

## Energy storage regulations tripoli

### Policies and ethics

Energy storage is a crucial technology to provide the necessary flexibility, stability, and reliability for the energy system of the future. System flexibility is particularly needed in the EU's electricity system, where the share of renewable energy is estimated to reach around 69% by 2030 and 80% by 2050.

The Commission adopted in March 2023 a list of recommendations to ensure greater deployment of energy storage, accompanied by a staff working document, providing an outlook of the EU's current regulatory, market, and financing framework for storage and identifies barriers, opportunities and best practices for its development and deployment.

The need for flexibility in the electricity system will increase significantly in all EU countries, reaching 24% (288 TWh) of total EU electricity demand in 2030 and 30% (2 189 TWh) by 2050 across all timescales (from 11% in 2021).

On average across the EU, the overall flexibility requirements increase significantly when the share of renewable generation in the electricity system is above 74% of the total installed capacity.

Different studies have analysed the likely future paths for the deployment of energy storage in the EU. These studies point to more than 200 GW and 600 GW of energy storage capacity by 2030 and 2050 respectively (from roughly 60 GW in 2022, mainly in the form of pumped hydro storage).

The EU needs a strong, sustainable, and resilient industrial value chain for energy-storage technologies. There is an increasing demand for data transparency and availability, and greater data granularity, including network congestion, renewable energy curtailment, market prices, renewable energy, greenhouse gas emissions content and installed energy-storage facilities. This need becomes more important for decisions about investing in, choosing a location for, and evaluating new energy-storage facilities.

The rapid deployment of a hugely increased share of variable renewable energy sources will require more flexibility, allowing the energy system to adapt to the changing needs of the grid and manage the variability and uncertainty of energy supply and demand.

At any moment in time, the consumption of electricity has to be perfectly matched with the generation of electricity. This balance is necessary in all electricity grids to maintain a stable and safe supply. Flexibility solutions can adjust demand and supply by allowing excess electricity to be saved in large quantities over different time periods.

Besides being an important flexibility solution, energy storage can reduce price fluctuations, lower electricity prices during peak times and empower consumers to adapt their energy consumption to prices and their needs. It can also facilitate the electrification of different economic sectors, notably buildings and transport.

The main energy storage method in the EU is by far "pumped hydro" storage, but battery storage projects are rising. A variety of new technologies to store energy are also rapidly developing and becoming increasingly market-competitive.

Since 2020, the Commission publishes yearly progress reports on the competitiveness of clean energy technologies that present the current and projected state of play for different clean and low-carbon energy technologies and solutions. The 2023 report included dedicated sections on renewable hydrogen production through water electrolysis, and batteries, which are crucial to succeed in the decarbonisation of the energy and transport sectors.

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