

Monthly Energy Bulletin

TSKB Economic Research

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The share of electricity generation from renewable resources reach 44.3% in European Union (EU) countries

According to “European Electricity Outlook 2024” report published by Ember Climate, the share of renewable energy resources in electricity generation in EU countries increased to 44.3% in 2023 from 38.5% in 2022. The report remarked that electricity generation from coal had halved in the EU since 2016, while coal based electricity generation had dropped to its lowest level in 2023. Ember Climate emphasized that the amount of electricity generated by wind power exceeded the amount of electricity generated by natural gas for the first time, adding that energy sector emissions had fallen by 19% in 2023. The report remarked that share of the electricity generation by nuclear energy stood at 22.9% in 2023, while the share of electricity generated by wind had reached 17.6%.

According to another report of Ember Climate, the capacity of hybrid power plants of Türkiye that use solar energy as its supplementary resource would had reached 510 megawatts (MW) as of 2024. The report stated added that the solar power capacity had reached 12.2 gigawatts (GW) with the additional hybrid solar energy capacity surpassing the the wind power capacity of 11.8 GW.

In addition to these reports, WindEurope published “Wind Power in Europe: 2023 Statistics and the Outlook for 2024-2030” report. According to this report, an additional 18.33 GW of wind capacity was established in Europe in 2024, with 16.2 GW of this new capacity established by EU member states. Off-shore wind farms accounted for 79% of the newly established capacity, with newly established on-shore wind farms constituting 3.8 GW of the new capacity. WindEurope indicated that wind power facilities built in 2023 would not be adequate to meet Europe's climate and energy targets by 2030, and that Europe would need to build an additional 260 GW of wind power capacity between 2024 and 2030.

26.58
TWh

February Gross
Generation

1,957.9
TL/MWh

Average
MCP

4.0%

Daily average licensed electricity generation decreased by 3.4% MoM and increased by 4.0% YoY in February.

[Click](#) for details.

-30.1%

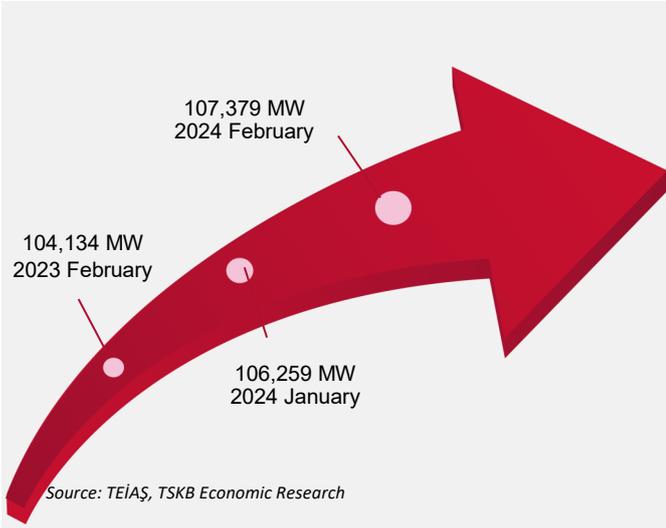
Market Clearing Price (MCP) increased by 0.8% MoM and decreased by 30.1% YoY in February.

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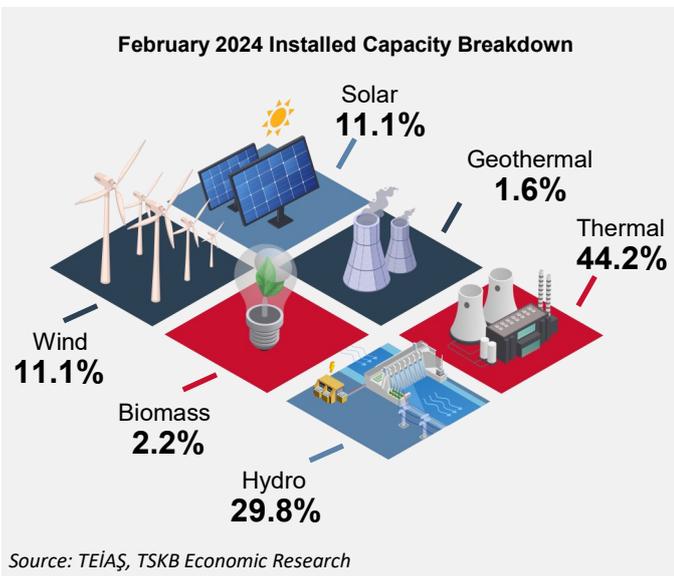


Installed Capacity Analysis

Türkiye's total installed generation capacity, which stood at 106,259 MW at the end of January 2024, reached 107,379 MW in February 2024. A mere 119.6 MW in net installed capacity was activated in February, lower than the 899.3 MW added in the previous month, and reached. Renewable waste power plants accounted for 109.2 MW of the new installed capacity. There was no change in solar and wind capacity when compared to the previous months, while the capacity of natural gas and multi-fueled electricity power plants increased by 5.4 MW.

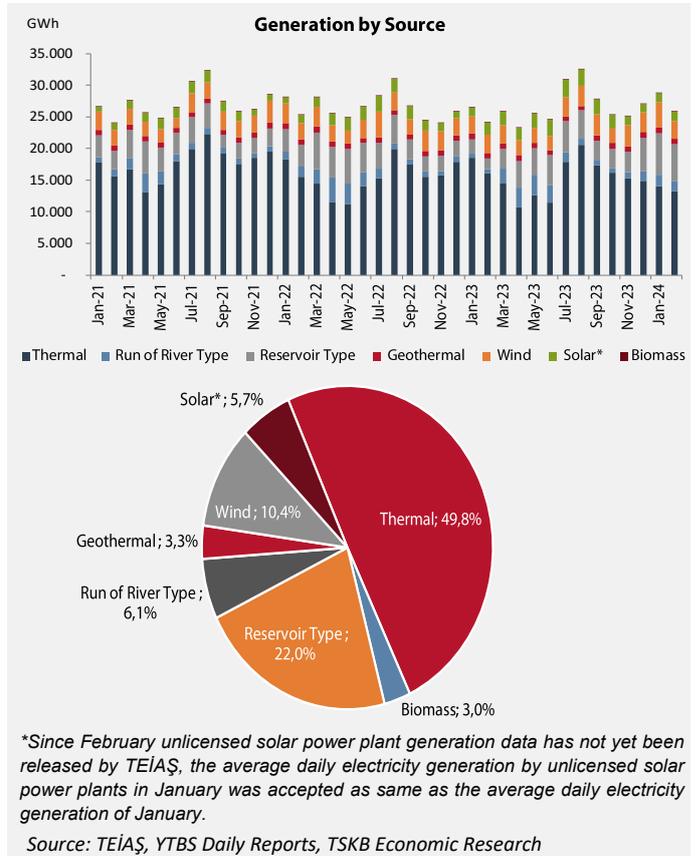


The share of renewable energy power plants in total capacity increased to 55.8% in February, up from 55.7% in the previous month. Hydroelectric power plants provided 29.8% of the total installed electricity capacity in Türkiye, with wind and solar power plants accounting for a 22.2% share of total installed capacity.



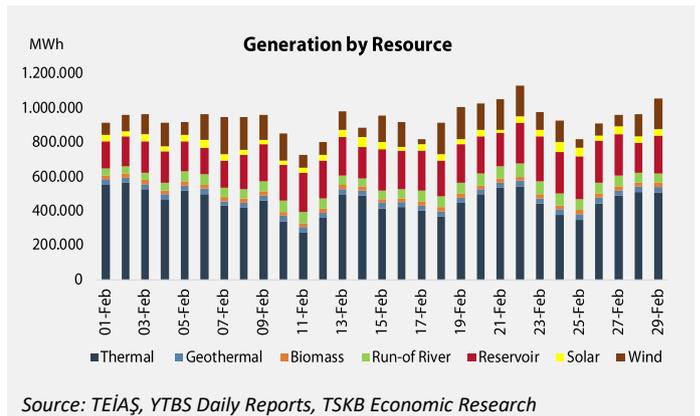
Generation-Consumption Analysis

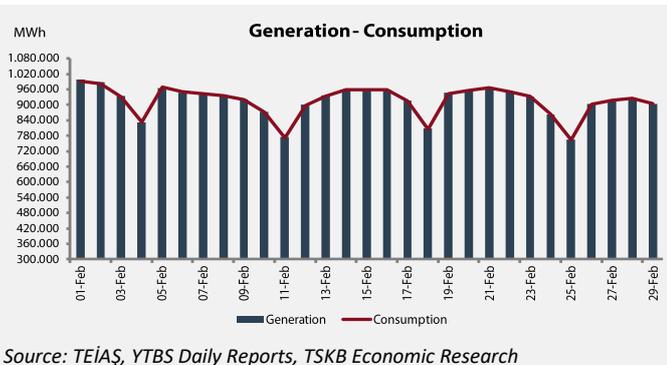
Total electricity generation, which stood at approximately 29.4 terawatt hours (TWh) in January 2024, declined to 26.6 TWh in February 2024. In addition, daily average electricity production increased by 4.0% in February in comparison with the same period of the previous year, and decreased by 3.4% in comparison with the previous month.



Thermal power plants provided 47.8% of the electricity generated in January 2024 and 49.8% of the total in February. A breakdown of generation by source finds that hydroelectric power plants, which had a 28.3% share of total generation in the previous month, generated 28.1% of the total electricity in February. In the same period, the share of electricity generated by wind declined from 13.6% in January to 10.4% in February. Geothermal energy power plants contributed 3.3% to total electricity generation.

The share of renewable energy power plants in the electricity production was 52.2% in January 2024, and reduced to 50.2% in February 2024. In the same month, dam-type hydroelectric power plants generated 22.0% of the total electricity, while run-of-river type hydroelectric power plants generated 6.1% of the total electricity. In addition, the ratio of electricity generated by wind and solar power in total generation stood at 16.2%. Wind was the second biggest source of electricity, after dam-type hydro-electric power plants, with a 10.4% share of total generation in February.





Source: TEİAŞ, YTBS Daily Reports, TSKB Economic Research

Licensed power plants generated an average of 916,612 MWh of electricity per day in February. The minimum generation during the month was 764,758 MWh on Sunday, February 25th with the maximum generation recorded on Thursday, February 1st, at 998,142 MWh.

In the same period, the daily average electricity consumption stood at 915,632 MWh with the maximum recorded on Thursday, February 1st (992,138 MWh) and the minimum on Sunday, February 25th (762,704 MWh).

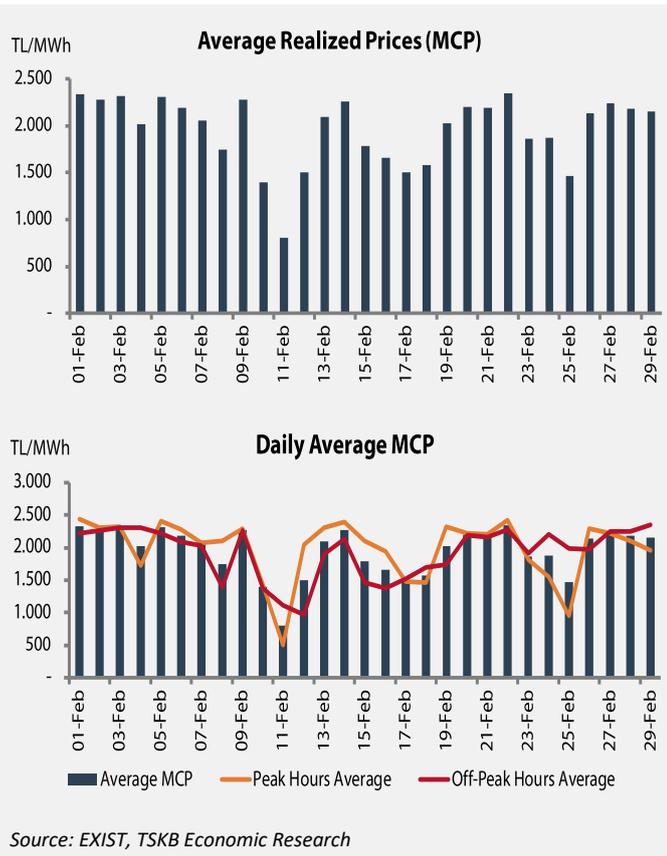
Electricity Price Analysis

The daily average market clearing price (MCP) ranged from TL 805.00 to TL 2,400.00/MWh in February. The average daily MCP stood at TL 1,957.70/MWh in February with the highest daily average MCP value recorded on Thursday, February 22 at TL 2,349.70/MWh and the lowest on Sunday, February 11, at TL 806.20/MWh.

In an analysis of the hourly data, the MCP reached the maximum price limit of TL 2,700/MWh in January for a total of 16 hours.

The minimum hourly electricity price of TL 10.00/MWh was reported between 12PM-2PM on Sunday, February 11.

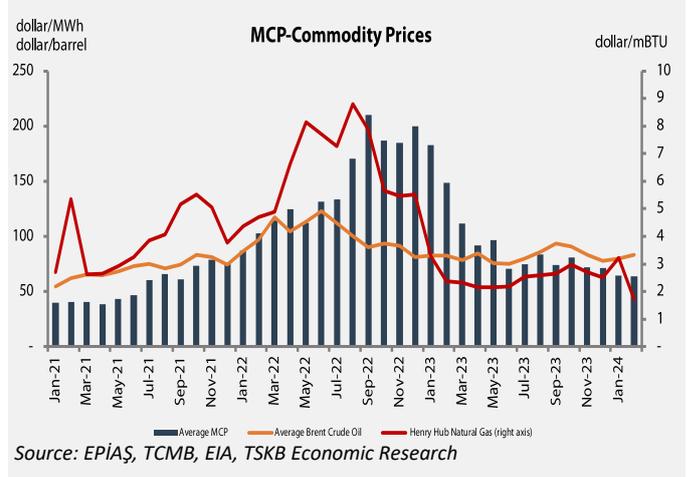
In an analysis of the daily MCP for February, the peak hours (8AM-8PM) average was 1.5% higher than the all-hours average value, at TL 1987.30/MWh. During peak hours, the highest limit price of TL 2,700 /MWh was recorded for 14 hours, with the lowest price of TL 10.00/MWh recorded for 2 hours.



Source: EXIST, TSKB Economic Research

During the same period, the average off-peak hours (8PM-8AM) rate was TL 1,928.0/MWh. The maximum limit price of TL 2,700/MWh was reached twice during off-peak hours, with the lowest price of TL 500/MWh only recorded for two hours.

While the MCP averaged USD 64.60/MWh in January 2024, the MCP declined to an average of USD 63.70/MWh in February, marking a fall of 57.2% compared to the same period of the previous year in dollar terms.



Source: EPIAŞ, TCMB, EIA, TSKB Economic Research

Average Commodity Prices

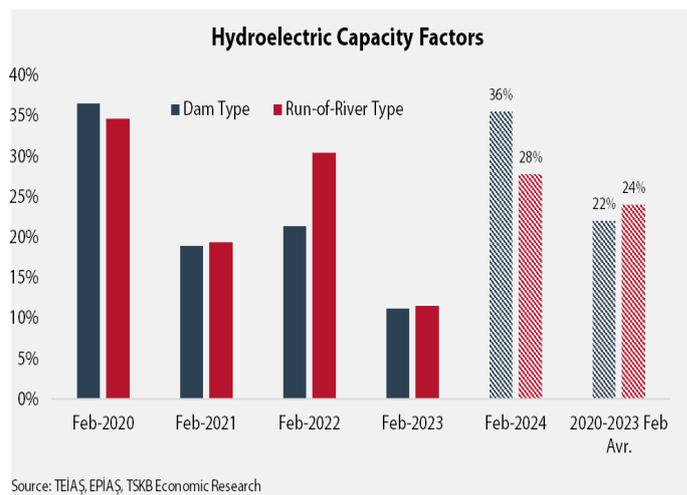
Brent oil prices increased to USD 83.36 per barrel in February, from an average of USD 79.78 per barrel in January 2024, marking a 4.5% monthly rise. This average price was 0.9% higher than the same period of the previous year.

The Henry Hub natural gas contract price, which averaged USD 3.23/mBtu in January, decreased by 46.4% on the month to USD 1.73/mBtu in February, also coming in 27.3% below the price for the same period last year.

Hydroelectric Capacity Factors

Capacity factors of dam-type hydroelectric power plants and run-of-the-river type hydroelectric power plants stood at 36% and 28% respectively in February 2024. This was 9 percentage points higher than the capacity factor for last February.

The capacity factors for both types of hydroelectric power plants exceeded the average values of 22% and 24%, respectively, for the months of February 2020-2023, dam-type hydroelectric power plants operated at higher capacity factors than run-of-the-river type power plants during the same time period.



Source: TEİAŞ, EPIAŞ, TSKB Economic Research



Sector News

Local News

-Energy Market Regulatory Authority (EMRA) releases December 2023 Electricity Market Report. According to the analyses, total electricity consumption increased by 0.23% from 328.1 terawatt-hours (TWh) in 2022 to 328.8 TWh in 2023. While total output declined by 0.17% from 325.3 TWh in 2022 to 324.8 TWh, renewable energy resources accounted for 42.5% of total generation.

-EMRA publishes Natural Gas Market Report for December 2023. According to the report, natural gas imports declined by 7.64% from 54.7 billion cubic meters (bcm) in 2022 to 50.5 bcm in 2023. Natural gas consumption decreased by 5.5%, from 52.9 bcm in 2022 to 50.0 bcm in 2023.

-Ministry of Energy and Natural Resources (ETKB) issues Renewable Energy Resource Area (YEKA) statement, identifying three potential YEKAs. Candidate YEKA locations include Burdur, Diyarbakır, and Mersin. The new YEKA region in Karaman is 15.41 square kilometres.

-Turkish Electricity Transmission Inc. (TEİAŞ) announces TL 451.3 million in capacity mechanism support in December 2023. Thus, the budget distributed through the capacity mechanism in 2023 was TL 4 billion, compared to the TL 3 billion announced for 2022.

-Directorate of Climate Change releases 2024-2028 Strategic Plan. According to the strategy developed in accordance with 'Türkiye's 2053 Net Zero Emission Target, the Directorate's goals include the establishment of the National Emission Trading System (ETS), an infrastructure for the voluntary carbon market and national equalization. However, the pro-

posal to improve climate financing capacity anticipates a 39% reduction in greenhouse gas emissions by the end of 2028, compared to the growth in the 2012 reference scenario.

-Proposals for floating solar power plants with a potential 80GW in capacity. According to Solar Energy Producers and Industry Association (GENSED) Secretary General Hakan Erkan, Türkiye has the potential for 80GW of floating solar power capacity if 10% of the area on lakes, ponds and reservoirs are covered with panels, excluding those used for drinking water. The investment cost is estimated to be in the order of USD 700,000 for each MW of capacity in floating solar power plants.

-TEİAŞ authorizes 3,750 MW in wind, solar, and hybrid power. The allotted capacity right will be used for unlicensed energy production investment purposes.

-Turkish Statistical Institute (TUIK) releases Household Final Energy Consumption Statistics for 2022. TÜİK issued the first data set on total residential energy usage in 2022, which was 1.3 exajoules. An analysis of the distribution of consumption by energy source and usage type finds that the natural gas constituted the highest percentage in home consumption (48.3%), with 76.3% used for space heating. Natural gas was followed by electricity (17.1%) and coal (14.3%), with 82.4% of electricity being used for lighting and electrical appliances, and 98.9% of coal being utilized for room heating.

-Agreement signed to build Türkiye's first gigawatt-hour (GWh) energy storage plant. Kontrolmatik group enterprises will commission a wind farm in Tekirdağ, capable of generating 875 million kWh of electricity annually. The project, which will have 50 wind turbines with a combined capacity of 250 MW, is expected to reach the provisional approval stage by 2027. Dur-

ing the signing ceremony, Vice President Cevdet Yılmaz emphasized the importance of the USD 600 million investment, adding that the contract for the first phase of the project, worth USD 375 million, had been signed.

-Agreement reached to set up a green hydrogen and R&D facility in the Marmara Organized Industrial Zone (OSB). According to the agreement signed with the Green Hydrogen Producers Association (H2DER), operations will include green hydrogen production to meet the OSB's needs, as well as green hydrogen storage and transport. In addition, advertising and training activities to popularize green hydrogen are planned as part of the project.

-EPIAŞ and The European Energy Exchange (EEX) sign memorandum of understanding to establish a carbon market in Türkiye and construct an Emission Trading System (ETS) compatible with the EU. The EPIAŞ General Manager, Taha Meli Arvas, commented on the EPIAŞ's announcement, stating that the new collaboration with EEX would significantly contribute to the construction of an effective and efficient ETS in Türkiye, in line with European Union principles.

Foreign News

-International Energy Agency (IEA) claims there is no longer a direct correlation between GDP growth and CO2 emissions. The analysis highlights that both developed and developing countries should completely break this relationship by ramping up their investments in clean energy. According to the IEA, the divergence in the relationship between GDP growth and CO2 emissions, which would generally be expected to move in the same direction, was a result of electrification, increased technical energy efficiency, and developed countries moving away from coal with the impact of clean energy investments.

-European Investment Bank (EIB) and energy network company RESA sign a EUR 190 million agreement as part of the firm's 2023–2026 energy transition plan. The agreement is expected to be used to strengthen and modernize the electricity network, support the growth of the regional network and supply the infrastructure required for adaptable and effective energy management.

-Industrial Carbon Management Approach, announced by the European Commission, expected to help cut net greenhouse gas emissions by 90% by 2040 when compared to 1990 levels. The Commission's statement outlined the Industrial Carbon Management Approach and expressed support for the EU's goal of becoming climate neutral by 2050. However, it also emphasized that in order to meet this emission target, the EU must develop a comprehensive policy approach to develop carbon capture and storage technologies by 2040, as well as about 280 million tonnes of CO2 storage capacity. The Financial Times reports that the 30% reduction in methane, nitrogen, and other greenhouse gases linked to agriculture that was part of the carbon management method had been cancelled in response to the recent protests by farmers in the European Union.

-United States Energy Information Administration (EIA) lowers its oil price prediction for 2024. According to EIA predictions, the Brent crude oil price will average USD 82.42 per barrel in 2024, slightly higher than the average of USD 80 per barrel in January due to growing uncertainty surrounding global oil shipments. The EIA had previously projected an average Brent crude oil price of USD 79.48 per barrel in 2025

and USD 82.49 per barrel in 2024.

-Plan to boost investments in clean energy in developing nations discussed in "Reducing the Cost of Capital", a paper released by the IEA. According to the report, high costs of capital have prevented most emerging and developing economies (EMDE) from carrying out substantial investments in renewable energy. While the IEA predicts that capital flows towards clean energy in EMDEs need to increase from USD 270 billion to USD 870 billion in the early 2030s if the global energy transformation is to succeed, it also highlights the significance of energy policies and regulations that are developed at this scale with international financial and technical support.

-European Commission declares that it will form a new SMR Alliance to expedite the development, introduction and installation of Small Modular Reactors (SMR) in the EU. The EU's aim of climate neutrality by 2050 will require use of all technologies, as the commission noted when it issued a call for applications to join the SMR Alliance.

-OPEC (Organization of Petroleum Exporting Countries) raises its projection for daily crude oil demand to 104.4 million barrels per day in 2024. According to OPEC's Monthly Oil Market Report for February, the rise in air and road travel, as well as in industrial, construction, and agricultural activity will lead to an increase in demand for oil. Furthermore, OPEC projected that demand would rise to 104.4 million barrels per day in 2024, an annual increase of 2.2%. In January, OPEC raised its prediction for both years by 40,000 barrels per day, estimating that oil consumption would rise by 1.8% to 106.3 million barrels per day in 2025.

-USD 12 trillion will need to be invested if renewable energy sources are to triple. USD 8 trillion should be invested in renewable energy facilities, according to a report by Climate Analytics, and USD 4 trillion should be used to build the grid and storage infrastructure that will support these facilities. Furthermore, the report highlights that under current policies, more than USD 6 trillion will be invested in fossil fuels. It also emphasizes that if this amount is reallocated to renewable resources and grids, the investment gap could be closed and the target of keeping the rise in the global average temperature to 1.5°C global average temperature target can be maintained.

-Shell projecting a 50% increase in demand for Liquefied Natural Gas (LNG) by 2040. Global consumption is predicted to reach between 625–685 million tonnes in 2040, despite the fact that demand is predicted to keep rising, particularly as China's shift from coal to gas accelerates and Asian nations



consume more LNG to support their growth. On the other hand, the value of the global LNG commerce is on course to surpass 397 million tonnes in 2022, reaching 404 million tons in 2023.

-IEA's February Oil Report published. According to the report, global demand for oil, which was 101.8 million barrels per day in 2023, is expected to increase to 103 million barrels per day in 2024. Demand for oil climbed by 2.4 million barrels per day in 2023 and is expected to increase by 1.2 million barrels per day in 2024. The IEA predicts that non-OPEC member nations will account for 95% of the predicted increase of 1.7 million barrels per day in production in 2024, noting the fact that the increase of 2.8 million barrels per day in the third quarter of 2023 had decreased to 1.8 million barrels per day in the fourth quarter.

-EUR 6.9 billion support package for hydrogen energy approved according to announcement from the European Commission. It is anticipated that the package, which aims to reduce reliance on natural gas and increase the supply of renewable hydrogen, will mobilize EUR 5.4 billion in private sector investment. The package, in which 32 companies will take part in 33 projects, aims to develop hydrogen storage facilities with a minimum capacity of 370 GWh, the deployment of 3.2 gigawatts of large-scale electrolyzers and 2,700 km of pipelines for hydrogen carriers, the development of hydrogen storage facilities and building port infrastructure capable of handling 6,000 tonnes of hydrogen per year.

-Natural gas consumption in Europe at its lowest point in the last ten years. Demand for natural gas has decreased by 20% in the last two years following Russia's invasion of Ukraine, while Europe's natural gas consumption declined in 2023 due to efficiency measures implemented by the countries and an increase in the use of renewable energy resources, according to a study conducted by the Institute of Energy Economics and Financial Analysis (IEEFA). Germany, Italy and the UK accounted for the largest portion of the reduction, according to IEEFA. The analysis did, however, project that LNG consumption would peak in 2025 while the capacity of LNG terminals in Europe would be three times as high as LNG demand by 2030.

-2060 Net Zero Energy report for nations in Europe and Central Asia (ECA) published by the World Bank. The paper provides the least expensive way for ECA nations to maintain the rise in global temperature to below 2°C and achieve carbon neutrality by 2060. The research highlights that for countries to become carbon neutral by 2060, their energy systems must become net zero by 2040, with commercial buildings carbon neutral by 2050 and houses carbon neutral by 2055. While 14 of the 23 nations covered by the research have not yet adopted a net zero goal, it is noted that coal accounts for 42% of emissions in ECA countries (excluding Russia). The report's lowest-cost decarbonization scenario highlights that 90% of coal capacity should be gradually removed by 2030. Additionally, the report claims that energy efficiency, technological developments and behavioural change have the potential to lower overall final energy consumption by 28% by 2060 compared to the reference scenario.





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