

TERNA: ELECTRICITY CONSUMPTION INCREASES BY 2.2% IN 2024

NEW INSTALLED CAPACITY IN 2024 REACHES 7.5 GW: TOTAL OF 50 GW OF RENEWABLES ACHIEVED BETWEEN SOLAR AND WIND POWER

FOR THE FIRST TIME, RENEWABLE SOURCES ACCOUNT FOR MORE THAN 40% OF DEMAND COVERAGE, MATCHING THE CONTRIBUTION OF FOSSIL SOURCES

Record-breaking photovoltaic production (36.1 TWh) and double-digit growth in hydroelectric generation (+30.4%)

Nearly 1,000 MW of large-scale energy storage capacity commissioned in 2024

Rome, 16 January 2025 – According to data from Terna, the company that manages the national transmission grid, led by Giuseppina Di Foggia, electricity consumption in Italy increased by 2.2% in 2024 compared to 2023, reaching 312.3 billion kWh, with a peak hourly demand of 57.5 GW recorded on July 18 between 3:00 and 4:00 p.m. Last year, renewable energy sources achieved a record-high demand coverage of 41.2% (compared to 37.1% in 2023), driven by significant contributions from hydroelectric and photovoltaic generation.

The annual increase in electricity demand was primarily observed during July and August, months characterized by temperatures above the ten-year average. Regionally, electricity demand rose across the country: +2.2% in the North, +2.3% in the Center, and +2.1% in the South and Islands.

In 2024, Terna's IMCEI index, which monitors electricity consumption among approximately 1,000 energy-intensive industrial enterprises, remained stable (-0.3%). Notably, positive trends were recorded in the cement, lime, and gypsum; paper; food; and steel sectors, while declines were observed in non-ferrous metals, chemicals, transportation equipment, and ceramics and glass.

On the supply side, 2024 saw significant growth in renewable generation (+13.4%) and a slight decline in net foreign exchange (-0.5%), driven by a sharp increase in exports (+47.9% compared to 2023) and a modest rise in imports (+2.4%). In December, for the first time, Italian electricity exports surpassed 4,000 MW during certain hours, highlighting the critical role of interconnections in importing cost-effective energy and, increasingly in the future, in providing a flexible mechanism to share generation and storage resources in response to the growing variability of renewable generation.

More specifically, Italy's electricity demand in 2024 was met 83.7% by domestic production and 16.3% by net imports. Domestic net production (264 billion kWh) increased by 2.7% compared to 2023, with the following breakdown by source: double-digit growth in hydroelectric (+30.4%) and photovoltaic (+19.3%) generation, the latter reaching a record 36 TWh. Wind (-5.6%) and geothermal (-0.8%) generation declined, while thermal generation decreased by 6.2%, primarily due to a 71% reduction in coal-fired generation, which has been nearly eliminated except for operations in Sardinia. This reduction in coal usage corresponds to an estimated CO2 emissions reduction of over 8 million tons.

According to Terna, the total increase in renewable capacity in 2024 amounted to 7,480 MW, exceeding the 2023 figure by 1,685 MW (+29%). As of December 31, Italy's installed renewable capacity totalled 76.6 GW, including 37.1 GW of solar and 13 GW of wind power. The 2021-2024 installation target set by the DM Aree Idonee (June 21, 2024) was surpassed by 1,609 MW.

From January to December 2024, nominal storage capacity increased by 2,113 MW. Italy now has approximately 730,000 storage installations, corresponding to around 12,942 MWh of capacity and 5,565 MW of nominal power, of which 1,065 MW is utility-scale. Growth in small-scale storage was driven by fiscal incentive policies, while utility-scale installations benefited from long-term contractual mechanisms under the capacity market framework.

In December, electricity demand rose by 2.8% year-on-year, aided by two additional working days (20 vs. 18) and average monthly temperatures 1.6°C lower than in December 2023. Adjusted for temperature and calendar effects, the increase was 1.3%. On a month-to-month basis, demand remained stable (+0.1% compared to November). Regionally, demand growth was observed across the board: +1.9% in the North, +3.5% in the Center, and +4.4% in the South and Islands. Renewable sources accounted for 31.7% of monthly demand (compared to 34.3% in December 2023).

Domestic net production (21.5 billion kWh) rose by 4.5% year-on-year in December, with the following breakdown by source: photovoltaic (+35.3%), thermal (+11.2%), wind (+8.2%), hydro (-35.4%), and geothermal (-1.5%). The net import-export balance decreased by 3.6%, with exports increasing by 12.9% and imports decreasing by 2.2%.

The IMCEI industrial consumption index showed a 6.5% year-on-year decline in December 2024, with increases in paper, food, cement, lime, and gypsum; ceramics and glass; and mechanical sectors, and declines in chemicals, steel, non-ferrous metals, and transportation equipment. Adjusted for seasonal and calendar effects, the monthly variation was flat (-0.1% compared to November).

The IMSER index for October registered a slightly negative variation (-0.4% year-on-year), the second such instance in 2024. However, the first ten months of the year showed overall growth of +3.7% compared to the same period in 2023.

A detailed analysis of the provisional monthly electricity demand for 2024 is available in the "Monthly Electricity System Report," accessible under "Electric System >> Publications >> Monthly Report" on Terna's website: www.terna.it. Real-time data on the operation of the national electricity system can also be accessed via Terna's app, available on major app stores:

<https://play.google.com/store/apps/details?id=it.terna.energia&hl=it>

<https://apps.apple.com/it/app/terna/id1458535498>