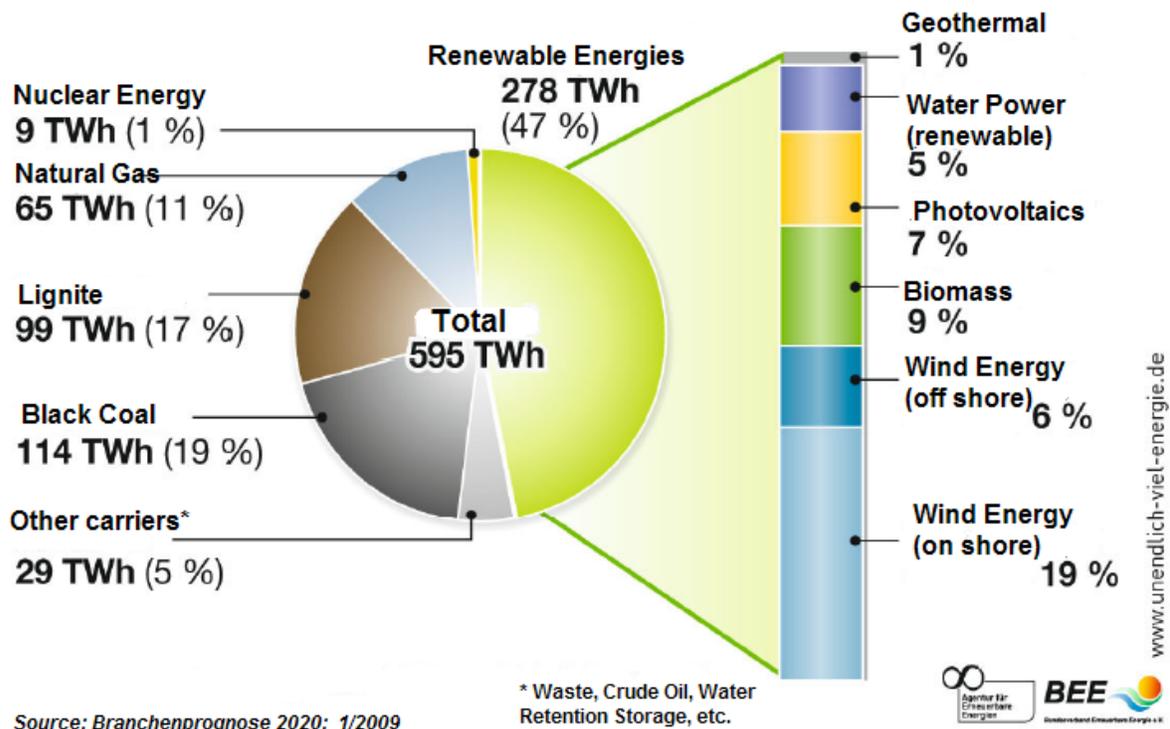


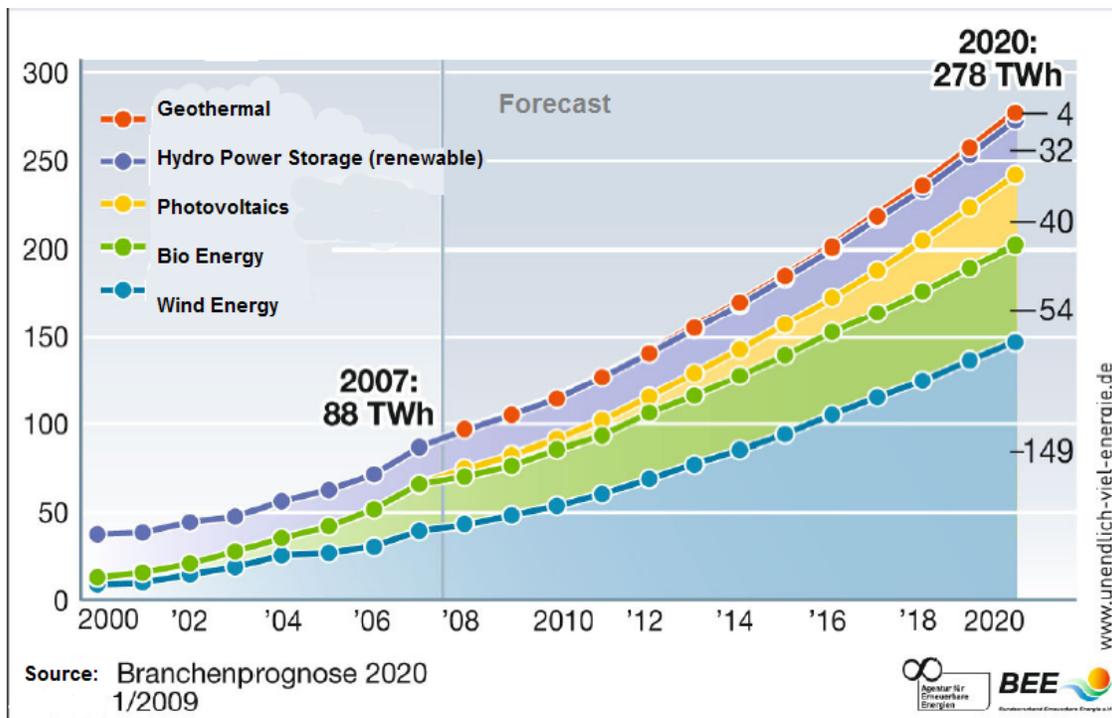
Summary

Germany's National Renewable Energy Association (Bundesverband Erneuerbare Energien / BBE) expects that Germany will be able to satisfy as much as 47 percent of its electric power demands from renewable energy sources in 2020 (2007: 17%). All renewable segments will benefit from this development, which will be based on a necessary modernizing of existing facilities (repowering), efficiency increase (e.g. combined mini heat and power plants for residential applications) and the exploitation of new technologies. New construction of conventional power installations using fossil fuels and the prolonged use of nuclear power plants (Germany opted to cease the use of nuclear plants by 2022) are not believed to be necessary according to the forecast, even if domestic demand for electric power were to increase when, for example, electric vehicles became popular.



Estimates predict that in 2020, renewable sources will produce 278 billion kilowatt hours of electricity with a total installed capacity of 111 Gigawatt. This translates into a growth rate of 9 percent annually from 2007 to 2020.

Two thirds of the renewable sources for electric power are expected to come from unpredictable and fluctuating resources, i.e. wind and sun. However, power plants with predictable or storable power sources and fuels (e.g. biomass, biogas, but also hydro power) will become a critical as base load buffer and provider. Hence, major investments into repowering and increased cooperation with countries that can provide advantageous conditions for pump storage hydro power plants (e.g. Scandinavian countries and Austria) are expected for the near to medium future.



Wind Energy

Of all renewable energy sources, wind energy will remain most significant for the producing electricity. Until 2020, wind energy is expected to produce 25%, or 149 TWh, of the entire electric consumption in Germany. Most of the production will be realized on shore. Experts forecast that the installed capacity of 24 GW (2008) will reach 45 GW in 2020. Repowering of old installations will be the main driver for the increase in power capacity. It is not expected that many new wind fields will be constructed, the total number of installed on shore wind turbines will remain at roughly 20,000. Off-shore installations are expected to reach 10 GW in total installed capacity.

Industry contact:

German Wind Energy Association (BWE) - www.wind-energie.de

Bio Energy

Total installed capacity of bio energy power plants will more than double from 4.1 GW (2007) to 9.3 GW in 2020 to reach an electricity production of 54 TWh. The major share will come from biogas, followed by solid biomass (mainly wood and other waste from plants), liquid biomass (by running combined heat and power units using plant oils), and sewage and landfill gas. Bio energy will form not only the second largest source for electric power, it will also play a significant role since the resource as such is storable and power from bio energy can be produced on demand.

Industry contacts:

Energy Plants Union (UFOP) - www.ufop.de

Biogas Industry Association (Fachverband Biogas) - www.biogas.org

German Wood Pellet Energy Association (DEPV) - www.depv.de

Federal Plant Oils Association (BVP) - www.bv-pflanzenoel.de

Photovoltaic (PV) Energy

Both installed capacity as well as power generation is expected to increase tenfold until 2020. In 2020, installed cells with a capacity of 39.5 GW will generate 40 TWh (2007: 4.3 billion kWh). PV will then generate around 7 % of the entire electricity in Germany. To reach these ambitious growth goals, a further increase in efficiency combined with drastic price reductions are necessary, particularly since the feed-in tariffs for power generated by PV installations are subject to an annual digression of 8 % on average. Grid parity whereby PV generated power will cost as much as 'conventional' power can be reached by 2015, and be surpassed shortly after. According to the German Solar Association (BSW), EUR 2.9 billion will be invested in upgrading or new construction of PV manufacturing plants, and EUR 224 million in additional R & D activities until 2010.

Industry contact:

Federal Solar Industry Association (BSW) - www.solarwirtschaft.de

Hydro Power

In Germany, small hydro power plants have been neglected during the last decade. Medium and large sized plants, on the other hand, often do not fulfill basic environmental needs any more. Major investment activity is expected in this segment, not only for repowering existing facilities and upgrading them to meet environmental standards (e.g. elimination of barriers, installation of fish passes) but also by reactivating decentralized small units. The Renewable Energy Act (Erneuerbare Energien Gesetz - EEG) reflects the political will to support decentralized units by offering higher feed-in tariffs for small hydro power plants.

Unit size	New installations Feed-in tariff € ct per 1 kW (guaranteed for 20 years)	Repowering / retrofit installation Feed-in tariff € ct per 1 kW (guaranteed for 20 years)
Up to 500 kW	12.67	11.67
500 kW- 2MW	8.65	8.65
2 MW - 5 MW	7.65	8.65
5 MW and up	6.32 - 3.5 (depending on size) Annual digression of 1 % beginning 2010	

Contacts:

Federal Hydroenergy Association (BDW), www.wasserkraft-deutschland.de

Geothermal Energy

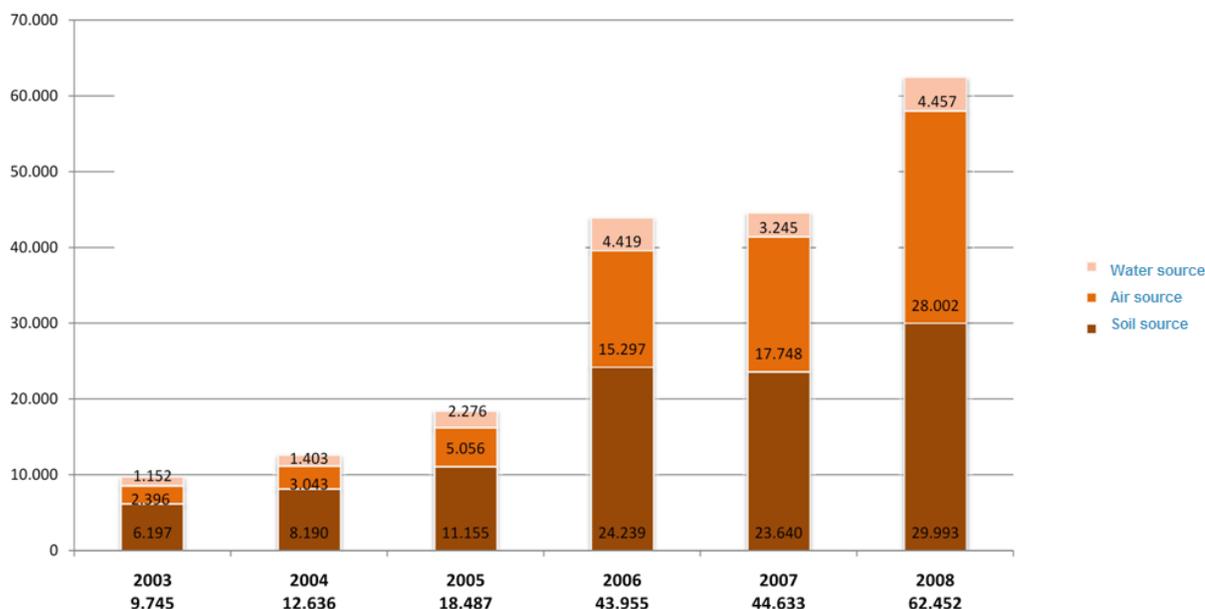
At present the total installed electrical power sums up to 7 MW generating 150 Million kWh per year. Geothermal energy is forecast to reach as much as 6000 MW and 400 million kWh/year until 2020. The main driver for this development will be the EEG and a special segment of the Market Incentive Program (Marktanreizprogramm - MAP) offering additional financial aid covering the risks of deep geothermal drilling. 150 areas for geothermal exploration have been designated, some of which allow several projects. About 62,000 heat pumps are installed mostly in private residences in Germany. More than 50 % use groundwater or soil source technology whereby vertical drilling or horizontal netting is required. A little less than half use air source technology. However, despite the lower coefficient of performance (COP), air source technology is expected to carry the highest growth potential.

Industry Contact:

Geothermische Vereinigung e.V. - Bundesverband Geothermie

Federal Geothermal Energy Association (GtV-BV) - www.geothermie.de

Installed Heat Pumps in Germany (2008)



Selected Renewable Energy Generation Events in Germany :

- Wind energy: **Husum WindEnergy** - Husum, September 21-25, 2010 - www.husumwind.de
- Photovoltaic and solar thermal energy: **Intersolar** - Munich, June 2010 - www.intersolar.de
- Hydrogen / fuel cell / wind: **Hanover Fair Energy** - Hanover, April 2010 - www.hannovermesse.de
- Biogas / wood / pellets / bio fuels: **Renexpo / IHE**, Augsburg, Sept. 24-27, 2009 - www.renexpo.de
- Heat pumps / pellets / wood: **ISH**, Frankfurt, March 15-19, 2011 - www.ish.messefrankfurt.com
- Biogas / bio fuels: **Eurotier**, Hanover, November 16-19, 2010 - www.eurotier.de
- Biogas / sewage gas: **IFAT**, Munich September 13-17, 2010 - www.ifat.de

Other Useful Contacts:

Federal Renewable Energy Association (BEE) - www.bee-ev.de

German Energy Agency (DENA) - www.dena.de

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