



Development of renewable energy sources in Germany 2013

Graphics and tables

Version: February 2014

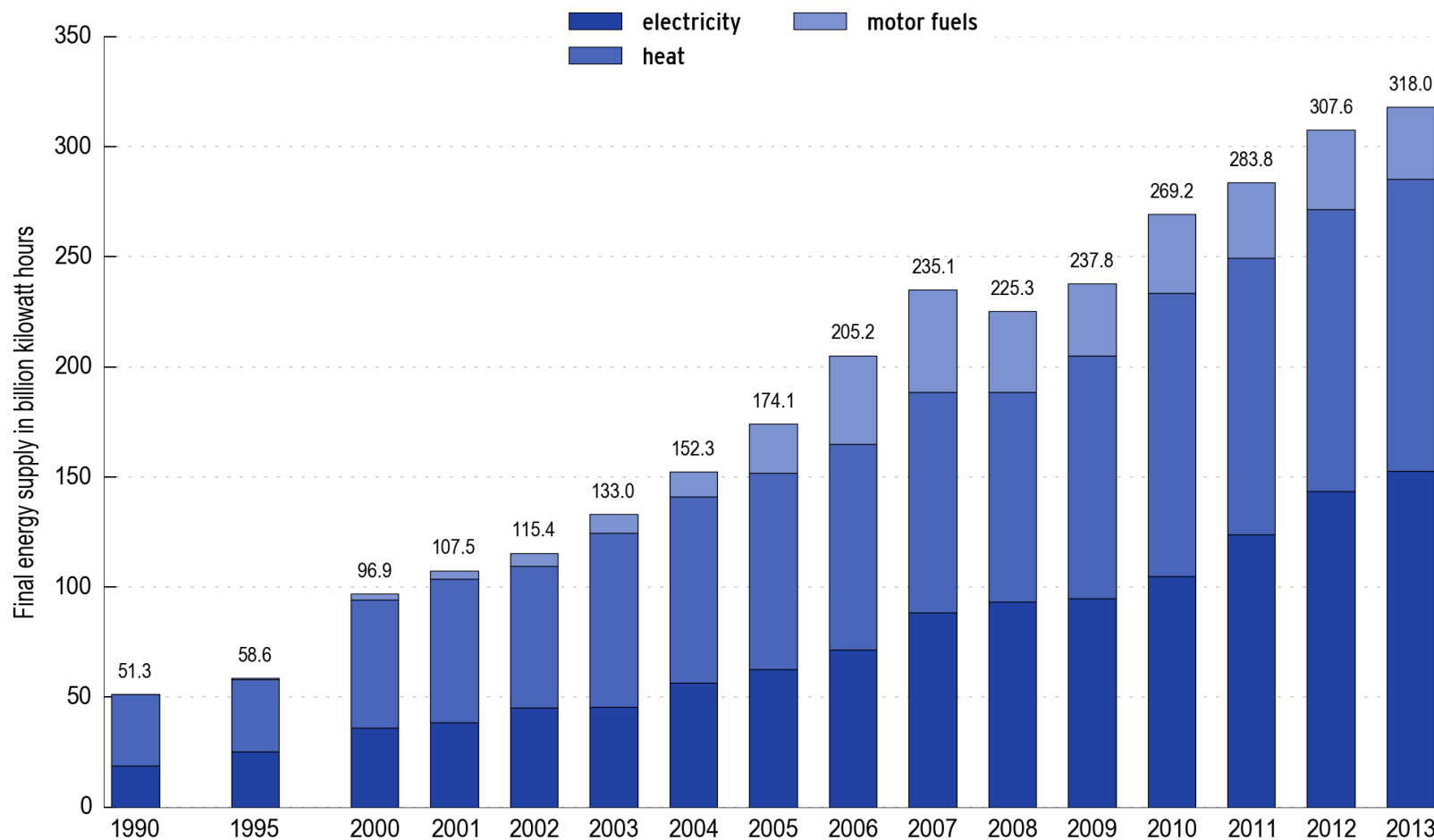
Based on statistical data from the
Working Group on Renewable Energy-Statistics (AGEE-Stat)

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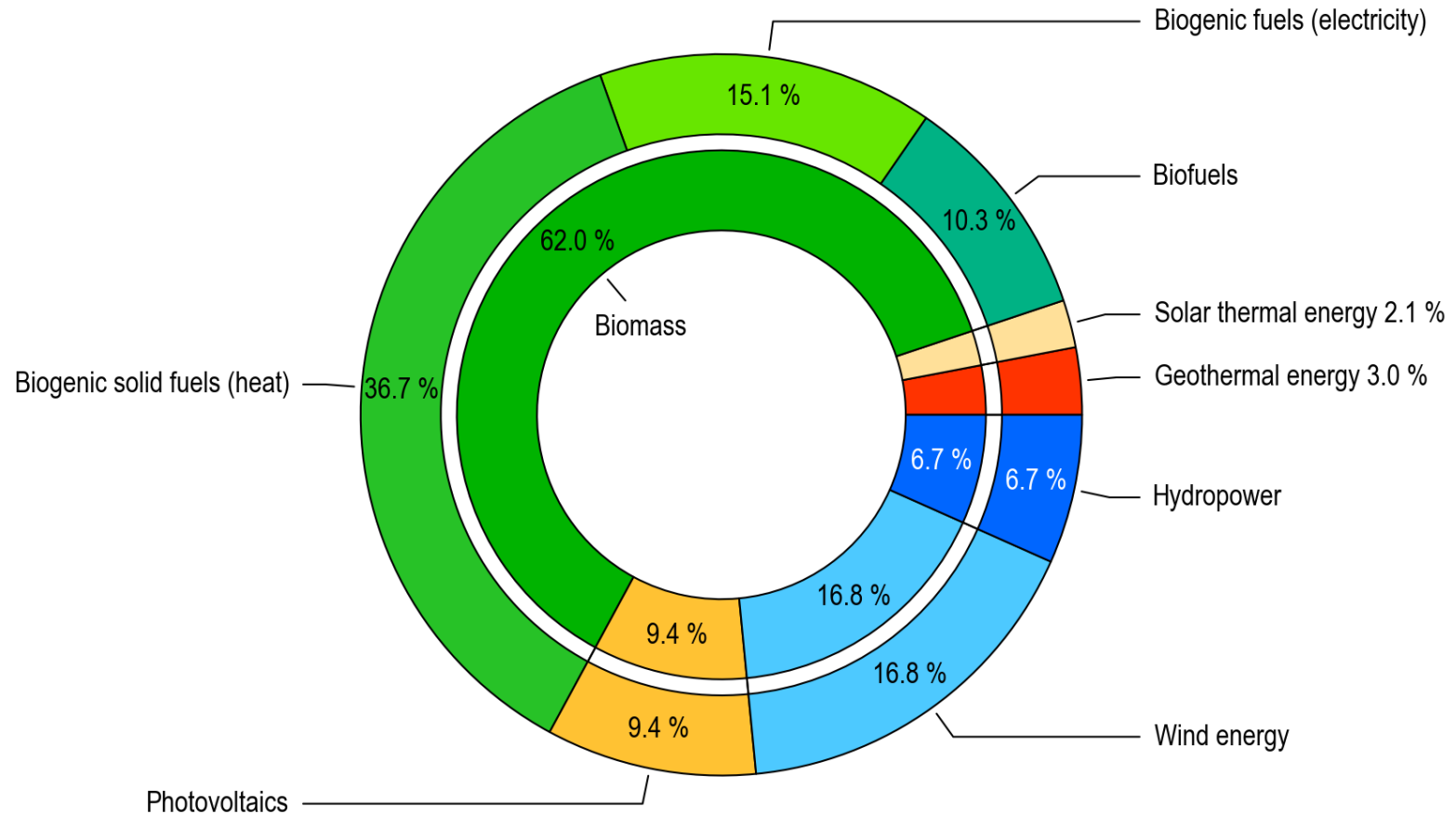
Development of renewables-based final energy supply in Germany



ZSW according to Working Group on Renewable Energy-Statistics (AGEE-Stat); as at February 2014; all figures provisional

Structure of renewables-based final energy supply in Germany 2013

Total: 318.0 billion kilowatt hours

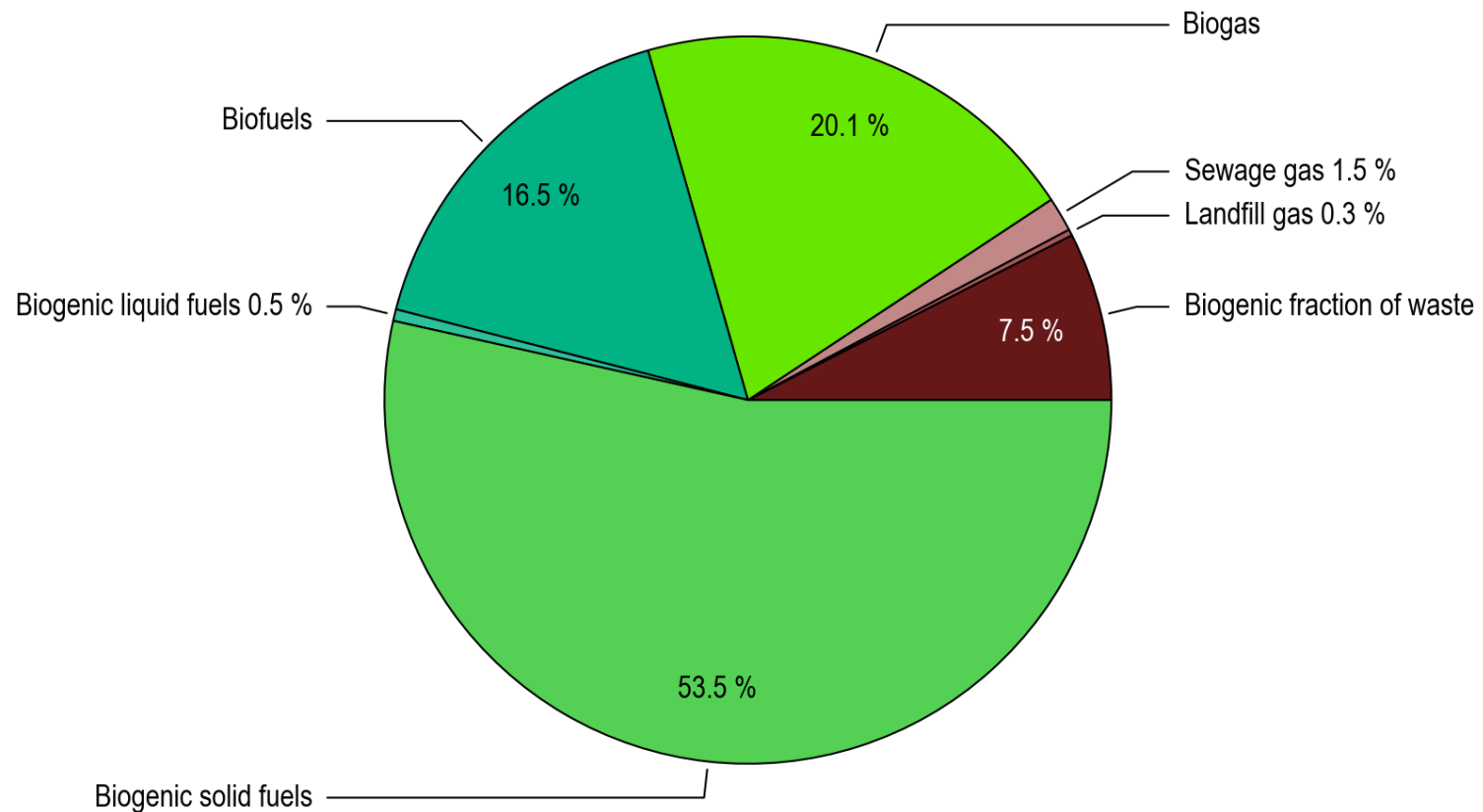


ZSW according to Working Group on Renewable Energy-Statistics (AGEE-Stat); as at February 2014; all figures provisional



Structure of final energy produced from biomass in electricity, heat and motor fuel sectors in Germany 2013

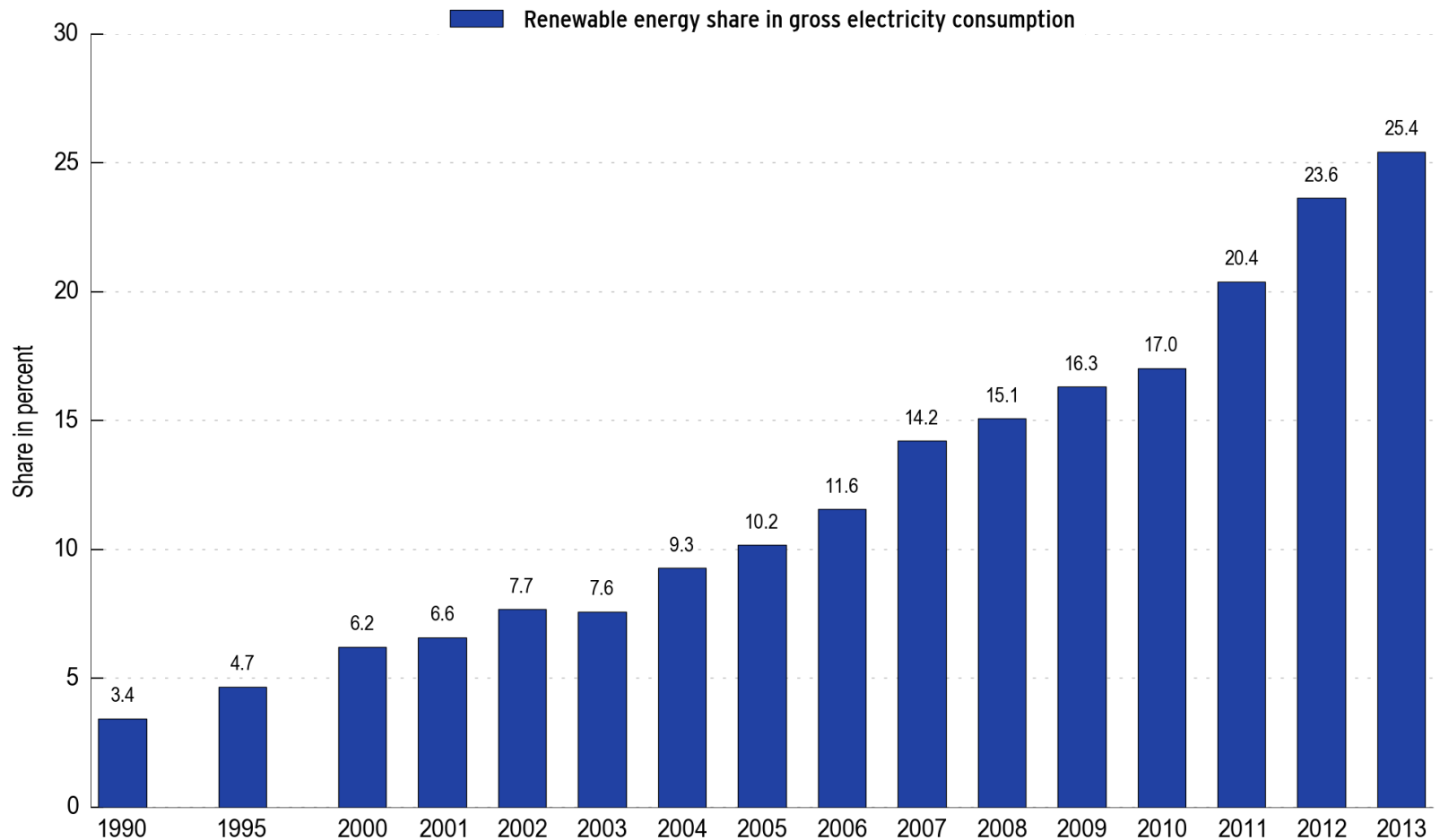
Total: 197.1 billion kilowatt hours



ZSW according to Working Group on Renewable Energy-Statistics (AGEE-Stat); as at February 2014; all figures provisional



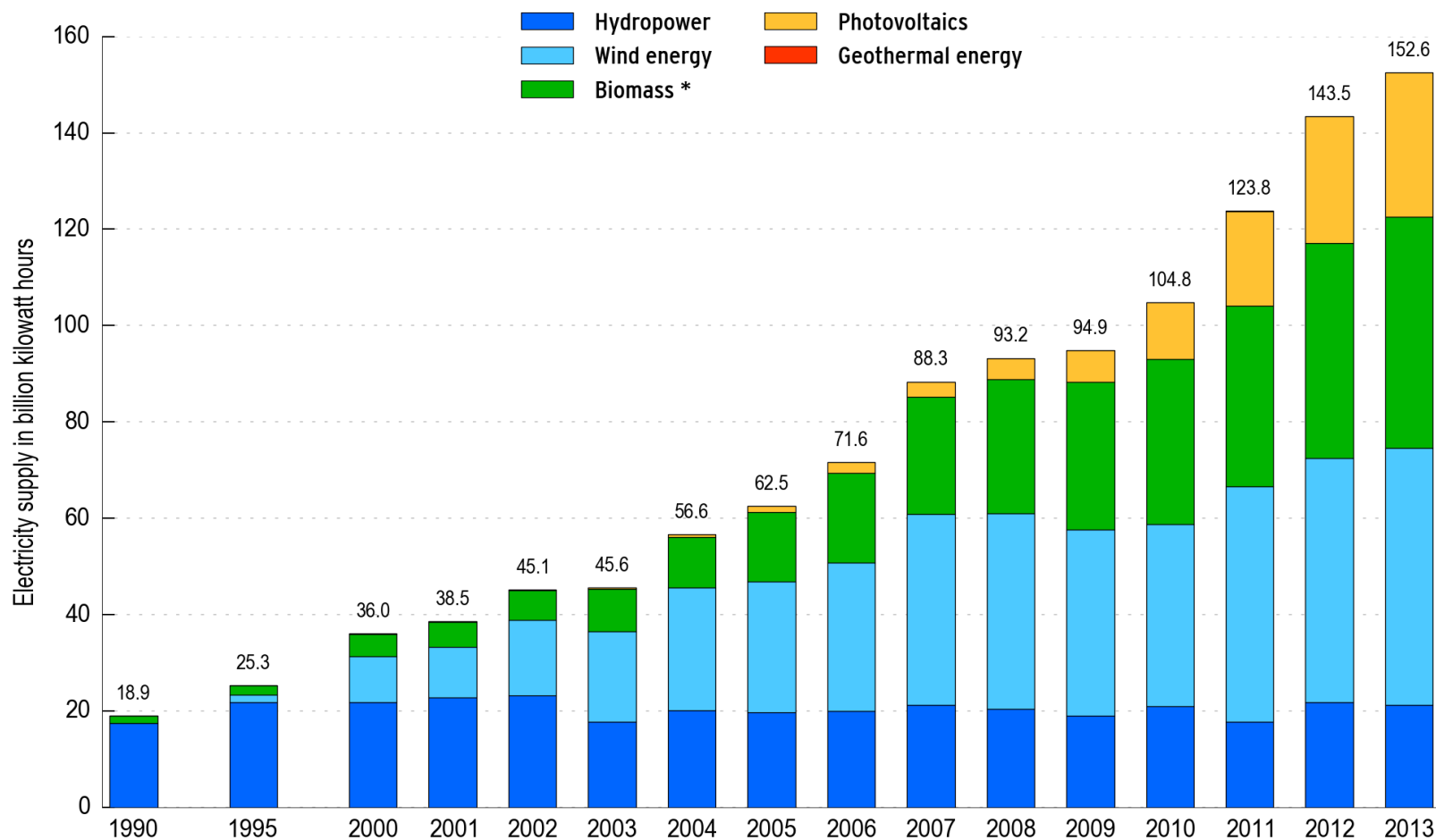
Development of renewable energy shares of gross electricity consumption in Germany



ZSW according to Working Group on Renewable Energy-Statistics (AGEE-Stat); as at February 2014; all figures provisional



Development of electricity supply from renewable energy sources in Germany



* solid and liquid biomass, biogas, sewage gas, landfill gas and biogenic fraction of waste; ZSW according to Working Group on Renewable Energy-Statistics (AGEE-Stat); as at February 2014; all figures provisional



Development of electricity supply from renewable energy sources in Germany since 1990

Data in million kilowatt hours

	Hydropower ¹	Wind energy onshore	Wind energy offshore	Photovoltaics	Biomass ²	Geothermal energy	Renewables- based electricity supply	Renewable energy share in gross electricity consumption
1990	17,426	71	0	1	1,435	0	18,933	3.4 %
1995	21,780	1,500	0	7	2,010	0	25,297	4.7 %
2000	21,732	9,513	0	60	4,731	0	36,036	6.2 %
2001	22,733	10,509	0	76	5,214	0	38,532	6.6 %
2002	23,124	15,786	0	162	6,048	0	45,120	7.7 %
2003	17,722	18,713	0	313	8,841	0	45,589	7.6 %
2004	20,095	25,509	0	557	10,471	0	56,632	9.3 %
2005	19,638	27,229	0	1,282	14,354	0	62,503	10.2 %
2006	20,008	30,710	0	2,220	18,700	0	71,638	11.6 %
2007	21,170	39,713	0	3,075	24,363	0	88,321	14.2 %
2008	20,443	40,574	0	4,420	27,792	17	93,247	15.1 %
2009	19,031	38,610	38	6,583	30,578	18	94,859	16.3 %
2010	20,953	37,619	174	11,729	34,307	27	104,810	17.0 %
2011	17,671	48,315	568	19,599	37,603	18	123,775	20.4 %
2012	21,755	49,948	722	26,380	44,633	25	143,463	23.6 %
2013	21,220	52,430	970	30,000	47,900	40	152,560	25.4 %

ZSW according to Working Group on Renewable Energy-Statistics (AGEE-Stat); as at February 2014; all figures provisional

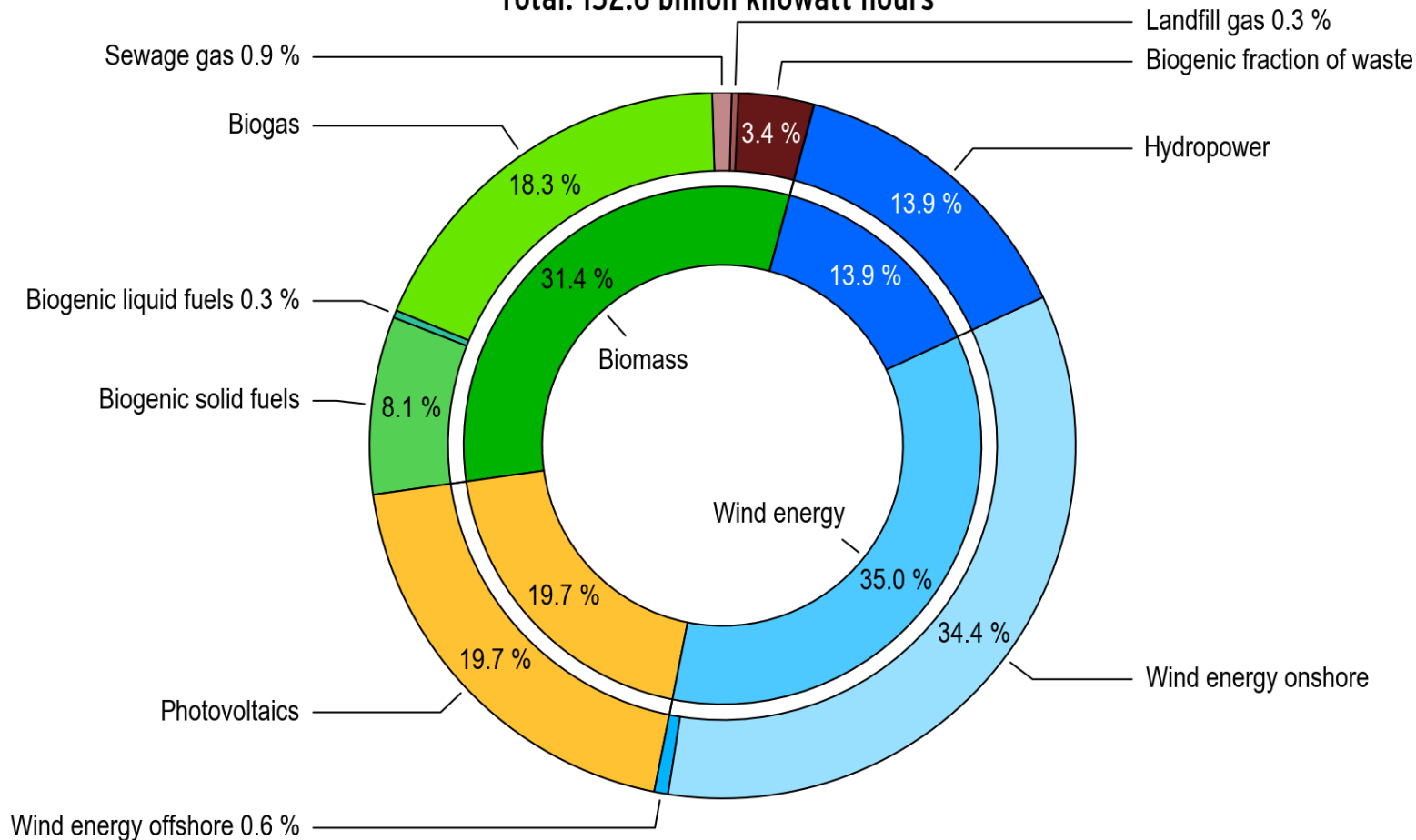
¹In the case of pumped storage plants: electricity generation from natural inflow only

²Includes biogenic solid fuels and liquid biomass, biogas, sewage gas and landfill gas and the biogenic fraction of waste (biogenic component of waste in waste incineration plants estimated at 50 percent); until 1998 only feed-in to the general supply grid



Structure of renewables-based electricity supply in Germany 2013

Total: 152.6 billion kilowatt hours

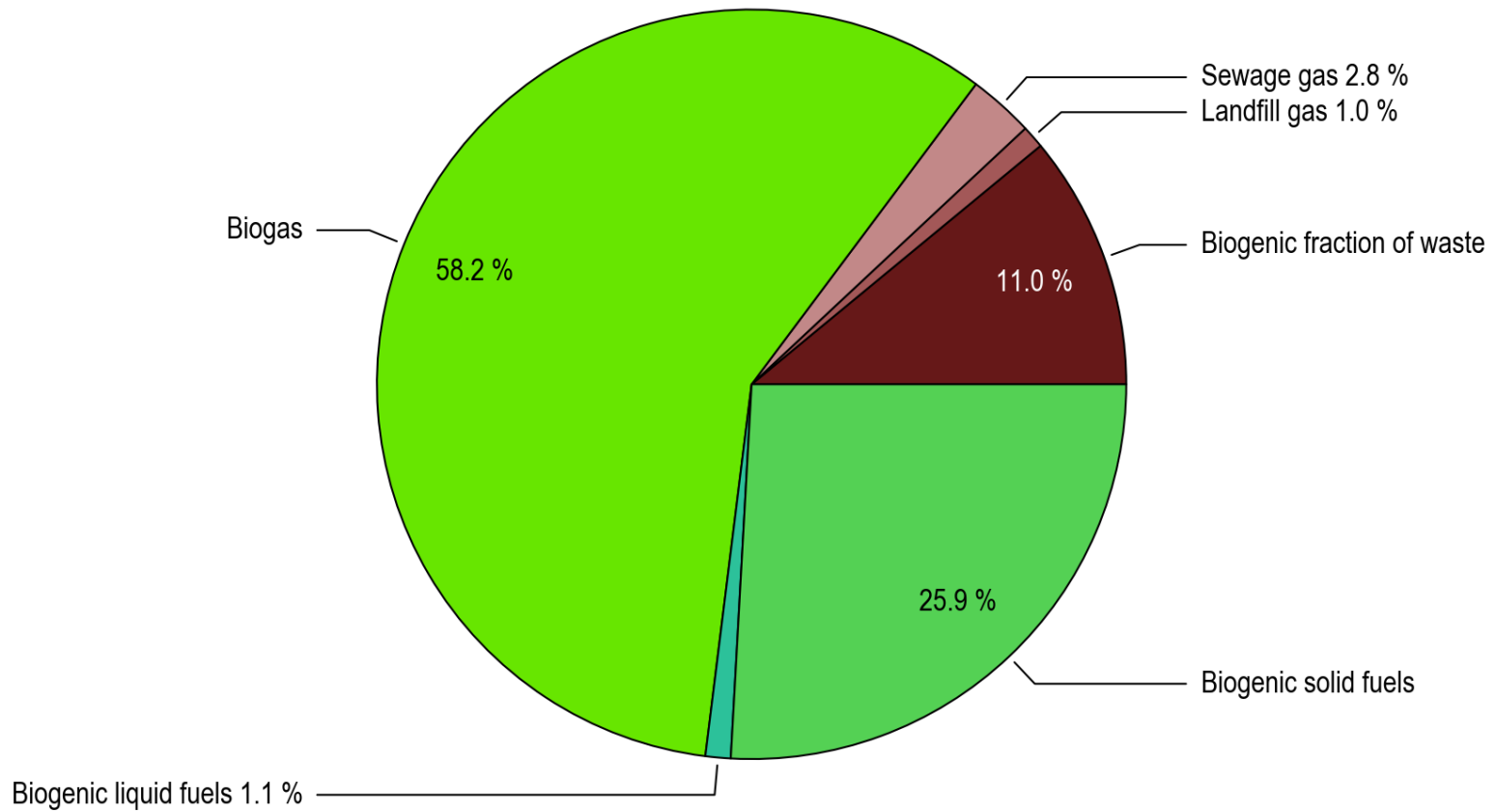


geothermal electricity supply is not shown due to small quantities involved; ZSW according to Working Group on Renewable Energy-Statistics (AGEE-Stat); as at February 2014; all figures provisional



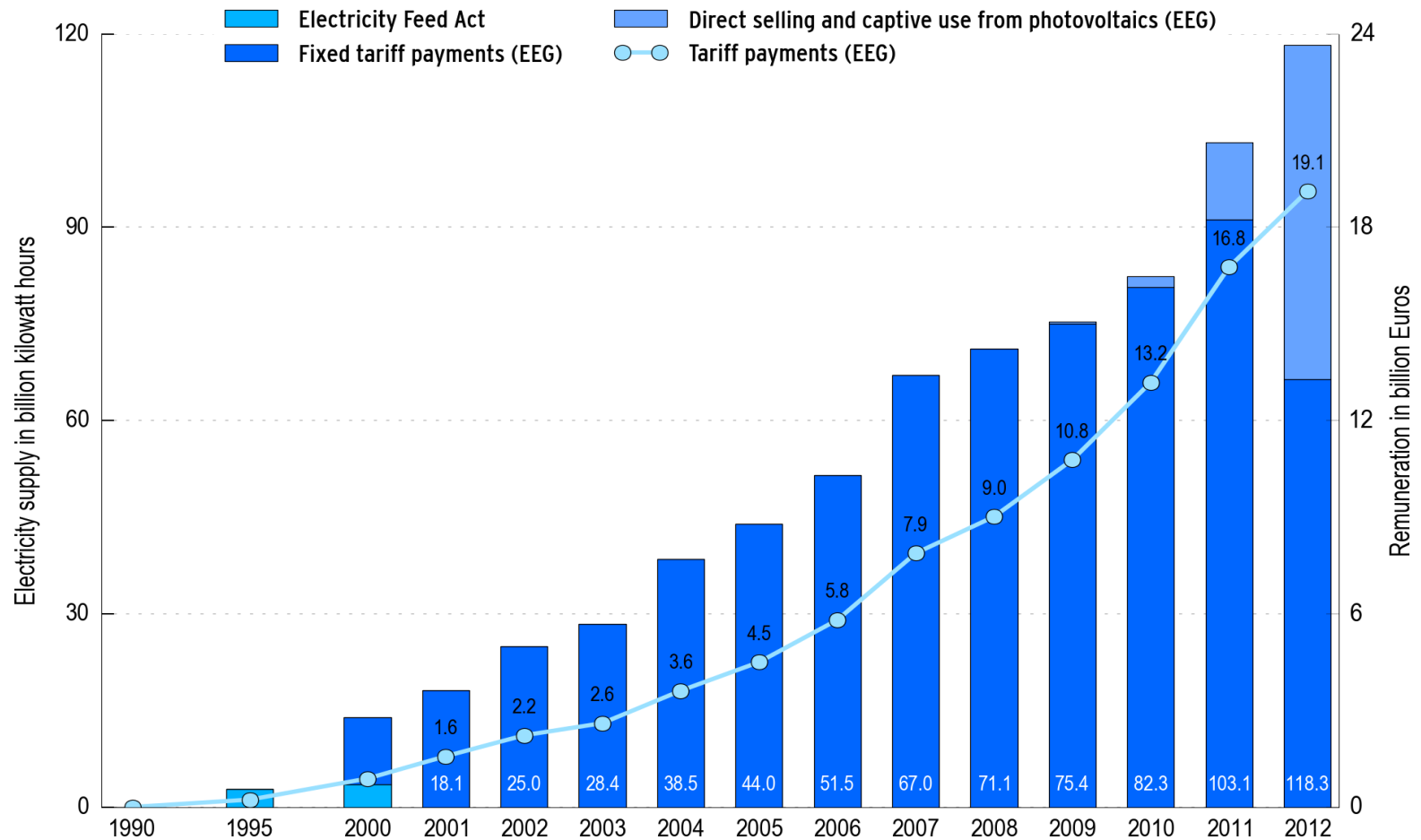
Structure of biomass-based electricity supply in Germany 2013

Total: 47.9 billion kilowatt hours



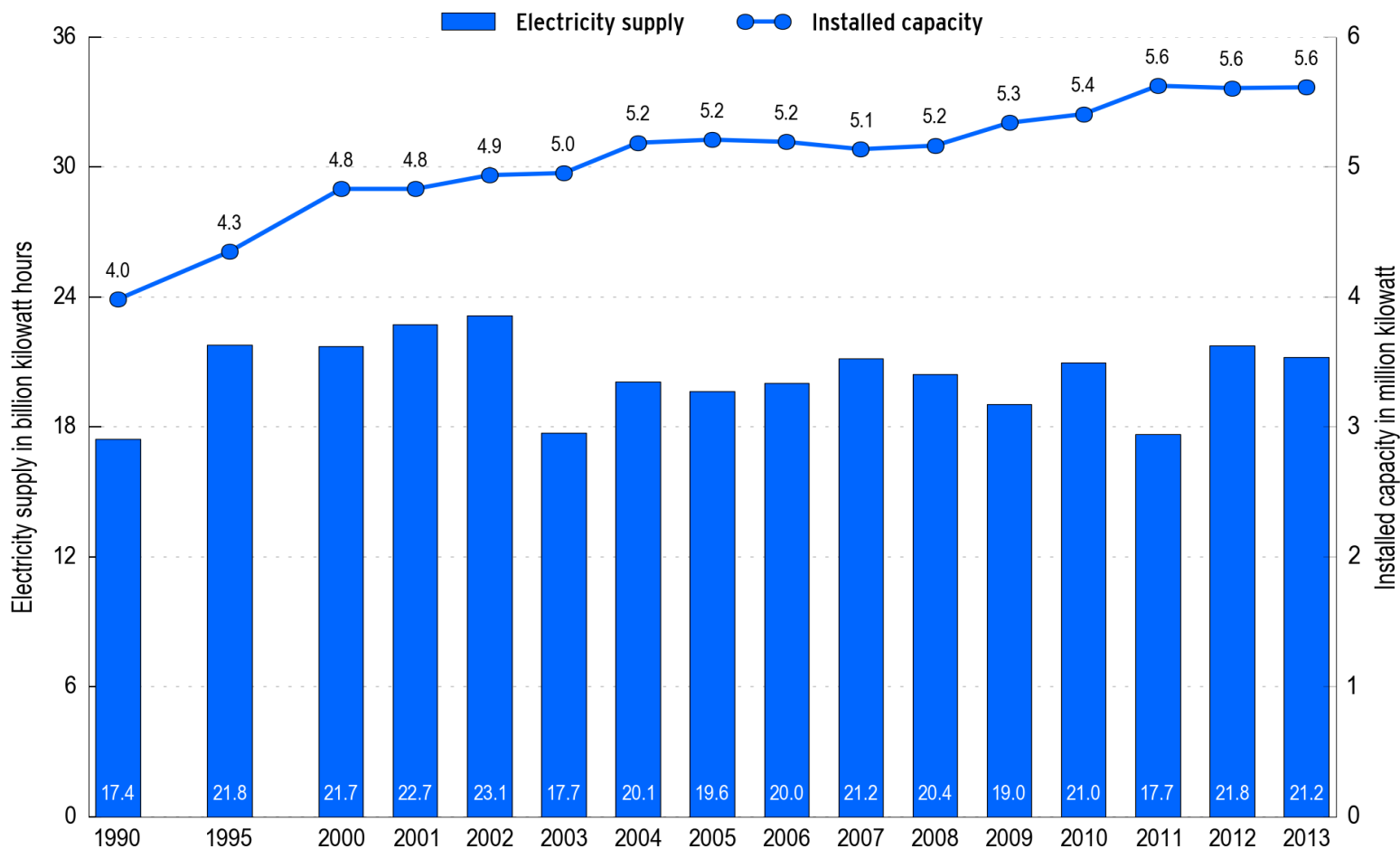
ZSW according to Working Group on Renewable Energy-Statistics (AGEE-Stat); as at February 2014; all figures provisional

Feed-in and fees under the Electricity Feed Act and the Renewable Energy Sources Act (EEG)



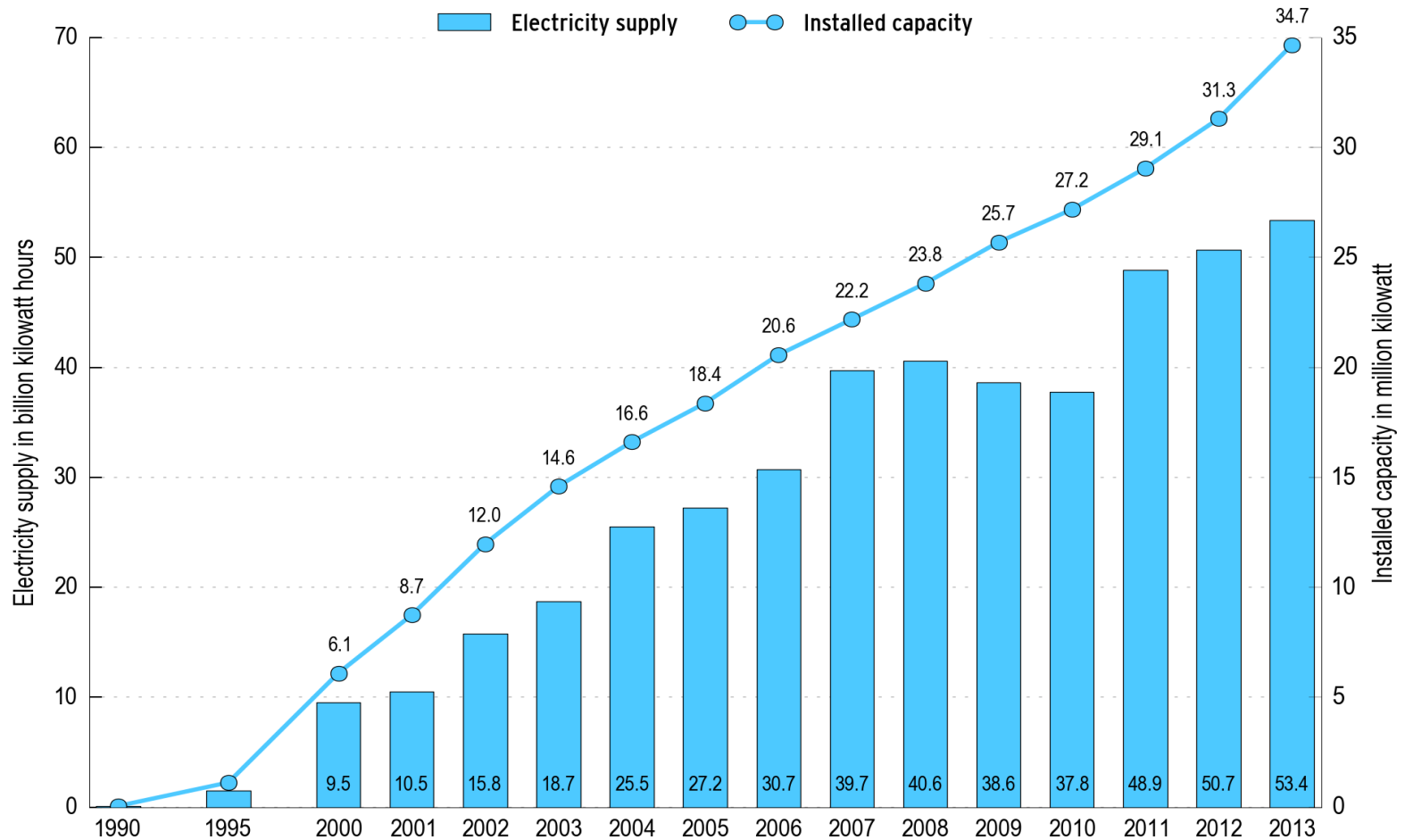
ZSW according to Working Group on Renewable Energy-Statistics (AGEE-Stat); as at February 2014; all figures provisional

Development of electricity supply from and installed capacity of hydropower plants in Germany



River and storage power plants including pump storage power plants with natural inflow; ZSW according to Working Group on Renewable Energy-Statistics (AGEE-Stat); as at February 2014; all figures provisional

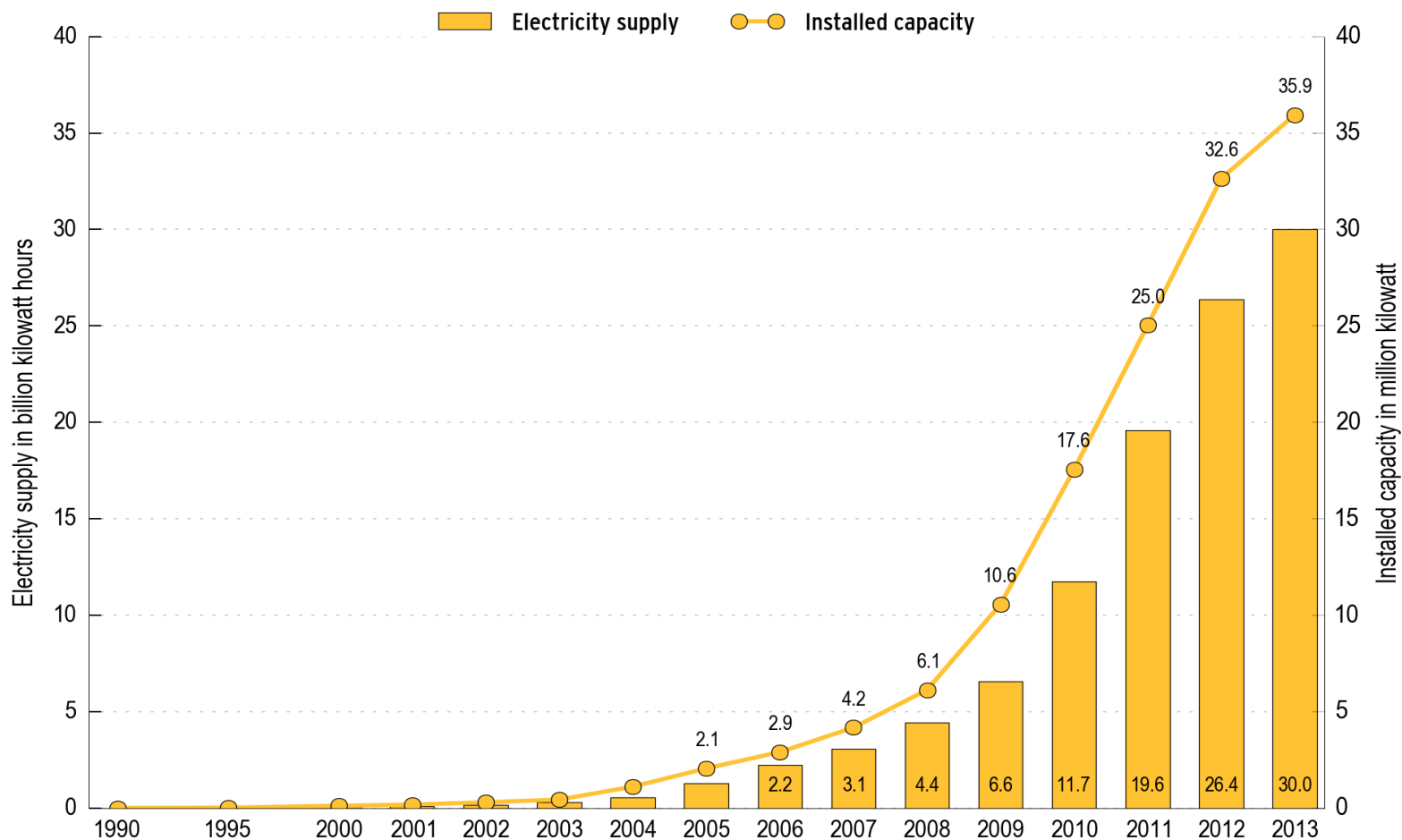
Development of electricity supply from and installed capacity of wind energy plants (onshore and offshore) in Germany



ZSW according to Working Group on Renewable Energy-Statistics (AGEE-Stat); as at February 2014; all figures provisional

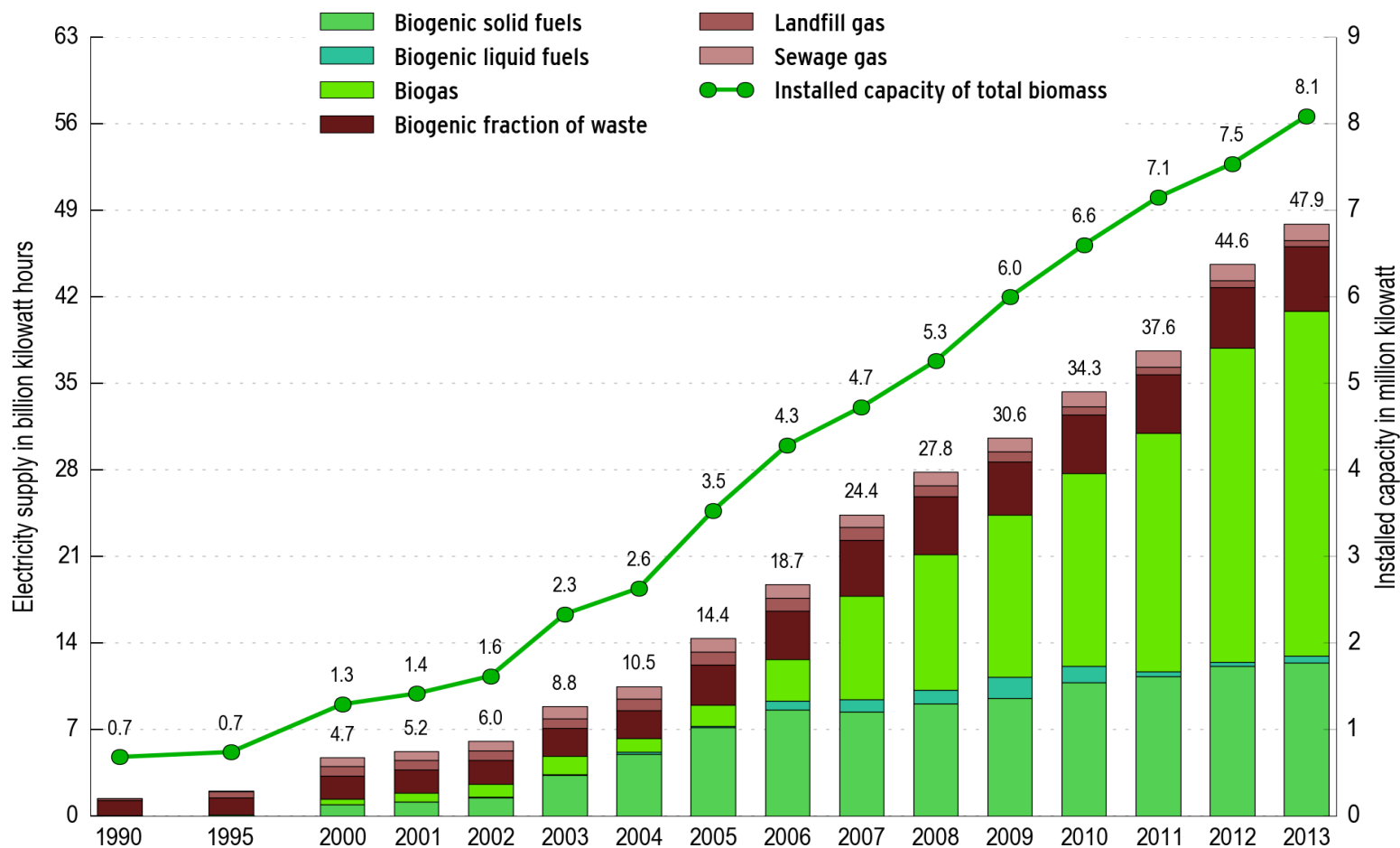


Development of electricity supply from and installed capacity of photovoltaic plants in Germany



ZSW according to Working Group on Renewable Energy-Statistics (AGEE-Stat); as at February 2014; all figures provisional

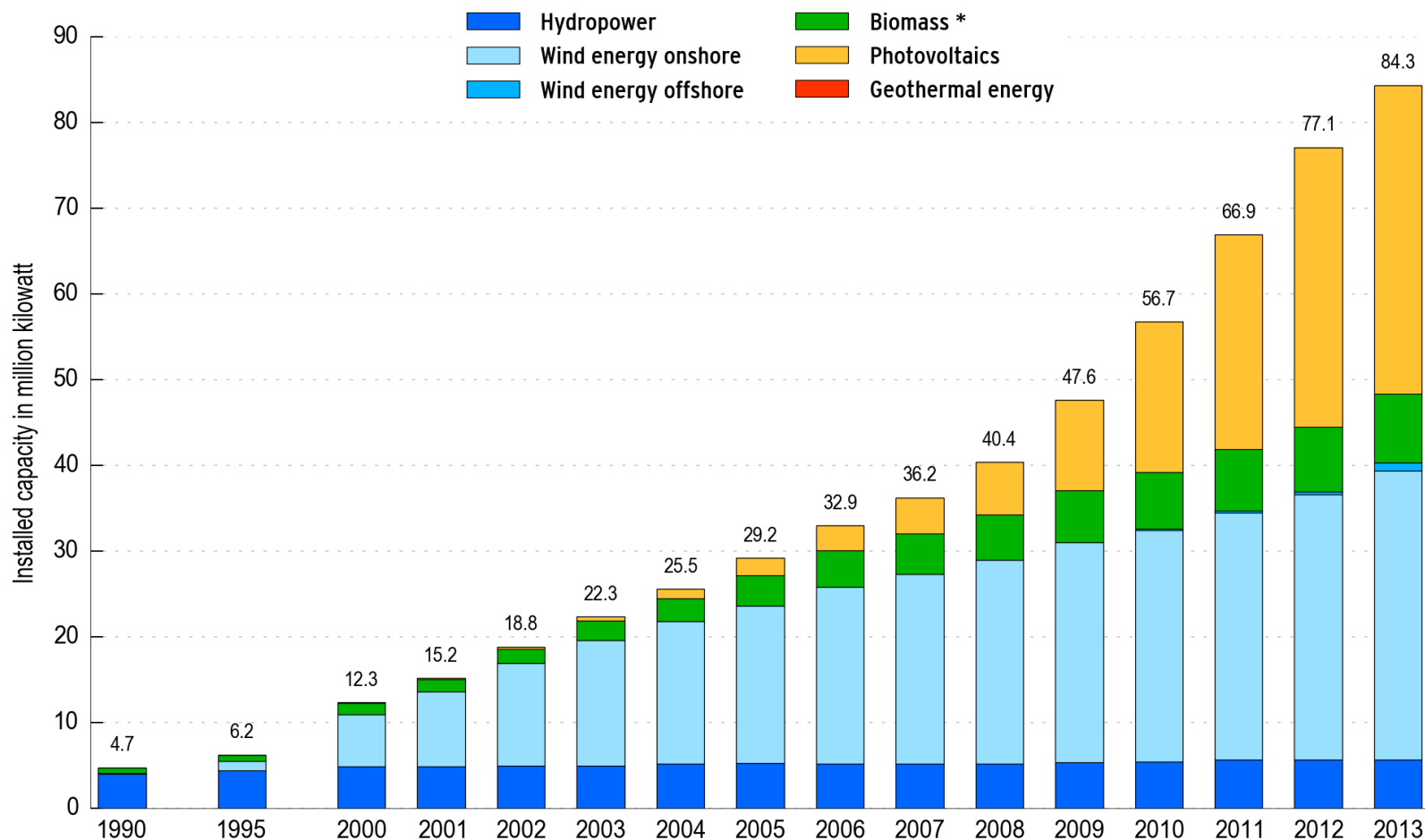
Development of electricity supply from and installed capacity of biomass plants in Germany



ZSW according to Working Group on Renewable Energy-Statistics (AGEE-Stat); as at February 2014; all figures provisional



Development of installed capacity for renewables-based electricity supply in Germany



* Solid and liquid biomass, biogas, sewage gas, landfill gas and biogenic fraction of waste; ZSW according to Working Group on Renewable Energy-Statistics (AGEE-Stat); as at February 2014; all figures provisional



Development of installed capacity for renewable-based electricity generation in Germany since 1990

Data in thousand kilowatt

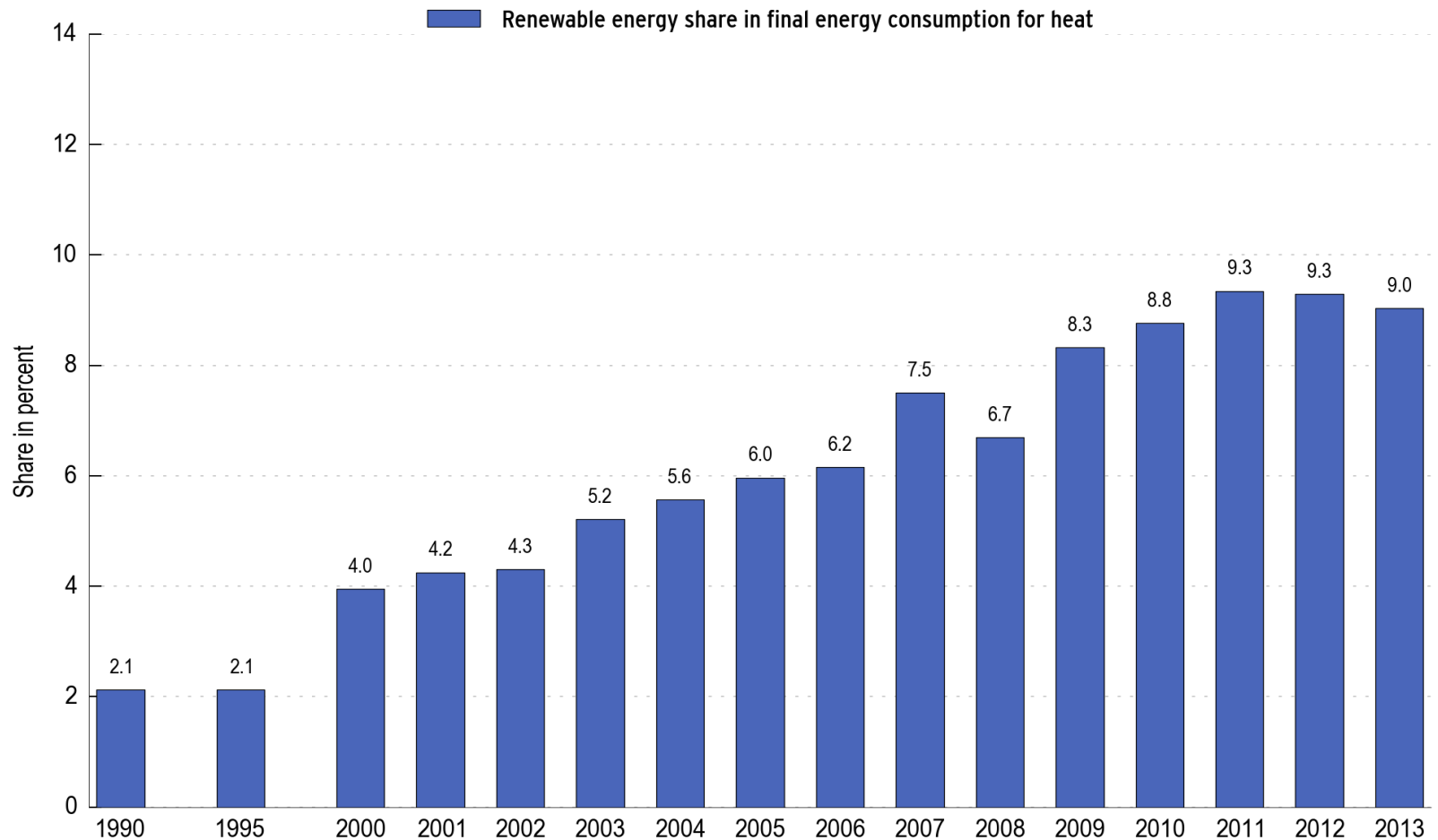
	Hydropower ¹	Wind energy onshore	Wind energy offshore	Photovoltaics	Biomass ²	Geothermal energy	Installed capacity for renewables-based electricity generation
1990	3,982	55	0	2	679	0	4,718
1995	4,348	1,121	0	18	736	0	6,223
2000	4,831	6,097	0	114	1,288	0	12,330
2001	4,831	8,738	0	176	1,412	0	15,157
2002	4,937	11,976	0	296	1,615	0	18,824
2003	4,953	14,593	0	435	2,330	0	22,311
2004	5,186	16,612	0	1,105	2,630	0	25,533
2005	5,210	18,375	0	2,056	3,526	0	29,167
2006	5,193	20,568	0	2,899	4,283	0	32,943
2007	5,137	22,183	0	4,170	4,723	3	36,216
2008	5,164	23,815	0	6,120	5,256	3	40,358
2009	5,340	25,632	60	10,566	5,995	7	47,601
2010	5,407	27,012	168	17,554	6,599	7	56,748
2011	5,625	28,857	203	25,039	7,148	7	66,880
2012	5,607	30,996	308	32,643	7,537	12	77,103
2013	5,613	33,757	903	35,948	8,086	31	84,338

ZSW according to Working Group on Renewable Energy-Statistics (AGEE-Stat); as at February 2014; all figures provisional

¹Inclusion of installed capacity of pump storage power plants with natural inflow

²Includes biogenic solid fuels and liquid biomass, biogas, sewage gas and landfill gas and the biogenic fraction of waste (biogenic components of waste in waste incineration plants estimated at 50 percent)

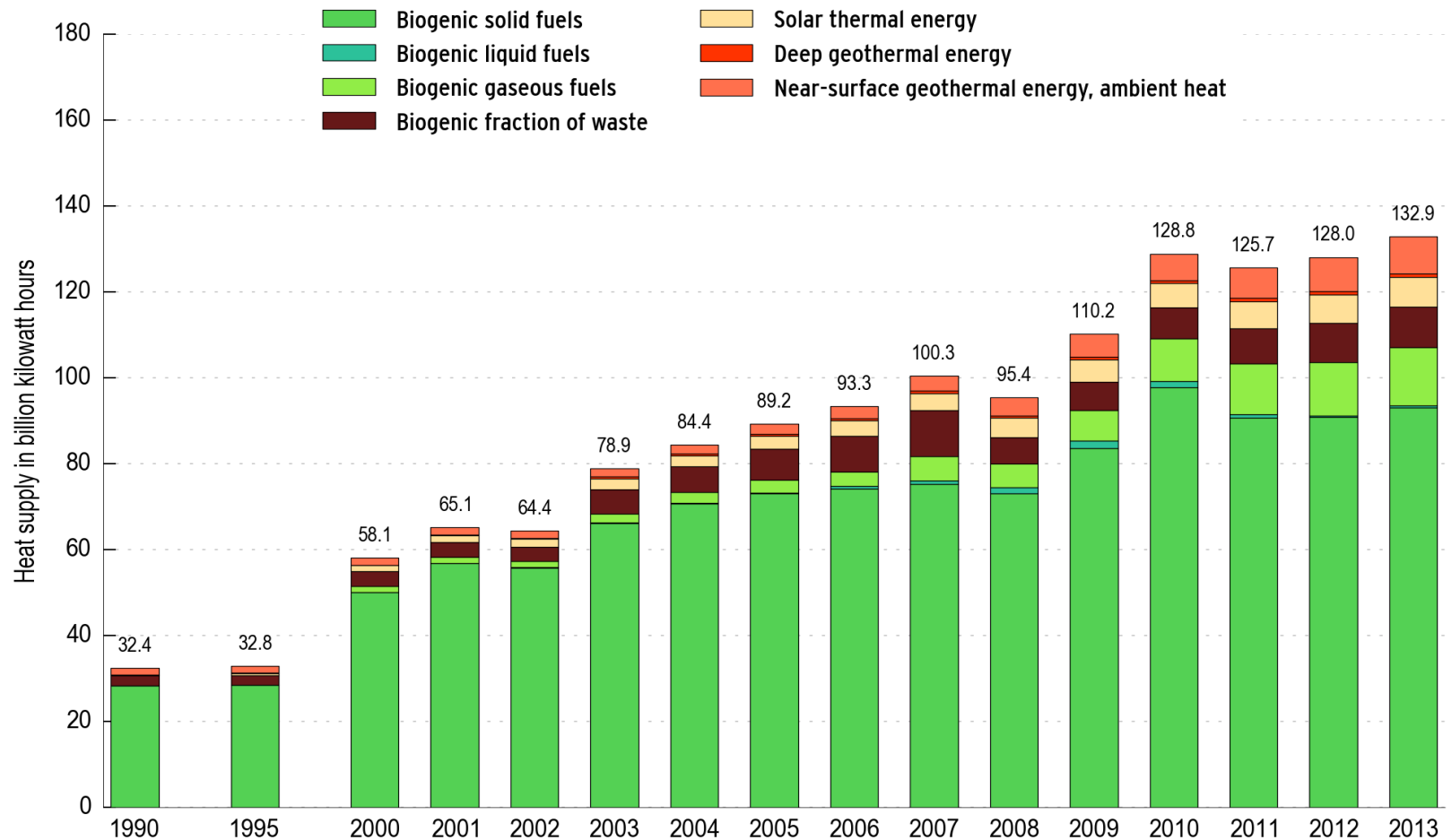
Development of renewable energy shares of final energy consumption for heat in Germany



ZSW according to Working Group on Renewable Energy-Statistics (AGEE-Stat); as at February 2014; all figures provisional



Development of heat supply from renewable energy sources in Germany



ZSW according to Working Group on Renewable Energy-Statistics (AGEE-Stat); as at February 2014; all figures provisional

Development of heat supply from renewable energy sources in Germany since 1990

Data in million kilowatt hours

	Biogenic solid fuels ¹	Biogenic liquid fuels ²	Biogenic gaseous fuels ³	Solar thermal energy ⁴	Geothermal energy and ambient heat ⁵	Renewables-based heat supply	Renewable energy share in final energy consumption for heat
1990	28,265	0	0	130	1,677	32,380	2.1 %
1995	28,387	0	0	440	1,705	32,840	2.1 %
2000	50,056	8	1,355	1,290	1,808	58,065	4.0 %
2001	56,857	10	1,353	1,620	1,858	65,119	4.2 %
2002	55,756	48	1,438	1,910	1,936	64,383	4.3 %
2003	66,016	192	2,135	2,520	2,368	78,873	5.2 %
2004	70,728	105	2,427	2,560	2,520	84,374	5.6 %
2005	73,061	183	2,974	3,030	2,759	89,206	6.0 %
2006	74,182	573	3,293	3,550	3,268	93,255	6.2 %
2007	75,210	818	5,581	3,940	3,968	100,350	7.5 %
2008	72,992	1,469	5,421	4,490	4,763	95,383	6.7 %
2009	83,632	1,654	7,179	5,280	5,882	110,157	8.3 %
2010	97,668	1,569	9,835	5,630	6,856	128,818	8.8 %
2011	90,714	723	11,790	6,440	7,846	125,653	9.3 %
2012	90,751	355	12,513	6,700	8,701	128,048	9.3 %
2013	93,030	500	13,530	6,780	9,520	132,860	9.0 %

ZSW according to Working Group on Renewable Energy-Statistics (AGEE-Stat); as at February 2014; all figures provisional

¹Includes the biogenic fraction of waste (biogenic components of waste in waste incineration plants estimated at 50 percent); modifications in the survey methods from 2003 onwards (as a result of the amendment of the Energy Statistics Act of 2003); heat decline in 2008 compared with year before is due to a change in data collection methods which does not permit any conclusions about the actual expansion of use

²Modifications in the survey methods from 2003 onwards (as a result of the amendment of the Energy Statistics Act of 2003)

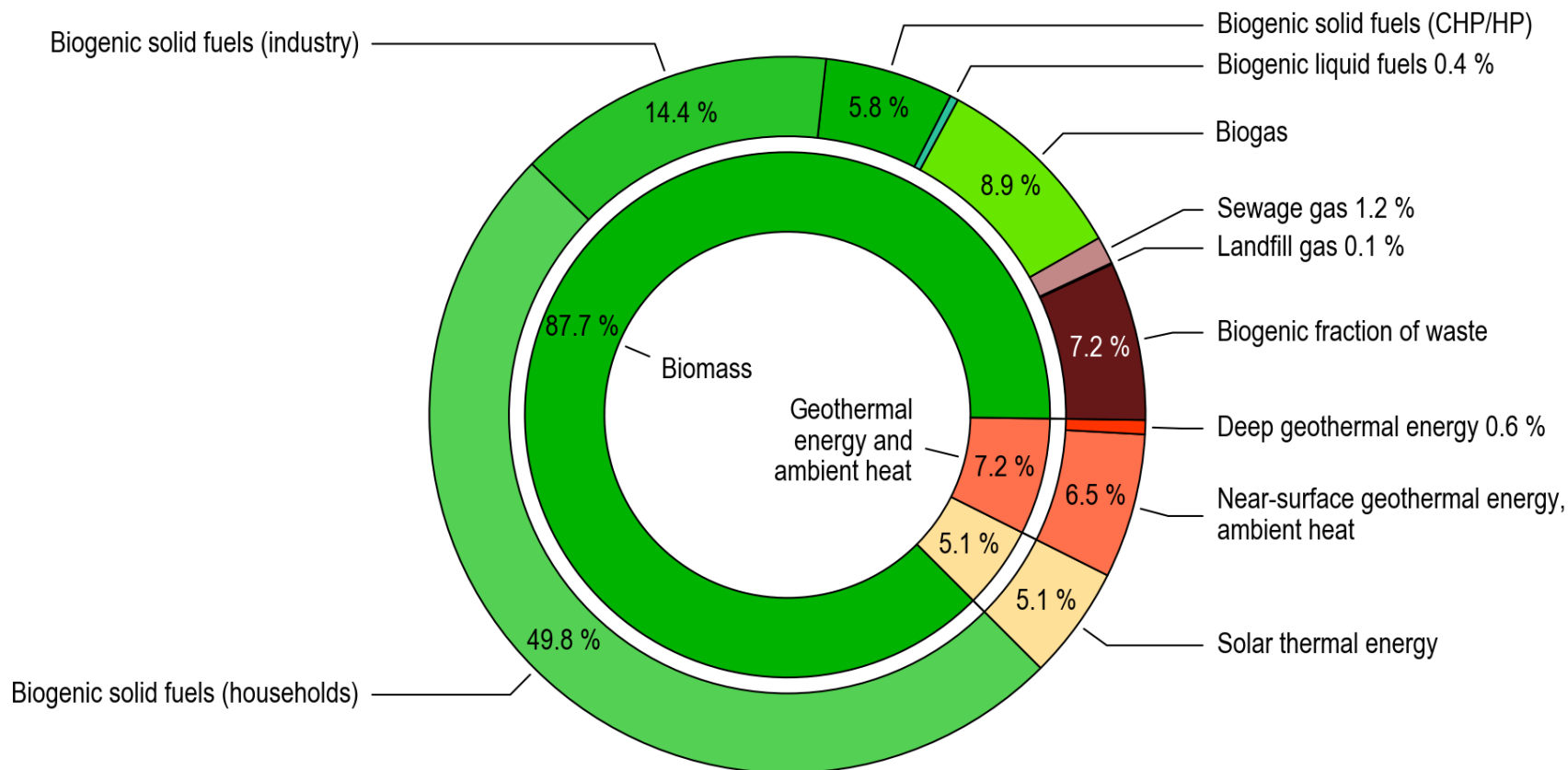
³Includes biogas, sewage gas und landfill gas; modifications in the survey methods from 2003 onwards (as a result of the amendment of the Energy Statistics Act of 2003)

⁴Takes decommissioning of old plants into account

⁵Includes heat from deep geothermal energy and from heat pumps (air/water, water/water, brine/water, exhaust air/water and thermally driven heat pumps)

Structure of renewables-based heat supply in Germany 2013

Total: 132.9 billion kilowatt hours

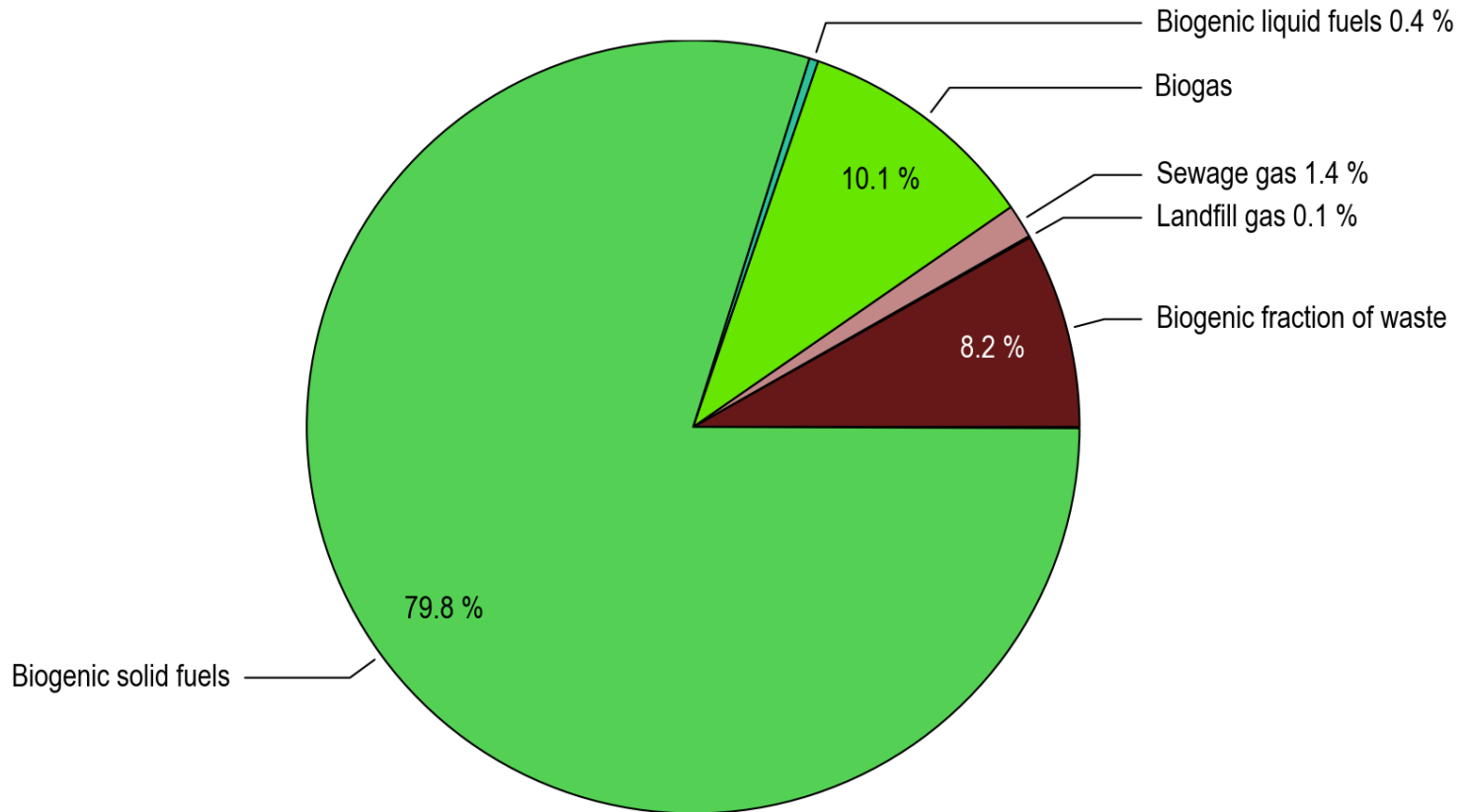


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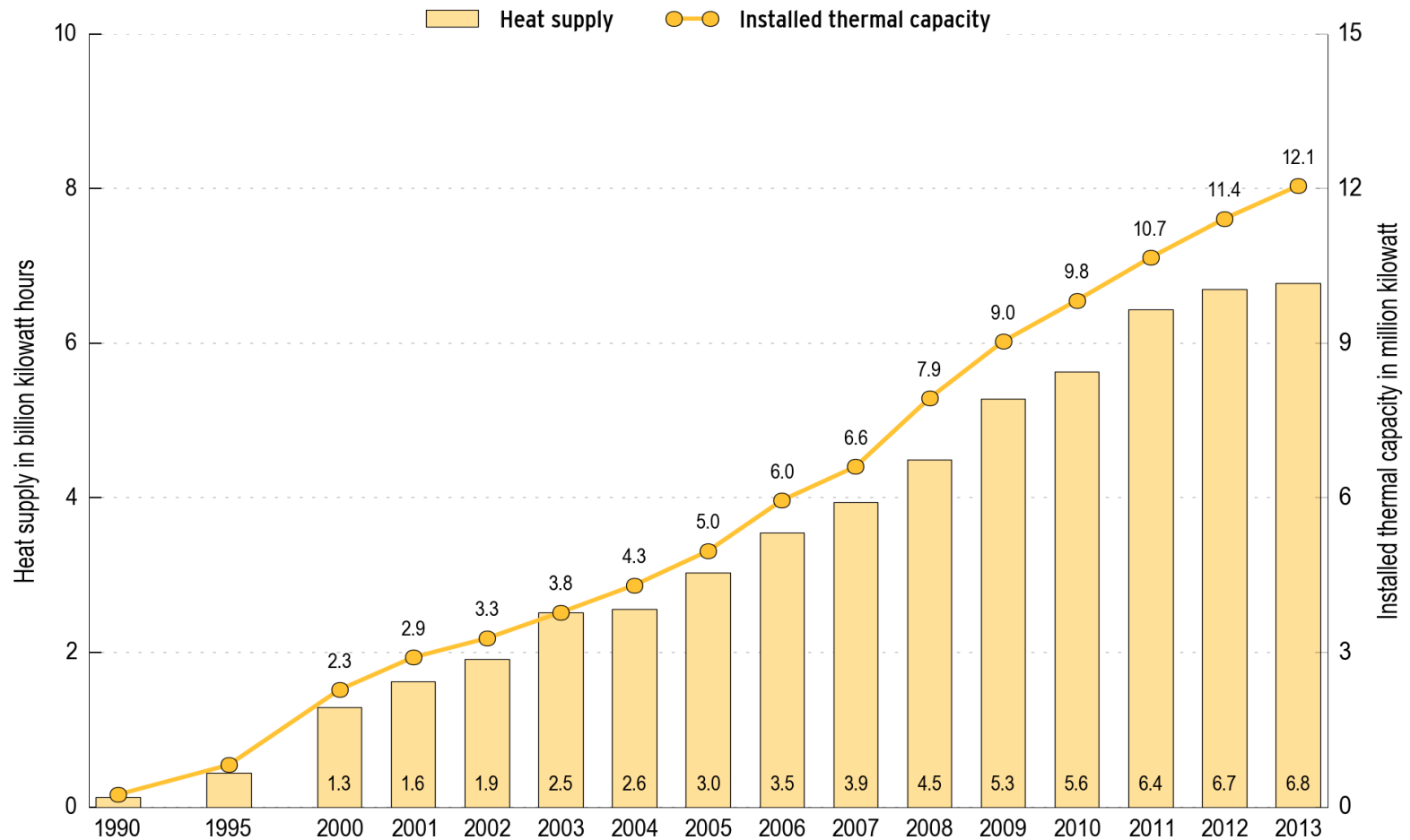
Structure of biomass-based heat supply in Germany 2012

Total: 116.6 billion kilowatt hours



ZSW according to Working Group on Renewable Energy-Statistics (AGEE-Stat); as at February 2014; all figures provisional

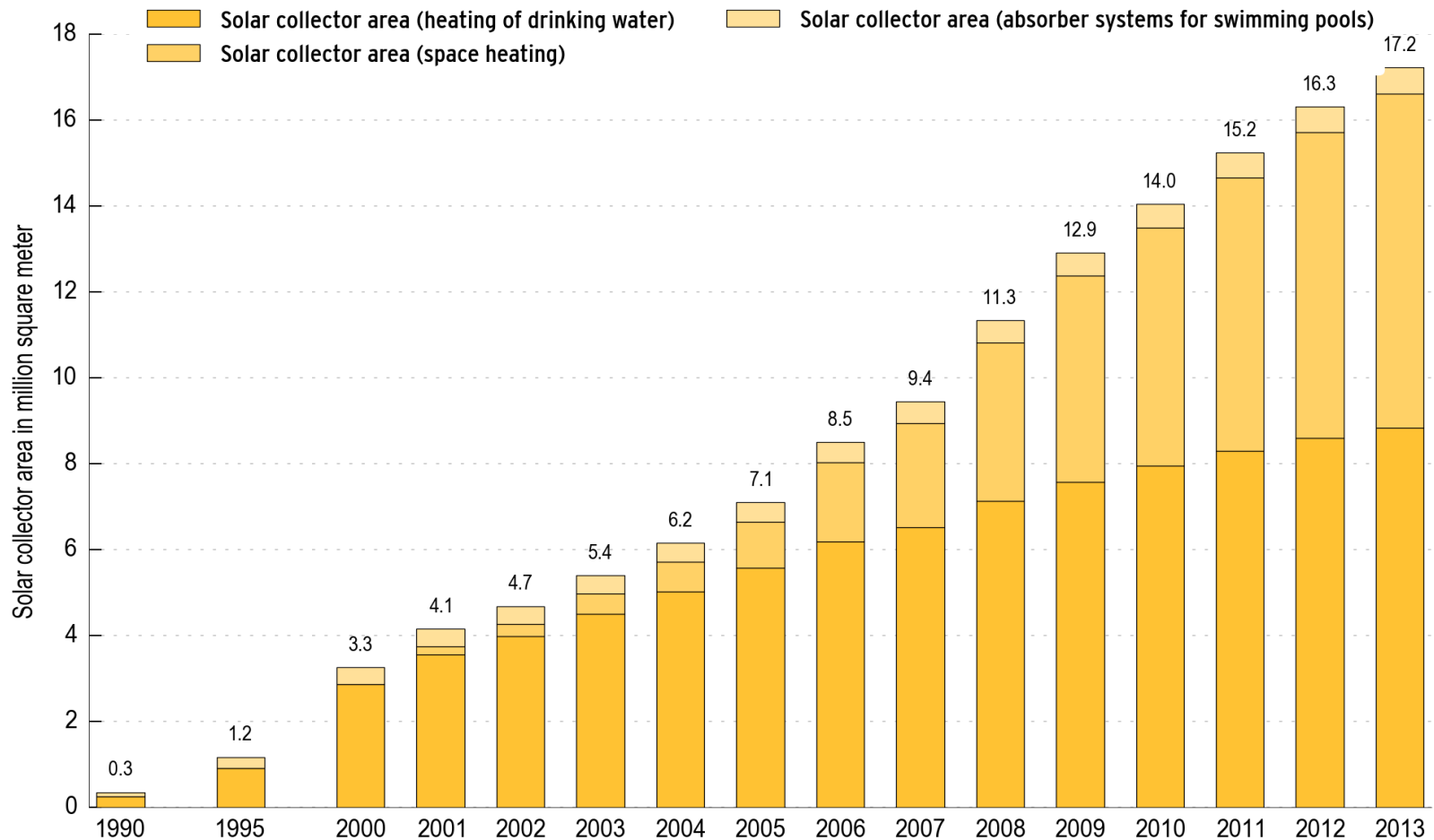
Development of heat supply from and installed thermal capacity of solar thermal plants in Germany



ZSW according to Working Group on Renewable Energy-Statistics (AGEE-Stat); as at February 2014; all figures provisional

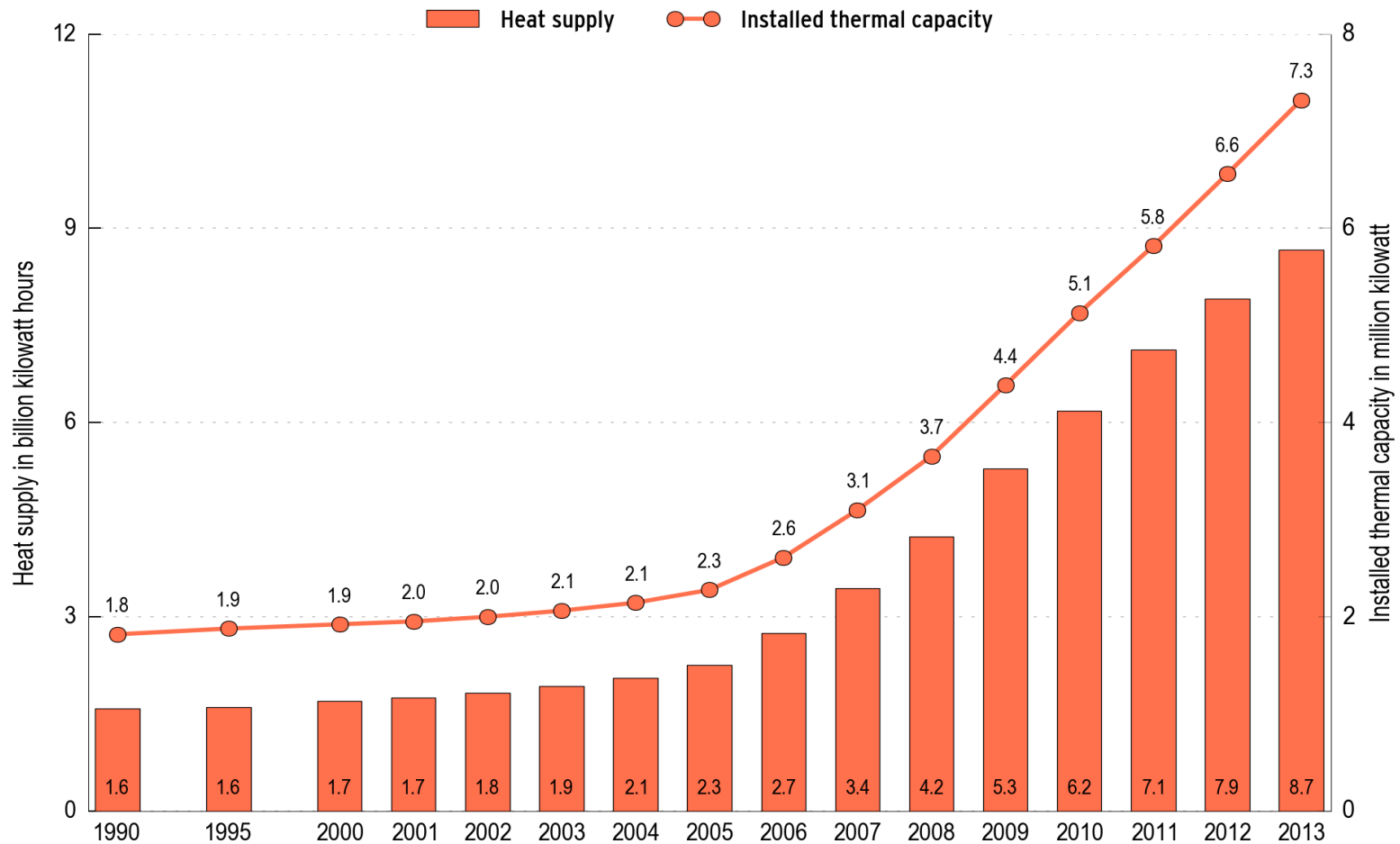


Development of collector area of solar thermal plants in Germany



ZSW according to Working Group on Renewable Energy-Statistics (AGEE-Stat); as at February 2014; all figures provisional

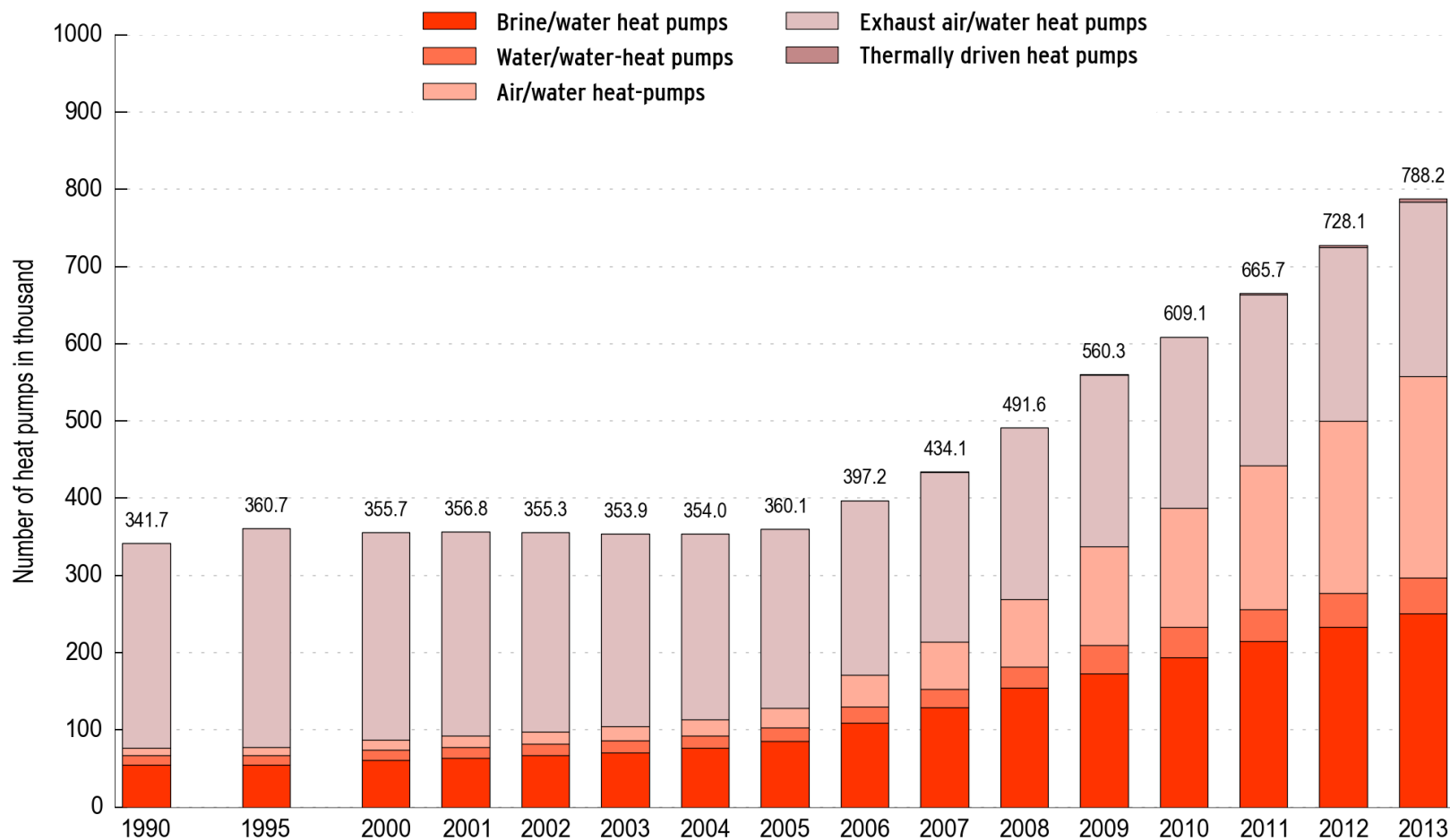
Development of heat supply from and installed capacity of heat pumps (near-surface geothermal energy and ambient heat) in Germany



ZSW according to Working Group on Renewable Energy-Statistics (AGEE-Stat); as at February 2014; all figures provisional

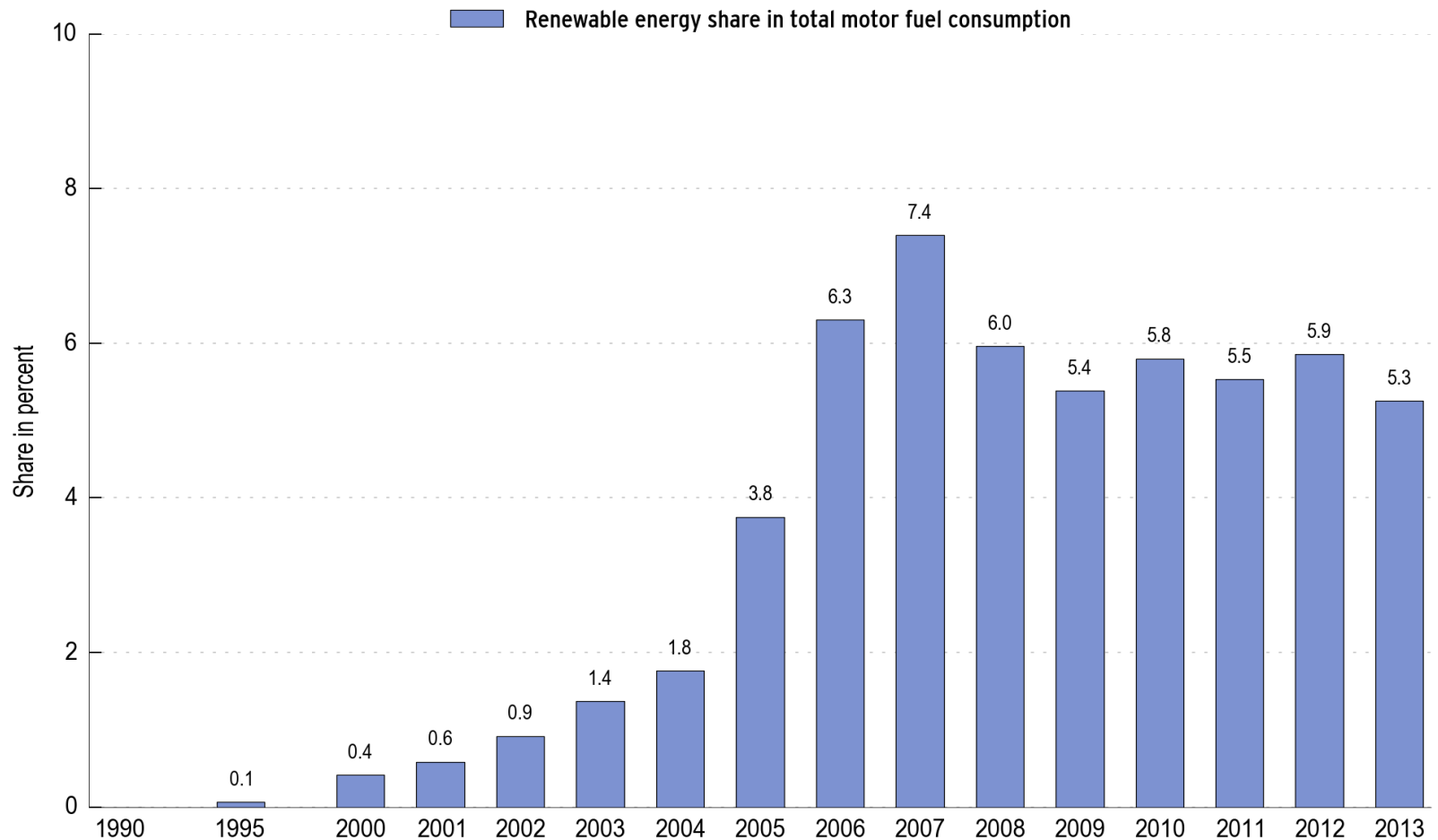


Development of the number of heat pumps in Germany



ZSW according to Working Group on Renewable Energy-Statistics (AGEE-Stat); as at February 2014; all figures provisional

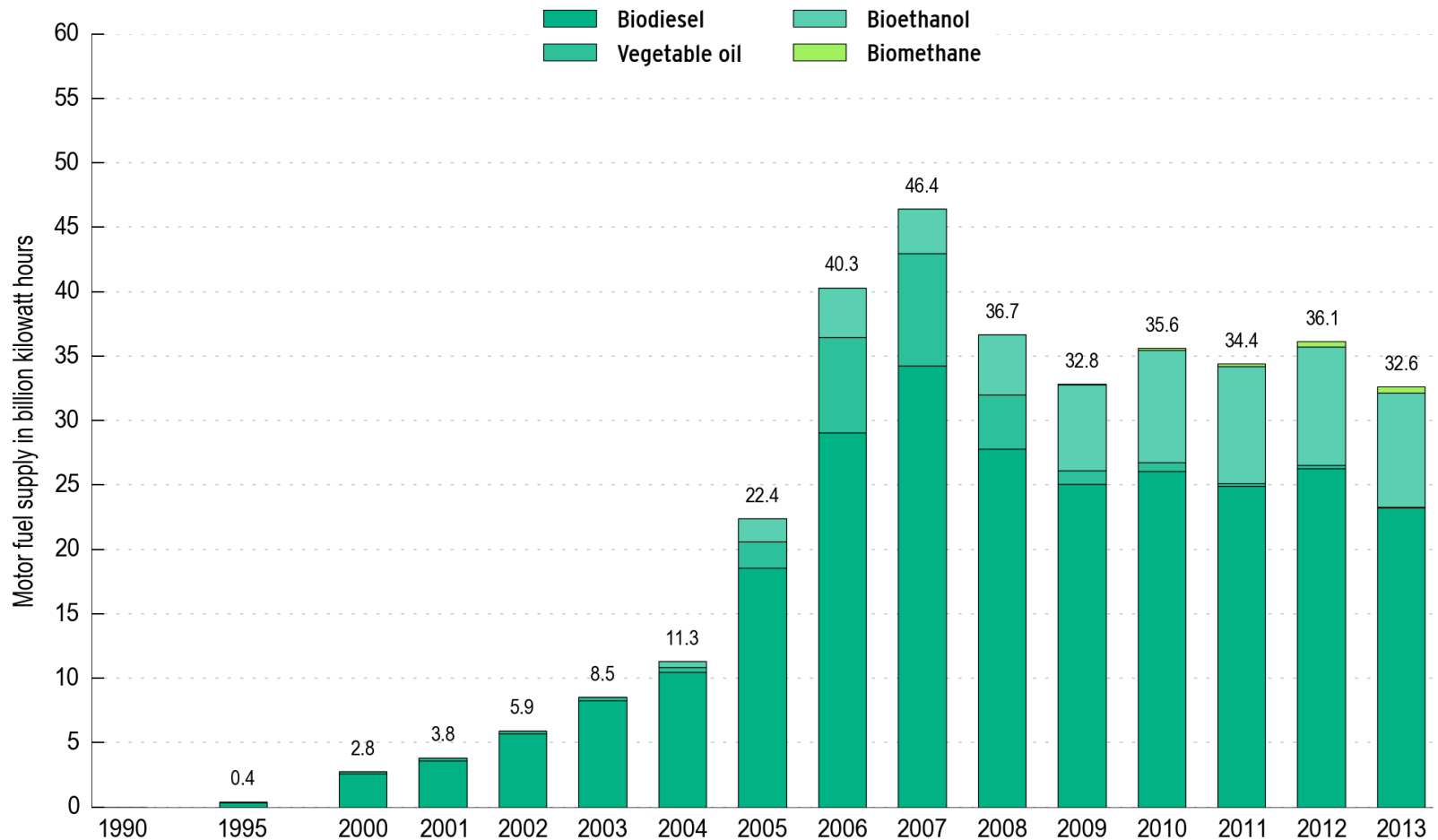
Development of renewable energy shares of motor fuel supply in Germany



ZSW according to Working Group on Renewable Energy-Statistics (AGEE-Stat); as at February 2014; all figures provisional



Development of motor fuel supply from renewable energy sources in Germany



ZSW according to Working Group on Renewable Energy-Statistics (AGEE-Stat); as at February 2014; all figures provisional



Development of motor fuel supply from renewable energy sources in Germany since 1990

Data in million kilowatt hours

	Biodiesel	Vegetable oil	Bioethanol	Biomethane	Renewables-based motor fuel supply	Renewable energy share in total motor fuel consumption ¹
1990	0	0	0	0	0	0.0 %
1995	362	52	0	0	414	0.1 %
2000	2,583	167	0	0	2,750	0.4 %
2001	3,617	209	0	0	3,826	0.6 %
2002	5,683	251	0	0	5,934	0.9 %
2003	8,254	292	0	0	8,546	1.4 %
2004	10,493	345	486	0	11,324	1.8 %
2005	18,572	2,047	1,780	0	22,399	3.8 %
2006	29,065	7,426	3,828	0	40,319	6.3 %
2007	34,239	8,748	3,437	0	46,424	7.4 %
2008	27,810	4,192	4,673	4	36,679	6.0 %
2009	25,086	1,044	6,673	15	32,818	5.4 %
2010	26,095	636	8,713	162	35,606	5.8 %
2011	24,920	205	9,091	190	34,406	5.5 %
2012	26,275	258	9,207	390	36,130	5.9 %
2013	23,258	13	8,892	450	32,613	5.3 %

ZSW according to Working Group on Renewable Energy-Statistics (AGEE-Stat); as at February 2014; all figures provisional

¹Basis until 2002: motor fuel consumption by road traffic; basis from 2003: total consumption of moto fuel (excluding consumption by air traffic, armed forces an inland waterway shipping)



Development of motor fuel supply from renewable energy sources in Germany since 1990

Data in thousand tonnes

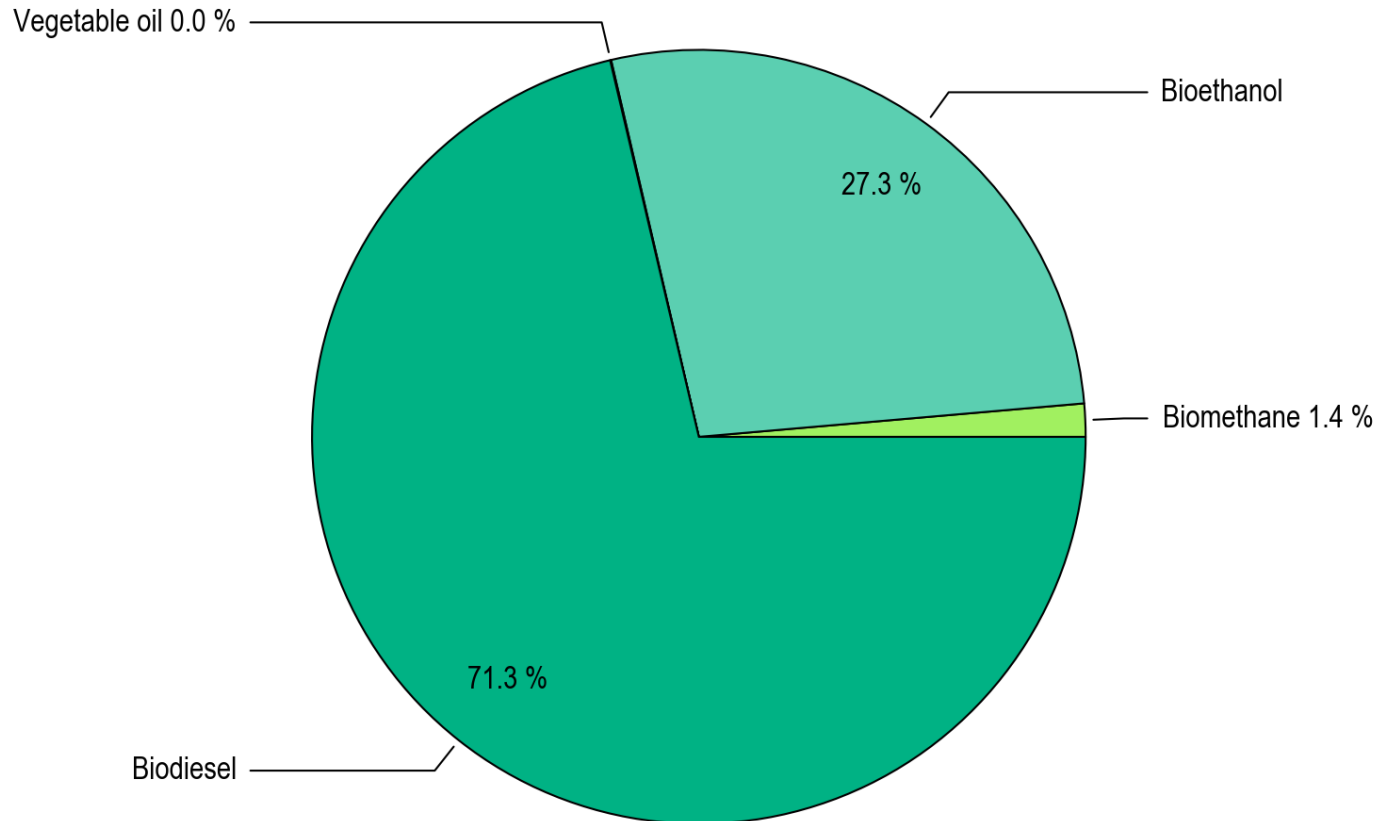
	Biodiesel	Vegetable oil	Bioethanol	Renewables-based motor fuel supply
1990	0	0	0	0
1995	35	5	0	40
2000	250	16	0	266
2001	350	20	0	370
2002	550	24	0	574
2003	800	28	0	828
2004	1,017	33	65	1,115
2005	1,800	196	238	2,234
2006	2,817	711	512	4,040
2007	3,318	838	460	4,616
2008	2,695	401	625	3,721
2009	2,431	100	892	3,423
2010	2,529	61	1,165	3,755
2011	2,426	20	1,233	3,679
2012	2,479	25	1,249	3,753
2013	2,192	1	1,206	3,399

ZSW according to Working Group on Renewable Energy-Statistics (AGEE-Stat); as at February 2014; all figures provisional



Structure of renewables-based motor fuel supply in Germany 2013

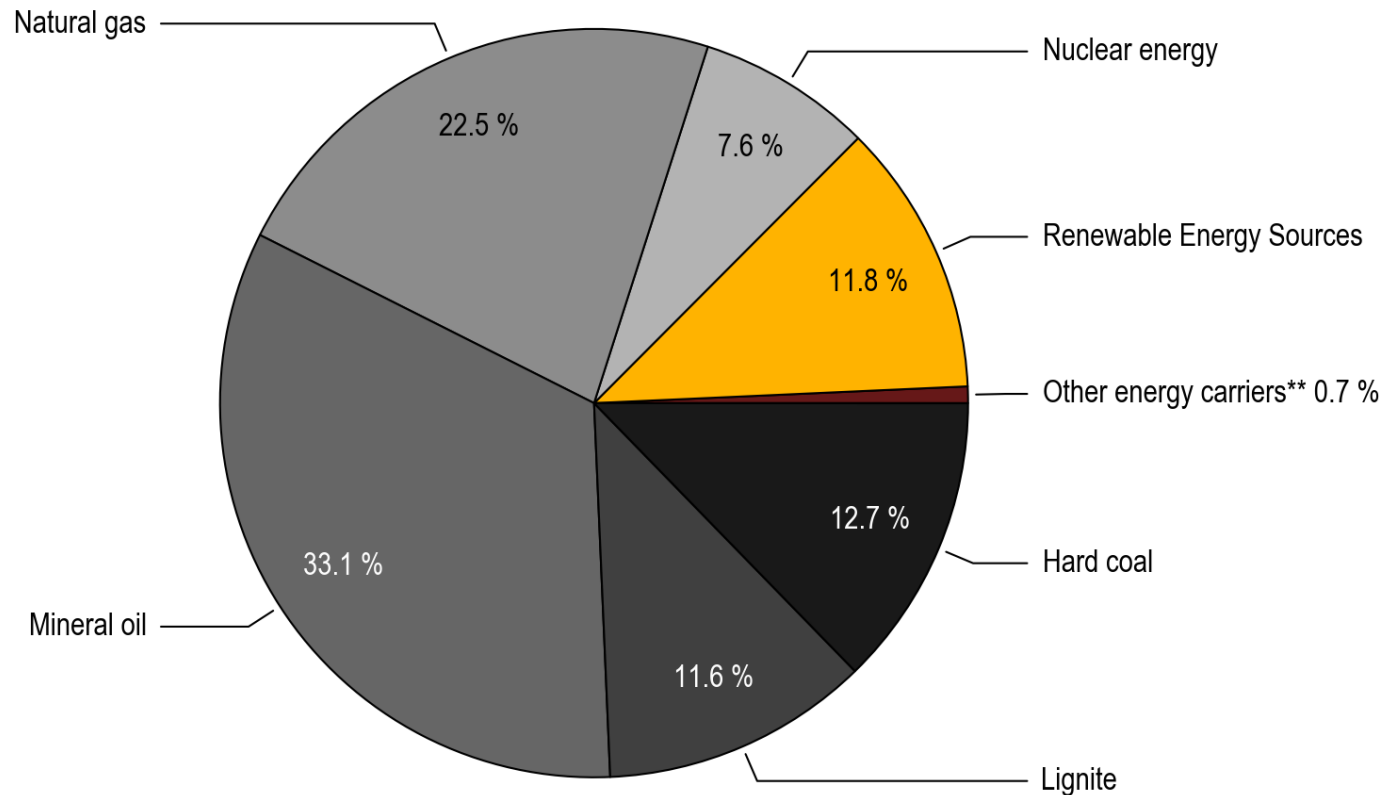
Total: 32.6 billion kilowatt hours



ZSW according to Working Group on Renewable Energy-Statistics (AGEE-Stat); as at February 2014; all figures provisional

Renewable energy share of total primary energy consumption in Germany 2013

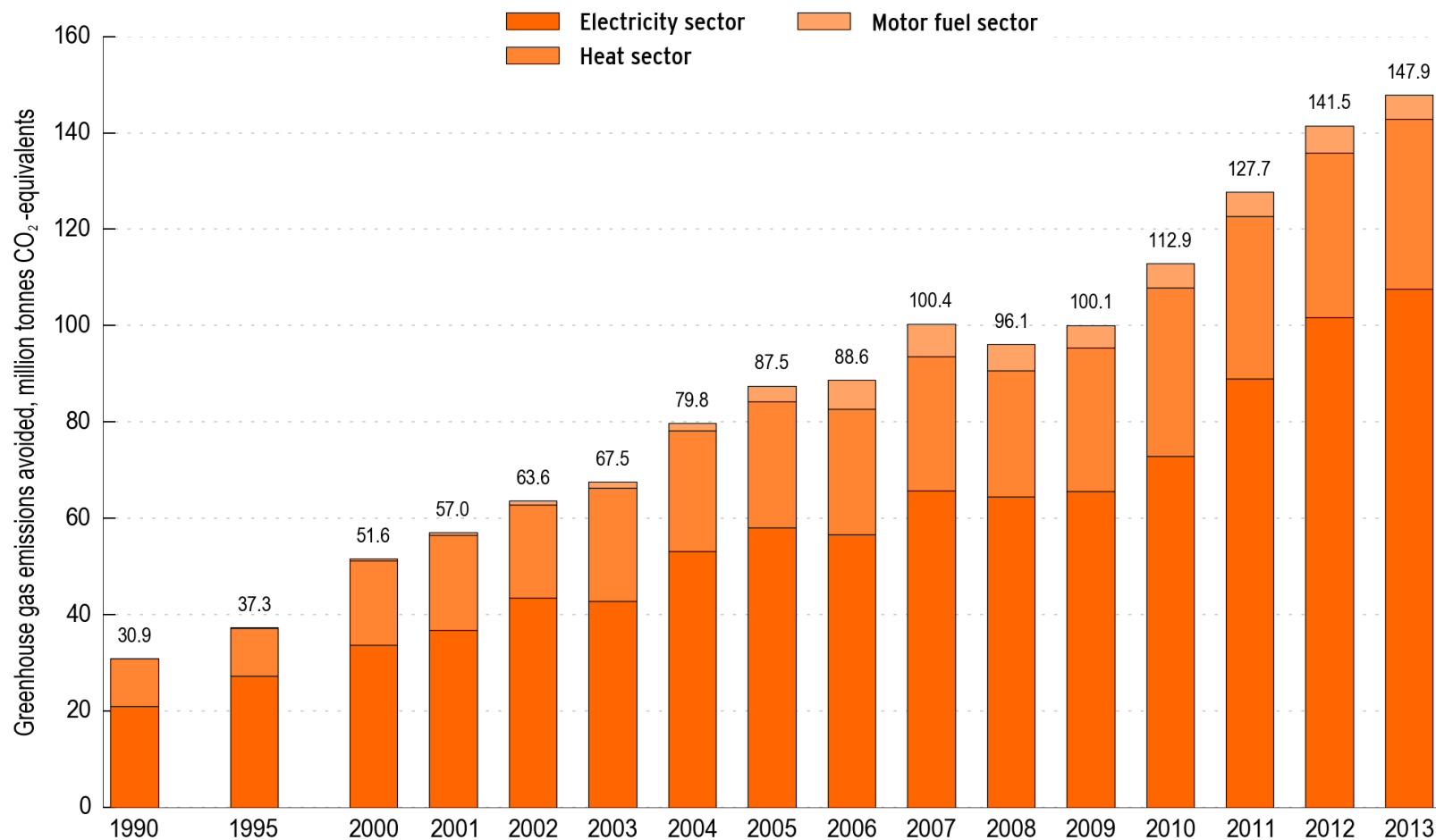
Total: 14,005.5 Petajoule *



* Working Group on Energy Balances (AGEB);** other energy carriers: mine gas, non-renewable wastes and waste heat, pumping of water and foreign trade balance for electricity; ZSW according to Working Group on Renewable Energy-Statistics (AGEE-Stat) using AGEB data; as at February 2014; all figures provisional

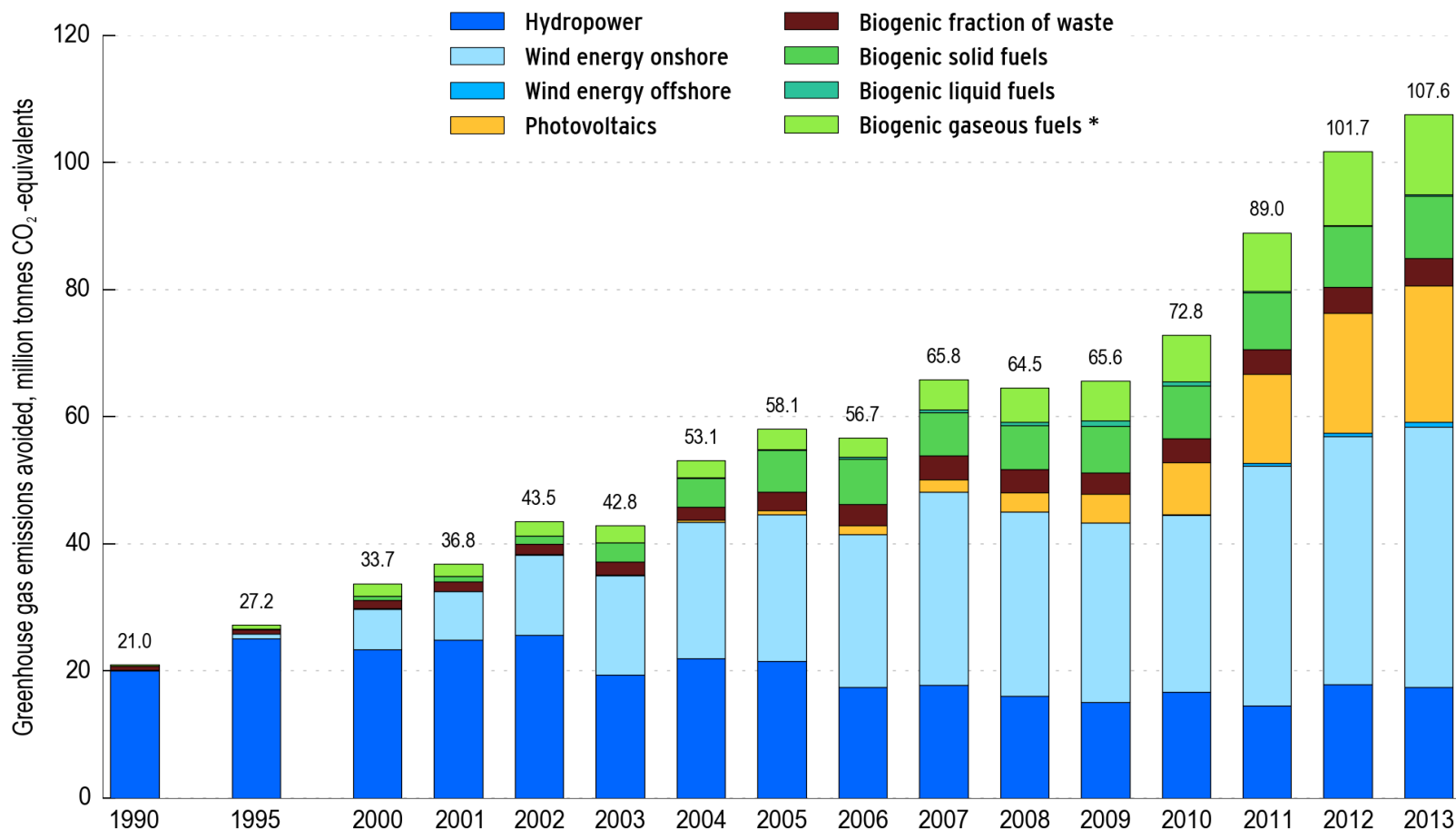


Greenhouse gas emissions avoided through use of renewable energy sources in the electricity, heat and motor fuel sector in Germany



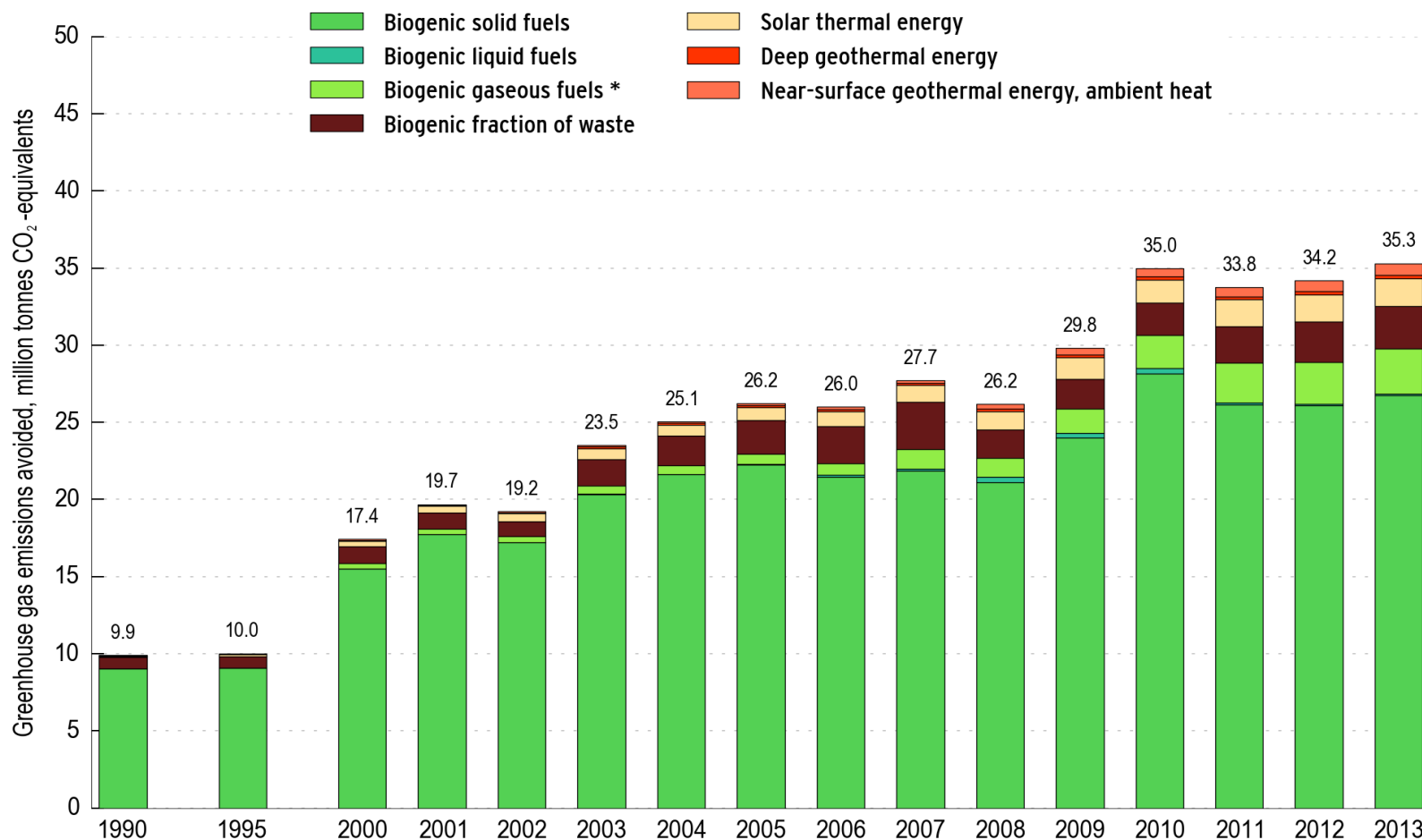
Federal Environment Agency (UBA) according to Working Group on Renewable Energy-Statistics (AGEE-Stat); as at February 2014; all figures provisional

Greenhouse gas emissions avoided through use of renewable energy sources in the electricity sector in Germany



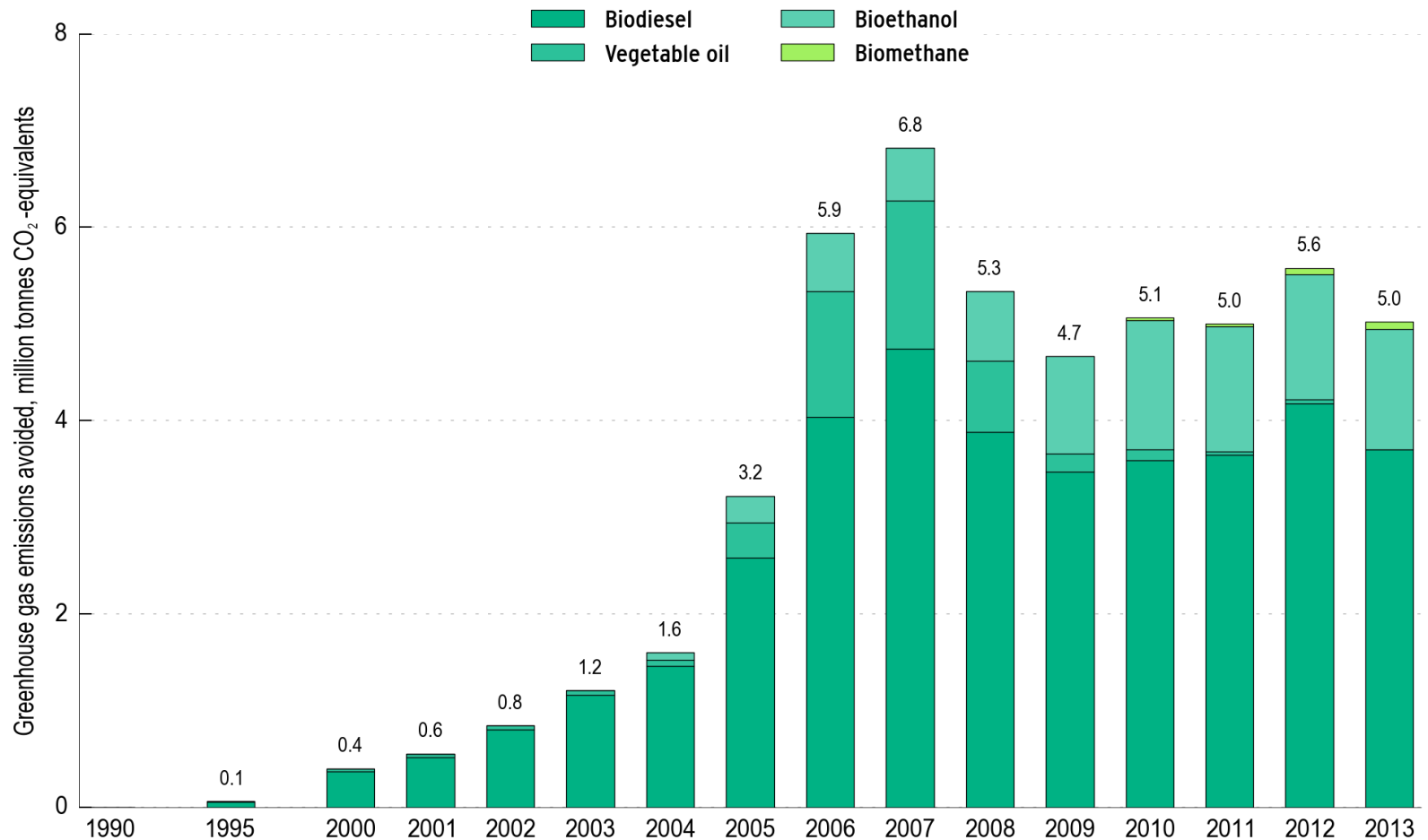
* Biogas, sewage gas and landfill gas; greenhouse gas emissions avoided via use of geothermal electricity supply is not shown due to the small quantities involved; Federal Environment Agency (UBA) according to Working Group on Renewable Energy-Statistics (AGEE-Stat); as at February 2014; all figures provisional

Greenhouse gas emissions avoided through use of renewable energy sources in the heat sector in Germany



* Biogas, sewage gas and landfill gas; Federal Environment Agency (UBA) according to Working Group on Renewable Energy-Statistics (AGEE-Stat); as at February 2014; all figures provisional

Greenhouse gas emissions avoided through use of renewable energy sources in the motor fuel sector in Germany

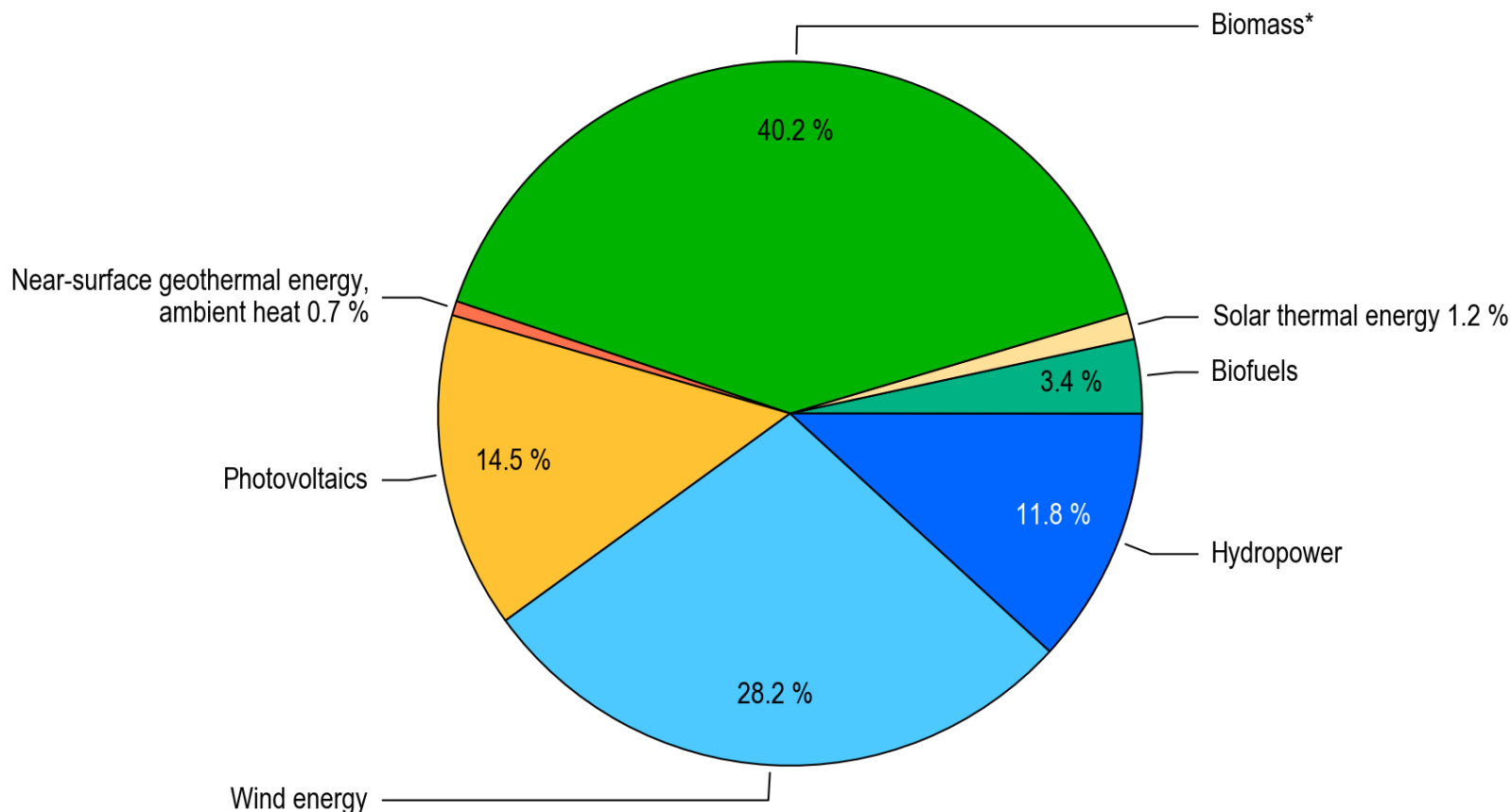


Federal Environment Agency (UBA) according to Working Group on Renewable Energy-Statistics (AGEE-Stat); as at February 2014; all figures provisional



Structure of greenhouse gas emissions avoided through use of renewable energy sources in Germany 2013

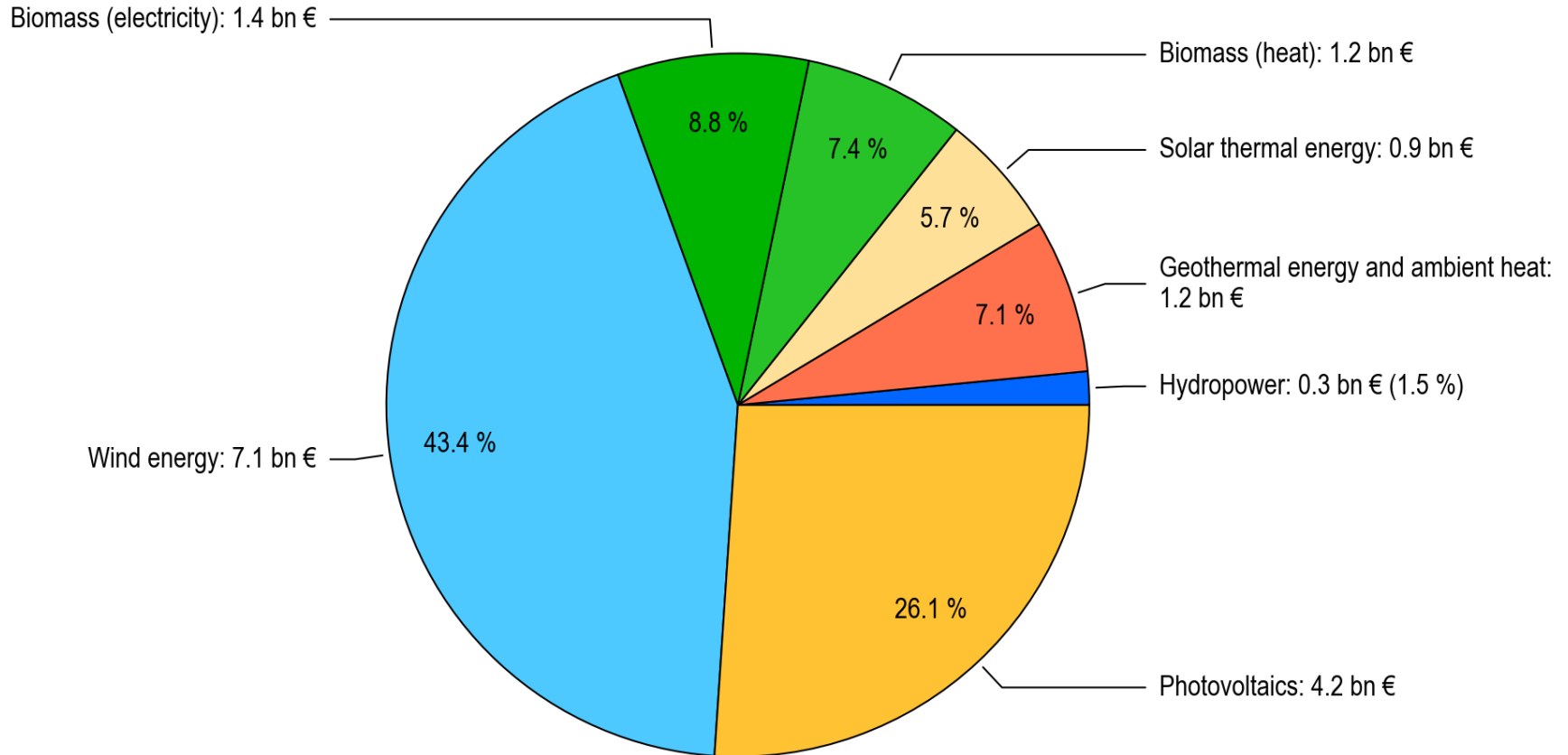
Total: 147.9 million tonnes CO₂-equivalents



* Solid and liquid biomass, biogas, sewage gas, landfill gas and biogenic fraction of waste; Federal Environment Agency (UBA) according to Working Group on Renewable Energy-Statistics (AGEE-Stat); as at February 2014; all figures provisional

Investments in construction of renewable energy installations in Germany 2013

Total investments: 16.3 billion Euro

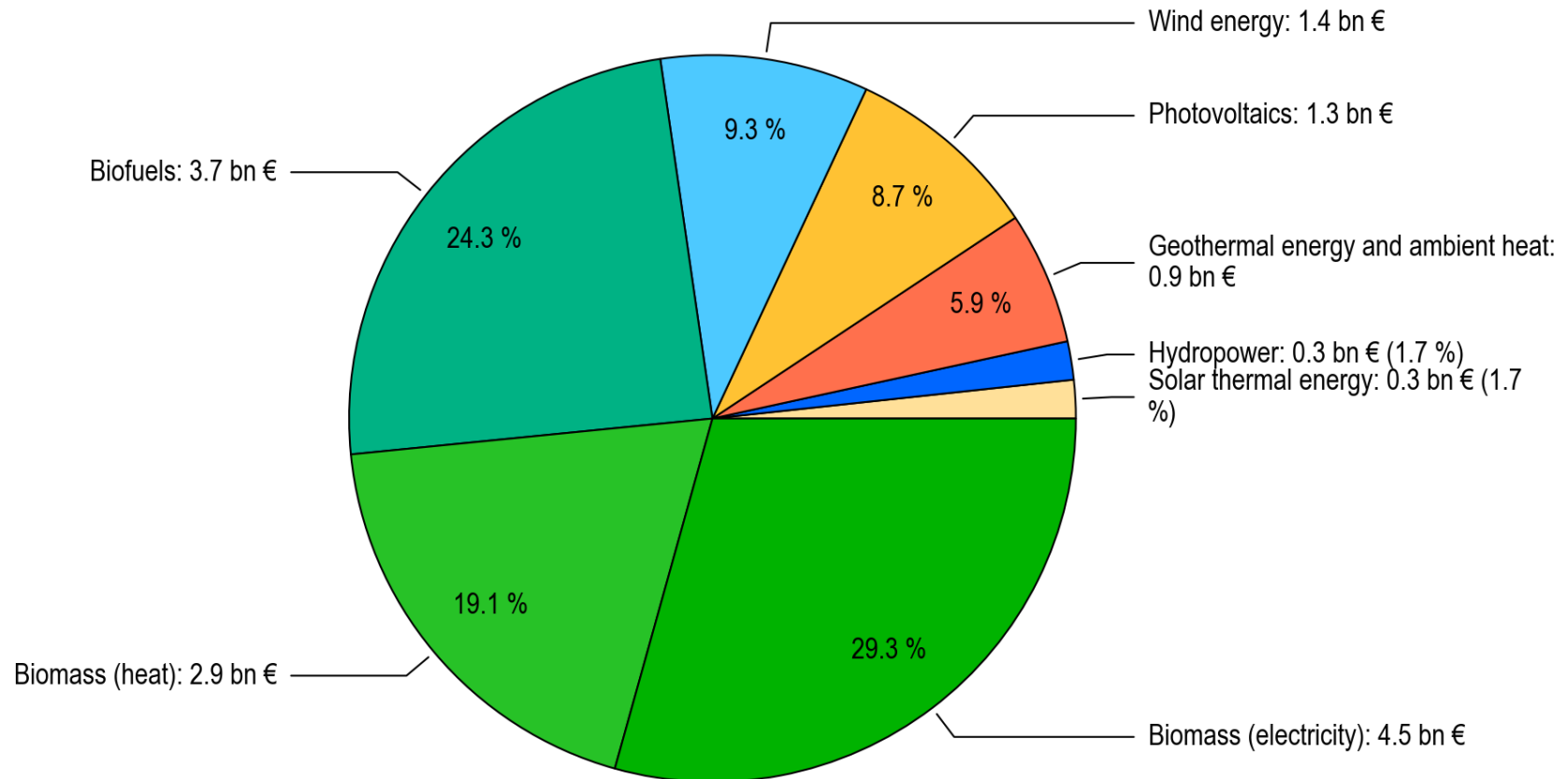


Centre for Solar Energy and Hydrogen Research Baden Wuerttemberg (ZSW); as at February 2014; all figures provisional



Turnover from the operation of renewable energy installations in Germany 2013

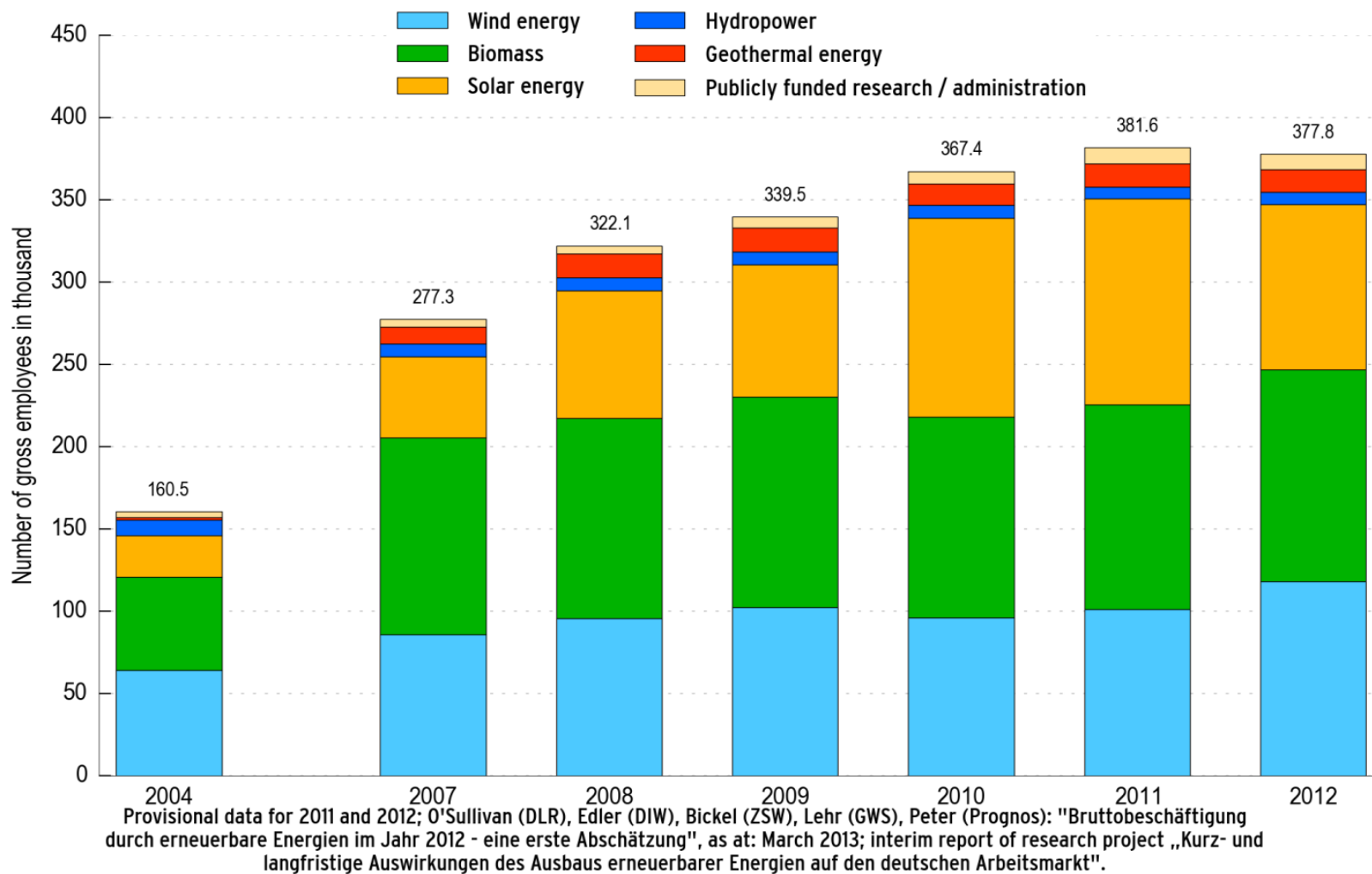
Total turnover: 15.2 billion Euro



Centre for Solar Energy and Hydrogen Research Baden Wuerttemberg (ZSW); as at February 2014; all figures provisional



Development of gross employment in Germany's renewable energy sector



Sources:

Working-Group on Renewable Energy-Statistics (AGEE-Stat)	Fachagentur für Nachwachsende Rohstoffe e.V. (FNR)
Centre for Solar Energy and Hydrogen Research Baden Wuerttemberg (ZSW)	Institute for Applied Ecology (Öko-Institut e.V.)
Federal Environment Agency (UBA)	Bundesverband Solarwirtschaft e.V. (BSW)
Federal Statistical Office (StBA)	Bundesverband Wärmepumpe e.V. (BWP)
Federal Office of Economy and Export Control (BAFA)	Bundesverband der Energie- und Wasserwirtschaft e.V. (BDEW)
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Quellen:

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