

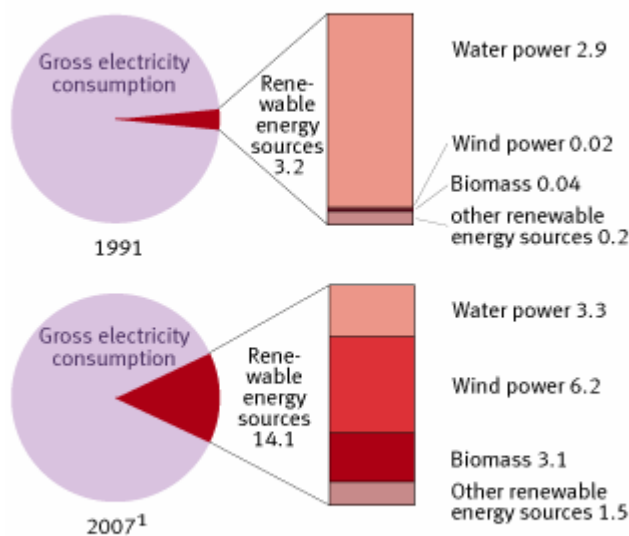
Renewable energy sources

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Development since 1991

Shares of electricity production from renewable energy sources in gross electricity consumption, 1991 and 2007

Shares in percent



¹ Provisional.

Source: Federal Statistical Office (Destatis), Working Group on Renewable Energy Sources – Statistics.

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Extending electricity production from renewable energy sources has been funded by government since the 1990s. The most recent act passed in this area was the Renewable Energy Sources Act (EEG), which came into force on 1 August 2004. This act has given clear priority to renewable energies. Renewable energy sources include hydropower (exclusive of power generated from pumped storage reservoirs with an artificial inflow), wind power, solar energy, ambient heat, biomass and geothermal power.

Owing to the extremely favourable framework conditions for promoting electricity produced from renewable energy sources, Germany has already now achieved the target set out by the European Union and laid down in the EEG - namely to expand the proportion of electricity generation from renewables to 12.5% by 2010. According to first preliminary results, the share of renewable energies in gross electricity production increased to 14.1% in 2007. The German federal government seeks to increase that share to at least 20% by 2020. In 1991, the relevant proportion, which was based almost exclusively on renewable hydropower

sources, amounted to not more than 3.6%. Wind power and biomass played only a very minor role at that time. On the whole, electricity production from renewable energy sources quintupled from 17.5 terawatt hours (1 TWh = 1 billion kilowatt hours) in 1991 to 87 TWh in 2007.

Water power

The energetic use of water power depends on the naturally occurring water supply and the weather conditions in a given water catchment area. Therefore, the informative value of comparisons is limited. In 1991, the proportion of electricity production attributed to water power as a whole was about 3.6% (19.2 TWh). It climbed to 4.3% (27.5 TWh) in 2007. Gross electricity production from regenerative hydropower, that is based on run-of-river and storage power stations and on pumped storage power plants with a natural inflow, amounted to 20.7 TWh or 3.3% last year. In the past few years, a slight increase has been achieved, in particular, in the area of small-scale hydropower plants and as a result of modernising existing plants.

Wind power

Growth was strongest in wind power utilisation during the observed period. The installed capacity of wind power stations amounted to 22.3 gigawatts in 2007. Hence Germany ranked first in the world in this area. The power stations generated electricity to the amount of 39.5 TWh, which was a share of 6.2% in total electricity production. The expansion of wind installations concentrated on regions in Lower Saxony, Brandenburg, Saxony-Anhalt and North Rhine-Westphalia.

Biomass and other renewable energies

Biomass constitutes an important component in reliable electricity supply (19.5 TWh or 3.1%). Within a short period of time, the amount of electricity produced from solar cells (solar energy) tripled due to funding provided for by the Renewable Energy Sources Act (EEG). In 2007, the amount of electricity produced from solar sources totalled slightly more than 3 TWh. However, the share of ambient heat and geothermal power in electricity generation was below 0.1% in 2007.

Prospects

The proportion of electricity generation from renewable energies will continue to grow in the next few years, too. The development of water power stations will certainly be restricted to modernising and replacing existing plants. The goals in this context are to increase efficiency while, at the same time, further improving the ecological condition of water bodies. As far as wind power is concerned, setting up offshore wind farms in the North and Baltic Seas will be a new focus of further development. Regarding onshore installations, too, the point will be to considerably increase the electricity yield of existing wind power plants by way of modernisation (repowering). Technical innovations and expanding markets will create a situation where electricity generated from photovoltaic systems will become cheaper

with every new year and the share of solar energy in electricity production will increase as well. However, biomass, which has a really huge potential, will certainly be a runaway success in the future.

As a matter of fact, biomass contributes not only to electricity generation. In the form of wood or other regenerative raw materials, it is also used for heating purposes in households and in industry. Furthermore, biofuels are produced from biomass. They are used either in pure form or as admixtures in fossil fuels. Biofuels, which form a subgroup of biomass, can contribute to making national energy supplies more independent in the future. This does not only apply to the well-known biodiesel, but also to bioethanol, biomethanol, biogas, bio-ETBE, biohydrogen or synthetic biofuels. However, pure vegetable oil can also be used, provided it is suitable as a biofuel for a given type of engine and fulfils the relevant emission requirements.