data collection: Contracted quality of the integrated water service - Year 2020" was launched, to acquire:

- information on the services rendered during 2020, monitoring the evolution of contracted quality levels offered to users;
- the summary of the services performed in the same year, relating to the incentive mechanism based on the two macro-indicators MC1 "Start and termination of the contracted relationship" and MC2 "Management of the contracted relationship and accessibility of the service".

The Authority has published the contracted quality data of the integrated water service on its website⁵⁰, both in excel format and by reorganising them in a special interactive data browsing platform, per individual management, the number of services performed within and outside the standard, the presence of any improvement standards identified by the competent area governing bodies, as well as the values achieved with reference to the individual macro-indicators.

⁵⁰ See section "Data and statistics", in the part concerning "Contracted quality of the integrated water service", available at: <https://www.arera.it/it/dati/RQSII.htm>.

Outcomes of the first application of the incentive mechanism introduced by the RQTI for 2018 and 2019

The Regulation of the Technical Quality of the Integrated Water Service (RQTI) defines, among other things, the incentive mechanisms for technical quality, providing that the quantification of bonuses and penalties shall, as of 2020, be based on the performance achieved in each of the two preceding years⁵¹. To this end, the Authority has initiated a specific ruling aimed at the application of the aforementioned incentive mechanism, identifying the terms and ways for the attribution of the bonuses and penalties for 2018 and 2019 provided for by the technical quality regulation.

The proceeding for the awarding of bonuses and penalties for 2018 and 2019 was divided into two main phases, aiming to:

- identify the set of management teams for which there is a complete set of information available;
- attribute maximum penalties to all the management teams that, at the time of the definition of the rankings, have not sent the data necessary for the assessment of the technical quality objectives underlying the macro-indicators admitted to the incentive mechanism.

The mechanism awarded bonuses totalling € 63,201,507 in 2018 and a total of € 72,167,020 in 2019. The highest amounts were awarded in the North-East and Central areas, followed closely by the North-West area, while in the South and Islands the awarding was considerably lower.

As for contracted quality, data and rankings were published on the Authority's website, both in excel format and reorganised in a special interactive data browsing platform⁵².

SETTORE IDRICO | QUALITA' CONTRATTUALE

GLI OBBLIGHI DI QUALITA' DEL SERVIZIO ALL'UTENZA: GESTIONI IDRICHE A CONFRONTO

LA QUALITA' CONTRATTUALE DEFINISCE GLI OBBLIGHI DI QUALITA' NEI RAPPORTI DI FORNITURA TRA I GESTORI DEL SERVIZIO IDRICO E GLI UTENTI

DI COSA SI TRATTA?

Dal 2020, per rafforzare gli incentivi al rispetto degli standard minimi di qualità contrattuale ARERA ha introdotto degli obiettivi di miglioramento annuali con validità nazionale e basati sulla definizione di due macro indicatori, MC1 e MC2, costruiti a partire da 42 indicatori già previsti dalla regolazione della qualità contrattuale (RQS).

MC1 - AVVIO E CESSAZIONE DEL RAPPORTO CONTRATTUALE

Composto da 18 indicatori che riguardano: i tempi di invio dei preventivi, dell'esecuzione di allacciamenti e di lavori, di attivazione e disattivazione della fornitura.

MC2 - GESTIONE DEL RAPPORTO CONTRATTUALE E ACCESSIBILITA' AL SERVIZIO

Composto da 24 indicatori relativi: ai tempi di gestione degli appuntamenti, di fatturazione, delle verifiche dei misuratori e del livello di pressione, delle risposte a richieste scritte e della gestione del contatto con l'utenza.

A QUALE CLASSE APPARTIENE IL TUO GESTORE?

VALORE MC1	VALORE MC2
A. ITALIA (MC1) 100%	A. ITALIA (MC2) 100%
B. REGIONE (MC1) 100%	B. REGIONE (MC2) 100%
C. PROVINCIA (MC1) 100%	C. PROVINCIA (MC2) 100%
D. CITTA' (MC1) 100%	D. CITTA' (MC2) 100%

SCOPRI I MACRO-INDICATORI NEL DETTAGLIO (SCARICA IL DOCUMENTO)

VAI ALLA MAPPA INTERATTIVA

SETTORE IDRICO | QUALITA' TECNICA

LA QUALITA' TECNICA: LE PERFORMANCE AMBIENTALI E DI SERVIZIO DELLE GESTIONI IDRICHE

LA QUALITA' TECNICA HA L'OBIETTIVO DI MIGLIORARE L'IMPATTO SULL'AMBIENTE E LA CONTINUITA' E SICUREZZA DEL SERVIZIO RESO AGLI UTENTI

DI COSA SI TRATTA?

Dal 2017, ARERA ha definito degli obiettivi minimi per valutare le performance dei gestori attraverso 6 macro-indicatori (delibera 917/2017/R/Idr).

La qualità tecnica mira ad indirizzare gli sforzi dei gestori verso investimenti e comportamenti gestionali necessari al miglioramento del servizio idrico integrato e volti a mitigare gli impatti sull'ambiente e sulla sicurezza e continuità del servizio.

MECCANISMO INCENTIVANTE

La misurazione dei macro-indicatori si accompagna ad un meccanismo che assegna premi e penalità ai gestori sulla base delle prestazioni ottenute nel biennio 2018-2019 (delibera 183/2021/R/Idr).

Per la loro attribuzione, al termine del biennio viene condotta una analisi delle performance, suddivisa in tre livelli di valutazione (Base, Avanzato, Eccellenza).

COME SONO COMPOSTI E QUALI SONO LE CLASSI DEI MACRO-INDICATORI?

APPROFONDISCI

COME FUNZIONA IL MECCANISMO DI PREMI E PENALITA'?

MAPPA INTERATTIVA QUALITA' TECNICA

SCOPRI LE PRESTAZIONI DEL TUO GESTORE

SCOPRI LE GRADUATORIE

I MACRO-INDICATORI

ARERA ha previsto 6 macro-indicatori e le relative classi di valutazione delle performance, considerando i tre comparti del servizio: acquedotto, fognatura e depurazione.

ACQUEDOTTO

- M1 - PERDITE IDRICHE
- M2 - INTERRUZIONI DI SERVIZIO*

FOGNATURA

- M3 - QUALITA' ACQUA EROGATA
- M4 - ADEGUATEZZA SISTEMA FOGNARIO

DEPURAZIONE

- M5 - SMALTIMENTO FANGHI IN DISCARICA
- M6 - QUALITA' ACQUA DEPURATA

51 Title 7 of Annex A to resolution 917/2017/R/Idr.

52 See section "Data and statistics", in the part concerning "Technical quality of the integrated water service", available at: <https://www.arera.it/it/dati/QTSII.htm>

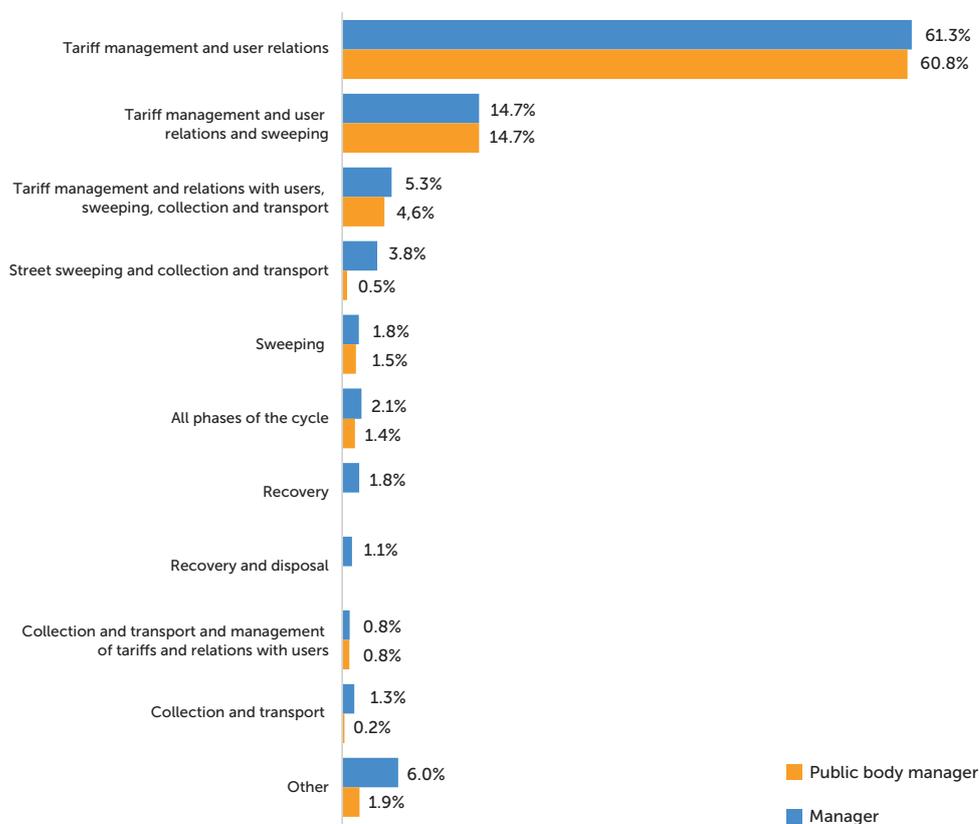
WASTE CYCLE

In 2021, the Authority continued the construction of the sector regulatory framework with the definition of the Waste Tariff Method for the 2022-2025 second regulatory period (MTR-2)⁵³. In addition, the preliminary enquiry continued on the tariff preparations referring to the 2020 and 2021 business plans proposed by the bodies with territorial competence ("ETCs") and the relative approval resolutions were adopted.

Structure and organisation of the sector

As of 22 April 2022, 7,843 entities were registered in the Authority's Registry of Operators (of which 7,608 were registered as managers in 86.5% of the cases accredited as Public Bodies), with an increase over last year of more than 370 new entities registered. Confirming the persistent fragmentary nature of governance in the sector and the failure to complete the process of territorial organisation of the service, in the face of an almost unchanged number of entities registered as Area Governing bodies (slightly less than 60), there still is a very high number of different entities registered as territorially competent Bodies (amounting to 3,762), with an increase over last year of about 7%.

FIG. 6.5 Public body managers for activities carried out



Source: ARERA, Registry of operators.

53 Approved by resolution 363/2021/R/rif.

Further confirmation of the significant parcelling of the service comes from the analysis of the number and type of activities carried out: in most cases (68.6%), the subjects are certified for a single activity, while a far smaller percentage (2.1%) is certified for all cycle activities. Less than a third are accredited for two or more activities (29.2%).

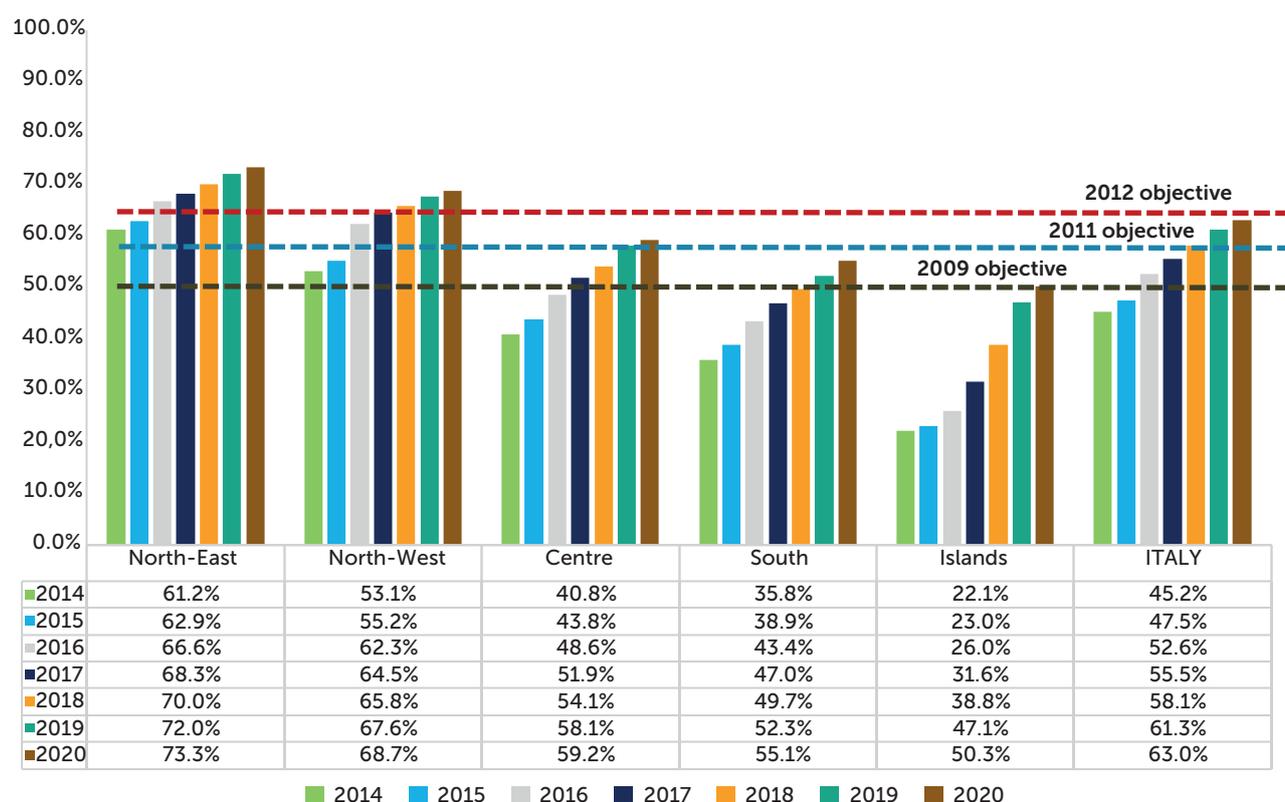
Waste production and collection⁵⁴

In 2020, **national municipal waste production** came to approximately 28.9 million tonnes, down 3.6% from last year. This decline is, however, less drastic than that recorded by the “GDP” and “household spending” socio-economic indicators which, due to the pandemic emergency, declined respectively by 8.9% and 11.7%.

The growth trend (+1.7% compared to 2019) in **waste sorting** is also confirmed, which in 2020 came to 63% of national production (18.2 million tonnes), but with major inequalities at a territorial level.

In the North-East and North-West regions, the objective of 65% set by the regulation was achieved, with waste sorting of respectively 73.3% and 68.7% of the total production of municipal waste, while in the Centre, South and Islands, waste sorting was respectively 59.2%, 55.1% and 50.3%.

FIG. 6.7 Trends in waste sorting by geographical area and comparison with objectives (2014-2020)



Source: ARERA, processing of ISPRA data, 2021 Municipal Waste Report.

The percentage of preparation for **re-use and recycling** stood at 54.4% (above the target of 50%), an increase of 1 percentage point over the previous 12 months.

⁵⁴ Data is reprocessed by ARERA from the ISPRA 2021 Municipal Waste Report.

Plants

In the context of the opening of the proceeding for the definition of the Waste Tariff Method for the second regulatory period (MTR-2)⁵⁵ and of the criteria for the definition of the tariffs for access to treatment plants, the Authority also ordered the acquisition of data, information and assessment elements useful for the preparation of consultation documents with reference to the issues covered by the proceeding. Therefore, data collection was started on the treatment services of municipal and similar or related waste, as well as municipal waste, in order to obtain data and information by macro-types of plants, giving priority to mechanical/mechanical biological treatment plants, incineration plants and landfills operational on 31 December 2019.⁵⁶

FIG. 6.12
Waste incinerated
by panel plants
(in tonnes and
percentage values)

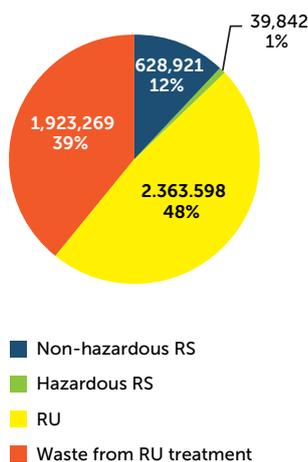


FIG. 6.14
Waste delivered
to panel landfills
(in tonnes and
percentage values)

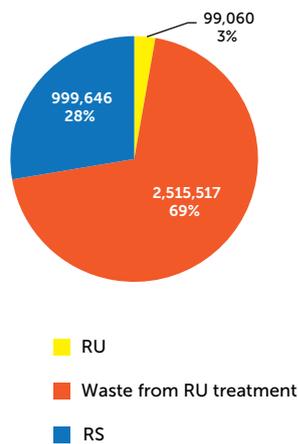
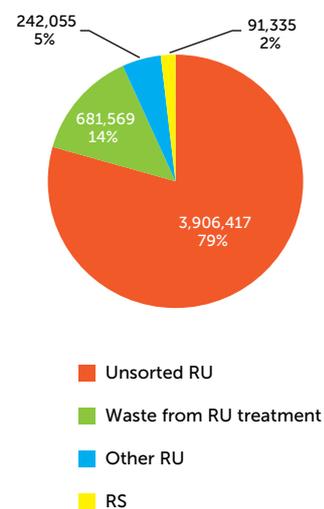


FIG. 6.14
Waste delivered to panel
mechanical biological treatment
plants (in tonnes and
percentage values)



Source: ARERA, processing of data communicated by the operators pursuant to resolution 1/2021 - DRIF.

In the reporting year, 4.9 million tonnes of waste (13% special and 87% municipal) were incinerated in the 29 plants making up the panel. The 5 largest plants treated 49% of the total waste incinerated and, about municipal waste only, 48% of the total municipal waste incinerated. The total amount delivered, with reference only to the portion of waste of municipal origin, derives 53% from the collection system and 47% from treatment plants. The allocation price declared by managers varies from a minimum of 12 €/tonne to a maximum of 190 €/tonne (average price of 84 €/tonne).

About landfills, data were collected for 55 plants⁵⁷ that handled a total of 3.6 million tonnes of waste, of which 2.6 million tonnes were of municipal origin. The allocation price declared by the managers is extremely variable, ranging from a minimum value of 12 €/tonne to a maximum value of 190 €/tonne, with the average allocation price of all the plants in the panel being around 84 €/tonne.

⁵⁵ Approved by resolution 138/2021/R/RIF of 30 March 2021.

⁵⁶ See resolution of 31 March 2021, 1/2021 - DRIF.

⁵⁷ The total number of landfills surveyed on the national territory by ISPRA in 2019 is 131 for a total of 9.5 million tonnes of treated waste, of which 6.3 million tonnes is municipal waste.

Mechanical biological treatment (MBT) plants⁵⁸ receive 4.9 million tonnes of waste (50% of the total treated by the 130 plants surveyed by ISPRA), of which 98% is municipal waste and only 2% special waste. The largest waste input, consistent with the type of plant, is unsorted waste, which accounts for 79% of the total.

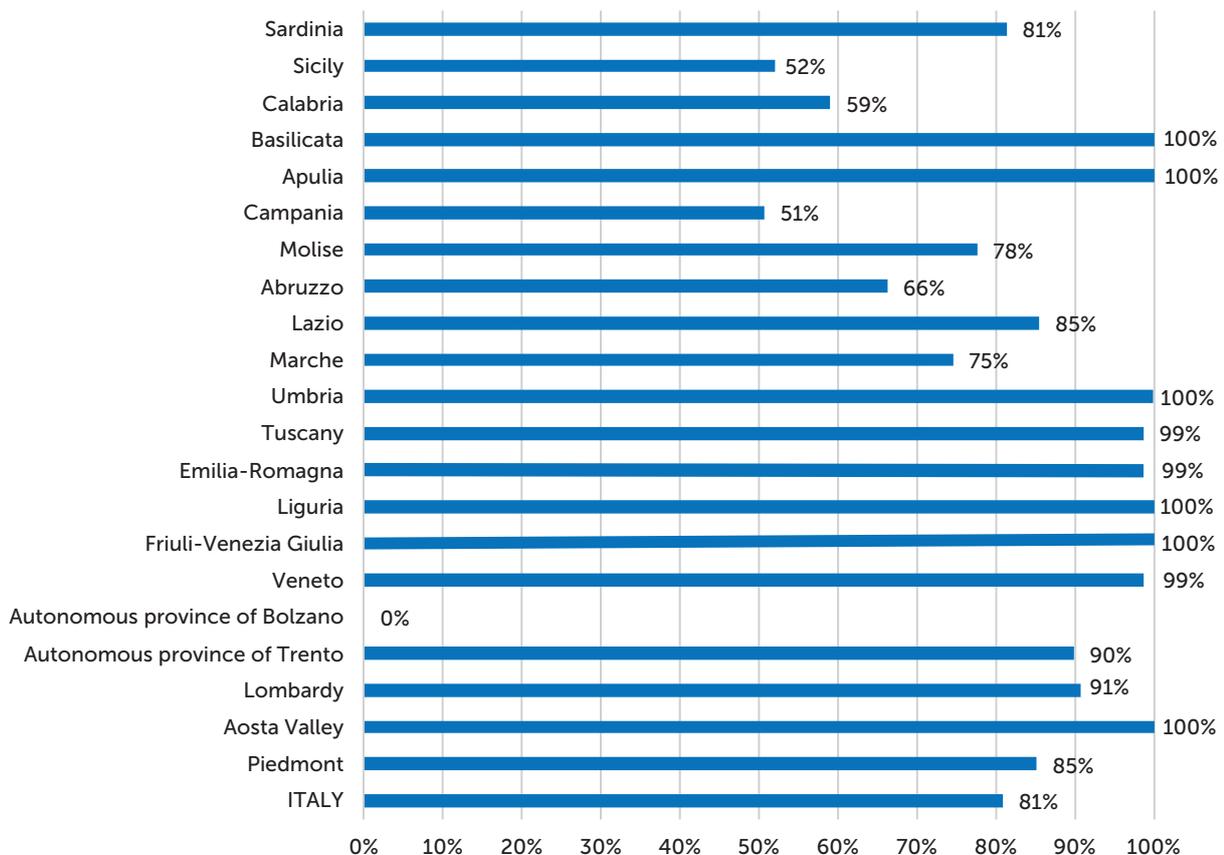
Status of tariff approvals for 2020 and 2021

In 2021, the process of approval of the tariff preparations was impacted by the continued health emergency connected with the COVID-19 virus and by the consequent deferral of the deadlines for approval of the TARI arranged by the legislator with various regulatory interventions. Therefore, approvals of tariffs for the previous year continued in 2021.

For 2020, the Authority received just over 6,250 tariff recommendations by more than 3,000 ETCs, for a population of 51.5 million inhabitants (approximately 87% of the national population). As instead regards the 2021 economic-financial plan, the Authority has received approximately 5,700 preparations, which represent a total population of around 49.2 million inhabitants (approximately 83% of the national population) from approximately 2,700 ETCs.

The preparations approved by the Authority for 2020 concern about 180 tariff areas (8.7 million inhabitants living in 270 Municipalities) and saw a very small average increase of 0.43% compared to 2019. With regard to 2021, on the other hand, the approvals concerned 33 tariff areas (4.3 million inhabitants living in 124 Municipalities) with an average annual increase in tariffs of 1.3% compared to 2020.

⁵⁸ The panel consists of 68 plants, compared to the total of 130 plants surveyed by ISPRA.

FIG. 6.18 Tariff preparations per region sent to the Authority for 2021 (% population served)

Source: ARERA, processing of tariff preparations for 2021.

For 68 of the 179 tariff areas for which the 2020 tariff preparation was approved and 16 of the 33 areas for which the 2021 tariff preparation was approved, the ETC did not identify any changes in the scope of operations or in the quality of services; these areas represent 58% and 28%, respectively, of the population affected by the tariff approvals; it should also be noted that for the aforementioned groups of tariff areas, an average annual tariff change of -0.37% (for the 2020 financial year) and of 0.21% (for the 2021 financial year) was approved. Only for 51 tariff areas involved by the approval for 2020 and 2 subject to approval for 2021, representative, respectively, of 25% and 3% of the population concerned, the competent ETCs set both specific objectives for changes in the scope of operations and objectives for improvements in quality levels compared to what has been achieved in the past; for the aforementioned groups of tariff areas, an average annual tariff change of 4.2% for 2020 and of 5.5% for 2021 was approved.

Operating incentive costs were recognised for 33 approved preparations, mainly for targets related to the determination of the service quality improvement coefficient. The average ratio of these costs to the total 2020 tariff revenue is 1.94%. For 2021, operating incentive costs were included in the business plan in 9 out of 33 approved preparations: the average incidence was 1.7%.

Contrary to the findings of the previous Annual Report, the continued approval of the 2020 preparations revealed that the use of tariff components specifically introduced to cope with the pandemic was not negligible⁵⁹. About 12% of the tariff areas for which the ETCs quantified higher or lower costs related to the management of health emergencies, with an incidence on total tariff revenues ranging from -9.9% to +1.24%, indicating that the valuation of these higher costs, where they occurred, involved quite small amounts. With reference to the PEF 2021, there are 7 out of 33 tariff areas whose ETCs have valued emergency health components, with a range of incidence from -0.74% to 2.12%.

Finally, with reference to the guarantee mechanisms inherent in the 2020 tariff approval procedures, the Authority received a total of 116 requests for intervention (328 in 2020).

BOX OF ACTIVITY CARRIED OUT

In 2021, the Authority's activity was strongly focused on the protection of the user of the municipal waste management service, finding fulfilment in the definition and subsequent approval of a Consolidated text for the regulation of the quality of the municipal waste management service (TQRIF), which provides for, as of 1 January 2023, the introduction of a set of minimum service obligations valid for all management teams (concerning the main contracted and technical quality profiles), flanked by the provision of overall quality indicators and standards, differentiated in relation to the initial quality level guaranteed to users in

This activity was particularly necessary for a sector, such as that of municipal waste, which is highly heterogeneous, with significant differences between the macro-areas of the Country, in terms of the services guaranteed to users, characterised by the presence of numerous small operators carrying out individual activities of the integrated municipal waste management service in areas that are generally municipal in size, by poor compliance with the obligation to adopt the Quality Chart and by a meagre implementation of contracted and/or technical quality indicators, related performance standards and user compensation systems.

The main aims of the regulatory intervention are to:

- guarantee all categories of users (households and non-households) an increasing and homogeneous minimum level of protection throughout the country, in any case within a context of sustainability of the costs of the tariff paid by users;*
- encourage the gradual convergence of the various management realities towards an optimal model in terms of services guaranteed to users and technically efficient service delivery conditions;*
- ensure the necessary correspondence between the tariff paid by the user and the quality of the service provided to ensure the necessary correspondence between the tariff paid by the user and the quality of the service provided, ensuring consistency with the criteria for covering the efficient operating and investment costs of the integrated municipal waste service in each tariff area;*

59 These are the components $COV_{TV,2020}^{EXP}$, $COV_{TF,2020}^{EXP}$ e $COS_{TV,2020}^{EXP}$, introduced by resolution 238/2020/R/RIF.

- *ensure transparency and dissemination of knowledge about the performance of managers;*
- *ensure harmonisation, where possible and considering the specificities of the waste sector, with the quality regulation criteria adopted in the other sectors regulated by the Authority for the protection of the user.*

After extensive consultation, the approach envisaged by the Authority was confirmed, at the same time foreshadowing the introduction - suggested by some operators - of a number of additional measures aimed at strengthening the protection of users in the phases of activation, change and termination of the service, as well as specific measures for punctual tariff management teams aimed at supporting an effective transition towards the adoption of tools for the quantification of the waste actually produced and at transmitting a timely price signal to users in compliance with the EU principle of "pay as you throw", as well as at encouraging greater transparency of service costs.

CUSTOMER PROTECTION

The system of safeguards for the handling of complaints and out-of-court settlement of disputes of customers and end users of the regulated sectors (hereafter simply the safeguard system) is implemented by means of nationwide tools and consists of two macro-areas and three levels. The first macro-area relates to information and assistance to customers and end users interacting with operators and managers in the areas of competence of the Italian Regulatory Authority for Energy, Networks and Environment (basic level); the second macro-area (first and second level) concerns the resolution of problems and disputes that may arise within the supply relationship.

Among the new features, as of 1 July 2021, district heating users were also able to make use of the contact centre services of the Help-Desk and activate, for the problem arising with the operator and not resolved through a complaint, the Conciliation Service of the Authority, as a second-level tool.

In terms of the digital evolution of tools, on the other hand, 2021 saw the implementation of SPID access and identification way to the telematic portal of the Help-Desk for customers and end users and their proxies, in line with the relevant regulations.

TAB. 10.1 Protection system: input volumes to the Help-Desk and conciliation service for the electricity, gas, water and waste sectors (2021)

ACTIVITIES AND SECTORS			2021
Basic level	Calls to the call centre 800.166.654 (received during working hours)		605,608
			24,475
	Written requests for information		18,834
			1,207
	Requests for activation of special information procedures		43,756
	Second-level complaints redirected with information on conciliation		2,041
		193	
Second level	Questions to the conciliation service	 (mandatory conciliation)	16,795
		 (optional conciliation)	3,633
	Requests for the activation of special settlement procedures		11,298
	Second-level complaints		3,449
Transient management of communications in the waste sector, including sorted, municipal and similar or related waste			140

Source: ARERA, processing of data from the Energy and Environment Consumer Help-Desk and from the Conciliation Service.

Energy and environment consumer help-desk

In 2021, the Help-Desk call centre received 630,083 calls during working hours (+31% compared to 2020), almost all of which were related to the electricity and gas sectors (96%). In line with that recorded in recent years, the three main issues in terms of volume of calls were: social bonuses (50%), dispute resolution ways (22%) and open cases at the Help-Desk (11%).

TAB. 10.9 Customer satisfaction reading results for the Help-Desk call centre (2021)

	2021
Good 	87%
Acceptable 	9%
Negativo 	4%
% conversations assessed	56%
% users invited by the operator to leave an assessment	82.5%

Source: processing by the Energy and Environment Consumer Help-Desk of Nextip data.

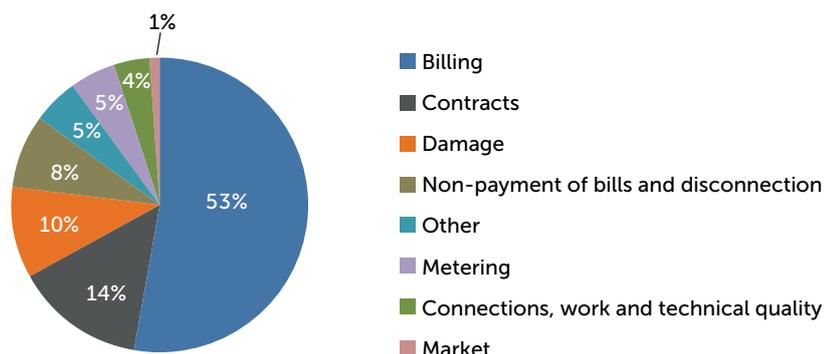
There were 20,041 written requests for information (14,822 in 2020), most of which concerning the energy sectors and, in particular, to the following issues: social bonus (25%), billing (19%), market (18%), contracts (11%) and non-payment of bills and disconnections (11%). Requests for the activation of special information procedures have increased considerably, rising to 43,756 (+36% compared to 2020).

Authority conciliation service

In 2021, the Conciliation service received 20,428 requests, up 10% compared to 2020, which confirms that the growth trend in volumes managed on an annual basis continues, albeit at a slower rate.

48% of requests involved the electricity sector (-6% compared to 2020), 25.5% the gas sector (-0.5%) and 18% the water sector (+5.5%). Dual fuel customers and prosumers accounted for 8% and 0.5% of the total, respectively. The value of requests for the district heating sector (9 in total) for which the Service has been active since 1 July 2021 is residual. 74% of the requests received involved households.

FIG. 10.10 Disputes brought before the Conciliation service in the energy sectors (2021)



Source: Conciliation service.

Excluding waived procedures, the rate of agreement on completed procedures was 70% (-1% compared to 2020) while the average time to complete procedures was 58 days (62 in 2020). The authorisation rate in conciliation procedures varies depending on the sector: from 79% for water to 75% for gas and 63% for electricity.

In 2021, more than € 11 million were given in “compensation”, namely payment obtained by end users or customers through the conciliation agreement (in the form of value recovered also with respect to the value of the dispute or reimbursement, compensations, recalculation of incorrect bills, waiver of expenditure and late payment interest, etc.).

FIG. 10.14 Customer satisfaction results for the Conciliation service (2021)

	 Very satisfied (1)	 Satisfied (2)	 Quite satisfied (3)	 Not very satisfied (4)	 Not satisfied at all (5)
Total	50%	18%	27%	3%	2%
Opinion summary	95%			5%	

Source: Conciliation service.

Social bonuses

2021 was the first year during which the new system of automatic recognition of social electricity, gas and water bonuses, to help address the economic difficulties, came into effect⁶⁰. At the end of the consultation process of all stakeholders and taking into account the opinion of the Italian Data Protection Authority⁶¹, l’Autorità ha definito le modalità applicative del regime di riconoscimento automatico delle tre agevolazioni (bothe Authority defined the application ways of the automatic recognition scheme of the three breaks (social bonus for electricity, gas and

60 The automatism was introduced by Decree Law no. 124 of 26 October 2019, converted with amendments by Law no. 157 of 19 December 2019 (Decree Law no. 124/2019).

61 Issued on 17 December 2020.

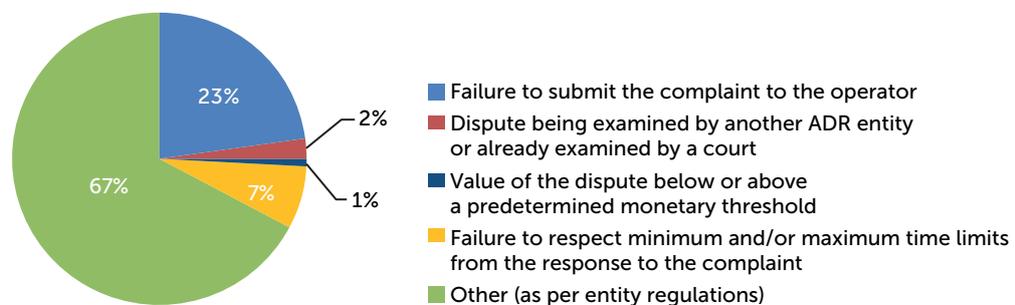
water for economic hardship) that replaced the regulatory provisions of the previous “demand-driven” system. In the implementation of the Government rulings⁶² aiming to limit the effects of the increase in energy bills, starting from the fourth quarter of 2021, supplementary countertrades of social gas and electricity bonuses were introduced.

In the first implementation phase of the mechanism (bonus accruing in 2021), the timing of the start-up differed for the different bonuses, due to the diversity and different degrees of complexity of the processes involved in granting the benefit to those entitled. July 2021 saw the start of the process for the recognition of the social electricity and gas bonuses for direct supplies and, subsequently, the process for the recognition of the social gas bonus in the case of households served by condominium supplies, ensuring that any previously accrued 2021 bonus instalments are paid to those entitled. The 2021 social water bonus, on the other hand, will be granted to those entitled to it in 2022 upon completion of the further investigations and fulfilments that have become necessary, particularly with regard to compliance with personal data protection regulations.

Regarding social bonuses for electricity and gas, the IIS received a total of 4,281,855 DSUs from the National Social Security Institute⁶⁴ in the period from January to December 2021. Following the audits completed by the IIS⁶⁵, 2,487,599 electricity bonuses and 1,537,884 gas bonuses were recognised to direct customers, i.e. holders of individual natural gas supplies.

The annual amount corresponding to the recognised bonuses is about € 488.1 million for electricity bonuses and about € 208.7 million for direct gas bonuses.

FIG. 10.19 ADR bodies: main reasons for inadmissibility (2021)



Source: Conciliation service.

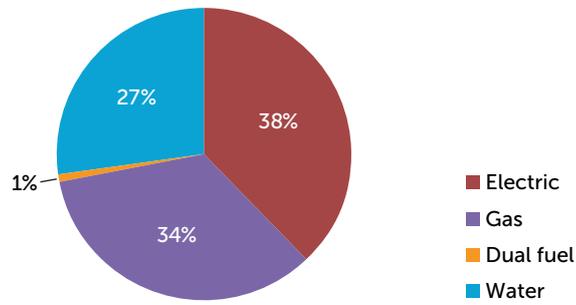
⁶² Decree Law no. 130 of 27 September 2021. The measure was also replicated in the first quarter of 2022 in the implementation of Article 1, Paragraph 508 of Law no. 234 of 30 December 2021 (the 2022 Budget Law). For the amount of the ordinary and supplementary bonuses, see TAB. 10.15, 10.16 and 10.17 of chapter 10 (Volume 2).

⁶³ The completion of the Consolidated Declaration in lieu is the only act that customers are asked to do in order to activate the bonus automatism.

⁶⁴ Integrated Information Service.

As a result of the introduction of the new regime of automatic recognition to those entitled, the total number of beneficiaries of social bonuses for economic hardship regulated by the Authority increased significantly compared to previous years.

FIG. 10.20 ADR bodies: share of concluded procedures per sector (2021)



Source: 2021 Annual reports of ADR entities.

SUPERVISION AND LITIGATION

As part of its **enforcement activities**, the Authority carries out controls on the behaviour of operators required to comply with regulatory provisions. Controls are initiated following recommendation papers or evidence in the possession of the Authority's Offices or through the identification, from time to time, of scope of intervention, through the definition of a programme of activities with an annual horizon. For its control activities, the Authority makes use of various tools, such as investigations, on-site inspections and documentary controls on plants, processes and services. In this context, the contribution of the Tax Police, through the Special **Goods and Services Unit**, constitutes essential support to the Authority's control activities, in terms of both resources and expertise.

In 2021, **control activities** were carried out through:

- documentary controls, in particular concerning the costs to be recognised in the tariff, the compliance with the regulation by electricity and gas retail companies, the correct disbursement of incentives to energy-intensive companies, as well as the correct contribution by regulated companies to the Authority's operating charges;
- on-site inspections, covering priority issues such as security of service, customer protection, the proper functioning of markets and the control of the incentives provided, and the cost items recognised or to be recognised in the tariff.

As far as **sanctioning activity** is concerned, the new feature is represented by the intervention in environmental matters, i.e. the start and closure in 2021 of the first sanctioning proceedings in the field of municipal waste and the closure of 3 proceedings in the field of district heating and district cooling.

More generally, of the 90 proceedings concluded (including 15 initiated with a simplified procedure and extinguished, 3 concerning the re-exercise of the sanctioning power and 2 closed due to annulment) 84 ended with the ascertainment of responsibilities and the consequent imposition of sanctions (14 with the adoption also of a prescriptive ruling) and 6 were closed without the imposition of sanctions.

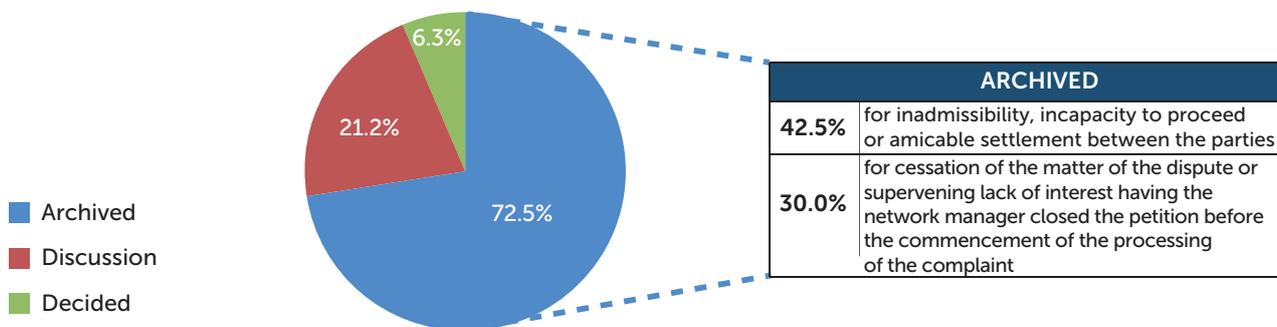
The 66 sanctions imposed totalled approximately € 10.5 million.

With regard to the **activity of settling disputes** between regulated entities, judicial protection - as an alternative to the jurisdictional one - confirms itself as a tool, within the scope of the Authority's enforcement activity, which is rapid and easily usable by operators, completely free of charge, in order to pursue the objectives of a public nature, set by European legislation and by national discipline (primary and regulatory), and a fundamental safeguard, widely appreciated and used by stakeholders, to guarantee the functionality and effectiveness of the regime of access to and use of energy facilities. In this context, also in 2021, the updating of the list of decisions rendered by the Authority following the activation of the judicial remedy continued.

Despite the continuation of the state of epidemiological emergency throughout 2021, the management of complaints has not suffered any critical issues in terms of continuity and efficient service delivery, also because it is a proceeding based on predominantly document-based adversarial proceedings.

In 2021, 80 complaints were lodged under resolution 188/2012/E/com, of which 58 were filed, 17 were pending as of 31 December 2020 and 5 were under decision.

FIG. 11.7 *Complaints between operators handled by the Authority pursuant to resolution 188/2012/E/com (focus on 2021)*



Source: ARERA.

As of December 2021, the average time for dispute resolution procedures between economic operators under resolution 188/2012/E/com managed by the Authority is 9 months and 25 days.

The analysis of the outcomes of **litigation** in 2021 makes it possible to assess the effects of judicial review on the Authority’s regulatory acts in the sectors under its jurisdiction, both about substantive and procedural profiles.

Out of a total of 11,860 resolutions approved by the Authority since it was started (April 1997-31 December 2021), 1,276 (10.8%) have been challenged and 272 (21.3% of the total resolutions challenged and 2.3% of those adopted) have been fully or partly definitively cancelled (with final judgement). The rate of resistance to the Authority’s resolutions to jurisdictional control stands at around 97.7%. More specifically, in 2021, there was a reduction in litigations in terms of the number of appeals brought as compared with the previous year: 74 appeals (144 in 2020).

IMPLEMENTATION OF REGULATION, COMMUNICATION, ORGANISATION AND RESOURCES

Rulings adopted

The rulings adopted by the Board of the Authority during 2021 totalled 639 among resolutions, consultation documents, pleadings, opinions, reports and recommendation papers, with a monthly average of approximately 53 rulings, with significant peaks in March, May, November and December.

TAB. 12.2 Monthly trend of ruling production for 2021

MACRO-AREAS	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	TOT.	%
R - Settlement	19	33	47	18	35	32	27	21	28	33	59	66	418	65.41
E - Enforcement and customers	3	2	5	2	8	8	5	2	2	3	5	2	47	7.36
S - Sanctioning proceedings	2	4	7	4	17	2	9	5	4	9	10	7	80	12.52
C - Litigation and arbitration	1	4	—	—	—	2	1	1	1	1	1	6	18	2.82
A - Administration	2	1	5	2	6	1	8	1	1	8	6	5	46	7.20
I- Institutional	1	1	2	2	3		4	3	6	1	5	2	30	4.69
TOTAL	28	45	66	28	69	45	54	33	42	55	86	88	639	100

Source: ARERA.

The most relevant macro-areas in numerical terms are those relating to "Regulation" with 418 acts (approximately 65.4% of the total acts adopted by the Authority during the year), "Sanctioning proceedings" with 80 acts (12.5%), "Enforcement and customers" with 47 acts (7.4% of the ruling production), "Administration" with 46 acts (7.2%) and "Institutional" with 30 acts (4.7% of the total). As a residual ruling, there were 18 measures attributable to the "Litigation and arbitration" activity in 2021 (2.8%).

TAB. 12.3 Authority rulings adopted in 2020 and 2021, broken down by macro-areas of intervention

TYPE	2020		2021	
	NUMBER	% SHARE	NUMBER	% SHARE
R - Settlement	423	69.46	418	65.41
E - Enforcement and customers	49	8.05	47	7.36
S - Sanctioning proceedings	49	8.05	80	12.52
I- Institutional	34	5.58	30	4.69
C - Litigation and arbitration	6	0.99	18	2.82
A - Administration	48	7.88	46	7.20
TOTAL	609	100.00	639	100.00

Source: ARERA.

Communication

Also for 2021, the Authority has geared its communication choices to the main needs arising from the pandemic. Information to operators and customers highlighted the rulings taken by the Authority to cope with contingent difficulties. In autumn, the focus of information to journalists was on the exceptional increase in energy bills and the resulting institutional collaboration, with the Government and Parliament, to find solutions.

Mechanisms for instalments, automatic social bonuses, zeroing of general system charges, and reduction of certain tariff components for the categories of companies most affected by the effects of the pandemic are just some of the complex issues on which the Authority has produced information and communication materials. There was, of course, no shortage of ordinary and planned activities. Illustrative, in this sense, was the communication campaign coordinated with the Trade associations, carried out in January and resumed in July, in order to illustrate the phases of the *end of price protection* to the small companies affected by the deadline.

Considering the simultaneous launch of the so-called Gradual Standard Offer Service⁶⁵, the campaign was articulated together with them on communication and information tools.

Other innovative communication approaches included the first survey on charging devices for electric cars, which opened ARERA to the exploration of different subjects and forms of communication, such as those that traditionally accompany the automotive sector.

The communication solutions adopted in 2021 not only followed the objectives set out in the 2019-2021 Strategic Framework and in the DCSM Communication Plan but also reinforced messages that remain topical, to inform about the exit from the electricity and gas market with a reference price. These include the rescheduling, in October, of communication activities on the *Portale Offerte*, with the broadcasting of the "*Alessandro Volta*" campaign advertisement in the free RAI spaces of the Publishing Department of the Presidency of the Council. The campaign, which was broadcast on the Rai networks (TV and radio advertisements) also included a relaunch on the web and social media.

The hearings for the new 2022-2025 Strategic Framework, with two days of live streaming and illustrative reports from dozens of trade associations, institutions and bodies, were one of the most intense moments of the busy digital event activity. During 2021, webinars gave continuity to the training and information activities that the Authority traditionally conducts on its rulings, constituting - moreover - an archive of video recordings and slides still available to customers and operators on the ARERA.IT website.

ARERA also supported initiatives of international significance, in particular those promoted during the year by the MEDREG and WAREG associations.

⁶⁵ See box "Activities carried out" in the chapter on Electricity.

Human resources

The Authority has a staff of 235 permanent employees and, following the stabilisation process, 20 fixed-term employees. As of 31 December 2021, 214 tenured employees (16 of whom managers, 150 officials, 45 operatives, and 3 executives), 15 employees with fixed-term contracts and 14 employees acquired on secondment or off-site from other public administrations were in service.

For its on-site inspections, the Authority can also count on the cooperation of personnel from the Tax Police, available for deployment under a specific Memorandum of Understanding. Employees have an average age of just over 48 years; over 90% are university graduates.

