

Monthly Energy Bulletin

TSKB Economic Research

December 2022 #55

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Work continuing for extraction of natural gas

A natural gas reserve of 58 billion cubic meters (bcm) has been discovered in the Black Sea. President Recep Tayyip Erdoğan announced the discovery of the gas field, adding that this new discovery was in addition to the previously discovered 540 bcm reserve, which had since been revised to 652 bcm as a result of data analysis. As a result, the total reserve in the Black Sea is now 710 bcm.

Furthermore, the capacity of the Silivri Underground Natural Gas Storage Facility has been increased to 4.6 bcm. President Erdoğan stated during his speech at the Ceremony to mark the capacity increase that the new facility will be the largest underground natural gas storage facility in Europe, and that Thrace will become a natural gas and energy hub. President Erdoğan stated that the natural gas reference price will be established in Turkey and that work on natural gas and energy transportation from Turkmenistan had got underway. In a speech at the opening ceremony, the Minister of Energy and Natural Resources Fatih Dönmez stated that these reserves could provide 25% of winter natural gas demand, with plans to supply the system with Black Sea natural gas by March 2023.

In another statement, Mr. Dönmez stated that natural gas use would be 10-12% lower this year compared to last year because of the relatively mild seasonal conditions, while adding that a Floating Liquefied Natural Gas Storage and Gasification Unit (FSRU) would be operational in the in the Saroz Gulf in January.

26.72
TWh

December Gross
Generation

3,724.4
TL/MWh

Average
MCP

-7.9%

Daily average licensed electricity generation increased by 5.0% MoM with a decline of 7.9% YoY in December.

[Click](#) for details.

8.3%

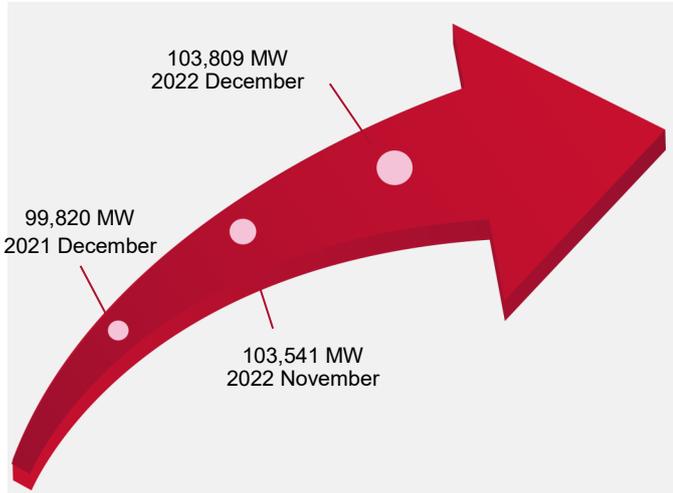
Market Clearing Price (MCP) increased by 8.3% MoM and 269.3% YoY in December.

[Click](#) for details.



Installed Capacity Analysis

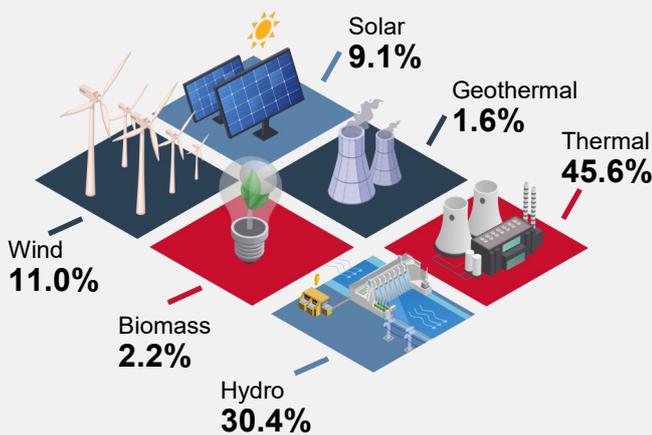
Turkey's total installed generation capacity, which had reached 99,820 megawatts (MW) at the end of December 2021, reached 103,809 MW by the end of 2022. A net total of 268.2 MW in installed capacity came onstream in December, with solar power plants accounting for 106.4 MW of this installed capacity. In the same period, there was an increase of 30.6 MW in the total net installed capacity of wind farms, while the increase was 82.9 MW for renewable waste energy power plants. In addition to these capacities, the net capacity of natural gas power plants increased by 35.2 MW in December.



Source: TEİAŞ, TSKB Economic Research

In November, 54.3% of the capacity of the power plants in operation consisted of renewable energy. Thus, the share of renewable resources remained above 54%. Hydroelectric power plants accounted for a 30.4% share of Turkey's total installed electricity power, followed by wind and solar power plants with a 20.1% share.

December 2022 Installed Capacity Breakdown

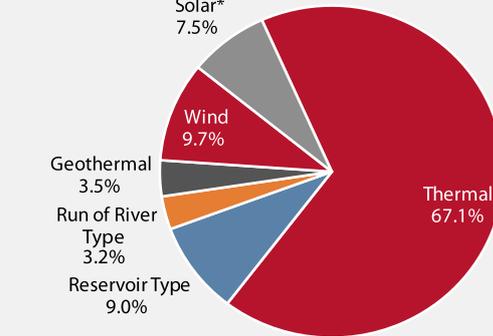
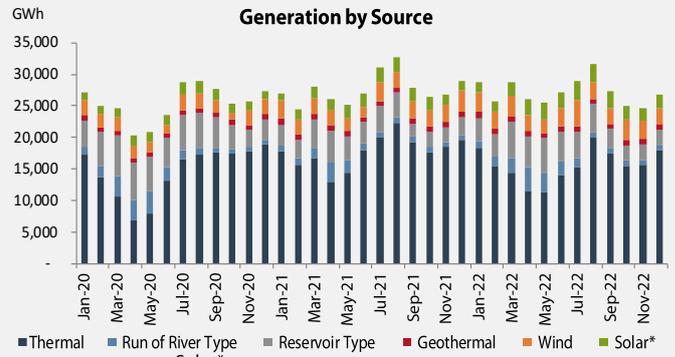


Source: TEİAŞ, TSKB Economic Research



Generation-Consumption Analysis

A total of 26.72 terawatt-hours (TWh) of electricity was generated in December, compared to 24.62 TWh in November. Average daily electricity consumption in December was up by 4.4% compared to the previous month, but down by 7.1% when compared to the same period of last year.

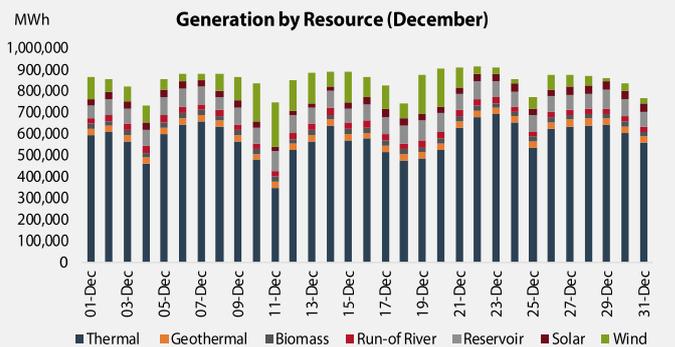


*Since December unlicensed solar power plant generation data has not yet been released by TEİAŞ, the average daily electricity generation by unlicensed solar power plants in December 2022 was accepted as same as the average daily electricity generation of November 2022.

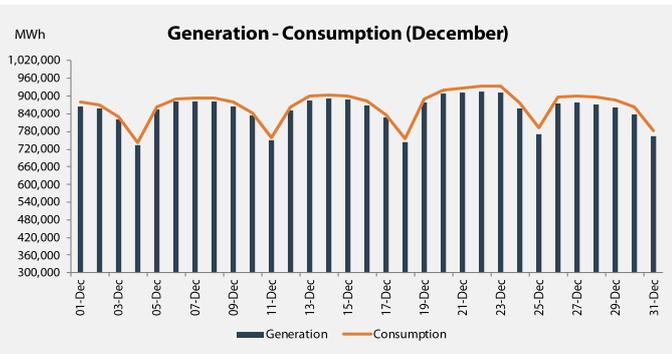
Source: TEİAŞ, YTBS Daily Reports, TSKB Economic Research

Thermal power plants generated 63.8% of the electricity generated in November and 67.1% of the total electricity generated in December. Looking at the breakdown of power plants by resource, hydroelectric power plants generated 12.2% of all electricity in December, compared to 12.8% in November. During the same time period, the share of electricity generated by wind farms fell by 2.3 percentage points from the previous month to 9.7%. Geothermal power plants, on the other hand, accounted for 3.5% of total electricity generation.

The proportion of renewable energy plants in electricity generation declined from 36.0% in 2021 to 32.9% in December 2022. Dam-type hydroelectric power plants contributed 9% to total production during the relevant period, while river-type hydroelectric power plants provided 3.2% of total production. There was no decrease in the share of dam-type hydroelectric power plants in total generation since May. Wind and solar power accounted for 17.2% of all electricity generated during the period.



Source: TEİAŞ, YTBS Daily Reports, TSKB Economic Research



Source: TEİAŞ, YTBS Daily Reports, TSKB Economic Research

The average daily electricity generation of licensed power plants stood at 852,245 MWh in December. While generation from licensed power plants peaked at 914,155 MWh on Thursday, December 22nd, the lowest generation from licensed power plants stood at 732,369 MWh on Sunday, December 4th.

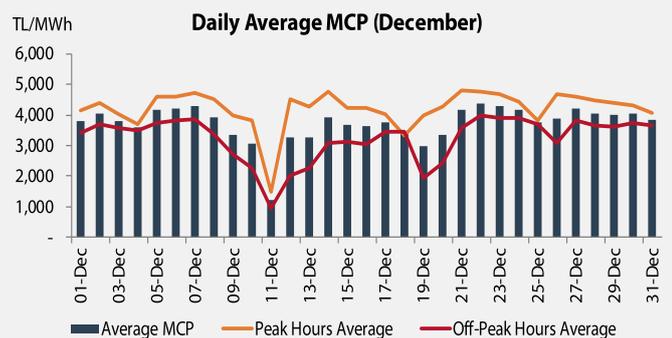
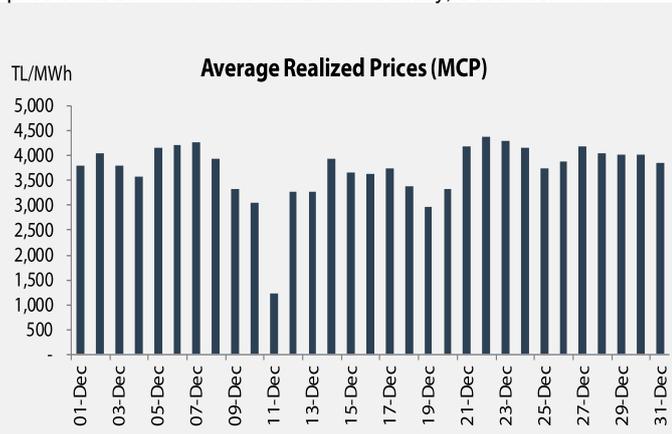
The average daily electricity consumption during the same time period was 867,163 MWh. The highest consumption in the last month of the year was 932,316 MWh on Friday, December 23rd, while the lowest consumption was 740,800 MWh on Sunday, December 4th.

Electricity Price Analysis

The daily average market clearing price (PTF) in December ranged between TL 1,230 and 4,375 TL/MWh. The daily average MCP in December was TL 3,724.40 /MWh. The highest daily average MCP value was TL 4,372.10/MWh on Thursday, December 22nd, while the lowest daily average MCP was TL 1,232.50 /MWh on Sunday, December 11th.

An analysis of hourly data finds that the highest MCP was realized in December at TL 4,800 /MWh, which was the maximum price limit for 185 hours. The hourly minimum electricity price was realized on Monday, December 12th at TL 249.99 /MWh.

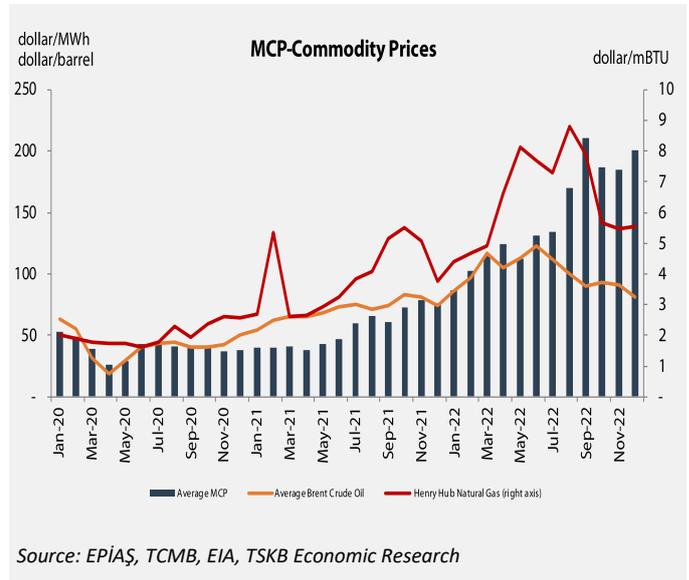
An analysis of the daily MCP for December finds that the peak hours average (8AM-8PM) was 13.1% higher than the average for of all hours, at TL 4,212.30 /MWh. While the maximum limit price of TL 4,800 /MWh was recorded for 174 hours during peak hours, the lowest price of TL 250 /MWh was realized on Sunday, December 11th.



Source: EXIST, TSKB Economic Research

During the same time period, the average off-peak hours (20.00-08.00) price was TL 3,236.50/MWh. The maximum limit price of TL 4,800 /MWh was reached for 11 hours during off-peak hours, while the lowest price of TL 249.99 /MWh was recorded on Monday, December 12th.

The average MCP stood at USD 184.61/MWh in November but decreased to USD 200.26/MWh in December. The MCP was 169.1% higher in dollar terms compared to the same period of the previous year.



Source: EPIAŞ, TCMB, EIA, TSKB Economic Research

Average Commodity Prices

The price of a barrel of Brent crude oil, which averaged USD 91.42 in November, fell to USD 80.92 in December, an 11.5% decrease on a monthly basis. This realized average price was still 9.1% higher than in the same period of the previous year.

The Henry Hub natural gas contract price, which averaged USD 5.45 /mbtu in November, climbed by 1.5% month-on-month to USD 5.53 /mbtu. This represented a 47.1% increase compared to the same period of the previous year.





Sector News

Local News

- **The maximum limit of the day-ahead market prices has been revised downward.** According to an Energy Market Regulatory Authority (EMRA) decision published in the Official Gazette, the minimum price limits in the relevant markets will be set at 0 TL per MWh and the maximum price limit will be TL 4,200 /MWh. The maximum price limit was raised to TL 4,800 /MWh with the September regulation. On the other hand, EMRA reduced the eligible consumer limit in the electricity market by 100 kWh to 1,000 kWh. (30 December 2022)

- **The report entitled "Policy Options for Flexibility Practices in the Turkish Electricity System" was published by the SHURA Energy Transition Center.** According to the report, Turkey must turn largely to renewable energy sources if it is to meet its 2053 net zero emission target. The report, which highlighted increasing the flexibility of the electricity system as the way to integrate renewable energy sources, emphasized technological options such as improving battery energy storage technologies, pumped storage hydroelectric power plants, transmission and distribution systems. (29 December 2022)

- **Gazprom announces opening of applications for the establishment of a natural gas hub in Turkey.** In his statement, Gazprom CEO Aleksey Miller stated that work on the establishment of a natural gas hub in Turkey was continuing and that Gazprom had begun practical implementation. Mr. Miller also stated that the establishment of a natural gas hub in Turkey would provide transparent and fair pricing in the natural gas market. (29 December 2022)

- **Russia considering increasing natural gas shipments through Turkey.** According to the Russian Deputy Prime Min-

ister, Aleksandr Novak, Russia's liquefied natural gas (LNG) exports to the European Union (EU) have increased, and the European market remains important for Russia. Deputy Prime Minister Novak highlighted the importance of the planned natural gas hub in Turkey for Russian natural gas shipments and stated that Russia was in discussions to ship additional volumes of natural gas through Turkey following the establishment of a hub. (27 December 2022)

- **2023 may be more difficult than 2022, according to IEA head.** In a speech at the Sabancı University Istanbul International Center for Energy and Climate (IICEC) conference entitled "The World Energy Crisis: Solutions and The Role of Renewable Energy", the President of the International Energy Agency (IEA), Fatih Birol stated that while 2022 had been a difficult year for energy, 2023 may be just as bad. Dr. Birol stated that the Russia-Ukraine conflict and actions following it caused the first global energy crisis, and that 2022 would be looked back on as a year when clean energy technologies gained historical momentum. Stating that Turkey has achieved significant progress in renewable energy, the IEA President predicted that Turkey would achieve 65% growth in renewable energy over the next five years. During the launch presentation of the "Turkey Renewable Energy Outlook 2022 Report" in the same conference, the IICEC Director Bora Şekip Güray stated that they had presented 7 concrete suggestions to all stakeholders in the report. According to Bora Şekip Günay, each unit invested in Turkey's electricity system would result in ten units of savings in imported fossil fuel and emission costs. (26 December 2022)

- **Turkey to implement calendar for establishing a natural gas trade hub within the next year.** The Minister of Energy and Natural Resources, Fatih Dönmez, stated that the govern-

ment was meeting representatives from Russia and other sources to discuss the establishment of an energy trade center in Thrace with the goal of realizing such a market within the next year. Mr. Dönmez stated that no increase in electricity or natural gas prices was expected at the beginning of the year, and that a smaller number of markets could be launched before a permanent market. He added that the fundamental decisions to double the capacity of the Trans-Anatolian Natural Gas Pipeline (TANAP) have been taken, and that there may be a gradual increase in natural gas coming from TANAP each year. (22 December 2022)

Foreign News

- **USD 797 billion to be invested in LNG around the world over the next 5 years.** According to the Global Energy Monitor report, entitled "Amidst all the market turmoil, Asia's liquefied natural gas plans have reached a crossroads," there are currently over 300 LNG export and import projects in the planning or construction phase around the world. These investments, which are estimated to cost USD 797 billion, will result in an annual LNG import capacity of 682 million tons. (23 December 2022)

- **Gazprom will not pay more than the determined ceiling price for natural gas purchased from certain natural gas fields.** Gazprom will not pay more than the agreed amount for natural gas obtained from projects carried out jointly with the German Wintershall and Austrian OMV, according to a decree signed by Russian President Vladimir Putin. Russia will determine the ceiling price within 10 days. (23 December 2022)

- **Nuclear energy provided 25% of all electricity in Europe in 2021.** According to the European Commission, the amount of electricity generated by nuclear power stations increased to 731.7 TWh in 2021, providing 25% of all electricity production. France and Germany contributed the most to electricity generation from nuclear sources, with a 7% increase. In 2021, France will supply 52% of the total electricity generated by nuclear sources in the European Union. (22 December 2022)

- **European Commission approves changes which Germany will implement to support generation of electricity from renewable energy.** According to the European Commission's statement, Germany aims to increase the share of electricity generated from renewable energy sources such as solar, wind, and biomethane to 80% by 2030 in order to meet its climate targets. The statement also highlighted that the country had prepared a EUR 28 billion support program in this vein. The statement stated that the plan complied with European Union public assistance rules. (22 December 2022)

- **Agreement for production of hydrogen-powered green steel signed.** The Australian iron ore mining group, Fortescue Metals, the Austria-based Voestalpine, Japan's Mitsubishi Corp and the UK-based Primetals Technologies have signed a zero-emission iron production agreement. The agreement aims to design and engineer a prototype plant on an industrial scale with a three to five ton per hour green hot metal capacity. The project will be located in Linz, Austria, and is expected to enter operations in 2027. (21 December 2022)

- **European Union (EU) agrees on a ceiling price for natural gas.** In the statement issued after the meeting of EU energy ministers, the ceiling price will enter effect if prices of LNG in global markets exceed EUR 35 /MWh, and if the future gas contract traded at TTF, the Netherlands-based virtual natural gas trading point with the most depth in Europe, exceeds EUR

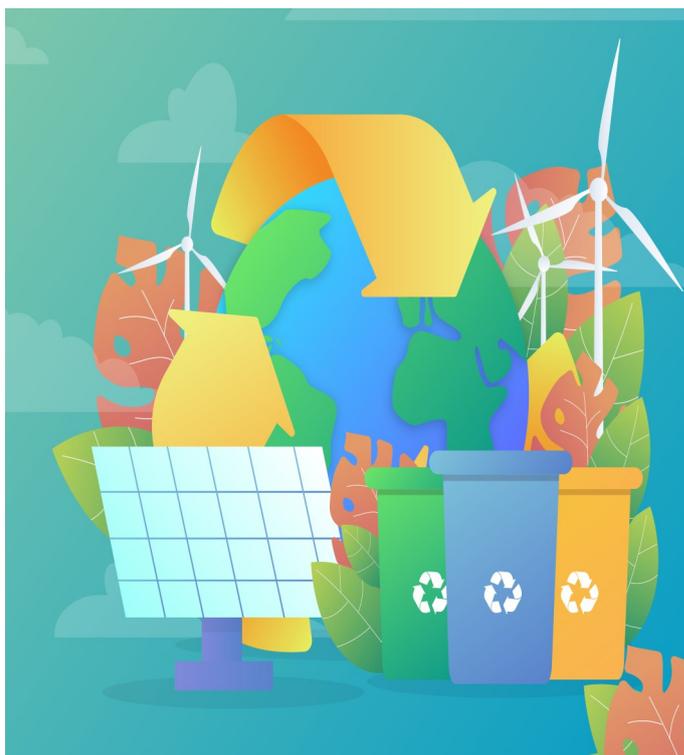
180 for 3 working days in the same period. In the statement regarding the mechanism, which will enter force on 15 February 2023, it was remarked that the mechanism would be suspended if demand for natural gas increases by 15% in a month or by 10% in two months, or if the natural gas amount being traded in the TTF drops significantly in comparison with the same period of last year. (20 December 2022)

- **Germany opens its first LNG terminal.** In his speech at the opening ceremony, German Chancellor Olaf Scholz stated that Europe and Germany were facing high energy prices, and that once the ship in the Wilhelmshaven terminal begins operations, terminals will be built in the cities of Stade, Lubmin and Brunsbüttel. (19 December 2022)

- **Discovery of nuclear fusion announced in the United States.** Jennifer Granholm, the Secretary of State for Energy and scientists from the California-based Lawrence Livermore National Laboratory (LLNL) announced that they had for the first time produced more energy in a nuclear fusion reaction than the amount of energy required to initiate the reaction. Nuclear fusion, which generates net energy gains, generates only minor amounts of short-lived radioactive waste while emitting no greenhouse gases. (14 December 2022)

- **OPEC revises forecast for global oil demand.** In its "Monthly Oil Market Report", the Organization of Petroleum Exporting Countries' (OPEC) reduced its oil demand forecast for 2022 from 99.58 million barrels/day as stated in the previous month to 99.56 million barrels/day. In 2022, the Organization for Economic Cooperation and Development (OECD) region is expected to supply 46.2 million barrels per day of the daily world oil demand, while non-OECD nations are expected to supply 53.36 million barrels per day. Demand for oil is expected to increase by 2.25 million barrels per day from this year to about 101.8 million barrels the following year. (14 December 2022)

- **UK to double LNG purchases from US by 2023.** The UK has agreed to increase its LNG imports from the US to between 9 and 10 billion cubic meters next year, according to British Prime Minister Rishi Sunak. According to the Prime Minister, the two countries plan to collaborate on the develop-



ment of new nuclear and renewable energy technologies. With the signing of the agreement, the UK will receive approximately 12.5% of its annual natural gas needs from the United States. (08 December 2022)

- Renewable energy to be primary source of electricity generation by 2025. According to the IEA's "Renewable 2022" report, renewable energy will account for more than 90% of global electricity generation growth over the next five years, and will surpass coal by early 2025 to become the largest global source of electricity generation. According to the report's main scenario, renewable energy capacity, which is expected to have a 38% share of electricity generation in 2027, is expected to increase by 2,400 gigawatts in 5 years, which is equal to China's current energy capacity. According to the report, China, the United States and India will double their renewable capacity over the next five years, accounting for two-thirds of global growth. (07 December 2022)

- Energy consumption expected to be 2% more efficient globally by 2022. According to the IEA's "Energy Efficiency 2022" report, countries stepped up their efforts to increase energy efficiency in 2022 because of cuts to fuel supply and high energy prices. While the report estimates that energy will be used 2% more efficiently in 2022 after a 0.5% increase in 2021, efficiency will have to increase by an average of 4% over the next decade to keep on track with the IEA's Net Zero Emissions Scenario by 2050. According to the report, global investments in energy efficiency, such as building renovation, public transportation and electric car infrastructure reached USD560 billion in 2022, a 16% increase over 2021. According to the report, total energy bills in countries covered by the IEA are estimated to have been USD 680 billion lower in 2022 as a result of energy efficiency measures applied since 2000. (5 December 2022)





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