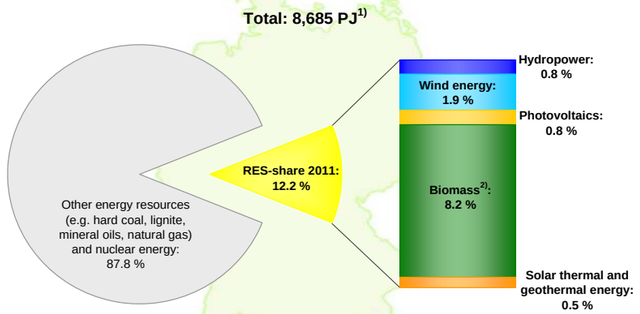
Federal Ministry for the Environment, Nature Conservation and Nuclear Safety

Renewable Energy Sources in Germany - key information 2011 at a glance -

AGEE Stat – Arbeitsgruppe Erneuerbare Energien - Statistik

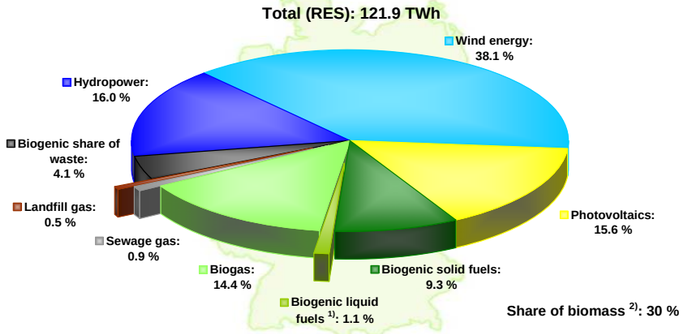
Source: BMU-KI III 1 based on Working Group on Renewable Energy-Statistics (AGEE-Stat)
as at: March 2012

Renewable energy sources shares of total final energy consumption in Germany 2011



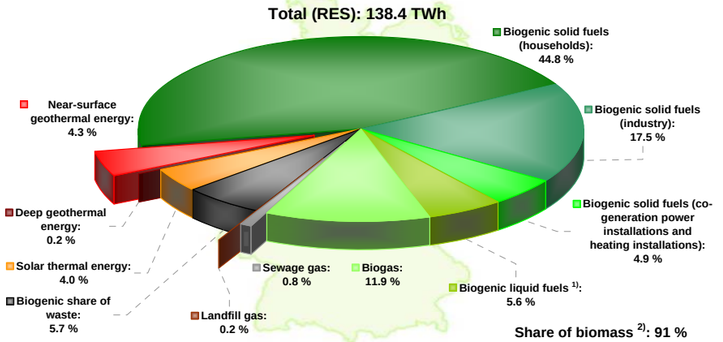
1) Energy Environment Forecast Analysis (EEFA) GmbH & Co KG; 2) solid and liquid biomass, biogas, sewage and landfill gas, biogenic share of waste, biofuels;
source: BMU-KI III 1 based on Working Group on Renewable Energy-Statistics (AGEE-Stat) and Centre for Solar Energy and Hydrogen Research Baden-Württemberg (ZSW), according to Working Group on Energy Balances e.V. (AGEB); RES: Renewable Energy Sources; deviations in the totals are due to rounding; 1 PJ = 10^{15} Joule; as at: March 2012; all figures provisional

Structure of renewables-based electricity supply in Germany 2011



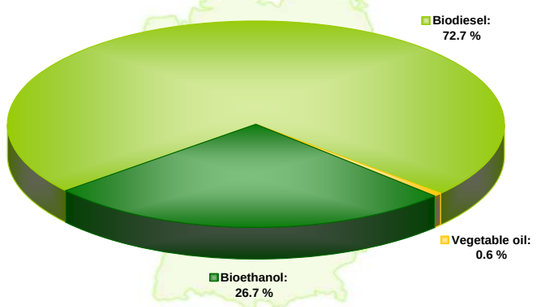
1) Vegetable oil included; 2) solid and liquid biomass, biogas, sewage and landfill gas, biogenic share of waste; electricity from geothermal energy not presented due to negligible quantities produced; deviations in the totals due to rounding; RES: Renewable Energy Sources; 1 TWh = 1 Bill. kWh;
source: BMU-KI III 1 according to Working Group on Renewable Energy-Statistics (AGEE-Stat); as at: March 2012; all figures provisional

Structure of renewables-based heat supply in Germany 2011



1) Vegetable oil included; 2) solid and liquid biomass, biogas, sewage and landfill gas, biogenic share of waste; RES: Renewable Energy Sources; 1 TWh = 1 Bill. kWh; deviations in the totals are due to rounding; source: BMU-KI III 1 according to Working Group on Renewable Energy-Statistics (AGEE-Stat); as at: March 2012; all figures provisional

Structure of renewables-based motor fuel supply in Germany 2011



RES: Renewable Energy Sources; source: BMU-KI III 1 according to Working Group on Renewable Energy-Statistics (AGEE-Stat);
1 TWh = 1 Bill. kWh; deviations in the totals are due to rounding; as at: March 2012; all figures provisional

Renewable energy sources: goals of the German government

RE share in electricity		RE share in gross final energy consumption	
At the latest	[%]		[%]
2020	at least 35	2020	18
2030	at least 50	2030	30
2040	at least 65	2040	45
2050	at least 80	2050	60

By 2020 the German government aims to raise the renewables' share in total heat supply to 14 percent, and to 10 percent in final energy consumption in the transport sector.
These targets will also help to lower greenhouse gas emissions in Germany by 40 percent by 2020 and by 80 to 95 percent by 2050 (compared to 1990). To this end, the government aims to reduce electricity consumption by 10 percent by 2020 and by 25 percent by 2050, while primary energy consumption is to fall by 20 percent by 2020 and 50 percent by 2050.

Contribution of renewable energy sources to energy supply in Germany in 2011

Electricity		
Hydropower	[TWh = 1 billion kWh]	**19.5**
Wind energy		**46.5**
onshore		*45.9*
offshore		*0.6*
Biomass (total)		**36.9**
therefrom:		
solid biomass		*11.3*
liquid biomass, vegetable oil included		*1.4*
biogas		*17.5*
sewage gas		*1.1*
landfill gas		*0.6*
biogenic share of waste		*5.0*
Photovoltaics		**19.0**
Geothermal energy		**0.019**
Total electricity		**121.9**

Heat		
Biomass (total)	[TWh = 1 billion kWh]	**126.5**
therefrom:		
solid biomass		*93.0*
liquid biomass, vegetable oil included		*7.7*
biogas		*16.5*
sewage gas		*1.1*
landfill gas		*0.3*
biogenic share of waste		*7.9*
Solar thermal energy		**5.6**
Deep geothermal energy		**0.3**
Near surface geothermal energy		**6.0**
Total heat		**138.4**

Biofuels		
Biodiesel (approx. 2.4 mill. t)	[TWh = 1 billion kWh]	**24.9**
Vegetable oil (approx. 0.02 mill. t)		**0.2**
Bioethanol (approx. 1.2 mill. t)		**9.1**
Biofuels (total)		**34.3**

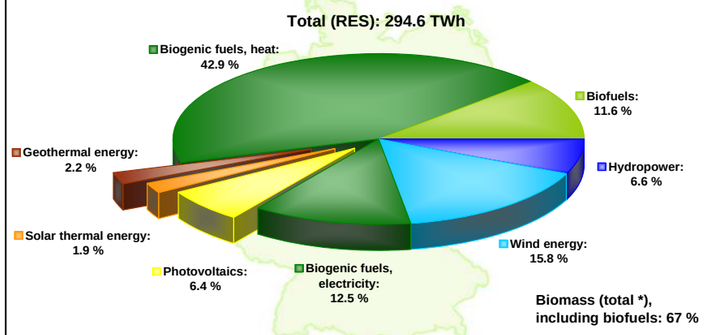
Total final energy from renewable energy sources	**294.6**

Renewable energy sources as a share of energy consumption in Germany

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Renewables as a share of total final energy consumption (FEC)	[%]													
Electricity generation (in relation to total gross electricity consumption)	3.1	4.5	6.4	6.7	7.8	7.5	9.2	10.1	11.6	14.3	15.1	16.4	17.1	20.0
Heat supply (in relation to total heat supply)	2.1	2.1	3.9	4.2	4.3	5.0	5.5	6.0	6.2	7.4	7.6	8.9	10.2	10.4
Fuel consumption[1)] (in relation to total fuel consumption)	0.0	0.1	0.4	0.6	0.9	1.4	1.8	3.7	6.3	7.4	6.0	5.4	5.8	5.6
Renewables as a share of total FEC	**1.9**	**2.2**	**3.8**	**4.1**	**4.5**	**5.0**	**5.8**	**6.8**	**8.0**	**9.5**	**9.3**	**10.2**	**11.3**	**12.2**
Primary energy consumption (PEC)	[%]													
Renewables as a share of PEC[2)]	**1.3**	**1.9**	**2.9**	**2.9**	**3.2**	**3.8**	**4.5**	**5.3**	**6.3**	**7.9**	**8.1**	**8.9**	**9.7**	**10.9**

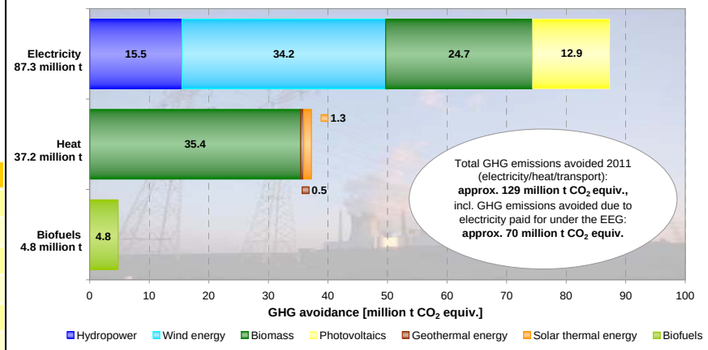
1) Until 2002, the reference variable was fuel consumption in road traffic, from 2003, the reference variable here is the total consumption of engine fuels, excluding fuel in air traffic;
2) source: Working Group on Energy Balances (AGEB);

Structure of renewables-based final energy supply in Germany 2011



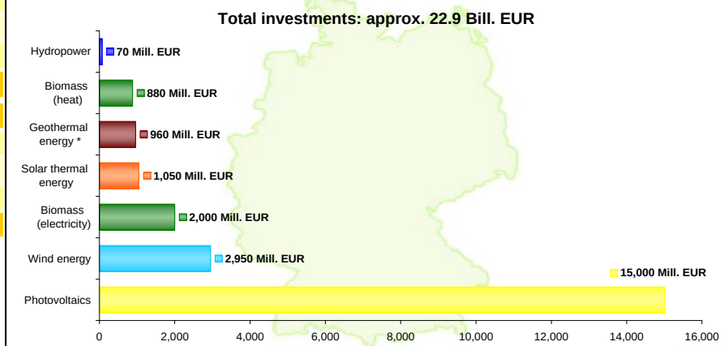
* Solid and liquid biomass, biogas, sewage and landfill gas, biogenic share of waste and biofuels; RES: Renewable Energy Sources; 1 TWh = 1 Bill. kWh; deviations in the totals are due to rounding;
source: BMU-KI III 1 according to Working Group on Renewable Energy-Statistics (AGEE-Stat); as at: March 2012; all figures provisional

Total Greenhouse gas emissions avoided via the use of renewable energy sources in Germany 2011



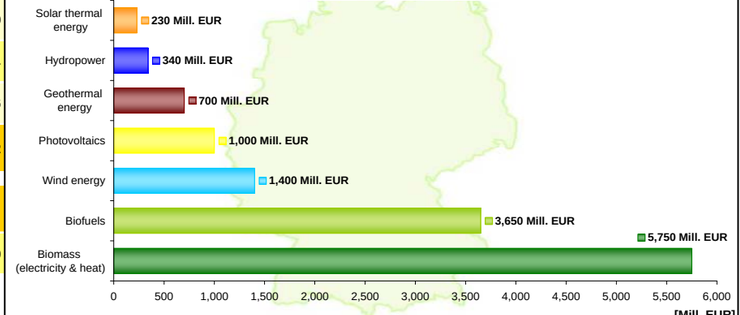
GHG: Greenhouse gas; deviations in the totals are due to rounding; geothermal energy not presented due to negligible quantities of electricity produced;
source: Federal Environment Agency (UBA) according to Working Group on Renewable Energy-Statistics (AGEE-Stat); image: H.G. Oed; as at: March 2012; all figures provisional

Investments in the construction of renewable energy facilities in Germany 2011



* Large plants and heat pumps; deviations in the totals are due to rounding;
source: BMU-KI III 1 according to the Centre for Solar Energy and Hydrogen Research Baden-Wuerttemberg (ZSW); as at: March 2012; all figures provisional

Turnover from the operation of renewable energy facilities in Germany in 2011



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source: BMU-KI III 1 according to the Centre for Solar Energy and Hydrogen Research Baden-Wuerttemberg (ZSW); as at: March 2012; all figures provisional