ARERA
Autorità di Regolazione
per Energia Reti e Ambiente

ANNUAL REPORT ON THE STATE OF SERVICES AND ACTIVITIES CARRIED OUT IN 2023

SUMMARY

Note to the 2024 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 2023 calendar year.**

For ease of reference, tables and figures in this summary show the numbering and references of the two full volumes of the **2024 Annual Report**, which can be downloaded at *https://www.arera.it/chi-siamo/relazione-annuale/relazione-annuale-2024*

This edition was distributed on the occasion of the Annual Report to the Government and Parliament held in Rome on 09 July 2024.

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With Presidential Decree of 9 August 2018, (from left to right) Stefano Saglia, Stefano Besseghini (Chair), Clara Poletti, Gianni Castelli and Andrea Guerrini were appointed as members of ARERA's Board.

CHAIR'S FOREWORD

The 2023 figures, of which this summary presents a crosssection with the most relevant ones, show how the transition to sustainability is demanding constant and continuous attention from ARERA.
Having passed the most acute phase of the price crisis in the energy sector, 2023 saw a gradual settling into a 'new normal' in which, far from returning to precrisis prices, markets became more responsive and globalised.
It's important that we don't waste the valuable lessons we've learned from this unusual situation.
Also on the environmental front, natural dynamics and management choices demand increasing sensitivity on the part of the regulator to the changes taking place. Droughts confront us with recurring crises, which show that the topic of water can no longer be tackled in a fragmented manner and according to strictly sectoral logic, but rather needs a broader, more integrated vision. The evolution of European standards and the permanent territorial differences in waste management in our country drive ARERA to promote a constant sense of responsibility towards transparency and efficient management of the cycle by operators.
The focus remains on the citizen who is the consumer, user and customer of the services regulated by ARERA and towards whom the action of protection, information and simplification has focused and will continue to focus.

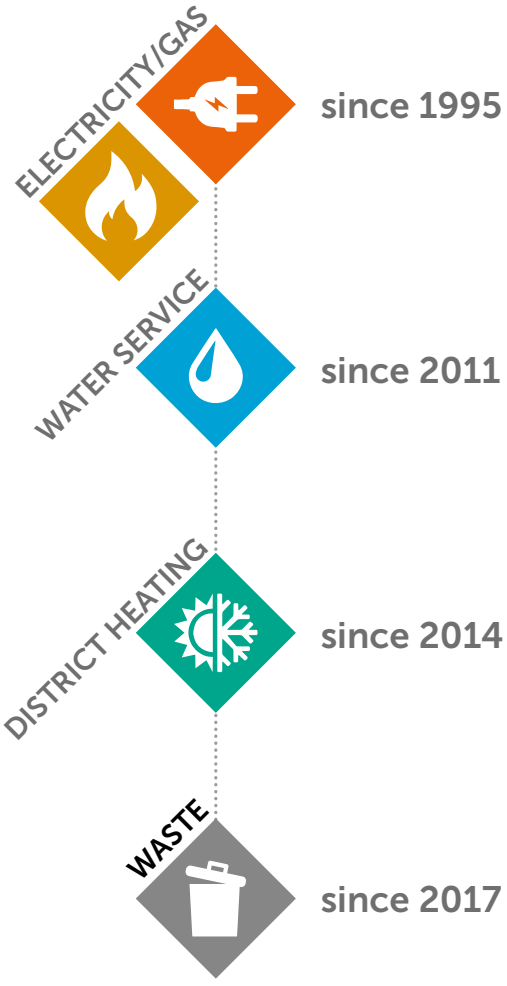
ABOUT US

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 in full autonomy and with independent judgement within the framework of the general policy guidelines formulated by the Government and Parliament and of the regulations of the European Union.

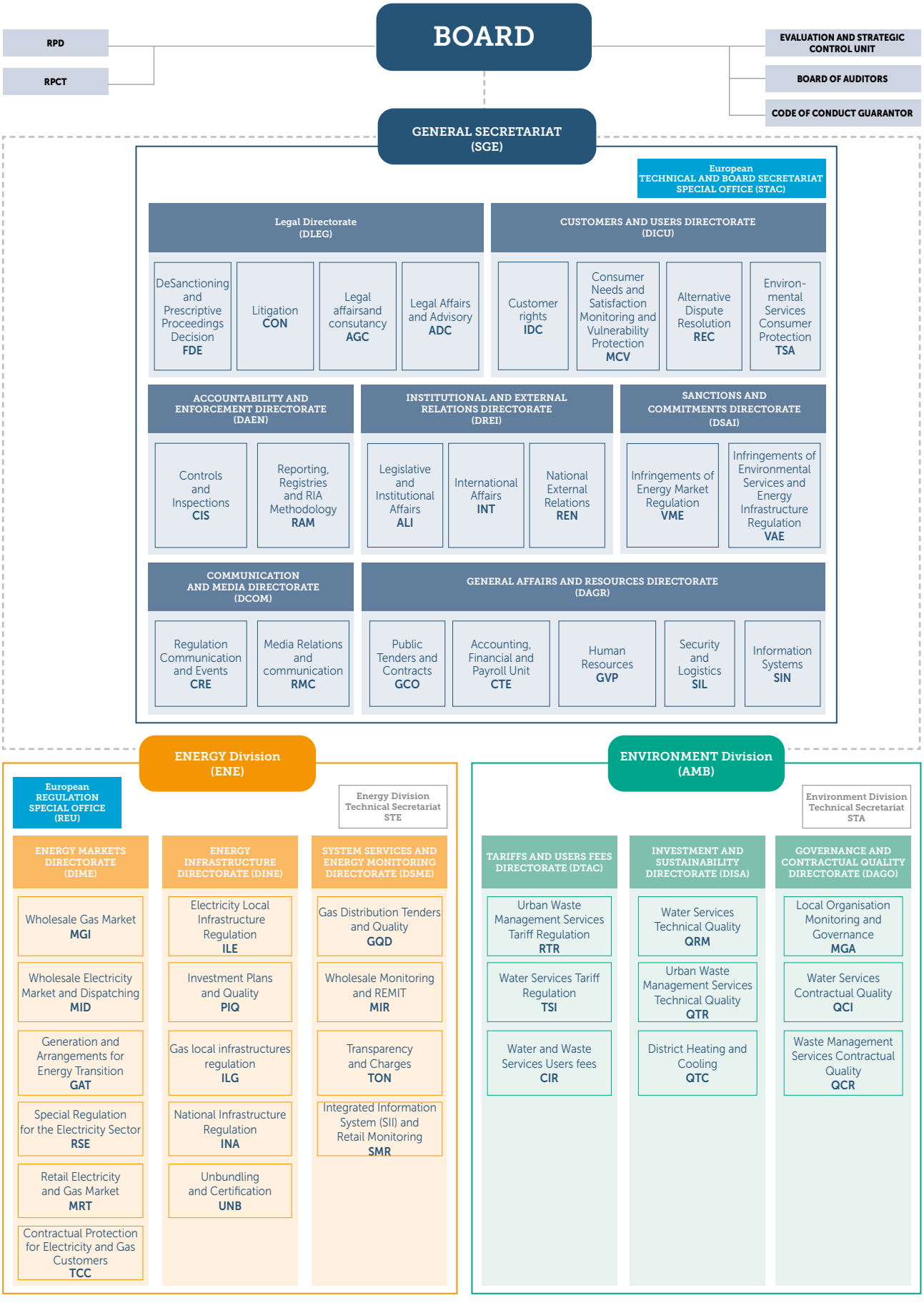
It is a collegial body, the five members of which are chosen from among persons of high and recognised professionalism and competence. To safeguard its independence, the Board's appointment procedure provides for a broad institutional consensus: the members are appointed by Prime Ministerial Decree, upon resolution

of the Council of Ministers, following a recommendation by the Minister of Economic Development and the Minister of Environment and Energy Security, 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 seven-year non-renewable term.

Internationally, the Authority participates in the work of the European Union 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 the cooperation between water regulators, which it currently chairs. As the owner of the ADR Conciliation Service Entity, ARERA is a member of NEON (National Energy Ombudsman Network), a European non-profit association network.
Within the scope of the OECD, it participates in 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. Finally, the Balkan Energy School was established at ARERA's headquarters - together with the regulatory authorities of Albania, Bosnia-Herzegovina, Montenegro, and North Macedonia - to support the harmonisation of the regulatory framework at the regional level, and to support the development of the Balkan energy market and its effective integration at a European level.



ORGANISATIONAL CHART



ARERA IN NUMBERS

IN 2023

DOCS

571 resolutions

42 technical data sheets

1 reports

7 opinions

123 determinations

39 consultations

11 briefs

2 reports

6 reports

ACTIVITIES

24 inspection audits

19 sanctions imposed for a total amount total of approximately € 3.7 million

196 complaints

322 appeals

ORGANISATION

232 EMPLOYEES

AVERAGE AGE **50** YEARS OLD

OVER **90%** GRADUATE

ARERA'S SOCIAL NETWORKS

13,500 followers

1.900 members

41,000 followers

3,200 followers

COMMUNICATION

775 interventions TV who have mentioned ARERA

329 radio interventions who have mentioned ARERA

6,473 press articles

5,680 articles newspapers digital

39 press releases

NATIONAL AND INTERNATIONAL CONTEXT

International markets for energy products

Compared to the recent past, the International Monetary Fund's April 2024 assessments and forecasts paint a more optimistic picture of the outlook for the world economy despite the Russian-Ukrainian war and a more unstable Middle East than usual, which has created difficulties in trade through Suez due to attacks on ships by Houthi rebels. World average growth of 3.2% is expected for 2024-2025, similar to that already recorded in 2023. Thus, the danger of stagflation (stagnation and simultaneous inflation) feared by several economists, even at the end of 2022, has definitively subsided.

The final 2023 figures saw US growth at 2.5% against 0.4% for the Euro Area; the 2024 fiscal year already underway is expected to close with a US growth of 2.7% and +0.8% for the Euro Area. Only 2025 should bring the respective development rates back to the same order of magnitude: +1.9% for the US and +1.5% for the Euro Area. The European Union, and in particular the Euro Area, is, in fact, paying almost the full price for the effects of the Russia-Ukraine conflict, also as a result of the decision to source, in political retaliation against Moscow, energy products from suppliers further away than the Russian Federation and therefore more expensive.

Also weighing on the European economy is the long-standing de-industrialisation of the European continent, which leads European companies to invest increasingly in Asia or the US where the fiscal, bureaucratic and environmental burdens are lower.

If the weight of the Euro Area is now limited to 11.7% of the world GDP, the other areas of potential US business contacts now have a completely different weight: the 33.4% of developing Asia (including China and India) is joined by 3.7% of Japan and 7.3% of Latin America. These areas, which are economically very dynamic, weigh even more heavily on the world's population: together with 57.6%.

Indeed, in the three-year period 2023-2025, the growth rates of Asian developing countries, China, India and, Asean-5 are by far the highest in the world: 4.1%-7.8%. Development rates in Latin America and the Caribbean are more moderate (2%-2.5%) but still higher than in Europe.

Sub Saharan Africa, although starting from a limited weight on the world GDP (3.1%), is growing at a rate of 2%-2.5%, a rate that is totally insufficient to allow the exit from the endemic poverty of this geographical area. It should be noted that the sanctions policies against the Russian Federation are not having a disruptive effect:2023 ended for Moscow with a GDP increase of 3.6% and 2024 is expected to record +3.2%. Only in, 2025 there will be a slowdown to 1.8%, growth still higher than in the Euro Area.

International oil market

In 2023, oil prices remained relatively stable, despite the new record demand and with three conflicts threatening the regularity of exports.
Demand continues its unstoppable growth, reaching a new peak in 2023 at just under 102 million barrels with an increase of more than 2 million barrels per day, an annual change rarely seen in the past. On the other hand, supply follows the expansion of demand at a rapid pace, with an abundance of new projects that, for the time being, ward off the risks of a shortage of investment in the coming years.

This resulted in a crude oil price of $ 82.2/bbl[1], down from $ 99 a year earlier, surprising for the downward trend, given the assumptions at the end of 2022 of potential scarcity. The $ 100 threshold, which seemed easily reachable, receded in 2023, and even in 2024, it would appear unlikely that prices will return to those levels.

The growth in production was the primary reason for the containment of prices; the areas of highest production, those in the Middle East, have production costs that rarely exceed $ 5/bbl (as opposed to $ 40/bbl in the US), which also explains the huge financial revenues of the countries in the region that are often in-vested inefficiently. What should be emphasised is that US production, once in decline, after 20 years of strong growth has al-lowed export volumes to increase and now contributes decisively to price formation mechanisms around the world, including Europe.

International gas market

In 2023, natural gas markets showed signs of rebalancing after a period of subsequent shocks, with spot gas prices that have risen from record lows in 2020, during the COVID-19 pandemic, to unprecedented highs in 2022, in the context of the energy crisis in Europe. Spot gas prices have dropped significantly due mainly to two consecutive mild winters, despite remaining above historical averages. This price drop supported the growth in demand for natural gas, with many countries again favouring natural gas over other energy sources.

2023 saw a contraction of 0.69% in world gas consumption, down from 4,109 to around 4,095 billion cubic metres (bln m^3). After the reduction in 2022, demand in Asia Pacific and China rebounded, recording +2.9% and +7.4% respectively; Europe contracted heavily (-6.9%) and Central and South America only minimally (-0.7%). North America (+1.1%) and the Middle East (+2.1%) grew marginally, as did Africa (+3.5%).

At an EU level, 2023 saw a further drop in consumption of 26 bln m^3, or 7.3%, influenced by the region's mild winter climate, the renewal of EU regulations on a voluntary 15% reduction in gas demand, and an increase in wind and solar energy production.
In Italy, gas demand amounted to 61.9 bln m^3, a decrease of 6.9 bln m^3 compared to 2022 (-10%) due to the drop in consumption recorded in all main sectors. More specifically, the reduction in gas demand is mainly attributable to the thermoelectric sector (-4.10 bln m^3; -13.6%) as a result of the increase in electricity imports deriving from the resumption of French nuclear power, higher hydroelectric production, the reduction in electricity demand

1 Bbl stands for 'barrel of crude oil', a metering unit used in the oil market that is equivalent to 62 gallons, or 159 litres.

also due to the slow recovery of the industrial sector, and the greater weight of renewables; the residential and tertiary sector (-2.16 bln m^3; -8.6%) benefited from the generally milder temperatures compared to 2022, as well as the actions to contain consumption that influenced the early months of the year; the industrial sector (-0.61 bln m^3; -5.2%) was affected, as last year, by the trend in energy prices and the unstable macroeconomic situation, with a reduction in industrial production in specific energy-intensive sectors.

In 2023, world gas production returned to 2021 levels, regaining by +0.36% the previous year's modest decline, driven by high international prices. The production of unconventional gas, which has grown steadily in recent years, increased further, with its share of global natural gas production at 32% (up from 31% in the previous year): unconventional gas accounts for approximately 90% of US production and approximately 41% of Chinese production.

Overall, the OECD area recorded an output growth of 1.7%, while consumption decreased by 2%, imports fell by 15.3% (-150 bln m^3) and exports by 8.8%. With reference to the OECD Europe area, in 2022, imports decreased by 19.2% as a result of falling demand: in particular, the collapse of imports from Russia (-44%) continued, as did the drop in flows from other European countries (-25%) and Asia (-26%). Again in reference to the OECD Europe area, 46% of imports in 2023 will come from European countries, only 7% from Russia, 4% from Asia and the remaining 43% from other countries (the USA first and foremost).

Norway's gas production stood at 126 bln m^3, down 5.3%, mainly due to the extension of the maintenance period at the Troll maxi-gas field (-15.5%) and the Kollsnes gas processing plant in the North Sea. The Netherlands' gas production was 12.4 bln m^3, continuing its unstoppable downward trend; the large Groningen gas field, once Europe's largest, in production for 65 years, officially ceased operations during the year. UK gas production decreased by 15% to 30.9 bln m^3. Production developments in Europe include the start of gas production from the Turkish Sakarya field in the Black Sea, the Fenja field in the Norwegian Sea and the Cygnus gas field in the UK.

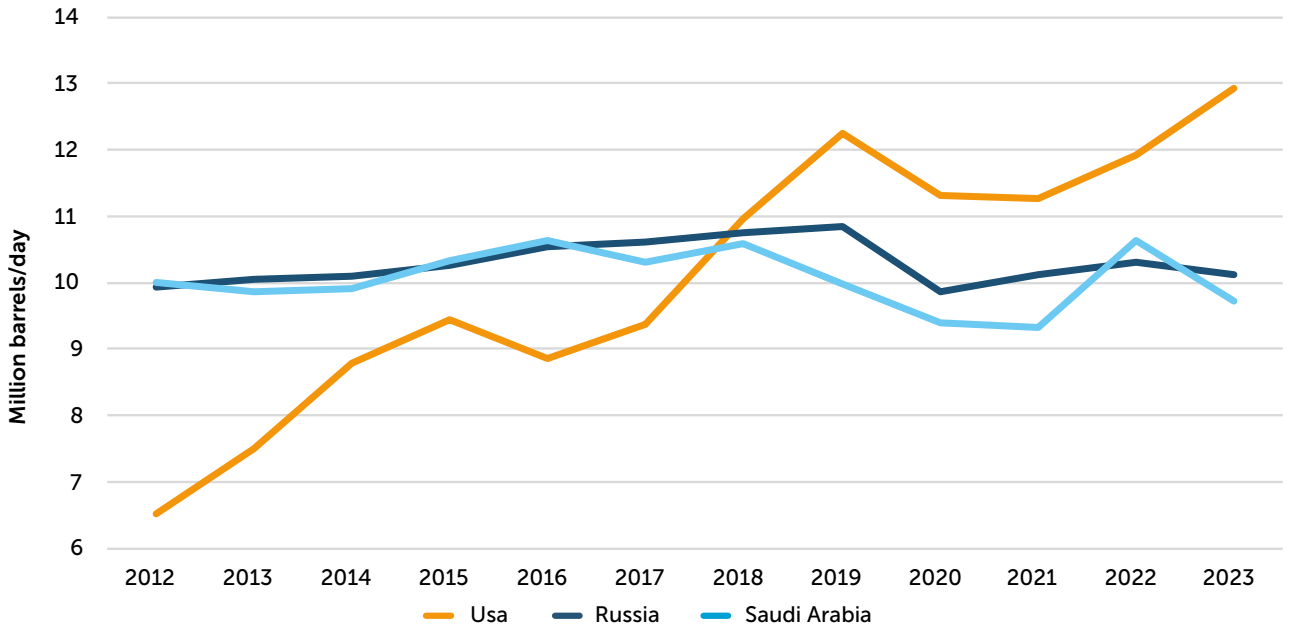
In 2023, EU countries imported 155 bln m^3 (-24%). However, Norway remained the main natural gas pipeline supplier for the EU with 54%, while Algeria accounted for 19% and Russia 17%[2]. There were marginal increases in the share of supply from the remaining suppliers compared with 2022: Azerbaijan increased from 6% to 7% and Libya from 1% to 2%.

Among the largest EU LNG importers, only Italy showed an increase compared to 2022: +13.2%, compared with significant reductions in the Netherlands (-35.1%), France (-15.5%) and Spain (-13.9%). In Italy, the regasifier in Piombino became operational and received 1.1 G bln m^3 during the year. At the close of the cold season (at the end of the 14th week of the year), the volume of gas in European storages reached the level of 60.8 bln m^3, more than double the levels of 12 months earlier (28.5 bln m^3).

2 As of 2023, Russia's only natural gas pipeline exports to the EU are via two routes, from Turkstream and via Ukraine: the natural gas pipeline from Turkstream accounted for 51% of total Russian flows to the EU for the year and, compared to the previous year, gas exports via this route increased by increased by 5%.

In 2023, the price of natural gas at European borders was € 41.2/MWh (it was € 101/MWh in 2022). The spread between the price to Europe and Asian LNG was almost reduced to zero, from € 43/MWh last year to 30 cents in 2023, highlighting a trend towards convergence between macro-markets, first and foremost the European and Asian markets, thanks to the growing weight of LNG in world gas trade. The price at the European hubs has not deviated from that at the borders: € 40.5/MWh at TTF (Netherlands), € 42.9/MWh at PSV (Italy) and € 41/MWh at THE (Germany). The price at PSV remains higher than all the others: € 2.4/MWh the differential between PSV and TTF.

FIG. 1.4 *International comparison of gas and Brent oil prices*



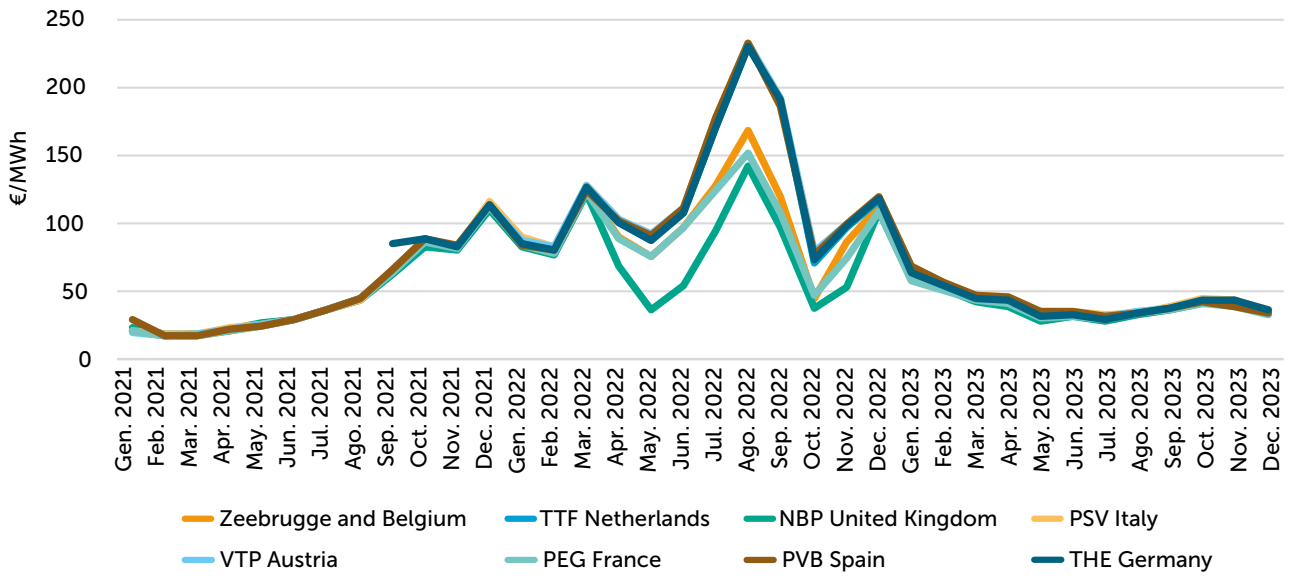
Source: *U.S. Energy Information Administration*.

The Henry Hub (HH, USA) gas spot price averaged € 8/MWh in 2023, marking a 64% decrease from the 2022 average of € 20.9/MWh. European (SW) LNG spot prices were $ 5.2/MWh lower than those of Asia, albeit with considerably fluctuating differentials ($ 1-9).

In January 2023, European hub prices dropped by € 55/MWh compared to December 2022 due to a combination of factors, including mild weather conditions, strong LNG deliveries, increased wind production and abundant storage levels within the EU. The decrease in supply from Norway, resulting from maintenance activities, was offset by withdrawals from storage. In February 2023, the intensification of LNG dispatch and concerted efforts to reduce gas consumption further contributed to the fall in prices (approx. € -9/MWh).

The volatility of spot prices in 2023 in both Europe and Asia was 80% lower than in 2022.

FIG. 1.5 *Price of natural gas at European hubs*



Source: Platts.

International LNG market

In 2023, global LNG exports reached a new peak of 410 million tonnes an increase of 2.8% (11 mln tonnes) lower than the previous year (+4.4%). The recovery of LNG exports was driven by several factors, including the operation of new LNG projects, the reduction of unscheduled maintenance on some liquefaction plants, and increased availability of feed gas in some countries. The US overtook Qatar to become the world's largest LNG exporting country in 2023, with exports of 88 mln tonnes. Qatar slipped into second position with 79 mln tonnes, shared with Australia, followed by Russia (31 mln tonnes) and Malaysia (27 mln tonnes). The substantial increase in global LNG exports came mainly from the United States, with significant contributions from Algeria, Mozambique, Norway and Indonesia; in contrast, Egypt, Nigeria and Russia recorded a decline in LNG exports.

International coal market

In 2023, world coal demand reached a new all-time high of 8.536 billion tonnes, or +1.4% over the previous record of 2022. Asia-Pacific, which saw demand grow by 5% last year (to 6,971 mln tonnes), is the key area of global coal consumption, as it now covers more than 4/5 of global consumption, with China at 55% and India at 15%. These countries are still growing in 2023: China has increased its coal demand by 4.9%, to 4740 mln tonnes and India by 8.4%, to 1260 mln tonnes. By contrast, the US (21%, to approximately 360 mln tonnes) and the European Union (23%, to 354 mln tonnes) declined.

Despite increasing political and trade tensions in 2023, the price of coal also decreased for all major coals, albeit with regional specificities. The European benchmark, Cif ARA, fell by as much as 56% to an annual average of $ 129/tonne. The reasons for these declines include, in addition to the downward drag effect of crude oil, was that of natural gas, coal's direct competitor in the Interfuel Competition of electricity generation.

European Emissions Trading Scheme (EU-ETS)

Emissions in 2023 under the EU Emissions Trading Scheme (ETS) show the most significant annual reduc-tions since the system was launched in 2005: the energy sector and industry have reduced emissions by 15.5% compared to 2022, reaching a cut of 47% from 2005 levels. A large portion of the reductions came from the energy sector, where emissions decreased by 24% due to increased generation from renewable and nuclear energy resources, while industry saw emissions fall by 7%, mainly as a result of the drop in production induced by high energy and carbon prices. Meanwhile, aviation emissions increased by 10%, still recovering from postpandemic activity.
The European CO2 price in 2023 averaged € 85.3/tonnes, breaking the € 100/tonne mark in February, a new record since its inception.

Electricity and natural gas prices in the European Union

As in 2022, electricity and gas prices experienced exceptional growth dynamics almost everywhere in Eu-rope in the first part of 2023, as a result of tensions in the wholesale markets due to the effects of the post-pandemic economic recovery and the outbreak of the conflict between Russia and Ukraine, which raised fears of physical scarcity of the resource. In order to ensure the availability of supplies and, above all, to mitigate the impact of prices on final customers and the economy more generally, public interven-tion policies in the electricity and gas markets have been adopted in many European countries. The latter, depending on the country, acted in various stages of the supply chain and, therefore, on various price com-ponents, or even downstream of them, through discounts and benefits of various kinds paid directly to cus-tomers (e.g. bonuses, tax credits, etc.)[3].

The different ways in which the governments of EU Member States have changed or removed taxes in the price of electricity and gas in response to the energy crisis have created huge discrepancies in the prices paid by customers. Therefore, the comparison of the price data of the various countries must take into account, in addition to the usual warnings, the public interventions carried out, which are wide-ranging, as well as the more general context, which is particularly complex, especially due to the ongoing conflict in Ukraine, and thus the many variables at play.

3 For a discussion of the types of aid introduced in the various European countries, see Chapter 1 Volume 1.

Electricity prices for households

Consumption classes of households	
FROM	<1.000 kWh/year
DB	1.000 kWh/a - 2.500 kWh/year
DC	2.500 kWh/a - 5.000 kWh/year
DD	5.000 kWh/a - 15.000 kWh/year
DE	>15.000 kWh/year

In 2023, total (i.e. before all taxes) electricity prices for households in the European Union increased in 18 countries, while in the remaining 9 countries the price decreased. By far the highest increase was recorded in the Netherlands (+518%), while the largest decrease can be observed in Denmark (-27%). Among the most populous Euro Area countries, the highest prices were in Germany (42.03 c€/KWh), France (23.65 c€/KWh) and Spain (26.02 c€/KWh). The average price in the Euro Area in 2023 was 31.45 c€/KWh.

TAB 1.13 *Household electricity prices in Europe (c€/kWh)*

COUNTRIES	2022				2023			
	ENERGY AND SUPPLY	NETWORK COSTS	CHARGES AND TAXES	TOTAL PRICE	ENERGY AND SUPPLY	NETWORK COSTS	CHARGES AND TAXES	TOTAL PRICE
Austria	11,24	6,64	4,79	22,67	20,37	7,68	0,02	28,07
Belgium	22,93	9,41	7,61	39,95	22,60	9,10	8,77	40,47
Bulgaria	5,48	3,85	1,87	11,20	5,44	4,27	1,94	11,65
Czech Republic	23,53	6,50	4,96	34,99	18,36	6,24	5,50	30,10
Cyprus	18,34	2,63	8,47	29,44	19,05	3,30	14,00	36,35
Croatia	6,58	4,74	3,02	14,34	7,51	4,82	3,18	15,51
Denmark	24,34	5,70	16,60	46,64	16,45	7,51	10,29	34,25
Estonia	12,38	4,77	4,91	22,06	10,69	5,80	4,84	21,33
Finland	8,02	5,22	4,87	18,11	9,25	5,95	5,35	20,55
France	10,11	5,79	4,77	20,67	13,39	6,20	4,06	23,65
Germany	13,45	8,53	12,23	34,21	20,63	9,78	11,62	42,03
Greece	33,48	2,68	-9,71	26,45	25,52	3,63	-4,39	24,76
Ireland	20,08	9,70	7,83	37,61	36,80	7,55	-11,64	32,71
Italy	**24,24**	**7,23**	**4,96**	**36,43**	**24,84**	**6,14**	**7,66**	**38,64**
Latvia	15,63	5,64	5,54	26,81	18,18	8,94	5,74	32,86
Lithuania	11,24	5,39	3,68	20,31	15,09	6,37	3,62	25,08
Luxembourg	8,71	7,23	3,38	19,32	16,86	11,55	0,61	29,02
Malta	11,68	2,70	0,87	15,25	11,08	2,70	0,85	14,63
Netherlands	20,38	7,22	-22,43	5,17	26,78	9,67	-4,51	31,94
Poland	5,31	4,92	6,27	16,50	5,57	5,98	10,67	22,22
Portugal	13,70	6,02	3,62	23,34	20,67	5,68	-3,41	22,94
Romania	16,98	4,58	1,96	23,52	7,24	6,13	4,46	17,83
Slovakia	8,10	4,70	5,62	18,42	8,58	4,20	7,22	20,00
Slovenia	8,28	4,01	3,85	16,14	10,32	5,52	3,92	19,76
Spain	17,10	8,06	6,65	31,81	13,49	9,26	3,27	26,02
Sweden	10,75	5,34	2,38	18,47	7,40	5,24	7,40	20,04
Hungary	2,72	4,96	2,08	9,76	2,77	6,04	2,38	11,19

(continued)

European Union	14,52	6,68	5,23	26,43	16,40	7,29	5,54	29,23
Euro area	15,38	7,10	5,46	27,94	18,51	7,70	5,24	31,45
Norway	14,69	3,43	-3,27	14,85	7,52	3,43	1,82	12,77

Source: Eurostat.

The Italian price rose by 6.1%, from 36.43 to 38.64 c€/kWh, whereas in the Euro Area average, the price of electricity rose more than twice as much (12.6%), from 27.94 to 31.45 c€/kWh. Thanks to the lower increase in Italian prices, the spread with respect to the Euro Area, which had reached +30% in 2022, was reduced to 22.9%, just as the difference in net prices (i.e. net of charges, taxes and fees) fell from +40% to +18.2%.

The increase in the gross price in Italy is mainly due to the charges and taxes component, which changed significantly (+54.4%) compared to 2022, mainly due to the discontinuation of the general charges taxation measures; net prices, in fact, given by the sum of the price of energy and supply and network costs, recorded a small negative change (-2%), falling from 31.74 c€/kWh to 30.98 c€/kWh.
By contrast, in the Euro Area there was an increase in net prices (+16.6%, from 22.48 to 26.21 c€/kWh), while there was a slight decrease in charges and taxes (-4%, from 5.46 to 5.24 c€/kWh).

The data therefore shows, on the whole, a fair improvement in the relative situation in our country, partic-ularly as regards the dynamics of the industrial price component (i.e. the sum of the components: 'energy and supply' and 'network costs'). Focusing on the different parts that contribute to the formation of the price, we can see that in Italy this component was also higher in 2023 than in all the other main European countries, but in sharp decline compared to the previous year (+58% compared to France, it was +98% in 2022; +2% compared to Germany, it was +53% in 2022; +18.2% compared to the Euro Area, it was +40% in 2022). The only exception is Spain, against which the differential of the industrial component of the Italian price, which was +25% in 2022, rose to +36% in 2023.

The tax component of Italian prices shows, also in 2023, a progressive structure: its value, in fact, tends to increase as the size of customers grows; in the Euro Area, on the other hand, the tax component shows a flatter pattern, exhibiting relatively similar values across consumption classes. Unlike in 2022, the differential between Italy and the Euro Area in 2023 also became consistently positive for all consumption categories; in the DB and DC classes it is expected to be +48% and +38% respectively.

When comparing Italian prices with those of European countries comparable in size to Italy, Germany, as we have seen, was the country with the highest average electricity price (42.03 c€/kWh) for the household sector; followed by Italy (38.64 c€/kWh), Spain (26 c€/kWh) and France (32.7 c€/kWh). While, up until 2022, the Italian household paid higher end prices than its German counterpart, with a gap of approxima-tely +6% on average, in 2023 the Italian household paid a lower average price of 3.4 c€/kWh, experiencing an average differential of -8%. In 2023, the differential to German prices was lower in all classes (with the maximum for the last class DE, where it was -15.7%) except for the first class DA, where it was positive (+0.3%).
France's prices, averaging 23.77 c€/kWh, remain the most advantageous for customers among the four countries surveyed. Thanks to smaller increases in Italian prices, however, the differentials between Italy and France are decreasing by at least ten percentage points with respect to 2022 for all classes; the differentials towards France

tend to increase as the size of customers increases in terms of consumption: from a minimum of +22.5% for the first class, they rise to +33% for the second, +46.5% for the third, up to a maximum of +55% in the penultimate DD, while the gap in the last class falls to +38%.

As in 2022, in 2023 Spain maintained lower prices than Italy, on average by 40%; specifically, the differential between Italy and Spain is positive and increasing for all consumption classes, with increasing value from class DA to DD (+27% and +52% respectively). The only exception is the last DE class, where the differential fell from 43% to 32%.

Electricity prices for industrial customers

In 2023, the highest total price (before all taxes) in Europe was paid by customers in Cyprus (33.18 c€/kWh), followed by customers in Hungary, Slovakia and the Netherlands; in fifth place were Italian industrial customers, who paid 28.90 c€/kWh. The analysis of prices for non-households in 2023 in the international context, however, shows that the significant reduction in domestic prices (-17%) has significantly reduced the price disadvantage of Italian companies compared to the Euro Area average.

During 2023 in the European Union, prices for non-households decreased compared to the previous year in 13 countries, including Italy; in two countries, the price remained unchanged, while in the remaining 12 it increased.

Consumption brackets for industrial customers

Consumption classes for industrial customers	
IA	< 20 MWh/year
IB	20 - 500 MWh/year
IC	500 - 2.000 MWh/year
ID	2.000 - 20.000 MWh/year
IE	20.000 - 70.000 MWh/year
IF	70.000 - 150.000 MWh/year

In France, prices increased the most (+61%); as a result of this significant increase, the differential with France fell to +17% in 2023, down more than 100 percentage points from last year. The disadvantage of Italian prices compared to those paid by German industrialists, the other main manufacturing country in Europe, has also decreased to +13% compared to +38% in 2022. As in the case of households, on the other hand, the differential to Spanish prices increased, which fell by more than Italian prices (-25%) in 2023; thus in 2023 the Italian average price was 55% higher than the Spanish one, while in 2022 it was 40% hi-gher.

More generally, the fall in Italian prices has also improved in comparison to the Euro Area countries, com-pared to which the Italian price is 16% higher in 2023, but has recovered 29 percentage points compared to 2022 (it was +45% a year ago).

In 2023, the weighted average gross price of non-household consumption classes fell in Italy from 34.8 c€/kWh to 28.90 c€/kWh and increased by approximately 2% in the Euro Area, from 24.39 c€/kWh to 24.83 c€/kWh; Italian industrialists thus paid a gross average price of 4.07 c€/kWh higher than the Euro Area average, substantially recovering the competitiveness lost in 2022. In 2022, non-households paid 10.41 c€/kWh more than the Euro Area average.

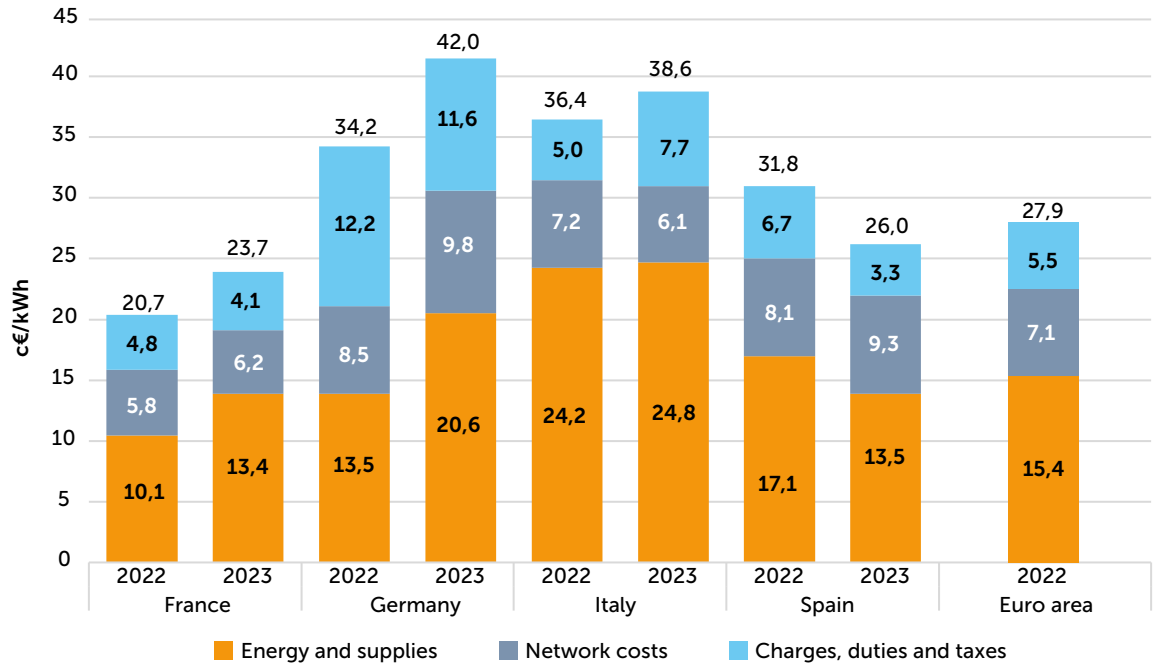
The decrease in gross prices in Italy is due to the net decrease in the energy material (-31%), which fell from 25.2 to 17.5 c€/kWh, as well as to the partial reduction in network costs (-10%), which fell to 2.93 c€/kWh; the decrease in the total price was, on the other hand, partially mitigated by the increase in the tax component (+35%), which rose from 6.3 c€/kWh in 2022 to 8.52 c€/kWh in 2023. This is due to the reintroduction of the item relating to general charges, which was reset to zero in 2022 and was not extended in 2023.

Italian price differentials with respect to those in the Euro Area are halved if, instead of considering the price including charges and taxes, one compares the price net of these components, which companies can pass on to their customers. Net of tax components, Italian prices are also very competitive vis-à-vis France: in the first four classes, Italian customers paid in 2023 around 15% lower prices than the corresponding French customers. When comparing with the net prices recorded in Germany, Italian customers were found to have paid a lower price (-3%) than the corresponding German customers only in the case of class IC (consumption between 500 and 2,000 kWh per year), while in the other classes prices were similar (class IA) or slightly higher, at least up to class IF. By contrast, the difference between Italian and Spanish net prices remains very favourable for Spanish customers in all classes.

Gas prices for households

Contrary to what was observed in 2022, in 2023 Italian natural gas prices for household use became lower than the average price in the Euro Area. More precisely, while in 2022 Italian customers paid 13% more than the average Euro Area customer, in 2023 they paid 8% less. In the past year, the highest total price (i.e. including taxes and charges) was recorded in Sweden (25.17 c€/kWh) and the Netherlands (20.48 c€/kWh), while the lowest prices were observed in Romania (5.57 c€/kWh), Croatia (4.55 c€/kWh) and Hungary (3.33 c€/kWh). The Italian price of 11.36 c€/kWh was in the middle range.

FIG. 1.12 *Household electricity price components in the main European countries*



Source: ARERA, processing of Eurostat data.

The price before charges and taxes increased compared to the previous year in 15 countries, while it decreased in the remaining 9 published by Eurostat, as for Cyprus, Finland and Malta the data are not made available because they are considered statistically confidential.

The increase in gross prices in Italy, which averaged +2.3% (from 11.10 c€/kWh to 11.36 c€/kWh), is attributable to the increase in the energy material (from 7.54 to 8.72 c€/kWh), which accounts for 77% of the total price, and to the increase in network costs (+30%); these increases were strongly mitigated by the decrease in the item charges, taxes and fees (-99%) determined by the policies applied on this component by the Italian government. In the Euro Area, the gross price also increased for the same reasons, but by a higher order of magnitude. The 25.8% increase in the final price (from 9.85 c€/kWh to 12.39 c€/kWh), is in fact due to the 37.5% increase in the cost of energy (which accounts for 64% of the final price) and that of the network cost component, which rose by 20%.

Even if we exclude the tax component, whose negative change in Italy - as just seen - counterbalanced the increases in other items, the net price increase for Italian customers remains lower than in the Euro Area.

Gas prices for industrial customers

In 2023, the difference between the average price paid by Italian non-households (8.23 c€/kWh) and the average price paid in the Euro Area (8.01 c€/kWh) narrowed considerably compared to 2022, when it was 11.8%, but remained positive at 2.7%.

The reduction of the final price in Italy from 10.01 c€/kWh to 8.23 c€/kWh is due to a considerable decrease of the charges and taxes component, which decreased by 43% (from 0.91 c€/kWh to 0.52 c€/kWh) and to the reduction of the energy component (-22%, from 8.41 c€/kWh to 6.54 c€/kWh). These reductions are largely due to the consumption support measures taken by the Italian government.

The highest prices for non-household use in the European Union were in Sweden (15.80 c€/kWh), Hungary (11.90 c€/kWh) and Finland (11.60 c€/kWh); conversely, the lowest prices were in Spain (4.99 c€/kWh) and in Bulgaria and Romania (in both of them 6.04 c€/kWh) (Table 1.6). At 8.23 c€/kWh, Italy was in the middle of the ranking.

In comparison with the main European countries, Italy's position changed compared to the previous year, with a significant improvement over Germany and France and a deterioration against Spain. In 2022, the final price of Italian gas for non-households was 24% higher than in France and 20% higher than in Germany. In 2023, the Italian price became 9% lower than the French one and only 5% higher than the German one (the differential narrowed by 15 percentage points). However, compared to Spain, the differential has worsened considerably: whereas in 2022 Italian prices were 3% lower than Spanish prices, in 2023 the differential is 65% higher; in fact, Italians pay a price almost double that of Spain (4.99 c€/kWh).

Economic and climate trends in 2023

The Italian economy recorded a GDP growth of 0.9% in 2023, compared to an average Euro Area growth of 0.4%. The overall positive performance of the Italian economy was driven first and foremost by Gross Fixed Capital Formation, up 4.7%.

National consumption increased overall by 1.2%; the components Household Consumption and General Public Administration Expenditure rose at a similar pace.

In private consumption, growth in demand for services stood out (+3.8%), while the purchase of goods fell by 1.1%. Durable goods were down 1.7% and semi-durable goods contracted even more (-5.4%) as they are often 'compressible' goods, such as clothing. Demand for durable goods, on the other hand, rose sharply (+5.7%), supported mainly by car purchases, while furniture and house-hold appliances declined.

During 2023, numerous climatic events occurred in Italy, causing quantifiable damage to various sectors of the national economic system. A total of 378 events had heavy impacts in the various Italian territories (+22% over 2022) with economic repercussions as well. The floods in Romagna, particularly in the provinces of Ravenna, Forlì-Cesena, Rimini and Bologna, caused € 8.8 billion in damage. In Tuscany, the provinces of Florence, Prato, Pistoia and Livorno were affected by floods at various times in 2023; in this case, the damage was estimated at € 4 billion.

Energy supply and demand in Italy

Despite the growth of the Italian economy in 2023 (+0.9%), gross domestic energy consumption fell by 4.4% to 141.5 MTOE compared to the year before, leading to a further sharp drop in energy intensity.
Coal consumption fell by more than a third to 4.9 MTOE, returning to the trend of 2022. Natural gas also decreased, albeit smaller, by 10.3%, to 50.3 MTOE.

Among fossil fuels, demand for oil bucked the trend (+1.5%), even outperforming the GDP. It should be noted that this dynamic, parallel to the fall in demand for natural gas, has returned oil to the top of the most consumed sources in the Italian energy economy.

Renewables and bioliquids grew by 1.1% to 28.5 MTOE, while the contribution of non-renewables fell by 1.7% to 1.1 MTOE. Finally, it is worth mentioning the significant jump in demand for electricity, which increased by 19.2% to 4.4 MTOE.

In relation to the sectors of the Italian economy, industry recorded a substantial drop (-6.4%) in end energy consumption. The main contributors to the negative performance of industry were solid fuels, whose industrial consumption fell by 43.4%, and petroleum products (-18.2%). Industrial demand for electricity also decreased by 4%.

The transport sector as a whole increased its energy demand by 0.5% to 36.9 MTOE, due to an increase in petroleum (+0.6%) and electricity consumption (+5.6%). Gas consumption in the sector fell by 6.8%, while there was a 2.2% increase in demand for renewables and bioliquids, mainly due to the increased consumption of the latter.

The decline in industrial consumption was only partly offset by the 5.2% growth in services, to almost 17 MTOE. Services were the sector that most increased demand for oil and petroleum products, increasing it by 13.7%; even greater was the increase in sectoral consumption of natural gas, which rose by 18.3%, while the contribution of electricity in the tertiary sector fell by 2%.

Demand for energy from the residential sector fell by 8.1% to 27.6 MTOE, with all forms of energy declining across the board: demand for oil and petroleum products (mostly gasoil and LPG) fell by 6.6%, demand for natural gas fell by 12.9%; electricity consumption also fell by 3%.

Consumption in agriculture also fell by 4.5% to 2.8 MTOE, and in particular consumption of petroleum products - down 3.9% - and gas, down 3%. Agricultural electricity consumption also fell sharply (-7.8%).

Water systems in Europe

Although water withdrawal in the European Union has decreased by 15% in the last two decades, water scarcity conditions have not improved. In general, the situation is more severe in southern Europe, where around 30% of the population lives in areas with permanent water stress and up to 70% of the population lives in areas with

seasonal water stress during the summer. Water withdrawals for agriculture, public water supply and tourism represent the most significant pressures on freshwater withdrawals. Water scarcity affects river basins throughout the EU, particularly in Western Europe where drought events have become more frequent and severe over the past decade. The phenomenon of water scarcity, however, afflicts many other areas of the world, as also reported recently by the World Bank. Globally, 60% of ground-water depletion affects alluvial water-bearing strata often shared by several cross-border countries. For example, in the Middle East and South Asia, up to 92% of waterbearing strata showed signs of depletion in 2023.

The demand for fresh water in the 27 EU Member States[4] is largely met by extraction from surface water (rivers, reservoirs and lakes) and groundwater. Between 2000 and 2019, total water withdrawal per year in the EU-27 decreased by 15%, from approximately 215,000 million m^3 in 2000 to 202,000 million m^3 in 2019. The relative contributions of surface water and groundwater to the total volume of water abstracted have changed over this same period: in 2000, 81% of water withdrawals came from surface water and 19% from groundwater, whereas, in 2019, surface water accounted for only 77% of total water withdrawals and groundwater for 23%.

However, while in some sectors water withdrawals have decreased (e.g. cooling in power generation -27%), in others they have increased (e.g. withdrawals for public water supply and withdrawals in the manufacturing sector). In 2019, cooling in electricity generation generated the largest share of total water withdrawal (32%), followed by withdrawal for agriculture (28%), public water supply (20%), manufacturing (13%) and cooling in the manufacturing sector (5%), while mining and construction each ac-counted for only 1% of total withdrawal.

Published in April 2023, WAREG's report "Impacts of the energy crisis on the price of water services"[5] analysed the impact of the energy crisis on the water and wastewater services sector by examining the measures taken by members to address the crisis. The findings of the report are based on data provided by 18 member regulators of the association, through a structured questionnaire and inter-views with representatives of the regulators themselves, which aimed to understand the extent to which the regulatory governance and tariff frameworks of WAREG members were suitable for dealing with the energy crisis.

Municipal and similar or related waste in Europe

Parallel to the intense legislative debate that brought to the fore the revision of municipal waste legislation through the adoption of a new regulation on packaging and packaging waste, as well as through the progressive extension of waste streams subject to separate collection and recycling obligations, during 2023 the EU framework for municipal waste underwent important developments in the field of updating and enriching the set of information, observations and analyses supporting the systematic examination of the evolution of the circular economy. With the update of the 'Circular Economy Scoreboard'[6], the Commission has ideally completed the framework, at least from a definitional point of view, initiated at the start of its mandate with the presentation of the Green Deal and aimed at coordinating, if not subjecting, numerous fields of political and administrative action to the pursuit of the overall 'climate neutrality' objective. In this context, a system has been set up for the

4 Source: European Environment Agency, data updated to June 2022.
5 https://www.wareg.org/articles/impacts-of-the-energy-crisis-on-the-price-of-water-services/
6 Communication of 15 May 2023 (COM/2023/306).

continuous monitoring of notable parameters related to waste management (even if not exclusively urban) that contribute to the pursuit of environmental sustainability objectives, partly by relying on surveys already collected by Eurostat within the established waste statistical observation environment, and partly by promoting new observations on the attitude of economic activities to incorporate raw materials from recycling and reuse. The 'Circular Economy Scoreboard' is based on the collection of 11 indicators divided into five areas (Production and Consumption; Waste Management; Secondary Raw Materials; Competitiveness and Innovation; Global Sustainability and Resilience), investigated to assess and calculate the benefits of the circular economy over time.

In 2022[7], municipal waste generation in the European Union decreased by around 3% to 229.5 million tonnes compared to 236 million tonnes in the previous year; a corresponding reduction in absolute values is found in all panel countries. In turn, per capita generation declines by 3.2% year-on-year, from 530 kg in 2021 to 513; the decline in per capita generation affects, with the exception of Poland alone, all the countries in the panel, and is particularly pronounced in Germany, where a drop of 8.2% is recorded. In Italy, municipal waste production in absolute terms amounted to 29 million tonnes in 2022, down 2% from the previous year, while municipal waste per capita amounted to 494 kg, also down slightly from 502 kg in 2021. The picture of the mix of municipal waste treatment technologies appears to be relatively stable, the recomposition of which over time in favour of recycling, with a corresponding reduction of allocation to landfills and incineration, underpins the process of promoting the circular economy.

In 2022, allocation to landfills recorded values almost identical to those of the previous year (118 kg per capita compared with 117 kg in 2021); the per capita contribution of municipal waste to recycling fell slightly, both for material recovery proper and for the treatment of the organic fraction (153 kg and 96 kg respectively, against the corresponding 2021 values of 162 kg and 102 kg), which can essentially be explained by the reduction in waste generation. In total, 249 kg per capita of municipal waste was sent for recovery and preparation for recycling in 2022, down 5.6% from 264 kg in 2021. This confirms the slowdown in the growth of the share of municipal waste for recycling: the figure for 2022 corresponds to an increase in weight of more than 50% compared to 2005, 30% compared to 2020 and 15% compared to 2015.

Among the panel members examined, Italy appears to be the country closest to the 'European mix': the percentages of municipal waste destined for the various treatments are in line with EU averages, with a nonnegligible incidence (albeit lower than in other panel countries) of landfilling, considering the 10% target to be reached by 2035 for this type of disposal. Prominent in the sample is the model adopted in Germany, which allocates less than one-third of municipal waste to incineration with energy recovery and the entire remaining portion to recycling, which is equivalent to achieving zero landfill use. The other countries, on the contrary, show lower-than-average shares of urban waste for recycling; particularly far from the circular economy targets is Spain, which will landfill half of its municipal waste in 2022.

7 Eurostat and Istat data.

Appendix 1: The Italian and European regulatory framework, institutional relations and accountability

Evolution of Italian legislation

Many important legislative measures were adopted during 2023 in the field of energy and the environment. During the year, a series of rulings were issued with urgent support measures in the energy and public finance sector aimed at, among other things coping with high utility bills, increasing natural gas production in order to contribute to strengthening the security of supply and reducing emissions, extensions of terms in the natural gas sector that postponed the end of economic protections in the natural gas sector by one year, strengthening social bonuses for electricity and gas, protecting the national interest in strategic production sectors, coping with the emergency caused by flooding events occurring from 1 May 2023, and reforming the system for collecting general system charges.

In the environmental sphere, particular mention should be made of Law No. 68 of 13 June 2023, 'Conversion into law, with amendments, of Decree-Law No. 39 of 14 April 2023, containing urgent provisions to combat water scarcity and to repower and adapt water facilities', which established, at the Presidency of the Council of Ministers, a Steering Committee for the water crisis with functions of direction, coordination and monitoring for the containment and contrast of the water crisis connected to the drastic reduction in rainfall.

Law No. 14 of 24 February 2023, Conversion into Law of Decree-Law No. 198 of 29 December 2022, containing Urgent Provisions on legislative deadlines, in Art. 11, provided for a series of extensions concerning the sectors regulated by ARERA on unilateral changes to the general conditions of electricity and gas contracts, the prices of the vulnerability service in the gas sector, the modalities of incentives for biomethane produced or injected into the natural gas network, the programme to maximise the use of electricity generation plants (> 300 MW) using coal or fuel oil, the discipline of the termination of the waste status of inert construction and demolition waste and other inert waste of mineral origin.

Evolution of European legislation

As the acute phase of the energy crisis came to an end, 2023 was characterised by the implementation of the emergency measures launched in 2022. These emergency measures, largely contained in the REPowerEU strategy aimed at reducing dependence on Russian imports, took the form of ensuring the filling of gas storages; reducing the demand for gas and electricity; increasing electricity production from renewable energy resources; favouring joint purchases of gas, LNG and hydrogen and strengthening solidarity instruments between Member States in the event of emergencies; and curbing gas price increases above certain thresholds.
In light of the continued volatility of the energy markets and in view of the persistent risk situation for supplies in the European markets with negative consequences on gas prices that have remained at a higher level than

precrisis levels, the validity periods of some of the emergency regulations adopted in 2022 were extended by one year in 2023. In particular, measures related to strengthening solidarity measures through better coordination of gas purchases; accelerating the deployment of renewable energies; and establishing a market cap to protect EU citizens and the economy from excessively high prices were extended. Similarly, Regulation (EU) 2023/706 was adopted, extending by one year the period of validity of Council Regulation (EU) 2022/1369 of 5 August 2022 on coordinated gas demand reduction measures, which maintained in force for a further 12-month period, until the end of March 2024, the measures to reduce gas demand by 15% for the period from 1 April 2023 to 31 March 2024 compared to the average gas consumption during the same period of the previous five years.

In addition to the extension of the emergency measures, 2023 was characterised by the conclusion of the negotiations between the European institutions that had started in 2022 on the package of recom-mendations presented by the European Commission in July 2021 in the context of the "Fit for 55".

Thus, the following were published on the Official Journal: Directive (EU) 2023/2413 of the European Parliament and of the Council of 18 October 2023 on the promotion of energy from renewable energy resources and repealing Council Directive (EU) 2015/652 (the "REDIII"); the Directive (EU) 2023/1791 of the European Parliament and of the Council of 13 September 2023 on energy efficiency; the Regu-lation (EU) 2023/1804 of the European Parliament and of the Council of 13 September 2023 on the deployment of an alternative fuels facility repealing Directive 2014/94/EU (the "AFIR Regulation").

Furthermore, a preliminary agreement was reached in 2023 on the recommendation to revise Di-rective 2010/31/EU on the energy performance of buildings; while the preliminary interinstitutional agreement reached in December 2023 concluded the negotiation phase on the recommendations to revise Directive 2009/73/EC and Regulation (EC) No. 715/2009 called the 'Gas Market Decarbonisa-tion Package'. The Package, which also includes a regulation to reduce methane emissions from the energy sector, aims to adapt the common gas market rules to decarbonisation goals by introducing measures to promote renewable gases and enable the development of a hydrogen market.

December 2023 also saw the conclusion of the interinstitutional negotiations on the European Commission's March 2023 electricity market reform recommendation in the wake of the energy price crisis, which highlighted the need for a reflection on the current functioning of the electricity market. The legislative recommendation aims to introduce targeted changes to the current electricity market framework in order to make it fit for electricity price crises such as those experienced in 2022 and better suited, in a decarbonisation scenario, to the deployment of renewable energy resources. The recommended revision of the electricity market was accompanied by a recommendation to revise Re-gulation 1227/2011 on wholesale energy market integrity (the "REMIT Regulation"), whose interinsti-tutional negotiations were also concluded in December 2023, which aims to reduce the risks of market abuse in wholesale energy markets.

Institutional relations

For years, ARERA has been actively cooperating with other European regulators in the energy and gas sec-tors, both multilaterally, through the European Union Agency for the Cooperation of Energy Regulators (ACER)[8], the Council of European Energy Regulators (CEER)[9] and the regional platforms provided for in the European electricity market regulations, and through bilateral meetings to explore discussion of topics of common interest, in particular with regulators from neighbouring countries. In 2023, in continuity with previous years, interaction continued on the implementation of the network codes and guidelines adopted as a result of the Third Energy Package and in the transposition of the provisions of the Clean Energy Package.

ARERA has been actively cooperating with ACER for some time, often taking leading roles in the working groups entrusted with the preparation of the various dossiers under the Agency's responsibility: at the end of 2023 Clara Poletti, ARERA commissioner, was re-elected as chair of the Board of Regulators. In addition, many representatives of ARERA hold positions of responsibility in specific task forces related to the electricity sector (system operations and facilities).

Through its participation in the CEER International Relations Working Group (IRG-CEER), ARERA contributed to the elaboration of the international positioning of the Council of European Energy Regulators. The CEER's new international strategy, formulated by the IRG and approved by the Board Meeting, aims to broaden global relations between authorities and regulatory agencies, to focus interaction on energy transition and to multiply assistance and cooperation efforts in favour of new and emerging institutional realities.

As far as the environmental sectors are concerned, ARERA is a founding member of WAREG, the Associa-tion of European Water Regulators, of which it holds, for the third consecutive term, the position of chair, entrusted to Andrea Guerrini, a member of the Board. ARERA held a number of bilateral meetings with the offices of the European Commission's Directorate-General for the Environment, aimed at presenting ways of regulating the quality of water services in Italy, with particular reference to improving water leak-age levels. Activities included the 3rd European Regulatory Forum for Water Services, EFRWS10, which was inaugurated by the European Commissioner for the Environment and the Deputy Chair of the European Investment Bank, who recognised the key role of regulators in stimulating integrated water service operators to achieve the European objectives of water protection, climate neutrality and cost efficiency.

Throughout 2023, legislative and regulatory recommendations of EU origin multiplied, not least to follow up on the commitments contained in the Circular Economy Action Plan. These recommendations concerned, in particular, the partial revision of the Waste Framework Directive (extending the scope of recycling legislation to new waste streams) and new targets for packaging reduction, recycling and reuse. The discussion with the European Commission revealed the need to relaunch the activities of the European Network of Municipal Waste Regulators, also in view of the development of waste legislation in the next legislative period (2024 - 2029).

8 ACER is the agency introduced with the Third Energy Package to foster cooperation between the regulatory authorities of EU countries and assist them "in the exercise, at Community level, of the regulatory functions performed in the Member States". It is responsible for all decisions concerning the implementation of pan-European network codes. On the other hand, the competence of the national regulatory authorities remains unchanged with regard to implementing acts of regional competence. ACER is also responsible for adopting a set of methodologies under Regulation 2019/943 concerning the adequacy of the system and the tasks of the Regional Coordination Centres.9

9 The CEER, the independent association of national energy regulators, includes among its members not only representatives of the EU countries, but also those of the UK, Norway, Iceland and, as observers, of Albania, Switzerland, Montenegro, North Macedonia, Kosovo, Moldova, Bosnia-Herzegovina, Georgia and Serbia. Since December 2018, the Chair has been held by Annegret Groebel of the German Regulatory Authority.

10 Brussels, 6 December 2023.

ARERA promoted a series of meetings of the Waste Task Force (WAREG) to urge members to produce recommendations for thematic meetings between the European Commission and European regulators.

Accountability

In line with ARERA's accountability and transparency commitments set forth in the Strategic Framework for the four-year period 2022-2025, Resolution 525/2023/A of 14 November 2023 approved the interim reporting on the main activities carried out from 1 January 2022 to 30 September 2023, in implementation of the strategic objectives contained therein. These activities represent the main focus of regulatory action during the two-year period under consideration. In particular, the reporting document, Annex A to the aforementioned Resolution 525/2023/A, sets out the main measures characterising the 29 strategic objectives, broken down into the relevant lines of action, grouped into three macro areas (Transversal Issues, En-vironment Area and Energy Area), in order to more effectively represent the activities carried out by ARE-RA in the two-year period 2022-2023, with an indication of the progress made and the reasons for any deviations from the original timelines.

ENERGY SECTORS

ELECTRICITY

State of services

Electricity supply and demand in Italy. Market and competition

In 2023, electricity demand decreased by 2.9% to approximately 287.3 TWh. The decline affected all sectors except for transport and fishing, which increased by more than 5%. National demand was met just over 84% by net domestic production (minus energy for pumping) and the remaining 16.8% by the ba-lance from abroad. Gross domestic production decreased by almost 7% compared with the previous year (264.3 TWh), while imports increased by 15.2% and energy for exports decreased by 24.6%. In particular, there was a 19.3% decrease in thermoelectric production compared with a 15.6% increase in energy production from renewable energy resources, driven mainly by the increase in hydroelectric production (+42.4%), which with 40.4 TWh returned to close to the quantities of the years before 2022 (characterised by a major water emergency).

TAB. 2.1 *The Electricity Transmission Grid Operator's electricity balance in 2022 and 2023 (GWh)*

AVAILABILITY AND USE	2022	2023(A)	VARIATION
Gross production	283.953	264.273	-6,9%
Auxiliary services	9.345	8.329	-10,9%
Net production	**274.608**	**255.944**	**-6,8%**
Received from foreign suppliers	47.391	54.572	15,2%
Sold to foreign customers	4.404	3.320	-24,6%
Intended for pumping(B)	2.586	2.199	-15,0%
Availability for consumption	**315.008**	**304.997**	**-3,2%**
Network leakage	19.155	17.620	-8,0%
Consumption net of leakage	**295.853**	**287.377**	**-2,9%**
Energy	8.852	8.730	-1,4%
Industry	111.638	107.135	-4,0%
Transport	9.009	9.510	5,6%
Household	64.640	62.680	-3,0%
Trade and public services	94.967	93.005	-2,1%
Agriculture/Forestry	6.387	5.970	-6,5%
Fishing	230	242	5,2%
Other	117	105	-10,5%

(A) Provisional data..

(B) For 2023, the figure includes heat pump absorptions.

Source: ARERA. Processing of the Electricity Transmission Grid Operator's data.

TAB. 2.3 *Gross production by resource from 2019 to 2023 (GWh)*

SOURCE	2019	2020	2021	2022	2023[A]
Thermoelectric production	**176.171**	**161.673**	**170.640**	**181.594**	**146.559**
Solids	18.839	13.380	14.022	22.607	13.220
Natural gas	141.687	133.683	143.998	141.445	118.981
Petroleum products	3.453	3.175	3.851	4.953	3.622
Other	12.192	11.436	8.769	12.589	10.736
Hydroelectricity from pumping	**1.835**	**1.944**	**2.090**	**1.893**	**1.551**
Production from renewable energy resources	**115.847**	**116.915**	**116.339**	**100.466**	**116.163**
Hydroelectric	46.319	47.552	45.388	28.398	40.449
Wind power	20.202	18.762	20.927	20.494	23.303
Photovoltaic	23.689	24.942	25.039	28.122	30.711
Geothermal	6.075	6.026	5.914	5.837	5.962
Biomass and waste	19.563	19.634	19.071	17.616	16.008
TOTAL PRODUCTION	293.853	280.532	289.069	283.953	264.273

A) Provisional data.

Source: Terna.

In 2023, Enel remains the leading producer with a 16.9% share followed by Eni at 9.5%. Looking at ther-moelectric production alone, on the other hand, Eni is once again the leading operator in thermoelectric generation, accounting for 16.5% while Enel, the second operator, has a share of 15.2% (last year the po-sitions were reversed with shares of 13.9% and 18.3% respectively).

Overall, for 2023, the costs of incentivising renewable energy resources amounted to approximately € 7 billion, an increase compared to the previous year when, due to high electricity market prices and the incentive mechanisms described, the cost of some incentive instruments was cancelled out.

In 2022, imports increased by approximately 7.1 TWh over the previous year, from 47.4 to 54.5 TWh (+15%). Since, at the same time, exports decreased by a higher percentage (-24.6%, from 4.4 to 3.3 TWh); the increase in the foreign balance was amplified: compared to 2022, in fact, foreign electricity entering the Italian system increased by 19%. Compared to the previous year, in 2023 we imported around 1,000 GWh more from Switzerland, 1.3 TWh from Montenegro, 657 GWh from Greece and 294 GWh from Slo-venia, partly to compensate for the drop in volumes from Austria, partly due to the interconnection bloc-kade of the relevant interconnection for almost a month and a half.

Electrical facilities

Slight changes in transmission lines were recorded during 2023: +23km for 380 kV lines, +21km for 220 kV lines, +48 km for lines with a voltage below 150 kV; in the case of DC lines, only the doubling (+95 km) of 320 kV lines was noted. Compared to 2022, the number of stations has also increased: +4 at 380 kV, +1 at 220 kV and +4 at < 150 kV. As regards interconnection capacity with foreign countries, Italy is electrically interconnected with France, Switzerland, Austria, Slovenia, Montenegro and Greece through 30 interconnection lines.

TAB. 2.12 *Interconnection capacity with foreign countries (in MW; capacity during Monday to Saturday and during peak hours (7:00-23:00))*

BORDER	WINTER			SUMMER		
	2022	2023	2024	2022	2023	2024
France	4.350	4.485	4.485	3.900	4.044	4.044
Switzerland	4.240	4.572	4.572	3.420	3.747	3.747
Austria	315	325	625	270	280	580
Slovenia	730	753	753	515	534	534
Total Frontier North	**9.635**	**10.135**	**10.435**	**8.105**	**8605**	**8.905**
Greece	500	500	500	500	500	500
Montenegro	600	600	600	600	600	600
TOTAL IMPORT	**10.735**	**11.235**	**11.535**	**9.205**	**9.705**	**10.005**
France	1.995	1.995	1.995	1.870	1.870	1.870
Switzerland	1.810	1.810	1.810	1.440	1.440	1.440
Austria	100	100	200	80	80	180
Slovenia	660	660	660	620	620	620
Total Frontier North	**4.565**	**4.565**	**4.665**	**4.010**	**4.010**	**4.110**
Greece	500	500	500	500	500	500
Montenegro	600	600	600	600	600	600
TOTAL EXPORT	**5.665**	**5.665**	**5.765**	**5.110**	**5.110**	**5.210**

Source: Terna.

Major projects include:

- The very high voltage direct current (HVDC) link SA.CO.I.3, which consists of the renewal and modernisation of the existing connection (named SA.CO.I.2) between Sardinia, Corsica and the Italian peninsula, which will allow the use of a total transmission capacity of up to 400 MW.
- The ELMED project, the 500 kV direct current HVDC link that will connect Italy and Tunisia, allowing a power exchange of up to 600 MW. This is an interconnection approximately 230 km long, of which approximately 200 km will be in submarine cable, scheduled to come into operation in 2028.
- The second section of the Tyrrhenian Link, the direct current submarine cable connection between Sardinia, Sicily and Campania is approximately 970 km long and has a capacity of 1,000 MW.

As 31 December 2022, 119 electricity distributors were registered in ARERA's Registry of Operators. The first 10 served 98.5% of the total number of customers, delivering a similar proportion (98.3%) of the electricity drawn from the distribution networks. E-distribuzione (Enel Group) remains by far the largest operator, with an 85.1% share of the total volumes distributed. A total of approximately 250 TWh was distributed in 2023, down 7 TWh compared to 2022.

37.2 million users were served: 30.1 million household points and 7.1 million non-household points, which withdrew 56.3 TWh (58 TWh in 2022) and 193.7 TWh (199.1 in 2022) respectively. Most households (79.4%) were found to be resident and consumed 87.5% of all the electricity distributed to families. The majority of household withdrawal points have a contract with a committed power between 1.5 and 3 kW: they account for 84.7% of all households and take 74.8% of all distributed electricity.

With regard to active connections to the transmission grid, in 2023, 4,693 connection requests were made to the Electricity Transmission Grid Operator for power generation plants with a total capacity of 442.6 GW. As far as the connections of passive users are concerned, the data collected show that 252,030 connections were made to the distribution networks in 2022, almost all of them in low volta-ge.

Wholesale market

In 2023, the quantity of electricity traded directly on the power swap exchange amounted to 209.9 TWh (-0.5% compared to 2022) and the average energy purchase price (PUN) dropped considerably, coming in at € 127.2/MWh, down 58.1% compared with the peak high of € 303.95/MWh recorded in 2022. Zonal prices were characterised by decreases ranging from -58.5% in the North zone (€ 127.8/MWh) to -57.1% in the Sardinia zone (€ 123.2/MWh), which remained, for the second year in a row, the zone with the lowest average price, while the zone with the highest average price became the North-Central zone (€ 128.5/MWh).

In 2023, there was a significant drop in prices on European stock exchanges after the record highs of 2022, although the average prices observed in 2023 are still very high, approximately 2.5 times higher than in 2019. On average, European electricity prices ranged from € 95/MWh (the lowest price recorded on the German EPEX exchange) to € 127/MWh (the average price on the Italian exchange). The Italian PUN again showed a trend rather distant from the prices that have been established in the stock exchanges of neighbouring countries, mainly due to the historical differences of the national production parks. The annual average value of the spot price recorded on the German exchange (€ 95.18/MWh) was almost identical to the French exchange price of € 96.86/MWh, although both remained rather distant from the Spanish price (€ 87.10/MWh).

The lowest points were reached in the last months of the year in Germany, Spain and France, where quotations fell below € 70/MWh. In the Italian and Scandinavian stock exchanges, on the other hand, the lowest points were reached in the summer months, albeit at very different levels: around € 105/MWh in the Italian exchange and around € 14/MWh in the case of NordPool.

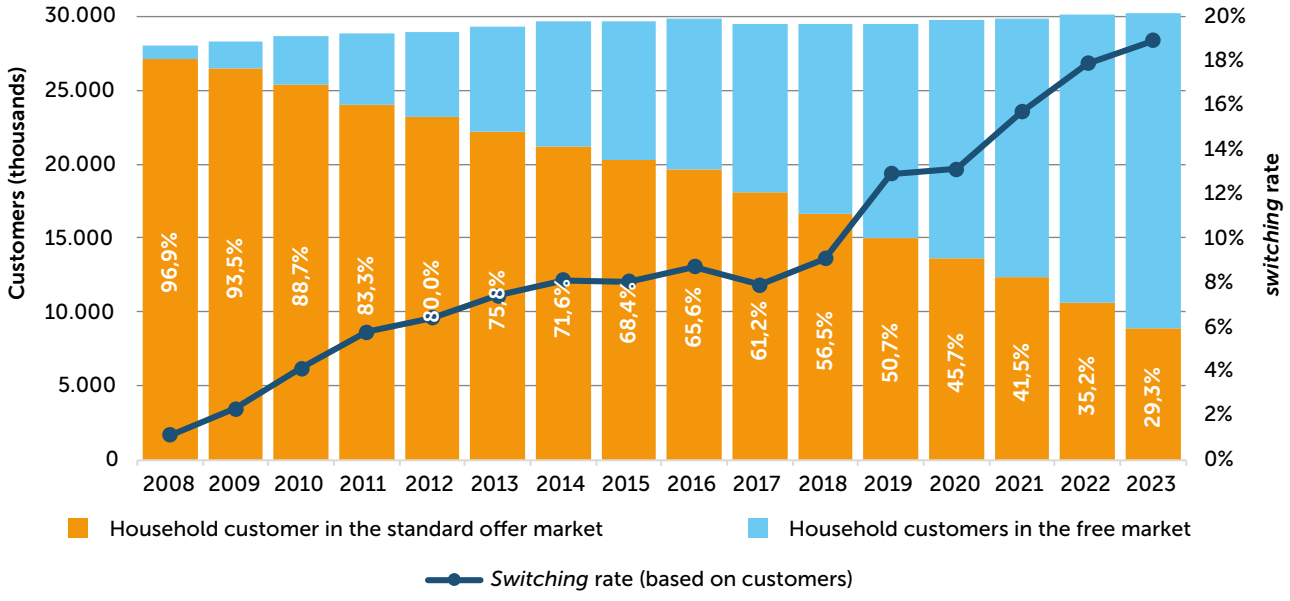
End sales market

There were 756 entities present in the sale of electricity in 2023: 106 in the standard offer service, 4 in the gradual standard offer service for small enterprises, 7 in the gradual standard offer service for micro enterprises, 3 in the safeguard service and 707 in the free market.

According to data from the Annual Survey of the Regulated Electricity and Gas Sectors, just over 241 TWh were sold to the end market last year to 37.3 million customers. The contraction of 4.4% compared to 2022 occurred proportionally evenly for the two types of customers: non-households purchased about 8.8 TWh less than in 2022, falling from 193.9 to 185.2 TWh, while household consumption fell by approximately 2.3 TWh from 58.2 to 56 TWh. The modest economic growth and the weakness of the more energy-intensive sectors contributed to the decline in demand from non-households, while in the case of house-holds, the continuing high energy prices were the main factor. The decline in average household unit consumption also continued, reaching an all-time low of 1,851 kWh/year (-4.4%), with a difference of approximately 28% between customers in the standard offer market (1,548 kWh/year) and those in the free market (1,977 kWh).

In 2023, there were 30.2 million households, of which just under 8.9 million were served in the protection regime offer and around 21.4 million in the free market. The percentage of household points served on the free market have now risen to 70.7% and purchased 75.5% of total volumes.

FIG. 2.13 *Households in the standard offer service and in the free market since 2008*



Source: ARERA. Annual survey of regulated sectors.

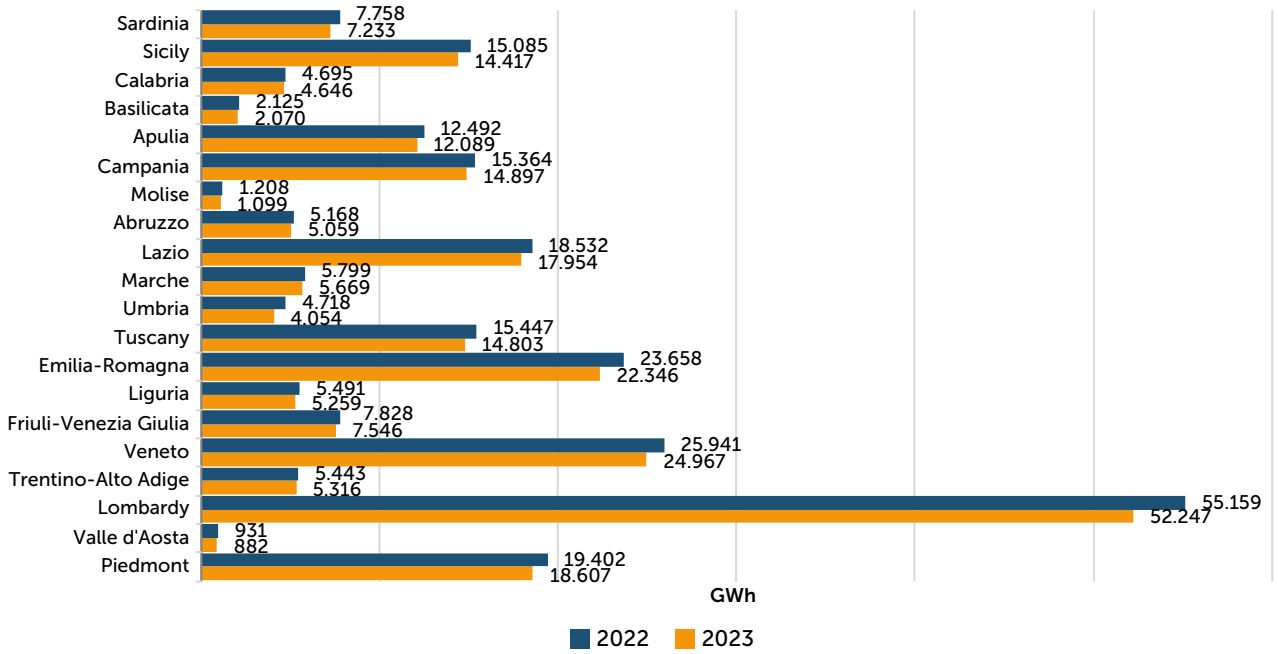
The average unit consumption of households in the market with a reference price is slightly lower than that of households purchasing energy in the free market: 1,733 kWh/year versus 2,046 kWh/year. In 2023, the gap widened slightly by 126 kWh compared to 2022. Also considering non-household points for which price protection was permitted until 31 March, the share of electricity sold in the standard offer service is, however, very small, amounting to only 6% of the volumes of the entire Italian electricity market (corresponding to 24.2%

of the total withdrawal points).
In 2023, the two gradual standard offer services[11] served a total of around 919,000 withdrawal points (2.4% of all customers in the electricity market), to which it supplied just over 3 TWh, or 1.3% of the energy sold in the total market.

In a final market that overall decreased by 11.1 TWh compared to 2022, sales volumes decreased by 7.4 TWh in the market with a reference price (-34%) and by 4.7 TWh in the free market (-2.1%), while energy supplied in gradual standard offer services increased by 750 GWh (+33%), and that in the safeguarded regime increased by 276 GWh (+5.7%).

Geographically, there is no significant change in consumption compared to 2022.

TAB. 2.14 *Electricity sales to the end market by region*



Source: ARERA. Annual survey of regulated sectors.

The distribution of electricity sales in the five markets[12] at territorial level shows a preponderant share of the free market everywhere, albeit with regional gaps that are slowly closing: the portion of energy purchased in the free market tends to be larger in the central and northern regions, while in the southern regions the segments of standard offer, gradual standard offer and safeguard are often larger than the national average (6% in standard offer, 0.6% in gradual standard offer, 2.1% in safeguard and 90.6% in free market).

Household switching has grown again (+1%), both in terms of withdrawal points and volumes, approaching that of non-households. 18.9% of households (approximately 5.7 million withdrawal points, accounting for 24.5% of the energy acquired by the household sector) changed supplier at least once during the year. While for

11 Small enterprises and micro-enterprises that did not choose a supply in the free market on the respective end dates of the end of the standard offer service (1 January 2021 and 1 January 2023) are supplied under a special gradual standard offer service by a supplier selected by tender.
12 Standard offer service, Gradual standard offer service for small enterprises, Gradual standard offer service for micro enterprises, Safeguard service and Free market.

nonhouseholds, almost 1.8 million non-household withdrawal points changed supplier in 2022 (around 52 TWh, service of certain categories of customers (non-household LV) has had an impact on the switching activity, which, for these customers, has been growing steadily in recent years: in terms of volume from 18.4% in 2020, to 29.4% in 2021, to 31.7% in 2022 and reached 33.8% in 2023.

The ranking of the top twenty groups by total sales to the end market in 2023 shows several position changes after the top two.

TAB. 2.28 *Top twenty groups by total electricity sales to the end market in 2023 (GWh)*

GROUP	HOUSEHOLDS	NON-HOUSEHOLDS			TOTAL	SHARE	POSITION IN 2022
		LV	MV	HV/VHV			
Enel	31.146	20.300	21.986	8.093	81.525	33,8%	1°
A2A	2.222	5.967	9.931	2.204	20.323	8,4%	2°
Hera	2.146	4.661	7.289	203	14.299	5,9%	5°
Edison	1.629	2.744	6.173	2.517	13.063	5,4%	3°
Axpo Group	206	2.377	7.292	2.280	12.155	5,0%	4°
Eni	5.417	1.557	3.800	859	11.632	4,8%	6°
Engie	634	364	3.250	4.089	8.337	3,5%	8°
Acea	1.887	2.016	2.279	183	6.364	2,6%	7°
Alperia	426	1.195	2.741	274	4.636	1,9%	10°
Iren	1.837	1.475	847	153	4.312	1,8%	13°
Agsm Aim	523	1.741	1.845	160	4.269	1,8%	12°
Duferco	166	1.308	1.367	1.158	3.999	1,7%	9°
Sorgenia	527	2.044	1.270	53	3.894	1,6%	18°
Repower	0	1.967	1.783	1	3.751	1,6%	14°
Nova Coop	54	753	2.801	79	3.687	1,5%	17°
C.V.A.	111	574	2.675	42	3.401	1,4%	22°
Dolomiti Energia	682	1.361	1.285	4	3.332	1,4%	15°
E.On	623	984	1.499	3	3.109	1,3%	11°
Iberdrola	80	889	1.134	5	2.108	0,9%	20°
Alpiq	0	62	1.571	197	1.831	0,8%	19°
Other operators	5.677	13.201	10.496	1.756	31.130	12,9%	-
TOTAL OPERATORS	55.991	67.541	93.313	24.315	241.159	100,0%	-

Source: ARERA. Annual survey of regulated sectors.

Standard offer service

The first results of the Annual Survey on regulated segments show that in 2023, 14.2 TWh were sold, under standard offer supply conditions for electricity, to approximately 9.2 million withdrawal points (calculated on a pro die basis). As mentioned previously, compared to 2022, consumption fell by 7.4 TWh (-34%), while the

number of withdrawal points served decreased by 3 million (-24.2%). During the year, 1.7 million households (16.4%) and 1.2 million non-households (-77.4%) left the standard offer service. In 2023, households (resident and non-resident) purchased 13.7 TWh, compared to 18.4 TWh in 2022; 76.2% of customers are residents and they account for 87.1% of the total energy purchased by households. Moreover, almost all resident customers (92.6%) belong to the first four consumption classes, i.e. they purchase a maximum of 3,500 kWh/year.

Gradual standard offer service for small companies

Estimates based on data from the Annual Survey show that 1.5 TWh (-35% compared to 2022) were sold to 92,700 withdrawal points (-32%) in the gradual standard offer service for small enterprises in 2023.

TAB. 2.39 *Operators selected to provide the gradual standard offer service for small enterprises for the period 1 July 2021 - 30 June 2024 in each territorial area*

TERRITORIAL AREA	ESERCENTE
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 most numerous type of customer is that of non-households with consumption other than public lighting (or customers with other uses), which consumed approximately 1.3 GWh and had approximately 81,000 withdrawal points, for a unitary consumption of 16,839 kWh (-3% compared to 2022). Public lighting utilities have an average consumption of 12,283 kWh.

Gradual standard offer service for micro enterprises

According to estimates compiled from the Annual Survey, in 2023 non-households other uses consumed approximately 1.5 TWh for around 827 thousand withdrawal points, with an average consumption of 1,865 kWh, while public lighting recorded an average consumption of 6,000 kWh.

TAB. 2.44 *Operators selected to provide the gradual standard offer service for micro enterprises for the period from 1 April 2023 - 31 March 2027 in each territorial area*

TERRITORIAL AREA	OPERATOR
Friuli-Venezia Giulia, Trentino-Alto Adige, Belluno, Venice, Verona	Hera Comm
Bologna, Modena, Piacenza, Padua, Parma, Reggio Emilia, Rovigo, Treviso, Vicenza	Sorgenia
Abruzzo, Marche, Umbria, Forlì-Cesena, Ferrara, Ravenna, Rimini	A2A Energia
Bergamo, Brescia, Cremona, Lecco, Lodi, Milan excluding municipality of Milan, Mantua, Sondrio	Sorgenia
Valle d'Aosta, Alessandria, Asti, Como, Monza-Brianza, Milan, Novara, Pavia, Varese, Verbania, Vercelli	Sorgenia
Liguria, Biella, Cuneo, Turin	Illumia
Arezzo, Florence, Latina, Prato, Rieti, Rome excluding municipality of Rome, Siena, Viterbo	A2A Energia
Molise, Frosinone, Grosseto, Livorno, Lucca, Massa-Carrara, Pisa, Pistoia, municipality of Rome	Estra Energie
Basilicata, Calabria, Bari, Taranto	A2A Energia
Sardinia, Caserta, Naples excluded municipality of Naples	Acea Energia
Avellino, Barletta-Andria, Benevento, Brindisi, Trani, Foggia, Lecce, municipality of Naples, Salerno	A2A Energia
Sicily	A2A Energia

Source: ARERA, Annual survey on regulated sectors.

Free market

As already mentioned, according to the (provisional) data collected, 218.6 TWh were sold in the free electricity market in 2023, 4.7 TWh less than in 2022, to just over 27 million customers (+ 9%).

TAB. 2.49 *Supplier activity by sales class*

SUPPLIER CLASS	2018	2019	2020	2021	2022	2023
Number of operators in standard offer	**127**	**123**	**119**	**112**	**109**	**106**
Number of active suppliers	**441**	**481**	**521**	**537**	**560**	**546**
More than 10 TWh	2	3	4	4	4	5
5-10 TWh	8	7	4	8	5	2
1-5 TWh	19	18	20	15	16	21
0,1-1 TWh	78	74	71	80	72	65
up to 0.1 TWh	334	379	422	430	463	453
Volume sold (TWh)	**206,8**	**211,8**	**202,4**	**216,9**	**223,2**	**218,6**
More than 10 TWh	67,6	81,2	90,8	96,7	109,6	118,5
5-10 TWh	56,4	50,5	26,9	51,4	35,2	16,9
1-5 TWh	50,6	48,9	54,6	36,5	49,7	58,3
0,1-1 TWh	26,5	25,0	23,8	25,5	21,5	17,4
up to 0.1 TWh	5,6	6,2	6,3	6,8	7,3	7,5
Average unitary volume (GWh)	**469**	**440**	**389**	**404**	**399**	**400**

(continued)

More than 10 TWh	33.798	27.077	22.712	24.180	27.389	23.693
5-10 TWh	7.053	7.217	6.735	6.421	7.037	8.458
1-5 TWh	2.665	2.717	2.731	2.433	3.105	2.775
0,1-1 TWh	340	338	335	319	298	268
up to 0.1 TWh	17	16	15	16	16	17

Source: ARERA. Annual survey of regulated sectors.

The ranking of the top twenty groups by sales in the free market does not show any resounding move-ments compared to 2022: in first position is the Enel Group with 31.1% of total sales, identical to 2022, followed by the A2A Group with a much smaller share of 7.4%, (7.1% in 2022) and the Edison Group again with 6%. It therefore comes as no surprise that the degree of concentration in the free market has not changed substantially: the share of the top three groups is 44.4% (it was 44.2% in 2022); that of the top five is 55.7% (from 54.9% in 2022). The HHI index rose from 1,189 to 1,201, although it remains far from the 1,500 threshold at which the market is judged to be moderately concentrated.

TAB. 2.54 *Household free market in 2023 by consumption class (volumes in GWh; number of withdrawal points in thousands, average consumption in kWh)*

CONSUMPTION CLASS	VOLUMES	SHARE	WITHDRAWAL POINTS	SHARE	AVERAGE CONSUMPTION
< 1.000 kWh	2.859	6,8%	5.826	27,2%	491
1.000-1.800 kWh	7.896	18,7%	5.637	26,4%	1.401
1.800-2.500 kWh	8.659	20,5%	4.061	19,0%	2.132
2.500-3.500 kWh	9.699	22,9%	3.305	15,5%	2.935
3.500-5.000 kWh	7.038	16,7%	1.721	8,0%	4.089
5.000-15.000 kWh	5.413	12,8%	805	3,8%	6.726
> 15.000 kWh	700	1,7%	28	0,1%	25.044
TOTAL HOUSEHOLDS	42.263	100,0%	21.382	100,0%	1.977
OF WHICH WITH DUAL FUEL CONTRACT					
< 1.000 kWh	148	5,7%	251	19,9%	590
1.000-1.800 kWh	524	20,2%	371	29,4%	1.412
1.800-2.500 kWh	602	23,2%	281	22,3%	2.138
2.500-3.500 kWh	649	25,0%	221	17,5%	2.936
3.500-5.000 kWh	395	15,2%	95	7,5%	4.148
5.000-15.000 kWh	259	10,0%	42	3,3%	6.174
> 15.000 kWh	22	0,8%	1	0,1%	23.091
TOTAL WITH DUAL FUEL CONTRACT	2.599	100,0%	1.263	100,0%	2.058

Source: ARERA. Annual survey of regulated sectors.

In 2023, the average number of commercial offers that each sales company was able to recommend to its potential customers was 26.4 for households (17.7 online-only) and 30 for non-households (19.8 online-only).

The success of online offers remains limited, as these were chosen by only 7.2% of households and 2.9% of non-households.

66.8% of households signed a fixed-price contract in the free market, while 33.2% chose a variable-price contract (the most common type amongst non-household customers).

TAB. 2.58 *Contracts for the supply of electricity in the free market in 2023 by type of price and average price (percentage of customers having signed the indicated contracts)*

CONTRACTS	HOUSEHOLDS		NON-HOUSEHOLDS	
	SHARE	PRICE(A) €/MWh	QUOTA	PRICE(A) €/MWh
Fixed-price contracts	66,8%	276,92	31,7%	235,95
Variable-price contracts	33,2%	227,33	68,3%	172,68
TOTAL CUSTOMERS	100%	259,84	100%	181,31

(A) Supply cost component.

Source: ARERA. Annual survey of regulated sectors.

Part of the growing preference for variable-price contracts may be due to the reduction in the supply of such contracts by suppliers in 2022 and the first part of 2023, a period characterised by strong price increases. The fall in prices in 2023 had a significant impact on variable-price contracts: households paid an average of € 227.33/MWh for the energy component, some € 150/MWh less than in 2022, while non-households paid an average of € 172.68/MWh, i.e. € 135/MWh less than in the previous year.

TAB. 2.59 *Variable price contracts for the supply of electricity in the free market in 2023 by type of average price indexing (percentage of customers having signed the indicated contracts)*

TYPE OF SUPPLY CONTRACT INDEXING	HOUSEHOLDS		NON-HOUSEHOLDS	
	SHARE	PRICE(A) €/MWh	SHARE	PRICE(A) €/MWh
With a discount on one of the components established by ARERA for the standard offer service	6,84%	223,37	1,89%	217,10
Index-linked to the development of the average PUN	89,78%	227,49	83,03%	176,29
Index-linked to the hourly wholesale price (dynamic electricity price contract)	3,29%	231,62	8,74%	168,74
With a discount on the price set in a Consip or other public tender	0,00%	209,39	0,95%	164,56
Otherwise index-linked (e.g: ITEC, ITEC 12, consumer price index, Brent, etc.)	0,03%	186,19	1,77%	169,47
With limited indexing	0,05%	174,27	0,03%	102,93
By other means not otherwise specified	0,01%	190,18	3,59%	149,05
TOTAL	100%	227,33	100%	172,68

(A) Supply cost component.

Source: ARERA. Annual survey of regulated sectors.

33.7% 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 addition, the results collected revealed a clear propensity, as in the past, for fixedprice households to purchase energy with a contract that includes an additional service; "favourites" include contracts with a guarantee to purchase electricity produced from renewable energy resources (51.7%) and for ancillary energy services (37.6%). The opportunity to receive a guarantee to buy electricity produced in Italy (2.3%), which had not been successful in 2022, as well as the opportunity to have other products or services along with the electricity supply (1.9%) also attracted a fair amount of interest. This was followed by the points collection programme (1.8%) and receiving a free gift (1%). The results collected for non-household customers show a significant lack of interest in additional services.

Safeguard service

According to the data received from the three operators, the service expanded in 2023 by 10% in terms of withdrawal points (97,830) and by 5.7% in terms of energy consumed (5,119 GWh).

Prices and tariffs

At the end of 2023, as usual, ARERA updated the tariffs for the provision of electricity transmission, distribution and metering services for households and non-households to be applied in 2024. The national average tariff covering transmission, distribution and metering costs for 2024 is 3.407 c€/kWh (3.022 c€/kWh for 2023).

On the price front, the analysis of the data submitted by the companies shows the usual variability in the unit expenditure incurred by customers, with values inversely proportional to the size of consumption.

TAB. 2.66 *Average end prices to households in 2023 by consumption class (energy quantity in GWh; withdrawal points in thousands; prices in €/MWh)*

CONSUMPTION CLASS (kWh/year)	QUANTITY OF ENERGY	WITHDRAWAL POINTS	PRICE NET OF TAX	OF WHICH SUPPLY COSTS
< 1.000	4.305	9.263	601,4	388,6
1.000-1.800	11.215	8.014	337,6	273,5
1.800-2.500	11.826	5.549	299,6	252,1
2.500-3.500	12.610	4.301	281,3	240,2
3.500-5.000	8.693	2.128	268,5	230,4
5.000-15.000	6.451	958	260,4	218,2
> 15.000	891	35	248,0	202,4
TOTAL HOUSEHOLDS	55.991	30.248	316,1	256,1

Source: ARERA. Annual survey of regulated sectors.

After the interlude of 2022, the free market again shows higher values than the standard offer service, except for the two largest consumption classes. For the supply component, the higher cost of the free market is between 27.8% for the smallest class (consumption up to 1000 kWh/year) and 1.4% for the band between 3,500 and 5,000 kWh/year, while for the two largest classes (consumption over 5,000 kWh/year) the free market is approximately 4% lower than the standard offer. The final price, including all components except taxes, shows similar trends for the two markets, but with smaller differentials.

TAB. 2.67 *Average prices to households in 2023 by consumption class and market type (€/MWh)*

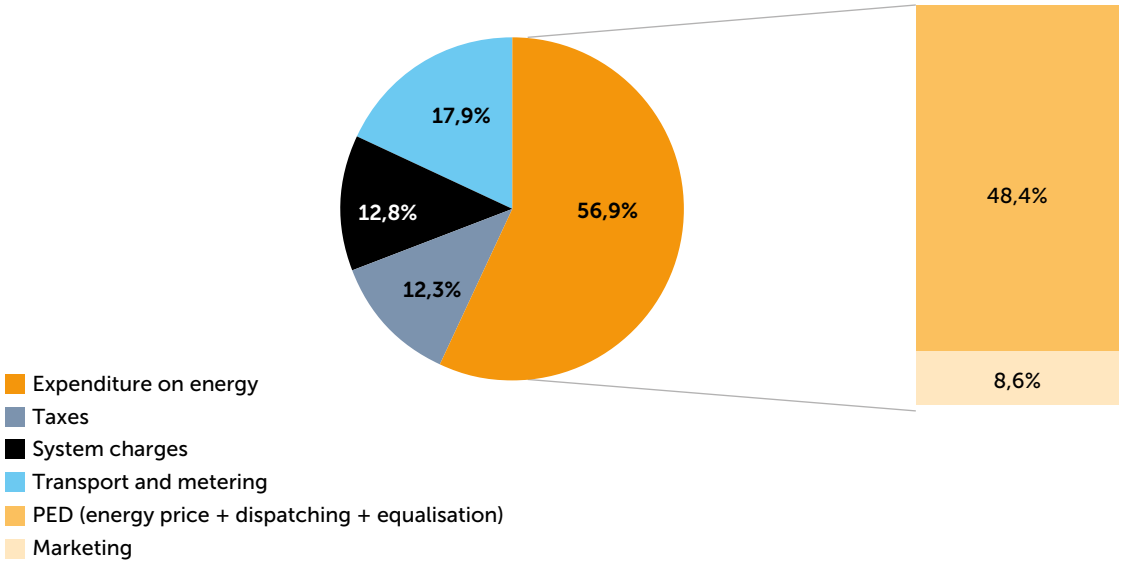
CONSUMPTION CLASS	SUPPLY COSTS			TOTAL AVERAGE PRICE (NET OF TAX)		
	STANDARD OFFER	FREE MARKET	DIFF.	STANDARD OFFER	FREE MARKET	DIFF.
< 1.000	328,0	419,2	27,8%	573,1	615,7	7,4%
1.000-1.800	247,0	284,7	15,3%	314,4	347,3	10,5%
1.800-2.500	235,1	258,3	9,9%	285,0	305,0	7,0%
2.500-3.500	230,0	243,3	5,8%	272,9	283,8	4,0%
3.500-5.000	227,9	231,0	1,4%	266,9	268,9	0,7%
5.000-15.000	226,0	216,7	-4,1%	268,2	258,9	-3,5%
> 15.000	207,9	200,9	-3,3%	252,1	246,9	-2,0%
TOTAL HOUSEHOLDS	244,7	259,8	6,2%	316,0	316,2	0,1%

Source: ARERA. Annual survey of regulated sectors.

Looking at the breakdown of low voltage non-households by type of market, this shows high price differentials: gradual standard offer services, which benefit from the competitive effects of the competitive procedures carried out to award these services, have the lowest supply component (just over € 160/MWh); this is followed by the free market (approximately € 180/MWh), then the safeguard service (€ 238/MWh) and, finally, the standard offer service, which is very distant (€ 467/MWh), but is now marginal in terms of volumes, having ceased during the year.

As of 1 January 2024, the price of electricity for a household residing in standard offer, with annual consumption of 2,700 kWh and 3 kW power, is 22.14 c€/kWh after tax and 25.24 c€/kWh before tax (respectively 47.48 and 53.11 c€/kWh in 2022). The charges covering electricity procurement and marketing costs in Q1 2024 are 57%, significantly higher than at the beginning of the three-year period (46%).

FIG. 2.34 *Percentage breakdown of the standard offer supply conditions for the typical customer with annual consumption of 2,700 kWh and power of 3 kW on 1 January 2023*



Source: ARERA.

Quality of the electricity transmission system

A crucial indicator for the integration of electricity markets and the support of the energy transition is the **capacity for interconnection with foreign countries and transport between internal grid zones**. Since 2019, output-based regulation has encouraged the implementation of additional transmission capacity. In 2021, the parameters for the incentive mechanism were updated.

In 2022 and 2023, the Electricity Transmission Grid Operator increased transmission capacity between market areas and with foreign countries through capital-light solutions. Specifically, in 2023:

- Interconnector 'Nauders - Glorenza' (220 kV) commissioned on 12 December 2023 made available 300 MW of import capacity on the Austrian border;
- Increases on the South to Central South section which, from 1 January 2024, made available an increase varying between 0 and 100 MW, depending on the amount of residual demand;
- Increase on the Calabria to Sicily section, which, from 1 January 2024, made available an increase of 50 MW.

TAB. 2.72 *Transmission capacity between grid zones, and their starting levels, targets and declared reference values as of 1 January 2024, for grid borders and main sections (MW)*

BORDER/SECTION	STARTING CAPACITY (WINTER PEAK SITUATION)	TARGET CAPACITY (WINTER PEAK SITUATION)	TRANSMISSION CAPACITY AT 01 January 2024
Italy - northern countries (aggregation of France, Switzerland and Austria), importing	7.705	10.505	9.682
Italy - eastern countries (aggregation from Slovenia to Greece), importing	1.230	1.380	1.853
North - Centre-North	3.900	4.300	4.300
Centre North - North	1.500	1.900	1.900
Centre-North - Centre-South	1.400	1.800	1.800
Centre South - Centre North	2.400	2.800	2.800
South - Central South (one-way)	4.600	5.550	5.100-5.200
South - Calabria/Rossano	1.100	(A)	1.100
Calabria/Rossano - South	2.350	(A)	2.350
Calabria/Rossano - Sicily	1.100	1.750	1.550
Centre North - Sardinia	300	1.000	300
Sardinia - Centre North	300	1.000	300
Sardinia - Centre South	900	(A)	900
Centre South - Sardinia	720	(A)	720

(A) Capacity not required.

Source: ARERA, Resolution no. 446/2021/R/eel, and processing of the Electricity Transmission Grid Operator's data.

With regard to the quality of the transmission service, there was an improvement compared to previous years both in terms of reliability, 3,005 MWh/y compared to 1,589 MWh/y in 2021, and in the average number of interruptions lasting more than one second per user due to all causes, including those outside the electricity transmission grid operator's responsibility, including major incidents.

The bonus-penalty regulation introduced by ARERA gave the Electricity Transmission Grid Operator an incentive to improve reliability: the regulated ENS[13] (ENSR) showed a significant reduction in energy not supplied, exceeding the set targets. In 2023, the ENSR target was 763 MWh/year[14].

Turning to scheduled or unscheduled **unavailability**, this can reduce transmission capacity and have negative economic effects on users. The ASAI[15] availability indicator for all the Electricity Transmission Grid Operator's operating areas remained stable in 2023 compared to 2022, with some regional variations. The unavailability of overhead lines was analysed for various voltage levels, showing significant differences in the rates of scheduled and unscheduled unavailability.

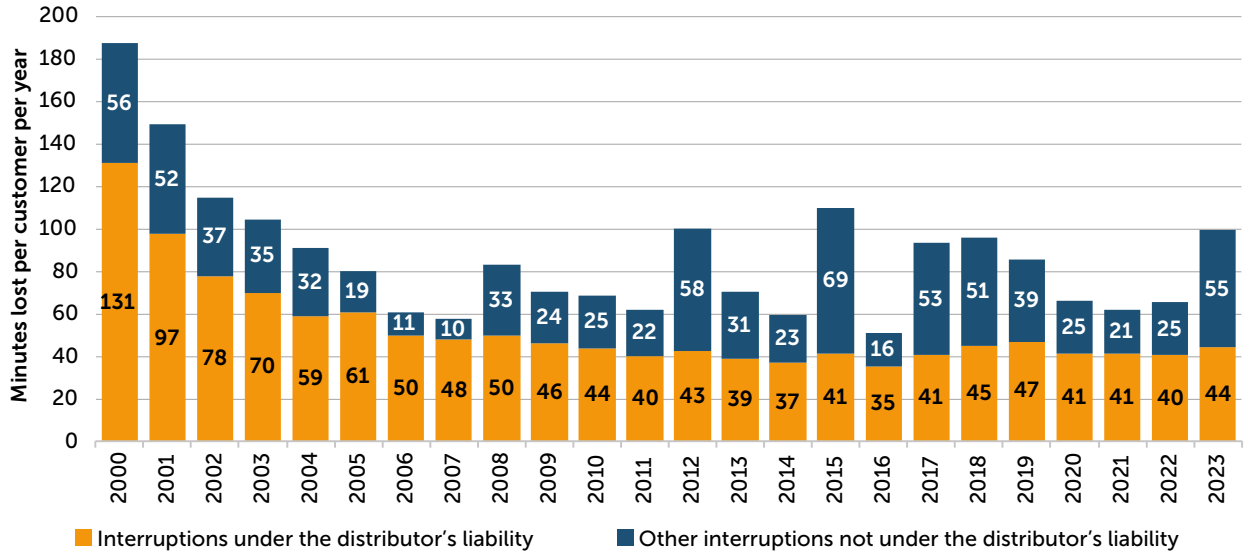
13 The reliability of the transmission service is mainly measured by the energy not supplied (ENS) indicator, which is expressed in MWh/y.

14 In 2016 it was 980 MWh/year and then decreasing each year.

15 *Average system availability* index: represents the availability of the NTG elements. An element is 'unavailable' when it cannot be used by the electricity transmission grid operator.

As regards **quality and continuity of distribution service**, there was a worsening recorded in 2023 compared to the three-year period 2020-2022, both for the average duration of **unannounced outages** (100 minutes) and for the average number of outages per user (4.87).

FIG. 2.37 *Duration of long unannounced interruptions per low-voltage customer*

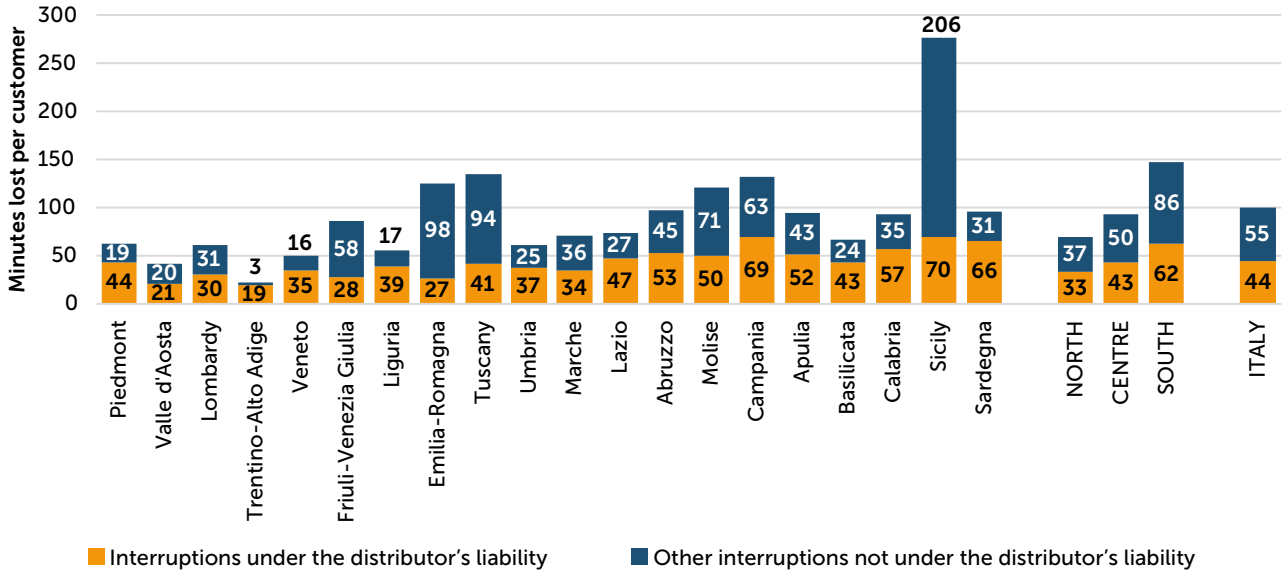


(A) Excluding major incidents on the NTG, defence system interventions and interruptions due to theft.

Source: ARERA. Processed from data communicated by the distribution companies.

This worsening is mainly attributed to exceptional weather events such as floods, wind storms and heat waves, which affected several Italian regions and, in particular, Friuli-Venezia Giulia and Emilia-Romagna in the North, Tuscany in the Centre, and Abruzzo, Molise, Campania and Sicily in the South.

FIG. 2.38 *Duration of long unannounced outages per low-voltage user in 2023 by region*



(A) Excluding major incidents on the NTG, defence system interventions and interruptions due to theft.

Source: ARERA. Processed from data communicated by the distribution companies.

In detail, the duration of interruptions attributable to distribution companies was 44 minutes per user and the number of long and short interruptions was 3.43 per user. These figures are calculated excluding interruptions due to external factors such as failures in the national transmission grid, exceptional weather conditions, and interruptions due to acts of authority or theft.

The average duration of **announced interruptions** also increased compared to the previous four-year period 2017-2020 due to the marked increase in user connections, particularly of producers, and the consequent growth in grid upgrading and development activities by distribution companies. In 2023, considering all interruptions, both announced and unannounced, the average duration per low-voltage user in Italy was 185 minutes: 115 minutes in the North, 174 minutes in the Centre and 291 minutes in the South.

The current regulation requires the Electricity Transmission Grid Operator to remunerate distribution companies for **actions to mitigate** the effects of disconnections due to faults on the National Transmission Grid (NTG). These mitigation actions mainly include the reconfiguration of Medium Voltage (MV) networks to counterbalance the load. If these actions result in savings for the electricity transmission grid operator, particularly in the context of the incentive mechanism for transmission service continuity, they are remunerated.

TAB. 2.77 *Energy valued for mitigation service provided by distribution companies (number of episodes and energy in MWh)*

TERRITORIAL OPERATIVE AREA	2015	2016	2017	2018	2019	2020	2021	2022	2023
Turin	98,922%	98,977%	98,964%	98,981%	98,824%	98,885%	98,566%	98,876%	98,810%
Milan	99,096%	99,122%	98,933%	98,772%	98,526%	98,563%	97,993%	98,096%	98,436%
Padua	99,041%	99,254%	99,073%	98,826%	98,623%	98,663%	98,742%	98,538%	98,531%
Florence	98,856%	98,813%	98,913%	98,770%	98,526%	98,577%	98,124%	98,224%	97,736%
Rome	99,233%	99,144%	98,944%	99,231%	99,072%	98,915%	98,722%	98,673%	98,487%
Naples	99,314%	99,504%	99,246%	99,060%	98,950%	98,915%	98,535%	98,849%	98,480%
Palermo	99,220%	99,278%	99,254%	99,312%	99,371%	99,101%	98,833%	98,576%	99,100%
Cagliari	99,328%	99,181%	99,131%	98,578%	98,172%	98,444%	97,745%	98,061%	97,864%
TOTAL	99,101%	99,163%	99,043%	98,939%	98,760%	98,759%	98,435%	98,518%	98,454%

A) Average system availability index: represents the availability of NTG elements.

Source: ARERA. Processing of the Electricity Transmission Grid Operator's data.

From 2020, **regulation by experiment** is active, focusing on areas where the duration of interruptions (D1 indicator) and the number of interruptions (N1 indicator), both unannounced and the responsibility of distribution companies, significantly exceed the targets set by ARERA. Two major companies, Areti and e-distribuzione, have adopted an experimental approach that includes the use of new technologies, with the aim of improving and reaching target levels by 2023 through a 'customised' improvement path. This scheme covers approximately 19% of the areas and 27% of the low-voltage users. An analysis of the 2023 data compared with the 2019 data shows a general improvement in service continuity in most of the experimental areas. However, despite progress, most areas did not reach the target levels set for 2023, indicating areas where further improvements are needed.

Electricity service quality regulations include specific **regulations for medium voltage** users. The standards defined by ARERA limit the annual number of interruptions to 6 for customers in municipalities with more than 50,000 inhabitants, 9 for those between 5,000 and 50,000 inhabitants, and 10 for those in smaller municipalities. Users exceeding these limits may receive financial compensation, provided that they have submitted a declaration stating that the installations comply with the technical requirements.

In 2023, a significant proportion of medium-voltage users, especially in the southern regions, experienced abovestandard outages, at 26% compared to the national average of 9%. The total paid for the CTS[16] was more than € 28 million, bringing total payments over the period 2007-2023 to approximately € 660 million. The penalties paid by distribution companies for an excessive number of interruptions during 2023 were higher than in 2022, due to the worsening of the average number of interruptions per user for which distri-bution companies are responsible.

In addition to interruptions, industrial users, particularly those with continuous production activities, are sensitive to the voltage quality disturbance known as "voltage dips"[17]. The recording of voltage dips on the entire mediumvoltage network is a complex process and data for 2023 are still being processed and veri-fied; therefore, time series from 2016 to 2022 are available in Volume 1.

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: € 87 million were paid out to just over 1,100,000 users (on average around € 77 per user) and approximately € 7 million to around 6,500 medium-voltage users (on average € 1,000 per user).

Commercial quality

With regard to the **commercial quality of distribution and metering services**, the number of services[18] requested by final customers last year is in line with that of 2022. The number of services requested in 2023, in fact, slightly exceeded 4.1 million, compared to approximately 4.3 million requests per year in the two-year period 2021-2022 and approximately 4.6 million requests per year in the period 2016-2019. Both the number of cases of noncompliance with standards subject to automatic compensation and the number of compensation amounts paid, as well as their total amount, are increasing. The increase in the number of connection requests received from manufacturers resulted in increased workload for both technical and sales staff, which delayed the execution of the required commercial quality services.

Analysing the data on the **commercial quality of the sales service**, the Integrated uText on the Regulation of the Quality of Electricity and Natural Gas Sales Services (TIQV)[19] lays down obligations and commercial quality indicators with which all supply companies are required to comply. The indicators are divided into general and specific; of these, written complaints, bill adjustments and double bill adjustments follow specific minimum time standards while written requests for information fall under general standards. If the specific standards are not

16 Specific tariff charge, this is the compensation due in the event of non-submission of the declaration of adequacy.
17 A voltage dip is a sudden drop in operating voltage, followed by its rapid restoration. Voltage dips are characterised by residual voltage (usually expressed as a percentage of the operating voltage) and duration (usually expressed in milliseconds).
18 Connections, activations, deactivations, estimates, technical verifications, responses to complaints for distribution and metering activities, etc.
19 Annex A to resolution 413/2016/R/com of 21 July 2016.

met, customers automatically receive a basic compensation of € 25, which can be doubled or tripled depending on the severity of the delay, with the first bill available. Based on data reported by 512 companies and referring to 32.5 million electricity customers, it emerges that in 2023 the average time for commercial services was below standard. More specifically, they received: 325,681 written complaints, down slightly from the previous year; 329,429 requests for information, up 5.2%; 6,606 bill adjustments, down 37.5%; and 1,320 double bill adjustments, up 85.1%.

Approximately 98.85% of the non-compliance with standards is attributable to companies, while 1.14% is due to third-party causes and 0.01% to force majeure. Automatic compensation for non-compliance with standards was mainly paid for delays in written complaints. A total of more than € 1.7 million was paid in compensation in 2023 (just under € 1.1 million in 2022) mostly to households in the free market.

TAB. 2.100 *Automatic compensation paid in the electricity sector in 2023, divided up according to type of provision (in €)*

TYPE OF CUSTOMER	2022	2023	VARIATION
Low-voltage households served with standard offer	42.436	33.733	-20,5%
Low-voltage non-households served with standard offer	4.952	3.777	-23,7%
Low-voltage households served in the free market	194.281	200.632	3,3%
Low-voltage non-households served in the free market	46.681	60.643	29,9%
Medium-voltage customers served in the free market	2.015	2.583	28,2%
Multisite customers	22.779	28.061	23,2%
TOTAL	313.144	329.429	5,2%

Source: ARERA, processing of data declared by operators.

Activity carried out

Dispatching

In 2023, the new Integrated Electricity Dispatching Text (TIDE)[20] was approved, which recommends a merit order dispatch model, consistent with European provisions[21], in which all grid resources (at least in principle) can take on a dual role: the 'main' one of producing or consuming energy and the 'ancillary' one of providing services, consisting of the willingness to change their input and withdrawal profile to meet technical grid management needs. The TIDE, which will come into force on 1 January 2025, introduces significant innovations in terms of transparency, requiring the Electricity Transmission Grid Operator to publish details on expected inputs and withdrawals, the operating status and availability of lines and plants, continuously improving dispatching in line with the evolving state-of-the-art. The Text also provided an opportunity to rationalise the provisions on the

20 Resolution of 25 July 2023, 345/2023/R/eel.
21 Regulation 2017/2195 on balancing the electricity system.

organisation of the day-ahead and intraday electricity markets that had been stratified over the years.
Pending its incorporation into the TIDE, ARERA drafted the new regulation for the interruptibility service[22] and verified the conformity of the amendments to the Transmission, Dispatching, Grid Development and Security Code, aimed at enabling the participation of storage systems.

As part of the incentive mechanism for reducing dispatching costs borne by end users[23], ARERA awarded the Electricity Transmission Grid Operator the incentive for 2022: taking into account all sterilisation effects, the company accrued a total saving of € 2,210 million, to which corresponds a bonus of approximately € 796 million (36% of the total, of which 12% relating to 2022 and 24% as an advance for 2023 and 2024).

In light of the innovations and profound changes that have taken place over the years in the area of metering of inputs and withdrawals, ARERA has initiated proceedings to revise the regulations on the settlement and management of electricity network leakages[24]. Consultation document 377/2023/R/eel outlined an implementation path that envisages the start-up of the new discipline in a simplified manner as of January 2025 and the full entry into force of the new regulations upon completion of all functional activities for the management of all metering data in the IIS, including also those relating to inputs, so as to give all parties involved sufficient time to implement and adapt internal processes and supporting information systems.

Transmission and distribution service

In light of regulatory changes in recent years, in 2023 ARERA initiated proceedings to review and update the regulatory framework for historical cooperatives with their own network and for historical consortia with their own network[25]. This procedure following the conclusion of the process of survey and census of historical cooperatives with their own network and historical consortia with their own network has allowed for a clear and exhaustive picture to be obtained and, consequently, for the activity of updating the relevant regulatory framework to be carried out, in order to revise the TICOOP to take into account the evolution of the regulatory framework that has taken place in recent years, as well as to identify which changes to the characteristics of historical cooperatives or consortia are compatible with maintaining the title of historical cooperatives or consortia and, therefore, with access to the specific regulation provided by the TICOOP.

As part of the process of completing the regulation of the provision of transmission, distribution and dispatching services for electricity withdrawn for the purpose of enabling its subsequent feed-in to the grid (i.e. intended for storage) and electricity withdrawn for auxiliary generation services[26], ARERA has decided to extend, until 31 December 2024, the rules already set forth in Article 16 of TIT 2020-2023, in order to ensure that all generation plants and/or storage systems can continue to benefit from tariff exemptions[27].

22 Resolution of 05 December 2023, 572/2023/R/eel.
23 Introduced by Resolution 597/2021/R/eel of 21 December 2021.
24 Resolution of 25 July 2023, 336/2023/R/eel.
25 Resolution of 18 July 2023, 317/2023/R/eel.
26 Resolution of 16 March 2021, 109/2021/R/eel.
27 Resolution of 12 December 2023, 596/2023/R/eel.

Investment plans for distribution and metering

In 2023, ARERA outlined its guidelines to identify priorities and indicators of performance for a selective development of investments in electricity distribution networks, introducing minimum requirements for the consultation and preparation of distribution network development plans[28].

This consultation resulted in two resolutions: Resolution 296/2023/R/eel of 28 June 2023, which set out the timing and procedures for the preparation and two-year public consultation of distribution network development plans for distribution companies with more than 100,000 final customers, for 2023 and, thereafter, from 2025 for each odd-numbered year; Resolution No. 617/2023/R/eel of 27 December 2023, which provided for the distribution companies required to prepare development plans to prepare a number of common documents functional to subsequent development plans.

For larger companies (more than 100,000 withdrawal points), the regulation for the recognition of costs associated with the commissioning of 2G smart metering systems continued for the periods 2020-2022 and 2023-2025[29].

Adequacy of system capacity and security

The Capacity Market, which was established by Legislative Decree no. 379 of 19 December 2003, is aimed at achieving and maintaining the adequacy of production capacity, so that the demand for electricity is structurally met in accordance with predefined levels of security and quality[30].

In 2023, ARERA confirmed the existing regulatory framework on the strike price, providing, also in the light of the posthumous consultation of 2022[31], for the application of the amendments and additions introduced from the day after the date of publication of the measure (5 March 2022) until 31 December 2023. With regard to the natural gas component and the emissions component for the purpose of calculating the Capacity Market's strike price for 2024, it changed the methodology for determining the strike price in line with the changes introduced in 2022 and confirmed, following a consultation, also in 2023.

Also in relation to the Capacity Market, ARERA approved the recommended amendments to the Network Code by the Electricity Transmission Grid Operator[32].

ARERA also defined and modified the criteria and conditions for the operation of the electricity storage capacity forward supply system, as provided for in the primary regulation[33]. Parallel to the national activities for the startup of the mechanism, discussions between the Italian State and the European Commission were intensified during the year to verify the compatibility of the electricity storage capacity forward supply mechanism with EU regulations on State aid, which was concluded with a positive outcome.

28 Consultation document of 20 April 2023, 173/2023/R/eel.
29 By resolution 306/2019/R/com of 16 July 2019, as amended by resolution 724/2022/R/com of 27 December 2022.
30 For a more detailed description of the regulatory framework of the Capacity Market, please refer to Chapter 2, Volume 2, of the Annual Reports of 2017, 2018, 2019, 2020 and 2021.
31 Resolution 83/2022/R/eel.
32 Resolutions of 14 March 2023, 98/2023/R/eel and 99/2023/R/eel.
33 The mechanism is provided for in Article 18 of Legislative Decree No. 21 of 8 November 2021 and subsequently amended by Decree-Law No. 69 of 13 June 2023, as converted by Law No. 103 of 10 August 2023.

On 30 September 2023, the programme to maximise power generation plants fuelled with fuels other than natural gas, aimed at reducing the consumption of natural gas in the thermoelectric sector conducted pursuant to Article 5bis of Decree-Law No. 14/2022, came to an end.

During the year, activities continued under Resolution No. 111/06 for the annual determination of the cost reinstatement charge in relation to each essential plant admitted to the reintegration scheme[34].

On the basis of the information provided by the electricity transmission grid operator, ARERA also defined the values of the technical-economic parameters for the application of the alternative regime to the essential capacity for 2024 envisaged by the aforementioned resolution.

Monitoring of the wholesale markets

In the course of 2023, in accordance with the provisions of the "Integrated text on the monitoring of the wholesale electricity market and the market for dispatching services" (TIMM)[35] the final and budgeted costs for the GME and the Electricity Transmission Grid Operator[36] were approved.

Output-based regulation of electricity transmission and distribution services

In the implementation of the output-based integrated regulation of electricity distribution and metering services for the regulatory period 2020-2023 (TIQE), the expected bonuses and penalties were determined for 2022[37]. In total, € 10.2 million in bonuses were paid out: € 7.4 million for the duration of long unannounced interruptions and € 2.8 million for the number of long and short unannounced interruptions. In addition, penalties were allocated for the experimental regulation incentivising the reduction of the dura-tion of interruptions with notice of the electricity distribution service, amounting to € 8.6 million for 2021 and € 6.1 million for 2022[38].
With regard to the planned census of obsolete risers, ARERA awarded a total amount of approximately € 1 million to 13 distribution companies that carried out on-site inspections at blocks of flats. In the course of 2023, interventions eligible for bonuses and/or penalties aimed at increasing the resilience of electricity distribution networks were also determined: the net bonus balance recognised to companies totalled € 13.6 million[39].

34 The charge is equal to the difference between the production costs recognised to the plant and the revenues attributable to it, with reference to the period in respect of which the plant is included in the list of essential facilities. According to the provisions of Resolution no. 111/06, the dispatching user receives the charge from the electricity transmission grid operator if it takes on a positive value, while paying it to the electricity transmission grid operator if negative.
35 Adopted by Resolution of 5 August 2008, ARG/elt 115/08.
36 Respectively, for the GME with Resolutions 182/2023/R/com and 529/2022/R/com, for the electricity transmission grid operator with Resolution 606/2023/R/eel.
37 Resolution of 24 October 2023, 485/2023/R/eel.
38 Resolution of 27 June 2023, 283/2023/R/eel.
39 Resolution of 26 September 2023, 422/2023/R/eel.

Pursuant to the Integrated Text of output-based regulation of the electricity transmission service for the 2020-2023 regulatory period (TIQ.TRA), ARERA ordered that the Electricity Transmission Grid Operator receive a bonus of € 22.3 million in relation to the performance of continuity recorded in 2022[40]. With regard to the incentives offered for certain activities preparatory to output-based regulation, bonuses in the amount of € 2.9 million were determined for activities concerning the preparation of documents describing scenarios for the purpose of preparing the Transmission Development Plan, the preparation of annual reports on the quality and other outputs of the transmission service, and the preparation of the report identifying target capacities. The incentive mechanism for promoting the unification of the National Transmission Grid (NTG) introduced by the TIQ.TRA led to the acquisition of 5 NTG portions out of the 6 potentially eligible for bonuses (4 NTG holders and 2 merchant lines with no obligation to sell to the electricity transmission grid operator at the end of the exemption) for a total of over € 3.2 million in bonuses. Also in connection with TIQ.TRA[41], in 2023, incentive activities for the construction of new transmission capacity and the promotion of investment cost efficiency continued, under which the following bonuses were determined for the electricity transmission grid operator:

- € 23.7 million for the construction of additional transmission capacity in 2022;
- € 12.8 million for investment cost efficiency;
- € 4.0 million in relation to investment cost efficiency and with reference to the incentive mechanism for the period 2016-2019.

In 2023, updates were also made and new measures introduced regarding output-based regulation of both the electricity transmission service and the commercial quality of electricity distribution and metering services, all effective as of 1 January 2024.

Tariffs for network connection and access

In 2023, ARERA started a reform of the regulation of connections to electricity grids in order to take into account the new evolutionary needs of the electricity system:

- large increase in connection requests, mostly from small fuel gas production plants;
- very large production plants, even offshore (off-shore wind);
- storage systems;
- charging facilities for electric mobility and parking in ports.

The process of reforming the regulation of connections to electricity grids will consist of several regulatory interventions aimed, on the one hand, at updating the Integrated Active Connections Text (TICA) and, on the other, at arriving at an Integrated Electricity Grid Connections Text (TICR-E).

40 Resolution of 28 November 2023, 555/2023/R/eel.
41 The effects of this mechanism expired on 31 December 2023.

General system charges for the electricity sector

2023 was characterised, for the electricity sector, by a gradual return to 'normality' with a gradual reactivation of the tariff components covering the general electricity sector charges borne by users, decided by the government in the face of a slowdown in energy commodity prices.

In summary, the following tables show the distribution of network charges (broken down for transmission, distribution and metering services) applied to household and non-household users in 2023 and the breakdown of general system charges between the different components applied to final customers.

TAB. 3.4 *Energy-intensive effect: energy-intensive subsidies and A_{ESOS} element (of the A_{SOS} component) to cover the same subsidiesge*

		NON ENERGY-INTENSIVE USERS (A_{ESOS} PAYERS)				ENERGY-INTENSIVE USERS			
	TYPES	(TWH)	(GW)	NO. WITHDRAWAL POINTS	A_{ESOS} (M€)	(TWH)	(GW)	NO. WITHDRAWAL POINTS	SUBSIDIES (M€)
Households	Residents	49,40	79,04	23.992.232	212,75	-	-	-	-
	Non-residents	6,87	20,49	6.065.740	29,58	-	-	-	-
	Total households	**56,26**	**99,53**	**30.057.973**	**242,33**	**-**	**-**	**-**	**-**
Non households	Customers for public lighting (medium and low voltage)	3,98	nd	nd	25,96	-	-	-	-
	Charging points for electric vehicles	0,08	0,47	10.959	0,73	-	-	-	-
	Non-household low voltage customers (excluding public lighting)	63,90	50,66	6.723.959	438,23	0,18	0,03	4.637	-3,33
	Medium voltage customers (excluding public lighting)	63,21	19,01	94.871	394,31	26,75	6,25	6.510	-565,89
	High and extra-high voltage customers (including railway traction consumption)	4,33	1,84	568	6,41	30,33	6,72	412	-763,91
	Extra-tariff income from contribution of energy-intensive companies in VAL class	0,00	0,00	-	-	0,00	0,00	-	180,52
	Total non-household	**135,51**	**71,99**	**6.830.357**	**865,63**	**57,25**	**13,01**	**11.559**	**-1.152,61**
	TOTAL	**191,77**	**171,52**	**36.888.330**	**1.107,96**	**57,25**	**13,01**	**11.559**	**-1.152,61**

Fonte: ARERA.

TAB. 3.5 *Fixed/variable distribution (including A_{ESOS} and energy-intensive subsidies)*

		A_{SOS}				A_{RIM}			
	TYPES	M€	% PER PP	% PER KW	%PER KWH	M€	% PER PP	% PER KW	%PER KWH
Households	Residents	934,36	0,00%	0,00%	100,00%	161,99	0,00%	0,00%	100,00%
	Non-residents	528,18	75,40%	0,00%	24,60%	22,52	0,00%	0,00%	100,00%
	Total households	**1.462,53**	**27,23%**	**0,00%**	**72,77%**	**184,52**	**0,00%**	**0,00%**	**100,00%**

(continued)

Non-households	Customers for public lighting (medium and low voltage)	157,48	0,00%	0,00%	100,00%	23,92	0,00%	0,00%	100,00%
	Charging points for electric vehicles	4,57	0,00%	0,00%	100,00%	1,33	0,00%	0,00%	100,00%
	Non-household low voltage customers (excluding public lighting)	2.641,79	2,30%	21,42%	76,28%	482,55	6,01%	62,42%	31,56%
	Medium voltage customers (excluding public lighting)	2.569,58	1,01%	9,21%	89,79%	412,89	4,16%	43,72%	52,12%
	High and extra-high voltage customers (including railway traction consumption)	53,79	4,54%	13,26%	82,20%	55,06	6,23%	76,29%	17,49%
	Extra-tariff income from contribution of energy-intensive companies in VAL class	180,52	-	-	-	-	-	-	-
	Total non-household	**5.607,73**	**1,64%**	**14,92%**	**83,44%**	**975,74**	**5,08%**	**53,68%**	**41,24%**
	TOTAL	**7.070,26**	**7,07%**	**11,75%**	**81,17%**	**1.160,26**	**4,28%**	**45,14%**	**50,58%**

Source: ARERA.

In the first three quarters of 2023, the government also confirmed what had already been established for the whole of 2022 with regard to the strengthening of social bonuses in both the electricity and gas sectors[42].

For information on the size of the group of households benefiting from the support measures described above, please refer to Chapter 10 of Volume 2 on Initiatives in favour of customers/users in economic hardship and serious health conditions.

The 2023 social bonus manoeuvres were only partly financed by new resources from the state budget (only for Q1 and Q4 limited to the 'extraordinary contribution') and the remainder was placed on resources available in the CSEA budget.

In implementation of the provisions of the legislation[43], with Report 243/2023/I/com ARERA provided the Government and the competent parliamentary commissions with the second report on the resources Allocated to price containment in the electricity and natural gas sectors in 2022. The Report describes the measures to support households and businesses in the face of the sustained increase in wholesale prices of natural gas and electricity by breaking them down into three groups:

• the first group concerns measures to counter the price crisis, which in particular provided for the reduction of general electricity charges;

• the second group concerns measures to counter the price crisis, which in particular provided for the reduction of general charges in the gas sector;

• the third group the manoeuvres to strengthen the social bonus in the electricity and gas sector.
Report 243/2023/I/com compared the collection requirement for each purpose of general system charges (or bonuses) and the utilisation, as far as possible represented on an accruals basis for 2022. In addition, Report 243/2023/I/com provides an account of the income and expenditure of CSEA's management accounts relating to general gas sector charges.

42 This was established for Q1 2023 by Resolution 735/2022/R/com (implementing the provisions of the 2023 Budget Law), for Q2 2023 by resolution 134/2023/R/com (implementing Decree-Law No. 34/23) and for the third quarter of 2023 by Resolution 297/2023/R/com (implementing Decree-Law No. 79/23).
43 Decree-Law No 17/22 and Decree-Law No 34/23.

These analyses showed that:

- from an economic point of view, the resources transferred from the state budget were not sufficient, in total, to cover the needs for 2022, particularly in relation to the electricity sector where lower prices in the last months of 2022 led to an increase in the ASOS component;

- from a financial point of view, in the first part of 2023 and further envisaged, there were significant disbursements from the resources provided by the State Budget to cover 2022 requirements with the manoeuvres mentioned above.

The regulatory framework of nuclear liabilities for the third regulatory period (2021-2026) was finalised in 2022. The 2023 Budget Law[44] stipulates that, starting 2023, nuclear charges will no longer be borne by electricity customers, but directly by the state budget, in any case leaving ARERA's powers in terms of determining nuclear charges on the basis of economic efficiency criteria unchanged.

The charges placed on the account fed by the Asos component pertaining to 2023 were affected by the downward trend of the PUN throughout the year, and were therefore higher than in 2022 by approximately € 700 million.

TAB. 3.6 *Fixed/variable distribution of network charges (transmission, distribution and metering tariffs)*

	TRANS		DIS		MET		UC3+UC6		GRID SERVICES					
TYPES	M€	%	M€	%	M€	%	M€	%	M€	%	% PER PP	% PER KW	% PER KWH	TOT
Total households	**492**	**24,3%**	**2.098**	**46,7%**	**526**	**76,1%**	**55**	**33,9%**	**3.172**	**43,1%**	**19,4%**	**63,3%**	**17,3%**	**100,0%**
Customers for public lighting (medium and low voltage)	35	1,7%	50	1,1%	3	0,5%	4	2,4%	92	1,2%	0,0%	0,0%	100,0%	100,0%
Nonhousehold low voltage customers (excluding public lighting)	554	27,4%	1.569	34,9%	139	20,1%	62	38,2%	2.324	31,6%	7,3%	64,4%	28,3%	100,0%
Medium voltage customers (excluding public lighting)	721	35,7%	748	16,7%	22	3,2%	35	21,3%	1.526	20,7%	4,1%	43,7%	52,2%	100,0%
High and extra-high voltage customers (including railway traction consumption)	218	10,8%	24	0,5%	1	0,1%	7	4,2%	250	3,4%	7,9%	76,8%	15,4%	100,0%
Total nonhousehold	**1.529**	**75,7%**	**2.391**	**53,3%**	**165**	**23,9%**	**107**	**66,1%**	**4.192**	**56,9%**	**6,0%**	**56,2%**	**37,8%**	**100,0%**
TOTAL	2.021	100,0%	4.489	100,0%	691	100,0%	162	100,0%	7.364	100,0%	11,8%	59,2%	29,0%	100,0%

Source: ARERA.

44 Article 1, paragraphs 20, 21 and 22.

With regard to the subsidies for energy-intensive businesses[45], based on the available data updated to 18 March 2024, the total subsidised energy in 2023 amounts to slightly more than 57.2 TWh respectively, for a total of 11,559 withdrawal points.

TAB. 3.8 *Details of renewable energy support charges under the Asos account, in millions of euros*

APPLICABLE CHARGES	2022		2023	
	VALUE	% SHARE	VALUE	% SHARE
CIP 6 renewable electricity trading	-	0,00%	-	0,00%
Collection of green certificates	28	0,42%	17	0,23%
Green certificate conversion to incentives	1.001	15,16%	3	0,04%
Photovoltaic	5.906	89,46%	5.800	78,92%
Dedicated withdrawal	0	0,00%	22	0,30%
All-inclusive feed in tariff	- 231	-3,50%	1.013	13,78%
On-the-spot trading	79	1,20%	176	2,40%
RES administered incentives	- 237	-3,58%	237	3,23%
Self-consumption and energy communities	- 0	0,00%	0	0,00%
Bioenergy	-	0,00%	77	1,04%
Other	3	0,05%	3	0,05%
Total renewables	**6.549**	**99,20%**	**7.348**	**100,00%**
CIP 6 assimilated electricity trading	-	0,00%	-	0,00%
CO2 assimilated charges	53	0,80%	-	0,00%
Coverage of assimilated green certificates	-	0,00%	-	0,00%
CIP 6 resolution	-	0,00%	-	0,00%
Total assimilated	**53**	**0,80%**	**-**	**0,00%**
TOTAL CHARGES A_{SOS}	**6.602**	**100%**	**7.348**	**100%**

Source: ARERA.

In the course of 2023, it was stipulated that in connection with the adjustment of existing environmental and energy aid schemes, as of 1 January 2024, the Member State is obliged to implement the appropriate facilitation measures in order to bring them into line with the new 'Climate, Environment and Energy State Aid Guidelines 2022' (CEEAG Guidelines) by submitting them to the European Commission for prior approval for the assessment of State aid compatibility. The CEEAG Guidelines contain numerous differences with respect to the Guidelines in place at the time of Decision C(2017) 3406 therefore Decree-Law No. 131 of 29 September 2023 gave provisions for the adaptation to the CEEAG Guidelines of the subsidies for energy-intensive companies which modify, compared to the current situation, both the access requirements and the intensity of the subsidies and which, among other things, introduce conditions that energy-intensive companies must comply with during the year of the subsidy and which must therefore be verified ex-post. As a result, ARERA started the procedure for the formation of implementing measures to define the rules for the implementation of the new provisions.

45 We would like to remind you that the reference framework has been in effect until 31 December 2023 as it is no longer in force following the entry into force of the new community rules.

EU Regulations and Plans for Network Development

The 2023 Electricity Transmission Grid Development Plan envisages total expenditure of around € 21 bil-lion for the period 2023-2032, marking a 17% increase over the 2021 Plan, which amounted to € 18 billion. New investments include the Hypergrid project, with an investment of around € 11 billion. Hypergrid aims to increase transmission capacity by around 15 GW through the adoption of direct current transmission (HVDC) technologies, reducing the impact on the territory and facilitating the authorisation of works. This project includes the modernisation of existing power lines and the construction of new 500 kV submarine links.

During 2023, ARERA also checked the consistency of the National Transmission Grid's Ten-Year Deve-lopment Plan with the European Ten-Year Plan (TYNDP); this activity was conducted parallel to that carried out by ACER, which concluded with the publication of ACER Opinion 04/2023, which found several short comings in the Italian projects[46]. ARERA also indicated its disagreement with all the calculations of the expected benefits for the 2022 TYNDP projects concerning Italy, due to the unrealistic assumptions concer-ning the plan scenarios.
The minimum requirements for consultation and preparation of the Development Plan were also updated, with the introduction of an experimental two-stage approach for the approval of priority projects. Finally, ARERA participated in the selection process of the first list of Projects of Common Interest (PCIs) and Projects of Mutual Interest (PMIs) of the new TEN-E[47] regulation, within the framework of the regional groups provided for by the regulation.

Environmental protection and innovation

In the area of promoting energy transition, electric mobility and decarbonisation, the following should be noted:

- Resolution No. 496/2023/R/com of 31 October 2023 updated the regulation to implement the provisions of the primary standard[48] on Guarantees of Origin (GO) and transparency of information to final customers on the energy mix and environmental impact of production.

- Resolution 634/2023/R/eel defining a series of initiatives to support electric mobility and the progressive decarbonisation of consumption.

Pilot projects and experiments

ARERA has promoted, between 2021 and 2023, an experimental initiative aimed at encouraging private recharging of electric vehicles, making 6 kW power available free of charge, during evening and holiday hourly bands, even to those with lower contracted power (up to 4.5 kW), provided they can prove that they have installed a *"smart wallbox"*[49].

46 The list can be found in paragraph 3.2 'European Regulations and Community Network Development Plans' in Volume 2.
47 Regulation (EU) 2022/869, the new "facilities" regulation Trans-European Networks for Energy TEN-E.
48 Ministerial Decree no. 224 of 14 July 2023.

Finally, work continued in 2023 on experiments for both global and local ancillary services. It should be noted that the former will be exhausted with the entry into force of the TIDE on 1 January 2025; from that date onwards, resources under UVAM will have to reapply for authorisation under the new aggregates (UVAN and UVAZ).

49 Deliberazione 541/2020/R/eel.

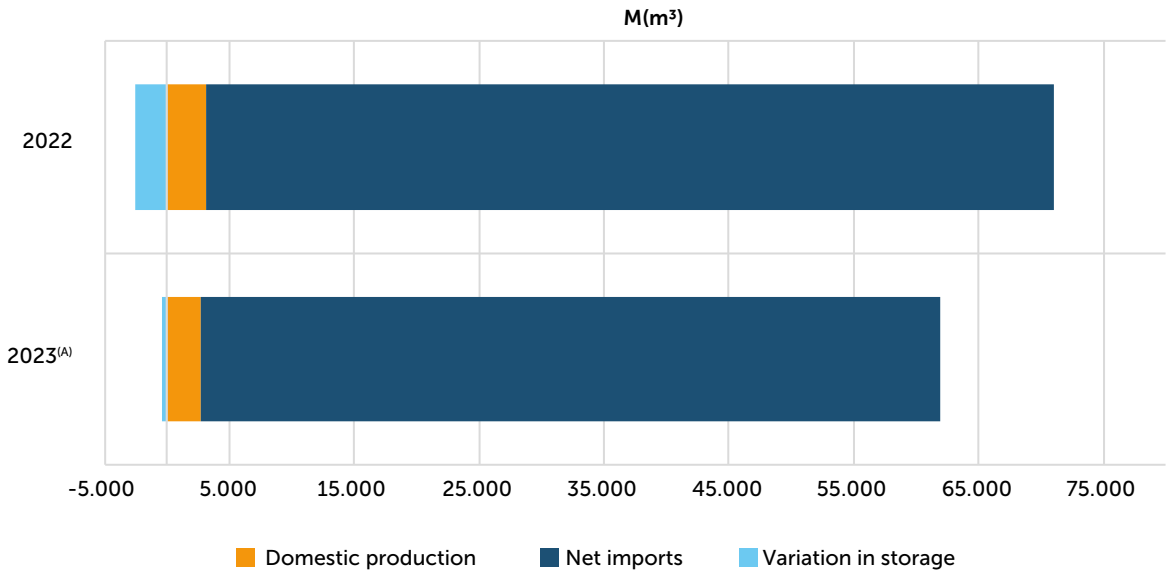
NATURAL GAS

State of services

Supply and demand of natural gas

In 2023, net natural gas consumption decreased by 7 billion cubic metres from the previous year (-10.4%), reaching 60.3 billion cubic metres from the 67.3 billion cubic metres recorded in 2022. The largest part of the contraction is attributable to the decline in thermoelectric generation (-18.5%, 5.2 bln m^3) and house-hold consumption (-12.9%, 2.4 bln m^3), while the change in industrial consumption was smaller (-4.6%, 0.6 bln m^3). Bucking the trend was the trade and services sector, whose rising consumption (+18.3%, 1.1 bln m^3) partially cushioned the overall decline. Domestic natural gas production recorded yet another decrease (-12.2%, significantly higher than the 2.7% decrease recorded in 2022) to 2,728 bln m^3; net imports also de-clined to 8.8 bln m^3 (-12.9% compared to 2022) due to the drop in gross imports, which fell by 10.8 bln m^3 (-14.8% compared to 2022), only partially offset by the reduction in exports (-2 bln m^3), which had expe-rienced somewhat anomalous growth in 2022.

Fig. 3.2 *Net natural gas consumption in the last two years*

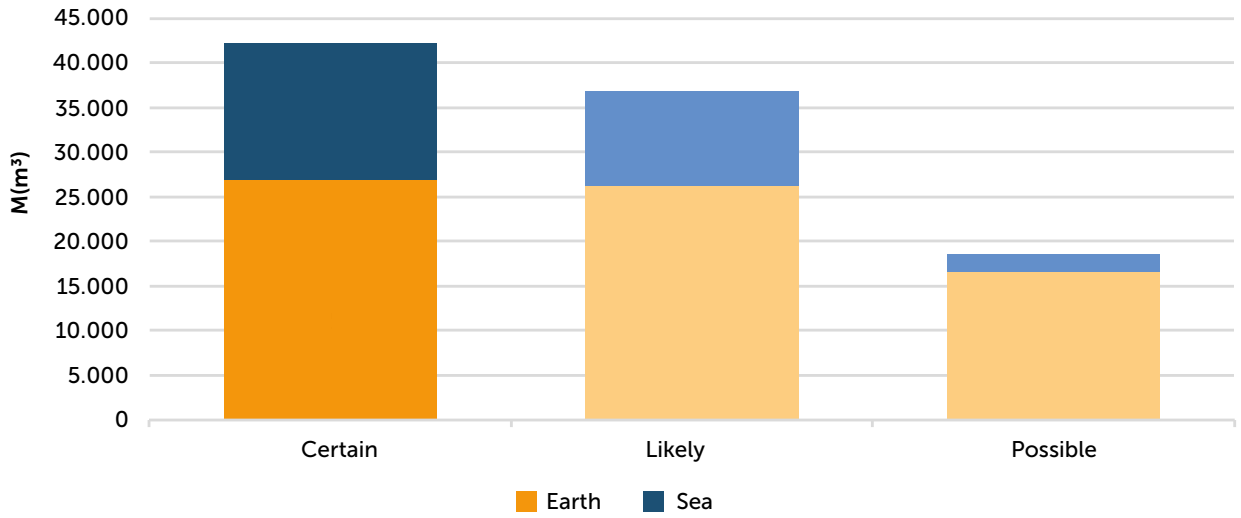


(A) *Provisional data - Source: Ministry of the Environment and Energy Security.*

As of 31 December 2023, the estimate of proven gas reserves is 41.8 bln m^3 and that of probable reserves is approximately 37 bln m^3. Compared to the data evaluated one year earlier[50], the former increased by 12.3%, while the latter decreased by 15.4%. The ENI Group controls 62.6% of production (66.3% in 2022). According to data from the Annual Energy Sector Survey, biomethane production in 2023 slightly exceeded 1[50] mln m^3, i.e. 5.2% of domestic production.

50 Gas reserves are estimated quantities that are defined, according to international classification, as "certain", "probable" or "possible" depending on the level of probability of being commercially produced under the technical, contractual, economic and operational conditions existing at the time of their evaluation. In particular, based on the available geological and reservoir engineering data, reserves are defined as 'certain' when this probability is greater than 90%, 'probable' when the degree of probability is greater than 50% and 'possible' when it is less than 50%.

FIG. 3.4 *Estimated natural gas resources in Italy as at 31 December 2023*



Source: Ministry of the Environment and Energy Security, Directorate General for Environmental and General Safety of Mining and Energy Activities.

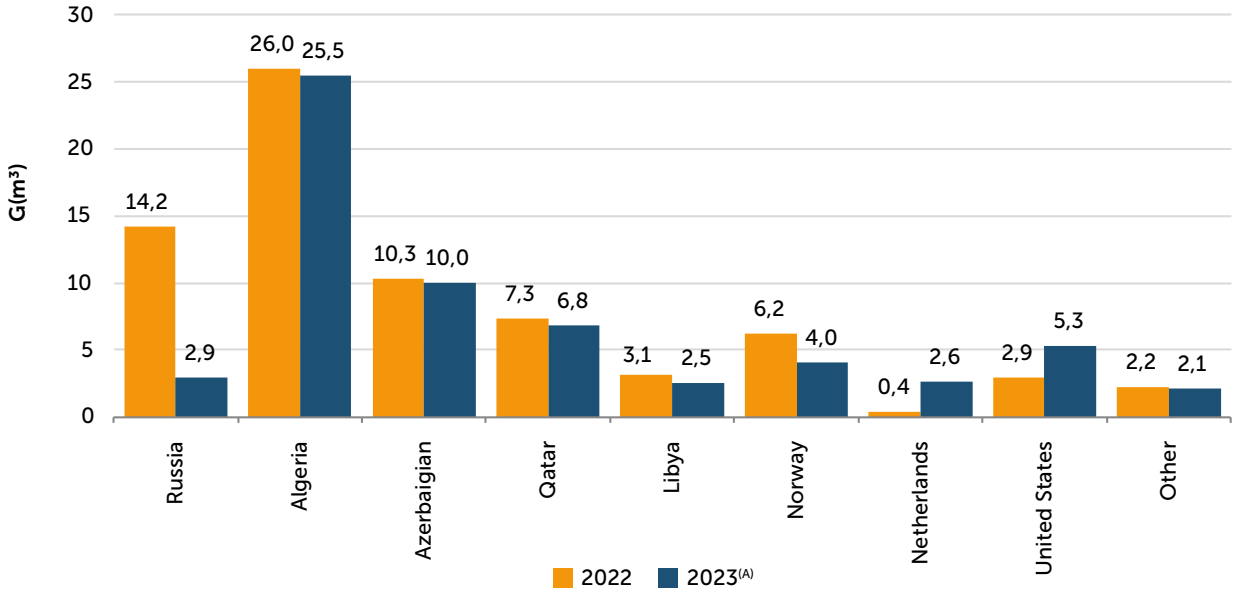
As anticipated, against the significant drop in consumption, gross imports fell to 61.8 bln m^3 from 72.6 bln m^3 in 2022 (-14.8%). As a result of the sanctions imposed by the EU on Russian exports in response to the war against Ukraine, gas imports from Russia have almost dropped to zero over the past two years: from 29.2 bln m^3 in 2021, they have fallen to 2.9 bln m^3 in 2023. The share of Russian gas in the coverage of national needs increased from 40% in 2021 to 4.7% in 2023. The substitution of Russian gas over the two-year period took place partly by increasing the amount of gas arriving in Italy via pipeline from other countries with which Italy is connected (mainly those from Algeria and Azerbaijan) and partly by increasing the share of liquid natural gas arriving in Italy via LNG carriers. LNG imports, in fact, have increased by almost 70% in two years.

In greater detail, the origin of imported gas in 2023 sees several countries[51] with significant quantities: 25.5 bln m^3 from Algeria, 10 bln m^3 from Azerbaijan, 6.8 bln m^3 from Qatar, 5.3 bln m^3 from the United States, 6.6 bln m^3 from Norway and the Netherlands, 2.5 bln m^3 from Libya and the remaining 2 bln m^3 from other countries.

In 2023, some 14.5 bln m^3 arrived by ship: 88% of all LNG imported came from Qatar, Algeria and the United States, which together accounted for 94% in 2021. In addition to these now traditional origins, cargoes from Spain (4.6%), Nigeria (1.7%) and Egypt were also important in the 2023 imports by ship.

51 Imports are broken down by country of physical origin of the gas and non-contractual one.

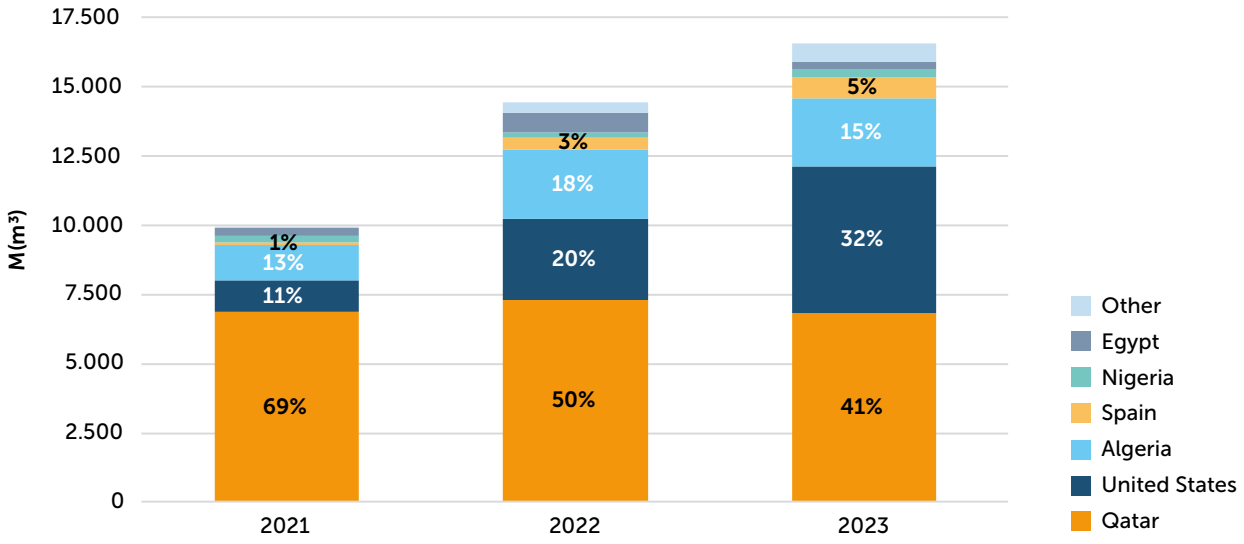
FIG. 3.5 *Gross gas imports in the last two years by origin*



(A) Preliminary data.

Source: Ministry of the Environment and Energy Security.

FIG. 3.6 *Countries of origin of LNG imports*



Source: Ministry of the Environment and Energy Security.

Despite the decline in overall imports, the share of gas imported via European exchanges remained largely unchanged compared to 2022. The list of the top twenty importers, drawn up on the basis of provisional data from ARERA's annual survey on energy sectors, shows no changes in the top three positions[52].

52 The differences with respect to ministerial data depend, in part, on the number of companies responding to ARERA's Annual Survey and, in part, on discrepancies in the classification of import data. It is likely that some quantities, which are classified as imports in the ministerial data, are considered as 'Purchases at the Italian border' in ARERA's investigation, in view of the customs clearance operations.

TAB. 3.3 Top twenty gas importers in Italy in 2023 (gross imports in millions of m^3)

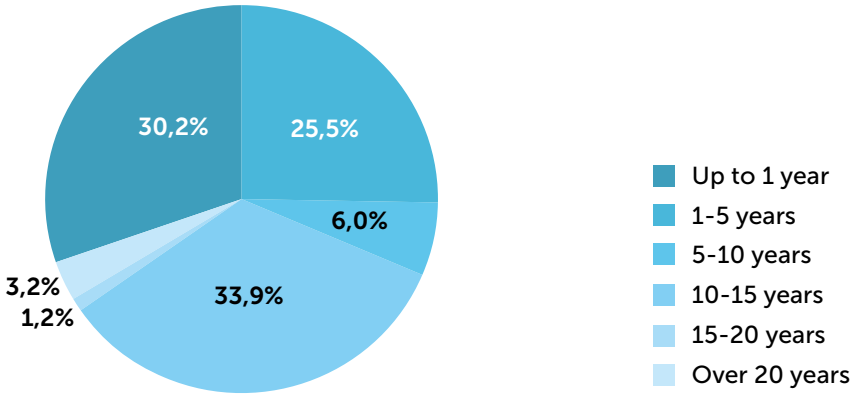
BUSINESS NAME	QUANTITY	SHARE	POSITION IN 2021
Eni	18.660	32,3%	1°
Edison	9.999	17,3%	2°
Azerbaijan Gas Supply Company Limited	8.138	14,1%	3°
Shell Energy Europe	4.665	8,1%	5°
Enel Global Trading	4.243	7,4%	4°
Gunvor International	2.956	5,1%	6°
Vitol	2.219	3,8%	7°
Exxonmobil Gas Marketing Europe	1.613	2,8%	9°
Bp Gas Marketing	1.030	1,8%	13°
Axpo Solutions	953	1,7%	11°
Engie Italia	582	1,0%	8°
Dxt Commodities	382	0,7%	10°
Enet Energy	331	0,6%	15°
A2A	290	0,5%	12°
Geoplin	269	0,5%	-
Hera Trading	239	0,4%	16°
Centrica Energy Trading	218	0,4%	18°
Uniper Global Commodities	185	0,3%	21°
Rwe Supply & Trading	171	0,3%	17°
Axpo Italia	141	0,2%	19°
Other	425	0,7%	-
TOTAL	**57.707**	**100%**	-
of which: Imports from European stock exchanges	3.805	6,6%	-
IMPORTS (Ministry of the Environment and Energy Security)	61.819	–	-

Source: ARERA, Annual survey on energy sectors.

The structure of import contracts (annual and multi-year) active in 2023 according to full term was substantially shortened, as has been the case for some years now: the share of long-term contracts (full term > 20 years) increased by one percentage point from 61.1% to 62%, the share of short-term imports (term < 5 years) rose sharply to 33.2% from 20.5% in 2022. In addition, the incidence of medium-term contracts (5-20 years) decreased significantly (from 18.4% to 4.8%), while that of spot imports[53], i.e. those with a duration of less than one year, increased slightly by approximately two percentage points to just under 21%.

53 It is worth mentioning that this was estimated, as in previous years, by excluding Annual Contract Quantities of spot contracts that did not give rise to imports in Italy, as the gas was resold directly abroad by the operator, active in Italy, who bought it.

FIG 3.8 *Structure of active import contracts in 2023, according to residual term*



Source: ARERA, Annual survey on energy sectors.

In terms of r**esidual life**, 55.7% of import contracts in place in 2023 will expire within the next five years (the same share was 32.4% in 2022) and 61.7% will expire within the next ten years. 4.4% of the contracts in force today have a residual life of more than 15 years (it was 39.3% in 2021 and 15% in 2022) and cover a total quantity of approximately 3.8 billion m^3.

Gas facilities

The reduction in natural gas consumption is, of course, also reflected in the data of the **transmission** volumes redelivered on the grids recorded a new significant drop of 11.8% in 2023, which follows the 3.6% drop shown last year, to 81.1 bln m^3 from 91.9 bln m^3 in 2022. The minus sign appears in all production sectors: industry (-4.5%), thermoelectric (-16.1%) and distribution plants (-7.5%). Snam rete gas controls 93% of the more than 35 thousand km that make up the Italian gas transmission system.

In Italy, the storage of natural gas is carried out under 15 concessions, 10 of which belong to Stogit wholly owned by the Snam group[54], 3 to Edison Stoccaggio and the last to Ital Gas Storage fully acquired in 2023 by F2i. There are three types of allocation:

- specifications for the capacities of gas producer storage, strategic and balancing services;
- through competitive auction procedures;
- through implicit allocation.

In the thermal year 2023-2024, 100% of the space offered at auction was allocated. As of 31 October 2023, the filling of the storage facilities amounted to 13.1 bln m^3 and the nominal peak delivery reached in the year was 260 million standard cubic metres/day: 247.5 million m^3/day in Stogit storage, 9.01 million m^3/day in Edison Stoccaggio and 3.47 million m^3/day in Ital Gas Storage.

54 Only nine of these concessions concern active storage sites.

Overall, the operators active in 2023 have **distributed** 25.6 bln m^3, reconfirming last year's negative trend, compared to which there was a decrease of 2.7 bln m^3. The number of final customers increased slightly to 21.9 million (21.8 million in 2022). The service was operated through 6,578 concessions in 7,359 Municipalities. The length of the networks increased further, by approximately 3 thousand km compared to 2022.

In terms of uses, 50.6% of customers use gas for both heating and cooking and/or for the production of domestic hot water; this category, which takes almost half (42.9%) of the total gas distributed in Italy, has a unit consumption of 992 m^3/year, 4.4% below that recorded for 2021 (1,038 m^3). The second most common type of customer (46.65%) is the use of gas for cooking and/or hot water production, to which 8.5% of the total is distributed, with a unit consumption of 213 m^3 (204 m^3 in 2021). Finally, gas users for heating purposes only (mostly centralised heating systems, equal to approximately 2%) also decreased, absorbing almost one-fifth of the gas distributed, with a unit consumption of 16,398 m^3, a decrease (-7%) compared to the previous year (17,624 m^3).

In 2023, there were 20.5 million households in the sector, who withdrew 11.85 billion m^3 or 46.3% 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 a significant share of 53.8% of all gas distributed in Italy and 94.5% of total customers.

Wholesale market

Overall, gas traded in the total supply market (wholesale and end market) in 2023 amounted to 253.6 billion m^3 (-13% compared to 2022): 53.2% supplied by wholesale suppliers, 4.7% by pure suppliers and 42.1% by mixed operators. Total deliveries to the PSV increased by 3.1% compared to 2022, from 115 to 118.6 bln m^3. In gas markets managed by the GME, total volumes of 155 TWh were traded (+35% compa-red to 2021). The prices recorded on the various platforms can all be traced back to an annual average of around € 42/MWh (it was € 124/MWh in 2022), in line with the annual average price of the PSV of € 43.05/MWh, down 65% compared with 2022 (€ 124/MWh; +165% compared with 2021).

End retail market

The provisional data of the Annual Survey of energy sectors showed that approximately 43 billion m^3 were sold in the retail market in 2023, in addition to 635 million m^3 supplied through last resort and default services. Overall, therefore, the value of final sales was 43.5 billion m^3, a decrease of 8.1 billion m^3 over 2022.

The level of concentration in the gas end-sale market in 2023, historically low in the sector, has de-creased compared to the previous year: the top three groups control 41.9%, whereas in 2022 the share was 44.3%. Looking at the ranking by total sales quantities, for the first time the Eni Group (13.7%) is not in first place, surpassed by the two historically trailing groups: Edison (14.3%) and Enel (13.9%).

The average price, net of tax, charged to final customers by suppliers in the retail market was 77.29 c€/m^3 (-30.5% compared to 2022), while the price charged by these suppliers to other resellers was 70.82 c€/m^3, 6.5 cents higher than that offered by wholesale suppliers as a whole.

TAB 3.34 *Final consumption of natural gas by consumption sector (volumes in M(m^3), redelivery points in thousands)*

CUSTOMER SECTOR	2022				2023			
	STANDARD OFFER SERVICE	FREE MARKET	SELF-CONSUMPTION	TOTAL	STANDARD OFFER SERVICE	FREE MARKET	SELF-CONSUMPTION	TOTAL
VOLUMI								
Household	4.219	8.987	0	13.205	3.043	8.685	0	11.728
Condo households	274	1.796	5	2.075	181	1.565	10	1.756
Trade and services	-	6.935	18	6.953	-	6.101	17	6.118
Industry	-	15.662	783	16.445	-	14.246	745	14.991
Power generation	-	12.473	13.273	25.746	-	8.449	11.364	19.813
Public service activities	-	581	0	581	-	569	0,441	569
TOTAL VOLUMES	4.493	46.434	14.079	65.006	3.224	39.615	12.135	54.974
PUNTI DI RICONSEGNA								
Household	6.864	13.782	0	20.646	5.678	14.676	0,0	20.354
Condo households	45	144	0	189	36	141	0,5	178
Trade and services	-	1.031	1	1.032	-	992	1,1	993
Industry	-	173	0	173	-	151	0,1	151
Power generation	-	1	0	1	-	1	0,1	1
Public service activities	-	42	0	42	-	48	0,0	48
TOTAL REDELIVERY POINTS	6.908	15.173	1	22.083	5.714	16.009	1,8	21.725

Source: ARERA, Annual survey on energy sectors.

In detail, in 2023 gas sales:

- to the household sector decreased by 27.9% in the standard offer service, and by 3.4% in the free market;
- to condominiums decreased by 34% in the standard offer service, and by 12.8% in the free market;
- to the industrial sector fell from 15.7 to 14.2 bln m^3 (-9%) and self-consumption fell by almost -2 bln m^3 (-4.8%), thus, overall, industry consumption in 2023 fell by 8.8%;
- to the thermoelectric sector decreased by 32.3% (-4 bln m^3), but self-consumption also recorded a drop of 1.9 bln m^3: taking both items into account, therefore, consumption in the sector came in 23% lower than in 2022;
- to the trade and services sector, both sales and self-consumption fell by 12%, an overall reduction of approximately 840 mln m^3;
- to public service activities fell by 13 mln m^3, quantifying the loss at 2.1%.

Considering only the household sector, it can be seen that the share of volumes purchased on the free market in 2023 reached 74.1% for households and 89.6% for condominiums (both values net of self-consumption). In terms of withdrawal points, in 2023, the share of households that acquired gas in the standard service dropped to 27.9%; in 2022, it was 33.2%.

In 2023, the overall switching rate55 was 15.2%, accounting for 17% of volumes. Compared to 2022, the percentages are increasing for all customers.

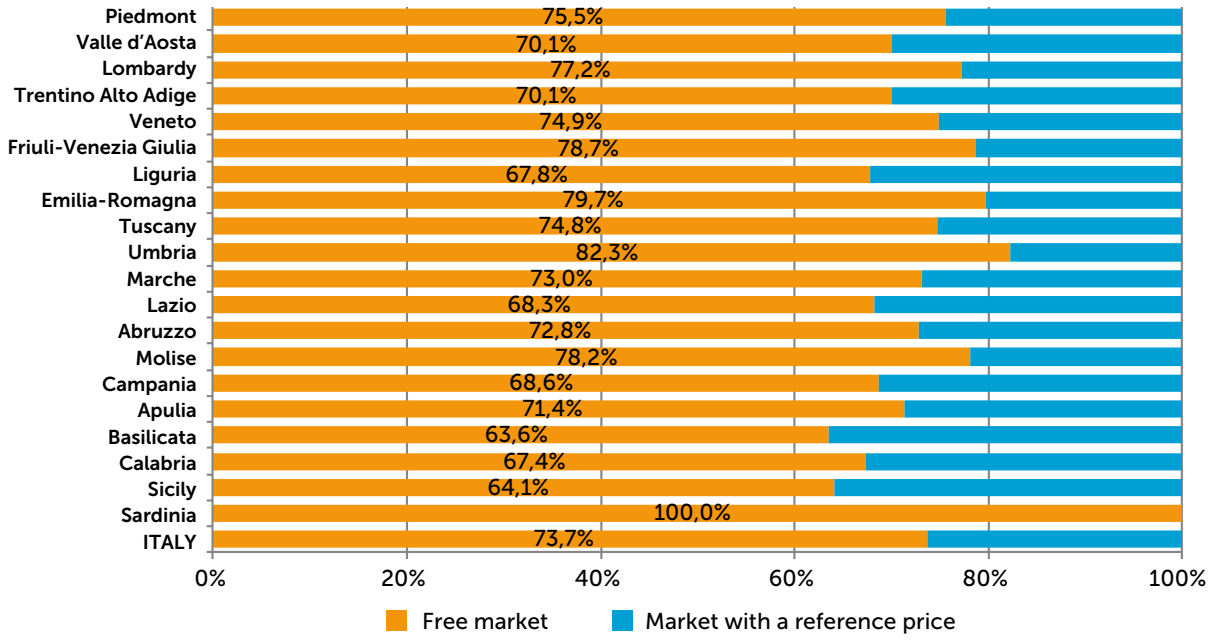
TAB. 3.6 *Switching rates of natural gas final customers*

CUSTOMERS BY SECTOR AND ANNUAL CONSUMPTION CLASS	2022		2023	
	CUSTOMERS	VOLUMES	CUSTOMERS	VOLUMES
Household	13,2%	15,5%	14,6%	20,9%
Condo households	24,2%	15,0%	27,6%	41,1%
Public service activities	37,1 %	20,4%	37,1%	57,2%
Other uses	19,9%	11,4%	21,2%	14,1%
TOTAL	13,8%	12,5%	15,2%	17,0%

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

Taking into account the number of customers at territorial level, it is possible to calculate regional average consumption values: the national average for household consumption is 656 m^3 and varies from 778 m^3 in the North (where climatic conditions are relatively colder and average unit consumption volumes are higher) to 554 m^3 in the Centre and 462 m^3 in the South and Islands.

FIG. 3.20 *Natural gas customers by region and market type in 2023*



Source: ARERA, Annual survey on energy sectors.

The average number of commercial offers that each gas supplier recommends to its potential customers is 17.1 for households (13.8 can only be subscribed online), 7 for condo households (3.1 online only) and 14.1 for nonhouseholds (4.9 online only).

55 Change of supplier.

22% of suppliers only submit their households one offer, 27% make up to three offers available and the remaining 51% of suppliers submit their customers a range of four offers or more. In 2022, the interest in online offers by households (13.4% of customers used this mode) and non-households - other uses (20.2%) grew, while the interest shown by apartment blocks (2%) remained low.

44% of households signed a fixed-price contract in the free market[56] while in the case of apartment blocks, variable-price contracts are by far the most popular (86.8%) and are also the type preferred by non-households (76.7%). Last year, variable-price contracts were less cheap for all types of customers, with the differential to fixedprice contracts very large for households and apartment blocks and smaller for non-households. Looking at the supply cost component of the price of these contracts, variable-price contracts are less convenient for all types of customers. However, the differential with a variable-price contract is ve-ry significant for non-households, while it is relatively small for condominiums and households.

TAB. 3.39 *Contracts for the supply of gas in the free market in 2023 by type of price and average price (percentage of customers having signed the indicated contracts)*

CONTRACTS	HOUSEHOLDS		CONDOMINIUMS		NON-HOUSEHOLDS	
	SHARE	PRICE(A) c€/m³	SHARE	PRICE(A) c€/m³	SHARE	PRICE(A) c€/m³
Fixed-price contracts	44,0%	104,48	13,2%	83,46	23,3%	85,32
Variable-price contracts	56,0%	94,03	86,8%	75,32	76,7%	59,23
TOTAL CUSTOMERS	**100%**	**96,18**	**100%**	**81,50**	**100%**	**62,94**

(A) Supply cost component.

Source: ARERA. Annual survey of regulated sectors.

For all customer types, the most frequent price indexation mode in variable-price contracts was the one linked to the PSV price trend, which, however, is not the one with the most advantageous economic conditions. Next, the type of variable price most chosen by households was that with indexation to the trend in TTF quotations, while for condominiums and non-households it was that with a discount on one of the components established by ARERA for the standard offer service.

40.2% 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 is applied to 59.9% of customers who chose a fixed-price contract and to 24.8% of customers who chose a variable price. Lower percentages are to be found for other customers: 18.2% of condominiums have signed a contract with a discount (62% with fixed price and 11.5% with variable price), while in the case of non-households, those with a contract with a discount in any form are 18.2% of the total (38% with fixed price and 11.9% with variable price).

56 In which the price does not change for at least one year from the time of subscription.

Prices and tariffs

Following the approval of the tariff regulation criteria for the transport and metering service of gas for the period 2024-2027, in May 2023 the tariff recommendations for the natural gas transportation charges submitted by the companies for the calendar year 2024[57] were approved. In 2023 ARERA also defined the criteria for regulating the **tariffs for the regassification service** of liquefied natural gas for the period 2024-2027 and, as a result, approved the tariff recommendations for the regassification service, relating to 2024, submitted by the companies: GNL Italia for the Panigaglia terminal; GNL Adriatico for the Rovigo plant; OLT Offshore LNG Toscana for the Livorno terminal; FSRU Italia for the Piombino terminal.

TAB. 3.47 *Regassification tariffs for terminal use in 2023*

CHARGE	METERING UNIT	PANIGAGLIA	ROVIGO	LIVORNO	PIOMBINO
Unitary commitment charge associated with contractual LNG quantities	**C_{qs} (€/m³ liquid/year)**	6,492768	20,830275	24,809480	11,467980
Unitary charge for coverage of restoration costs	**C_{rs} (€/m³ liquid/year)**	0,146999	-	0,086012	0,010854
% share covering consumption and losses paid by the terminal user	**Q_{CP} (per m³ delivered)**	1,66%	0,65%	0,99%	1,10%
Unitary charge to cover monetary costs associated with regassification chain consumption	**C_{CP} (€/m³ liquid/year)**	2,7694	-	-	-
Unitary charge to cover costs related to the Emissions Trading System	**C_{ETS} (€/m³ liquid/year)**	1,144695	0,623530	0,865152	1,039816

Source: ARERA.

Regarding **storage tariffs** for the period 1 April 2023 - 31 March 2024[58], ARERA set the CRVCS charge at 0.2519 c€/m³, while the following table summarises the auction results.

TAB. 3.49 *Outcome of storage capacity auctions for modulation services for the period 1 April 2023-31 March 2024 (capacity in GWh and prices in c€/kWh)*

COMPANY	CAPACITY CONFERRED	AVERAGE ALLOCATION PRICE
Stogit	73.364	0,592948
Edison Stoccaggio	9.525	0,699143
TOTAL	**82.889**	**0,605151**

Source: ARERA calculations based on Stogit and Edison Stoccaggio data.

The tariff regulation of natural gas distribution and metering services[59] for the period 2020-2025 was defined at the end of 2019 and is characterised, inter alia, by the following elements:

57 Please refer to Chapter 4 of Volume 1 for the valuation of charges and additional tariff components.
58 Paragraph 2.10 of Resolution of 30 March 2023, 134/2023/R/com.
59 For a detailed analysis, see chapter 4 of Volume 1.

- initial operating costs (2020) significantly lower than in 2019 and differentiated according to size of the distribution company and the density of the customers served;

- annual reduction in operating costs depending on the size of the company and between 3.53% for the operators with more than 300,000 redelivery points served, and 6.59%, for companies with less than 50,000 redelivery points served;

- identical rate of return on capital employed (WACC) for distribution and metering activities; for 2024 its value was set at 6.5%.

Last year, the average gas price net of taxes (weighted by quantities sold), charged **by supply companies to final customers** was a good 77 c€/m^3, a clear decline (-31%) on the previous year's level (111.2 c€/m^3). The decrease, due to the sharp drops in the cost of commodities in wholesale markets after the peaks reached in 2022, does not affect all customer categories in the same way, being related to their size class.

TAB. 3.53 *Retail market sales prices by consumption sector and customer size in 2023 (c€/m^3; annual consumption classes expressed in m^3)*

SECTOR	CUSTOMERS DISTRIBUTED BY ANNUAL CONSUMPTION CLASS						TOTAL
	< 5.000	5.000-50.000	50.000-200.000	200.000-2.000.000	2.000.000-20.000.000	> 20.000.000	
Household	99,7	85,8	78,1	72,0	-	-	99,5
Condo households	91,4	90,9	89,8	86,5	-	-	90,7
Public service activities	99,6	84,2	83,8	76,4	77,3	91,8	82,9
Trade and services	105,7	86,8	83,7	69,0	66,8	68,5	81,6
Industry	110,1	90,6	85,2	72,7	65,3	57,5	66,2
Power generation	94,8	81,8	79,3	69,4	63,9	55,8	57,6
TOTAL	100,2	88,5	85,0	71,3	65,3	56,7	77,0

Source: ARERA, Annual survey on energy sectors.

In 2023, the balance of convenience between the standard offer service and the free market for smaller customers (up to 5,000 m^3/year, predominantly single households) is reversed. This latter, in fact, in 2022 showed a lower price than the standard offer service (-17.6%) due to the major diffusion of locked-price contractual formulas that had delayed, for the time being, the transfer to final customers of the strong growth in gas commodity prices that occurred in the months that followed the outbreak of conflict. This transfer took place, at least in part, in 2023, when the price on the free market rose by more than 10%, while in the standard offer service it fell by almost 30%; consequently, last year, the convenience ratio was completely reabsorbed and reversed, as the free market returned to being more expensive (+28%).

In the two largest classes (consumption over 5,000 m^3/year), on the other hand, there is a drop in both markets, but this is not enough to change the convenience ratio, which remains favourable to the protection service, particularly for the intermediate class (between 5,000 and 50,000 m^3/year), made up almost entirely of

condominium users. This type of user also characterises the last class (between 50,000 and 200,000 m³/year), in which the two markets show a substantially identical price level over the past year.

TAB. 3.54 *Average end prices to household customers, by consumption class and market type (in c€/m³; annual consumption classes expressed in m³)*

ANNUAL CONSUMPTION CLASS AND MARKET	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Less than 5,000 m3											
Standard offer service	60,2	56,8	52,8	47,7	48,2	55,8	60,4	51,0	62,3	115,7	82,6
Free market	63,7	62,4	60,1	56,8	56,1	60,3	65,5	62,0	67,9	95,3	105,7
Differential	5,8%	10,0%	13,9%	19,2%	16,5%	8,1%	8,3%	21,8%	8,9%	-17,6%	28,0%
Between 5,000 and 50,000 m3											
Standard offer service	52,2	44,1	44,7	37,8	39,2	46,4	48,9	39,6	49,3	115,8	75,9
Free market	50,9	47,6	46,1	42,8	43,5	48,6	50,9	44,1	58,0	124,7	89,0
Differential	-2,4%	8,0%	3,1%	13,1%	11,1%	4,9%	4,1%	11,1%	17,7%	7,7%	17,3%
Between 50,000 and 200,000 m3											
Standard offer service	50,5	41,9	40,9	36,1	36,1	45,2	44,9	36,7	43,9	117,2	84,5
Free market	43,9	41,4	41,0	37,0	36,3	43,7	44,7	37,3	56,5	122,2	85,0
Differential	-13,0%	-1,1%	0,2%	2,6%	0,5%	-3,4%	-0,5%	1,6%	28,7%	4,3%	0,6%

Source: ARERA, Annual survey on energy sectors.

The development of the final price (including taxes) for households in the gas protection service (with an annual consumption of 1,400 m³) closely mirrors the development of the gas material component: after falling to around 108 c€/m³ in October 2022 thanks to extraordinary interventions on tariff components and temporary declines in the wholesale markets, it then rose to an all-time high of 151 c€/m³ in December 2022, before falling by half (75 c€/m³) as early as March 2023. The elimination of the negative tariff component (UG2c) from May onwards led to an increase to a level of around 90 c€/m³, which then re-mained substantially stable in the period from April to September. The usual autumn increase resulted in values of around 105 c€/m³ in October and November, while in December 2023, which is the last month of the standard offer service[60], they fell to 97.8 c€/m³. This is approximately 30% higher than pre-pandemic levels.

At December 2023, the price for an Italian household consuming 1,400 m³ gas and owning an individual heating system consists of 77.5% cost-covering components and the remaining 22.5% of taxes on natural gas (duty, regional surtax and VAT). The costs for the use of transport, distribution and metering facilities account for 26.7% of the total gas price, system charges[61] constitute a minimal share (1.1%), while the gas material (including sales costs) is the main item, accounting for about half of the total (49.7%).

As far as LPG is concerned[62], at 1 January 2024, the price for an Italian household consuming 200 m³ of LPG is 428.6 c€/m³ (407.6 c€/m³ in 2021) and is made up of 73.1% cost-covering components and the remaining 26.9% taxes. The cost of the commodity accounts for 23.4% of the total price, retail marketing for 4.2%, distribution on the local network for 26.1%, and transport costs upstream of the distribution plant for 19.4%.

60 As of 1 January 2024, the vulnerability protection service, reserved for certain categories of final customers (over 75, disabled, social bonus holders, inhabitants in emergency facilities following disasters), as provided for in Decree-Law No. 115 of 9 August 2022 converted by Law No. 142 of 21 September 2022.

61 The above classification reflects the aggregation of items provided for bills to final customers, as of 1 January 2016, by Resolution of 30 April 2015 200/2015/Rcom (Bill 2.0).

62 Liquefied petroleum gas.

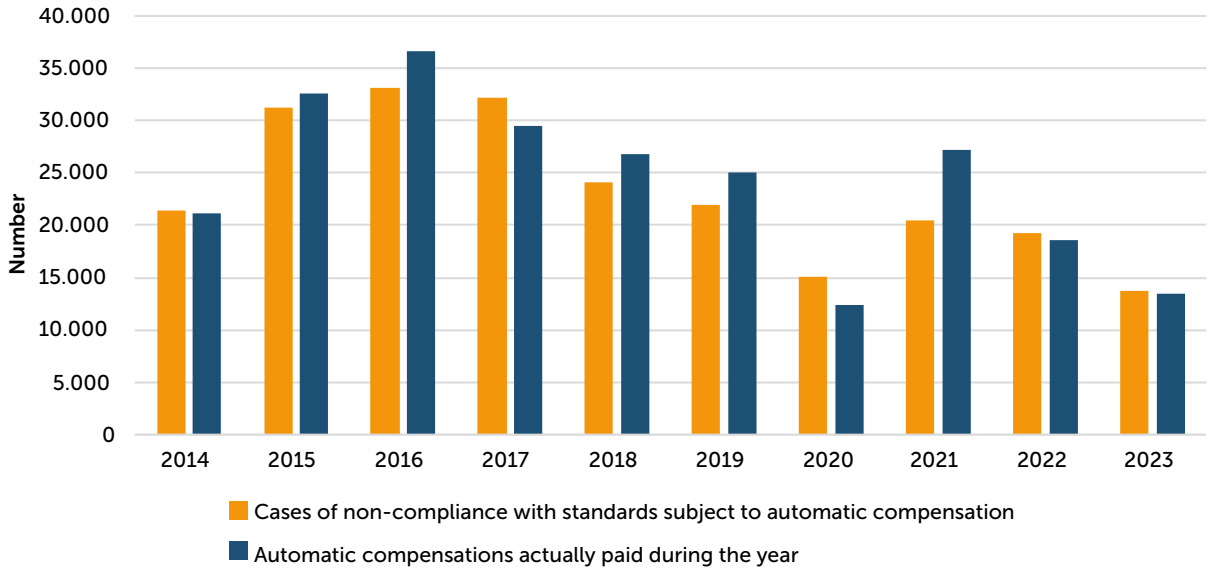
Quality of service

The regulation of the quality of the natural gas transmission service regulates the services required from transmission companies by service users, or final customers directly connected to the transmission network, through specific quality standards and the services subject to automatic compensation for transmission service users. In 2023, no automatic compensation was paid for non-compliance with commercial quality standards.

In the distribution sector, the average value for the arrival time at the place of call (telephone) is approxi-mately 38 minutes (37 minutes in 2022), with a compliance rate of a maximum delay of 60 minutes of 99.8% (the obligation is at least 90%). On the other hand, both the number of localised leaks following scheduled network inspections and those reported by third parties decreased. Safety inspections of new and modified utility installations showed effective handling of requests, with a significant number of posi-tive findings. The audits carried out by the municipalities confirmed the safety of the installations ascer-tained in 2022.

In 2023, non-compliance with commercial quality standards and automatic compensation paid to customers decreased: the punctuality band for customised appointments remains the most popular service. The performances subject to automatic compensation for low-pressure final customers with a metering unit up to class G6 were generally met on time. In 2023, against 13,696 cases of non-compliance with specific standards, 13,405 automatic compensations were made to final customers, for a total amount paid of approximately € 680 thousand.

FIG. 3.40 *Number of cases and automatic compensation paid for non-compliance with commercial quality standards*



Source: Declarations by distribution companies with more than 5,000 final customers to ARERA.

Similarly to the Commercial Quality measures of the electricity sales service, for final customers in the gas sector, indicators are in place that set maximum times for commercial quality services and, in the event of noncompliance with the standards, the customer automatically receives compensation in the first useful invoice (the value of the basic compensation is € 25).

As far as the gas sales service sector is concerned, the data reported by 401 suppliers (and relating to 19.1 million final customers) show that the actual average times for answers to complaints and bill adjustments (21.65 and 27.03 days respectively) for double bill adjustments (18.02 days) and for answers to requests for information (8.87 days) were respected.

In 2023, 169,739 written complaints were received, up 1.2% from the previous year, with 71.1% co-ming from households. There were 159,044 written requests for information, an increase of 11.9%. There were 9,341 bill adjustments, down 25.3%, with the majority coming from customers in the free market.

Finally, there were 22,165 cases of non-compliance with commercial standards in the gas sector that resulted in compensation, an increase of 36.2% compared to 2022. Most of the compensation was awarded for failure to respond to written complaints, with a total of over € 977,000 paid out, an in-crease of 39.9% compared to the previous year.

Activity carried out

Balancing services

In 2022, ARERA identified an overestimation of the provisional winter transport budget levies compared to the actual ones. In response, in January 2023, the Balancing Responsible Entity[63] was instructed to consider an estimate of the expected reduction in withdrawals at city gates and their countertrade[64]. In addition, the temporary suspension of supply interruption proceedings for final customers directly connected to the natural gas transmission network[65] was extended until 31 January 2023. Also in 2022, ARERA envisaged the extension to class G4 and G6 smart meters, as of 1 April 2023, of the monthly metering collection frequency already in force for larger gauges. Consequently, consultations and proceedings to implement the planned changes will take place during 2023.

63 Snam Rete Gas.
64 Art. 16 Integrated Gas Settlement Text (TISG).
65 Pursuant to Paragraph 25 of Article 1 of the 2023 Budget Law.

Transmission, storage and regassification services

ARERA extended the previous provisions to 30 September 2023[66] in order to facilitate the conclusion of new contracts on the market and to limit the risk of an increase of players in the default transmission service. This includes the monthly extension of transmission capacity, which can only be increased, and the possibility for new users to take over with the same capacity allocated in the previous month, without decreases. The measure also provided for the suspension of the 10% surcharge on the daily price charged to users without a valid correspondence report. In addition, a harmonised procedure was introduced for the booking of transportation capacities for thermoelectric and industrial users, through the adoption of the same allocation methods and timing, as well as the same products[67].

In light of the exceptional situation experienced by the natural gas market, ARERA has provided for a series of interventions to mitigate the financial impacts on the main transmission operator deriving from the subscription of instalment plans of amounts connected to the provision of the default transportation service with reference to the 2021 - 2022 and 2022 - 2023 thermal years.

Again in 2023, ARERA introduced further elements of flexibility in the use of transmission capacity, with the aim of eliminating uncertainties related to the effects of a possible early termination of the supply contract due to default by the final customer, also favouring the signing of contracts with a duration of less than one year. In addition, CSEA was mandated to pay Snam Rete Gas (as RdB) approximately € 1.4 million from the Fund to cover charges connected to the gas settlement system.

Finally, Consultation Document 588/2023/R/gas of 12 December 2023 envisaged the introduction of a Neutrality Charge, modelled on the German one, to cover the costs of the service of last resort with application from 1 April 2024[68]. On 31 December 2022, Council Regulation 2022/2576 entered into force to promote one-year temporary measures to counter the consequences of the Russia-Ukraine conflict on en-ergy markets. Taking into account the assessment submitted by Snam Rete Gas, ARERA exercised the right of derogation provided for in the Regulation. Still on the subject of interconnections with foreign countries, the regulations (contained in Resolution 137/02) on the subject of requesting access to transporter capaci-ty at points interconnected with foreign countries, other than points interconnected with countries belonging to the European Union and with Switzerland, and in particular for the Mazara del Vallo (connection with Algeria) and Gela (connection with Libya) points, were updated.

As far as the Trans Adriatic Pipeline is concerned, ARERA, jointly with the regulators of Greece (RAE) and Albania (ERE), approved the 'Market Test Guidelines 2023' regarding the launch of a new round of incremental capacity requests related to the development of the natural gas pipeline, which follows the same principles as the previous incremental capacity bidding procedures. In addition, again with RAE and ERE, the "Project Proposal" governing the 'binding second phase' of the Market Test for the TAP natural gas pi-peline started in 2021, has been approved. The Project Proposal, in particular, essentially describes the capacity levels offered, the general rules for the conduct of the procedure, the indications for future contracts, the guarantees to be provided by the parties and the economic parameters.

66 Resolution of 07 March 2023, 90/2023/R/gas.
67 Resolution of 18 July 2023, 319/2023/R/gas.
68 In implementation of Ministerial Decrees No. 253 of 22 June 2022 and No. 287 of 20 July 2022.

Provisions on the reform of capacity allocation processes at redelivery points of the transmission network were approved, providing for amendments and/or additions to Resolution 147/2019/R/gas of 16 April 2019, TIVG and RTTG[69].

ARERA has also updated and supplemented (also in the light of some reports received from users) the rules on the liability of distribution companies on the formation of what is termed the "delta in-out" or the difference between the quantities injected at the exit points of the transmission network interconnected with distribution networks (city gate) and the quantities withdrawn by final customers connected to the distribution network.

Regulation (EU) 2022/1032 of the European Parliament and of the Council of 29 June 2022, in order to co-pe with the crisis triggered by the conflict between Russia and Ukraine, defined mandatory minimum filling levels of European gas storages by providing for the possibility for Member States to take a number of measures to reach these filling levels. Consequently, measures were also introduced in Italy to deal with the consequences of the Russia-Ukraine conflict.

In 2023, the new regassification terminal operated by Snam FSRU[70] Italia, initially located in the port of Piombino, came into operation with an annual regassification capacity of approximately 4.5 billion Sm^3. With Resolution No. 28/2023/R/gas of 31 January 2023, ARERA approved the recommended procedure for the first allocation of regassification capacity at the terminal.

Again, during the year, several codes for transmission, storage and regassification services were updated, in order to incorporate new regulatory provisions, provisions of ARERA or management methods aimed at improving service provision.

Monitoring of the wholesale markets

In line with the provisions of the TIMMIG[71], the final costs incurred by the main transmission operator in 2022 for the monitoring of the natural gas wholesale market, the Activity Plan and the corresponding cost estimate submitted by the main transmission operator in connection with the wholesale gas market monitoring activity for 2024 were approved.

System security measures

In implementation of the provisions of the MiTE (now MASE), a mechanism was approved for a technical interruptibility service for withdrawals from the natural gas transmission and distribution networks, in addition to the interruptible supply contracts already in place and stipulated by operators, for entities that use natural gas for industrial purposes, including electricity generation only if it is functional to the production process in situ[72].

69 Resolution of 28 February 2023, 72/2023/R/gas.
70 FSRU - Floating Storage and Regassification Unit.
71 Integrated text on natural gas wholesale market monitoring adopted by Resolution 631/2018/R/gas of 5 December 2018.
72 By Resolution 563/2023/R/gas of 30 November 2023 implementing the provisions of Ministerial Decree 21 October 2022.

Quality of the transmission, storage, distribution and metering services

With reference to the provisions of the RMTG[73], ARERA ordered amendments to the RMTG in order to adapt the regulation to certain critical issues that emerged in the implementation of the reorganisation of the service. In addition, the procedure for the formation of measures on tariffs and quality of natural gas transportation service for the sixth regulatory period (6PRT) was initiated, highlighting, with reference to the quality of the transportation service, the advisability of assessing any needs to update the regulation in force in the 5PRT. In 2023, the criteria for regulating the quality of the natural gas storage service in force for the regulatory period 2020-2025 (RQSG 5PRS) were also approved, in substantial continuity with the previous regulation[74].

Further measures and activities in 2023 include: the commencement of proceedings for the determination of safety recovery bonuses and penalties for 2016 and 2017 and the completion of that for the period 2014-2019; the collection and provision of metering in the natural gas sector; and, finally, the amendments to RQDG[75] on natural gas metering service obligations.

Tariffs for network connection and access

During 2023, ARERA continued with tariff approvals, some of which are listed below. For the complete list, see Chapter 4 of Volume 2.

With Resolution 139/2023/R/gas of 4 April 2023, ARERA approved the tariff regulation for the natural gas transmission and metering service for the sixth regulatory period (RTTG 2024-2027), in force from 1 January 2024. In May, the tariff recommendations for natural gas transmission charges submitted by the companies for calendar year 2024 were approved[76].

After a consultation process, with Resolution 196/2023/R/gas of 9 May 2023, ARERA approved the tariff regulation criteria for the 6PR LNG regassification service (RTRG 2024-2027).

On 1 January 2023, the new version of the regulation of gas distribution and metering service tariffs (RTDG) for the regulatory period 2020-2025 came into force.

Finally, with Resolution 220/2023/R/gas of 23 May 2023, ARERA adopted provisions on the optimisation of biomethane connections and the simplification of connection directives[77].

73 Regulation of the metering service on the natural gas transmission network adopted by Resolution 512/2021/R/gas of 23 November 2021.
74 Resolution of 23 October 2019, 419/2019/R/gas.
75 Quality of distribution and metering services approved by Resolution 569/2019/R/gas.
76 Resolution of 30 May 2023, 234/2023/R/gas.
77 In implementation of the provisions of Article 37 of Legislative Decree No. 199 of 8 November 2021.

General system charges for the gas sector

In contrast to what was shown for electricity users, the components covering general gas charges were still cancelled until the end of 2023. Until April of the same year, the extraordinary negative component to the UG2c[78] tariff element was also confirmed, to be applied to the lowest consumption bands (up to 5,000 scm/y), which represented, in fact, a discount applied to all users for small consumption, both in the free market and in the market with a reference price.

In the document reporting on the use of the resources allocated by the Government in 2022 to cope with the effects of the energy price crisis[79], ARERA had also pointed out that, for 2023, with the resources already allocated for the first two quarters of 2023, there should have been an overall surplus. The charges envisaged for the cancellation of the general charges of the gas sector in Q3 and Q4 2023 were, therefore, placed on the resources already available at the CSEA. DL 79/23 also provided for the return of a portion of the same resources (amounting to € 489.31 million) to the State Budget and their use to finance the reduction of VAT on natural gas consumption for the third quarter of 2023. Finally, in the gas sector, it is worth mentioning a number of manoeuvres provided for by the Budget Law (Article 1, paragraphs 24 and 25), for a total of € 270 million, which, although not explicitly aimed at cancelling general charges, contributed to financing the requirements of the default transmission service charge account for 2023.

The measures relating to subsidies for natural gas-intensive businesses (referred to as "gas-intensive companies") include the fact that ARERA has instructed the CSEA to proceed, exceptionally for 2023, with the appropriate amendments to the "Gas-Intensive Procedures" concerning the collection of the amounts to be paid on account and in balance by gas-intensive companies having facility class VAL.

Ten-year network development plans

Following a specific public consultation, ARERA gave a positive assessment of the development intervention 'Upgrading for new imports from the South' (the "Adriatic Line")[80].

During 2023, ARERA also checked the consistency of the National Transmission Network's Ten-Year Development Plan with the European Ten-Year Plan (TYNDP); this activity was conducted parallel to that carried out by ACER, which concluded with the publication of ACER Opinion 06/2023 of 14 July 2023.

In implementation of Council of State Judgement 4241/2022, ARERA ordered the amendment of the minimum requirements for the consultation and assessment of Plans and for the cost-benefit analysis of natural gas transmission network development interventions[81]. Moreover, in application of the provisions of Legislative Decree No. 1997/2021 (Art. 37), ARERA has ordered certain amendments to the Minimum Requirements for the Preparation of Ten-Year Plans for the Development of the Natural Gas Transmission Network and for the Cost-Benefit Analysis (CBA) of the interventions[82].

78 Introduced by Resolution 148/2022/R/gas as of Q2 2022 and charged to the State Budget.
79 Report 243/2023/I/com.
80 Resolution of 21 March 2023, 108/2023/R/gas.
81 Resolution of 28 March 2023, 122/2023/R/gas.
82 see Annex A to Resolution 468/2018/R/gas of 27 September 2018, as amended and supplemented, see Minimum requirements.

Pilot projects and experiments

In 2023, following Resolution No. 404/2022/R/gas and Decision No. 9/22, pilot projects were launched to optimise the management and innovative use of natural gas facilities. ARERA received 26 project applications from 12 operators. The evaluation, based on 10 indicators divided into two macro-environments (experimental and prospective), involved experts from CIG, ENEA and RSE. Of the projects submitted, five were not accepted and 21 were approved with a total contribution of € 30.8 million. Since 2024, these experiments have entered the application phase.

Tenders per distribution service concession area

In 2023, ARERA adopted several measures concerning tenders for the scope of the gas distribution service concession. Analyses focused on the deviations between reimbursement value and RAB and the tender documentation of the contracting stations. ARERA commented on deviations of more than 10% for several areas, including Vicenza 4, Perugia 1, Bologna, Trento, Modena 2 and Vicenza 2. Data on assets as at 31 December 2020 and 2021 was also made available and the reference values for the calculation of the VIR-RAB indices were updated. The ongoing VIR-RAB variance assessment procedures were conducted via IT platforms and involve 69 contracting stations with a total of approximately 1467 municipalities[83].

83 A summary table of ongoing proceedings is available in Chapter 4 of Volume 2.

Appendix 2: Common aspects of the electricity and natural gas facilities regulation

In 2023, ARERA introduced new tariff regulation for facilities services in the electricity and gas sectors. This approach, called ROSS-base, aims at optimising the management of recognised costs by adopting the principle of tariff decoupling. Under this system, the fees for the use of facilities are separated from the allowed revenues of the companies, ensuring a balance through compensatory mechanisms. The compulsory tariffs for distribution services are a clear example of this structure.

The main new features introduced include:

- Duration of four-year regulatory periods;

- Efficiency incentives determined on the basis of the difference between the total baseline expenditure and actual expenditure. The incentives are divided into two components: operational efficiency and investment, with a 70% share for users and the remaining 30% for companies.

- Management of operating and investment costs for which companies can choose between a high-potential incentive (SAP) and a low-potential incentive (SBP). In addition, eligible expenditure is divided into two quotas: slow money and fast money, adding up to efficiency incentives.

- Regulatory alignment between sectors through homogenisation of regulatory criteria between the facilities services of the electricity and gas sectors, to avoid misalignments that could negatively impact capital allocation.

In 2023, ARERA also updated the value of the rate of return on capital employed (WACC) for the second regulatory period (II PWACC) from 2024 to 2027. The weighted average cost of capital (WACC) has been revised to reflect current macroeconomic and financial conditions in order to ensure adequate and sustainable remuneration for investors in the regulated sectors.

Main points related to PWACC II:

- Adjustments to country risk: The rate of return reflects country-specific risk conditions, considering the volatility of international and domestic financial markets.

- Inflation: The WACC adjustments take into account inflation forecasts for the regulatory period.

- Calculation criteria: The WACC calculation method includes a weighting between the cost of debt and the cost of equity capital, reflecting the average financial structure of regulated enterprises.

Finally, ARERA reiterated the importance of functional and accounting separation (unbundling) between the different activities of integrated energy companies. This approach is essential to ensure transparency and prevent discriminatory or anti-competitive practices.

Main aspects of unbundling:

- Functional unbundling: companies must operate distribution, transmission and sales activities independently of each other, both in organisational and accounting terms.

- Reporting obligations: companies must provide detailed reports on transactions between different divisions, to ensure that there are no cross-subsidies or competitive distortions.

- Monitoring and control: ARERA will intensify checks and controls to ensure compliance with the rules on unbundling, and taking corrective measures in the event of violations.

Appendix 3: The end of protection services and the tools available to final customers

Electricity market: standard offer and last resort services

Standard offer began as an electricity supply service for household and small business customers who had not signed a contract in the free market, ensuring continuity of supply and contractual quality at prices regulated by ARERA.

The path to overcoming the standard offer service had several milestones:

- From 1 January 2021, it was eliminated for small enterprises

- From 1 January 2023, the same measure was applied to micro-enterprises[84]

- From 1 July 2024 it will no longer be available for non-vulnerable households

Decree-Law 152/2021 had provided for a one-year transitional period to complete the competition procedures necessary for the allocation of the gradual standard offer service, which was extended to 10 January 2024 by Decree-Law 181/2023. During this period, customers remained in the standard offer service according to the guidelines of the then Minister of Ecological Transition (MiTE), now Minister of the Environment and Energy Security (MASE). With the Ministerial Decree of 17 May 2023, the gradual standard offer service was introduced to guarantee continuity of supply to non-vulnerable households who had not signed a contract in the free market

84 However, due to a technical extension, the standard protection service was extended until 31 March 2023.

when the standard protection service tariff was terminated. This service, regulated by ARERA, provides for these customers to be supplied with contractual conditions similar to PLACET offers, and the price of energy is aligned to the value of the commodity in the wholesale market (PUN ex post).

For customers classified as vulnerable, on the other hand, the legislator has ruled that, after the termination of the standard offer service, they are entitled to be supplied under the vulnerability service, with a price reflecting the cost of energy in the wholesale market and the efficient costs of marketing activities. These customers will continue to be served under the standard offer service until the new measures are fully implemented.
The safeguard service, for the two-year period 2023/2024, was assigned through competitive procedures (Resolution 454/2022). On 25 November 2022, the results were published, highlighting the exercising entities for each territorial area.

Gas market: standard offer, last resort and default services

Similarly to the standard offer service for electricity, the gas protection service was created to guarantee the supply of gas to households and small businesses that had not chosen a supplier in the free market. The law foresaw the abolition of the standard offer service for gas for non-vulnerable customers as of January 2024.

As of January 2024, non-vulnerable final customers ceased to be served under the protection regime. These customers received free market offers from their current suppliers, with the suppliers being obliged to recommend the cheapest offer in their portfolio. If customers did not accept the new conditions or did not sign a free market contract, they were automatically served according to the conditions of PLACET offers, characterised by:

- a variable component based on the wholesale price of natural gas (P_ING).
- an energy quota component comprising the CCR and QVD components.
- a fixed-rate component (P_FIX), freely defined by the supplier.

The economic conditions of these PLACET offers have a duration of 12 months, renewable automatically at the end of the period, with prior notice to the customer.

As of January 2024, vulnerable customers will be provided with specific supply conditions at economic terms similar to those of the protection service but with adjustments to reflect the actual cost of supply and the efficient costs of the marketing service.

With regard to the Default Transport Service (SdDT), following the reduction in natural gas prices compared to 2021-2022, ARERA adjusted the UG3FT and UG3T charge levels upwards for 2024 (which had previously been set at zero) in order to reduce the impact of high wholesale gas prices on the overall expenditure for the supply of natural gas for end users.

The supply service of last resort (SoLR) and the distribution default service (FD) in the natural gas sector ensure continuity of supply to final customers connected to the distribution network who, for various reasons, remain without a gas supplier. The SoLR serves small customers such as household customers, condo households and non-delinquent public utilities while the FD applies to larger customers not covered by the SoLR.

In 2023, the duration of the allocation of services was confirmed for two thermal years (1 October 2023 - 30 September 2025) and the overall regulatory framework adopted previously was confirmed, with a few spot changes:

- for vulnerable customers, the possibility of requesting activation of vulnerability protection service, if they cannot find a supplier in the free market willing to do so, and a ceiling has been set to the price paid by non-vulnerable customers (household and non-household) if the award prices should be higher than a threshold value defined by ARERA.

- the number of reinstatement sessions of the non-payment of bills mechanism of customers who can not be disconnected and customers with non-payment of bills for the distribution default service, moving from an annual session to two half-yearly ones.

- the range of information has been extended, which must be made available to those involved in insolvency proceedings, including data on vulnerable customers, to ensure greater transparency and facilitate better bid management.

- some requirements for participation in competitive procedures, in particular those of economic and financial soundness, integrity and professionalism, have been aligned with those provided for other services of last resort in the electricity sector, thus improving regulatory consistency between sectors.

Finally, in response to the non-allocation of area 9 (Sicily and Calabria) in the initial competitive procedures, a new extraordinary procedure was launched by Resolution 402/2023/R/gas to identify a supplier for this area. The results of this procedure were published on 15 September.

Tools available to final customers

In 2023, the "Portale Offerte" had a total of 2,504,504 unique visitors (+35.6% compared to 2022 and +190% compared to 2021); the number of users increased both in absolute terms and as a percentage of total visits. On average, last year the Portale had a monthly average of over 208 thousand unique visitors, with a peak in December of over 583 thousand users.

During 2023, significant changes were made to the usability and layout of the "Portale Offerte", with the dual aim of making it more user-friendly and providing as much useful information as possible; instead, no technological adjustments were necessary. As of 31 December 2023, there were 2,170 PLACET offers in the Portale Offerte.

In 2023, new functions were also added to the Portale Consumi such as the indication of maximum power consumption and data access to third parties authorised by final customers.

On the subject of disclosure obligations on the part of operators, as of 1 January 2023, free-market suppliers must include information on the rights of vulnerable customers and their conditions in the bills of their households.
This communication, defined by ARERA, is mandatory in bills issued between December 2023 and June 2024, and at least once a year from 1 January 2025.

In 2023, ARERA updated the Code of Business Conduct, introducing new provisions on early withdrawal charges and information obligations when renewing economic conditions to improve information and empowerment of final customers, facilitating informed choices and active participation in the free market.

Last year, the update of Bill 2.0 was initiated with the aim of simplifying, making it more understandable and standardising bills for final customers.

The recommended structure of Bill 2.0 includes:

- Unified title page: Mandatory front page with a uniform structure for all customers, containing key information.

- Essential elements: Part following the Unified title page, replacing the current summary bill.

- Details: They continue to report analytical information on the amounts invoiced.

ARERA also recommended three alternative models for the display of invoiced amounts:

- Model 1: A single item of expenditure for the supply of electricity or natural gas, with any social bonuses and additional services included.

- Model 2: Expenditure divided into a variable and fixed share, with a possible power share for electricity.

- Model 3: Detailed amounts for each quota (variable, fixed and power) and individual unitary charges.

Finally, further elements of transparency were recommended, such as synthetic price indicators, a breakdown of consumption by hourly bands (for differentiated contracts) and details for negative energy input for customers with production or storage facilities.

Following numerous meetings with the associations of household and non-households and operators and several in-depth studies (including a public opinion survey), ARERA considered it appropriate to provide for a further consultation phase, in the course of 2024.

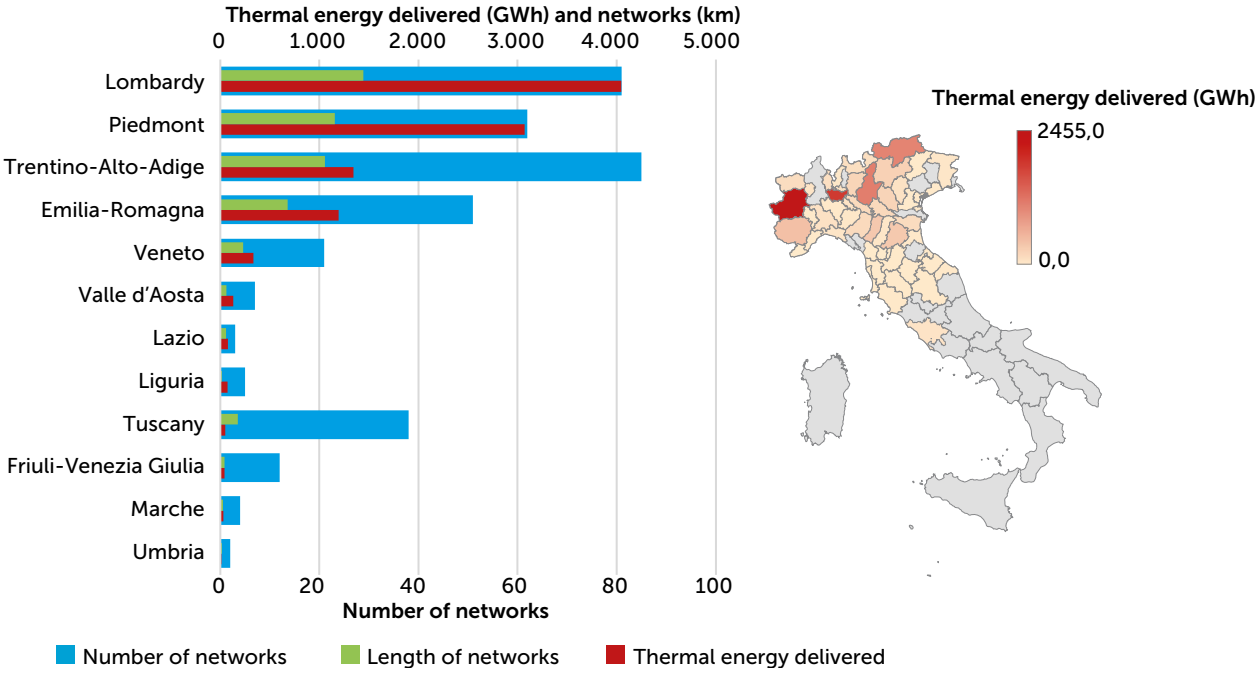
ENVIRONMENTAL SEGMENTS

DISTRICT HEATING

State of services

Although they are very common in some North-Eastern European countries, in Italy the spread of district heating systems is limited[85] but with a historically growing trend: the increase in the extension of the networks recorded in 2022 was 122 km while the connected volume grew by 2.8% (in both cases, there was a slowdown in growth compared to previous years).

FIG. 4.2. *Geographical distribution of district heating networks in 2021 (number of networks, extension and thermal energy delivered in GWh)*



Source: ARERA, Registries and data collection.

In 2022, thermal power stations serving district heating networks produced 11,515 thermal GWh, 6,535 electric GWh and 167 refrigeration GWh. Compared to the previous year, the heat supplied to customers dropped significantly (-8.2%), as did the electricity produced by power plants serving district heating net-works and fed into the national grid (-9.3%); the supply of cooling energy to district heating customers, on the other hand, recorded a double-digit increase (26.8%). Natural gas remains the clearly predominant energy source with 69.8% of total energy consumption; of the other sources, a significant contribution co-mes from waste (16.1%) and bioenergy (biomass, biogas and bioliquids, at 10.7%).

85 The 5 regions of the North in which they are most widespread (Lombardy, Piedmont, Trentino-Alto Adige, Emilia Romagna and Veneto), alone represent more than 96% of the thermal energy dispensed by district heating systems.

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, whilst use in industrial processes is only marginal. A significant share of the market consists of residential (64.0%) and tertiary (33.2%) users, 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 in number, account for a large share of total consumption (over 50%)[86].

The number of companies operating on district heating networks was 255: of these, 86% generally deal with activities that are strictly linked to the operation of networks and 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[87].

Following the significant increase in district heating service prices recorded from the last quarter of 2021 onwards, ARERA launched a factfinding investigation to assess its appropriateness.

The supply price of the district heating service, before ARERA's intervention, was freely defined by each operator on the basis of the features of its district heating system, its users and the territory served. Of the two main pricing methods, based on costs incurred (the aim of ensuring the operator's economic and financial equilibrium and guaranteeing an adequate return on invested capital) or on avoided cost (the aim of providing users with an affordable service price compared to the cost they would have incurred by using an alternative air-conditioning technology), the former was the most widespread and led to an increase in the average service price from € 81/MWh in 2020, to € 93/MWh in 2021, and to € 155/MWh in 2022.

The factfinding investigation revealed potential critical issues in relation to both market dynamics and, limited to some contexts, the fairness of the prices charged. In particular, with reference to mar-ket dynamics, the prices charged by district heating service operators were generally higher than the cost of providing an equivalent service through a gas boiler. Regarding the fairness of the prices charged, on the other hand, in some networks, characterised by significant use of waste-to-energy plants for the production of thermal energy, there has been a progressive misalignment between ser-vice costs and revenues. The growth in revenues, resulting from the use of the avoided cost method for pricing, was not followed by a corresponding growth in variable production costs.

In light of the findings yielded by the factfinding investigation, ARERA brought to the attention of the Parliament and the Government[88] the advisability of introducing a cost-reflective regulation of district heating service prices, so as to simultaneously overcome the critical issues encountered in the functioning of the market and ensure fairness in service prices. In district heating systems with lower thermal energy production costs, it would also be possible to pass on part of the benefits to the users, with positive social and economic effects. The guarantee for operators to recover their costs and to obtain an adequate rate of return on their invested capital could, moreover, ensure a favourable envi-ronment for further development of the sector, even where there is a reduction in the service prices.
The legislator intervened with Law No. 41 of 21 April 2023, which amended the provisions of Legislative Decree No. 102 of 4 July 2014, providing for the application of regulated tariffs for the generality of district heating

86 Source: AIRU.
87 The number of district heating operators offering a district cooling service is still small, approximately 12% of the total, and for some the service covers only limited portions of the area served by district heating networks.
88 Report 568/2022/I/tlr.

networks.

As far as the price of providing the district cooling service is concerned, this is in all cases determined on the basis of the avoided cost method. The reference technology is generally a cooling system powered by electricity, although there are also cases where the alternative technology taken as a reference is an absorption cooling unit (typically a direct flame system powered by natural gas).

With similar dynamics as in the case of district heating, in the formula for pricing with the avoided cost method, the most relevant variables are the performance of the alternative reference plant and the assu-mptions for pricing electricity (or gas), in relation to which there are considerable differences between the different operators. As far as the price of electricity is concerned, most operators refer to the prices of the protection service published by ARERA; alternatively, average energy prices as shown in the bills of individual users are used.

As far as the regulation of commercial quality and metering, connection and transparency are concerned, ARERA has laid down specific disclosure obligations for operators to monitor the quality of service and compliance with minimum standards. Last year, data referring to 2022 of 136 operators (26 larger, 76 me-dium-sized and 34 micromerchants), which had supplied thermal energy totalling 9,025 GWh to 126,353 users in 2022, was analysed.

Activity carried out

Law No. 41 of 21 April 2023, introducing Article 47 bis into Decree-Law No. 13 of 24 February 2023, amended the provisions of Legislative Decree No. 102/14, extending the powers attributed to ARERA in the regulation of the sector, through the introduction of a cost-reflective regulation of tariffs for the generality of district heating networks. In particular, as a result of the aforementioned legislative change, Article 10, paragraph 17, letter e) of Legislative Decree 102/14 stipulates that ARERA shall establish the heat transfer tariffs, so as to harmonise the economic-financial objectives of the entities providing the service with the general objectives of a social nature, environmental protection and efficient use of resources. This regulatory intervention followed Report No. 568/2022/I/tlr, with which ARERA had brought to the attention of Parliament and the Government the advisability of introducing a regulated price regime for the district heating service, in light of the results of the fact-finding investigation conducted by the same in the course of 2022 in order to assess the appropriateness of the prices of said service, the results of which were illustrated in Volume 2 of the previous 2023 Annual Report.

In defining the tariff method, in keeping with the provisions of Article 10, paragraph 18, of Legislative Decree 102/14, which requires the adoption of gradualness in the regulatory intervention, ARERA has chosen to adopt a multi-phase approach, so as to combine the protection needs of users with the maintenance of conditions of economic-financial balance of the operators, deciding:

- to define, for the transitional period (between 1 January 2024 and 31 December 2024), a criterion for the establishment of a revenue constraint based on avoided cost logic (the cost of the cheapest alternative heating service available on the market), in order to ensure the application of prices consistent with a

competitive market for heating services;

• to introduce, as of 1 January 2025, a revenue constraint determined on the basis of efficient service delivery costs.

The tariff method applicable during the transitional period (referred to as the "MTL-T") was approved by Resolution 638/2023/R/tlr. While confirming the application of avoided cost logic, in line with what most operators in the sector have done in the past, ARERA has nevertheless adopted specific corrective measures so as to resolve the main critical aspects of the methodologies previously used, which were highlighted during the fact-finding investigation.

Firstly, ARERA made changes to the method of calculating the avoided cost, providing for the use of parameters that were more representative of the costs actually incurred by users (in particular, the use of boiler efficiencies in line with condensing models currently available on the market).

A further correction concerns the application of a cap to the maximum avoided cost value for the share of thermal energy produced by plants fuelled by sources other than natural gas. This ensures a correlation between the costs and revenues of operators, even in the presence of peaks in natural gas prices, unlike during the 2022 energy crisis.

During 2023, ARERA also intervened in the regulation of technical quality and service transparency obligations.

As far as the regulation of technical quality is concerned, ARERA has provided for a strengthening of measures to protect power interruption standards, with the introduction of a specific continuity standard for the maximum duration of unscheduled interruptions, equal to 12 hours in the winter period and 24 in the summer period.

On the other hand, as far as service transparency is concerned, ARERA has introduced specific infor-mation obligations on the environmental performance of district heating networks, in addition to the obliga-tions already laid down on price transparency and the minimum content of service provision con-tracts.

INTEGRATED WATER SERVICE

State of services

Technical quality

Starting "Starting in" o "Since" 2018, ARERA introduced a specific regulation on the technical quality of the integrated water service (SII)[89], based on a mechanism of "bonuses-penalties" associated with the achievement of objectives set by "macro-indicators", with the intention of promoting a continuous improvement in the quality of the service provided to the users of the integrated water service.

Since the start of the technical quality regulation, three specific surveys have been carried out to collect the main data on the facilities aspects and the technical quality of the integrated water service. The most recent one was completed on 30 April 2024 and concerned the collection of final technical data for the years 2022 and 2023[90].

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 measure of 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

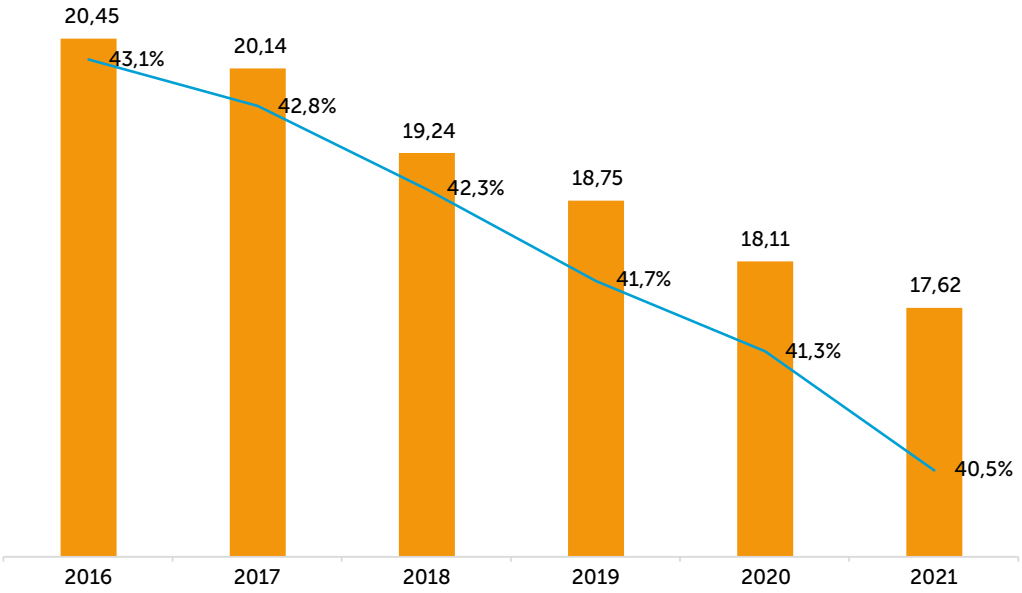
As already noted in the last version of the Annual Report, compared with the data collected with reference to the base year (2016), there would appear to be progress made in the process of comprehensive improvement in the technical quality indicators identified by ARERA and a slight but stable growth in the number of operators for which facility and quality data is periodically surveyed by the governing Bodies, al-so with reference to the localised management teams in the geographical area of the South and islands.

Specifically, at the national level, in 2023 the value of water leakage (M1) averages at 17.9 m^3/km/day (M1a-Linear leakage indicator) and at 41.8% (M1b-Percentage leakage indicator), with lower values in the North and higher average values in the Centre and the South and Islands. Compared to the base year data, there were average reductions in leakage of 12% for M1a and 4.4% for M1b. It is believed that the, albeit not insignificant, improvements shown so far in the Annual Reports, specifically for macro-indicator M1 but also for the other quality macroindicators, underestimate the actual results due to the entry of less advan-ced managements in the sample.
An 'isoperimeter' analysis of the performance achieved was therefore carried out for the macro-indicator M1

89 Resolution 917/2017/R/idr on the "Regulation of the technical quality of the Integrated Water Service or of each of the individual services comprising it (RQTI)".
90 Resolution of 06 February 2024, 39/2024/R/idr.

in the period between 2016 and 2021, constructing an ad hoc sample that included only the managements for which the data are present in ARERA's datasets for all the aforementioned years, with the precaution of excluding the managements that have significantly modified the territory managed, while the managements that, over time, have included portions of territory less relevant than that originally served were left. This analysis shows higher improvements in the reduction of network leakage, equal to -14% for the M1a indicator and -6% for the M1b indicator.

FIG. 5.4. *Trend line of values assumed by macro-indicator M1 over time*



Source: ARERA, processing of internal data.

The technical quality regulation stipulates that the reliability and trustworthiness of the data used for the determination of this macro-indicator on network leakages shall be verified, for each management, through the adoption of a specific prerequisite which requires that at least 70% of the total process volu-mes are subject to measurement and that at least 90% of the total user volumes are derived from the reading of a meter installed at the user's premises. In 2023, high volume measurement rates were recorded at the national level, with reference to both the process measure (92.1%) and the user measure (95.5%)[91].

As regards service interruptions (M2), 60% of the population is served by operators that have ensured a good continuity of service, showing a duration of interruptions of less than 3 hours/year per user. On ave-rage, however, at the national level, the value of the macro-indicator is around 59 hours/year per user. The greatest difficulties in maintaining adequate levels of service continuity are to be found in the South and Islands area, where an average value of interruptions per user per year of 227 hours was recorded, while values were on average lower in the North West and North East (both below one hour) and in the Centre (29.4 hours/year per user, the figure, however, suffers the negative performance of just 2 managements). It should be noted, however, that compared to the base year data, there was an average reduction in the M2 macro-indicator of 26%.

The analysis of data on the indicator of the quality of water supplied (M3)[92] shows, overall, good improvements compared to the initial situation in 2016. The average value of the incidence of non-potability orders is 0.071%

91 On the subject of metering, a specific regulation introduced in 2016 with Resolution 218/2016/R/idr, entitled "Regulation of the metering service within the integrated water service at national level "(TIMSII), most recently renewed with Resolution 609/2021/R/idr, entitled "Integration of the regulations on the metering of the Integrated water service (TIMSII)".

with rates of non-compliant samples and parameters of 3.39% and 0.22% respectively. 26% of the population, are in optimal conditions and 51% in an intermediate situation, while 15% are served by operators for whom significant impacts have been recorded in terms of the number and/or duration of non-potability orders during the year. Compared to the base year data, there were average reductions of 78% for M3a, 26% for M3b and 38% for M3c. The number of operators that have adopted, even partially and/or only on a limited portion of the served territory, the Water Safety Plan model[93], is increasing: in terms of users served, the application of such WSP model averages out at 30%, with local differences.

As regards the sewerage service (M4), the average figure for the frequency of flooding and sewerage spills is 5.0 per 100 km of sewerage network (with a peak of 11 per 100 km in the South and Islands), 22% of the flood drains are still to be adapted to current regulations (M4b indicator) and 7% of the flood drains are not controlled. Compared to the base year data, there were average reductions of 58% for M4a, 4% for M4b and 77% for M4c.

In 2023, at the national level, the production of sludge from water treatment plants (M5)[94] amounted to 424,836 tonnes of dry matter: the rate of allocation to landfills of the same was 7.5% of the total sludge produced, although with very different levels between the different geographical areas (in the North-West it was 0.6%, in the North-East and the Centre the values were close to 12%, and the figure was 9.6% for the South and Islands area). Compared to the base year survey, the sludge recovery rate increased (-62% of sludge disposed of in land-fills).

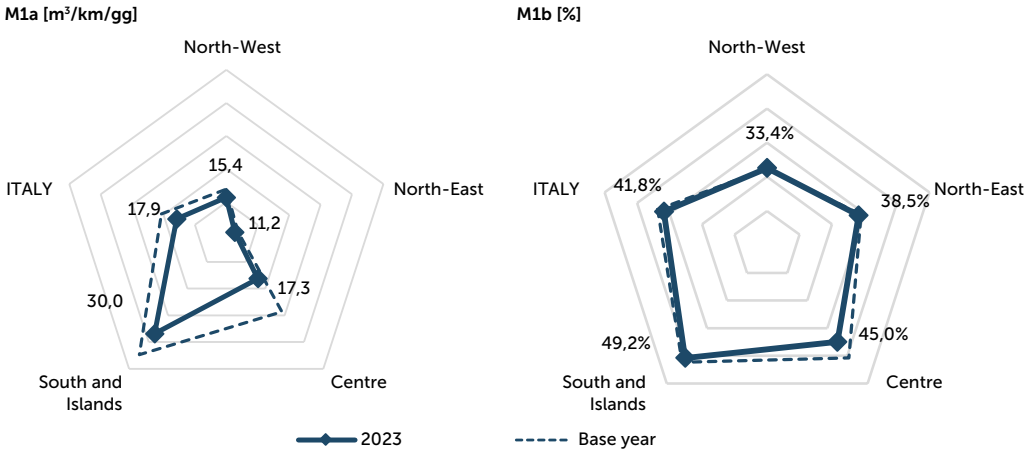
Regarding the environmental impact related to the discharge of purified wastewater (M6), compared to the regulation start-up phase, an improvement in the results achieved can be noted: the national average value assumed by the macro-indicator is 7.1%, highlighting an average reduction, compared with the base year figures, of 44%.

92 For the assessment of this macro-indicator, the presence and magnitude of non-potability ordinances and the rate of non-compliance are considered.

93 Introduced in Italy by the Decree of the Ministry of Health of 14 June 2017 and now reinforced in Legislative Decree no. 18/2023. The innovation associated with these plans is the introduction of a preventive approach - based on risk analysis - in the management of water supply network systems, replacing the current reactive management method.

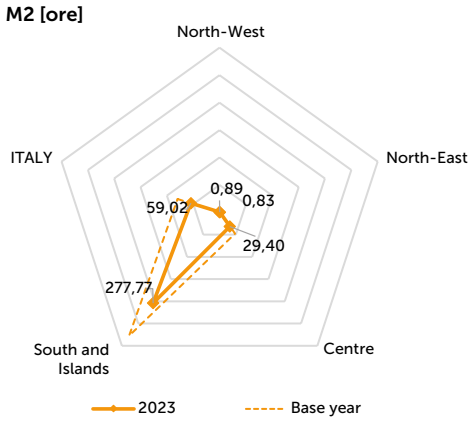
94 The macro-indicator M5 is defined as the percentage ratio between the quantities of water treatment sludge destined for final disposal in landfills and the total quantities recorded at the output of the managed water treatment plants.

FIG. 5.3 *Average values of indicators M1a - Linear water leakage and M1b - Percentage water leakage, by geographical area*



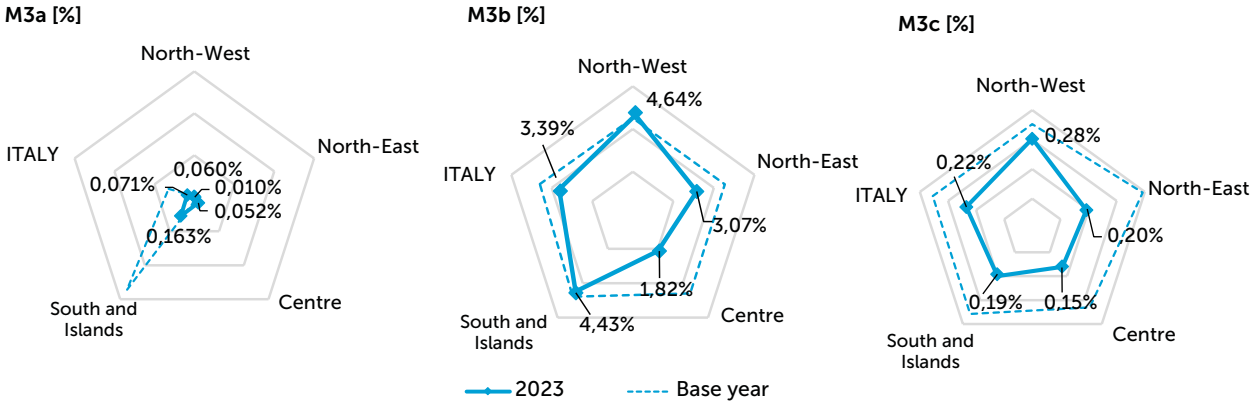
Source: ARERA, processing of data related to the Collection "Technical quality - monitoring (RQTI 2024)" (Resolution 39/2024/R/idr).

FIG. 5.10 *Average values of macro-indicator M2 - Water supply network service interruptions by geographic area*



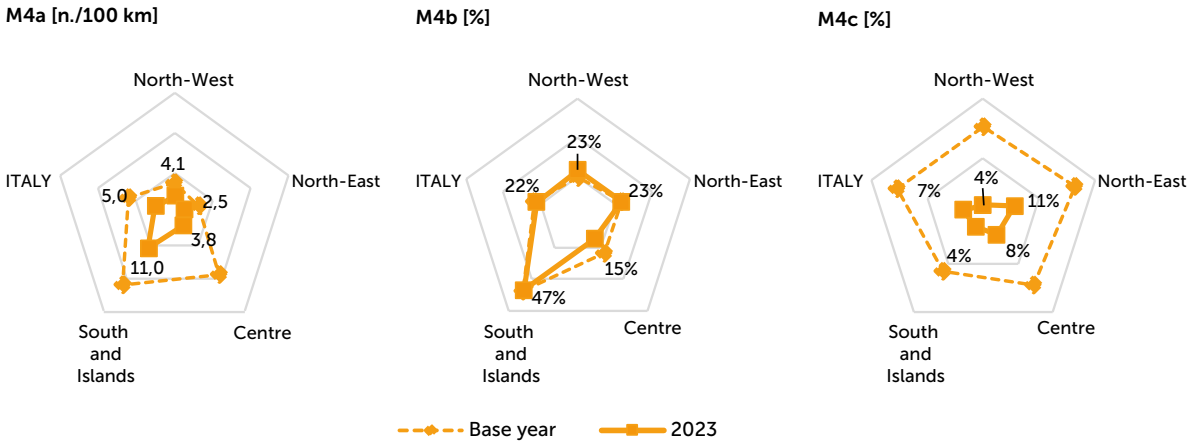
Source: ARERA, processing of data related to the Collection "Technical quality - monitoring (RQTI 2024)" (Resolution 39/2024/R/idr).

FIG. 5.15 *Average values of indicators M3a - Incidence of non-potability orders, M3b - Rate of samples from non-compliant internal controls and M3c - Rate of parameters from non-compliant internal controls by region*



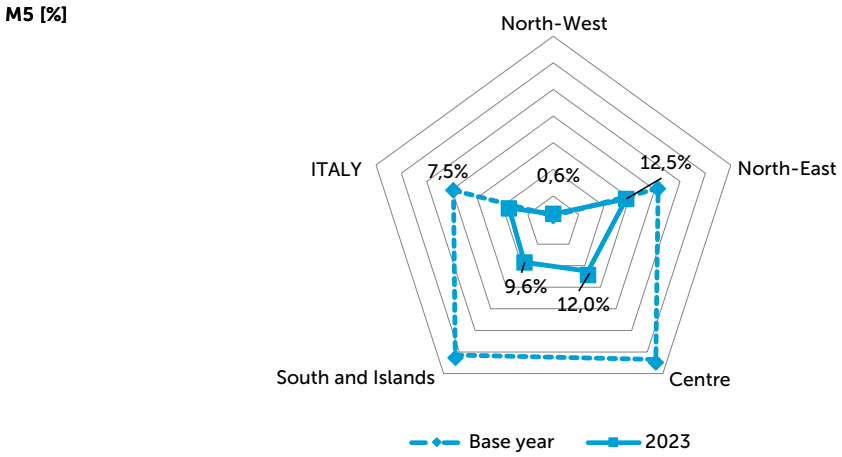
Source: ARERA, processing of data related to the Collection "Technical quality - monitoring (RQTI 2024)" (Resolution 39/2024/R/idr).

FIG. 5.24 *Valori medi degli indicatori M4a – Frequenza allagamenti e/o sversamenti da fognatura, M4b – Adeguatezza normativa degli scaricatori di piena e M4c – Controllo degli scaricatori di piena, per area geografica*



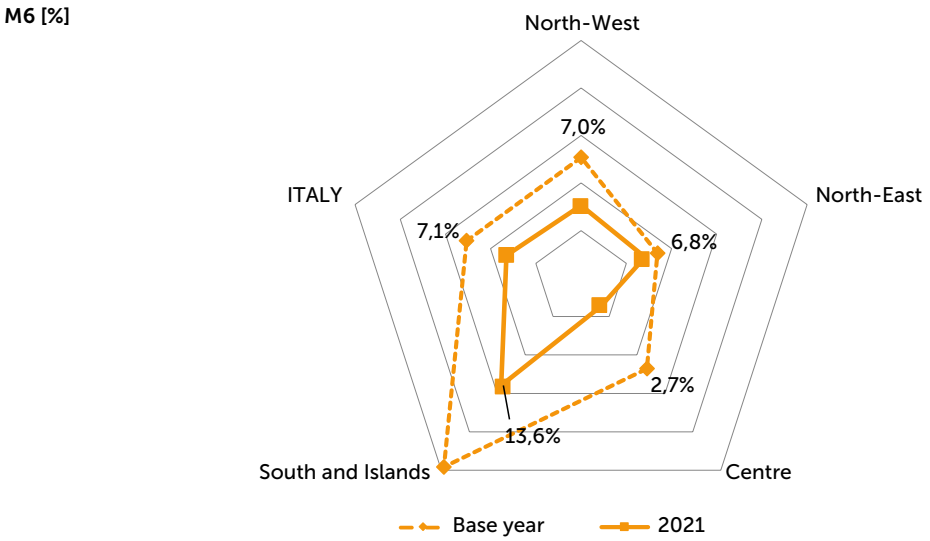
Source: ARERA, processing of data related to the Collection "Technical quality - monitoring (RQTI 2022)" (Resolution 107/2022/R/idr of 15 March 2022).

FIG. 5.30 *Average values of indicator M5 - Sludge disposal in landfills by geographical area*



Source: ARERA, processing of data related to the Collection "Technical quality - monitoring (RQTI 2024)" (Resolution 39/2024/R/idr).

FIG. 5.35 *Average values of indicator M6 - Quality of purified water by geographic area*



Source: ARERA, processing of data related to the Collection "Technical quality - monitoring (RQTI 2024)" (Resolution 39/2024/R/idr).

From a plant engineering point of view, the use by an increasing share of operators of advanced wastewater treatment technologies also has positive repercussions in relation to the reuse of purified wastewater. On the basis of 2023 data, it can be seen that the volumes that can potentially be used for re-use make up approximately 17% of the total purified volume, while the volumes that are actually reused (mainly for irrigation use) stand at values close to 4% of the total purified volume. Finally, with regard to energy consumption, approximately 62% of the total electricity consumption for the integrated water service is attributable to the water supply network service, 6% to the sewerage service and 32% to the water treatment service[95].

To accompany the analyses aimed at showing the performance achieved in the period between the base year and 2023 (therefore with the same regulatory conditions), the current Annual Report shows - for each macroindicator - the main data for 2023, as resulting from the application of the changes made to the RQTI with Resolution 637/2023/R/idr[96], which renewed and, in general, made the quality objectives more challenging for the purposes of the quantitative assessments of the incentive mechanism, starting from the two-year period 2024-2025.

In addition, the outcomes of the second application procedure of the incentive mechanism of the technical quality of the integrated water service (RQTI), which concerned the performance of water operators for the two year period 2020-2021, are described, the conclusions of which are represented in Resolution 477/2023/R/idr.

In relation to the assessments on the achievement of the targets set for the purpose of attributing the bo-nuses and penalties of the Base Stages, for 2021, target attainment rates ranging from a minimum of 30% of the population served for macro-indicator M4 (for which the exclusions from the mechanism weight significantly) to 64% for macro-indicator M5 are noted. It can be seen that even non-achieving situations, in a not insignificant percentage of cases, still show qualitative improvements, albeit not judged sufficient. As far as the rankings among

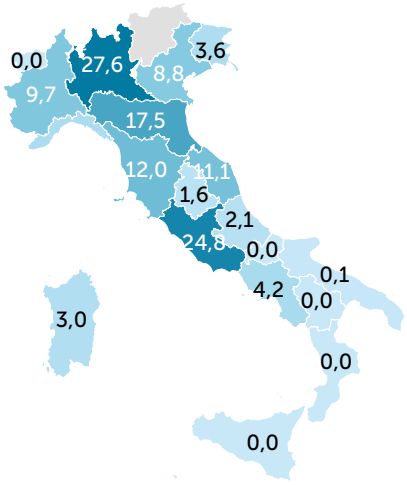
95 This amounts to approximately 0.46 kWh per cubic metre fed into the network, for the water supply network service, 6.64 kWh per AE (inhabitant equivalent) collected, for the sewerage service, and 35 kWh per inhabitant equivalent, for the water treatment service.

96 Resolution 637/2023/R/idr on 'Updating of the regulation of the technical quality of the integrated water service or of each of the individual component services (RQTI), as well as amendments to Annex A to ARERA's Resolution 586/2012/R/idr and Annex A to ARERA's Resolution 655/2015/R/ idr (RQSII)".

the managers are concerned, within the 39 podiums available, there is a preponderance of managers from the North and the Centre. In particular, with specific reference to the Stage of Excellence (ranking performed with reference to all the macro-indicators assessed), after the exclusions provided for, the rankings were populated by 27 managements in the two-year assessment period 2020-2021, none of which were located in the southern area of the country.

The mechanism awarded bonuses totalling almost € 130 million for the two-year evaluation period 2020-2021. The highest amounts were awarded in the Central areas, followed closely by the North-West area, while in the South and Islands the awarding was considerably lower. The size of the average bonuses awarded per management is highest in the Centre, due to the presence of some large operators in the Ad-vanced Stages rankings, while they are broadly in line in the remaining geographical areas. Finally, the mechanism provided for the application of penalties totalling just over € 14 million for the two-year as-sessment period 2020-2021.

FIG. 5.59 *Total amount of bonuses obtained by each region in 2021 (€ million)*



Source: ARERA, elaboration on data related to the proceedings on the application of the incentive mechanism of technical quality regulation for the twoyear period 2020-2021 (Resolution 477/2023/R/idr).

In the course of 2023, the financing lines of the Next Generation EU package, which concerned the in-tegrated water service,were almost fully allocated, and for which ARERA provided its input in the evaluation of the recommendations submitted from over time[97]. In particular, the M2C4-I4.4 line of the PNRR, destined to support the modernisation of sewerage and water treatment facilities (also in or-der to overcome EU infringement procedures), for a total amount of approximately € 600 million, has been completed. Then, with reference to the M2C4-I4.2 line concerning interventions in water distri-bution networks to reduce leakage through the digitalisation and monitoring of networks, the recent allocation of additional resources for a total of € 1.024 billion for projects that were eligible in the previous time windows, but were not financed due to the exhaustion of funds, was recorded with Directorial Decree No. 203 of 6 May 2024 of the Ministry of Infrastructures and Transport. The last two measures approved contributed almost € 4 billion (3.979 bln) to facilities invest-ments

97 In previous years, the M2C4-I4.1 line of the PNRR for interventions in primary water facilities for security of supply also for irrigation services (more than 1 billion euro out of a total allocated resource value of 2 billion), the Axis IV of the National Operational Programme "Facilities and Networks" 2014-2020 (PON IeR) for the reduction of leakage and the development of network digitisation and monitoring for a group of regions located in Southern Italy and the Islands (Molise, Campania, Apulia, Calabria, Sicily) worth more than € 476 million, as well as the two time windows of the M2C4-I4.2 line of the PNRR for reducing leakage through digitisation in distribution networks (worth a total of € 900 million) had already been completed.

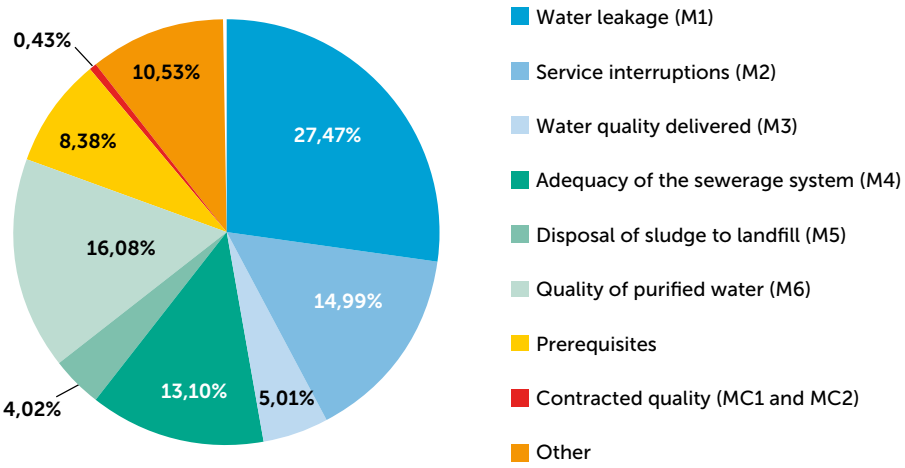
in the integrated water service between 2021 and 2026. At the national level, the disbursement of resources for the first part of the "water supply networks" section of the National Plan of Interventions in the Water Sector[98] necessary to mitigate the damage caused by water scarcity phenomena, through the upgrading and adaptation of water facilities, continued in 2023. With the most recent disbursements, the total amount of resources authorised for disbursement since the adoption of the "water supply networks" section of the National Plan (including advance payments and subsequent instalments) amounts to € 50,942,209.1, or 76.63% of the total funding allocated[99].

Again in 2023, ARERA continued investigations for the two-year update (2022-2023) of the regulatory schemes submitted by the competent sphere governing bodies for the third regulatory period 2020-2023 (MTI-3).
The investigations concerned the verification, among the acts constituting the regulatory scheme of each management, of the Programme of Interventions (PoI) and of the Strategic Works Plan (SWP) introduced by the MTI-3 in order to take into account the long-term effects of any works of strategic importance characterised by significant technical complexity, whose multi-year implementation time-frames go beyond the current regulatory period.

The analysis of the investment needs[100] for the 2022-2023 period at a national level confirms the weight of the investments aimed at reducing water leakage (which has been guiding the priorities in the planning of the sector since the first surveys carried out by ARERA), strengthening it due to the dual effect of the injection of resources allocated for the same purpose by the National Recovery and Resilience Plan (PNRR) and REACT-EU (already represented in the last Report), and the greater population of the sample of the South and the Islands (27.5% of the total planned investments). This was followed by investments to im-prove the quality of purified water at 16.1%, investments to reduce water shortages at 14.99%, and in-vestments to upgrade the sewerage system at 13.1%. The share of investments in integrated water service facilities that cannot be directly attributed to specific technical quality objectives set by ARERA is confir-med at 10.5% as per the previous data.

98 Adopted by Prime Ministerial Decree of 1 August 2019.
99 Figure updated following the changes in the composition of the Plan, referred to in the two Volumes of the Annual Report, as a result of which the resources currently allocated for the first part of the Plan amount to € 66,480,000.
100 The reference sample consists of 134 schemes serving a total of 48,894,099 inhabitants, an increase over the previous year's sample due to of the inclusion of additional regulatory schemes received from the North-West and South & Islands geographical areas.

FIG. 5.62 *Distribution of planned investments for 2022-2023*

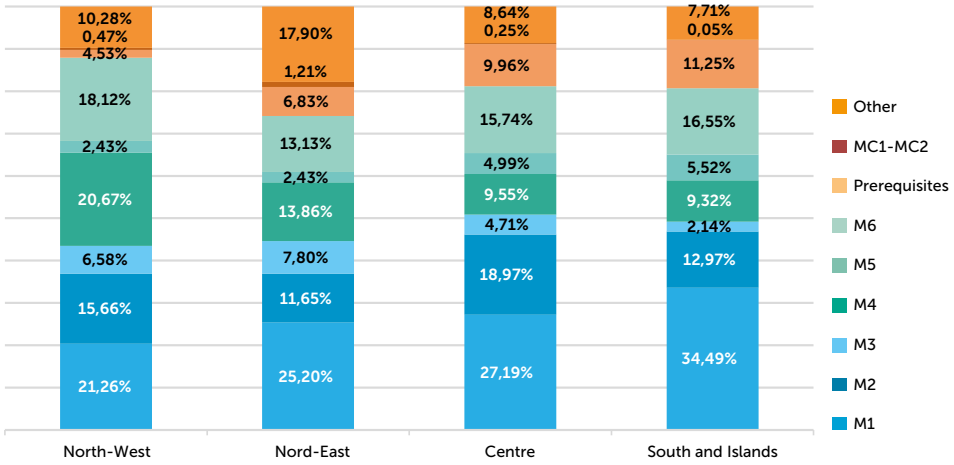


Source: ARERA, processing of data relating to the update of the third regulatory period (resolution 639/2021/R/idr).

Compared to the last survey (in which it stood at 7.82%), the weight of interventions aimed at overcoming the prerequisites, in particular, the critical situations in agglomerations condemned by the European Court of Justice for non-compliance with Directive 91/271/EEC, increased to over 8%, also due to the greater presence of southern management. This figure is, however, lower than in the previous regulatory period (when it was 9% higher), confirming the progress (and relative conclusion) of some of the actions aimed at resolving the critical issue.

In general service terms, the national framework for the two-year period, also for the reasons explained previously, is more oriented towards planned investments in water supply network facilities (48%), also considering the two prerequisites linked exclusively to water supply network chain profiles) than in sewera-ge networks and water treatment plants (overall 40.25%), although the differences already reported re-main between individual geographical areas: the North-West is the only area with a greater need for sewerage and water treatment facilities, while in Central Italy, Southern Italy and the Islands, the gap between the two phases increases in favour of water supply network facilities, with the latter coming in above the national average.

FIG. 5.63 *Distribution of planned investments for 2022-2023 by geographical area*

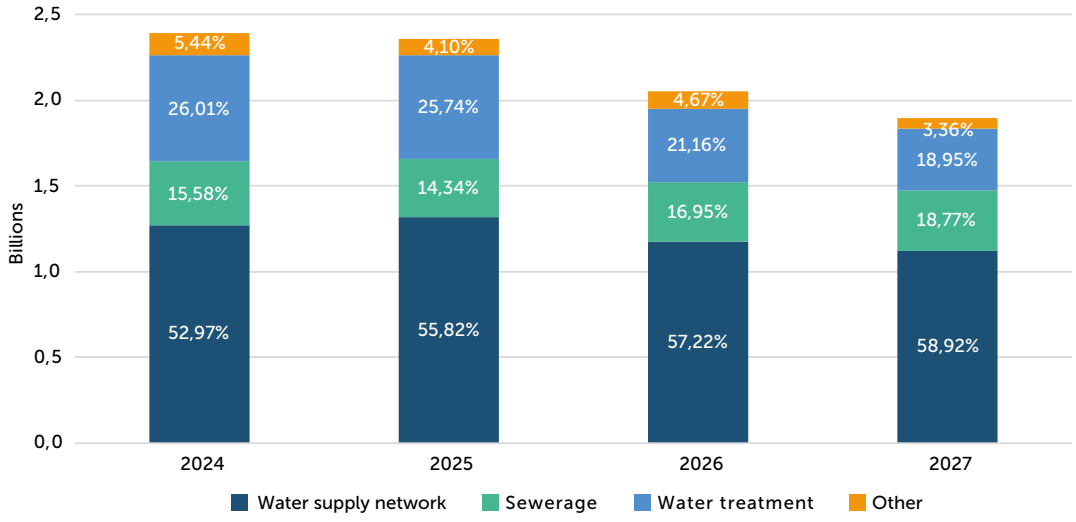


Source: ARERA, processing of data relating to the update of the third regulatory period (resolution 639/2021/R/idr).

According to the survey carried out on the submitted PoIs, updated with the new sample composition, the resources clearly attributable by the area governing bodies to interventions financed by the Next Generation EU package in the two-year period 2022-2023 exceed € 700 million (€ 711.22 million, up from the € 690.1 million reported last year), mainly allocated in 2023 (€ 618.61 million). This sum, almost 45% of which was earmarked for interventions financed with the REACT EU (a line that ended in June 2022 and that envisaged the conclusion of interventions in December 2023) includes the share of resources co-financed by the operator's tariff; the share planned as a public contribution in the same period, on the other hand, is equal to € 524.86 million (approximately 21.52% of the budget allocable to the integrated water service by the three lines mentioned)[101].

The requirement for strategic works comprehensively expressed by the sample of Plans analysed, as a result of the expansion of the sample considered, in the period 2020-2027, amounts to approximately € 12.18 billion, equivalent to € 249.11/inhabitant, an increase compared to the survey carried out in the previous Annual Report for the same period (€ 11.4 billion, equivalent to € 246.74/inhabitant), a sign of ever greater recourse to mediumlong term planning by EGAs and operators. This requirement is mainly allocated over the four-year period beyond the current regulatory period (2024-2027), where approximately € 8.69 billion (approximately 71% of the total) is allocated mainly to the supply and distribution phases.

FIG. 5.67 *2024-2027 time distribution of the investment needs expressed in the Strategic Works Plan and breakdown by service (in percent)*



Source: ARERA, processing of data relating to the update of the third regulatory period (resolution 639/2021/R/idr).

During 2023, ARERA continued its investigations aimed at approving the two-year (2022-2023) update of tariff preparations[102]. As of 31 December 2023, the acts of tariff determination adopted by ARERA, for the two-year period 2022-2023, concerned a total of 67 managements, affecting 30,830,746 inhabitants.

With reference to the sample, made up of 130 managements for which the recommendation for the biennial update of tariff arrangements was sent to ARERA (serving a total of 48,736,089 inhabitants), the average variation (compared to the previous year) of the charges applied to users in 2023 is equal to +4.56% with a certain

101 The illustrated framework concerns preliminary assessments that will be consolidated during the analysis of the Intervention Programmes that are the subject of the drafting of the schemes for the fourth regulatory period 2024-2029 (MTI-4), in which the full implementation of all PNRR funding lines can be appreciated.

102 In some cases, checks were also concluded on the preparations for 2020 and 2021, referring to contexts characterised by certain complexities in the proposals for the third regulatory period 2020-2023.

heterogeneity at a geographical level: +3.67% in the South and Islands, +3.97% in the North-East, +4.22% in the Centre and +5.87% in the North-West. On the basis of the PoI transmitted to ARERA for the same sample, the investments planned for the four-year period 2020-2023 - gross of the forecasts regarding the availability of public financing for the construction of water facilities - are, in per capita terms, equal to € 275/inhabitant at a national level (corresponding to an annual expenditure for investments of € 69/inhabitant); the highest value is found in the Central area, with € 337/inhabitant for the four-year period 2020-2023.

Including in the sample also the largest wholesale suppliers and the data of utilities excluded in the previous analyses due to the presence of some outliers, the investment expenditure related to a panel of 139 utilities serving 49,463,872 inhabitants amounts in total (also considering the availability of public funds) to € 13.6 billion for the four-year period, rising from € 2.5 billion in 2020, to € 3.2 billion in 2021 and 2022, and to € 4.6 billion in 2023.

The verifications carried out with reference to the cost of fixed assets calculated in the tariff have confirmed the general improvements in the capacity to make the investments planned (albeit with a certain degree of variability between panel managements). The implementation rate was approximately 107% in 2020 (a year for which, in any case, plans were updated during the course of the year, and the cautious investment forecasts took into account the slowdowns of construction sites due to the COVID-19 epidemiological emergency) and 95% in 2021, with lower values for operators operating in the South and Islands area (whose realisation rate, by 2021, stood at 77%), for which some critical issues seem to remain as regards the execution of interventions.

In 2023, the average expenditure incurred by a typical resident household[103], including 10% VAT, is € 345/year (€ 2.30 per cubic metre consumed) at the national level, with a lower average value in the North-West (€ 254.5/year) and higher in the Centre (€ 421.8/year). Considering the various items making up the charge paid by households, for annual consumption of 150 m^3, it is seen that around 38.8% of spending is for the water supply network service, for which, at the national level, € 133.7/year are spent. Average national spending for sewerage and water treatment services comes respectively to Euro 41.4/year (12.0% of the total) and Euro 101.9/year (29.5%).

TAB. 5.24 *Average annual expenditure for the integrated water service in 2023 (average expenditure, including VAT, for annual consumption of 150 m^3; annual expenditure in €/year, unitary expenditure in €/m^3)*

GEOGRAPHICAL AREA		ANNUAL EXPENDITURE (€/year)	UNITARY EXPENDITURE (€/m^3)
North-West	Population weighted average	254,5	1,70
	Maximum	509,5	3,40
	Minimum	134,9	0,90
North-East	Population weighted average	338,4	2,26
	Maximum	455,8	3,04
	Minimum	252,2	1,68

(continued)

103 Household of 3 persons, with annual consumption of 150 m^3.

Centre	Population weighted average	421,8	2,81
	Maximum	648,8	4,33
	Minimum	306,8	2,05
South and Islands	Population weighted average	367,4	2,45
	Maximum	407,7	2,72
	Minimum	246,6	1,64
ITALY	Population weighted average	345,0	2,30
	Maximum	648,8	4,33
	Minimum	134,9	0,90

Source: ARERA, processing of data from operators.

Contractual quality

In April 2024, the annual edition of the "contracted quality of the integrated water service" data collection was closed, aimed at allowing ARERA, as part of its regulatory and control functions, to acquire information on the services rendered during 2023 by SII operators. The analysis of the information transmitted 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.

An analysis of the data on the specific standards set by the RQSII shows, in 2023, a high level of contrac-tual quality with an average standard non-compliance rate of 3.5% (confirming the 2022 figure).

As of 31 December 2023, compensation payments amounted to approximately € 2.03 million, but a more complete assessment in this regard can be made in the next Annual Report, since, due to the physiological lag time in the disbursement of indemnities, a large part of these will actually be credited to users in the course of 2024.

Compliance with the general standards set by the RQSII - or with the improvement standards set out in the Service Chart - while showing slightly lower levels than for the specific standards, reveals a good level of compliance with the standard in 2023, moreover showing improvement compared with 2022 for most of the indicators.

In the aforementioned Data Collection, the SII operators were also requested to provide a summary of the services performed in 2023 to be able to ensure the homogeneous application of the incentive mechanism of bonuses and penalties based on the performance of individual operators with reference to two macro-indicators: "Initiation and 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 95.9% MC2) the existence of a Water Service Divide emerges once again, indicated by lower average values in the South area and in particular the Islands.

The first application procedure of the aforementioned incentive mechanism, which covered the performance of the operators in the two-year period 2020-2021 and which ended last October 2023, resulted in the overall

allocation of approximately € 20.9 million in bonuses, mainly in the North and the Centre (66 out of 71 operators), su 71), and € 22.1 million in penalties, mainly in the South (20 out of 51 operators).

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 contractual quality standards set by ARERA are approximately € 0.5/ inhabitant/year for the 2020-2021 two-year period and approximately € 1/inhabitant/year for the 2022-2023 two-year period.

Activity carried out

Over the last 12 years (of application of independent regulation), the integrated water service has reversed its trend in terms of its ability to invest and improve quality parameters. At the same time, however, other evidence has pointed to the urgency of adopting the necessary remedies: difficulty of supply systems in implementing the necessary reinforcement projects; conveyance of rainwater considered a nonpriority form of intervention; increase in critical supply and management issues in other areas of resource use.

Faced with the need to set the regulatory intervention for the water sector on the basis of a scenario different from the traditional one (much broader and capable of including larger complexities), ARERA - at the end of 2023 - launched a package of measures, adopting two measures:

resolution 637/2023/R/idr, with the aim of enriching and updating in particular the regulation of the technical quality of the water service to mitigate the critical issues related to Climate Change by introducing a new macroindicator called "M0 - Water Resilience", aimed at monitoring the expected effectiveness of the complex system of supply against the forecasts regarding the satisfaction of water demand in the relevant territory, including uses other than civil;

resolution No. 639/2023/R/IDR, approving the water tariff method for the fourth regulatory period (MTI-4), which also governed the criteria for determining the water tariff to be applied to the users of the company Acque del Sud S.p.A. (to which - by virtue of Article 23, paragraph 2-bis of Decree-Law No 44/23 - the functions of the abolished entity for the development of irrigation and land transformation in Apulia, Luca-nia and Irpinia (EIPLI), are transferred).

Specifically, a new tariff methodology was adopted for the fourth regulatory period that, among other things:

- confirms the general approach adopted so far, however declining it in a longerterm perspective (with a 6-year regulatory period and, in particular, providing for an update of the Strategic Works Plan, SWP, until 2035);

- takes into account the introduction of new elements when updating the regulation governing technical quality, with the overriding aim of fostering the development of an effective strategy to upgrade security of

water supply and, at the same time, to promote greater cooperation on the different planning levels affecting the water sector;
envisages:

- a consolidation of the existing rules favouring investment expenditure (as determined also in the light of the aforementioned update of the technical quality regulation) and to promote increasing management efficiency (while paying attention to the specificities of individual contexts, which characterise the asymmetry);

- an update of the treatment of the electricity cost component, able to take into account both changing conditions in the markets and the technical production characteristics of water services and that - in the light of the multiplicity of possible purchasing policies, as well as the continuing volatility in supply markets - also consider the possible effects due to a dispersion of values in relation to the benchmark, through an appropriate interval of tolerance;

- an extension of the approach already adopted in MTI-3 to enhance interventions for the sustainability of energy and the environment and resilience in the face of Climate Change in order to enhance its effectiveness, including by regulating a the first use of resources from the Innovation Promotion Fund (established at CSEA) for encouraging (by awarding bonuses) the reuse of purified wastewater (reuse incentive in accordance with the principle of "Water Conservation") and reducing the amount of electricity purchased (encouraging energy saving and/or self-production of energy);

- various measures aimed at accompanying (fostering the completion of) the management aggregation processes in place as a result of the most recent regulatory provisions aimed at rationalising the governance sector, in particular by updating the discipline of 'convergence regulation' (to seize all the opportunities inherent in it) introduced - as simplified regulation - with the MTI-3 and aimed at the progressive reduction of differentials in service levels and accessibility of water, between areas of the country.

In 2023, continuing on with what has been done regularly since 2015, ARERA has been preparing specific Reports submitted to the Parliament compliance with the requirements set out in Legislative Decree No. 152/2006, in particular in respect:

- of the regions, for the establishment of the area governing bodies (EGAs);

- of the area governing bodies, for the concession of the integrated water service (SII);

- of local authorities, in relation to participation in the governing bodies of the scope and in conceding free use of integrated water service facilities to entrusted service operators.

The Reports prepared in 2023[104] highlighted, on the one hand, the improvements that have come to light in the reorganisation of the sector's governance, and on the other, the critical issues still encountered with regard to the correct drafting and updating of the documents necessary for the adoption of the planning and management choices for the integrated water service.

In the same year, ARERA continued to provide support, for the profiles falling within its competence, to the interinstitutional working groups for the transposition of European Union legislation and, in particular, for the transposition of the new European directive on drinking water (transposed by Legislative Decree no. 18 of 23 February 2023, implementing EU Directive 2020/2184), which came into force on 21 March 2023, for the transposition into national law of the European Regulation on the reuse of purified wastewater (Regulation No. 2020/741 of the European Parliament and of the Council, in force as of 26 June 2023), and for the revision of the European Wastewater Directive. Last year also saw the continuation of institutional support for European or international surveys on the water sector, includ-ing the five-yearly update of the OECD's Product Market Regulation (PMR) indicators.

Institutional cooperation activities also include two Memoranda to Parliament with which ARERA sought to provide a contribution to the debate on the bill of law to combat water scarcity in Decree-Law no. 39/2023 (memorandum No. 178/2023/I/idr) and in the context of the examination of acts COM(2022) 540 on 'Framework for Community action in the field of water policy' and COM(2022) 541 on 'Urban wastewater treatment', in relation to the profiles of compliance with the principles of subsidiarity and proportionality (memorandum No. 106/2023/I/idr).

In the period between July and September 2023, a number of discussions also took place with the Mission Unit in support of the Guarantor for Price Supervision at the Ministry of Enterprises and Made in Italy (MIMIT), on the articulations of the charges applied to users of the integrated water service and on the powers and activities carried out by ARERA on the subject.

In the first half of 2023, as anticipated in the previous paragraph, the activities to identify the recommendations accepted for funding under the investment lines of the PNRR, relating to the repowering of the facilities of the integrated water service - for which ARERA provided its support to the central administrations both in the implementation and selection phases[105] - were completed, and the monitoring and reporting phase was started, aimed at verifying the achievement of the milestones attributed to each line of intervention and the disbursement of financing instalments. This is Mission M2 'Green Revolution and Ecological Transition', Component C4 'Protection of Land and Water Resour-ces', and the following intervention lines:

• M2C4 - I4.1 'Investment in primary water facilities for the security of supply', for which a total of € 2 billion has been earmarked

• M2C4 - R4.1 "Regulatory simplification and strengthening of governance for the implementation of investments in PNRR water supply facilities";

• M2C4 - I4.2 'Reducing leakage in water distribution networks, including digitisation and network monitoring, for which resources of € 900 million have been earmarked;

104 Reports of 18 July 2023, 323/2023/I/idr and of 06 February 2024, 38/2024/I/idr. Article 172, paragraph 3-bis, of Legislative Decree No 152 of 3 April 2006 provides that, by 30 June and on 31 December of each year, ARERA submits these documents to Parliament.

105 For more details on ARERA's contribution, please refer to the Reports of previous years.

• M2C4 - I4.4 "Investments in sewerage and water treatment", to which resources of € 600 million are allocated. With reference to the first part of the National Plan of Interventions in the Water Sector, "water supply networks"[106] section, last year the monitoring and disbursement of the financing quotas requested by the competent reference bodies for the interventions covered by the Plan continued.

As part of the regulation of relations between operators and users, with regard to the regulation of the technical quality of the integrated water service (RQTI), during 2023, the procedure for the allocation of the bonuses and penalties for the second two-year period of application of the relative incentive mechanism pursuant to Title 7 of Resolution 917/2017/R/idr was concluded, based on the performance achieved by each operator cumulatively in the years 2020 and 2021.

With regard to Contractual Quality, on the other hand, the Data Collection for 2022 was started in February last year and the preliminary investigations were completed, which led, in October, to the conclusion of the procedure aimed at applying the bonus/penalty incentive mechanism for the two-year period 2020-2021[107], as provided for by Title XIII of the aforementioned RQSII.

In order to strengthen users' awareness of the services offered by its operator, ARERA has also started the preparatory activities for updating the technical and contractual quality data on the infographic, interactive, map-structured portal, freely accessible from the website of ARERA and can be queried with reference to one's own operator or municipality[108].

Finally, on the subject of the governance of local public services, ARERA, in following up on the legislative dictate on the reorganisation of local public services in Legislative Decree no. 201/22, with Resolution no. 51/2023/R/idr of 14 February 2023, initiated a proceeding for the definition of model tender schemes for the concession of the management of the integrated water service, under which the minimum contents will be identified in order to ensure greater uniformity of the acts governing the public evidence procedures for the entrusting of the management of the integrated water service.

106 The first draft of the Plan is made up of a list of 26 interventions/projects (selected by ARERA in its report of 20 June 2019 (252/2019/R/idr), attributable to facilities of the integrated water service, the coverage of which has been ensured in the amount of € 40 million for FY 2019 and the same amount for FY 2020.

107 With reference to the two-year period 2020-2021, the quantitative assessments were carried out on the basis of the contractual quality data, if communicated by the operators within the scope of the relevant data collections, with reference to 2018 (base year) and 2021 (target year), assuming the target for 2020.

108 https://www.arera.it/dati-e-statistiche/dettaglio/qualita-contrattuale-del-servizio-idrico-integrato and https://www.arera.it/dati-e-statistiche/dettaglio/qtsii

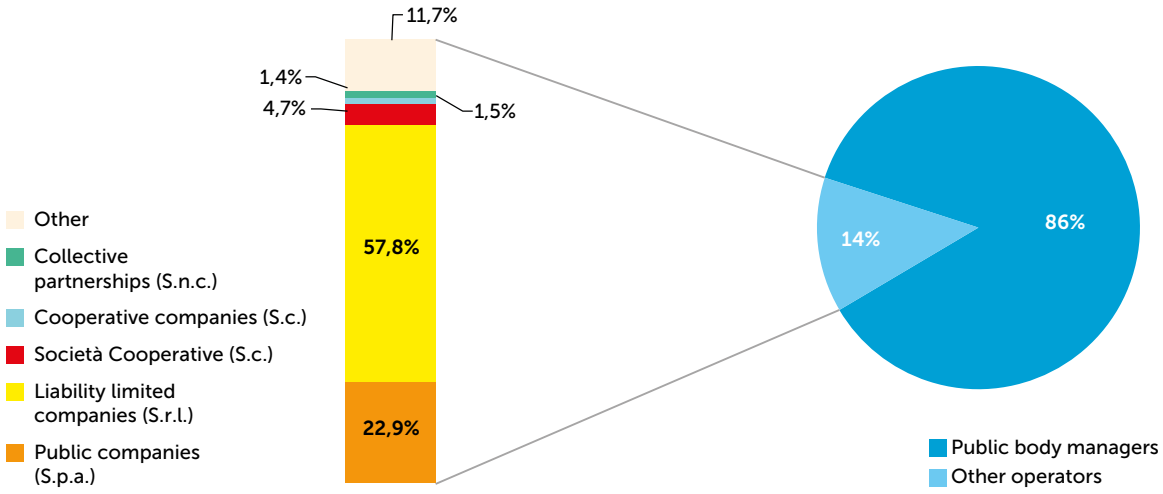
WASTE CYCLE

State of services

Sector structure

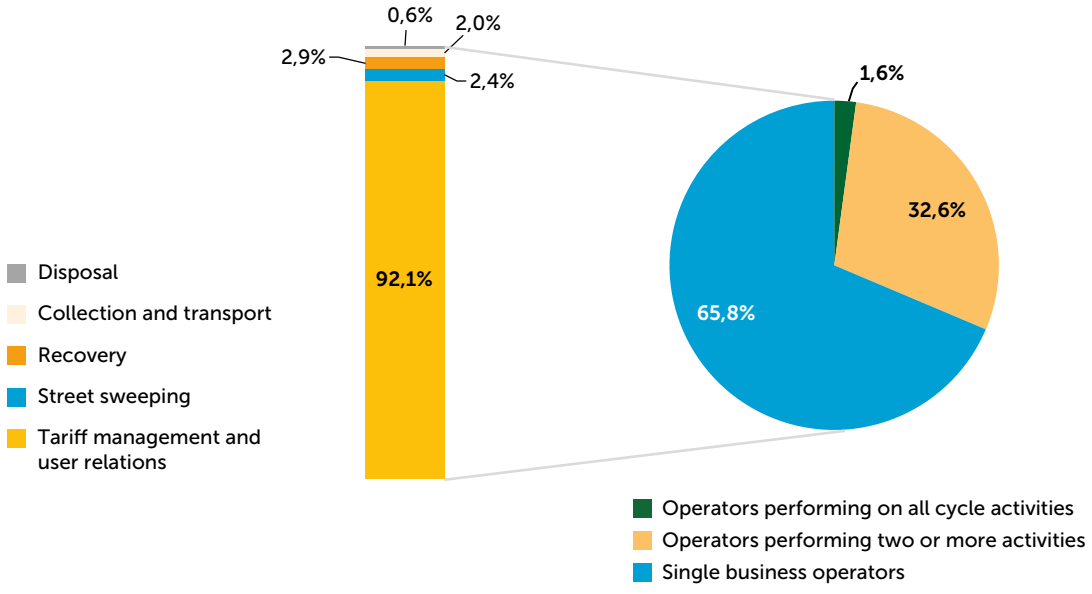
As of May 2024, 8,419 subjects were registered in ARERA's Registry of Operators, an increase of 318 new registrations compared to last year. Confirming that the process of territorial organisation of the service is still incomplete, the number of entities registered as territorially competent bodies remains high (at 3,389), albeit gradually decreasing.

FIG. 6.1 *Legal nature of operators registered with the Registry*



Source: ARERA, Registry of operators.

FIG. 6.2 *Operators who have declared in the Registry that they carry out only one activity*



Source: ARERA, Registry of operators..

Waste production and collection

In 2022, national municipal waste production came to approximately 29.1 million tonnes, down 1.8% on 2021. The previous year 2021 was characterised by a turnaround, in line with the post-pandemic economic recovery of the domestic economy. In contrast, the production figure for 2022 again shows a contraction, in contrast to the increases recorded for the socio-economic indicators, such as gross domestic product and final consumption expenditure on the economic territory, respectively 3.7% and 6.1%. On the other hand, the upward trend in separate waste collection is confirmed, increasing by more than one percentage point compared to 2021, from 64% to 65.2% (in terms of quantity, almost 19 million tonnes of sorted waste).

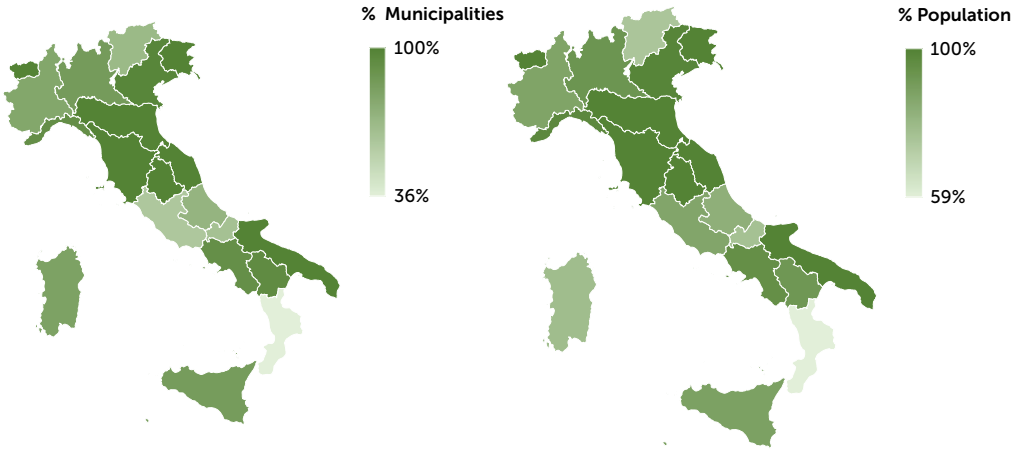
At the territorial level, the North-East and North-West regions maintain high levels of separate waste collection, confirming also for 2022 the exceeding of the 65% target set for 2012 by Legislative Decree No 152/06, with results of 74.3% and 69.8% respectively of the total municipal waste produced, while the Centre stands at 61.5% and the South and Islands at 57.5%.

State of tariff approvals for the first and second regulatory period

During 2023, the transmission to ARERA of tariff preparations for the regulatory period 2022-2025 continued. Despite of some delays in transmission, however, there has been a positive increase in the number of parties complying with tariff regulation: compared to the 5,987 tariff recommendations recorded in the pre-vious edition of the Annual Report, 6,202 have now been transmitted - of which 6,175 are municipal and 27 multi-municipal - relating to 6,563 municipalities (83% of Italian municipalities), for a total of 54.5 million inhabitants served, or 92% of the national population.

17% of the tariff recommendations were subject to intraperiod revision, affecting 19% of the total sample population.

FIG. 6.12 *Tariffs by Region submitted to ARERA for the period 2022-2025 (% municipalities served; % population served)*



Source: ARERA, processing of tariff preparations for the period 2022-2025.

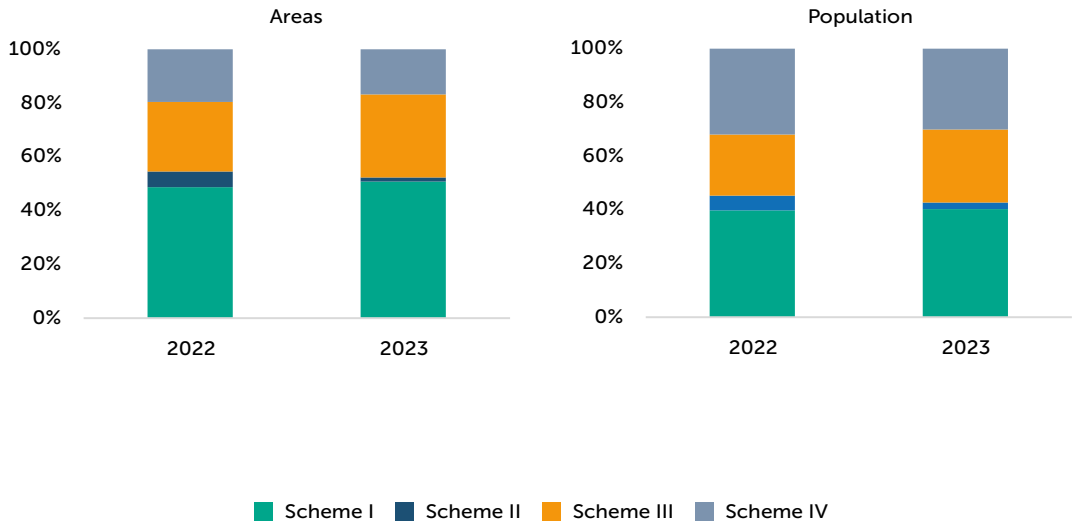
The transmission was carried out by 2,598 ETCs, 2,510 of which are municipalities, while 88 are represented by supramunicipal bodies, in particular Area Governing Bodies and Unions of Municipalities. The latter submitted tariff recommendations for 3,692 tariff areas, covering 4,061 municipalities and 34.5 million inhabitants.

The share of municipalities affected by the above-mentioned recommendations is the same or close to 100% for Emilia-Romagna, Friuli-Venezia Giulia, Tuscany, Umbria, Valle d'Aosta, Marche and Apulia. The Regions of Veneto, Basilicata, Liguria and Campania have a transmission coverage of more than 90% of the municipalities to ARERA. The Autonomous Province of Trento and the Regions of Lombardy, Sicily, Sardinia, Piedmont and Abruzzo were found to have sent tariff recommendations for between 70% and 90% of municipalities, while Molise, Lazio, the Autonomous Province of Bolzano and Calabria were between 36% and 63%.

The analysis of the Economic and Financial Plans available to ARERA, with particular reference to 2023, shows an average growth limit determined by the territorial competent entities (ETCs) of 3.6%, while the actual change in tariff revenues is more contained and equal to 2.3%, in continuity with the values of 2022. On average, the growth limit was respected and determined to be higher than the actual increase. At the macro-area level, both a growth limit and an actual increase in tariff revenues are observed to be higher in the Central area, at 4.8% and 2.9% respectively, while the lowest value is found in the South, which re-cords a growth limit of 2.6% against an actual increase in revenues of 1.7%.

Compared to 2022, the number of tariff areas in the third quadrant of the matrix of regulatory schemes increases in 2023 (31% of the total), which is characterised by the presence of improvement targets and thus by the valuation of the QL coefficient alone, which is also intended to cover, as of 2022, the costs of adapting to the service quality obligations laid down in the TQRIF. Although in terms of the number of tariff areas, the use of Scheme IV of the regulatory matrix, (which includes areas with objectives to improve the quality of service and changes to the perimeter managed) is around 17%, in terms of population, it can be seen that Scheme IV has a weight of 30%, implying, therefore, that the objectives of expanding the pe-rimeter and improving the characteristics of the service have been envisaged in larger areas.

FIG. 6.17 *Distribution of tariff areas and their population by regulatory schemes (%)*



Source: ARERA, processing of tariff preparations for the period 2022-2025.

For 2023 as a whole, eligible costs underlying tariff revenues amounted to approximately € 11.4 billion[109], resulting in total validated tariff revenues of € 10.8 billion[110]. Operating and common costs account for approximately 80% of the total costs, while capital costs are worth almost 10%[111]. The remainder consists mainly of nondeductible VAT charged to end users.

For 2020, the share of the population affected by ARERA's approval of the economic-financial plan for the integrated municipal waste management service is 17.5 million inhabitants (30% of the national population); the corresponding figure for 2021 is 16 million inhabitants (27% of the national population); finally, 12.2 million inhabitants were affected by the approval of the economic-financial plans for all the years of the first and second regulatory period (approximately 20% of the national population).

TAB. 6.1 *Population, areas and subjects affected by the tariff approval measures adopted by ARERA*

EFP REFERENCE YEAR	NUMBER OF TERRITORIAL AUTHORITIES	NUMBER OF TARIFF AREAS	NUMBER OF OPERATORS	POPULATION SERVED (millions of inhabitants)	NUMBER OF MUNICIPALITIES SERVED	AVERAGE ANNUAL CHANGE IN TARIFF REVENUE
2020	90	443	493	17,5	608	1,31%
2021	68	344	396	16,0	538	1,64%
2022	57	133	175	12,2	328	-0,002%
2023	57	133	173	12,2	328	1,39%
2024	57	133	172	12,2	328	1,02%
2025	57	133	172	12,2	328	0,77%

Source: ARERA, processing of tariff preparations for the period 2022-2025.

Activity carried out

In 2023, ARERA launched a package of reforms in the municipal waste sector, following up on recent regulatory provisions to reorganise local public services, to protect competition, to 'save the sea' operations and to foster the circular economy, taking into account the EU principle of extended producer responsibility (EPR), continuing, in the process of constructing the regulatory framework, the innovative, gradual and asymmetrical approach that has characterised ARERA's action in the sector since its earliest activities, consistent with a multi-level institutional set-up and capable of taking into account the most significant elements found in different contexts. In order to develop and complete the regulatory framework of the sector, also in light of the recent new powers, in 2023 ARERA with resolution 385/2023/R/rif, approved the model outline of the service contract for regulating relations between conceding entities and operators of the urban waste service, which governed the minimum essential

109 These are the costs determined on a historical basis (from the compulsory accounting records) in accordance with Article 7 of the MTR-2, to which are added the costs determined on a forecast basis for the specific purposes and objectives set out in the MTR-2, validated by the ETCs. The value indicated is already expressed net of the deductions corresponding to the right of ETCs to validate lower amounts than those resulting from the sum of costs from mandatory accounting sources, as per paragraph 4.6 of Resolution 363/2021/R/REF. For the total of the tariff arrangements under analysis, these deductions are worth, with reference to 2023, approximately € 311 million. Conversely, revenues from the sale of material and energy and costs exceeding the growth limit that are not articulated to users are not taken into account, i.e. subtracted from the aforementioned costs.

110 The value refers to the total revenue actually validated by the ETCs and thus total costs net of deductions 4-6, of the application of the sharing on revenues AR and ARsc andZ non-validated excess costs.

111 The quotas are determined as the average, weighted for the resident population, of the weights of the same cost categories in each tariff area.

contents of the service contract, aimed at ensuring, for the entire duration of the concession, the fulfilment of public service obligations, as well as the economic-financial balance of management ac-cording to criteria of efficiency, promoting the progressive improvement of the state of the facilities and the quality of the services provided[112];

with Resolution 387/2023/R/rif, it implemented an intangible structure of data on the actual perfor-mance of collection and transport operators and treatment plant operators, with reference to a set of indicators on the efficiency and quality of separate collection, waste management efficiency, service continuity, and the commercial quality of the supply chain; on these indicators, ARERA has provided for monitoring activities, according to a gradual approach that takes into account the starting condi-tions and the heterogeneity of the available plant stock; with Resolution No. 386/2023/R/rif, it intro-duced the equalisation mechanism for the management of accidentally fished waste and voluntarily collected waste, and established the equalisation account dedicated to covering the subsidies recognised for exceptional and calamitous events, as well as the relative unitary equalisation components that apply to all users of the service;

with Resolution 389/2023/R/RIF, it regulated the rules and procedures for the two-yearly update 2024-2025 of the reference tariff revenues for the integrated municipal waste management service and of the tariffs for access to "minimum" cycle closure plants, or to "intermediate" plants from which flows indicated as entering "minimum" cycle closure plants originate adopting tariff criteria that preserve a stable reference framework, in compliance with the principles of recovery of efficient investment and operating costs and non-discrimination of end users, as well as measures for monitoring the degree of coverage of the efficient costs of separate collection.

In particular, with regard to the determination of the reference tariff revenues for the integrated municipal waste management service, ARERA, in addition to updating the financial parameters (also by means of subsequent resolutions), has introduced: appropriate tools to take into account the greater charges incurred for the integrated waste management service in the years 2022 and 2023 attributa-ble to the dynamics of the prices of the factors of production, while guaranteeing the protection of users and the economic equilibrium of management.

an indicator of the effectiveness of the recycling of fractions subject to the extended producer responsibility obligations (R1) aimed at determining the valuation of the sharing factor of the revenues deriving from the charges recognised by the collective compliance schemes (as per Article 3 of the MTR-2) in order to strengthen the consistency between the assessments of the environmental quality of the management of separate collection and the actual management results in terms of the valuation of the materials deriving from the same collection a specific indicator, called Ha, as a measure of the degree of coverage of the costs of separate collection, calculated as the ratio between the revenues from packaging waste and the costs of separate collection of the same waste, associating an initial monitoring activity and also defining the corresponding objectives;

procedures for offsetting any revenues and costs relating to the activities of 'pre-cleaning, pre-sorting or pretreatment of plastic packaging from selective waste collection' in order to comply with the Council of State ruling 7196/23. di stato 7196/23.

112 The measure followed consultation document 262/2023/R/rif in which ARERA had illustrated the final guidelines for the preparation of a standard outline of a service contract for the regulation of relations between the entrusting body and the manager of the urban waste management service..

In addition to the definition of the operational modalities for the preparation and transmission of data and documents, drawn up according to typified schemes, which constitute the update of the tariff proposal for the years 2024 and 2025, in 2023 the preliminary activity on the tariff preparations proposed by the ETCs also continued, with reference to the second regulatory period 2022-2025 and the years 2020 and 2021.

On the subject of monitoring local institutional arrangements, starting as early as the first half of 2023, ARERA implemented the provisions of Article 5, paragraph 6, of Legislative Decree no. 201 of 22 December 2022, according to which, in order to "... contribute to the rationalisation of the local institutional structures of the waste sector, the Regulatory Authority for Energy Networks and Environment shall submit to the Chambers a periodic six-monthly report on compliance with the prescriptions established by the sector regulations for the definition of the perimeter of the districts and for the constitution of the area governing bodies". By means of two monitoring reports - the first contained in Volume I of the 2023 Annual Report and Report 609/2023/I/rif - ARERA provided the Chambers with an updated picture, indicating, on the basis of the data and information acquired from the competent bodies, the overall picture and any critical territorial profiles in relation to the aforementioned requirements.

Again by virtue of the new functions attributed by Legislative Decree 201/22, in accordance with the provisions of Article 7, paragraph 2 of the aforementioned decree, ARERA, with Resolution 50/2023/R/rif of 14 February 2023, commenced the procedure for the definition of the model outline of the call for tenders for the concession of the integrated municipal waste management service, and illustrated in Consultation Document 514/2023/R/rif the general framework elements and the guidelines it intends to follow for the definition of such outline.

With regard to collaborations with other institutions, during 2023 ARERA also participated in the Institu-tional Technical Table for the updating of the National Waste Prevention Programme, coordinated by the Ministry of the Environment and Energy Security, and composed of the Ministry of Enterprises and Made in Italy, the Ministry of Agriculture, Food Sovereignty and Forestry[113]. Furthermore, ARERA continued its par-ticipation in the Ecological Transition Steering Committee, established by the Ente Nazionale Italiano di Unificazione – UNI (the Italian National Unification Body), with the aim of supporting UNI governance in the implementation of the 2021-2024 Strategic Lines, by suggesting, developing and monitoring specific actions within the framework of the identified objectives and priorities. The main areas of focus are climate change, environmental protection (water, soil, air, biodiversity), the circular economy, waste and sustai-nable agriculture.

Finally, also during the early months of 2023, ARERA contributed to the two Commissions[114] for the admis-sion and evaluation of project recommendations for the allocation of the financial resources provided for the implementation of the interventions of the National Recovery and Resilience Plan (PNRR) in relation to Mission 2, "Green Revolution and Ecological Transition", Component 1, "Circular Economy and Sustainable Agriculture", functional to "bridging the facilities gap in the urban and special waste management sector that, at present, hinders the development of circular supply chains".

113 Article 180 of Legislative Decree No 152 of 3 April 2006, as amended by Legislative Decree of 3 September 2020, provides "in order to promote as a priority the prevention of waste production", the adoption, by the Ministry for the Environment and Protection of Land and Sea (now the Ministry for the Environment and Energy), in conjunction with the Ministry of Economic Development (now the Ministry of Enterprises and Made in Italy), the Ministry of Agricultural, Food and Forestry Policies (now the Ministry of Agriculture, Food Sovereignty, and Forestry), of the National Waste Prevention Programme, specifying that the aforementioned programme establishes "appropriate qualitative and quantitative indicators and objectives for evaluating the implementation of the waste prevention measures established therein".

114 The other institutions involved were MITE (now MASE), ISPRA, ENEA, and the Conference of the Regions and Autonomous Provinces.

CONSUMER PROTECTION

In 2023, there was an increase in written and telephone requests for information, with more than 1,500,000 calls to the Consumer Help Desk call centre, an increase of 23% compared to 2022. Written requests to activate support instruments also increased: for example, requests for the activation of special procedures in the energy sector increased by 40%. Conciliation applications to ARERA's service grew by more than 8,300 compared to the previous year, totalling 32,677 applications for all sectors (electricity, gas, water and district heating).

TAB. 10.1 *Input volumes to the Help Desk and conciliation service for the electricity, gas, water, district heating and waste sectors (2023)*

ACTIVITIES AND SECTORS			2023	Δ vs 2022
Telephone and written information on regulated sectors	Calls to the call centre 800166654 (received during working hours)		1.494.378	+ 24%
			52.431	+ 4%
	Written requests for information (*)		49.930	- 10%
			4.820	+ 111%
	Requests for activation of special information procedures		44.929	+ 7%
Alternative dispute resolution and support tools for handling specific issues	Questions to the conciliation service	(mandatory conciliation)	28.693	+ 36%
		(mandatory conciliation from 30 June 2023) (**)	3.984	+ 23%
	Requests for the activation of special settlement procedures		31.638	+ 40%
	Second-level complaints (***)		7.194	- 3%
Transitional management of end-user communications in the waste sector			230	+ 8%

(*) Including written petitions that the Help Desk encountered by providing information on out-of-court dispute resolution tools (referred to as "complaints redirected to conciliation").

(**) For the water and district heating sectors, 1,884 applications were submitted from 1 January 2023 to 29 June 2023 under the transitional regime (Resolutions of 1 February 2018, 55/2018/E/idr and 15 December 2020, 537/2020/E/tlr) and 2,100 applications from 30 June 2023 to 31 December 2023 following the operation of the mandatory conciliation attempt (Resolution of 30 May 2023, 233/2023/E/com).

(***) From 30 June 2023 for social water bonus issues only.

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

With regard to the regulatory activity in 2023, the following measures should be noted:

- Resolution 233/2023/E/com, which provided for the extension of the Integrated Conciliation Text (TICO) already effective for the energy, water and district heating sectors by making it mandatory, as of 30 June 2023, to attempt conciliation before proceeding to court.

- Resolution 621/2023/E/rif, which initiated the procedure to gradually extend the current system of protections - in place for the energy, water and district heating sectors - to the waste sector, through the use of services offered by the Help Desk and conciliation.

To further simplify access to the One-Stop Portal, the authentication system using CIE (Electronic Identity Card) level 2 credentials was integrated in 2023 and the possibility of submitting applications to the Conciliation Service in digitised format was implemented, with a free one-shot qualified electronic signature, obtainable via SPID/CIE or video recognition.

In 2023, ADR entities on ARERA's list[115] received 1,676 conciliation applications, an increase of 26% compared to 2022[116].

Complaints and commercial quality performance

Service Quality Code (TIQV)[117] regulates activities relating to complaints and written requests for information, as well as bill adjustments and double bill adjustments submitted by customers to energy sales companies.

Commercial services are subject to specific and general standards, with customers being entitled to automatic compensation if suppliers fail to meet specific standards, with the amount of compensation increasing according to the delay in *performance*.

In the course of 2023, in light of the legislative and regulatory changes that have taken place in the area of endof- protection, ARERA has made some changes to the TIQV, introducing, among others, a new type of supply, namely that of final customers of the gradual standard offer service for non-vulnerable households, and has supplemented the definition of the type of final customers of the free market to exclude the aforementioned non-vulnerable households of the gradual standard offer service. The resolution[118] also provided for a derogation to simplify the classification of written communications received by operators of the gradual standard offer service in the light of the possible increase in written communications received by these operators in relation to non-vulnerable households, following the activation of the service itself[119]. Lastly, in line with the postponement to 1 July 2024 of the date of activation of the gradual stan-dard offer service for non-vulnerable households, ARERA has established that the application of the TIQV in relation to the customers of this service[120] will also start from the same date.

115 Excluding the Conciliation Service.
116 At the time of writing, 31 organisations were registered.
117 Annex A to resolution 413/2016/R/com of 21 July 2016.
118 Resolution of 03 August 2023, 362/2023/R/eel.
119 This is in derogation from the provisions of Article 8, paragraph 5 of the TIQV.
120 Resolution of 19 December 2023, 600/2023/R/eel.

Sales companies are required to report performance data to allow verification of compliance with the TIQV and the payment of compensation to customers: sale commercial quality data for 2023 were reported by 623 operators, representing more than 53.1 million customers (counting electricity and gas customers to-gether), showing a decrease in complaints (526,623, -2.64%) and an increase in written requests for in-formation compared to 2022 (536,870, +5.97%).

61.84% of complaints were related to electricity customers, 32.23% to gas customers and 5.93% to dual fuel customers; the main topics were billing (42.1%), contracts (16.53%), the market (14.02%) and non-payment of bills (8.7%), while requests for information mainly concerned billing and contracts. Bill adjustments decreased compared to the previous year, while there was an increase in double bill adjust-ments. Requests for information amounted to 536,870, an increase of 5.97% compared to the previous year.

61.36% of written requests for information were attributable to the electricity sector, 29.62% to the gas sector and 9.02% to dual fuel customers; the main topics of requests for information from customers in the energy sectors concern billing (42.54%), contracts (17.42%), the market (8.61%), connections, works and technical quality of supply (6.23%). Most complaints, rectifications and requests for information come from free market customers. More than 65,000 indemnities were paid to customers during the year, mainly for delays in responding to complaints (97%), totalling more than € 2.8 million.

In addition to analysing the data submitted by suppliers, every year ARERA carries out a survey of customer satisfaction on the quality of responses to written complaints and requests for information by interviewing customers who have been answered in writing[121].

57.6% of customers were satisfied with the responses to complaints; non-professional delegates (friends or relatives of the contract holder) were on average more satisfied than holders and professional delegates. Analysing the data by market type, free market customers scored above average satisfaction levels (66.9%), while lower percentages were found for customers on the market with a reference price (54.5%).

82.8% of the customers who resolved the complaint were satisfied while only 23.8% were satisfied among those who did not solve the problem. Prior to the complaint, 53.7% of customers had contacted the call centre and 16.7% had made a previous complaint. The main reasons for complaints concerned billing (57.7%) and contracts (24.8%). Factors of dissatisfaction included clarity on resolution time (38.5%) and completeness of information (37.7%).

The Overall Satisfaction Index (ICS) for 2023, for the entire survey sample, is 64.2 out of 100; a value that is almost three points lower than the value for 2022 (67.0). The satisfaction survey on the quality of responses to written requests for information, on the other hand, shows a higher overall satisfaction level, with an ICS of 73.6, but significantly lower than in 2022 (-12.7).

121 In accordance with Article 38 of the TIQV. 20 companies were involved in the survey, representing approximately 45 million customers (counting together customers and gas customers together), representing 84.9% of all customers. 13,520 CATI (telephone interviews) and CAWI (web-based interviews) interviews were conducted for the survey on the quality of responses to complaints and 2,000 interviews for the quality of responses to requests for information.

TAB. 10.2 *Importance attributed by customers to response quality factors and dissatisfaction 2023 (% values)*

Factors	Weight 2023	% dissatisfaction
Clarity on when the problem has been or will be solved	16,5	38,5
Completeness of the indications on how the complaint will be resolved	12,5	37,7
Reasons given by the company for considering the complaint founded or unfounded	11,5	35,9
Clear indication of a company contact person for clarification	9,9	35,1
Accuracy and completeness of references to the grounds of the complaint	12,1	30,6
Accuracy and completeness of user references	12,1	27,6
Attached documentation	7,3	30,7
Comprehensibility and clarity of language	18,2	25,3

Source: ARERA, satisfaction survey on responses to complaints and requests for information.

Energy and Environment Consumer Help Desk

In 2023, the Help Desk call centre received 1,546,809 calls during working hours (+ 23% compared to 2022). The calls actually handled (i.e. net of those abandoned by customers or end-users without waiting for the operator to answer) amounted to 1,209,482 (approximately 195,000 more than in 2022). The average duration of conversations in the year was 252 seconds, up from 238 seconds in 2022. The electricity and gas sectors accounted for 97% of the total calls handled by the call centre (96% in 2022). More specifically, there were 64,473 calls in which information was provided on overcoming price protections in the energy sectors, either upon specific request or in the course of a conversation on related topics (approximately 52,000 more than the same figure for 2022). In this regard, it should be noted that, since last year, a spe-cial button on the interactive voice responder has been dedicated to, inter alia, the issues of vulnerability protection in the energy sectors and the gradual standard offer service for the electricity sector[122].

TAB. 10.6 *Main topics of queries received by the Help Desk call centre (2023)*

Service	2023		
	Electricity and gas	Water	Total
Social bonus	64%	76%	65%
Alternative dispute settlement	6%	5%	6%
Rights and regulation	17%	6%	17%
Files at the Help Desk	7%	13%	7%
Portale Offerte, Portale Consumi and Accredited purchasing groups	1%	-	1%
Gradual standard offer service and vulnerable customers	5%	-	4%
Of which Social Bonus	64%	76%	65%
Of which other topics	36%	24%	35%

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

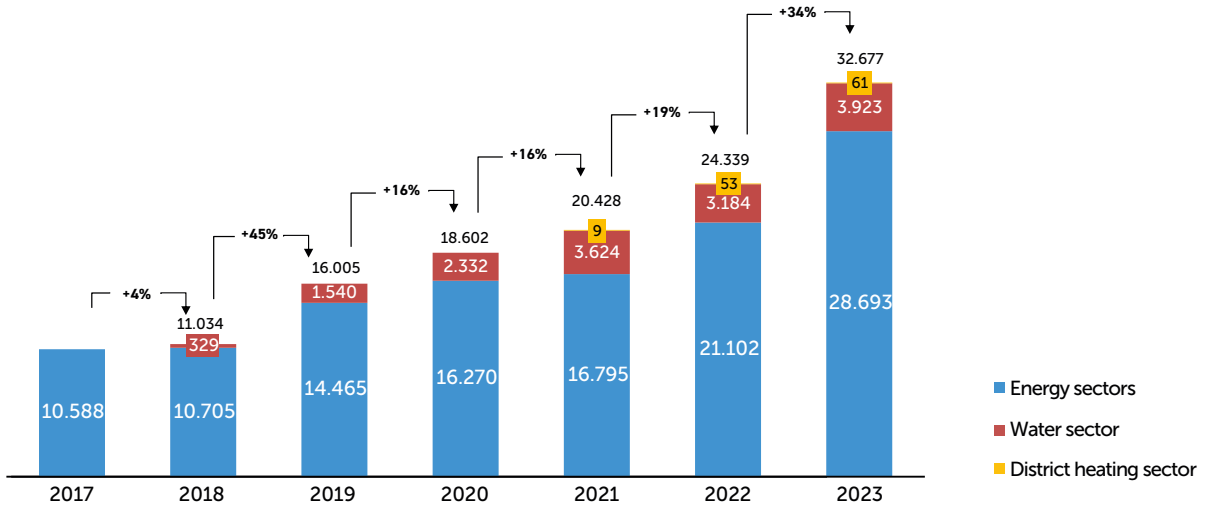
122 The 201 calls handled for the waste sector and 112 calls handled for the district heating sector, all related to the item "rights and regulation", complete the detailed picture.

There were 54,750 written requests for information (57,710 in 2022), of which 49,930 related to the energy sectors (down 10% from the previous year), 4,631 related to the water sector (more than doubled compared to 2022) and 189 to district heating. The top five topics covered were: social bonus (45%), billing (14%), market (12%), contracts (11%) and non-payment of bills and suspension (7%). In 2023, the Desk re-ceived 44,929 requests for the activation of special information procedures[123] (+7% compared to 2022); the breakdown by sector of these is identical to that of the previous year: 64% concerned electricity, 23% gas, 13% both sectors.

The Authority's conciliation service

In 2023, the Conciliation Service received 32,677 incoming applications (an average of 131.3 applications per working day), an increase of 34% compared to the 2022 volumes, confirming the growth trend recorded since 2017, when the Integrated Conciliation Text (TICO) came into force, and the prevalence of the energy sectors in the sectoral breakdown[124].

FIG. 10.5 *Trend of applications submitted to the Conciliation Service (2017-2023)*

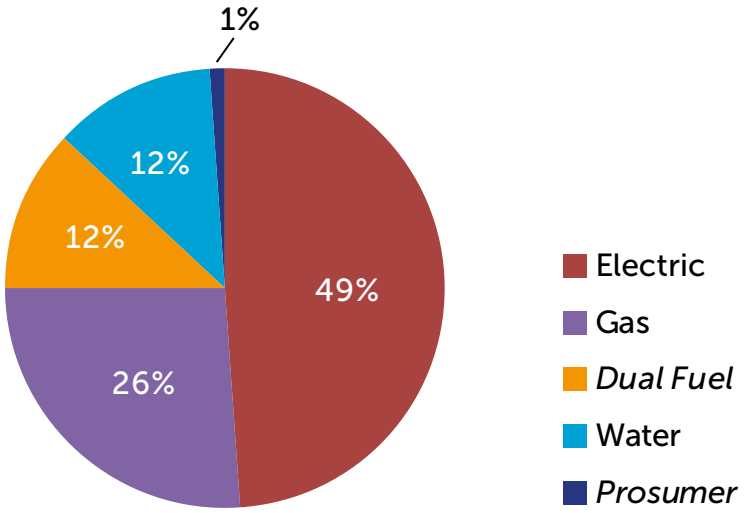


Source: Conciliation service.

123 Special information procedures allow final customers in the energy sectors to obtain specific information encoded in centralised databases (Integrated Information System, Indemnity System) accessible from the Help Desk and subject to specific regulation by ARERA. At the final customer's request, the Help Desk, through these procedures, may provide: the name of the commercial counterparty of the contract for which it is intended to request the transfer, the name of the a current commercial counterparty with the date of switching and, with regard to the CMOR, the name of the supplier that requested the application of that charge, the minimum contents of the claim provided for by the regulation and the information regarding the possible state of suspension or cancellation of the compensation.

124 The final figures of the Conciliation Service for 2023 for the last available update on the page arera.it/consumatori/conciliazione are published

FIG. 10.7 *Applications received by the Conciliation Service per sector (2023)*



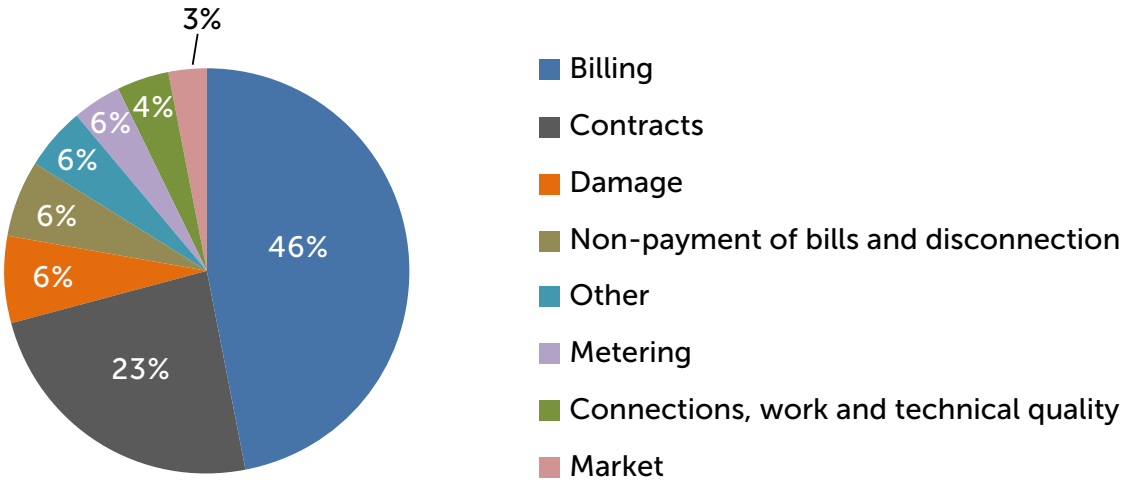
Source: Conciliation service.

38% of conciliation applications were submitted by delegates of customers or end-users other than associations representing household and non-household customers, 35% directly by the customers concerned, and 27% by delegates of CNCU associations.

In terms of platform accessibility, moreover, the clear preponderance (95%) of the use of computers for submitting applications is confirmed in 2023.

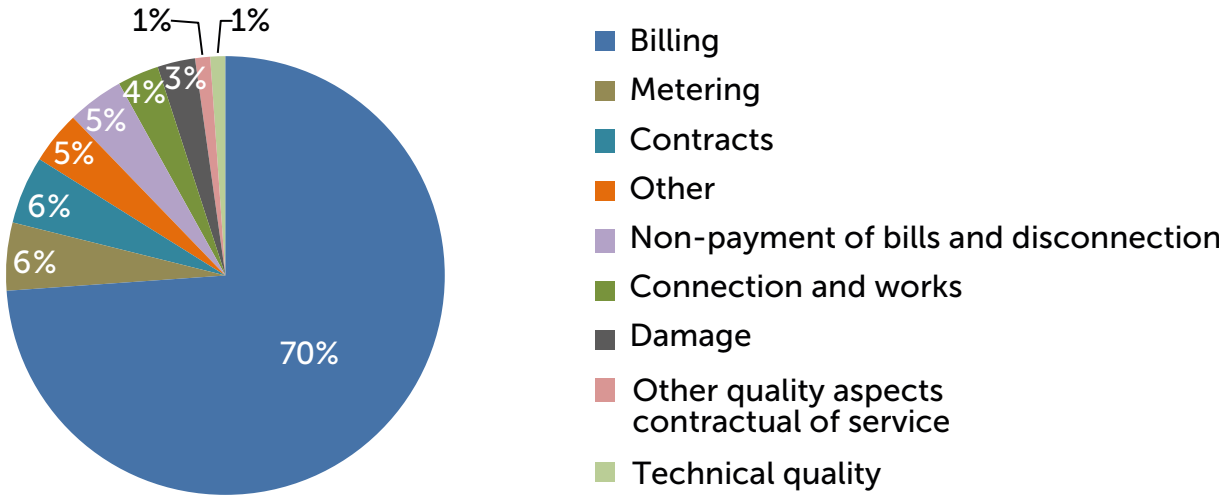
See the following graphs for the distribution of the main topics.

FIG. 10.10 *Disputes brought before the Conciliation service in the energy sectors (2023)*



Source: Conciliation service.

FIG. 10.11 *Disputes brought before the Conciliation service in the water sector (2023)*



Source: Conciliation service

In 2023, the obliged operators and managers participated in 99.5% of the procedures; the cases of non-adherence, mainly relating to small operators and managers, were analysed during the course of ARERA's usual activity of monitoring and enforcing the participation obligation, which led to the adoption of Resolutions 120/2023/E/com and 566/2023/E/com, by which 12 operators and 3 managers were ordered to comply with the obligation in question with reference to the period from 24 May 2022 to 13 October 2023.

Excluding proceedings discontinued due to abandonment by the activator and pending proceedings, the settlement rate stood at 70% as at the date of preparation of the Annual Report (+1% compared to 2022). Looking at the three main sectors by number of applications, it is gas that has the highest rate of agreement (74%) on completed procedures in this sector, followed by water with 70% and electricity with 65%.

In 2023, approximately € 23.5 million were given in compensation, namely, the charge obtained by final users or customers through the conciliation agreement (in the form of value recovered also with respect to the value of the dispute or reimbursement, indemnities, recalculation of incorrect bills, waiver of expenses and late payment interest, etc.). Finally, customer satisfaction results are broadly in line with what was recorded in 2022, albeit with approximately 50% more questionnaires.

FIG. 10.17 *Customer satisfaction results for the Conciliation service (2023)*

	Very satisfied (1)	Satisfied (2)	Quite satisfied (3)	Not very satisfied (4)	Not at all satisfied (5)
Total	52%	15%	28%	3%	2%
Opinion summary	95%			5%	

	Very satisfied (1)	Satisfied (2)	Quite satisfied (3)	Not very satisfied (4)	Not at all satisfied (5)
Service Guide	47%	17%	33%	2%	1%
Forms	46%	18%	34%	1%	1%
Conciliation procedure	47%	16%	29%	5%	3%
Virtual room	47%	16%	32%	4%	1%
Conciliator	66%	10%	19%	2%	2%

Source: Conciliation service.

Special resolution procedures[125]

In 2023, there were 31,638 requests for the activation of special resolution procedures (+40% compared to 2022): approximately 93% of requests concerned the social bonus (non-disbursement, issues concerning the bonus amount considered to be incorrect or the recognition of the bonus in the case of ISEE households with several PDR/PODs) and 6% the special procedure concerning the CMOR (verification of the conditions for its cancellation).

Assessment of complaints in the environmental services sector

With reference to environmental services, ARERA completed its work on extending the system of safeguards for the empowerment and settlement of disputes of customers and end users to the water and district heating sectors[126]. In particular, as of 30 June 2023, all water sector operators and district heating operators are obliged to participate in conciliation procedures activated by end users, and the attempt at conciliation is mandatory, i.e. its unsuccessful attempt constitutes a procedural condition for access to ordinary justice, similarly to what is already in force for the energy sectors. Problems concerning the social bonus continue to be handled by the Energy and Environment Consumer Help Desk.

125 Special solution procedures are applied for specific types of problems in the energy sectors, for the solution of which, at the final customer's request, the Help Desk can access codified information in centralised databases (as is the case for special information procedures) and, where appropriate, also send special requests for information to the operators involved. In particular, final customer issues related to the social bonus and CMOR are handled through these procedures.

126 Resolution 233/2023/R/com.

In 2023, a total of 7,194 complaints were handled, 96% of which related to the social water bonus and the remainder divided between issues related to billing, technical quality, non-payment of bills and contractual quality of service. 92% of the complaints were resolved through the handling of the dispute by the Help Desk. Most of the complaints were sent by users via e-mail/certified e-mail (PEC). On the other hand, in 2023, 4,491 written requests for information were sent by water users to ARERA, which, as for written complaints, mostly concerned the topic of the water bonus (64% of the total), followed by topics related to billing (16%), contract quality (7%) and non-payment of bills (5%).

Moreover, in 2023, following the monitoring of complaints and written reports from end users, ARERA adopted four sanctioning measures that ended with the imposition of fines totalling approximately € 750,000.

Concerning the district heating sector, 189 written communications were handled by the Help Desk in 2023, 79% of which concerned the transparency of the service and, in particular, the sub-topics of billing and tariffs applied by operators in calculating consumption amounts.

Finally, for municipal waste, ARERA initiated the extension of the protection system with Resolution 621/2023/E/ref. In 2023, some 230 communications were sent to the Help Desk, mainly on topics related to tariffs and service quality[127].

Social bonuses

In view of the significant increase in electricity and gas prices, there have been numerous Government interventions on social bonuses, which have, on the one hand, increased the quantification of the bonus to be disbursed and, on the other, extended the number of recipients by raising the thresholds of the Equivalent Economic Situation Indicator (ISEE) useful for access to countertrade[128].

In particular, the raising of the ISEE threshold to € 15,000 made it possible to benefit from the automatic mechanism for around 1.5 million households, who had obtained an ISEE certificate above € 9,530, but below the new threshold of € 15,000. Consequently, in 2023, 4.5 million electricity bonuses and 3 million gas bonuses were recognised to direct customers, i.e. holders of individual natural gas supplies: the estimated amount corresponding to the bonuses recognised is approximately € 1,427 million for the former and approximately € 716 million for the latter[129].

127 The Consolidated text for the regulation of the quality of the municipal waste management service is in force from 1 January 2023.

128 For a reconstruction of the interventions, see par. 10.2 'Initiatives in favour of customers/users in economic hardship and serious health conditions: social bonus for electricity, gas and water' in Volume 2.

129 Annual amount corresponding to the bonuses recognised for 2022 based on the number of bonuses activated for the different bonus types. Bonuses have a benefit period of 12 months, the start of which depends on the date on which the DSU is submitted and certified. The actual disbursement date for bonuses awarded to direct supplies depends on the billing cycle. The actual amount disbursed is reported by the relevant operators to the IWS on a bimonthly basis, within 60 days of the end of each two-month period.

TAB. 10.14 *Configuration of ISEE thresholds for accessing social bonuses in 2023*

Bonus type	ISEE threshold (€)	ISEE threshold (€) for large families	Value of social bonuses
Electricity/gas	9.530	30.000	100%
	15.000		80%
Water	9.530	20.000	100%

Source: ARERA.

As of 31 December 2023, there were 64,828 households with an active hardship bonus (+24% compared with 2022)[130].

TAB. 10.23 *Amount of the electricity bonus for physically disadvantaged customers (2023)*

Extra consumption compared to typical user (2700/kWh/year)		Quarter I 2023 (1)	Quarter II 2023 (2)	Quarter III 2023 (3)	Quarter IV 2023 (4)
€/quarter per withdrawal point		Ordinary bonus (CCF) + temporary supplementary countertrade (CCI)	Ordinary bonus (CCF) + temporary supplementary countertrade (CCI)	Ordinary bonus (CCF) + temporary supplementary countertrade (CCI)	Ordinary bonus (CCF) + update (aggBO)
MINIMUM BAND up to 600 kWh/year	up to 3 kW	99,00	59,15	59,80	47,84
	3,5 kW	111,60	74,62	78,20	57,96
	4,0 kW	117,00	81,90	88,32	60,72
	from 4,5 kW upwards	169,20	137,41	146,28	111,32
MEDIUM BAND between 600 and 1200 kWh/year	up to 3 kW	171,90	91,91	93,84	80,96
	3,5 kW	180,00	102,83	106,72	86,48
	4,0 kW	185,40	111,02	117,76	90,16
	from 4,5 kW upwards	240,30	169,26	179,40	140,76
MAXIMUM BAND more than 1200 kWh/year	up to 3 kW	248,40	128,31	130,64	120,52
	3,5 kW	253,80	136,50	141,68	123,28
	4,0 kW	260,10	145,60	152,72	126,04
	from 4,5 kW upwards	311,40	200,20	210,68	170,20

(1) resolution 735/2022/R/com.
(2) resolution 134/2023/R/com.
(3) resolution 297/2023/R/com.
(4) resolution 429/2023/R/com.
Source: ARERA.

130 The facilitation is divided into three consumption bands, depending on the type of equipment used, the average hourly consumption of each type of equipment and of average hours of use per day. On the basis of these elements, certified by the Local Health Unit (ASL), the customer is assigned to one of three counter-trade bands. The three bands of use are further differentiated to take into account the committed power of the supply.

Resolution No. 153/2023/R/com of 11 April 2023 implemented the provisions of the Prime Ministerial Decree of 15 March 2023, which in turn implemented Article 14-bis of Decree-Law No. 4 of 27 January 2022, converted, with amendments, by Law No. 25 of 28 March 2022 - Fund for the support of the families of persons with serious illnesses who use electricity for medical equipment necessary for life-sustaining purposes. These provisions provided for the disbursement of a one-off contribution, per withdrawal point, to recipients of bonuses for physical discomfort on 31 December 2022, for electricity supplies with power levels of 3.5 kW or more and with the intensity and use of life-saving equipment positioned in the medium (between 600 and 1200 kWh) and maximum (over 1200 kWh) bands. The amount allocated by the Prime Ministerial Decree of 15 March 2023 was distributed among the stakeholders and instructions were given to the operators to pay the one-off contributions in the first available bill.

TAB. 10.24 *Amount of the one-off contribution for physically disadvantaged customers (€/withdrawal point) under the Prime Ministerial Decree of 15 March 2023*

Extra consumption compared to typical user (2700/kWh/year)	Power of subsidised supply	One-off contribution in implementation of the Prime Ministerial Decree of 15 March 2023 (€/withdrawal point) (1)
AVERAGE BAND between 600 and 1200 kWh/year	3.5 kW	190
	4 kW	190
	from 4.5 kW upwards	190
MAXIMUM BAND over 1200 kWh/year	3.5 kW	190
	4 kW	190
	from 4.5 kW upwards	190

(1) Resolution 153/2023/R/com.
Source: ARERA..

As far as the social water bonus is concerned, the countertrade process has slowed down compared to bonuses in the energy sectors. This is due to some peculiarities of the water sector (the SII is not directly connected to water operators and therefore is not populated with information on water users as is the case for those in the energy sectors) and, in part, to the critical issues that emerged during the implementation of the systems, due both to the many fulfilments required of the operators on the privacy side, and to the difficulties encountered by smaller operators due to technical problems in managing flows to and from the SII.

Projects financed through the Sanctions Fund

During 2023, the implementation of activities for the benefit of electricity, gas and integrated water service customers continued, financed through the resources of the Sanctions Fund, fed by the proceeds of sanctions imposed by ARERA[131].

131 Pursuant to Article 11-bis of Decree-Law No 35 of 14 March 2005, converted into Law No 80 of 14 May 2005, the amount resulting from the payment of the penalties imposed by ARERA is allocated to a fund for the financing of projects for the benefit of customers of electricity and gas and of the integrated water service, approved by the Minister of Enterprises and Made in Italy on the recommendation of ARERA itself. The rule was last amended by Decree-Law No. 181 of 9 December 2023, which provided for in Article 14, inter alia, the transfer of the Sanctions Fund, and related competences, to the Ministry of the Environment and Energy Security.

132 Established by Resolution 620/2015/E/eel of 17 December 2015.

The customer-friendly projects implemented during 2023, which were the subject of previous proposals by ARERA and approved by the Minister for Business and the Made in Italy, concerned:

- support for ADR conciliation procedures (PDR project), carried out at the ARERA Conciliation Service or at ADR entities registered with ARERA[132] that offer free procedures for customers.

- the activation, for the three-year period 2023-2025, of a network of qualified territorial help desks of the customers able to provide households with qualified information and assistance on electricity, gas and water services, and involves covering the operating costs of the service provided and communication activities designed to promote customer knowledge and access to services (PQS Project).

Finally, ARERA recommended to the competent Minister the definitive confirmation of the procedure for the financing of the activities for the implementation and management of the "Portale Offerte", without prejudice to the adjustments that may be necessary in relation to any future changes in the regulatory framework of reference; the recommendation was approved by the Minister by decree of 14 December 2023.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