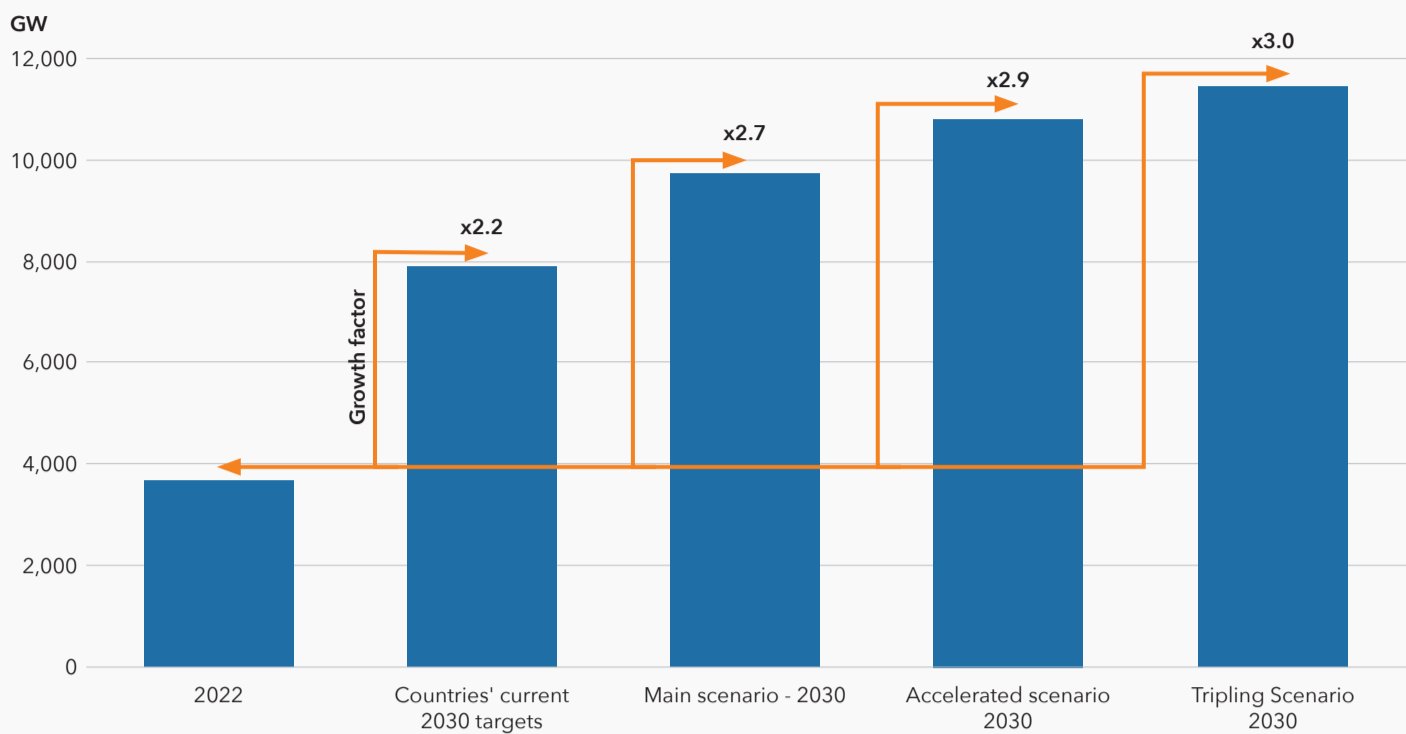


At the 28th United Nations Framework Convention on Climate Change (COP28), held in Dubai in 2023, nearly 200 countries committed to collectively triple their installed renewable energy capacities by 2030. Meanwhile, the International Energy Agency (IEA), in its Main Scenario, projects that global renewable energy capacity will increase 2.7 times, reaching a total of 9,800 GW by 2030.

According to the IEA's Main Scenario, an average 940 GW of new renewable energy capacity is expected to be added to the system each year until 2030.

Renewable energy capacity expansion across IEA scenarios (2022-2030)

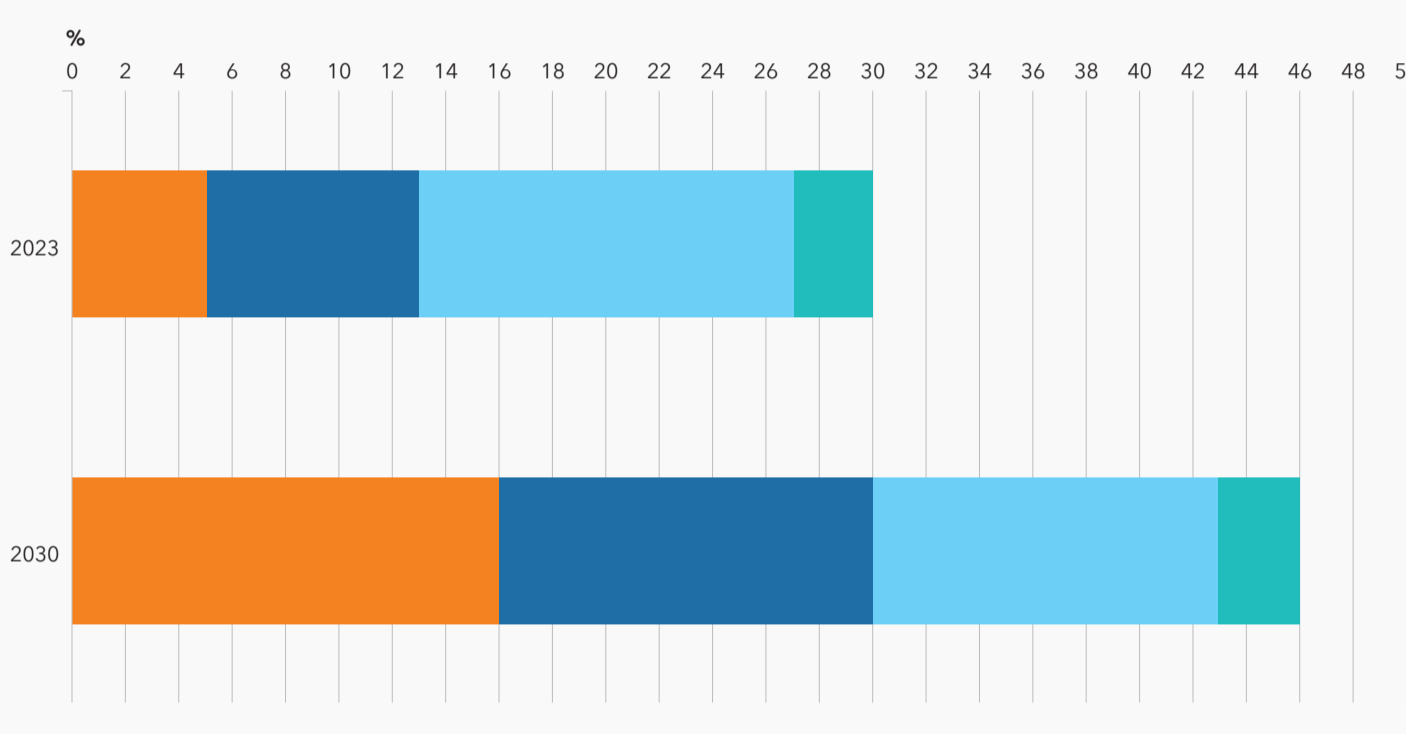


Source: IEA (2024)

In addition to the climate change and energy security policies implemented by countries, technological advancements have significantly reduced the costs of renewable energy. As a result, renewable energy power plants—both distributed and grid-scale—have become increasingly competitive. According to the IEA, solar and wind power plants are expected to account for 95% of the increase in renewable energy capacity by 2030.

The IEA's Main Scenario suggests that renewable energy-based electricity generation will account for nearly half of total generation by 2030, with solar and wind contributing 30% of the total electricity generation. Additionally, it is expected that solar energy alone will make up 16% of total generation in 2030, surpassing both wind and hydro power generation.

IEA Main Scenario - Global electricity generation from renewable energy (2023 vs. 2030)

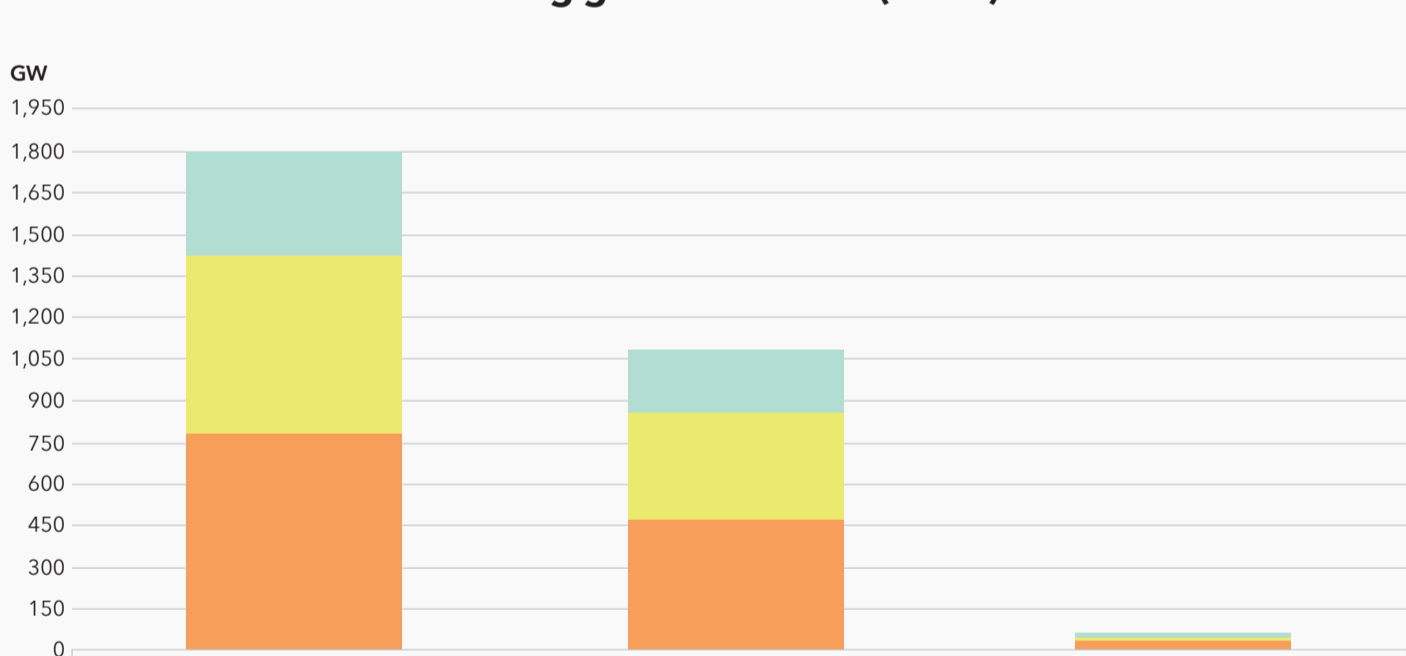


Source: IEA (2024)

As the share of variable energy sources in total electricity generation grows, grid constraints may emerge, increasing the need for flexibility in the grid. Consequently, as renewable energy capacity is added to the system, grid investments must accelerate to meet the evolving flexibility requirements.

According to the IEA, the total installed capacity of global wind, solar and hydroelectric power plant projects at advanced stages of development increased from 1,500 GW in 2023 to 1,650 GW by July 2024. Additionally, countries are implementing various measures to address bottlenecks in the grid connection of renewable energy projects. These efforts include grid reforms and the cancellation of projects deemed unlikely or slow-moving. While these measures are relatively recent, there are indications that they are helping to accelerate project progress.

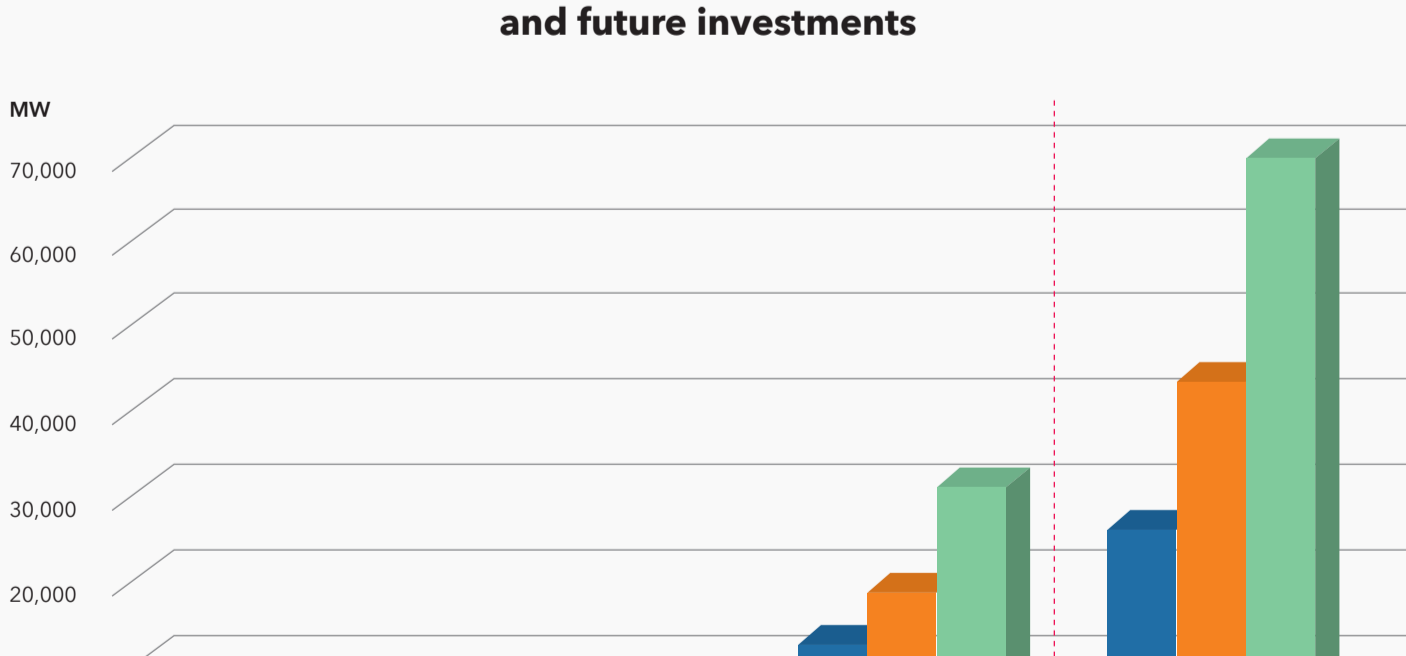
Global capacities of renewable energy projects awaiting grid connection (2024)



Source: IEA (2024)

As part of the "National Energy Plan" announced by the Ministry of Energy and Natural Resources (MENR) in January 2023, Türkiye set a target to achieve 52.9 GW of solar and 29.6 GW of wind energy installed capacity by 2035. However, with the release of the "Renewable Energy Roadmap 2035" in October 2024, MENR raised its wind and solar energy target by 50%, aiming for approximately 120 GW of installed capacity by 2035. If realized, this would quadruple Türkiye's total installed solar and wind capacity by 2035. To meet these ambitious goals, necessary grid development and flexibility enhancements have been prioritized, with an estimated investment of US\$28 billion planned for the electricity grid by 2035.

Development of wind and solar energy capacities in Türkiye and future investments



* Total capacities as of September 2024

Source: MENR (2024)

- IEA analyses predict that global renewable energy capacity will increase 2.7-fold by 2030. Türkiye, on the other hand, aims to quadruple its wind and solar energy capacity by 2035, expecting a pace of development that exceeds current global targets.
- It is estimated that solar energy, which will account for 80% of the global renewable capacity expansion, will be the primary driver of global renewable energy capacity growth through 2030. Declining technology costs, facilitation of permit processes and public acceptance are the main factors behind solar capacity expansion. In Türkiye, 43.5 GW of solar energy capacity is currently under development, with plans to enhance grid investments and streamline permitting procedures to expedite the commissioning of these projects.
- To achieve Türkiye's 2035 renewable energy targets, plans include constructing 15,000 km of new transmission lines and establishing 144 new transformer stations. Additionally, as a critical measure to enhance grid flexibility, interconnection capacities are set to increase, targeting 6,750 MW for export and 6,600 MW for import.
- According to SHURA's Net Zero Carbon Roadmap, Türkiye's installed wind and solar capacities are projected to reach 38 GW and 57 GW, respectively, by 2035. Additionally, the total share of renewable energy in power generation is expected to rise to 70%.