



The *Energiewende*:

Secure, sustainable and affordable energy for the 21st century

Our motivation

The *Energiewende* (energy transition) is Germany's path to a secure, environmentally friendly and economically successful future. It represents the decision to fully overhaul the country's energy supply, moving away from nuclear energy in favour of renewable energy sources. Contrary to widespread belief, the *Energiewende* goes far beyond the power sector and also includes the heating, transport and building sectors. The ultimate aim is that by 2030, half of the country's energy supply will be provided by the sun, wind and other renewable energy sources. At the same time, the plan is for this energy to be used ever more efficiently. By the middle of the century, energy consumption should be reduced by half compared with 2008.

The main goals of the *Energiewende*

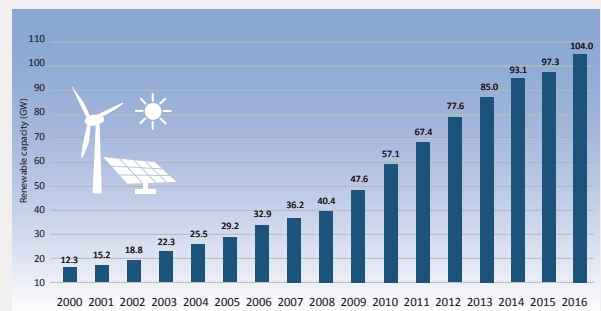
The aims of the *Energiewende* are to

- reduce greenhouse gas emissions
- create a driving force for investment and modernisation in Germany as a location for industry
- foster innovation, growth and employment
- make Germany more independent of oil and gas imports in the long term.
- enable the gradual phase-out of nuclear energy until 2022.

In order for the *Energiewende* to become an ecological and economic success story, energy must remain affordable and its supply must remain secure. Only in this way will the public continue to support the *Energiewende* and will Germany remain competitive as a location for industry.

Renewable energy – the essential component of the energy supply

The Renewable Energy Sources Act (EEG), which was introduced in 2000 and has been regularly updated since then, paved the way for making the *Energiewende* a success. Energy supply in Germany is becoming greener every year. While in 2000, only some 6% of the electricity consumed in Germany came from renewable energy sources, this figure is now around 32% and Germany is well on track to achieving a renewables share of 40-50% by 2025. However, the rapid expansion of renewable energies has also led to unintended consequences such as challenges for parts of



Installed renewable capacity (in GW) in Germany

the power grids. For this reason the Federal Government has overhauled the feed-in tariff system, that is, the support instrument provided under the Renewable Energy Sources Act (EEG).



Renewable electricity – the 2017 Renewable Energy Sources Act, competition-based funding for renewable energy

The 2017 Renewable Energy Sources Act rings in the next phase of the *Energiewende*. From 2017 onwards, funding rates for electricity from renewable energy sources will no longer be fixed by the government, but rather determined via a market-based auction scheme. The 2017 Renewable Energy Sources Act is the key instrument for achieving effective annual quantitative steering and improving renewable energies' position on the market. By exempting small renewables plants from the obligation to take part in auctions and relaxing the rules for community-owned energy companies bidding in auctions for onshore wind funding, the diversity of stakeholders will be maintained.

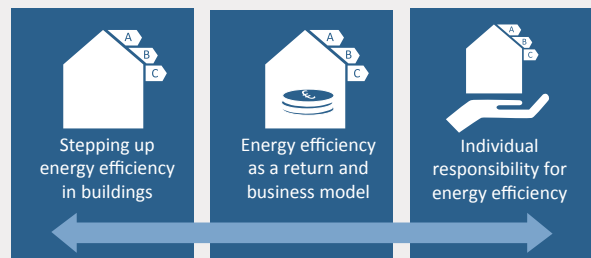
Renewable heat

More than half our energy is used for heating and cooling purposes. If we want the *Energiewende* to be successful, it is therefore crucial to also expand the use of renewable energy in the heating sector. Within the heat market, the use of renewable energies is regulated by the Renewable Energies Heat Act. Under this law, builders of new buildings are required to generate a percentage of their heating requirements from renewable sources of energy, to undertake certain compensatory measures such as installing additional insulation, or to use combined heat and power systems or district heating. In addition to the Renewable Energies Heat Act, the Federal Government uses the Market Incentive Programme (MAP) to increase the proportion of heat generated from renewable sources.

Renewable transport

In the transport sector, biofuels like bioethanol, biodiesel and biogas have been helping to meet energy demand and to mitigate climate change for several years now.

Renewables accounted for 5.1% of the fuel used in the German transport sector in 2016. The renewables in question consisted almost entirely of biofuels for cars, trucks, trains, ships and aircraft. But renewables are also becoming ever more important when it comes to powering more electric vehicles. Electromobility is a low-carbon form of transport and helps to bring electricity from renewable energy sources, such as solar and wind energy, into the transport sector. In order to boost electromobility in Germany, the Federal Government is supporting the development of the charging infrastructure and will provide funding of €600 million for purchase incentives for electric vehicles by 2019 (€ 4000 for an electric vehicle and €3000 for hybrid cars).



Key pillars of the National Action Plan on Energy Efficiency

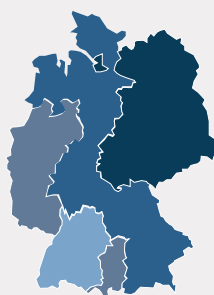
Energy efficiency first – making more of energy

Alongside renewables development, improving energy efficiency is also crucial in order to make the *Energiewende* a success. This applies to private households, manufacturing companies and local authorities. The German Government has set out clear energy efficiency targets. From 2008 to 2015, primary energy consumption decreased by a respectable 8.3%. By 2020, Germany is to cut its primary energy consumption by 20% compared to 2008, which means there is still a great deal of work to do. Energy efficiency benefits all sides – and also saves money. The best





Amprion
 - 11,000 km
 - 29.1% of
 volatile capacity



50Hertz
 - 9,995 km
 - 53.4 % of
 volatile capacity

TransnetBW
 - 3,330 km
 - 42.7% of
 volatile capacity

TenneT
 - 10,800 km
 - 60.5 % of
 volatile capacity

The German transmission grid and its operators

and cheapest way of combating climate change is to reduce the amount of electricity that needs to be generated in the first place. Better energy performance benefits the climate as it reduces our carbon emissions. It can also save households, companies and local authorities real money. Investments in energy efficiency tend to be higher at the moment than returns on secure investments in the capital market. Improving energy efficiency will also put our companies in a better position to compete globally. Furthermore, energy efficiency is a driver of new business models and innovative technologies and services that give German businesses an edge over their competitors. The Federal Government has adopted a National Action Plan on Energy Efficiency (NAPE), a comprehensive package of measures designed to improve the country's energy performance.

Electricity market – Making it fit for renewable energy

Renewables already provide over a third of our electricity consumption. However, the greater the share of our electricity supply derived from weather-dependent energy sources such as the wind and the sun, the greater the fluctuations in the amounts fed into the grid. A modern electricity market for the *Energiewende* aims to address this challenge. This market needs to be able to guarantee a secure, low-cost and environmentally compatible supply of electricity when a large proportion of the power is derived from renewable energy sources.

Electricity grids – Green light for grid development

The electricity grid is the backbone of a successful *Energiewende*. In order to make sure our electricity supply remains secure and affordable, we need new power lines. Only that will ensure that electricity from renewable energy sources will actually be able to reach every power socket in Germany in the future, too. The new generation situation with growing shares of electricity from renewable energy sources is creating fresh challenges for the grid. In some cases, electricity needs to travel long distances from



the power plants to the consumers. By the end of 2022, Germany's nuclear power plants will have been gradually decommissioned, and other conventional power stations will also have closed down. These changes are affecting the grid. In total, more than 7,500 kilometers of transmission grid will need to be upgraded or newly constructed in the next few years. Ultra-high-voltage direct-current transmission lines play a major role here. Upgrading the interconnectors to our European neighbours' transmission lines is also becoming more and more important, because the *Energiewende* needs a European approach. This allows us, for example, to combine hydroelectric power from Scandinavia and the Alpine countries with wind power and photovoltaics from Germany, thus cutting the costs of the *Energiewende*.

Coordination – Maintaining stakeholders diversity

A large number of stakeholders in government, industry and society is working together to ensure the success of the *Energiewende*. Both effective coordination and close cooperation between all stakeholders involved are key requirements for its success. Five *Energiewende* platforms have been established, providing opportunities for continual and intensive exchange among industry, academia, policymakers and civil society. This is where overarching strategies for the central fields of action – energy grids, the electricity market, energy efficiency, the building sector and research and innovation – are developed and discussed. The Federal Government carries out comprehensive monitoring to check the progress of the *Energiewende* in order to see long-term developments and – if required – take countermeasures.

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Cooperation – the *Energiewende* requires international partners

The energy markets in Europe are growing ever closer together. An even more integrated Energy Union is currently being created. This provides major benefits for customers, including more choice, lower prices and a higher degree of supply security. The larger the common market, the better fluctuating supplies of wind and solar energy can be offset. Nevertheless, an internal European market can only function if electricity flows to where it is needed. However, sufficient capacity is not yet available in existing transmission lines. In particular, cross-border interconnections need to be further developed and modernised. The *Energiewende* is embedded into the European energy and climate policy framework. This is why the Federal Government welcomes the fact that the European Council has agreed on ambitious climate and energy targets up to 2030. The goal of Germany's energy foreign policy is to ensure long-term reliability and affordability of energy imports. At the same time, Germany aims to find like-minded partners for the *Energiewende* both in Europe and worldwide. An intensified international dialogue can help to improve understanding of the *Energiewende*, dispelling reservations and making use of synergy effects for a common climate-friendly energy policy. It is against this background that the Federal Government has developed a large number of successful international energy dialogues and partnerships. It campaigns in multilateral energy organisations and dialogue forums for competitively structured, open and transparent markets, the worldwide development of renewable energies, a global increase in energy efficiency and climate protection.

“Who is Who” of the *Energiewende* in Germany

The brochure “Who is Who” of the *Energiewende* in Germany. Contact Partners in Politics, Industry and Society“ offers profiles of key stakeholders involved in the *Energiewende* in Germany and presents their tasks, roles and areas of activity. This brochure is available online at: www.diplo.de/publications.

