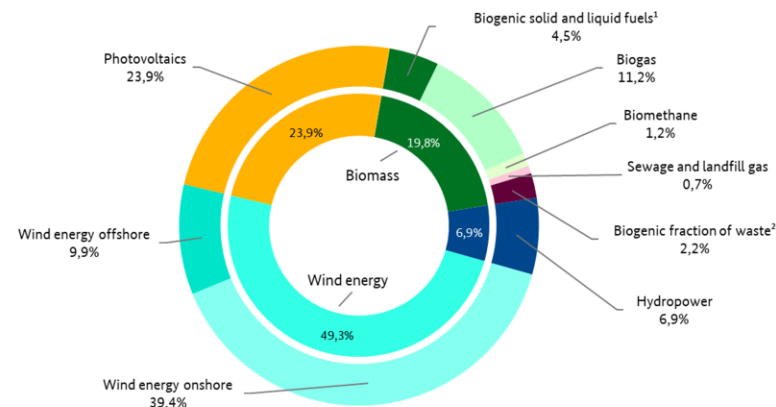


Gross electricity production from renewable energy sources in Germany in the year 2022

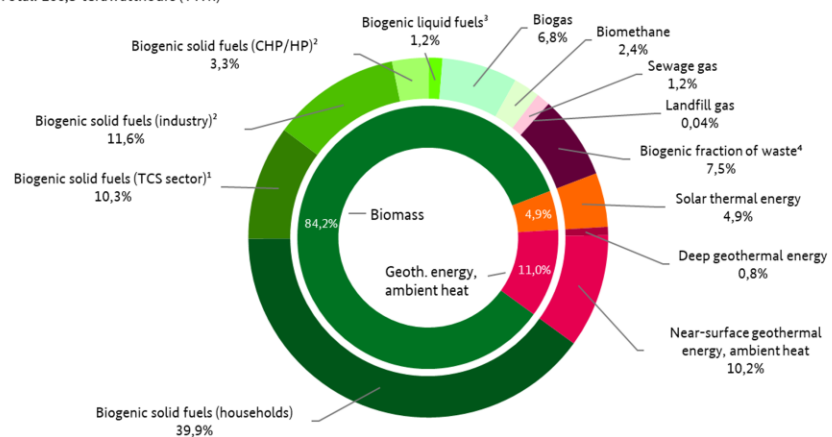
Total: 254 Terawatthours (TWh)



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 February 2023

Final energy consumption from renewable energy sources for heating and cooling in Germany in 2022

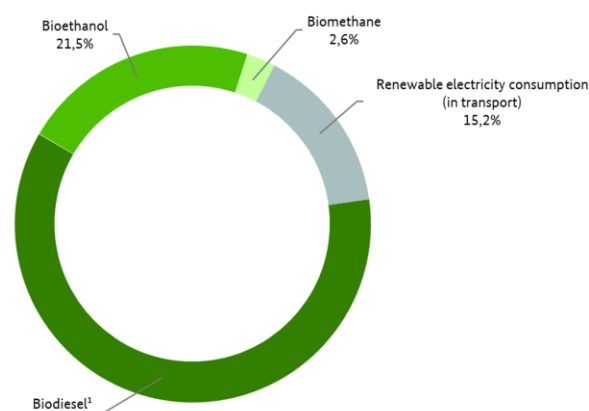
Total: 200,5 terawatthours (TWh)



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 February 2023

Final energy consumption from renewable sources in the transport sector in Germany in the year 2022

Total: 40,4 terawatthours (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 February 2023



Federal Ministry for Economic Affairs and Energy

Renewable Energy Sources in Germany
Key information of the year 2022 at a glance

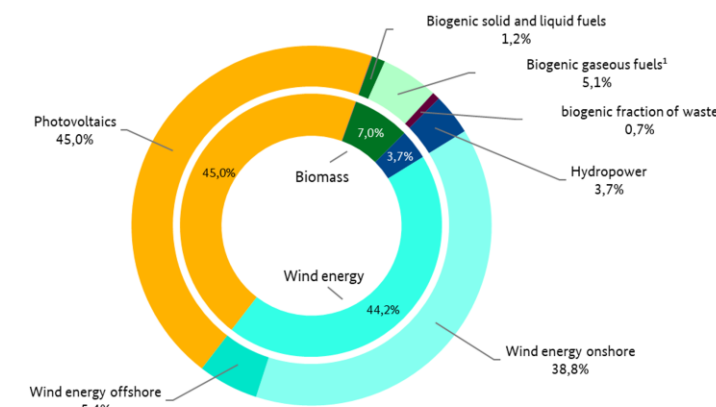


BMWK based on Working Group on Renewable Energy-Statistics (AGEE-Stat)
 Stand: February 2023

Renewable energy sources in the year 2022		RE 2022	Share of renewable energy	avoided GHG-emissions
		[GWh]	[%]	[1.000 t CO ₂ -Äq.]
Gross electricity production	Hydropower	17.462	3,2	14.061
	Wind energy onshore	100.164	18,2	75.625
	Wind energy offshore	25.123	4,6	19.295
	Solar Photovoltaic	60.787	11,1	41.714
	Solid biofuels & sewage sludge	11.187	2,0	8.325
	Liquid biofuels	175	0,0	52
	Biogas	28.471	5,2	13.557
	Biomethane	2.964	0,5	1.543
	Sewage gas	1.575	0,3	1.108
	Landfill gas	202	0,0	142
	Biogenic fraction of waste	5.607	1,0	4.536
	Geothermal energy	245	0,04	160
	Total	253.962	46,2	180.119
Final energy consumption for heating and cooling	Solid biofuels & charcoal (households)	80.021	6,9	13.020
	Solid biofuels & charcoal (TCS sector)	20.671	1,8	4.460
	Solid biofuels & sewage sludge (industry)	23.171	2,0	6.692
	Solid biofuels & sewage sludge (HP/CHP)	6.588	0,6	1.593
	Liquid biofuels	2.455	0,2	529
	Biogas	13.611	1,2	3.376
	Biomethane	4.761	0,4	1.119
	Sewage gas	2.412	0,2	789
	Landfill gas	83	0,01	36
	Biogenic fraction of waste	15.073	1,3	3.586
	Solar thermal energy	9.733	0,8	2.592
	Deep geothermal energy	1.505	0,1	428
	Near-surface geothermal energy & ambient heat	20.465	1,8	3.736
Total	200.549	17,4	41.955	
Final energy consumption transport	Biodiesel	24.518	4,1	6.826
	Vegetable oil	21	0,004	5
	Bioethanol	8.692	1,5	2.680
	Biomethane	1.061	0,2	323
	RE electricity consumption transport	6.148	1,0	0
	Total	40.440	6,8	9.835

Installed capacity for renewables-based electricity generation in Germany in the year 2022

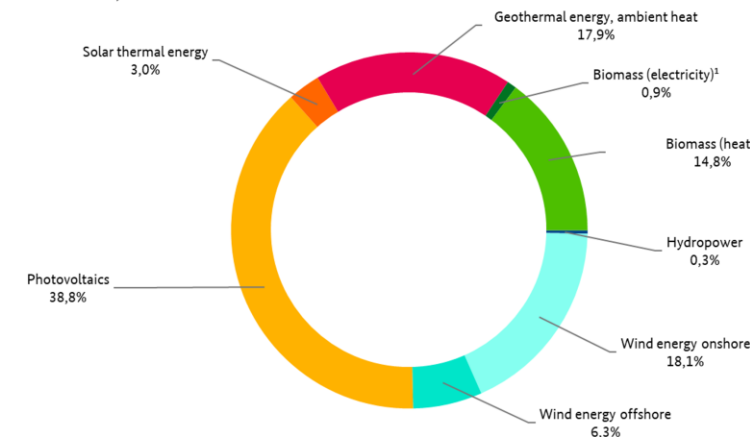
Total: 149,7 Gigawatt (GW)



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 February 2023

Investment in construction of renewable energy plants in Germany in the year 2022

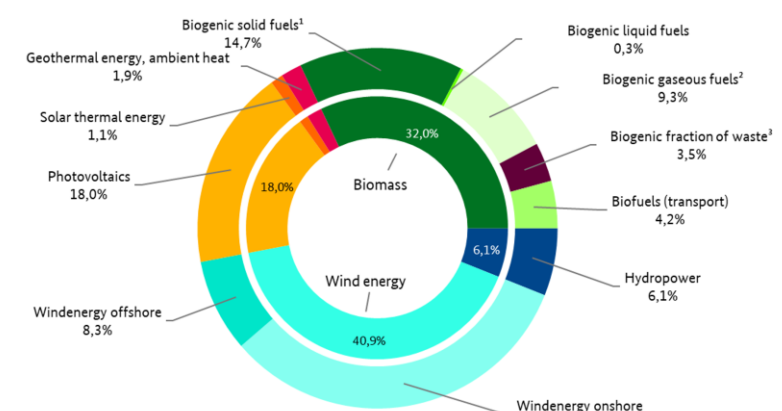
Total investment: 19,9 billion Euro



¹ Solid, liquid and gaseous biomass
 Source: Centre for Solar and Hydrogen Research Baden-Württemberg (ZSW); as of February 2023

Greenhouse gas emissions avoided through the use of renewable energy sources in the year 2022

Total: 231,9 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 February 2023

Development of renewable energy sources		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Gross final energy consumption ¹⁾	TWh	363,8	359,1	387,6	389,4	421,2	435,3	457,1	473,2	470,0	491,1
Gross final energy consumption EU-Directive ²⁾	TWh	364,7	362,1	382,3	388,6	407,4	432,5	446,4	465,4	480,0	494,1
Gross electricity production	TWh	151,9	161,9	188,1	189,1	215,7	223,3	241,6	251,5	234,0	254,0
Final energy consumption for heating and cooling	TWh	178,9	163,0	167,6	168,1	173,0	178,0	182,2	180,4	199,2	200,5
Final energy consumption in the transport sector ³⁾	TWh	34,3	35,3	33,3	33,6	34,6	36,0	36,0	44,3	39,8	40,4
Primary energy consumption	PJ	1.499	1.519	1.672	1.677	1.790	1.826	1.903	1.970	1.949	2.024

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 %		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
of gross final energy consumption ¹⁾	%	13,7	14,3	15,1	14,9	16,0	16,8	17,7	19,4	18,8	20,3
of gross final energy consumption EU-Directive ²⁾	%	13,8	14,4	14,9	14,9	15,5	16,7	17,3	19,1	19,2	20,4
of gross national electricity consumption	%	25,1	27,3	31,4	31,6	36,0	37,7	42,0	45,2	41,2	46,2
of final energy consumption for heating and cooling	%	13,8	14,0	13,9	13,7	14,0	14,9	15,1	15,3	15,8	17,4
of final energy consumption in the transport sector	%	5,4	5,6	5,2	5,2	5,3	5,6	5,6	7,6	6,8	6,8
of primary energy consumption	%	10,8	11,5	12,6	12,4	13,2	13,9	14,9	16,6	15,7	17,2

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