

Energy Transition

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Digitalization: Key Enabler of Germany's Energy Transition

Significant opportunities exist for digital technologies that support the integration of renewable energies into the grid to deliver innovative energy solutions.

Digital technologies can help realize significant cost savings of up to EUR 7.7 billion in the German energy sector. **Digitalization** counts as one of the four d's – alongside decarbonization, decentralization, and democratization – helping to enable Germany's energy transition. Germany's energy market offers excellent opportunities for products and solutions that facilitate the integration of renewable energies, adjust supply and demand, and increase the efficiency of energy consumption.

Digital Solutions in the German Energy Sector

Germany's energy market has undergone a significant transformation over the last decade. This is particularly evident in the power sector; going from large generation capacities based on nuclear and fossil fuels towards a power mix with almost 42 percent share of renewable energies and 1.6 million renewable generation units in 2019.

The country's decision to phase out nuclear power by 2022, and the expected phase-out from coal based power generation by 2038, further drive the shift to renewable energies. The integration of renewable energies nonetheless remains a challenge – especially for the German power grid. The decentralization and volatility that come with the shift towards renewable energy generation increases complexity and requires ever greater flexibility.

E-Mobility and Smart Buildings

The national target of 10 million electric vehicles on German roads by 2030 also increases the need for innovative consumption management and charging processes solutions. The German government has also called for an increase in the energy efficiency of buildings and industrial processes to reduce overall energy consumption. Digital solutions that address these challenges add value in all areas: from the generation of energy to its transmission, distribution, trade and final consumption in the power, heating and transport sectors. From the prognosis and maintenance of renewable energy assets to the flexibilization of energy demand using smart devices – digital solutions impact the entire value chain, allowing new actors to participate in the German energy market.

Digitalization in the Energy Sector: Consumer, Procumer, Flexumer

According to recent market reports, German utilities regard the coordination of decentralized energy generation, efficient power use, and grid flexibility as the most important fields for applying digital technologies in the German energy sector.

Digital solutions that enable the pooling of small-scale generation capacities and peer-to-peer trading are gaining importance in Germany. This trend goes in line with the shift towards the more active role of consumers in the energy market – whether as "prosumers" (thanks to residential solar PV generation and storage units) or as "flexumers" (through adjusting their energy consumption levels).

The GDEW law of 2016 to digitalize the energy transition lays the regulatory framework for this development. Since December 2019, three smart meter gateways have received BSI certification for IT security. The BSI certification and market readiness declaration is a formal requirement to start the smart meter roll-out that is expected to be realized

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in 2020. The country consists of around 50 million metering points, for which those with a consumption over 6,000 kWh a smart meter becomes mandatory.

Smart Meters - New Use Cases and Business Models

Smart meters should enable new use cases ranging from energy management products and smart home and smart mobility applications to flexible electricity tariff models. A second generation of smart meters is expected to create further business cases in the years ahead.


The shift towards digitalization not only creates opportunities for new business models but also helps new players to enter the German market. According to a recent study, almost 80 percent of German utilities agree that the smart meter law enables new players to enter the market. New actors do not necessarily just mean competition – established industry players are cooperating with third parties including start-ups to speed up the digital transformation process.


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