

**ENERGY SECURITY –
EUROPE'S GREEN SOVEREIGNTY?**



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Energy security is an economic condition in which the current and future energy needs of an economy can be met at all times. It determines a state or region's ability to act independently. The current energy price crisis reveals Europe's vulnerability. The dependence on energy imports, while demand is growing poses enormous risks and leads to questions around the long-term sovereignty of European energy supply.

The current situation can provide important insights as a stress test in the midst of the transformation of our energy systems. Despite great progress in the development of renewable capacities within Europe, supported by the economic superiority of the technologies, the dependency remains high. Both the economy and households are groaning under the growing burden of energy prices. Rapidly rising global demand for energy and limited fossil reserves are intensifying competition on the world market. In addition to oil, which continues to dominate the transport sector by far, gas is becoming the focus of current developments. Global efforts to curb climate change are leading to a massive increase in demand for gas due to the shutdown of coal-fired power plants and the focus on renewable energies.

Flexibility and seemingly lower emissions compared to coal-fired power generation make gas the pendant for volatile supply from renewable energies. Forecasts on the development of gas-fired power plant capacities in Europe illustrate the expected continuing importance of gas as a bridging technology. These are expected to increase by more than 50 % by 2050. The capacity of gas-fired power plants to cover peak loads ("gas peaker"), i.e. to compensate for too low renewable production, is expected to more than triple in the same period.¹ The demand could be considerably higher in the event of significant changes in wind and temperature conditions.

Lower gas supplies from Russia, the conflict between Algeria and Morocco with its consequences for the pipeline leading to Spain, and the competition with China for liquefied gas from the Middle East illustrate the importance of energy security. However natural gas production within Europe will continue to decline in the future (export stop Netherlands, reduction in Norway), while gas demand will remain at a stable level until 2030. To compensate for this growing

import demand, additional capacities have so far only been created in the form of another – politically still controversial – pipeline for Russian natural gas. In addition, the expansion of liquid gas storage facilities should be examined, even keeping mobile storage facilities on ships – as already practised in Estonia – should be investigated.

But, while high burdens for households and industry reduce acceptance towards the energy transition, it must be noted that the contribution of renewable energies has so far dampened the impact of the gas price increase by around €33 billion.

Real solutions that would reduce the EU's dependence on energy imports lie in rethinking the long-term strategy. For example, battery storage can smooth out fluctuating production in line with a significantly accelerated expansion of renewable energies and thus reduce fossil fuel supplements to a minimum. The dynamic price reduction of battery storage brings competitiveness with gas-fired peakers within reach. Nevertheless, the required storage capacities create additional costs that burden the elementary determinant of energy security, namely the affordability of energy. For this reason, the expansion of renewable energy supply must go hand in hand with the integration, i.e. the interconnection, of the European markets. But a common European approach is missing, in this context, the prioritised shutdown of modern coal-fired power plants in Western Europe also appears doubtful, as it contrasts with the extension and competitive protection of outdated technologies in parts of Eastern Europe.

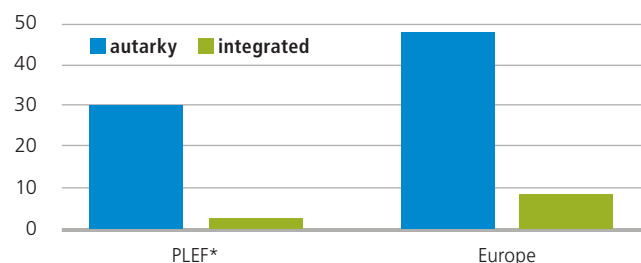
Interconnecting EU member states would reduce the additional capacity of fossil power plants by a factor of ten.

A regionally and technologically diversified approach by the EU points to a path that focuses on weather-dependent and resource-coordinated production and distribution of renewable energies. In this course, a smoothing of fluctuating generation would also be

possible, which would significantly increase the secured supply. The negatively correlated technologies of solar PV, wind and hydropower as well as the regional differences between wind speeds on the coasts and high solar radiation in the south complement each other. Compared to self-sufficiency, interconnection of the member countries would reduce the storage requirements for renewable electricity and the additional capacity of fossil power plants by a factor of about ten.

¹ BNEF (2021)

Storage requirements Renewable Energy in Europe (in TWh)²



Thus, the integration of European energy markets makes it possible to guarantee the security of supply through renewable energy. A simultaneous expansion of renewable energies and the grids increases system efficiency, reduces the costs for storage solutions and decreases grid-related curtailments. In addition to the decreasing import demand and thus lower dependency, the approach offers a possibility to pass on the cost efficiency of renewable technologies to the consumer, as the price-setting and price-driving importance of the bridging technology gas power decreases. Appropriate implementation would also increase the planning security of private investors and thus give the expansion of renewable energies the necessary significant boost.

² Fraunhofer IWES (2015)

* Austria, Belgium, France, Germany, Luxembourg, the Netherlands and Switzerland

At the same time, protecting the energy sector from external danger – in the age of cyber operations – also requires the development of European solutions. Both, however, presuppose the political will to subject the competences of the nation states as well as the European organisations to a thorough examination.

However, shaping a European energy policy continues to prove extremely difficult. Energy policy orientations and the retention of apparent national sovereignty limit the effective use of the advantages that lie in the sustainable transformation of our energy supply. Within Germany alone, the grid expansion that would enable the delivery of wind power from the north to the industrial regions of the south is proving to be protracted and conflictual.

Realising the energy transition through a united Europe with an integrated energy market and a coordinated EU external energy policy offers an economically efficient and ecologically valuable alternative. With the appropriate expansion of renewable energies, an integrated European energy market can guarantee security of supply in the long term and also ensure affordability. The prerequisite, however, is that European independence from exporting countries takes precedence over national sovereignty vis-à-vis Europe.

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