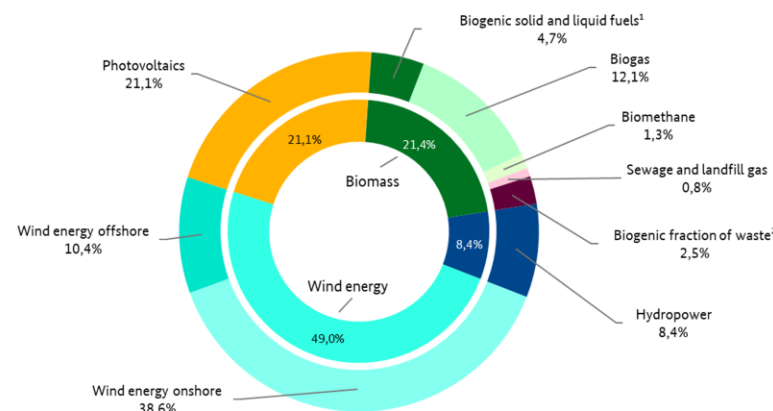


Gross electricity production from renewable energy sources in Germany in the year 2021

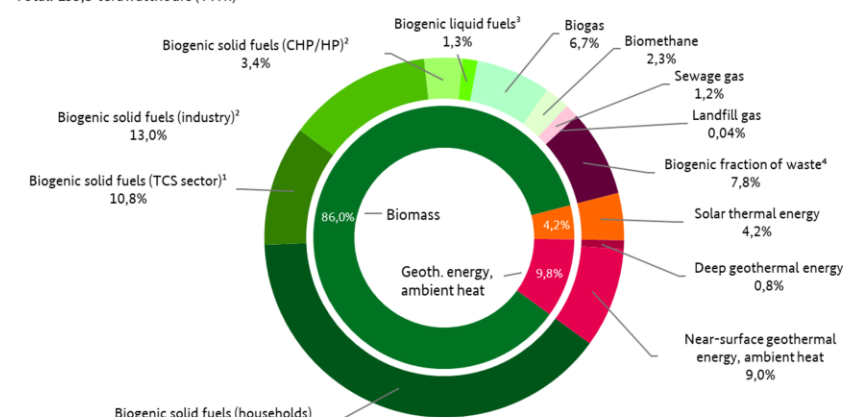
Total: 233,9 Terawatt-hours (TWh)



¹ incl. sewage sludge; ² biogenic fraction of waste in waste incineration plants estimated at 50%
 Notice: electricity production from geothermal power plants (0,1%) not shown because of very small share
 Source: Working Group on Renewable Energy-Statistics (AGEE-Stat); as of September 2022

Final energy consumption from renewable energy sources for heating and cooling in Germany in 2021

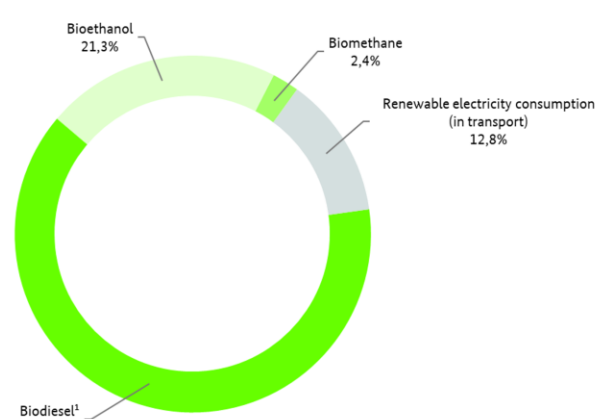
Total: 199,5 terawatt-hours (TWh)



¹ TCS corresponds to trade, commercial and service sector; ² incl. sewage sludge and charcoal; ³ incl. biofuels used in agriculture, forestry, construction and military; ⁴ biogenic fraction of waste in waste incineration plants estimated at 50%
 Source: Working Group on Renewable Energy-Statistics (AGEE-Stat); as of September 2022

Final energy consumption from renewable sources in the transport sector in Germany in the year 2021

Total: 39,5 terawatt-hours (TWh)



¹ consumption of biodiesel (including HVO) in the transport sector (excluding consumption in agriculture, forestry, construction and military)
 Notice: share of vegetable oil (0,05%) not shown because of very small contribution
 Source: Working Group on Renewable Energy-Statistics (AGEE-Stat); as of September 2022

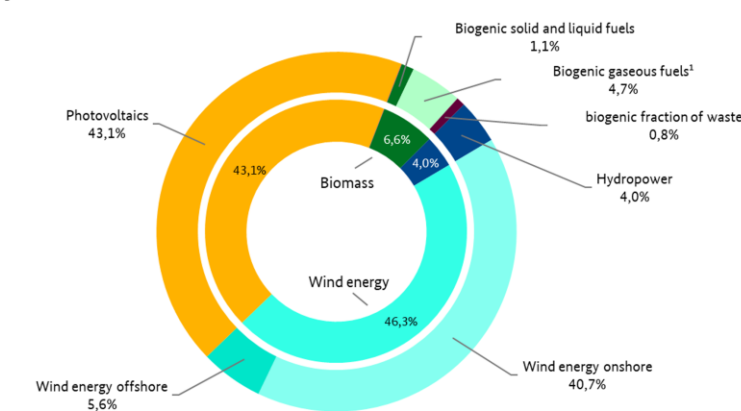
Renewable Energy Sources in Germany
Key information of the year 2021 at a glance

BMWK based on Working Group on Renewable Energy-Statistics (AGEE-Stat)
 Stand: September 2022

Renewable energy sources in the year 2021		RE 2021 [GWh]	Share of renewable energy [%]	avoided GHG-emissions [1.000 t CO ₂ -Äq.]
Gross electricity production	Hydropower	19.658	3,4	15.773
	Wind energy onshore	90.272	15,8	67.936
	Wind energy offshore	24.375	4,3	18.661
	Solar Photovoltaic	49.340	8,7	33.740
	Solid biofuels & sewage sludge	10.909	1,9	8.108
	Liquid biofuels	202	0,0	68
	Biogas	28.189	4,9	13.350
	Biomethane	3.133	0,5	1.623
	Sewage gas	1.577	0,3	1.105
	Landfill gas	229	0,0	160
	Biogenic fraction of waste	5.805	1,0	4.681
	Geothermal energy	244	0,04	158
	Total	233.933	41,0	165.363
Final energy consumption for heating and cooling	Solid biofuels & charcoal (households)	78.539	6,4	12.670
	Solid biofuels & charcoal (TCS sector)	21.602	1,8	4.608
	Solid biofuels & sewage sludge (industry)	25.972	2,1	7.358
	Solid biofuels & sewage sludge (HP/CHP)	6.865	0,6	1.599
	Liquid biofuels	2.674	0,2	567
	Biogas	13.374	1,1	3.320
	Biomethane	4.527	0,4	1.068
	Sewage gas	2.378	0,2	778
	Landfill gas	87	0,01	38
	Biogenic fraction of waste	15.593	1,3	3.561
	Solar thermal energy	8.449	0,7	2.242
Deep geothermal energy	1.578	0,1	429	
Near-surface geothermal energy & ambient heat	17.905	1,5	3.314	
Total	199.543	16,2	41.551	
Final energy consumption transport	Biodiesel	25.072	4,3	6.911
	Vegetable oil	21	0,004	5
	Bioethanol	8.412	1,4	2.602
	Biomethane	965	0,2	296
	RE electricity consumption transport	5.070	0,9	0
	Total	39.540	6,8	9.813

Installed capacity for renewables-based electricity generation in Germany in the year 2021

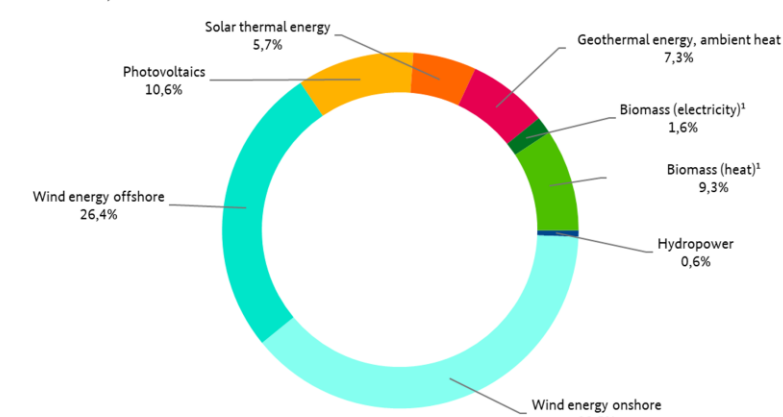
Total: 137,8 Gigawatt (GW)



¹ Biogas, biomethane, landfill gas and sewage gas
 Notice: geothermal power plants are not shown here because of their very small share (0,04%)
 Source: Working Group on Renewable Energy-Statistics (AGEE-Stat); as of September 2022

Investment in construction of renewable energy plants in Germany in the year 2021

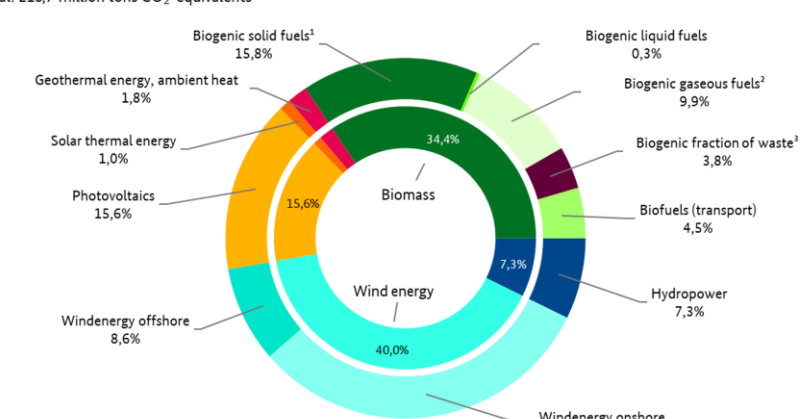
Total investment: 13,9 billion Euro



¹ Solid, liquid and gaseous biomass
 Source: Centre for Solar and Hydrogen Research Baden-Württemberg (ZSW); as of September 2022

Greenhouse gas emissions avoided through the use of renewable energy sources in the year 2021

Total: 216,7 million tons CO₂-equivalents



¹ incl. sewage sludge, without charcoal; ² biogas, biomethane, sewage gas and landfill gas; ³ biogenic fraction of waste in waste incineration plants estimated at 50%
 Source: AGEE-Stat based on data of the German Environment Agency (UBA); as of September 2022

Development of renewable energy sources		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Gross final energy consumption ¹⁾	TWh	351,2	363,7	359,0	387,5	389,3	421,1	435,2	457,0	473,1	470,2
Gross final energy consumption EU-Directive ²⁾	TWh	350,7	364,7	362,1	382,3	388,6	407,4	432,5	446,4	465,4	480,0
Gross electricity production	TWh	143,4	151,9	161,9	188,1	189,1	215,7	223,3	241,6	251,5	233,9
Final energy consumption for heating and cooling	TWh	171,9	178,8	162,9	167,5	168,0	172,9	177,8	182,1	180,3	199,5
Final energy consumption in the transport sector ³⁾	TWh	37,2	34,3	35,3	33,3	33,6	34,6	36,0	36,0	44,1	39,5
Primary energy consumption	PJ	1.385	1.499	1.519	1.671	1.677	1.790	1.825	1.903	1.969	1.949

1) according to the German government's Energy Concept; 2) according to the European Directive 2009/28/EC and 2018/2001/EC; 3) consumption of biogenic fuels and renewables-based electricity in the transport sector (excluding consumption in agriculture, forestry and military)

Shares of renewable energy sources in %		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
of gross final energy consumption ¹⁾	%	13,6	13,7	14,3	15,1	14,9	16,0	16,8	17,7	19,4	18,8
of gross final energy consumption EU-Directive ²⁾	%	13,5	13,8	14,4	14,9	14,9	15,5	16,7	17,3	19,1	19,2
of gross national electricity consumption	%	23,6	25,1	27,3	31,4	31,6	36,0	37,7	42,0	45,3	41,0
of final energy consumption for heating and cooling	%	13,7	13,8	13,9	13,9	13,7	14,0	14,9	15,1	15,2	16,2
of final energy consumption in the transport sector	%	6,0	5,4	5,6	5,2	5,2	5,3	5,6	5,6	7,6	6,8
of primary energy consumption	%	10,3	10,8	11,5	12,6	12,4	13,2	13,9	14,9	16,6	15,7

1) according to the German government's Energy Concept
 2) according to the European Directive 2009/28/EC and 2018/2001/EC