ARERA: THE FIGURES FOR PUBLIC UTILITIES

The volumes of ARERA's Annual Report are now on-line. 2022 data for electricity, gas, water and waste.

Rome, 11 July 2023

With the **presentation** by the Board to Parliament and the Government of the **2023 Annual Report**, **the two volumes of the Annual Report by ARERA** – the Italian Regulatory Authority for Energy, Networks and Environment – on the state of services and regulatory activities in 2022 **have been published on the website www.arera.it**.

The information given in the two volumes (partly summarised here) **regards the calendar year of 2022**. **A picture influenced by the energy crisis following the Russian invasion of Ukraine.**

In particular, price trends, and their comparison between different European countries based on Eurostat data, are also influenced by the **diversity of public interventions by governments** to protect customers in the energy sectors.
In the Italian case, many of the interventions, which employed substantial public resources, have ensured a **limitation of prices even downstream of their formation, through bonuses**, which have selectively protected increasingly large groups of customers in economic difficulty from the increases of the crisis phase. **In other European experiences, intervention has focused on the upstream stages**, directly affecting price formation in wholesale markets. For Italy, a greater dependency on gas as a direct source of consumption or electricity generation also weighed heavily, while other major European countries were able to rely on other sources less impacted by the crisis (e.g. nuclear in France or coal in Germany).

SECTORAL DATA FOLLOWS

ARERA SERVICES FOR CONSUMERS

SOCIAL BONUSES: MORE THAN 6.2 MILLION BONUSES RECOGNISED, FROM APRIL THE NUMBER OF BENEFICIARIES TO COMBAT HIGH ENERGY PRICES INCREASED

In 2022, the second year of implementation of the automatic bonus scheme, a **total of 6,207,263 economic hardship bonuses** were disbursed: 3,766,105 electricity bonuses (+51.4% on 2021) and 2,441,158 gas bonuses (+58.7%), **for a total value in excess of Euro 2,162 million** (approximately Euro 1,313 million for electricity bonuses and approximately Euro 849 million for direct gas bonuses). The bonus for physical difficulties, which was granted to 52,176 families in 2021 (+24.33%), remains "on demand" through the SGATE system.
As of 1 October 2021, a series of legislative provisions provided for **the reinforcement of the** social electricity and gas **bonus** on a quarterly basis, financed with funds from the state budget transferred to the Energy and Environmental Services Fund. ARERA therefore introduced the supplementary compensatory component (CCI), which is in addition to the 'ordinary' bonus and is updated every

quarter. Also, with this in mind the government adopted further urgent measures to counter the economic effects of the Ukrainian crisis, deciding, in particular, to raise **the ISEE threshold for access to the social bonus for electricity and gas to Euro 12,000 for the period from 1 April to 31 December 2022** (increased to Euro 15,000 for 2023, Euro 30,000 for large families).

SPORTELLO PER IL CONSUMATORE ENERGIA E AMBIENTE (ENERGY AND ENVIRONMENT CONSUMER HELP DESK): EURO 19.8 MILLION RECOVERED THROUGH CONCILIATION. NUMBER OF CALLS DOUBLED, 96% RELATED TO ELECTRICITY AND GAS

In 2022, the call centre received **1,254,318 calls** during service hours (+99% compared to 2021), with an average call time of 238 seconds (241 in 2021). In line with previous years, **96% of calls concerned the electricity and gas sectors, and the social bonus remains the most recurring topic with 68% of contacts**, while the remainder (dispute resolution, open dossiers, Portals and gradual standard offer service) stopped at 32%. **Written requests for information** totalled 57,710 (almost three times as many as in 2021) and largely concerned the energy sectors (55,422), compared to 2,139 requests for the water sector and 149 requests for district heating. The top five topics covered were: social bonus (58%), billing (11%), market (10%), contracts (10%) and non-payment of bills and suspension (5%). Requests for the activation of **special information procedures for the energy sectors** amounted to 41,958 in 2022, slightly down from 2021 (-4%).

In 2022, the **Conciliation Service received 24,339 applications (+19% compared to 2021),** for an average of 108.3 applications per working day. 53% of requests involved the electricity sector (+5% compared to 2021), 22% gas (-3.5%) and 13% the water sector (-5%). Finally, applications from dual fuel customers and prosumers accounted for 11% and 1% respectively. 73% of the requests received involved households. The agreement rate stands at 69% (-1% compared to 2021) with an **average conclusion time of 54 days** (4 less than the previous year). Looking at the three main sectors by number of applications, it is water that has the highest rate of agreement (75%) on completed procedures in this sector, followed by gas (72%) and electricity (65%).

In 2022, more than 19.8 million euros were given in compensation, namely payment 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.).

LITIGATION: SINCE ARERA STARTED, 97.4% OF RESOLUTIONS APPROVED VALID, IN 2022 APPEALS GROW

Out of a total of 12,524 resolutions approved by ARERA since it was started (April 1997-31 December 2022), 1,363 (10.9%) have been challenged and 320 (23.5% of the total resolutions challenged and 2.6% of those adopted) have been fully or partly definitively cancelled (with final judgement). Therefore, the rate of resistance of ARERA's resolutions to jurisdictional control stands at around 97.4%.

In 2022, there was a rise in litigations in terms of the number of appeals brought as compared with the previous year. Due mainly to the appeal by producers of renewable energy sources of the resolution on the two-way compensation mechanism on the price of electricity fed in by certain types of RES plants, introduced in implementation of a government ruling, a **total of 1,081 appeals** were registered in 2022 (950 directly related to this case), **compared to 74 total appeals in 2021** (144 in 2020).

ELECTRICITY

ELECTRICITY: IN 2022 PUBLIC INTERVENTIONS REDUCED BILLS FOR HOUSEHOLDS, COUNTERACTING HIGHER PRICES THAN THE EURO AREA AVERAGE

In 2022, various public interventions reduced the final bill of households, counteracting the high prices of the crisis phase. In the Italian case, in fact, many of the interventions have ensured a limitation of prices even downstream of their formation, above all through bonuses, which have selectively protected increasingly large groups of customers in economic difficulty. **In other European experiences, intervention has instead taken place upstream, directly affecting price formation in wholesale markets.**

Average electricity prices for households in 2022 (thus not considering the effects of bonuses for our country) show increases of +40% in Italy and +13% in the Euro Area (with average final prices of 36.43 c€/kWh in Italy and 27.94 c€/kWh in the Euro Area), while in 2021 the increases in Italy and the Euro Area had remained around +5%. In both cases, the **increase in gross prices is due to the significant changes in net prices (energy and sales prices and network costs), which are higher in Italy** (+72%) **than in the Euro Area** (+43%) and are partly offset by the effects of the albeit significant measures adopted to reduce the charges and taxes component (-35% in Italy and -40% in the Euro Area).

The gross price differential with respect to the Euro Area, which had remained below +6.5% in 2020 and 2021, for Italy in 2022 reaches an average of +30% and is positive for all classes: there is therefore a reversal of the trend (with respect to the path of relative improvement in prices started in 2017), in particular, in the DB (consumption from 1,000 to 2,500 kWh/y) and DC (consumption from 2,500 to 5,000 kWh/y) classes, in which the highest consumption is concentrated in our country, where the differential for gross prices had remained weakly negative in the previous two years.

In relation to net prices, differentials remained positive compared to the Euro Area in 2021 for all consumption classes, with values this year close to 30% in all classes except the last one, where they were +43%; in the DB and DC classes, in particular, the differentials were +7% and +3% respectively in 2021. The last class, which accounts for a residual share of consumption, is the one affected by the largest gaps in energy and sales prices (+62%), ranging from +50% to +55% in the other classes.

Turning to the DC intermediate consumption class (2,500-5,000 kWh/year) – representing households, insofar as in addition to having the greatest weight in terms of energy sold (41%), it also includes the average customers taken as reference for ARERA – the gross price has increased by 46%, in the face of an average increase in the Euro Area of 13% and much smaller increases in the main countries (+9% in Spain, +8% in France and +3% in Germany).

Still looking at pre-tax values, **Italian households with consumption in this class pay a price of 33.71 c€/KWh, which is 58% more than the French and 9% more than the Spanish, while it is fully comparable with the price paid by German households, compared to which the positive deviation is limited to about 2%**.

ELECTRICITY: IN ITALY, CONSUMPTION AND PRODUCTION DECLINE (-1%), HALF THE PRODUCTION STILL FROM GAS (48.5%). RENEWABLES DOWN TO 35%, DROUGHT-DRIVEN DROP IN HYDROPOWER (-37.8%). PHOTOVOLTAICS GROW (+12.3% ON 2021). WIND POWER STABLE.

Electricity consumption decreased by 1.1%; the decrease in electricity consumption was most noticeable in industry (-3.9%), residential (-2.8%) and agriculture (-1.7%), whereas it increased in the tertiary sector (+4%).

Just over 86% of domestic demand was met by domestic production, the remainder was sourced from abroad. These values are in line with those of 2021 (while in 2020, the share of domestic production had been 90%). **Domestic production decreased by 1%, while imports grew by 1.8% and exports by 16.4%.**
Gross domestic production specifically decreased from 289.1 TWh in 2021 to 286.9 TWh in 2022 (-1%).
Thermoelectric production increased by 7.9% after growing by 5.2% last year due to the low contribution of hydro. As a result of the crisis in the gas market, very significant increases were recorded in production from solids (+84.9%), oil products (+91.5%) and other energy sources (+38.6%), while **natural gas saw a decrease of 3.7%, although this source continued to account for just under half of gross production (48.5%; 49.5% in 2021)**.
Renewables were down 13.9%, but within them, photovoltaics grew by 12.3%. In particular: hydro generation -37.8%, given the water emergency in 2022; generation from bioenergy -8.5%, from wind -1.8% and from geothermal -1.7% compared to 2021.
Renewables contributed approximately 35% to the national electricity generation mix, less than in 2021 (when this share was 40%).
Enel once again returned to being the leading operator in thermoelectric generation (ENI was first in 2021), covering 18.3% of gross national production, while Eni, the second operator, had a share of 13.9% (last year it stood at 15.8%).
Enel is also confirmed as the top operator in production from renewable energy resources, with 21.5% of gross generation, in particular with a significant share in hydroelectric (39.8%, down on the 41.2% of last year) and all geothermal production. Among the top 15 groups contributing to generation from renewable energy is Eni, which is the tenth largest player with generation from wind, solar and bioenergy. Significant, as in previous years, is Erg's 11.7% share in wind power, as well as Edison's 9.5% share.
For 2022, the costs of incentivising renewable energy sources amounted to approximately € 6.4 billion, which is significantly lower than in previous years (€ 10.5 billion in 2021), due to high electricity market prices. In the period between 1 October 2021 and 31 March 2023, some of these costs, those related to the special trade regimes (guaranteed minimum prices and on-site exchange) were charged to general taxation.

ELECTRICITY: SWITCHING INCREASES, 64.8% OF HOUSEHOLDS HAVE NOW CHOSEN THE FREE MARKET. FIXED-PRICE OFFERS PREVAIL

In 2022, the number of domestic withdrawal points was 30.1 million, of which 10.6 million were served in the protection regime offer and 19.5 million in the free market. The domestic points served **in the free market have now risen to 64.8%** (a figure that will rise to 69.3% in March 2023). If we then look at the volumes, the free market is even wider: in 2022, in fact, energy purchased by the household sector in this market rose to 68.5% from 61% of the previous year. The domestic withdrawal points that are supplied in the protection regime offer are still just under a third of the total.
In 2022, the share of households purchasing electricity on the free market exceeded 50% in all regions (Sardinia was missing in 2021). There are eight regions where more than 65% of domestic withdrawal points are served in the free market; there were two in 2021.
Household switching has grown again, both in terms of withdrawal points and volumes, approaching that of non-households. 17.9% of households - about 5.3 million withdrawal points - changed supplier at least once during the year. In recent years, household switching has confirmed a certain acceleration from a more modest trend maintained until 2018.
In 2022, the number of operators also rose, albeit to a lesser extent than in recent years to a total of 560 active suppliers. 15 companies have started supplying in the electricity free market: among them, many are companies that were already present in the energy markets with other activities. It would appear that 66 companies have ceased operating, a much larger number than in the past because it includes the many adjustments to the activities of companies that took place following the entry into

operation of the Ministry of Ecological Transition's list of entities entitled to supply electricity to final customers (EVE).
The Enel group remains, as always, the dominant operator in the entire Italian electricity market, this year with a share increasing to 36.2% from 34.4% in 2021 (after several years of slight decline), thanks to a discreetly positive increase in total group supplies of 4.8%. While supplies to medium voltage (+19%) and high voltage (+31.5%) customers grew very strongly, there were reductions in supplies to households (-6.3%) and much more modest growth among non-domestic low voltage customers (+3%).
With a share of 7.1%, the A2A group confirmed its second position in the overall ranking in 2021, overtaking the Edison group (5.3%), which has always been the incumbent's top chaser.
In 2022, the level of concentration in the total market rose slightly again: the share of the top three operators (corporate groups) rose to 48.7% of total supplies, whereas it was 46% in 2021.
76.7% of households signed a fixed-price contract in the free market (i.e. with the price not changing for at least one year from the time of signing), while 23.3% chose a variable-price contract, i.e. with the price changing at a time and in a manner determined by the contract itself. The preference for variable price has grown, also due to the specific market conditions experienced in 2022; in 2021, the variable-price contract was chosen by 18.6% of households.
2.5% of households have signed a contract with a minimum contractual duration clause, meaning that the customer does not have to change supplier for a minimum amount of time specified in the contract in order for the price to be applied.
Index-linking to the trend in the average PUN (in various forms) is the most common mode in both contracts for household and non-household customers.
For the first time since the advent of the liberalisation of electricity supplies to households, the free market presented significantly lower price values for all classes than the protection regime offer, as a result of the predominance of locked-price contracts in the free market, which limited or delayed, at least in the immediate future, the effects on final customers of the huge price rises in the wholesale markets highlighted above.

GAS

GAS: GLOBAL CONTRACTION OF CONSUMPTION. GREATEST DECLINE SEEN IN EUROPE (-14%), PRODUCTION INCREASES (+3.6%) AND IMPORTS FALL, BUT LNG IS +63%.
Globally, there was a contraction of about 1.5% in world gas consumption, but Europe experienced the largest percentage drop at -14.0%. In Asia Pacific and China, the decrease in demand was -1.6% and -0.8% respectively, in the latter case with the first drop in demand in two decades. The US, on the other hand, saw a significant increase in demand (+5.4%), mainly driven by thermoelectricity uses as a result of a lower use of coal due to its higher price compared to that of US gas. Looking at the top five EU markets in terms of size, Germany, Italy, France, the Netherlands and Spain, it can be seen that **the reduction in consumption ranges from a low of -3.8% in Spain to -22% in the Netherlands**. **Italy recorded -9.9% and Germany -15.3%. In the UK, demand fell by approximately 7%.**
Global gas production remained constant, but within it, unconventional gas production increased from 25% of the 2021 total to 31%. **In Europe, production grew by 3.6%,** driven by Norway and the UK. **By contrast, the EU-27 posted a decrease of -7.7%,** to which the planned drop in production from the Groningen reservoir in the Netherlands contributed.
In the aftermath of the war in Ukraine, the European supply system changed, in terms of trade flows of internationally traded gas: there was a **massive recourse to LNG available on the international market, new regasification terminals (floating and onshore) were built and/or planned, and secondly, there was an increase, where possible, of pipeline imports as an alternative to Russian gas**.

In 2021, the EU-27 imported about 375 billion m^3 (gross of re-exports), 80% via pipeline and 20% via LNG. **In 2022, total imports decreased to about 360 billion m^3 (-3.6%), of which 64% was via pipeline and 36% via LNG. Pipeline imports decreased by about 21% (-63 billion m^3).** The EU's decision to substitute imports from Russia in the short to medium term has led to a reduction in flows from that country of approximately 80 billion m^3. **In 2021, Russia accounted for about 50% of EU imports by natural gas pipeline, in 2022 it was 28%.** It is precisely with LNG that, with the help of falling demand, the European Union was able to replace Russian gas and fill up storage facilities during the year. **In 2022, the EU imported approximately 130 billion m^3 of LNG, an increase of 63% compared to 2021 (80 billion m^3), diverting flows to Europe that were originally destined for Asia, where competition from Europe's record prices has since caused dramatic drops in these imports.**
46% of the LNG imported in the EU-27 came from the Americas, particularly the US, 21% from Africa, 15% from the Middle East and 15% from Russia, an increase of 35% (+5 billion m^3) compared to 2021. Additional volumes by pipeline came from Norway (+7 billion m^3) and Azerbaijan (+3 billion m^3), while from Algeria there was a shift of flows from Spain to Italy, with a slight decrease overall.

GAS: RECORD MARKET PRICES WITH THE BREAKDOWN OF THE WAR, POINTS OF EVEN 320 €/MWh. HIGH PRICES FOR IMPORTS TOO

By the end of 2021, prices at the main European hubs had reached € 115/MWh, after which they fell slightly. With the outbreak of the war in Ukraine in March, the first records reached € 120-130/MWh, with peaks at € 200/MWh. **During the summer**, the gradual reduction in Russian gas and the need to rapidly fill the storages, which was advancing at an excessively low rate, led to a strong supply/demand imbalance which, together with certain cyclical factors, pushed **spot prices to unprecedented levels: in August, around € 230/MWh on a monthly average, with daily peaks close to € 320/MWh, i.e. a value equal to almost fifteen times the average price over the decade 2011-2021**. After a fall in the early autumn, gas prices gradually rose again due to increased demand for heating and unprecedented supply uncertainty, to which problems in French nuclear power plants also contributed. In the first half of December, prices on the PSV (the Italian wholesale market) again reached € 140/MWh, a 55% increase over the November average. **The PSV ended the year with an average value of € 124.8/MWh, +167% compared to 2021 (€ 47.2/MWh) and almost 8 times the 2019 average (€ 16.4/MWh).**
The record levels of prices at the hubs were also gradually affecting the average import prices at the borders. The average indicative value of gas at the borders imported into Europe peaked in September and October (€ 155-160/MWh), while that at the Italian border reached an indicative value in September (€ 134/MWh). The BAFA index, which represents Germany's monthly import price, averaged between the values of gas imported under multi-year and short-term contracts, peaked at € 149/MWh in August, although, like the other price indicators at the border, it remains almost constantly below the spot prices at the hubs.

GAS: IN 2022 IN ITALY CONSUMPTION FALLS TO -10%, 99% OF GAS IMPORTED: GAS FROM RUSSIA HALVED, WHICH REMAINS THE SECOND SUPPLIER, ALGERIA FIRST, AZERBAIJAN THIRD WITH THE TAP PIPELINE, NORWAY GROWS. EXPORTS OF ITALIAN GAS ABROAD TRIPLED

In 2022, **net consumption of natural gas dropped by 7.5 billion cubic metres, coming in at 67.3 billion cubic metres (-10% on 2021).** Consumption of the industrial sector dropped by -15.5% and that of thermoelectric generation by -4.1%. The lowest level was also reached for “Trade and Services”, after the post-pandemic rebound of 2021, marking a -15%. The same was true for transport-related gas consumption at -18% and the domestic sector, which between measures to curb consumption and one of the mildest winters fell by 13.5%.

The decline of domestic production slows down but does not stop, with a -2.7% in 2022 compared to 2021. In total, 3.4 billion cubic metres of natural gas have been extracted: 1.75 billion from the sea and 1.65 from the land-based fields. The **degree of Italy's dependency on foreign suppliers has risen to almost entire, 99% (from 93.5% in 2021).** Eni controls approximately 66% of domestic production, from 70% in the previous year, a long way off the Royal Dutch Shell group, stable at 16%. **Gross imports** remained stable **at 72.6 billion cubic metres**, but independence from Russian imports increased (halved from 40% to just under 20% of the total). **Algeria became the first supplier country** with about **36%**, followed by **Russia** and then **Azerbaijan with approximately 15%**. Next in the ranking is Qatar, from which 10% of the total gas imported to Italy arrives (9.4% in 2021), followed by Norway (up from 2.7% in 2021 to 8.6% in 2022) and then Libya stable at 4.3%, with new LNG routes from Africa under negotiation at government level. **Of the 73 billion m^3 of gas imported into Italy, 14.5 (9.9 in 2021) billion m3 came via ship.** Alongside the traditional – and majority – origins from **Qatar, Algeria and the United States**, which together account for **88% of all LNG imported**, in recent years other countries are also becoming important in the import by ship: Spain, Egypt and Nigeria.
Eni retreats considerably, remaining first in importers, with a market share of 41.9% (48.4% in 2021). Together, the top three importers supplied 70.1% of the gas that came into the Italian market (72.4% in 2021). The volumes of gas exported have tripled compared with 2021, rising from 1.5 to 4.6 billion m^3. The reduced availability of electricity from French nuclear power plants and the drought, which caused a drop in hydroelectric production, particularly in southern Europe, probably contributed to the growth. **There was also an increase in the volumes stored, which at the end of the year were about 2.6 billion m^3 higher than at the start of the year, partly as a result of government measures taken to ensure a high filling level. In the thermal year 2022-2023, the total storage space was 17.7 billion m3, including 4.6 billion m3 of strategic reserve.**

GAS: THE NUMBER OF ACTIVE ENTERPRISES ROSE TO 512. THE LEVEL OF MARKET CONCENTRATION RISES. MORE THAN 66% OF FAMILIES ARE ON THE FREE MARKET

In the supply segment, out of a total of 512 operative companies (-+23 compared with 2021), just 30 (5.9% in 2021) supplied more than 300 million cubic metres, covering 85.3% of all gas acquired on the retail market.
In 2022, the **level of concentration on the end supply market rose slightly**. The top three groups control 44.3%, while in 2021 the share was 43.4%. Considering the top five groups, the market portion served rose to 55.4% (as compared with 53.9% in 2021). Only half a percentage point behind Eni (15.9%) and Edison (15.4%). By contrast, the gap between Edison (15.4%) and Enel (13%) widened from 1.5% to 2.4%.
In 2022, the share of households that acquired gas in the standard offer service dropped to 33.2% (36.6% in 2021).
Approximately 2.8 million customers changed supplier in calendar year 2022, with a switching percentage that totalled 13.7% (from 11.6% in 2021) and corresponding to a portion of volumes of 12.5% (it was 13.4% in 2021). The category that made the most changes of supplier is that of condominiums (24.1%).

GAS: IN 2022 PUBLIC INTERVENTIONS REDUCED BILLS FOR HOUSEHOLDS, COUNTERACTING HIGHER PRICES THAN THE EURO AREA AVERAGE, HIGHER TAX CUTS THAN THE EURO AREA

Just like for electricity, in 2022, various public interventions reduced the final bill of households, counteracting the high prices of the crisis phase. In the Italian case, in fact, many of the interventions have ensured a limitation of prices even downstream of their formation, above all through bonuses, which have selectively protected increasingly large groups of customers in economic difficulty. **In other European experiences, intervention has instead taken place upstream, directly affecting price formation in wholesale markets.** For Italy, a greater dependency

on gas as a direct source of consumption or electricity generation also weighed heavily, while other major European countries were able to rely on other sources less impacted by the crisis (e.g. nuclear in France or coal in Germany).

As a result, in 2022 natural gas prices for Italian households (i.e. without taking into account the effects of bonuses for our country), including charges and taxes, were higher than the average of prices in the Euro Area for all consumption classes, even at the highest prices ever recorded. For the first consumption class (< 520 m^3/year), in particular, a slight increase in gross prices was recorded, +6% as compared with the Euro Area (it was +11% in 2021). For the class in which the greatest portion of total domestic consumption occurs (class 520-5,200 m^3/year with 71.8% of consumption), the gap with the average gross prices of the Euro Area reduces slightly, going to +9% (from +12%). For the class of over 5,200 m^3/year (mainly centralised heating), the value instead came to +29%, up on last year's +21%.

In terms of net prices, the difference with the Euro Area increased for all consumption classes. The component of charges and taxes falls for all three classes, and the differential with the Euro Area, which was still +9% in 2021, becomes strongly negative at -31% on average with respect to the Euro Area average: the advantage is greater for households in the first class (with a differential of -85%) than for those in the second class (-29%), while the last class shows a slightly positive differential (+3%).

The above outcomes are due to the **dynamics of net price increases**, both in Italy and in the Euro Area, which, **however, occurred more markedly in Italy** (on average +81% vs +55%), against a drop in tax components, as a consequence of the support measures adopted, more significant in Italy (on average -45%) than in the Euro Area (on average -14%). Looking at the comparison with the main European countries, the **Italian gross price (11.1 c€/kWh) is on average the highest, with negligible positive differences compared to Spain (11.02 c€/kWh), higher compared to France (9.59 c€/kWh) and highest compared to Germany (8.53 c€/kWh)**.

For the lowest consumption class, the Italian price (13.85 c€/kWh), including taxes, remains lower, as in the past, only than the French price (14.97 c€/kWh). In the second class, the Spanish price, which was higher than the Italian one in 2021, is marginally cheaper in 2022 (10.32 c€/kWh) than the Italian one (10.4 c€/kWh). The best prices, in all classes, are confirmed as the German ones. There was an improvement in the differences compared to German (from +29% to +19%) and Spanish (from +8% to +1%) prices with reference to the first customer class.

WATER SERVICE

WATER: INVESTMENT EXPENDITURE RISES TO € 13.5 BILLION. THE INTERVENTIONS SCHEDULED HAVE BEEN CARRIED OUT

Since July 2022, ARERA has been conducting investigations for the approval of the two-yearly (2022-2023) update of the tariff arrangements of 48 utilities (covering just under 27 million inhabitants). Compared to 2021, the average change in user fees was +4.97% with a certain degree of geographic heterogeneity: +3.32% in the South and Islands, +4.42% in the North-East, +5.36% in the Centre and +6.26% in the North-West. On the basis of the programmes of interventions (which together with the plans of strategic works form part of the acts constituting the regulatory scheme of each management) transmitted to ARERA, **planned investments** (net of public contributions) stand at **€ 208/inhabitant at a national level (corresponding to € 52/inhabitant/year)**, with the highest values recorded in the Centre (€ 286/inhabitant) and the lowest in the South and Islands (€ 132/inhabitant). Also considering the availability of public funds, **investment expenditure totals € 13.5 billion for the four-year period (2020-2023)**. 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. The realisation rate was in fact (considering the total investments in the two-year period 2020-2021) almost 100%, with a lower value for operators operating in the South and Islands area.**

WATER: € 326/YEAR AVERAGE SPENDING FOR A TYPICAL HOUSEHOLD MADE UP OF 3 PEOPLE. IN SPITE OF IMPROVEMENTS, THERE ARE STILL CRITICAL ISSUES ON OUTAGES AND SEWERAGE NETWORKS, ESPECIALLY IN THE SOUTH AND ISLANDS

In 2022, **the average expenditure of a three-person household with an annual consumption of 150 m^3**is nationwide **€ 326/year** (€ 2.17 per cubic metre consumed). The figure refers to a sample of 63 cases (supplying the service to approximately 34 million inhabitants), with a more limited value in the North-West (€ 232/year) and higher in the Centre (€ 390/year); in this latter area, the competent bodies have planned a greater spending per capita for the 2020-2023 period for investments to be financed through tariff. The value, however, stops at € 132/inhabitant in the South and Islands area. Looking at **the items that make up the bill of domestic users**, again with consumption of 150 m^3/year, it appears that about 39.2% of the expenditure is attributable to the aqueduct service, for which € 127.7/year is spent nationally, 12.1% is attributable to the sewerage service (€ 39.4/year) and 29.2% to the purification service (€ 95.3/year). Finally, the fixed fee accounts for 10.4% (€ 33.9/year) and taxes for 9.1% (€ 29.6/year). In 2022, ARERA conducted a further in-depth study on **technical and infrastructural aspects** on the most recent data available (2021), which, compared to the previous report, refer to a larger sample of operations, setting 2016 (the first year of the collection of the macro-indicators of technical quality) as the base year for comparisons. Specifically, **the national average of water leakage stands at 41.8% or 17.9 m^3/km/day, the latter figure shows an improvement of 12% compared to the base year although large geographical differences (the "water service divide") persist**. The same misalignment at the territorial level is also found in the data on **service interruptions, which are strongly conditioned by some critical situations at the territorial level**, showing on average low values in the North-West (0.66 hours/year) and the North-East (0.68 hours/year), higher values in the Centre (31.55 hours/year) and higher values in the South and Islands (204.69 hours/year). However, this figure shows an average reduction of 32% compared to 2016. Finally, with regard to the sewerage system, despite improvements compared to the base year, the data show a rate of inadequacy of flood drains (i.e. equipment to prevent overloading and spillage from sewers in the event of heavy rainfall) that in the South and Islands is almost double that of other areas of the country. On a national average, **20% of flood drains need to be brought** up to standard, while **sewer floods and spills** account for **4.6 per 100 km of sewer network** (with a peak of **10 per 100 km in the South and Islands**). The analysis of investment requirements (gross of contributions) conducted on the two-year period 2022-2023, the planning update period, confirms, at a national level, the concentration of the operators' efforts on the containment of the level of **water leakage**, which absorb **27%** of the total planned resources (up from 22% in last year's analysis). This was followed by investments to improve the **quality of purified water at 16.1%** (they were at 18.1%), investments to reduce **water shortages 15.3%** (13.5%), and investments to **upgrade the sewerage system at 13.5%** (13.9%). The share of investments in integrated water service infrastructure that cannot be directly attributed to specific technical quality objectives set by ARERA stands at 10.5%. In general service terms, the national picture for the two-year period is more oriented towards planned investments in water supply network facilities (45.6%) than in sewerage networks and purification plants (overall 40.66%), although **differences remain between individual geographical areas**: in the North-West there is a greater need for sewerage and water treatment infrastructures, while in Central Italy the gap between the two phases increases in favour of aqueduct facilities.

WASTE: THE NUMBER OF OPERATORS IS STILL INCREASING, RISING TO 8,100, BUT 66% CARRY OUT ONLY ONE ACTIVITY. THE TARIFF METHOD COVERS 90% OF THE INHABITANTS.

In 2022, with the approval of the new MTR-2 tariff methodology, the second period of tariff regulation for the integrated municipal waste management service began, characterised by the economic-financial planning of the service over a multi-year horizon extending to the four-year period 2022-2025, continuing to involve a very large number of competent bodies (3,550) and tariff areas. Confirming the significant fragmentation of the service, an analysis of the number and type of activities carried out

by all the registered operators (8,101) also shows that, in most cases (66.6%), the subjects are accredited for a single activity and only rarely (1.9%) for all the activities in the cycle. With reference to the **2022-2025 Economic-Financial Plan,** ARERA has received the **tariff arrangements for 5,987 areas** (5,961 municipal and 26 multi-municipal) representing **approximately 90% of the population** (52.3 million inhabitants served). The analysis of the economic-financial plans available to ARERA showed increases in tariff revenues ranging between 2.4% in 2022 and 0.9% in 2025: at a geographical level, the greatest variations are observed in the Islands (+5.6% over the two-year period), while the smallest are in the Centre and in the North-West macro-area (just over 3%). As far as **tariff arrangements for treatment services** are concerned, ARERA received 61 proposals from 13 competent bodies, mainly referring to plants operating in the North and Centre of the country. The arrangements concern 39 "minimum" and 22 "intermediate" (i.e. those subject to tariff regulation in some way) plants. Finally, with reference to the **guarantee mechanisms inherent in the tariff approval procedures**, during the year 2022, ARERA received a total of 68 reports of inertia (116 in 2021), 62 of which concerned situations of inertia on the part of municipal waste management service operators, while the remaining 6 concerned the inertia of operators of minimum or intermediate facilities.

DISTRICT HEATING

DISTRICT HEATING: GROWING TREND, STILL CONCENTRATED IN NORTHERN ITALY. PRICE AUTHORITY INVESTIGATION AFTER MAJOR INCREASES IN THE LAST QUARTER OF 2021

The growth trend of district heating and cooling is confirmed, between 2000 and 2021 the connected volume increased at an average annual rate of 5.9%, from 117.3 to 381.8 million cubic metres, and the extension of the networks quadrupled, from about 1,091 km in 2000 to 4,805 km in 2021. **The 5 regions of the north**, Lombardy, Piedmont, Trentino-Alto Adige, Emilia Romagna and Veneto, **alone represent more than 95% of the thermal energy dispensed**. In 2021, thermal power stations serving district heating networks produced 12,331 thermal GWh (+9%), 7,185 electric GWh (+15.9%) and 129 refrigeration GWh (+4.2%).

Natural gas remains the clearly predominant energy source for the operation of telecoil plants with 72.1% (69.2% in 2020) of total energy consumption, while renewables almost completely cover the remaining share with the main contribution coming from waste (15.4%) and bioenergy (biomass, biogas and bioliquids, at 9.5%). The number of companies operating in the district heating sector today registered with the Authority Operators Registry is 258 (253 last year). Of these, 86% generally deal in an integrated fashion with activities that are strictly linked to the operation of networks and supply of thermal energy to utilities (distribution or metering or supply), whilst the remaining portion only deal with the production of thermal energy.

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 portion of the market in fact consists of residential and service users (respectively 64.9% and 32.2% of the total), whilst the demand of the industrial sector remains marginal (2.8%).

Starting in the last quarter of 2021, there was a significant increase in the prices of district heating service: the median value of prices rose from a low of € 81/MWh in the third quarter of 2020 to a high of € 191/MWh in the first quarter of 2022. For this reason, **ARERA initiated a fact-finding investigation into price and cost developments for the period between 1 January 2020 and 31 March 2022**, which covered the largest operators in the sector to which more than 80% of market volumes correspond. The results showed potential critical issues in relation to both market dynamics and, limited to some contexts, the fairness of the prices charged. In light of these findings, **ARERA brought to the attention of the Parliament and the Government 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**. Cost reflective regulation now under development in 2023.