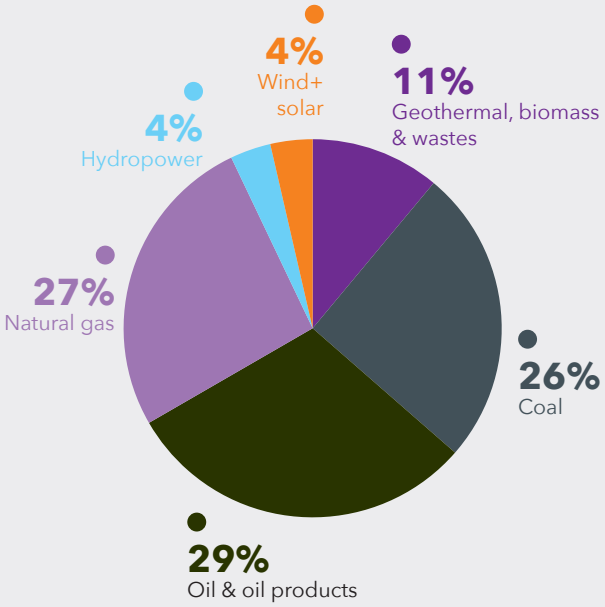
SHURA
ENERGY TRANSITION CENTER

TÜRKİYE ENERGY TRANSITION OUTLOOK 2025

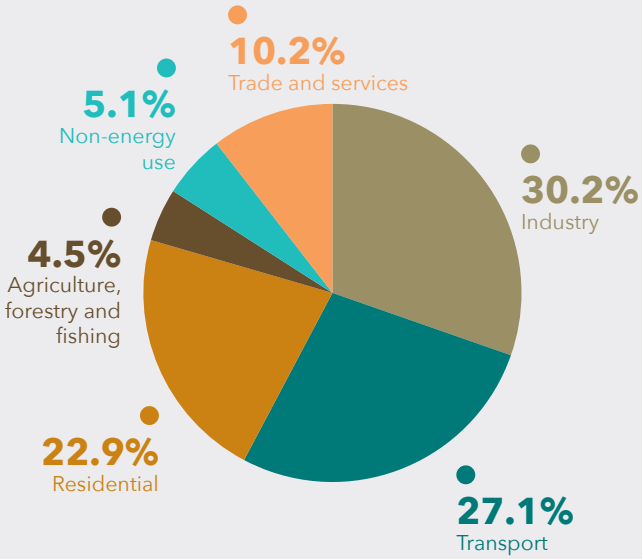
Primary energy supply by energy sources - 2024

In 2024, primary energy supply increased by **4.3%** compared to the previous year reaching **165.2 million toe.**

Compared to 2023, the share of fossil fuels decreased by **0.2%** (to **81.5%**), while the share of renewable energy increased by **0.5%** (to **18.6%**).



Source: MENR (2025)

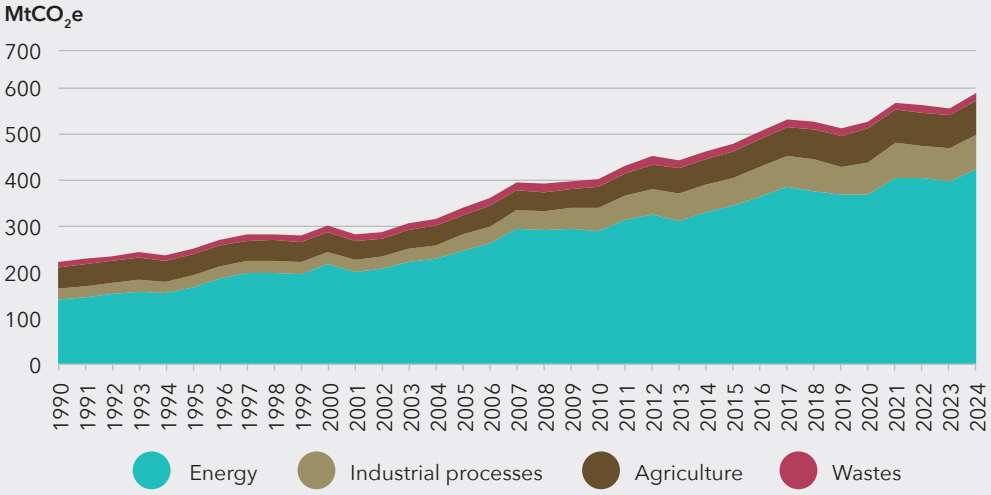


Final energy consumption by sector - 2024

In 2024, total final energy consumption increased by **4.6%** compared to the previous year, reaching **127.2 million toe.** Among all sectors, industry holds the highest share at **30.2%.**

Source: MENR (2025)

Trend of total greenhouse gas emissions (CO_2 equivalent) in Türkiye (1990-2024)

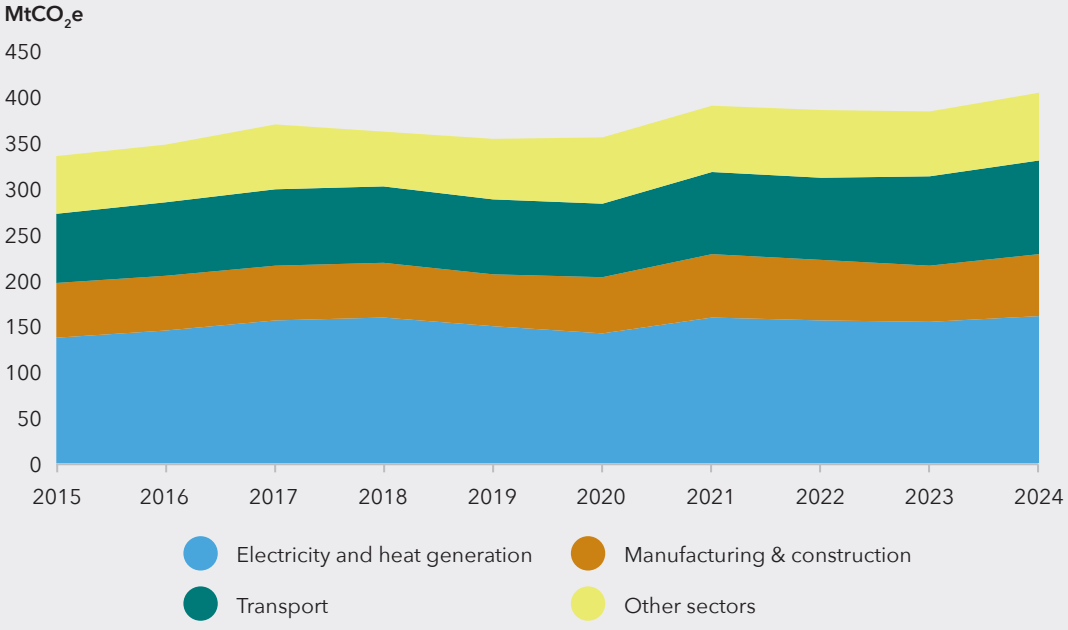


Source: TÜİK (2025)

Türkiye's total greenhouse gas emissions increased to **584.5 $MtCO_2e$** in 2024, marking a **5.3%** increase from the previous year. With this growth, total emissions are now **2.7** times higher than their 1990 levels.

The energy sector accounts for the largest share of greenhouse gas emissions in Türkiye.

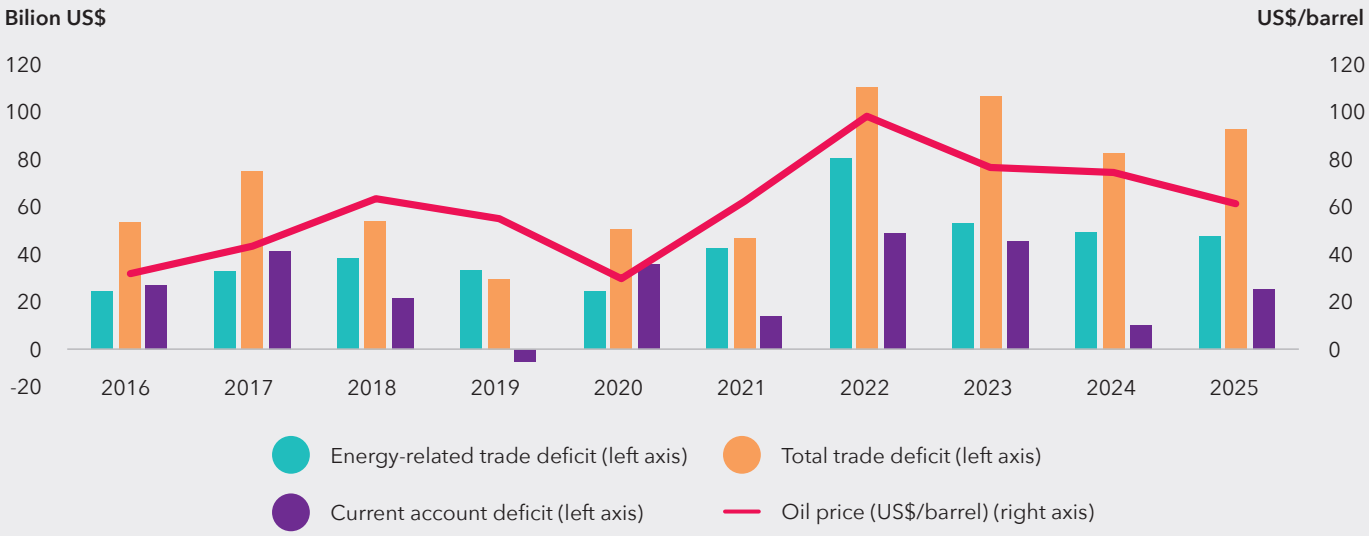
Energy-related CO_2 emissions by sector (2015-2024)



Source: TÜİK (2025)

According to 2024 data, energy-related carbon emissions stand at approximately **402 $MtCO_2$**.

Development of energy-related and total trade deficits, current account deficit, and oil prices (2016-2025)



In 2025, Türkiye's energy imports decreased by **4.7%** year-on-year, reaching **US$ 62.5 billion,** while the energy-related foreign trade deficit declined by **3.7% to USD 47.2 billion.**

The acceleration of renewable energy investments and the stable growth in electricity generation from renewable energy sources have reduced dependence on imported energy resources, contributing to a lower energy import bill.

Despite the increase in import volumes, the decline in oil prices was the key factor limiting the rise in the energy-related trade deficit.

Imported fossil fuels accounted for **77.6%** of the total primary energy supply in 2024. When assessed on a resource basis:

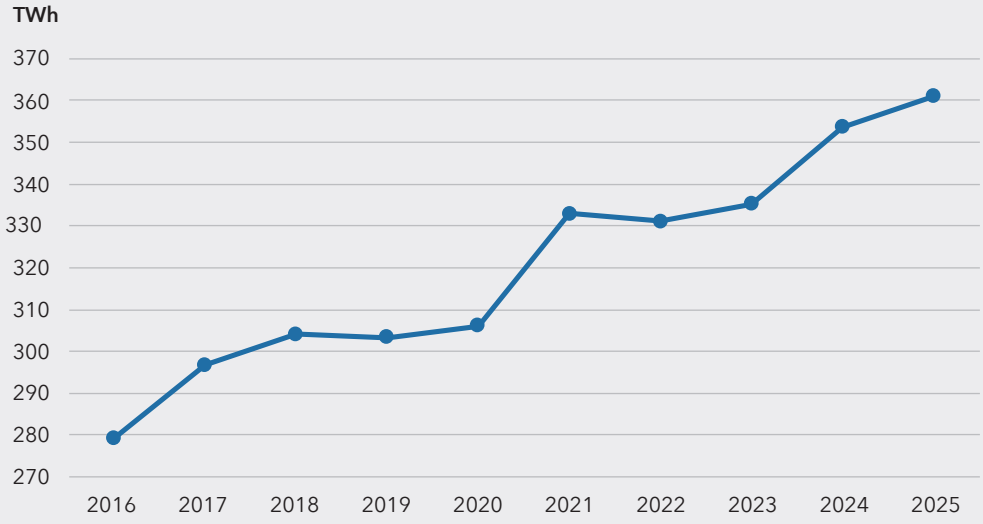
- Natural gas -**> 98%**
- Coal -**> 60%**
- Oil **-> 85,7%** are imported.*

** The source-based evaluation represents the share of imports within the total supply (the sum of domestic production and imports).*

Source: TCMB (2026), TÜİK (2026)

Development of gross electricity demand (2016-2025)

Türkiye's electricity demand grew by an annual average of **2.9%** between 2019 and 2024. In 2025, electricity consumption increased by approximately **2%** compared to 2024, reaching **360.9** TWh.



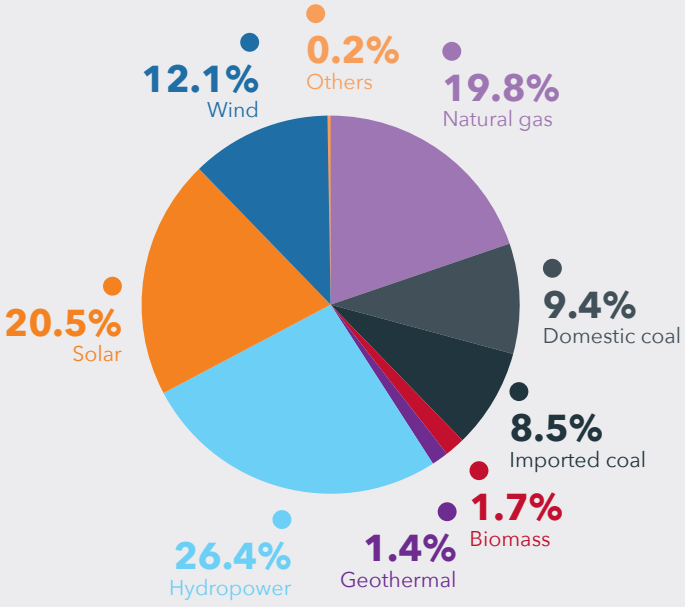
Source: TEİAŞ (2026)

Installed power capacity by sources - 2025

Approximately **99%** of the additional installed capacity commissioned in 2025 came from renewable energy power plants, comprising **4,899.5 MW** of **solar, 1,903 MW** of **wind,** and **93 MW** of **hydropower** capacity.

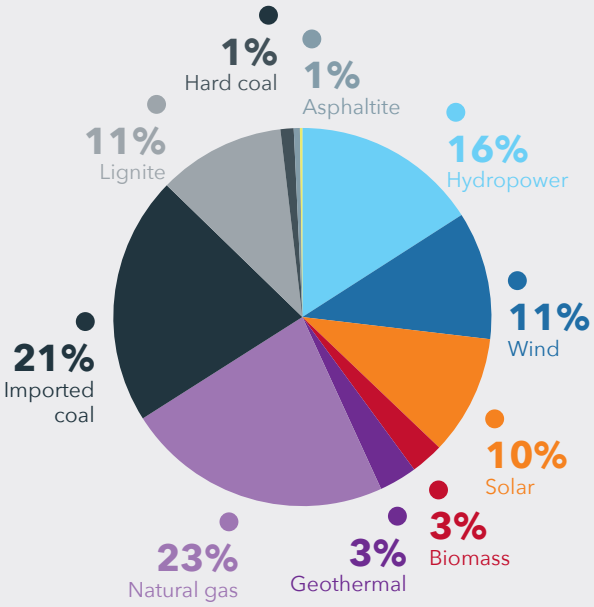
Solar power capacity reached **25.1 GW,** while total installed wind power capacity increased to **14.8 GW.**

By the end of 2025, the share of renewables in total installed power capacity increased by **1.8%** compared to the previous year, reaching **62.1%.**



Source: EMRA (2026)

Electricity Generation by Sources - 2025



Renewable energy sources accounted for **43.2%** of total electricity generation.

Electricity generation from renewable sources decreased by **2.5%** compared to 2024.

The primary driver of this decline was the **5.6%** drop in hydropower output compared to the previous year, largely attributable to drought conditions.

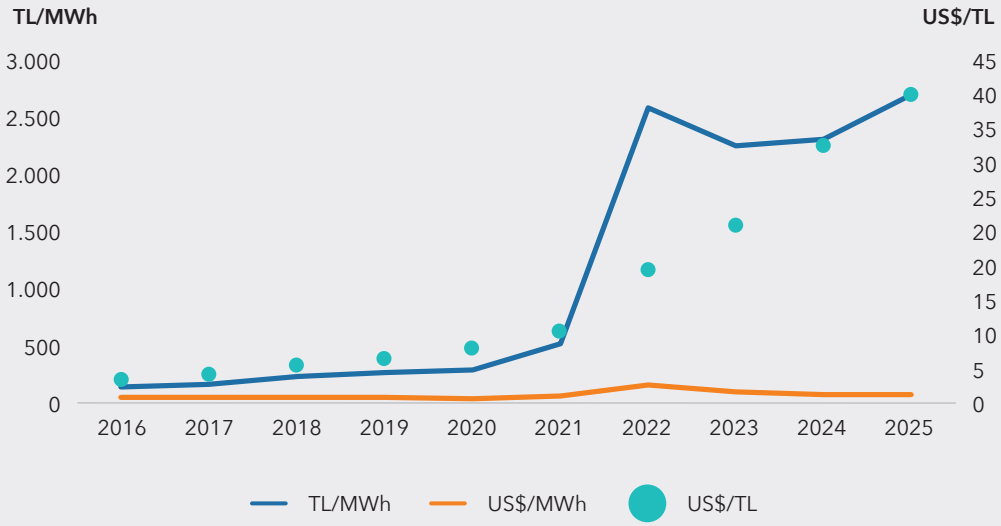
The reduction in hydropower-based electricity generation was largely substituted by natural gas. In 2025, electricity generation from natural gas increased by **24.9%** compared to 2024, while generation from imported coal increased by **1.8%**.

Source: EMRA (2026)

Evolution of Market Clearing Prices (2016-2025)

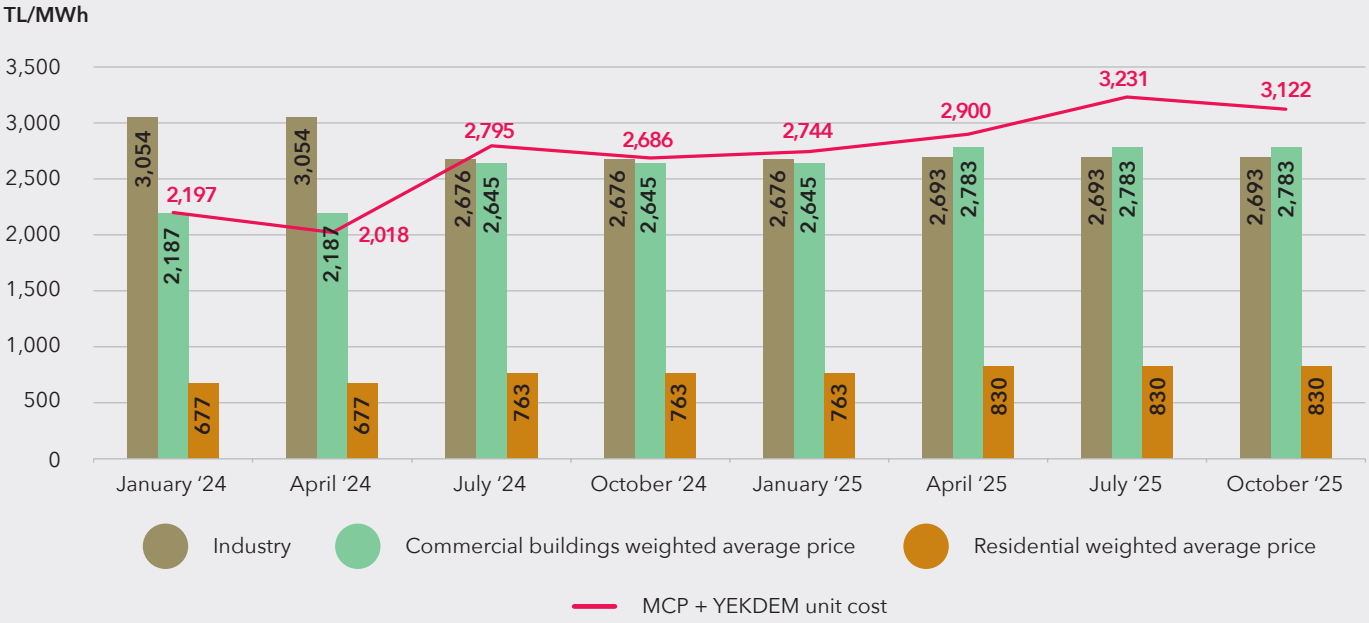
In 2025, the increase in natural gas power plant tariffs implemented in April, combined with a hydrologically dry year in terms of hydroelectric generation, resulted in higher average Market Clearing Prices compared to 2024.

Capacity additions in renewable energy sources have served as a key factor in moderating upward pressure on electricity prices.



Source: EPİAŞ (2026)

Monthly evolution of electricity tariffs and MCP (+YEKDEM) by end-user sector in 2024 and 2025

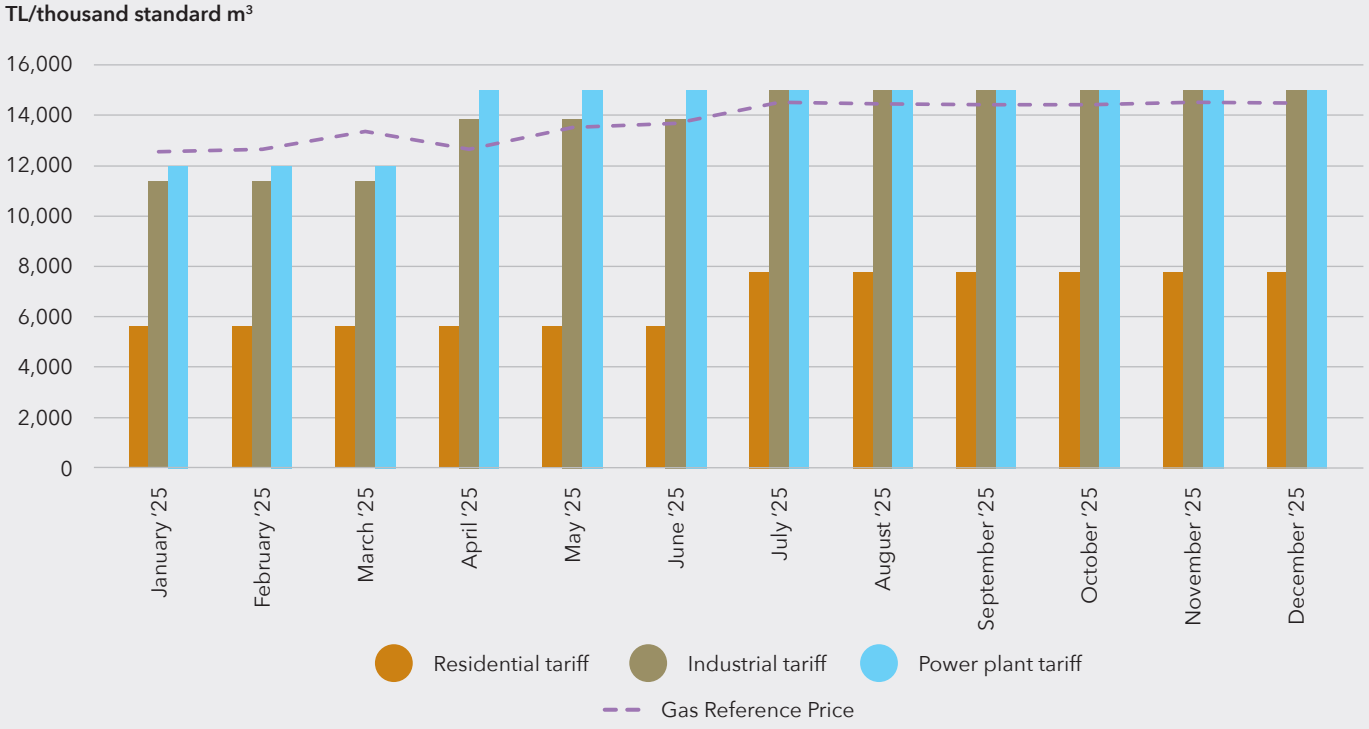


An evaluation of 2025 tariffs reveals that industrial and commercial subscribers largely procured electricity at levels close to spot market prices, whereas subsidy mechanisms for residential subscribers remained in place.

Under the new regulation introduced in 2025, the annual consumption threshold for residential users was set at **5,000 kWh**, while for commercial and industrial users were set at **15,000 kWh**. This enabled the relevant users to become eligible in sourcing their electricity from the spot market. Consequently, as of February 1, 2025, residential consumers surpassing the **5,000 kWh** limit are being billed under the Last Source Supply Tariff.

Source: EMRA (2026), EPİAŞ (2026)

Natural gas tariffs in 2025



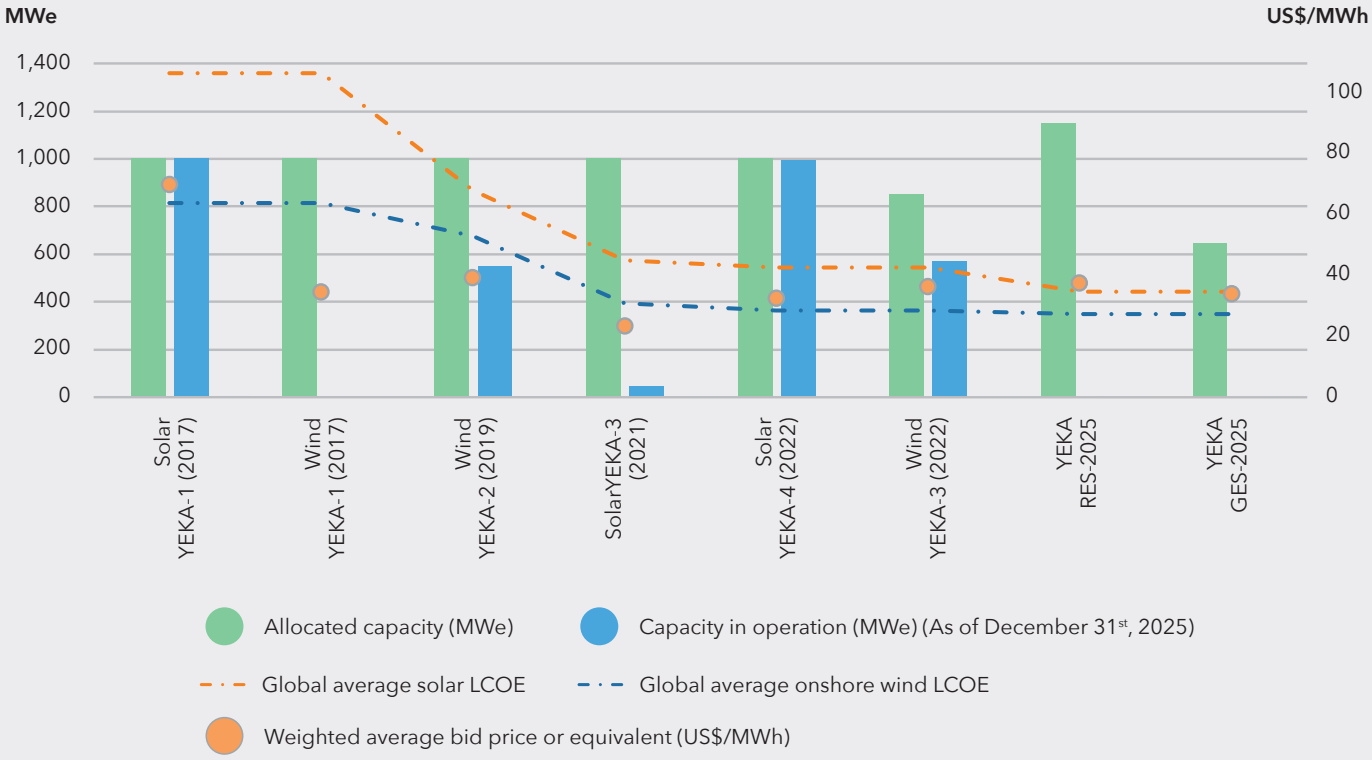
An analysis of natural gas tariffs reveals that gas prices for industrial and power generation purposes remain broadly aligned with reference gas prices. In contrast, residential tariffs continue to be supported through subsidy mechanisms, resulting in a continued burden on the public budget.

Source: BOTAŞ (2026), EnerjiIQ (2026)

Comparison of YEKA auction capacity realizations and weighted average bid prices (As of December 31st, 2025)

Within the scope of YEKA tenders conducted since 2017, a total of **7,650 MWe** of wind and solar capacity has been allocated, of which **41.3%** (**3,160 MWe**) has been commissioned. The commissioned capacity consists of **2,043 MWe** of solar and **1,117 MWe** of wind energy. Notably, **24.5%** of the total commissioned solar capacity and **82.5%** of the total wind capacity became operational in 2025.

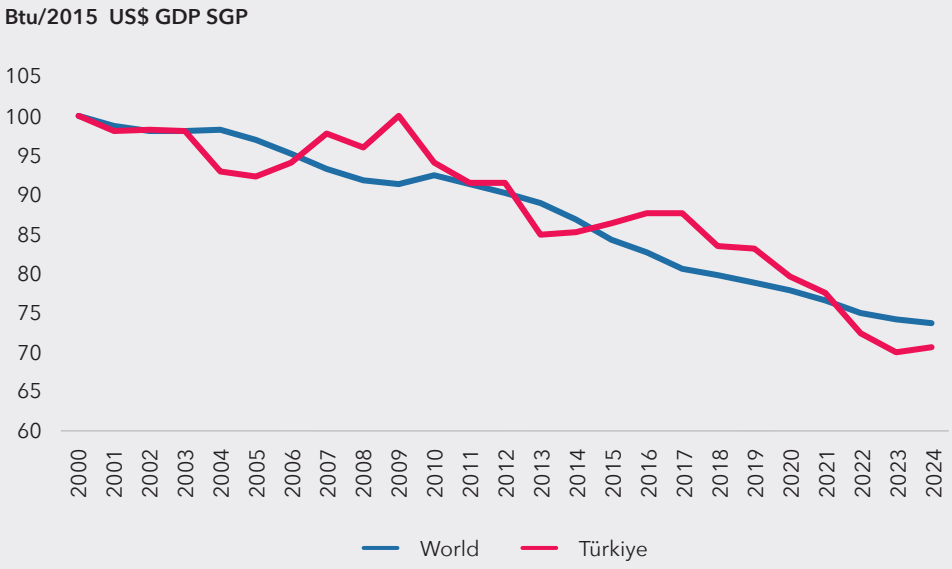
In line with the 2035 targets, YEKA tenders with a minimum annual capacity of **2,000 MW** are targeted. Within this framework, auctions of **1,200 MW** wind (YEKA RES-2024) and **800 MW** solar (YEKA RES-2024) were held at the beginning of 2025. Toward the end of the year, YEKA RES-2025 with a capacity of **1,150 MW** and YEKA GES-2025 with a capacity of **650 MW** were also tendered.



Source: MENR (2026), IRENA (2025)

Levelized Cost of Electricity (LCOE) data for 2024 was utilized for the YEKA GES-2025 and YEKA RES-2025 tenders.

Evolution of Energy Intensity in Türkiye and Globally

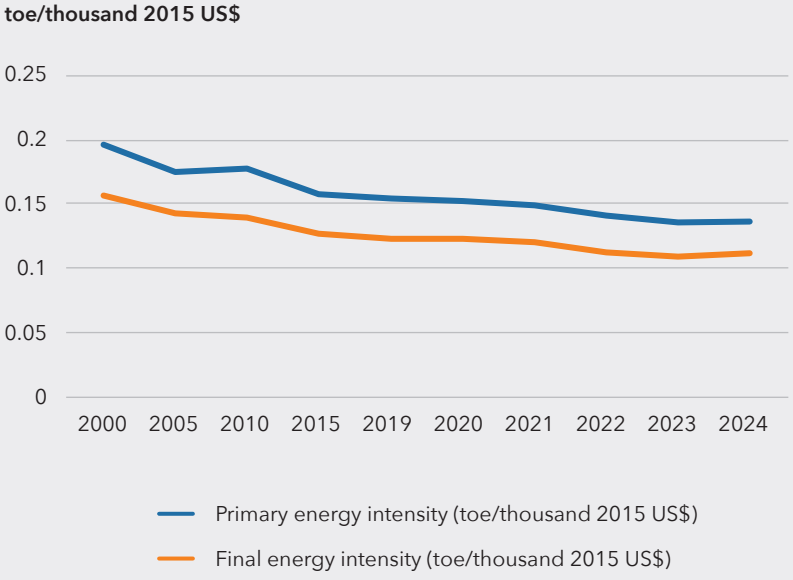


Source: EIA (2026), MENR (2025)

The pace of global average improvement declined from **1.2%** in 2023 to **0.7%** in 2024.

In Türkiye, energy intensity, which decreased by **3.7%** in 2023, increased by **0.9%** in 2024.

Evolution of primary and final energy intensity in Türkiye (2000-2024)



Türkiye's primary and final energy intensities for 2024 were calculated as **0.125 toe/thousand 2015 US$** and **0.098 toe/thousand 2015 US$,** respectively.

In 2024, primary energy intensity increased by **0.9%,** and final energy intensity rose by **3.2%**.

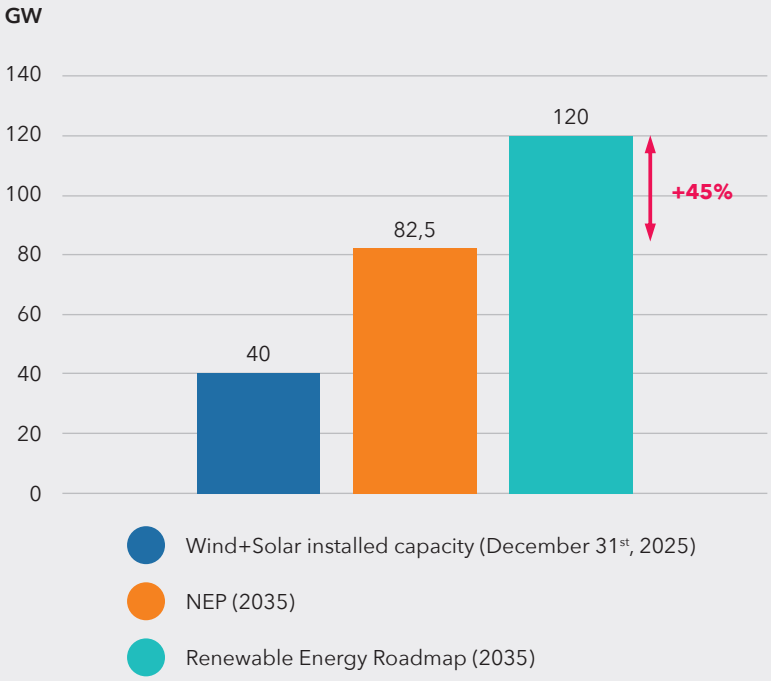
Main reasons of the increase:

- Higher output in energy-intensive and low value-added heavy industrial production,
- Increased cooling demand during the summer period,
- Behavioral increase in household natural gas consumption, despite stable heating degree days.

Although the energy savings reported by the MENR for 2024 surpassed the NEEAP II objectives, these gains fell short of driving a reduction in energy intensity.

Source: MENR (2025)

Current status and 2035 targets for wind and solar energy (NEP and Renewable Energy Roadmap targets)



In the National Energy Plan (NEP) published by the Ministry of Energy and Natural Resources (MENR) in 2023, the total installed wind and solar capacity target for 2035 was set at **83 GW.** In the "2035 Renewable Energy Roadmap" published in October 2024, this target was revised upward by **45%** to **120 GW.**

In this context, Türkiye aims to triple it's current wind and solar total installed capacity (which stands at **40 GW**) by 2035.

To achieve the 2035 target of **120 GW** in total installed wind and solar capacity, an average of **8 GW** of new capacity additions per annum will be required.

Source: EMRA (2026), MENR (2025)

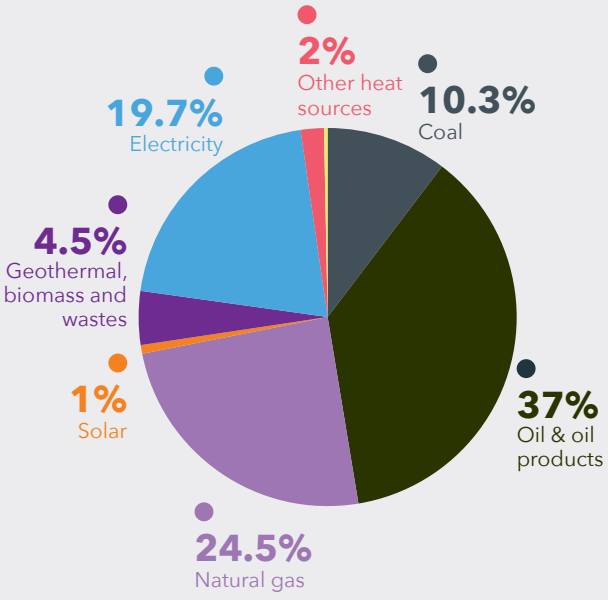
The share of electricity in final energy consumption

In 2024, electricity accounted for **20%** of the total final energy consumption.

The National Energy Plan (NEP) targets increasing this share to **25%** by 2035 and to **55.6%** by 2053.

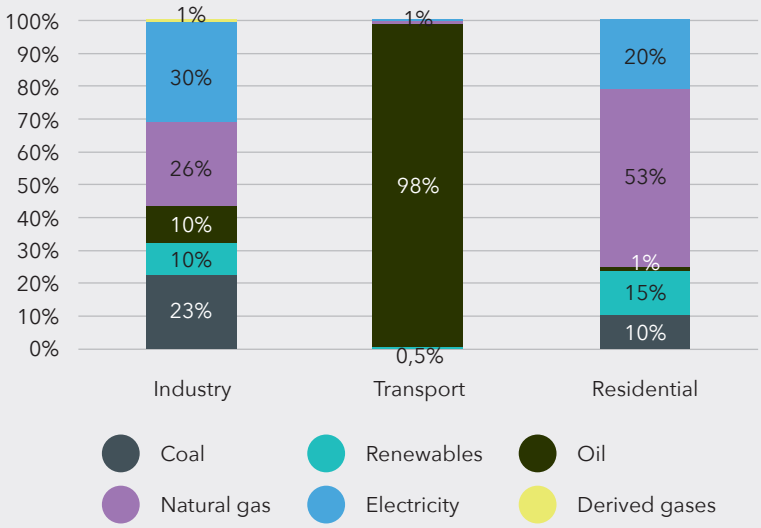
As part of the sectoral transformation:

- Increasing electrification of industrial production processes driven by the Green Deal Action Plan,
- Wider adoption of heat pumps in buildings,
- Growing share of electric vehicles in the transport sector will lead to an increased share of electricity in final energy consumption.



Source: MENR (2025)

The share of electrification in end-use sectors

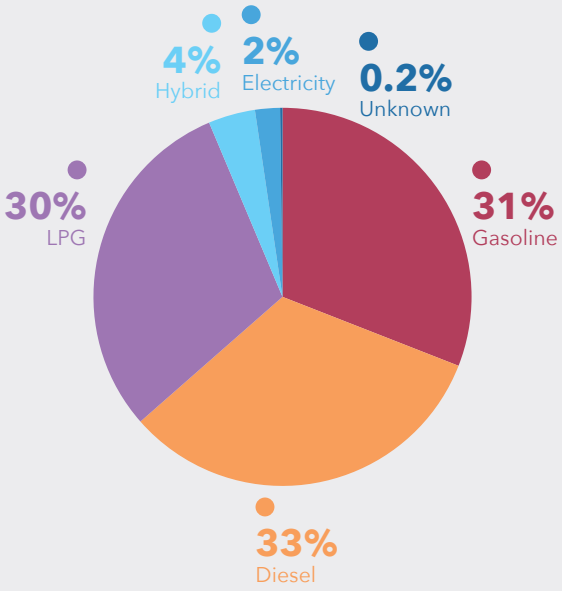


According to 2024 data, electricity holds the highest share in the final energy consumption of the industrial sector at **30%**, followed by natural gas at **26%** and coal at **23%**.

By the end of 2024, electricity accounted for only **1%** of the total final energy consumption within the transport sector.

Regarding residential energy consumption in Türkiye, natural gas maintains the leading position with a **54%** share, while electricity accounts for **21%**

Source: MENR (2025)



Distribution of registered passenger cars by fuel type - 2025

The number of registered electric vehicles increased by **101.1%** year-on-year, reaching **370,591** in 2025.

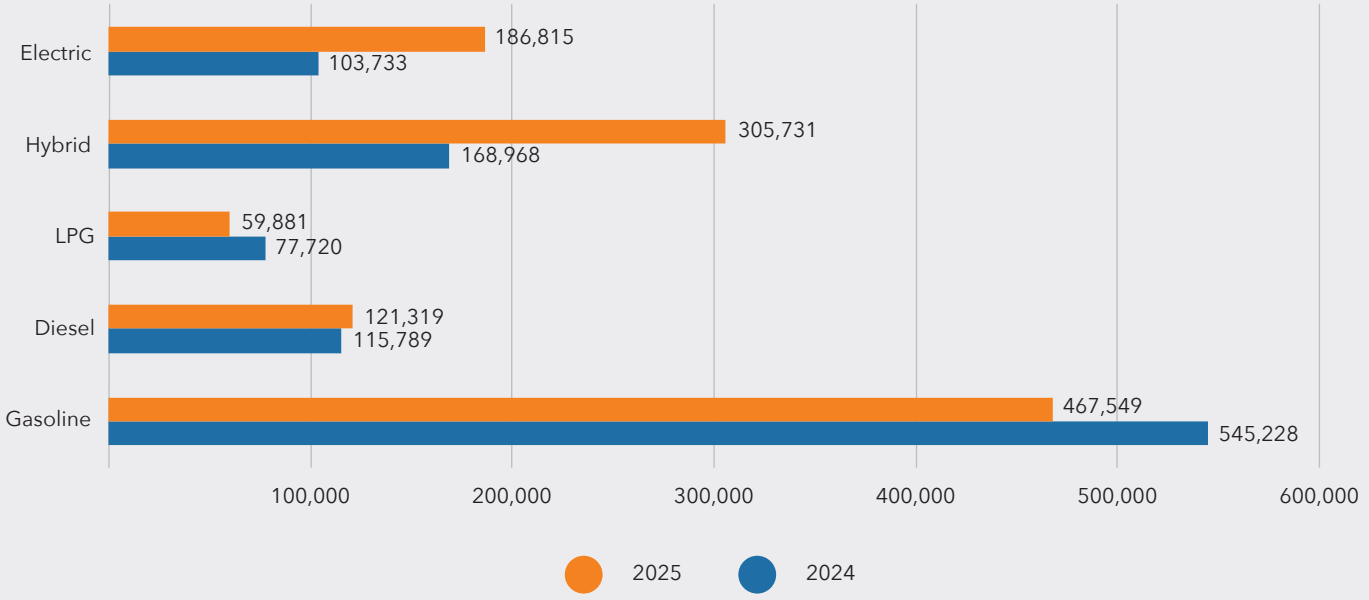
The share of electric vehicles in the transport sector remains at approximately **2%**.

Source: TÜİK (2026)

Comparison of new passenger car registrations by fuel type (2024-2025)

An analysis of new passenger car registrations by fuel type indicates that electric vehicle sales continued their upward trend in 2025.

In 2025, out of **1,141,123** newly registered passenger cars, **16.3%** (**186,815** cars) were electric vehicles.

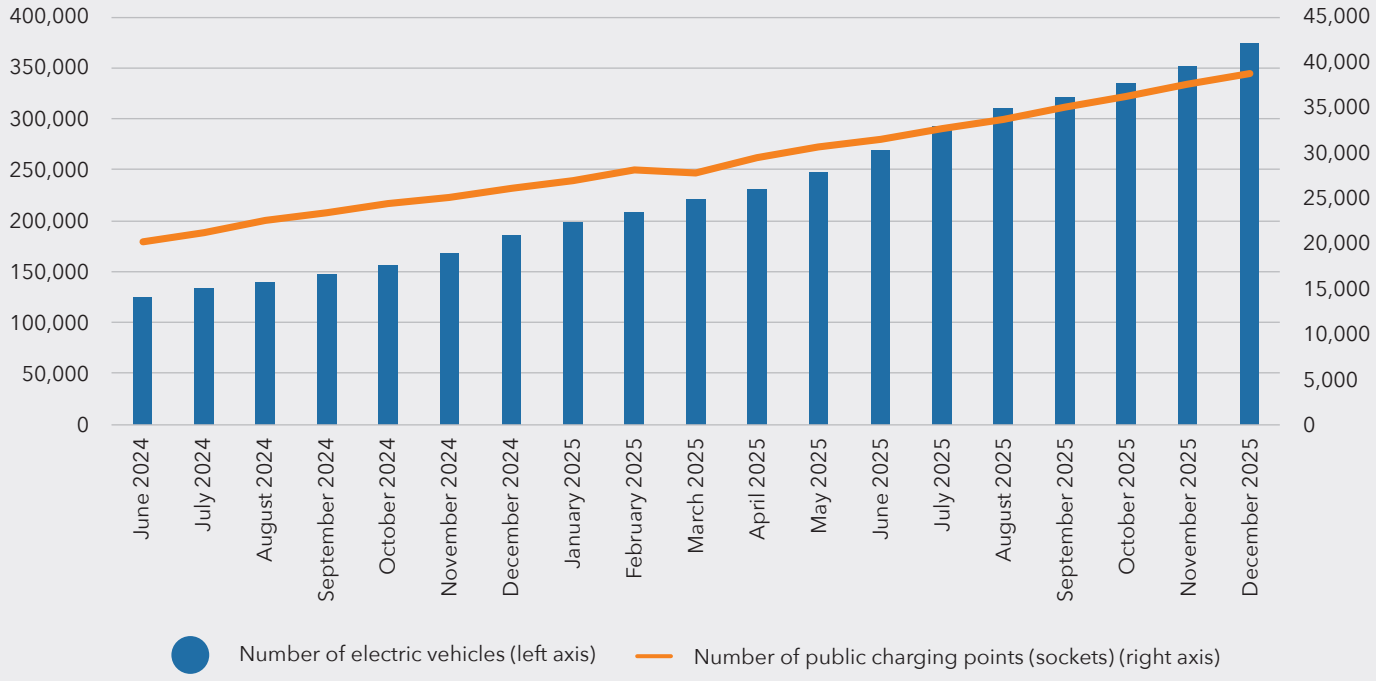


Source: TÜİK (2026)

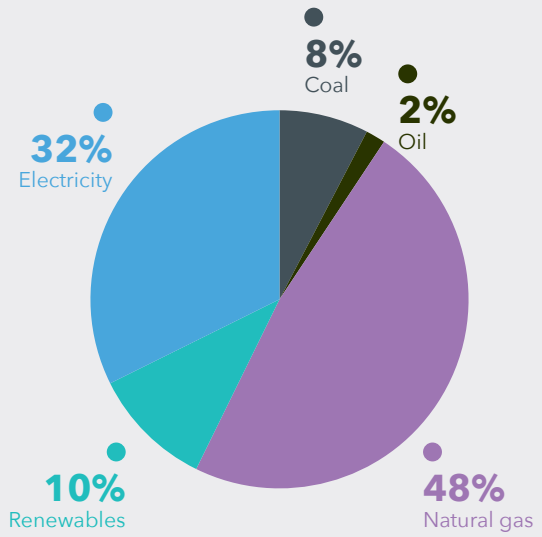
Development of the number of electric vehicles and public charging points (sockets) in Türkiye

As of December 2025, the number of electric vehicles in Türkiye reached **373,733**. In parallel, the number of public charging points (sockets) reached **38,808**.

A draft regulation on flexible pricing for electric vehicle charging services has been issued by EMRA. This draft regulation supports the deployment of smart charging applications that enhance renewable energy integration and contribute to the efficient and stable operation of the power system.



Source: EMRA (2026)



Electrification in buildings

The substitution of natural gas with electricity promotes the energy transition in buildings.

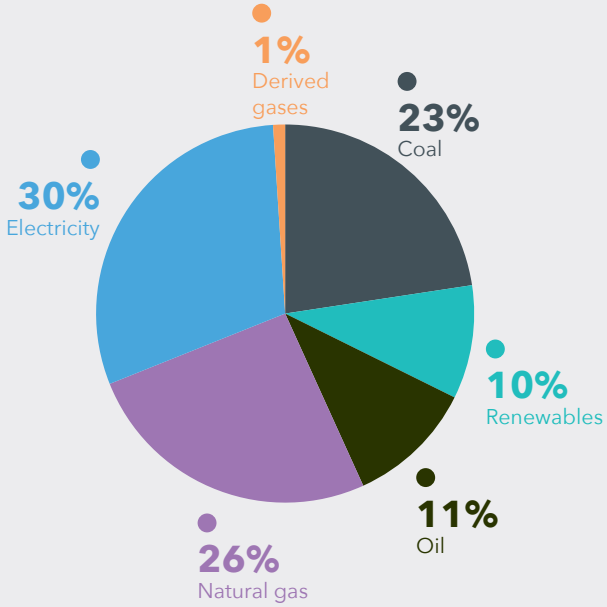
In this context, heat pump technology stands out as a key solution.

According to İSKİD (2025) data, domestic heat pump sales volumes are as follows:

- Air-source heat pumps: **47,200 units**
- Domestic hot water heat pumps: **1,250 units**

The heat pump market recorded a **50%** year-on-year growth rate in 2025 (İSKİD, 2025).

Source: MENR (2025)
The distribution of final energy consumption in buildings was calculated by aggregating the residential, commercial, and service categories.



Electrification in industry

In 2024, electricity accounted for **30%** of total final energy consumption in the industrial sector.

The electrification rates across key industrial sub-sectors in 2024 are as follows:

- Manufacture of iron and steel products: **29%**
- Manufacture of cement products: **12.4%**
- Manufacture of chemical and petrochemical products: **29.6%**
- Manufacture of glass products: **22.4%**
- Manufacture of ceramic products: **20.3%**

Source: MENR (2025)

Key Messages

While Türkiye made progress in its energy transition in 2025, rising energy demand, high dependency on energy imports, and limited electrification remained the primary constraints determining the pace of the transition.

- **Energy demand and emissions continued their upward trend**
  As of 2025, energy demand and greenhouse gas emissions have maintained their upward trend. The slowdown in improvements in energy intensity, together with the increase observed in 2024, highlights the need for stronger and more structural demand-side policies. In this context, accelerating energy efficiency measures, increasing the electrification rate, and transitioning towards a higher value-added and efficiency-based production structure—particularly in industry—will be critical.

- **While renewable energy has achieved strong momentum, growing energy demand continues to constrain the speed of the transition**
  Renewable energy investments have accelerated significantly, and in 2025, nearly all newly commissioned installed capacity originated from renewable sources. Despite this strong performance, increasing energy demand and fluctuations in hydropower generation llimited the system-wide impact of renewable expansion. Therefore, maintaining the current momentum and ensuring the uninterrupted execution of projected capacity increases, particularly in wind and solar energy, is of critical importance. Additionally, effective demand management across end-use sectors (industry, transport, and buildings) will further enhance the system-level impact of this growth.

- **Import dependency remains a critical vulnerability in Türkiye's energy system**
  Energy imports continue to exert a significant influence on the current account balance. The limited improvement observed in energy import costs in 2025 was largely driven by international price developments, indicating that this structural vulnerability persists. Consequently, it is evident that energy transformation serves as a vital instrument for ensuring macroeconomic stability alongside environmental objectives..

- **Renewable energy plays a strategic role in ensuring energy security and cost stability**
  In 2025, while the decline in hydropower generation limited the share of domestic energy resources, the growth in wind and solar energy offset a significant portion of this impact. Although the capacity increase in renewables partially balanced the pressure on electricity market prices, fluctuations in natural gas and hydropower output caused price volatility to persist. These developments reinforce the strategic role of renewable energy in terms of both security of supply and cost stability.

- **Grid infrastructure and flexibility solutions will determine the pace of the transformation**
  To ensure the sustainable integration of increasing renewable energy capacity, it is essential to strengthen transmission and distribution infrastructure, enhance grid flexibility, and effectively deploy mechanisms such as energy storage, demand-side response, and aggregation. In 2025, the rapid implementation of initiatives in these areas will be a key determinant of successful system integration.

- **Electrification remains one of the most critical enablers of the transformation**
  The limited pace of electrification growth indicates a need to strengthen policy instruments aimed at increasing the share of electricity in final energy consumption. The widespread adoption of heat pumps, electric vehicles, and electricity-based technologies will depend on the establishment of sector-specific targets, alongside the design of balanced electricity and natural gas pricing structures and targeted incentive mechanisms.

- **As the policy framework gains strength, implementation will remain the primary determinant of success**
  Mechanisms such as the Climate Law and the Emission Trading System (ETS) provide a vital framework for the energy transition. However, the impact of these instruments will depend on their speed of implementation and scope.

- **COP31 presents a critical opportunity for Türkiye to accelerate its energy transition**
  COP31, which Türkiye will host in 2026, provides a significant lever to advance implementation-oriented actions in key areas such as renewables, electrification, and grid flexibility.

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