



Solar and storage: Europe's response to energy crises

Europe's energy supply is under pressure. Price shocks, geopolitical conflicts, rising demand for electricity and competition for industrial value creation show that we need to rethink supply security. It is not just power plant capacities that count. The system must keep costs affordable, reduce dependencies and provide electricity when households, companies and industry need it.



These are precisely the issues that will be discussed at The smarter E Europe in Munich in June. Europe's largest alliance of exhibitions for the energy industry shows how photovoltaics, battery storage, grids, charging infrastructure, energy management and flexible consumers all have to work together to turn renewable generation into a resilient energy system.

The study Solar+: An EU Pathway to Achieve Renewable Targets, Price Affordability and

Energy Security by SolarPower Europe provides the data to prove that solar and storage are not just technologies for the energy transition, they are the building blocks for Europe's resilience.

Europe's vulnerability in numbers

As long as fossil fuels dominate most of our electricity generation and determine its price, Europe will remain vulnerable. Having to import fossil energy carriers forces countries

to be dependent on markets which they cannot properly control. At the same time, electrification, digitalization, heat pumps, electromobility and industrial processes are all driving electricity demand.

SolarPower Europe expects the EU's demand for electricity to grow to over 3,000 terawatt hours by 2030.

In the study's Solar+ scenario, which projects a faster deployment of solar energy and

analyzes its benefits, this growth boosts the system's robustness rather than presenting a risk. Renewable energies would meet 68% of the EU's electricity demand and solar energy would become the largest single source of electricity, covering more than a quarter of consumption. The installed solar capacity would increase to 732 gigawatts AC by 2030.

Meanwhile in the baseline scenario, the total installed solar capacity would be 594 gigawatts AC. The difference between these scenarios illustrates how fast solar energy could expand, provided the necessary approvals, grid access and market rules are aligned with the quick deployment of domestic renewable generation.

Storage systems turn solar power into a system resource

Resilience is not just a matter of ramping up generation, it needs flexibility. Battery storage systems make electricity generated during hours of high solar or wind production available at times when the demand is high, which levels out price peaks, reduces curtailment and relieves the load on grids. They make renewable energies easier to plan and reduce the need for fossil fuel power plants, which still determine electricity prices during large parts of the day and night.

The scope is considerable. In the Solar+ scenario, EU battery storage capacity will grow to 171 gigawatts of capacity and 598 gigawatt hours of electricity by 2030. This is a

fourfold increase in output and an eightfold increase in storage capacity compared to 2025. In this scenario, the average storage duration would increase to 3.5 hours.

This transforms the role of batteries from an add-on to specific projects, to infrastructure elements for an electricity system that relies more heavily on domestic renewable sources.

Price stability strengthens the local economy

A resilient energy system must be affordable. The Solar+ analysis shows that an ambitious expansion of solar energy and storage can almost halve the operating costs of the EU electricity system by 2030. Compared to 2025, costs could fall by 55 billion euros per year in the Solar+ scenario, mainly because of the drop in fossil fuel power plant usage and the resulting drop in demand for fuel imports.

Wholesale prices would also change. In some EU markets, the average day-ahead price in the Solar+ scenario is 63.4 euros per megawatt hour, 14% below the 2025 level. At the same time, price spreads are expected to fall by 42%. For energy-intensive companies, data centers, charging infrastructure and electrified heating processes, this is more than just a statistical improvement; more predictable electricity prices create investment security. Intelligently combining production, storage and flexible demand helps protect against price shocks.

Fewer gas imports, more autonomy

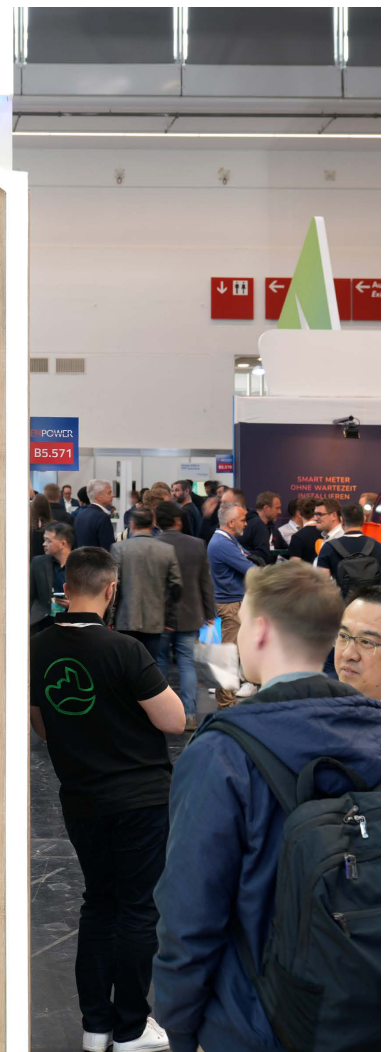
Reduced reliance on gas is the key driver of greater resilience. According to SolarPower Europe, in 2025, solar power prevented gas imports worth 27.2 billion euros. In the Solar+ scenario, the annual savings could go up to 53.3 billion euros by 2030. Cumulatively, from 2026 to 2030, this would eliminate the need for 223 billion euros' worth of gas imports for electricity generation.

This makes energy policy a strategy for strengthening Europe's security. Every euro that is saved on fossil fuel imports can be invested in grids, storage, industrial electrification, digital control and European value creation. At the same time, the vulnerability to geopolitical shock is mitigated.

Solar energy is thus emerging as a technology that combines competitiveness and supply security.

Europe also faces a growing challenge in balancing electricity supply and demand in real time. Renewable generation is becoming increasingly decentralized, with millions of rooftop solar systems, batteries, electric vehicles and heat pumps interacting with the grid simultaneously. This changes the role of the electricity network from a one-way distribution system into a dynamic, digital infrastructure that must constantly coordinate generation, consumption and storage.





Smart grids, advanced forecasting and digital energy management platforms therefore become essential components of energy resilience. They allow operators to identify bottlenecks earlier, shift loads more efficiently and integrate higher shares of renewable electricity without compromising system stability. Digitalization also enables consumers to participate more actively in the energy market. Households and businesses can respond to price signals, store electricity when prices are low and feed power back into the grid when demand rises.

This flexibility reduces strain on infrastructure while improving the overall efficiency of the system. As Europe accelerates electrification across transport, heating and industry, combining renewable generation with intelligent grid management will be critical for maintaining secure and affordable electricity supplies.

Flexibility determines the pace

The key task at hand is integration. Networks need to be expanded, but also utilized more efficiently. To build more storage devices, we need reliable business models. Flexible consumers need to receive clear market

signals. Electric vehicles, heat pumps, industrial plants and buildings can stabilize the system if rules, tariffs and digital infrastructure permit.

This is why SolarPower Europe speaks of a flexibility-first approach: to prevent new bottlenecks from arising, grid planning, market design and investment frameworks should include storage, demand-side flexibility and intelligent control. Considering the deployment of solar power and storage systems as a combined issue is key.

Europe's much-needed resilience relies on the combination of electrification and digital energy management.

The smarter E Europe 2026

The smarter E Europe brings these topics together at Messe München from June 23rd to 25th, 2026.

The four exhibitions Intersolar Europe, ees Europe, Power2Drive Europe and EM-Power Europe cover the key elements of an integrated energy system: photovoltaics, battery storage, charging infrastructure, electromobility, energy management, grids and solutions for buildings, industry and municipalities.

Around 2,800 exhibitors and over 100,000 visitors are expected, and the exhibition space will cover 200,000 square meters.

Conferences and forums

The conferences will take place at the ICM (Internationales Congress Center) Munich on June 22nd and 23rd, 2026, before the start of the exhibition.

The Intersolar Europe Conference, ees Europe Conference, Power2Drive Europe Conference and EM-Power Europe Conference address companies, investors, utility companies, project developers, policymakers and researchers.

Around 2,600 participants are expected. In addition, the exhibition forums offer practical presentations on power plant technologies, prosuming, grid integration and flexible energy systems on all exhibition days.

This makes Munich a meeting place for all those who want to make Europe's energy supply more secure, cheaper and more resilient.

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