



POWER GENERATION DISRUPTION

GERMANY'S CASE FOR CHANGE

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Energiewende (or “energy transition”) is one of Germany’s largest ongoing projects: a paradigm for the rapid and disruptive changes that many electricity markets are now facing or soon will face, as regulatory and consumer pressures to reduce fossil fuel usage grow and the costs of renewables-based generation continue to fall.

Due to its early adoption of renewable energy, Germany is now a good example of the kind of turbulence that can be expected as electricity markets transition. Its Renewable Energy Act (EEG) of 2000 (since amended several times) gives renewables priority and investment protection. Germany now meets more than a quarter of its electricity demand through renewables – a figure that is expected to rise to 80 percent by 2050. It’s a mission that has found widespread approval: More than three-quarters of German private households, energy utilities and industrial companies that we recently surveyed (in collaboration with the Technical University of Munich) see the realignment of the energy sector and Germany’s pioneering role in a positive light.

Nevertheless, there are clear hurdles to making renewables-based generation a reality. *Energiewende*, for example, envisions households and businesses investing directly in their own renewables-based power generation capacity – a leap that many are unwilling or unable to make without subsidies. Utilities, on the other hand, face the loss of their central role in power generation and the challenge of repositioning themselves to avoid stranded assets and value destruction.

NO GUARANTEE OF SUCCESS

Despite popular acceptance of *Energiewende*, our survey found that 49 percent of private households still have doubts about its ultimate success. Most critical are questions over implementation: 80 percent of households

80

Percent of households that consider the resulting rise in on-grid electricity prices to be a severe burden

consider the resulting rise in on-grid electricity prices to be a severe burden. And though a distinct majority is generally willing to invest in renewables (wind, photovoltaics and geothermal are popular), as many as two-thirds report that they will only do so if they receive some kind of subsidy. Even then, 40 percent are not prepared to invest more than \$1,100 in green technologies. Nearly two-thirds of our households surveyed expect their investments to pay off within three to five years. (See Exhibit 1.)

Businesses are skeptical, too. Some 70 percent of those surveyed believe that energy procurement costs will rise in the wake of *Energiewende*, and 67 percent don’t intend to build their own generation capacities – although all respondents said that adequate subsidies might make them more willing to invest. Of those industrial companies that do tend to invest, they are banking on renewables to improve their company’s image (77 percent) and reduce costs (62 percent).

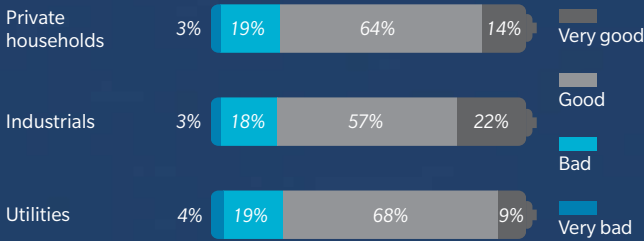
The German utilities we surveyed are primarily critical of energy policies: 83 percent view amendments made to the renewable energy law in 2014 as ineffective or counterproductive. In addition, only 30 percent of utilities expect that the expansion of both network and storage capacity needed to make the energy transition workable will be realized in the foreseeable future. And yet, utilities are optimistic about their own future, as 83 percent of survey

EXHIBIT 1: THE CURRENT STATE OF GERMANY'S ENERGY TRANSITION

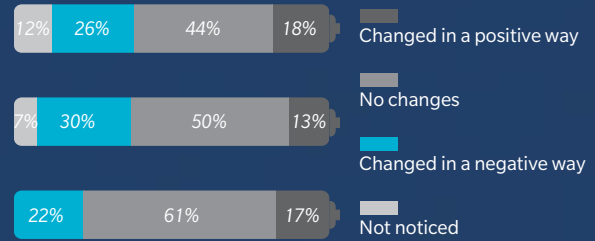
More than 75 percent of private households, industrials and utilities support Germany's Energy Transition...

...however the recent changes to the German Renewable Energy Act are regarded as insufficient by all groups...

HOW WOULD YOU RATE GERMANY'S ENERGY TRANSITION?

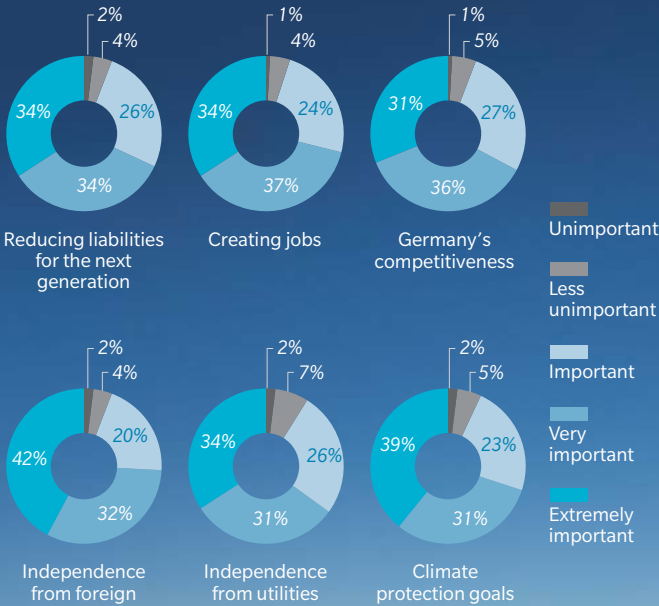


HOW HAVE YOU EXPERIENCED THE CURRENT CHANGES IN THE GERMAN RENEWABLE ENERGY ACT (EEG)?



...and the government needs to take this into consideration in the lead up to the next election since 58 percent of respondents agree it will influence their vote

HOW IMPORTANT ARE THE FOLLOWING ELEMENTS OF THE ENERGIEWENDE TO YOU, AS A PRIVATE HOUSEHOLD?



WILL THE ENERGIEWENDE INFLUENCE YOUR VOTE IN THE NEXT ELECTION?



Source: Oliver Wyman analysis

respondents reckon that they are now well prepared for upcoming challenges, and 65 percent think that retail energy still offers significant opportunities.

A CHANGING ROLE FOR UTILITIES

To stay competitive as renewables increase in a market and customers begin to generate (at least some) of their own power, Germany's example shows that utilities must reconsider the way they sell energy. As revenue from central generation assets declines, utilities must develop a better understanding of how customer needs and wants are evolving in response to the energy transition (and related cultural and technological changes), adopt innovative sales tools and business designs and develop simple, efficient solutions.

In short, *Energiewende* in Germany and the increased focus on renewables in other countries will require utilities to undergo a transformation – from asset-heavy energy providers to broader, asset-light service providers. By identifying their customers' specific, unmet needs, utilities can begin to build out new business designs, with the goal of delivering a consistent customer experience. Insurance, home repair, “smart home” technologies and installation and maintenance of renewables-based generation and storage equipment are just a few options that utilities could offer their customers.

For example, all of the large German utilities offer photovoltaic home installation services to their customers. RWE, one of the largest utilities, also provides customers with solar energy storage and home automation systems and runs a network of charging stations for electric vehicles. British Gas, which supplies natural gas in the United Kingdom, is remaking itself into a “caretaker” for its customers' homes, providing bundled heating and safety solutions. The Hong Kong and China Gas Company (known

as Towngas) sells its own white label appliances and offers bespoke kitchen design.

Germany's energy transition should serve as a wake-up call for utilities everywhere. Renewables and direct generation are part of a wave of disruption and innovation that will impact many energy markets in the future – much in the same way that mobile phones disrupted the previously static landline telecom industry and the Internet caused dislocation in a wide swath of retail and media business models. These other instances have demonstrated that treating innovation as a threat will end your business in a hurry; planning ahead, on the other hand, can open up tremendous new sources of value.

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