

Electricity generation turkey

Türkiye coal generation returned to its previous peak in 2022, but not from domestic sources. Coal imports for power reached \$5.3 billion while Russia became the main supplier. Türkiye can replace costly coal imports with its untapped solar power potential.

Hydropower quickly reacted when Türkiye experienced its own local energy crisis in the middle of the winter, on top of the global energy crisis. Gas supply from Iran was cut off for ten days from January 21st, with gas power necessarily curtailed in response. This was compensated by hydro dams, showing its flexibility to step up generation. Hydro almost doubled daily generation (+110 GWh) in that period, while daily gas generation was almost halved (-130 GWh).

The steady rise in wind and solar generation in Türkiye continues, led by wind power. With almost 11% wind share in generation, Türkiye outranks G20 countries like France and Italy. However, solar underperforms compared to many European countries, with similar solar share to countries with much lower solar potential, such as Poland and Ukraine.

Türkiye's new energy plan offers a fivefold rise in solar power capacity by 2035, with yearly projected new solar installations between 3-4 GW. However, the country has added around 1.2 GW solar power capacity annually in the last five years. Barriers against solar need to be removed to reach these targets.

In Türkiye, coal generation has hovered around 113 TWh over the last five years, excluding 2020 and 2021. In 2020, coal generation dipped as five lignite plants were forced to cease operation for six months, due to their non-compliance with the air pollution limits. In 2021, coal generation fell by 1.7 TWh because of skyrocketing hard coal prices.

In 2022, coal power generation rebounded to 113.6 TWh, with a 10% rise year-on-year. This is also slightly above the highest annual coal power generation from 2018 (113.2 TWh). This recovery from coal power was fueled by imported coal, partly because the market price cap was relaxed in 2022. As power market prices were allowed to rise, market prices became profitable enough for imported coal power plants. The newly commissioned 1.3 GW coal power plant, Hunutlu, also added to the import dependence, as it burns imported coal.

Although coal generation appears to have plateaued in the last five years, coal generation may be set to rise again. Hunutlu's two units came online only in June and October respectively, so its generation will likely be more evident in 2023. The long term National Energy Plan published at the end of 2022 also foresees around 2.5 GW additional coal capacity by 2035, up from 21.8 GW now.

Türkiye's coal generation is not dominated by domestic coal, contrary to popular belief. In 2022, coal power

plants relying on imports generated 25% more electricity than those burning domestic coal. Imported coal accounts for 8.3 TWh of the 10.2 TWh total increase in coal power generation between 2021 and 2022.

Imported coal has also pushed the upward trend in coal generation since 2010. In 2010, the share of imported coal generation was 7%, reaching 20% share in total power generation as of 2022. As of 2022, imported coal generation is over 4 times higher (63.2 TWh) than it was in 2010 (14.5 TWh).

Coal prices skyrocketed in late 2021, seeing a fourfold rise in a year. As prices reached 260 USD per tonne, unprofitable hard coal power plants in Türkiye reduced generation, leading to the decline in coal generation overall.

Russia's invasion of Ukraine pushed the price of coal to another record, reaching \$425 USD per tonne in May 2022, 60% higher than the previous all time record. Unlike 2021, extremely high coal prices did not reduce levels of coal power plants burning imported coal. On the contrary, imported coal generation was 13% higher year-on-year.

The rise in coal prices combined with this sustained generation is directly reflected in the coal import bill of the country. Official numbers show that in 2022 Türkiye paid 8.8 billion USD for coal imports, with 60% of total hard coal imports delivered to thermal power plants according to TURKSTAT. Accordingly, coal imports for power more than doubled in 2022 year over year, reaching a record \$5.3 billion USD.

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