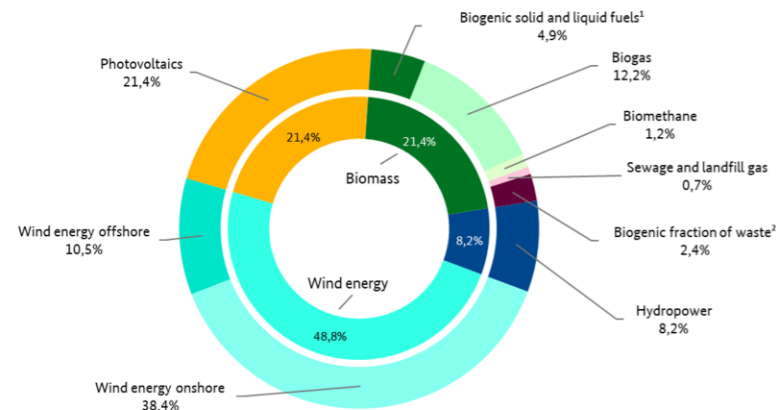


Gross electricity production from renewable energy sources in Germany in the year 2021

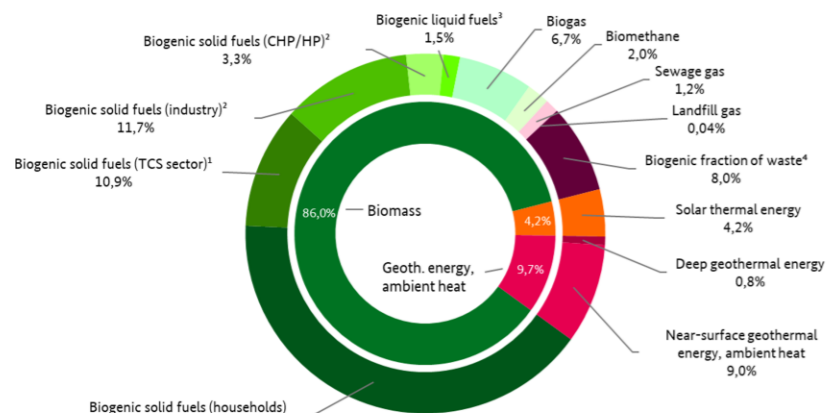
Total: 233,6 billion kilowatt hours



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
 BMWK based on Working Group on Renewable Energy-Statistics (AGEE-Stat); as of February 2022

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

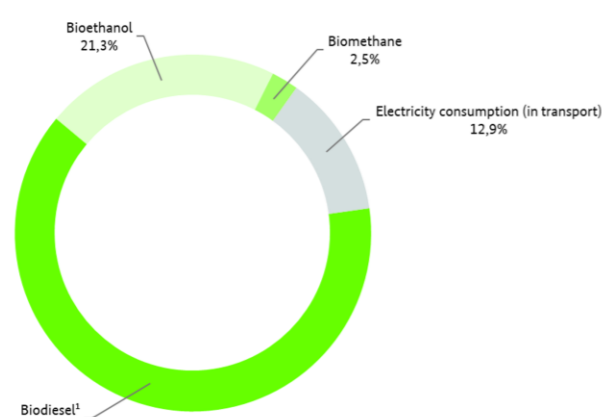
Total: 199,4 billion kilowatt hours



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%
 BMWK based on Working Group on Renewable Energy-Statistics (AGEE-Stat); as of February 2022

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

Total: 39,4 billion kilowatt hours



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
 BMWK based on Working Group on Renewable Energy-Statistics (AGEE-Stat); as of February 2022



Federal Ministry
for Economic Affairs
and Climate Action



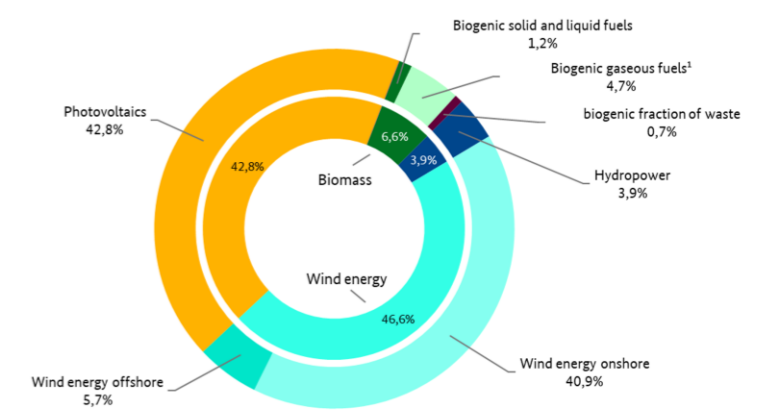
Renewable Energy Sources in Germany
Key information of the year 2021 at a glance

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

Renewable energy sources in the year 2021		RE 2021	Share of renewable energy	avoided GHG-emissions
		[GWh]	[%]	[1.000 t CO ₂ -Äq.]
Gross electricity production	Hydropower	19.086	3,4	15.412
	Wind energy onshore	89.474	15,7	67.661
	Wind energy offshore	24.374	4,3	18.810
	Solar Photovoltaic	49.992	8,8	34.354
	Solid biofuels & sewage sludge	11.363	2,0	8.529
	Liquid biofuels	293	0,1	100
	Biogas	28.453	5,0	14.262
	Biomethane	2.890	0,5	1.543
	Sewage gas	1.587	0,3	1.123
	Landfill gas	229	0,0	162
	Biogenic fraction of waste	5.630	1,0	4.576
	Geothermal energy	249	0,04	164
	Total	233.620	41,1	166.696
Final energy consumption for heating and cooling	Solid biofuels & charcoal (households)	81.130	6,7	14.792
	Solid biofuels & charcoal (TCS sector)	21.768	1,8	5.863
	Solid biofuels & sewage sludge (industry)	23.279	1,9	7.620
	Solid biofuels & sewage sludge (HP/CHP)	6.662	0,6	1.537
	Liquid biofuels	2.932	0,2	618
	Biogas	13.339	1,1	3.350
	Biomethane	4.056	0,3	962
	Sewage gas	2.378	0,2	747
	Landfill gas	70	0,01	28
	Biogenic fraction of waste	15.895	1,3	3.580
	Solar thermal energy	8.449	0,7	2.404
	Deep geothermal energy	1.513	0,1	408
	Near-surface geothermal energy & ambient heat	17.905	1,5	3.011
Total	199.376	16,5	44.920	
Final energy consumption transport	Biodiesel	24.916	4,3	6.865
	Vegetable oil	21	0,004	5
	Bioethanol	8.382	1,4	2.591
	Biomethane	965	0,2	296
	RE electricity consumption transport	5.083	0,9	
	Total	39.367	6,8	9.756

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

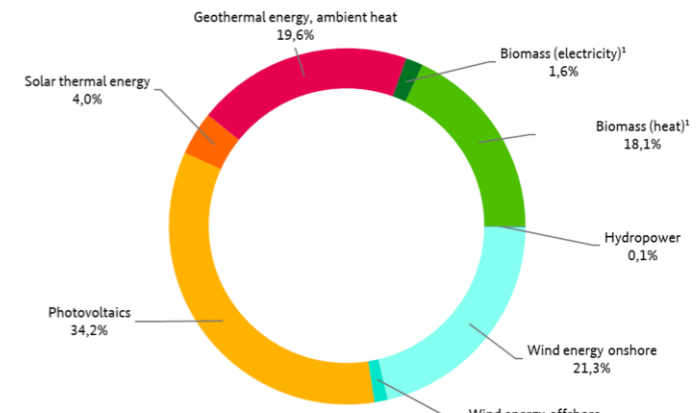
Total: 137,1 million kilowatt



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

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

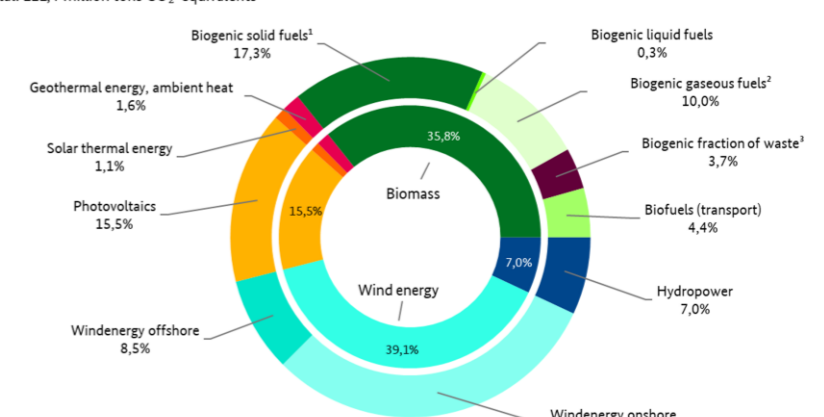
Total investment: 13,4 billion Euro



¹ Solid, liquid and gaseous biomass
 BMWK based on Centre for Solar and Hydrogen Research Baden-Württemberg (ZSW); as of February 2022

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

Total: 221,4 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%
 BMWK based on AGEE-Stat using data of the German Environment Agency (UBA); as of February 2022

Development of renewable energy sources		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Gross final energy consumption ¹⁾	TWh	353,1	365,7	359,3	390,0	389,9	421,5	435,4	456,6	474,0	469,6
Gross final energy consumption EU-Directive ²⁾	TWh	350,7	364,7	362,1	382,3	388,6	407,4	432,5	446,4	465,7	482,6
Gross electricity production	TWh	143,4	151,9	161,9	188,1	189,1	215,7	222,9	241,2	251,1	233,6
Final energy consumption for heating and cooling	TWh	173,8	180,8	163,2	170,0	168,7	173,2	178,4	182,1	181,7	199,4
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	39,4
Primary energy consumption	PJ	1.385	1.499	1.519	1.680	1.679	1.791	1.826	1.901	1.972	1.947

1) according to the German government's Energy Concept; 2) according to the European Directive 2009/28/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	13,8	14,3	15,2	14,9	16,0	16,8	17,7	19,7	19,2
of gross final energy consumption EU-Directive ²⁾	%	13,5	13,8	14,4	14,9	14,9	15,5	16,7	17,3	19,3	19,7
of gross national electricity consumption	%	23,6	25,1	27,3	31,4	31,6	36,0	37,6	41,9	45,2	41,1
of final energy consumption for heating and cooling	%	13,8	13,9	14,0	14,0	13,7	14,0	15,0	15,1	15,3	16,5
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	13,3	13,9	14,9	16,6	15,9

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