

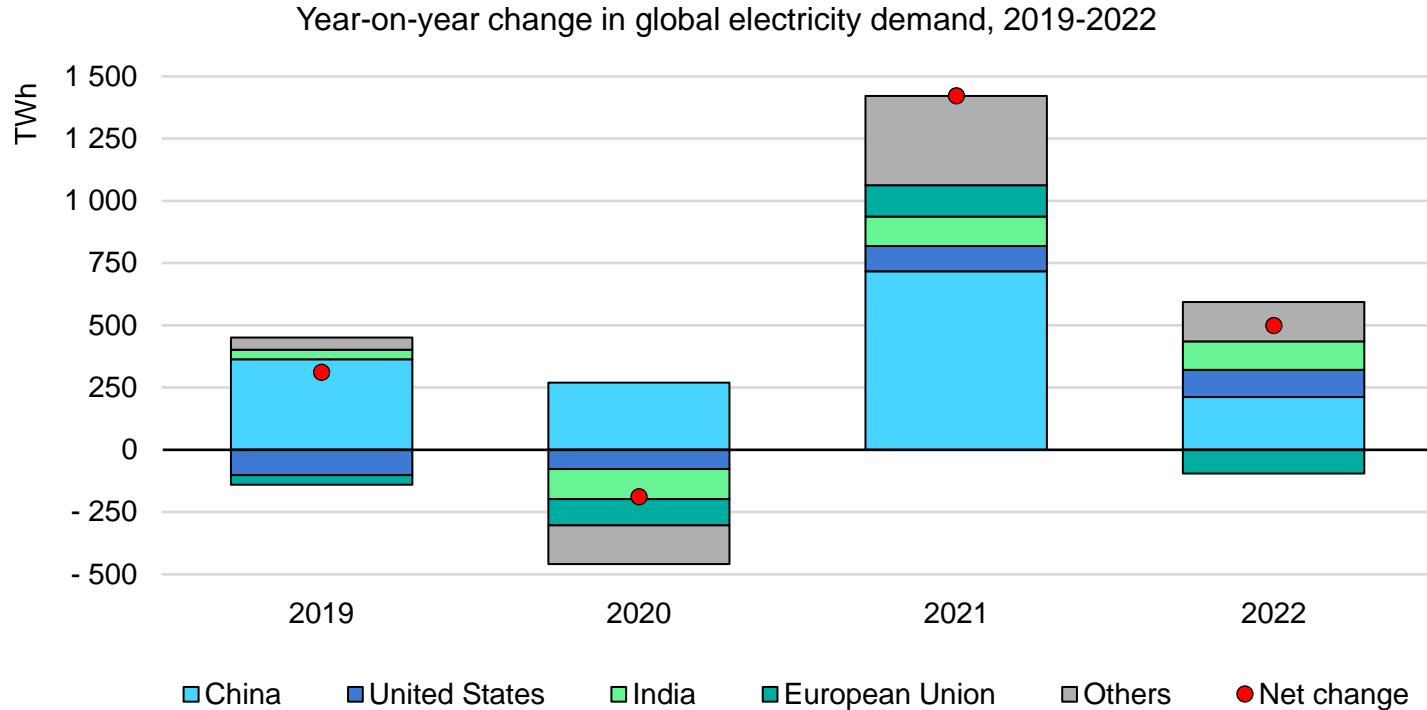


Electricity Market Report 2023

Dr. Eren Çam, Energy Analyst for Electricity • Directorate of Energy Markets and Security

The 28th IEEJ Global Energy Webinar, 9 March 2023

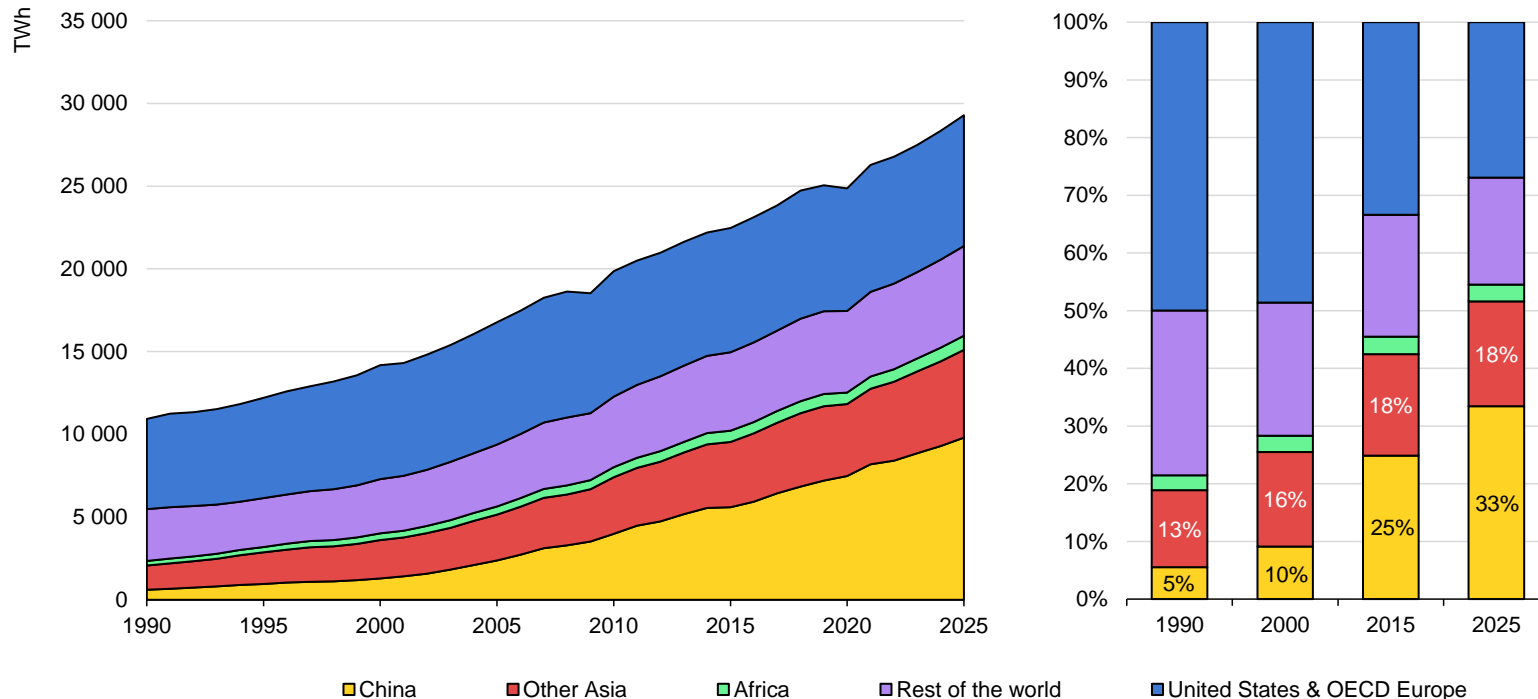
Global electricity demand growth slowed only slightly in 2022



Demand grew by 2%, slightly slower than the average growth rate in 2015-2019 (2.5%) before the pandemic.

One third of world's electricity will be consumed in China by 2025

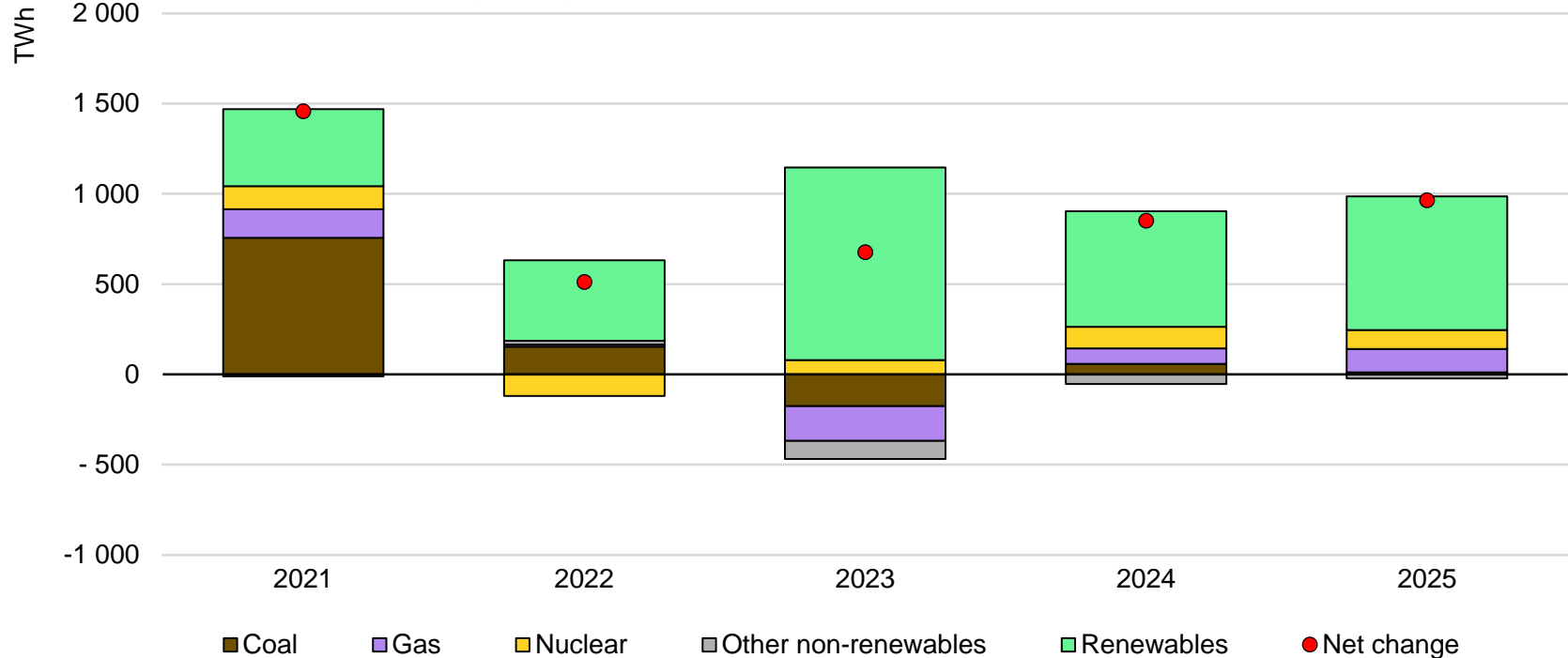
Evolution of global electricity demand by region (left) and regional shares (right), 1990-2025



From 2022 to 2025, more than 70% of the additional electricity demand comes from China, India and Southeast Asia.

Low-carbon sources cover almost all the demand growth over 2023-2025

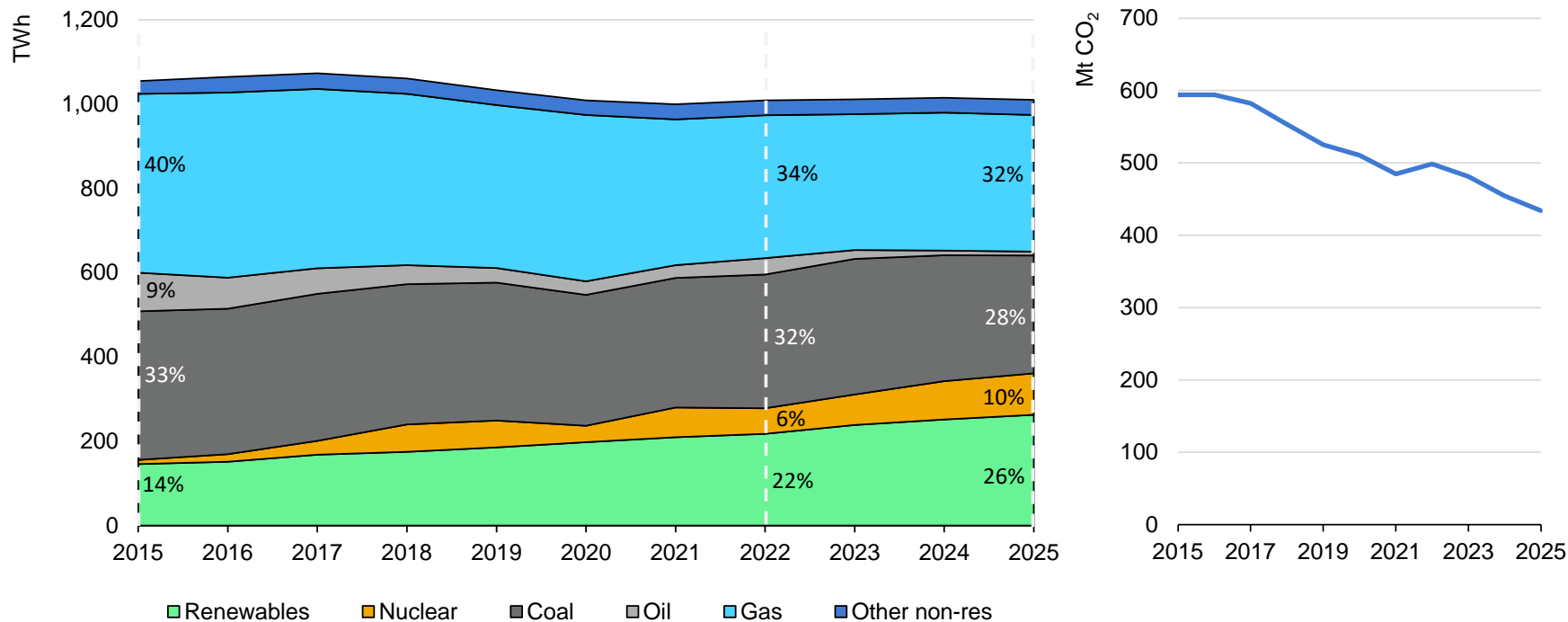
Changes in global electricity generation by source, 2021-2025



Renewables and nuclear will meet on average more than 90% of the additional demand over the next three years. Nevertheless, an accelerated global economic rebound may change the trends in demand and fossil-fired supply.

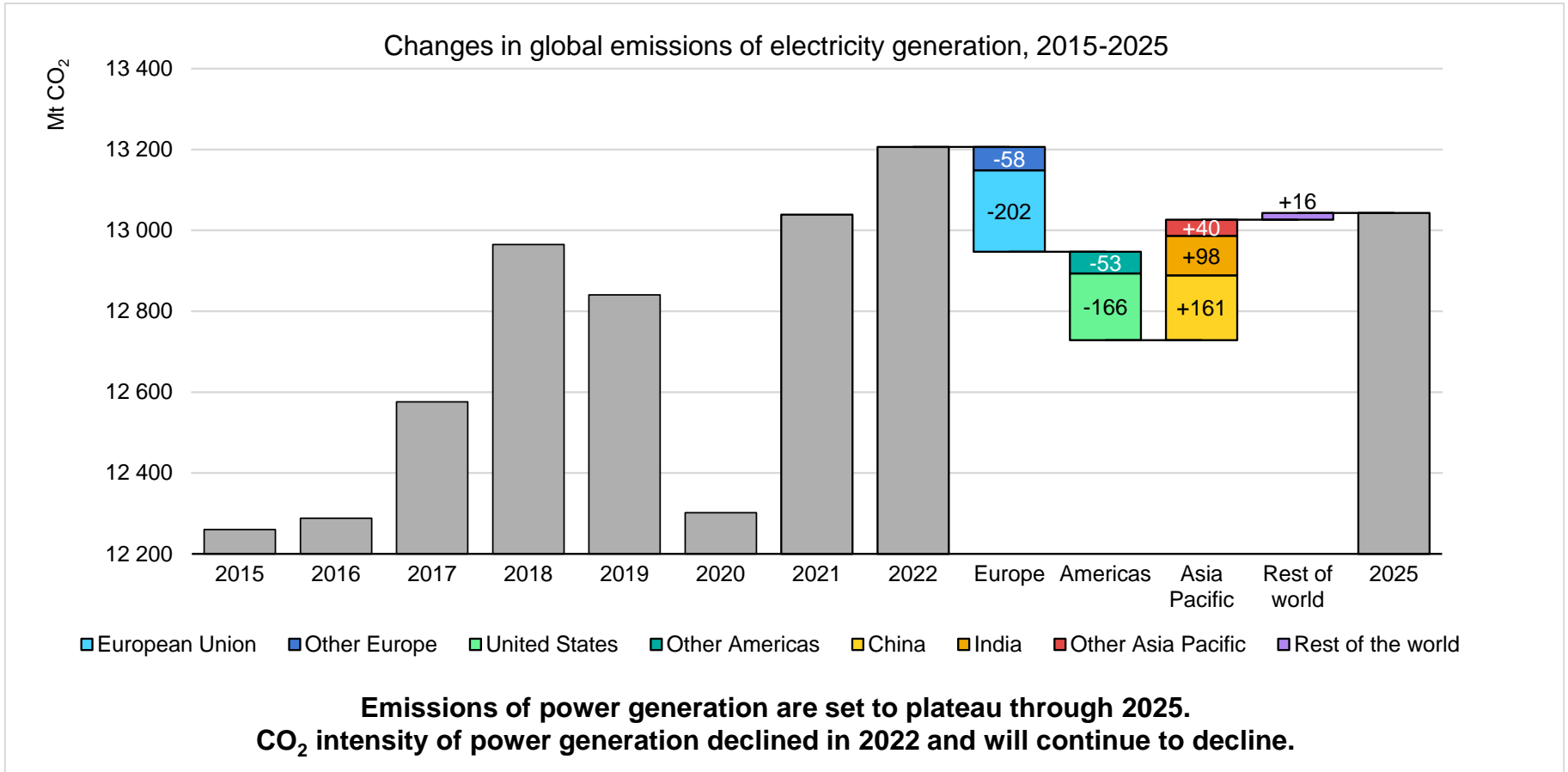
The share of fossil-fired generation in Japan is set to decrease

Evolution of the Japanese generation mix (left) and CO₂ emissions from power generation in Japan (right), 2015-2025



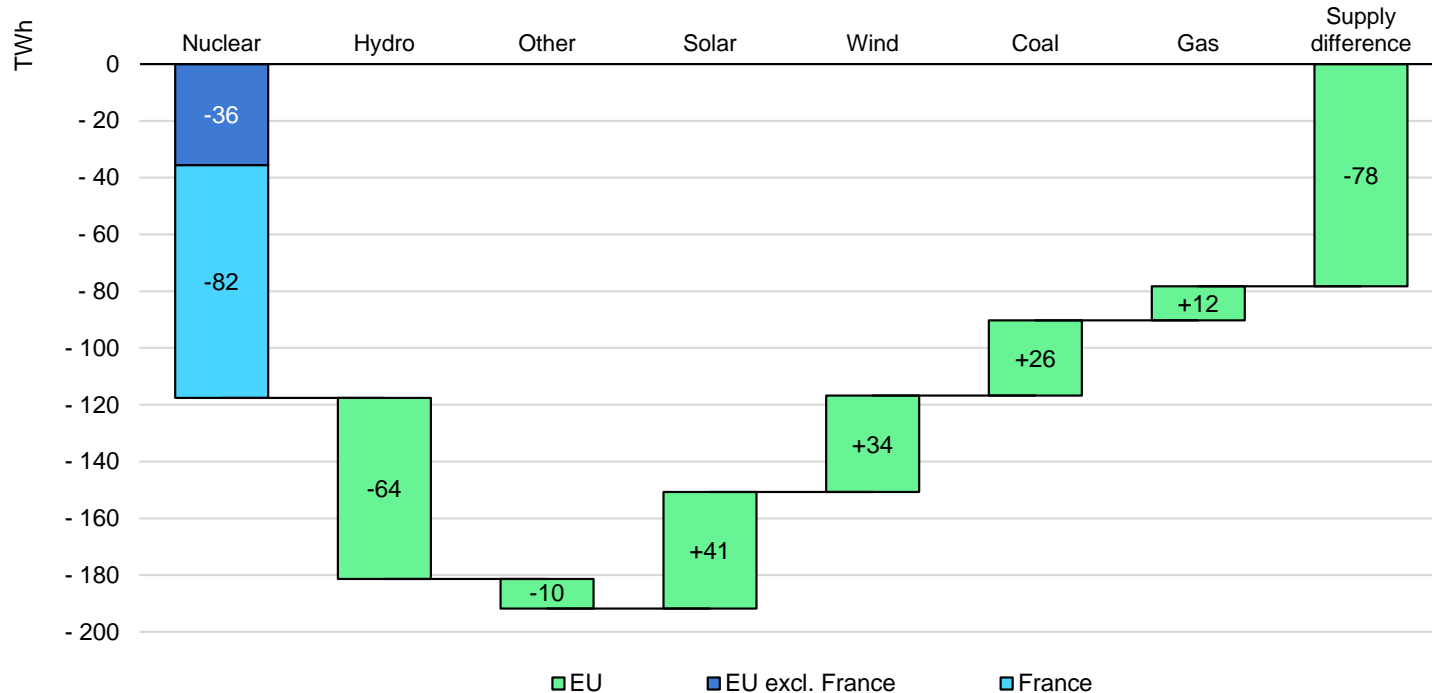
Low-carbon technologies—renewables & nuclear—are expected to make up 36% of the generation mix by 2025, more than double their share of 15% in 2015.

Global power generation emissions reached an all-time high in 2022



CO₂ intensity of power generation increased in the EU in 2022

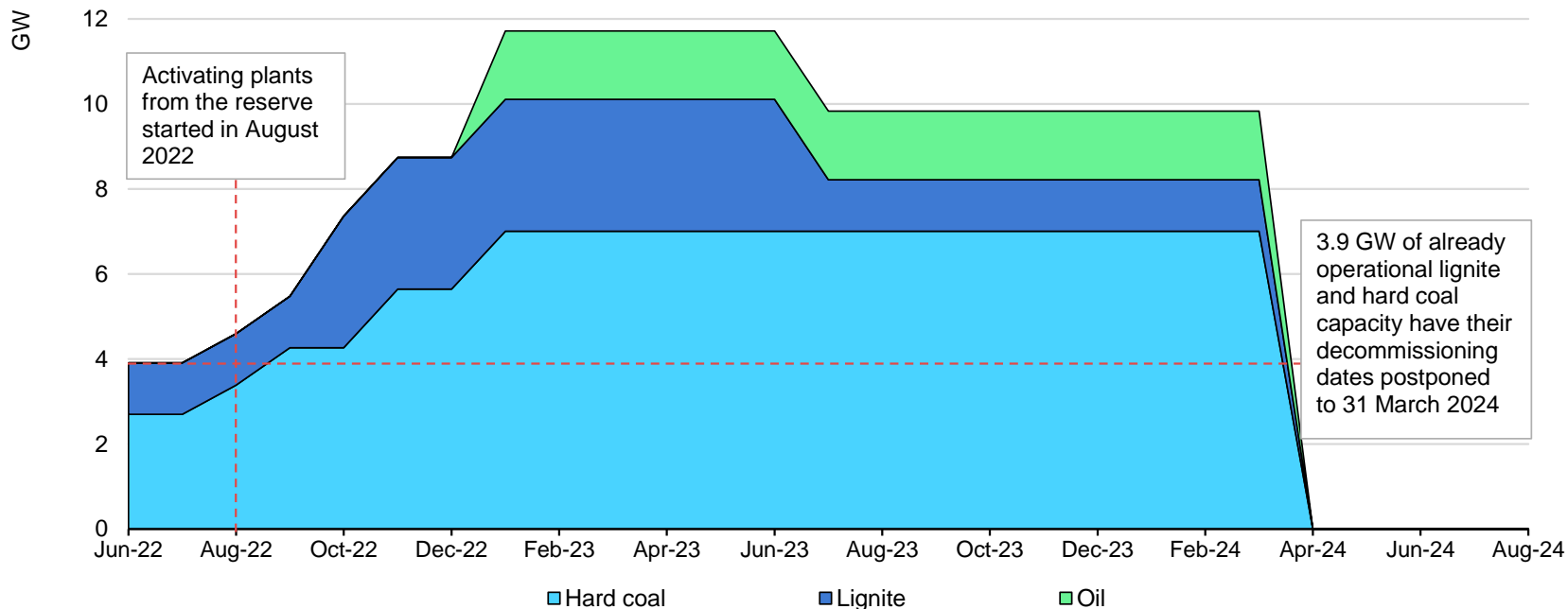
Change in electricity generation by technology in the European Union in 2022 compared with 2021



Low nuclear availability and low hydro output due to drought forced countries in the European Union to burn more coal and gas in 2022.

Reserve thermal power plants were reactivated in Europe

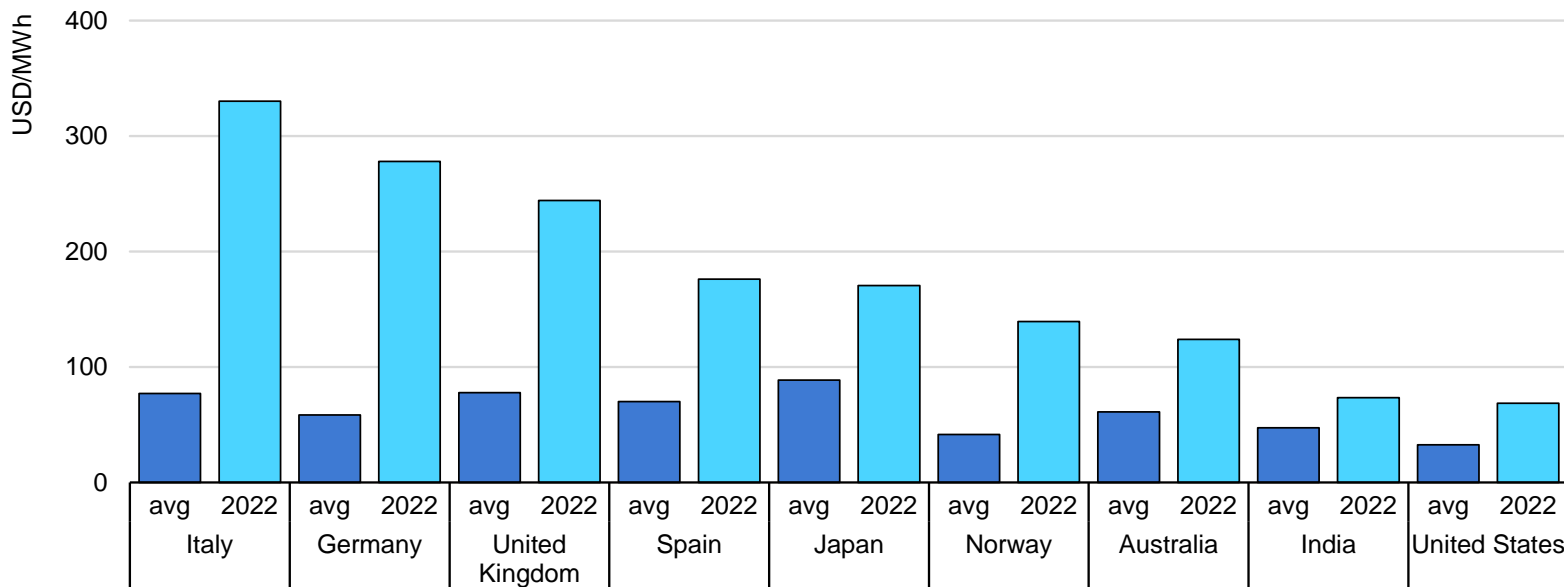
Evolution of the German gas replacement reserve, 2022-2024



For security of electricity supply, Germany delayed the closure and reactivated plants that make up 15% of its current fossil-fired generation capacity.

Wholesale electricity prices increased substantially in many regions

Annual wholesale prices in selected regions, 2022 and 2017-2021 average



Electricity markets were impacted differently across the world — Europe being hit the hardest.

- Global electricity demand growth slowed only slightly in 2022 amid the energy crisis and exceptional weather in some regions.
- Low-emission sources will cover the entire total growth in demand from 2022 to 2025, unless an accelerated economic rebound changes the fossil-fired generation trends.
- Power generation emissions reached all-time high in 2022, and are set to plateau through 2025.
- Global CO₂ intensity of power generation decreased in 2022 and will continue to decline. It increased in the European Union in 2022 due to lower nuclear and hydro output.
- **Affordability of electricity** has emerged as a major concern among governments
- Electricity demand and supply is becoming increasingly **weather-dependent**, calling for increased attention to **electricity security**.

iea