

# ***Renewables 2023 Global Status Report collection***

## **Renewables in Energy Supply**

### **Europe Factsheet**

#### **Key Headlines in 2022**

- European countries seek to enhance their energy security by reducing dependence on imported fossil fuels. The transition to renewables offers the opportunity to diversify energy sources and rely on domestic energy production. This political objective helps protect against price fluctuations and geopolitical risks associated with fossil fuel imports.
- Renewable energy developments offer significant economic opportunities for Europe. Political leaders recognize the potential for job creation, local investment, and the growth of renewable energy industries.
- The global energy crisis, characterized by supply chain disruptions, price volatility, and geopolitical tensions, has underscored the importance of energy security. European countries aim to enhance their energy security by reducing dependence on fossil fuel imports and diversifying their energy sources through renewable energy developments. This is highlighted by the emergence of energy related policies such as the European Union's REPowerEU, which aims to bridge the gap between regional energy supply and demand through renewables.
- Europe's overall investment in renewables fell by 26% to USD 55.9 billion, representing only 11% of new renewable energy investments globally. This was due to inflation-related challenges and national interventions in electricity markets that set revenue caps for different technologies.
- Europe led the modern bioelectricity with 30% installed capacity in 2022.
- Europe supplied 18% of the total production of renewable fuels. The share of renewables in the region's total electricity generation increased from 25% to 36% in a decade.
- Europe scored among the highest globally in wind power addition with several countries ranking in the top ten.
- Europe performed outstandingly in Solar PV additions and solar thermal heating sales.

#### **Key drivers**

- In heating supply, there is an increasing focus on decarbonisation through the adoption of renewable heating technologies. This includes the deployment of heat pumps, district heating systems utilising renewable energy sources, the use of biomass as a renewable heat source and the electrification of the heating sector.

#### **Key challenges**

- Ensuring grid stability, managing fluctuations in supply and demand, and incorporating energy storage solutions are crucial for the successful integration of renewables.
- Across much of Europe, the United States and several other countries, permitting processes continue to be challenging and in lead to undersubscribed auctions across all renewable energy technologies.
- Regional coherence, the global nature of climate change and the need for international cooperation.

## **Technologies**

### **Bioenergy:**

- Europe accounts for 90% of all bioheat produced globally from municipal waste.
- **Sweden, Finland and Denmark** accounted for 50% of heat production from biomass.
- Biopower generation in Europe from solid biofuels (excluding charcoal) grew 12% in 2022 to reach 93 TWh.

### **Concentrating Solar Thermal Power:**

- **Spain**, with the biggest capacity in CSP globally, has not added any new CSP capacity since 2013, mainly due to disagreements in price setting between government and industry and to uncertainties in possibilities to access the electricity grid. Spain had aimed to double its CSP capacity from 2.3 GW to 4.8 GW by 2025 and reach 7.3 GW by 2030.

### **Geothermal:**

- **Iceland** ranks third globally in the use of geothermal heat. Geothermal heat developments in continental Europe are concentrated in a few countries (**Germany, France, Hungary, Italy, the Netherlands and Poland**).
- No new Geothermal plants came online in 2022.
- Vienna will complete its first Geothermal plant in 2026 with a target to supply heat to 125,000 households.
- The Netherlands' production of Geothermal heat increased 6% in 2022.

### **Heat pumps:**

- Sales of heat pumps grew 38% in Europe driven partly by the Russian Federation's invasion of Ukraine. A record 3 million units were sold in 2022.
- In 2022, Europe allocated more than EUR 5 billion (USD 5.37 billion) of investments in heat pump manufacturing facilities. Most projects will be completed in 2025.
- **In Poland**, heat pump sales grew 120% in 2022.

### **Hydrogen:**

- In **Spain**, four grant programmes totalling USD 267 million were deployed to address innovation in the green hydrogen value chain in 2022.
- In 2022-2023, **Germany** signed a landmark agreement with **Denmark** to build a 1 GW electrolysis plant that will produce green hydrogen using offshore wind power.

### **Hydropower:**

- European hydropower production dropped 19% in 2022 due to extreme drought.
- Hydropower represented 10% of Europe's electricity output in 2022, led by **Sweden** with 69 TWh, followed by **France** with 46 TWh, and **Austria** with 36 TWh.
- **Türkiye** added 80 MW of hydropower capacity in 2022 for a total capacity of 32 GW.

### **Solar Thermal Heating:**

- Sales grew in several large European markets in 2022, including **Italy, France, Greece, Germany and Poland**. **Spain** was the only top-five European market where additions fell during the year, due to the strong competition for labour of Solar PV, that is more attractive for installers.
- **Italy's** market expanded 43% in 2022. This followed a record 83% increase in 2021, the first positive year after more than a decade of contraction.

- The second largest European market, **Greece**, added a record 293 MWth, an increase of 17%, for a total of 3.8 GWth in operation.
- More solar industrial heat plants (SHIP) began operation in 2022 led by the **Netherlands** and **France**.
- **Germany**, the world's sixth largest solar thermal market, increased annual sales by 11%, with an estimated 91,000 solar thermal system installations.

#### **Solar PV:**

- Europe added 40.5 GW of solar PV capacity in 2022 to reach 206 GW of installed capacity, marking another year of outstanding growth.
- Several countries in Europe also added solar PV capacity in 2022. **Spain** led the region with additions of 8.1GW, followed by **Germany** with 7.5 GW, **Poland** with 4.9 GW, the **Netherlands** with 3.9 GW and **France** with 2.9 GW added.

#### **Wind:**

- Europe was the only region where wind power installations rose in 2022, led by Germany's push for the energy transition.
- Europe added a record 17.9 GW of capacity in 2022, 86% of which was installed onshore, for a year-end total of 242.4 GW (212.1 GW onshore and 30.3 GW offshore).
- **Germany, Finland, France, Sweden, the United Kingdom** and **Spain** were all among the global top 10- countries for wind capacity and additions and accounted for nearly 60% of Europe's annual wind power installations.