



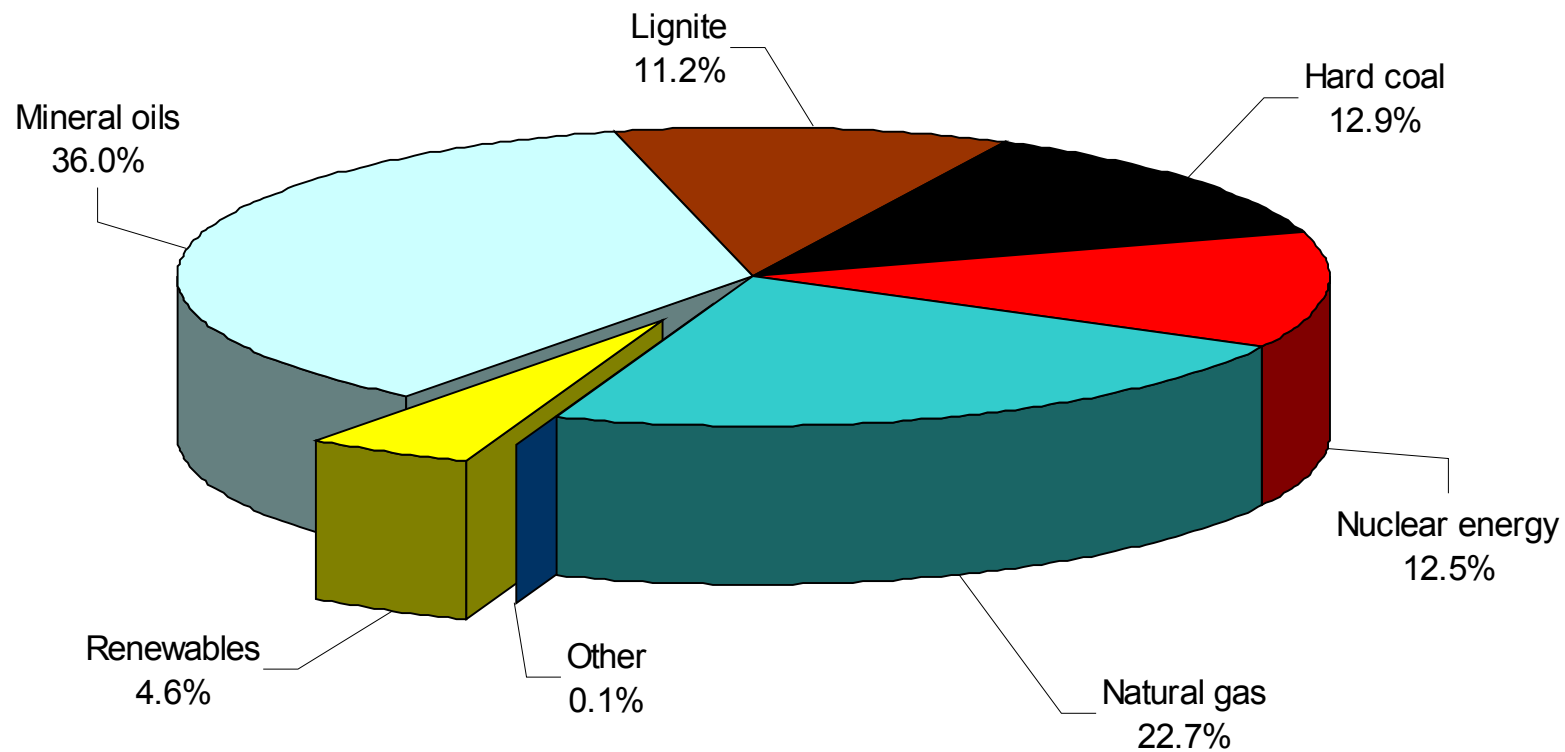
Federal Ministry for the
Environment, Nature Conservation
and Nuclear Safety

Graphics and tables on the development of renewable energy sources in Germany in 2005

Source: Federal Ministry for the Environment, Nature
Conservation and Nuclear Safety, May 2006

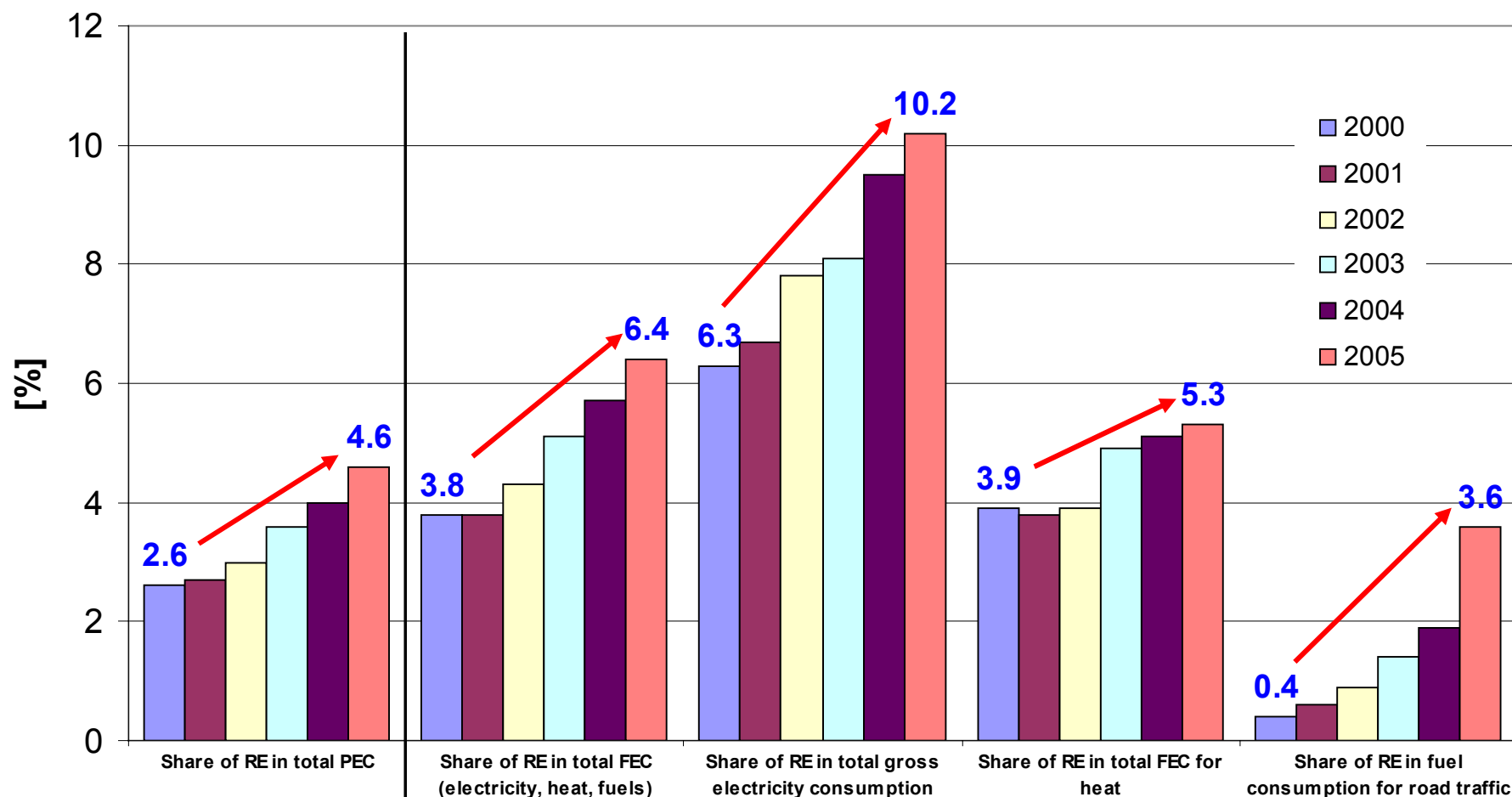
Structure of primary energy consumption in Germany in 2005

Total: 14,238 PJ



Sources: according to the Working Group Energy Balances (AGEB) and the Working Group on Renewable Energies Statistics (AGEE- Sat; according to physical energy content method; provisional figures; status February 2006

Development of renewable energies in Germany



Sources: BMU publication "Renewable energy sources in figures - national and international development", Status: May 2006; from 2003 new data taken into consideration from the Act on Energy Statistics (Energies tatistikgesetz - EnStatG)
 PEC: Primary energy consumption; FEC: Final energy consumption

Contribution of renewable energy sources to energy supply in Germany in 2005

Share of renewable energy sources		
In total primary energy consumption calculated according to physical energy content method ¹⁾	[%]	4.6
In total electricity supply *		10.2
In total heat supply **		5.3
In total road traffic		3.6

CO ₂ reduction through the use of renewable energy sources		
All renewable energy sources	[mill. t CO ₂]	84

Final energy supply from renewable energy sources in 2005			
Electricity	Wind energy	[TWh]	26.5
	Hydropower		21.5
	Photovoltaics		1.0
	Biomass (incl. biogas)		10.4
	Landfill and sewage gas		3.1
	Geothermal energy		0.0002
	Total electricity		62.5
Heat	Biomass (total)	76.0	
	Solar thermal energy	3.0	
	Geothermal energy	1.6	
	Total heat	80.6	
Biogenic fuels (total)		22.3	
Total:		165.4	


¹⁾ Calculation according to substitution method: approx. 6.6 %

* Share of gross electricity consumption

** Share of final energy consumption for heat

Source: BMU publication "Renewable energy sources in figures - national and international development", Status: May 2006

Contribution of renewable energy sources to energy supply in Germany in 2005

		Final energy	Primary energy equivalent		Share of total final energy consumption	Share of total primary energy consumption		
			acc. to physical energy content method	acc. to substitution method		acc. to physical energy content method	acc. to substitution method	
		[GWh]	[PJ]	[PJ]	[%]	[%]	[%]	[%]
Electricity generation	Hydropower	21,524	77.5	211.7	Share of electricity consumption	3.53	0.54	1.5
	Wind energy	26,500	95.4	251.5		4.34	0.67	1.7
	Photovoltaics	1,000	3.6	8.9		0.16	0.025	0.1
	Biogenic solid fuels	5,400	44.9	44.9		0.88	0.3	0.3
	Biogenic liquid fuels	430	3.6	3.6		0.07	0.03	0.02
	Biogas	2,500	20.8	20.8		0.41	0.15	0.14
	Sewage gas	864	7.2	7.2		0.14	0.05	0.05
	Landfill gas	2,200	18.3	18.3		0.36	0.1	0.1
	Biogenic share of waste	2,050	17.0	17.0		0.34	0.1	0.1
	Geothermal energy	0.2	0.0	0.0		0.00	0.0	0.0
	Total	62,468	288.2	583.8		10.2	2.0	4.0
Heat generation	Biogenic solid fuels (households)	56,000	201.6		Share of final energy consumption for heat	3.70	1.4	1.4
	Biogenic solid fuels (industry)	10,833	39.0			0.72	0.3	0.3
	Biogenic solid fuels, co-generation power installations and heating installations	1,993	7.2			0.13	0.05	0.05
	Biogenic liquid fuels	417	1.5			0.03	0.01	0.01
	Biogenic gaseous fuels	3,194	11.5			0.21	0.08	0.08
	Biogenic share of waste	3,577	12.9			0.24	0.09	0.09
	Solar thermal energy	2,960	10.7			0.20	0.07	0.07
	Deep geothermal energy	114	0.4			0.01	0.003	0.003
	Near-surface geothermal energy	1,472	5.3			0.10	0.04	0.04
	Total	80,560	290.0			5.3	2.0	2.0
Fuels	Biodiesel	18,600	67.0		Share of fuel consumption for road traffic	2.99	0.5	0.5
	Vegetable oil	2,047	7.4			0.33	0.05	0.05
	Bioethanol	1,683	6.0			0.27	0.04	0.04
	Total	22,330	80.4			3.6	0.6	0.6
Total		165,358	658.6	954.2	6.4	4.6	6.6	

Source: BMU publication "Renewable energy sources in figures - national and international development", Status: May 2006

Renewable energy sources as a share of energy supply in Germany

	1998	1999	2000	2001	2002	2003 ^{*)}	2004 ^{*)}	2005 ^{*)}
Final energy consumption	[%]							
Electricity generation (in relation to total gross electricity consumption)	4.8	5.5	6.3	6.7	7.8	8.1	9.5	10.2
Heat supply (in relation to total heat supply)	3.5	3.5	3.9	3.8	3.9	4.9	5.1	5.3
Fuel consumption (in relation to fuel consumption in road traffic)	0.2	0.2	0.4	0.6	0.9	1.4	1.9	3.6
Share of renewable energies in Germany's total final energy consumption	3.1	3.3	3.8	3.8	4.3	5.1	5.7	6.4
Primary energy consumption (PEC)	[%]							
Electricity generation (in relation to total PEC)	0.8	0.9	1.1	1.1	1.4	1.6	1.8	2.0
Heat supply (in relation to total PEC)	1.3	1.3	1.4	1.4	1.5	1.9	1.9	2.0
Fuel consumption (in relation to total PEC)	0.03	0.03	0.06	0.1	0.1	0.2	0.3	0.6
Share of total PEC	2.2	2.3	2.6	2.7	3.0	3.6	4.0	4.6

Share in PEC calculated according to physical energy content method

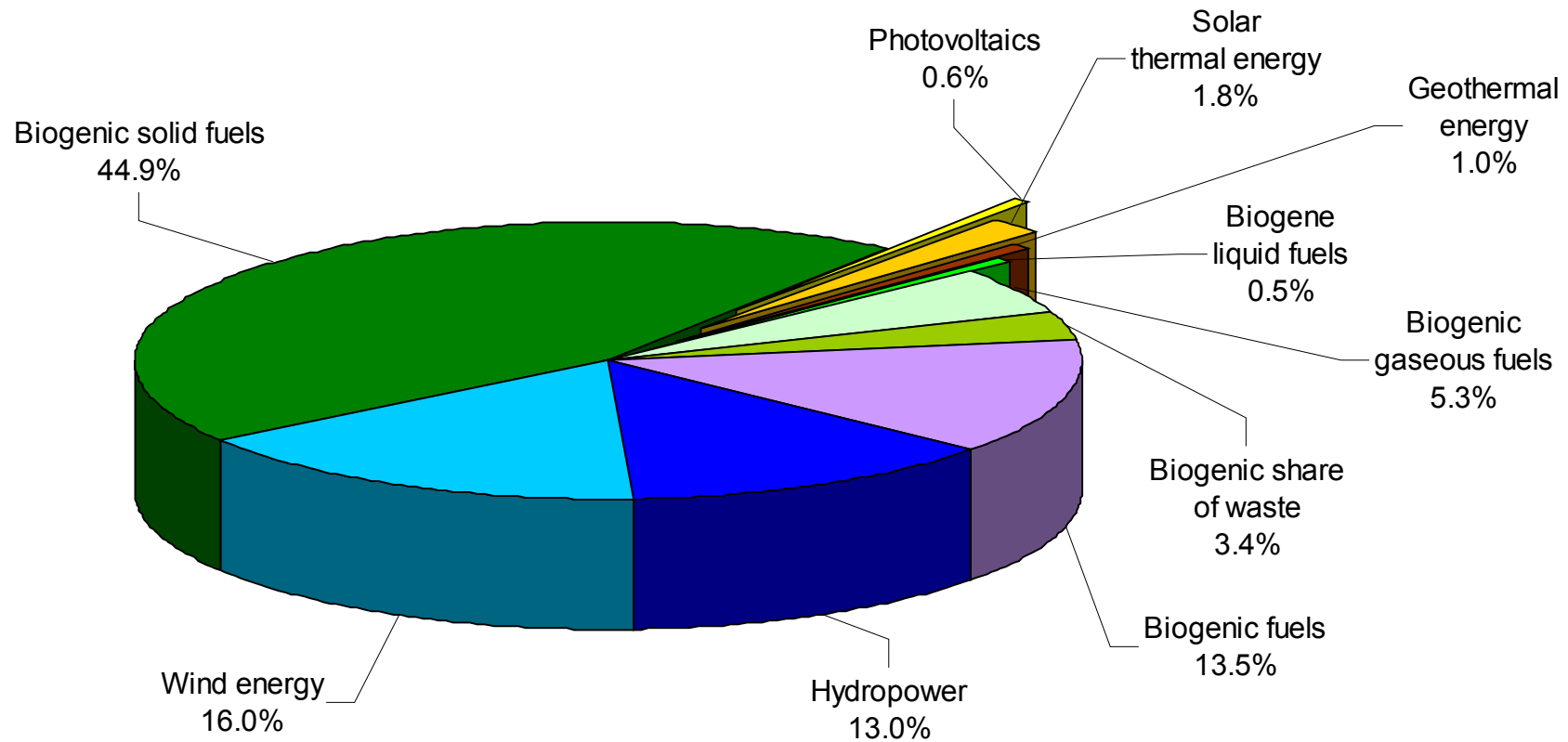
*) provisional figures

from 2003 new assessment of heat supply from renewables due to improved data availability (survey pursuant to Energiestatistik-Gesetz (EnStatG/Act on Energy Statistics)

Source: BMU publication "Renewable energy sources in figures - national and international development", Status: May 2006

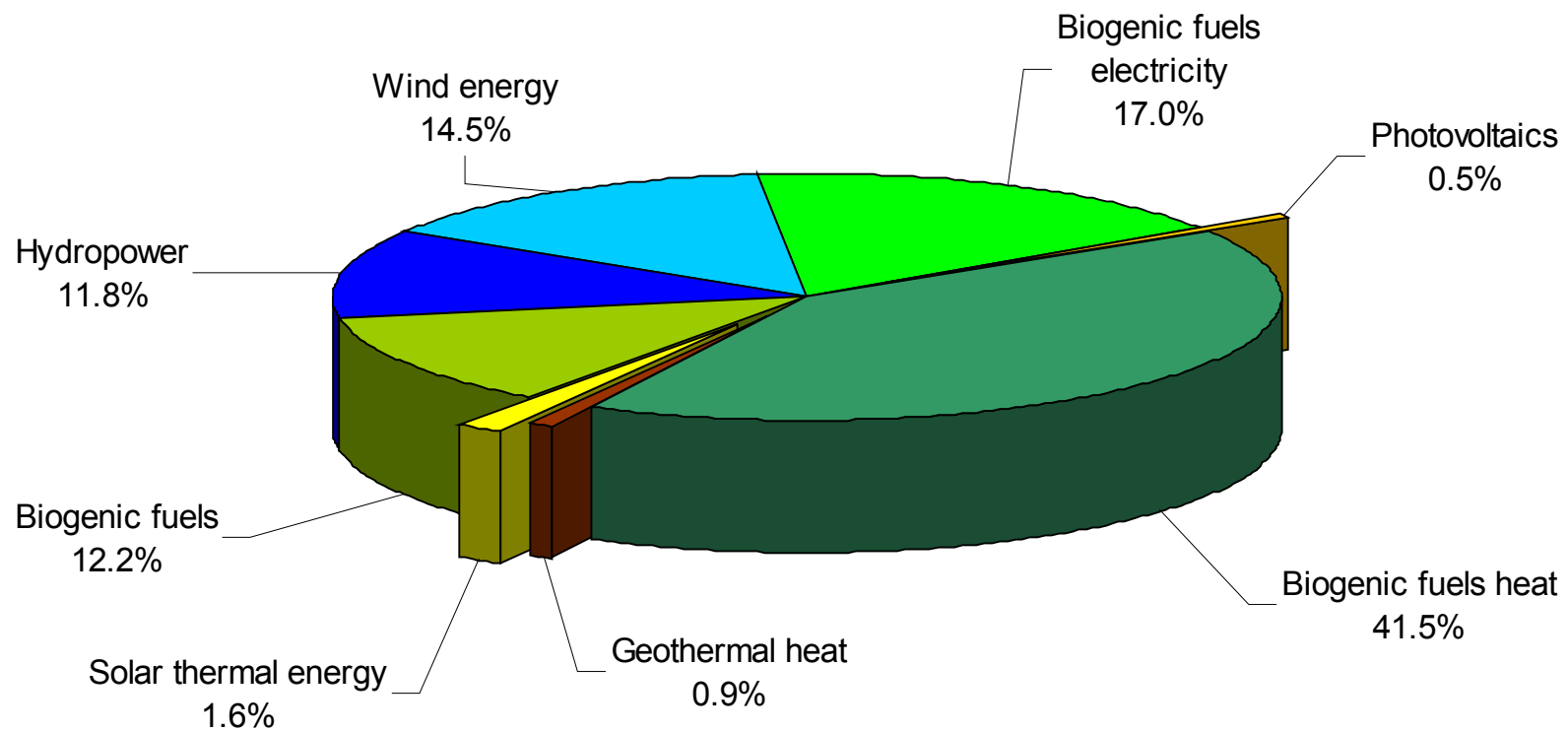
Structure of final energy supply from renewable energy sources in Germany in 2005

Total: 165 TWh



Primary energy supply from renewable energy sources in Germany in 2005

Total: 658.6 PJ



Source: BMU publication "Renewable energy sources in figures - national and international development", Status: May 2006

Electricity supply from renewable energy sources

Contribution of renewable energy sources to electricity generation in Germany 1990 - 2005

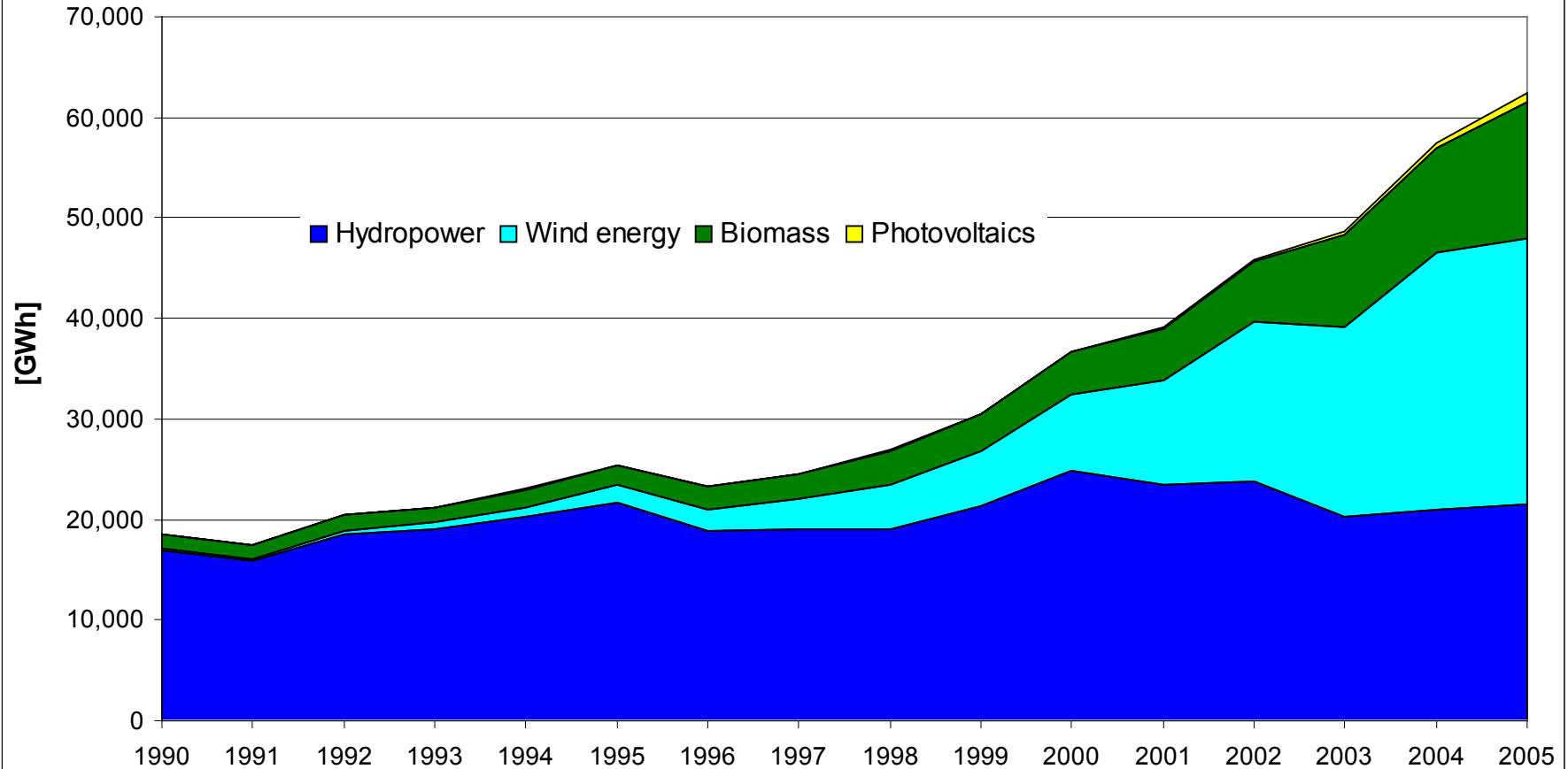
	Hydropower	Wind energy	Biomass **	Photovoltaics	Geothermal energy	Total electricity generation	Share of gross electricity consumption
[GWh]							
1990	17,000	40	1,422	1	0	18,463	3.4
1991	15,900	140	1,450	2	0	17,492	3.2
1992	18,600	230	1,545	3	0	20,378	3.8
1993	19,000	670	1,570	6	0	21,246	4.0
1994	20,200	940	1,870	8	0	23,018	4.3
1995	21,600	1,800	2,020	11	0	25,431	4.7
1996	18,800	2,200	2,203	16	0	23,219	4.2
1997	19,000	3,000	2,479	26	0	24,505	4.5
1998	19,000	4,489	3,392	32	0	26,913	4.8
1999	21,300	5,528	3,641	42	0	30,511	5.5
2000	24,936	7,550	4,129	64	0	36,679	6.3
2001	23,383	10,509	5,065	116	0	39,073	6.7
2002	23,824	15,859	5,962	188	0	45,833	7.8
2003*	20,350	18,859	9,132	333	0	48,674	8.1
2004*	21,000	25,509	10,463	557	0.2	57,529	9.5
2005*	21,524	26,500	13,444	1,000	0.2	62,468	10.2

* provisional figures

** incl. biogenic share of waste of 50 %

Source: BMU publication "Renewable energy sources in figures - national and international development", Status: May 2006

Contribution of renewable energy sources to electricity generation in Germany 1990 - 2005

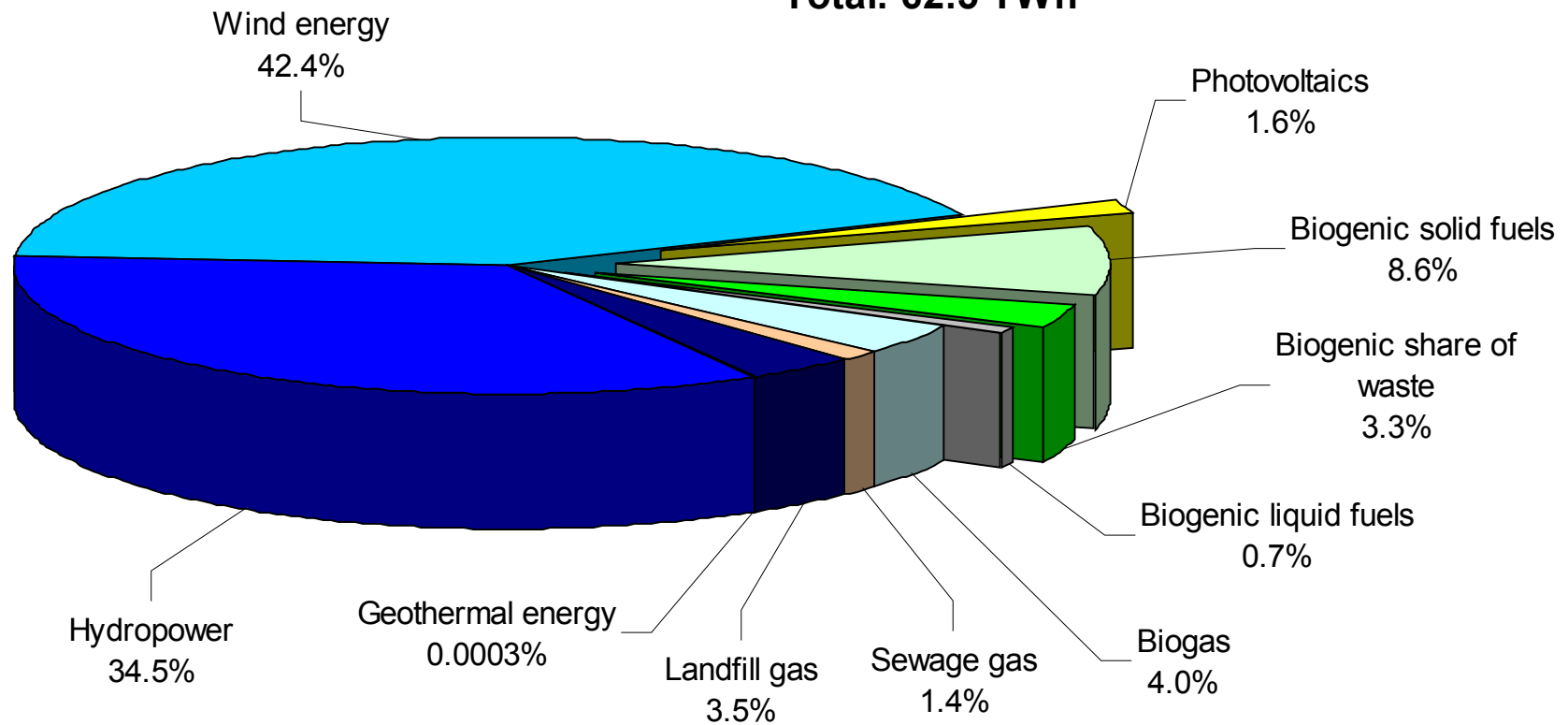


Source: BMU publication "Renewable energy sources in figures - national and international development", Status: May 2006; Data on biomass includes biogenic share of waste of 50%; electricity from geothermal energy is not presented due to the low volumes of electricity

Structure of electricity generation from renewable energy sources in Germany in 2005

Final energy for electricity generation

Total: 62.5 TWh



Heat supply from renewable energy sources

Contribution of renewable energy sources to heat supply in Germany 1990 - 2005

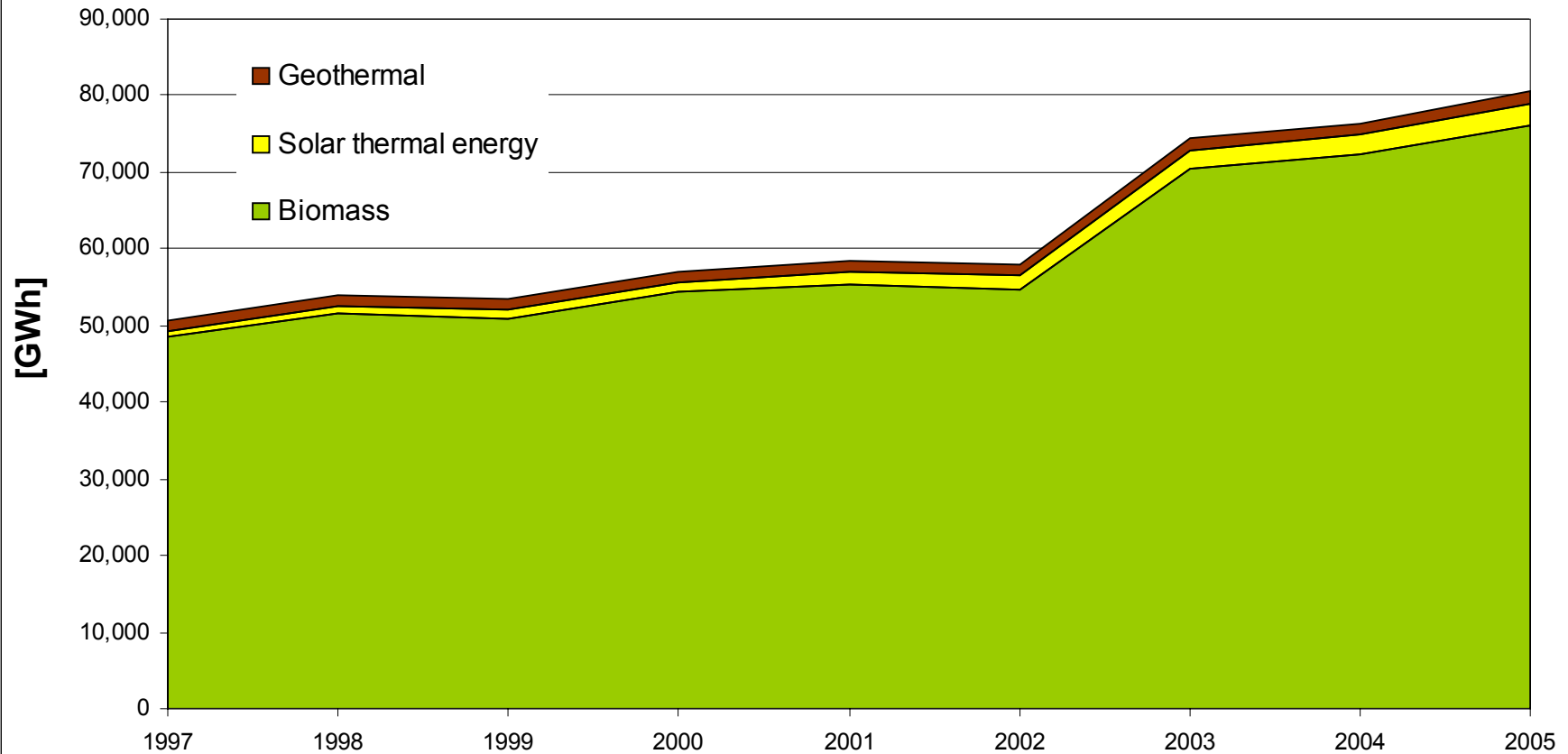
	Biomass	Solar thermal energy	Geothermal energy	Total heat generation	Share of total heat supply
	[GWh]				[%]
1990	n/a	130	n/a	n/a	n/a
1991	n/a	166	n/a	n/a	n/a
1992	n/a	218	n/a	n/a	n/a
1993	n/a	279	n/a	n/a	n/a
1994	n/a	351	n/a	n/a	n/a
1995	n/a	440	1,425	n/a	n/a
1996	n/a	550	1,383	n/a	n/a
1997	48,546	695	1,335	50,576	3.2
1998	51,613	857	1,384	53,854	3.5
1999	50,951	1,037	1,429	53,417	3.5
2000	54,314	1,279	1,433	57,026	3.9
2001	55,326	1,626	1,447	58,399	3.8
2002	54,626	1,955	1,483	58,064	3.9
2003	70,346	2,465	1,532	74,343	4.9
2004	72,259	2,573	1,558	76,390	5.1
2005	76,014	2,960	1,586	80,560	5.3

Source: BMU publication "Renewable energy sources in figures - national and international development", Status: May 2006



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Contribution of renewable energy sources to heat supply in Germany 1997 - 2005

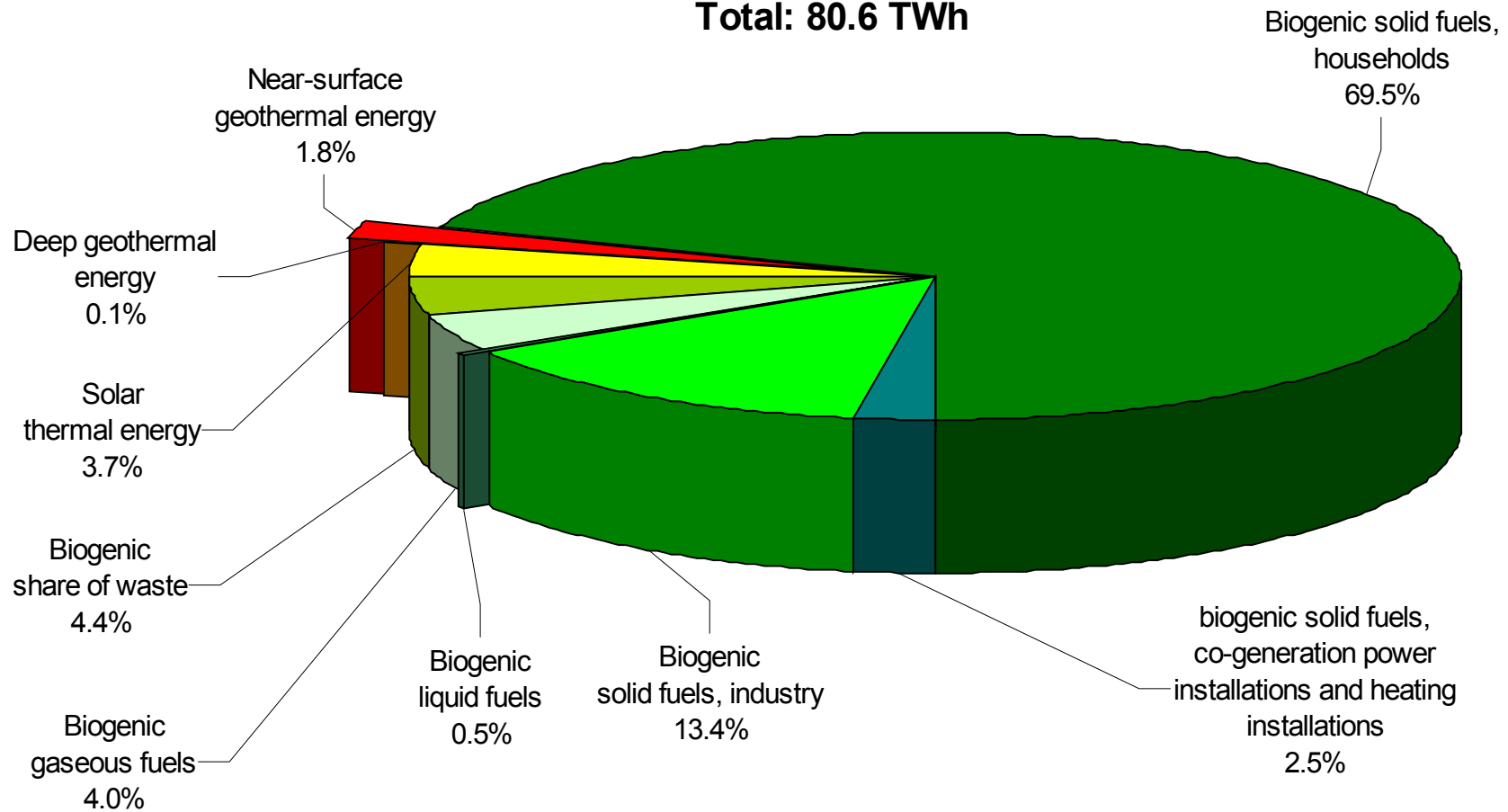


Source: BMU publication "Renewable energy sources in figures - national and international development", Status: May 2006; for the years 1990 - 1994 no data for geothermal energy and for the years 1990 - 1996 no data for biomass

Structure of heat supply from renewable energy sources in Germany in 2005

Final energy for heat generation

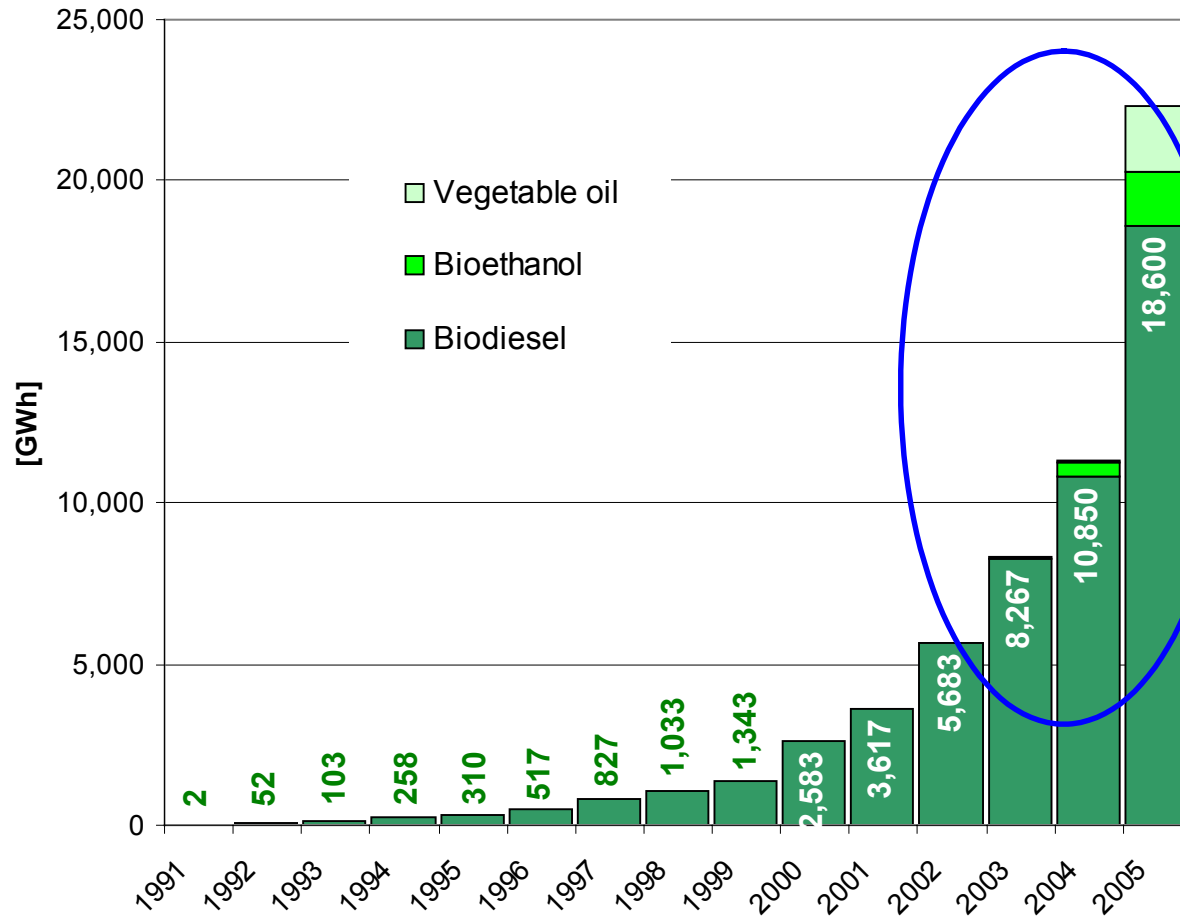
Total: 80.6 TWh



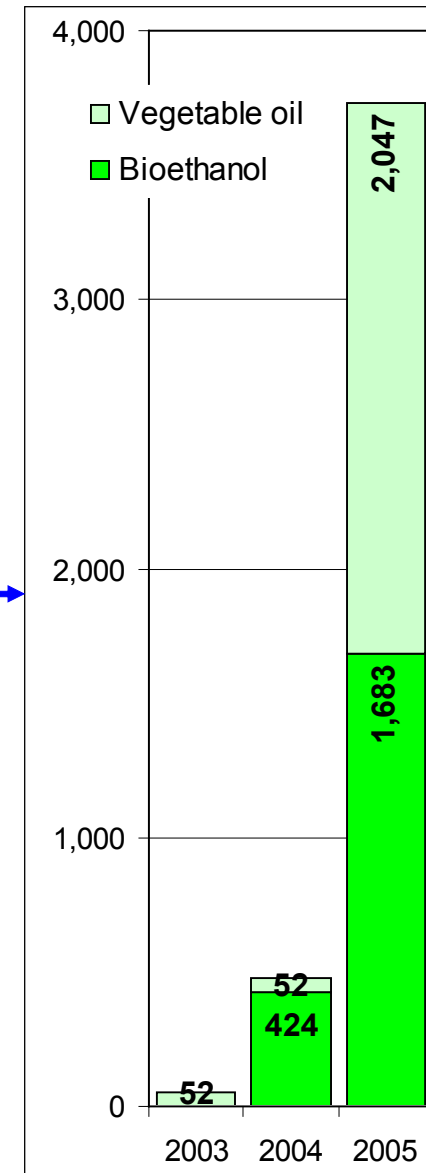
Source: BMU publication "Renewable energy sources in figures - national and international development", Status: May 2006;

Biogenic fuels

Contribution of renewable energy sources to fuel supply in Germany 1991 - 2005

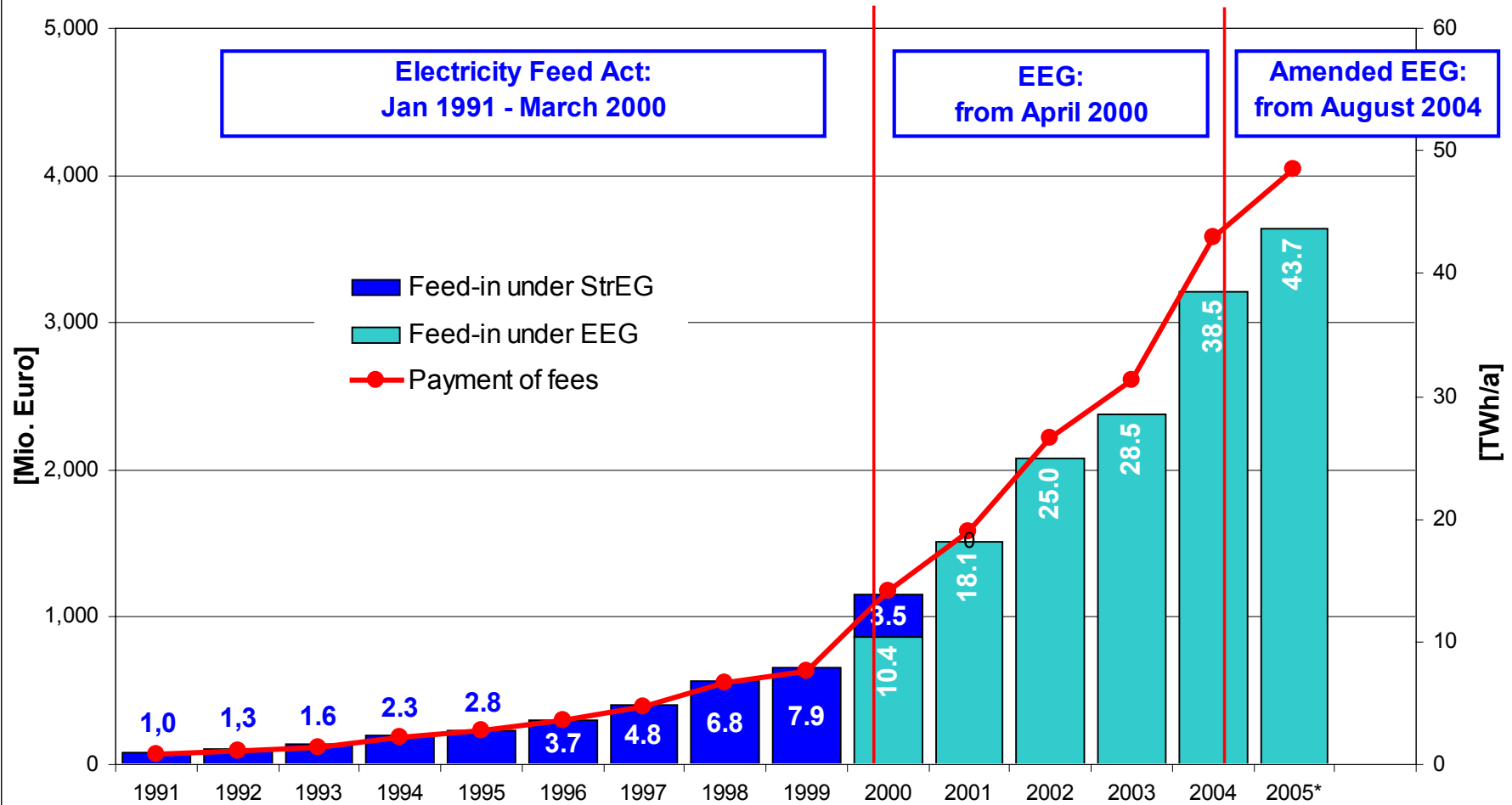


Source: BMU publication "Renew able energy sources in figures - national and international development", Status: May 2006



**Feed-in and payment for
electricity from renewable energy
sources**

Feed-in and payment under the Electricity Feed Act (StrEG) and the Renewable Energy Sources Act (EEG) in Germany 1991 - 2005

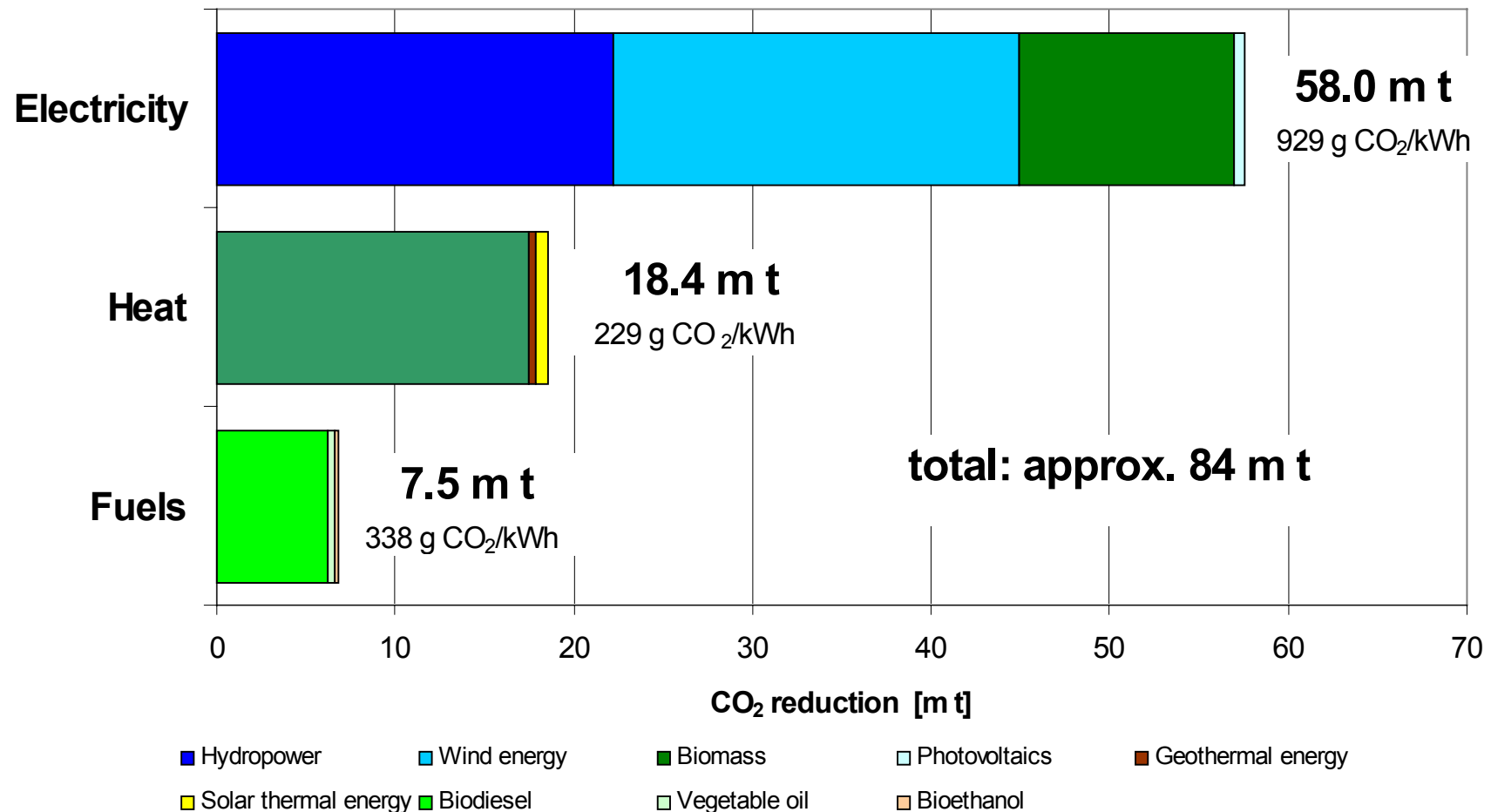


* 2005: estimate, final figures not yet available;

Source: BMU publication "Renewable energy sources in figures - national and international development", Status: May 2006

**CO₂ avoidance through the use
of renewable energy sources**

Emissions avoided through the use of renewable energy sources in Germany in 2005

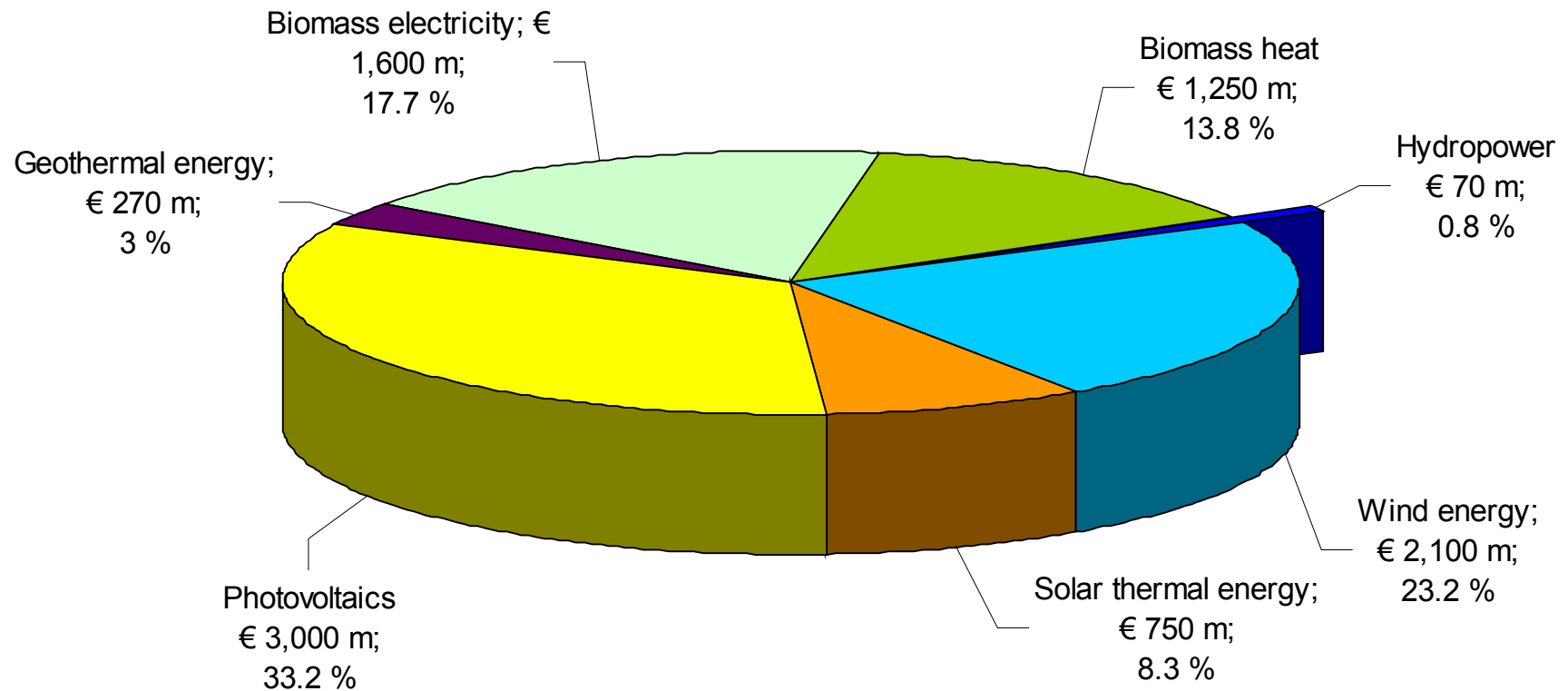


Source: BMU publication "Renewable Energy sources in figures - national and international development", Status: May 2006

Turnover with renewable energy sources

Turnover from the construction of plants for the use of renewable energy sources in Germany in 2005

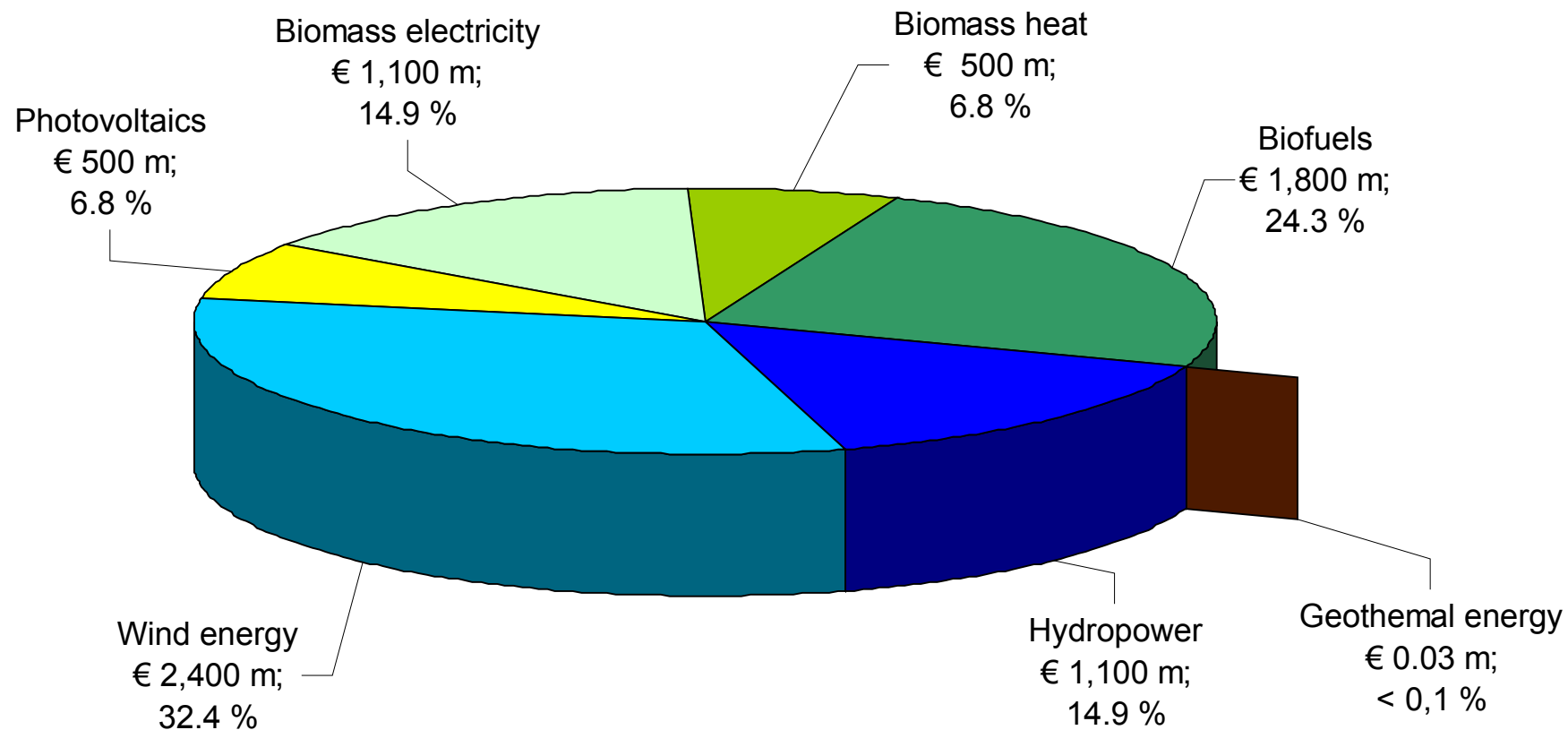
Total: approx. € 9.0 billion



Source: BMJ publication "Renew able energy sources in figures - national and international development", Status: May 2006

Turnover from the operation of plants for the use of renewable energy sources in Germany in 2005

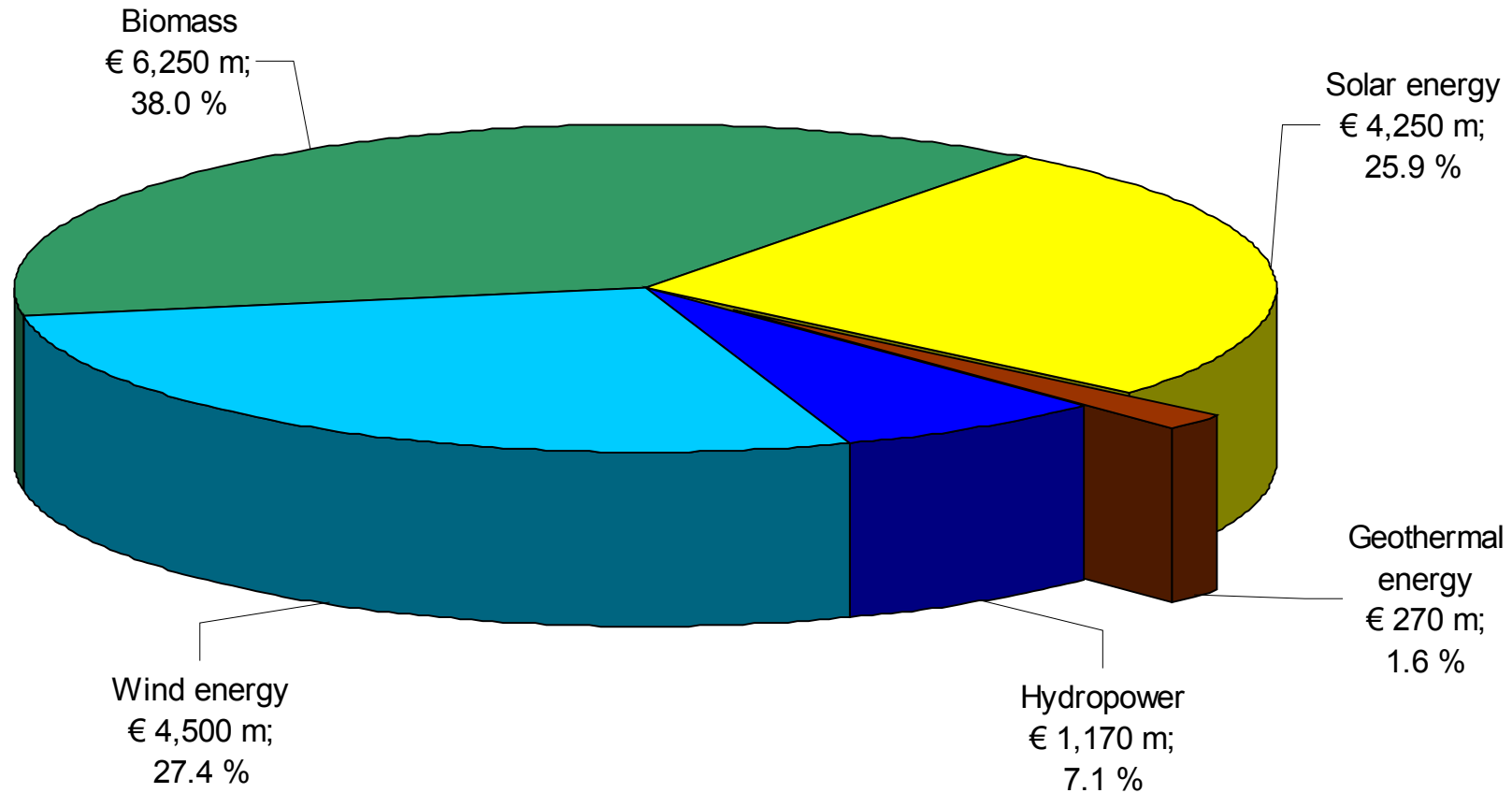
Total: approx. € 7.4 billion



Source: BMU publication "Renewable energy sources in figures - national and international development", Status: May 2006

Total turnover with renewable energy sources in Germany in 2005

Total: approx. € 16.4 billion

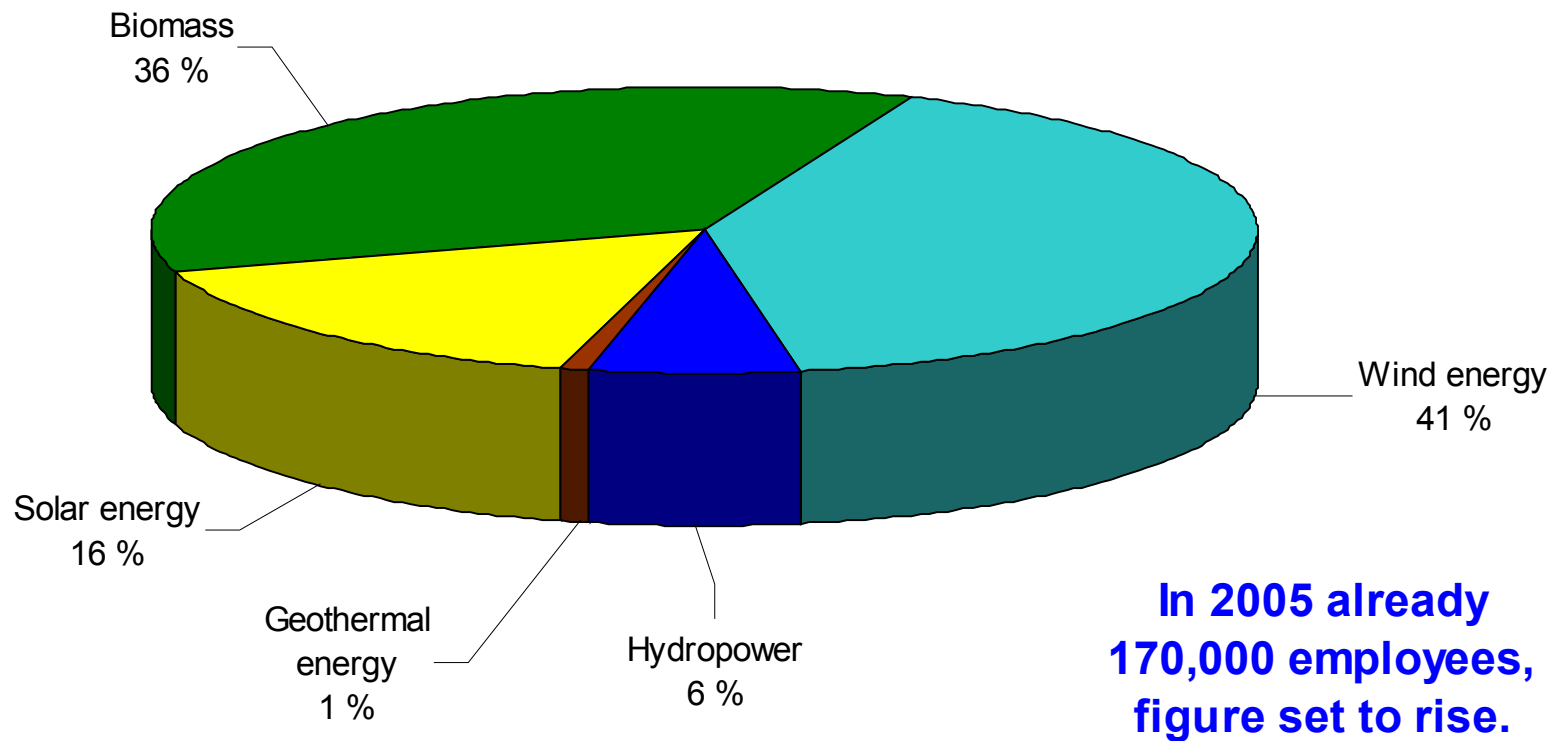


Source: BMU publication "Renewable energy sources in figures - national and international development", Status: May 2006

Employees in the renewable energy sources sector

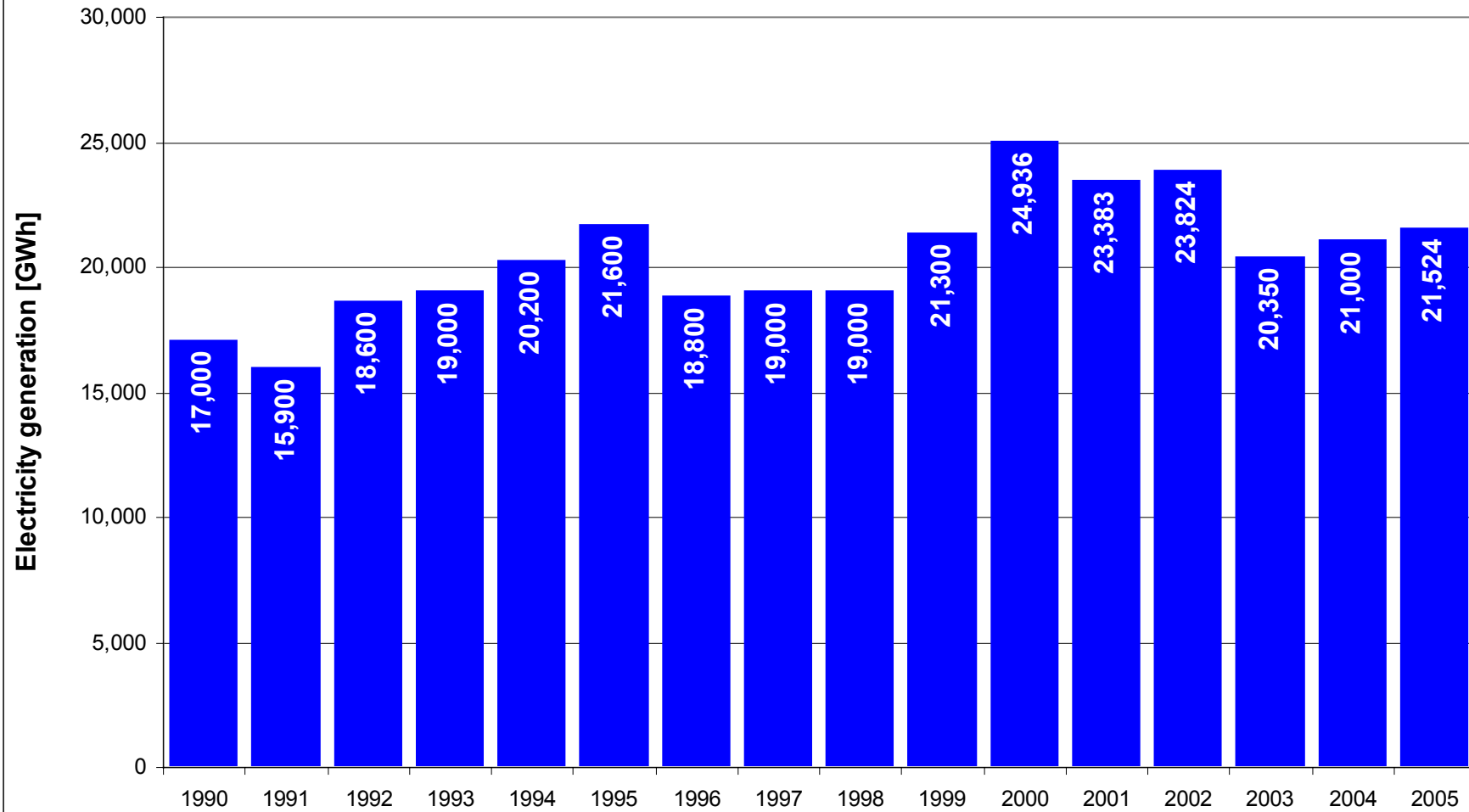
Employees in the renewable energy sources sector in Germany in 2004

Total: approx. 157,000 jobs



Hydropower use for electricity generation

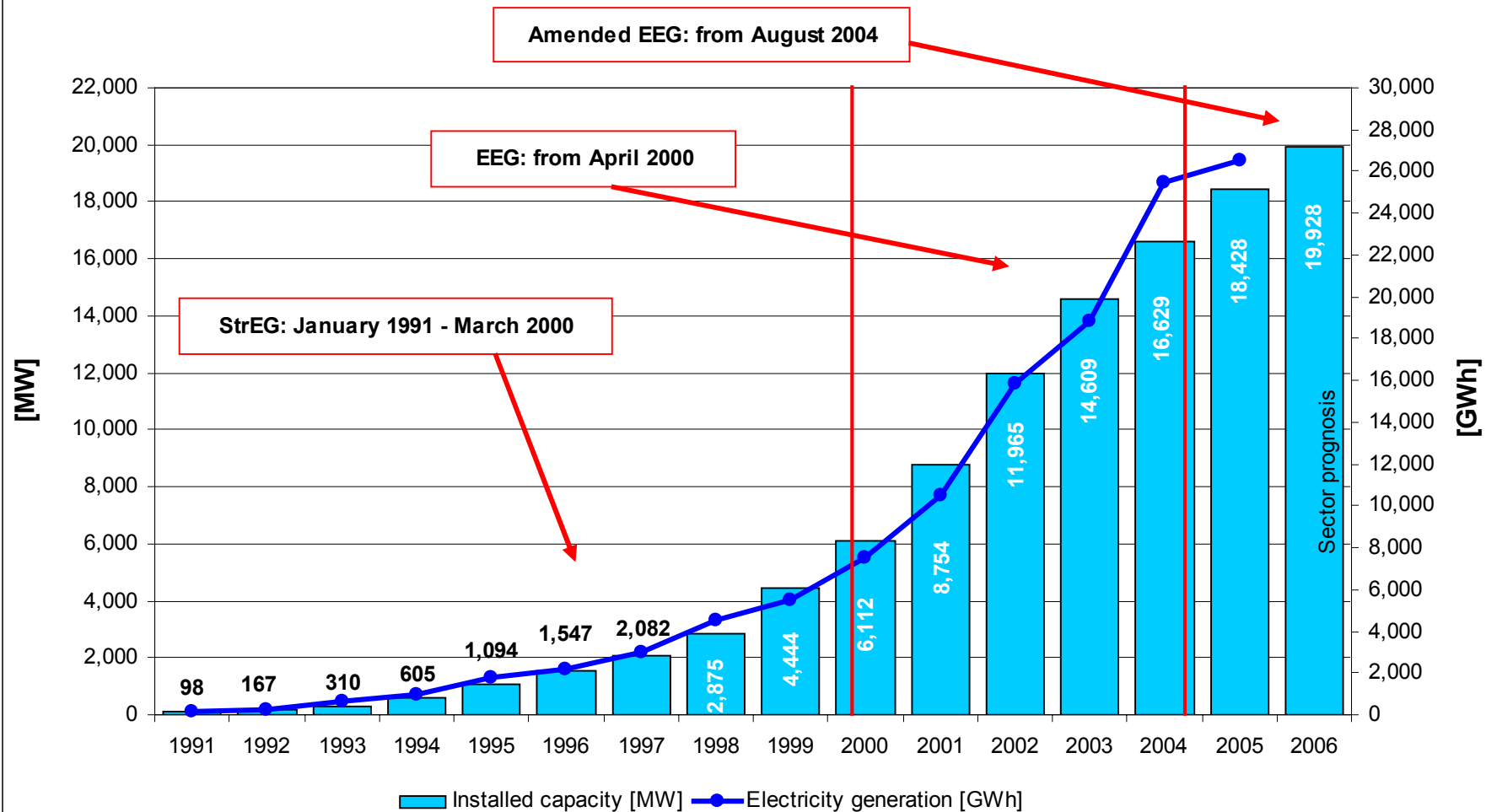
Development of hydropower use in Germany 1990 - 2005



Sources: BMU publication "Renew able energy sources in figures - national and international development", Status: May 2006

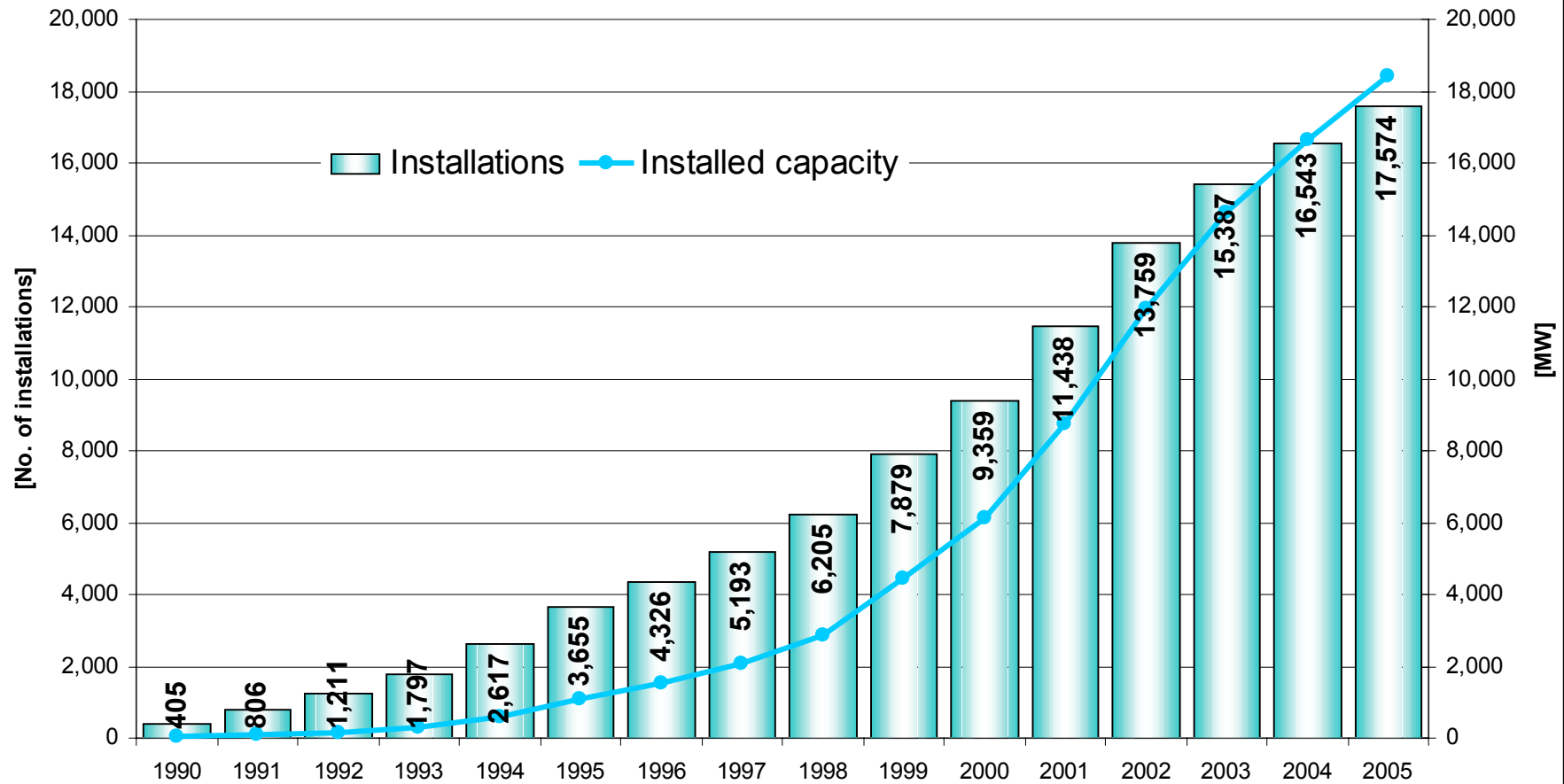
Wind power use for electricity generation

Development of wind energy use in Germany 1991 - 2005



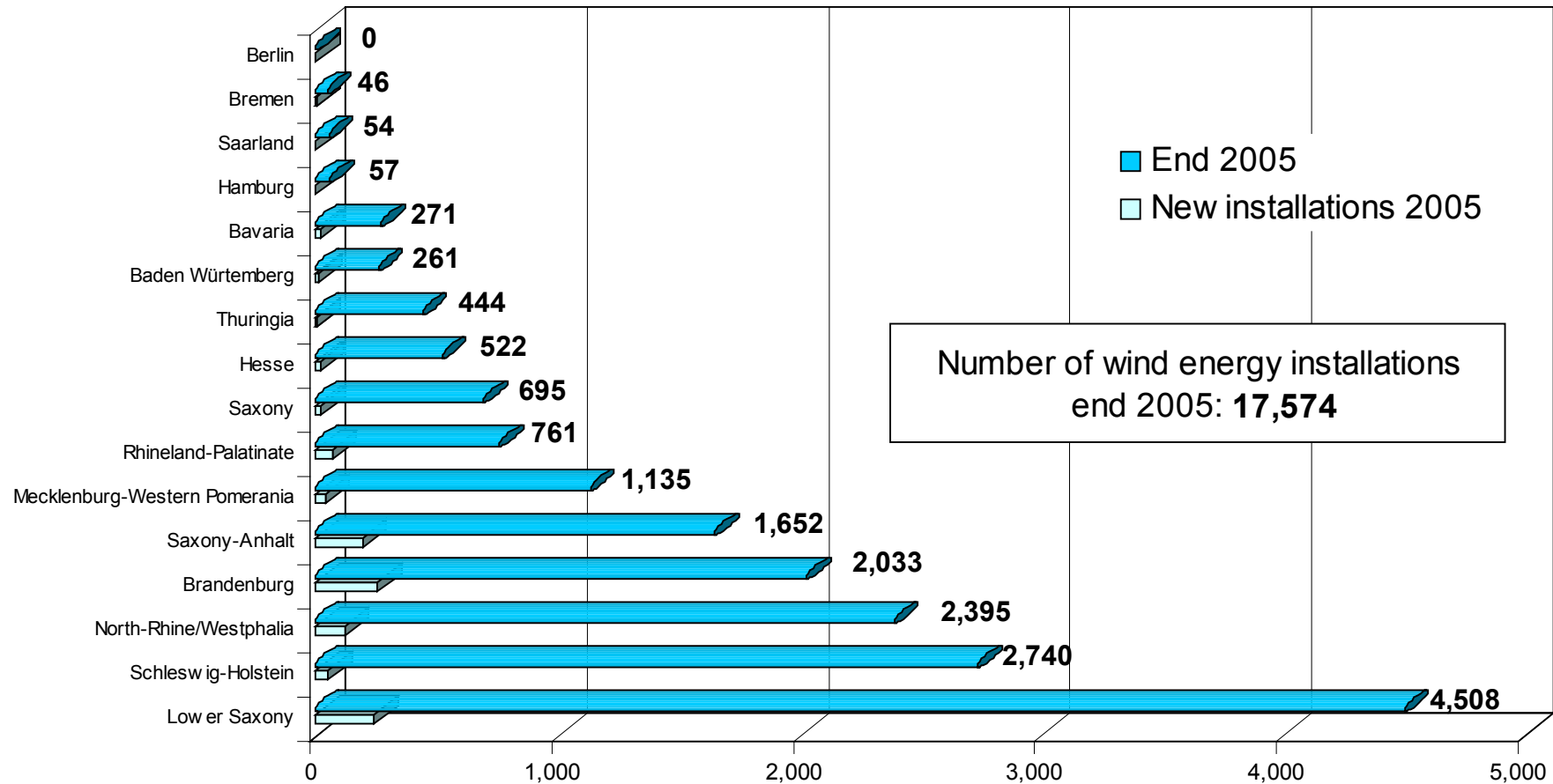
Source: BMU publication "Renew able energy sources in figures - national and international development", Status: May 2006

Number of wind energy installations and installed capacity in Germany 1990 - 2005



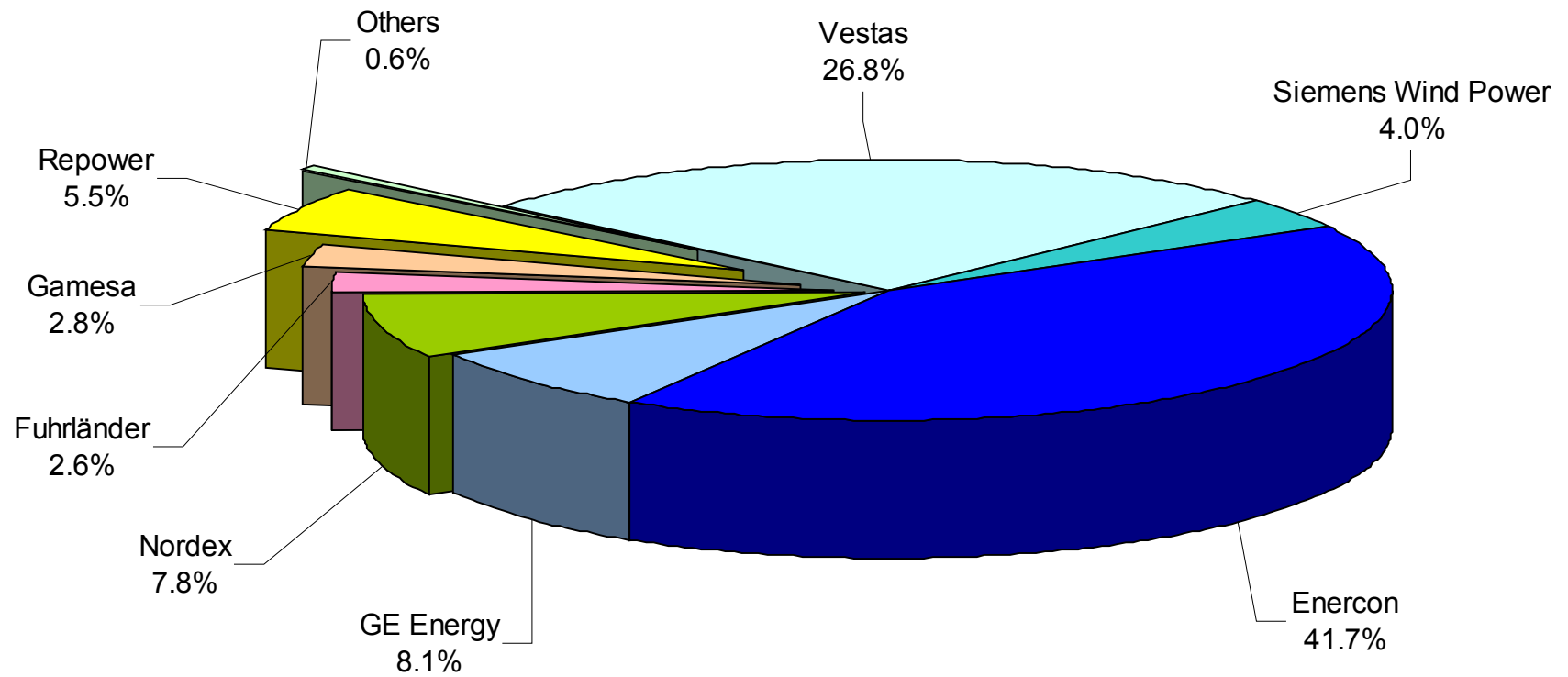
Sources: Deutsches Windenergie-Institut (DEWI); BMU publication "Renewable Energy sources in figures - national and international development", Status: May 2006

Number of wind energy installations in the Federal Länder in 2005



Source: Bundesverband Windenergie e. V. (BWE), VDMA Power Systems, January 2006

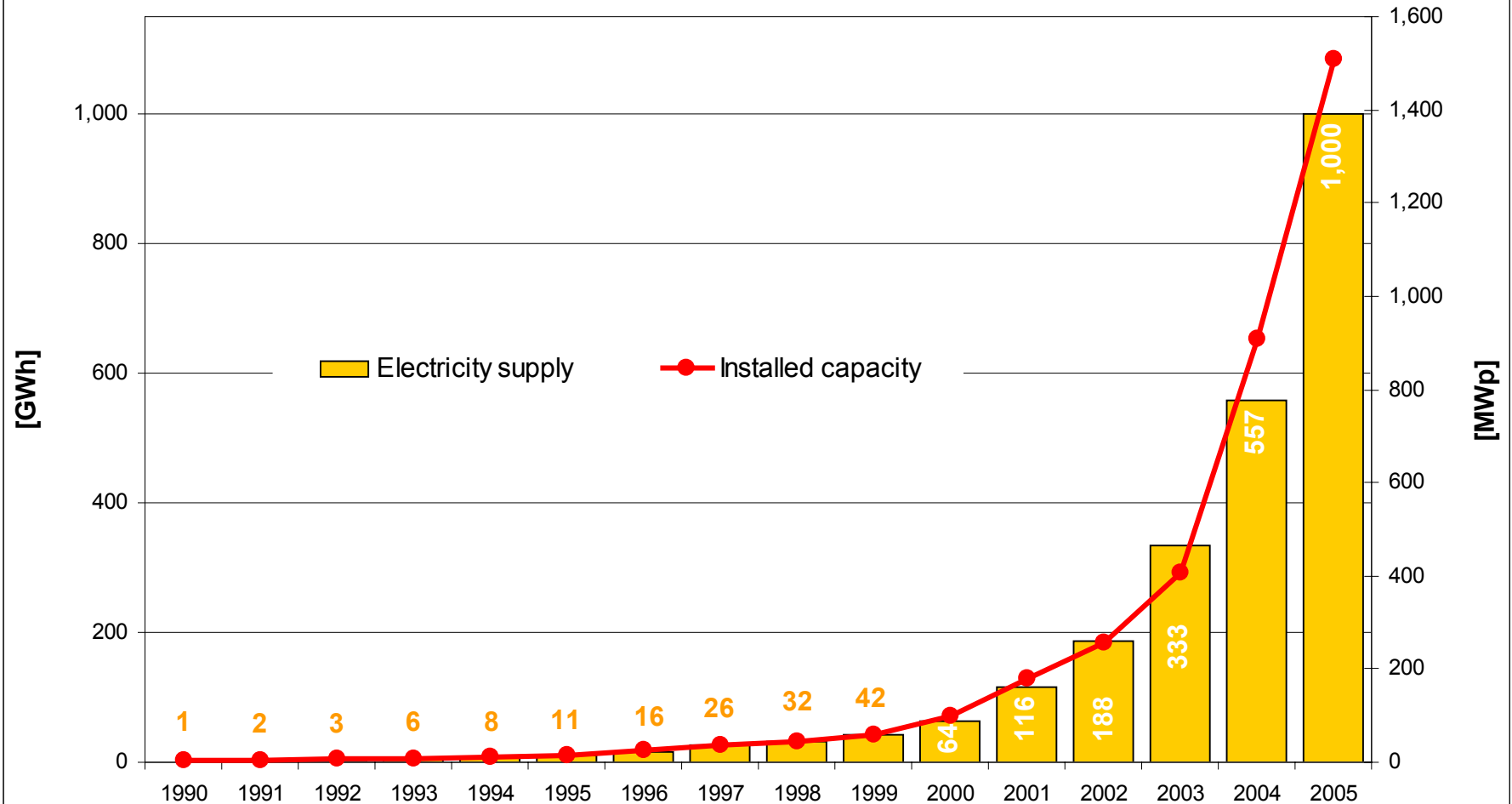
Share of providers of wind energy installations in newly installed capacity in Germany up to end of 2005



Source: Deutsches Windenergie-Institut (DEWI), January 2006

Electricity generation from solar power through photovoltaic installations

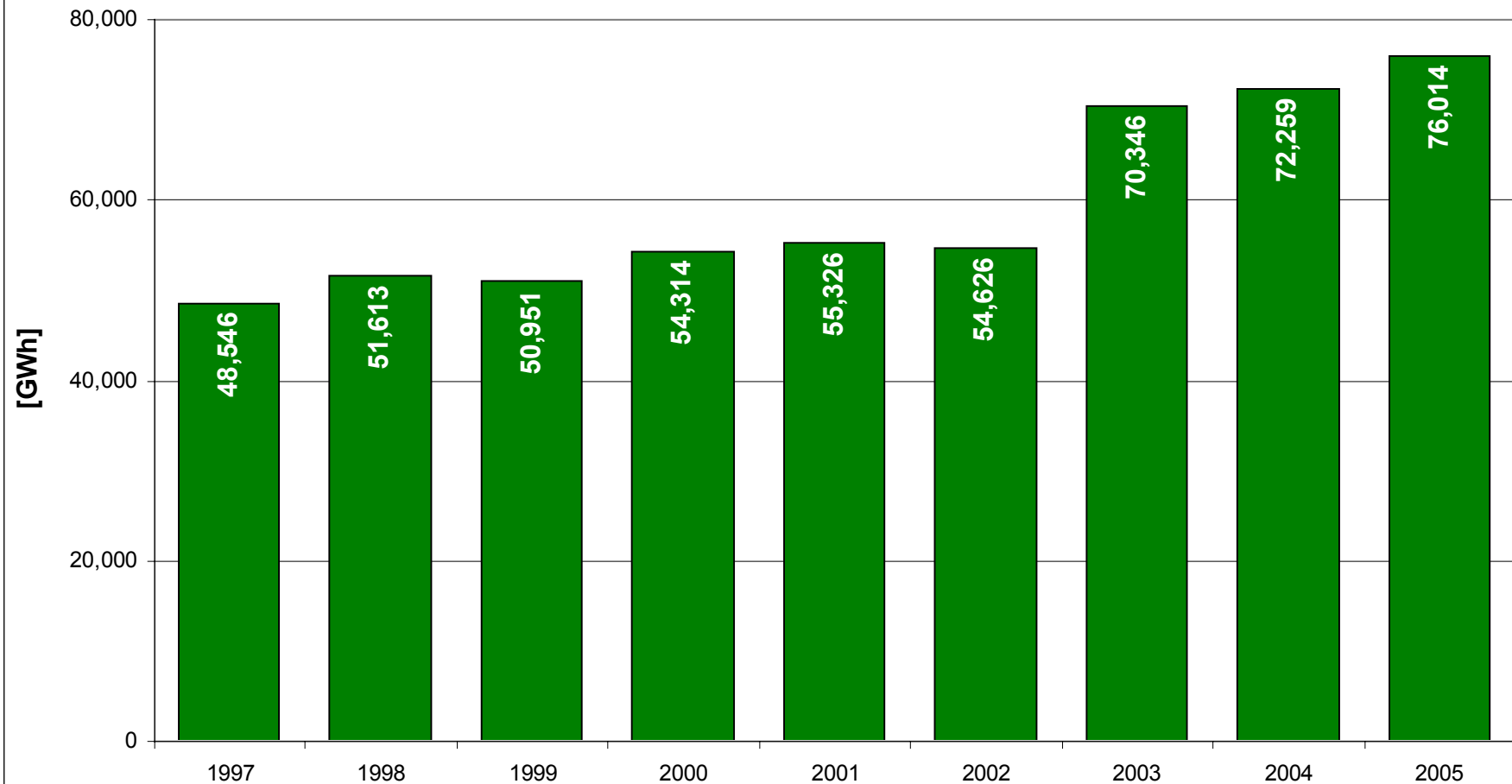
Installed capacity and energy supply from photovoltaic installations in Germany 1990 - 2005



Source: BMU publication "Renew able energy sources in figures - national and international development", Status: May 2006

Biomass use for heat supply

Development of biomass use for heat supply in Germany 1997 - 2005



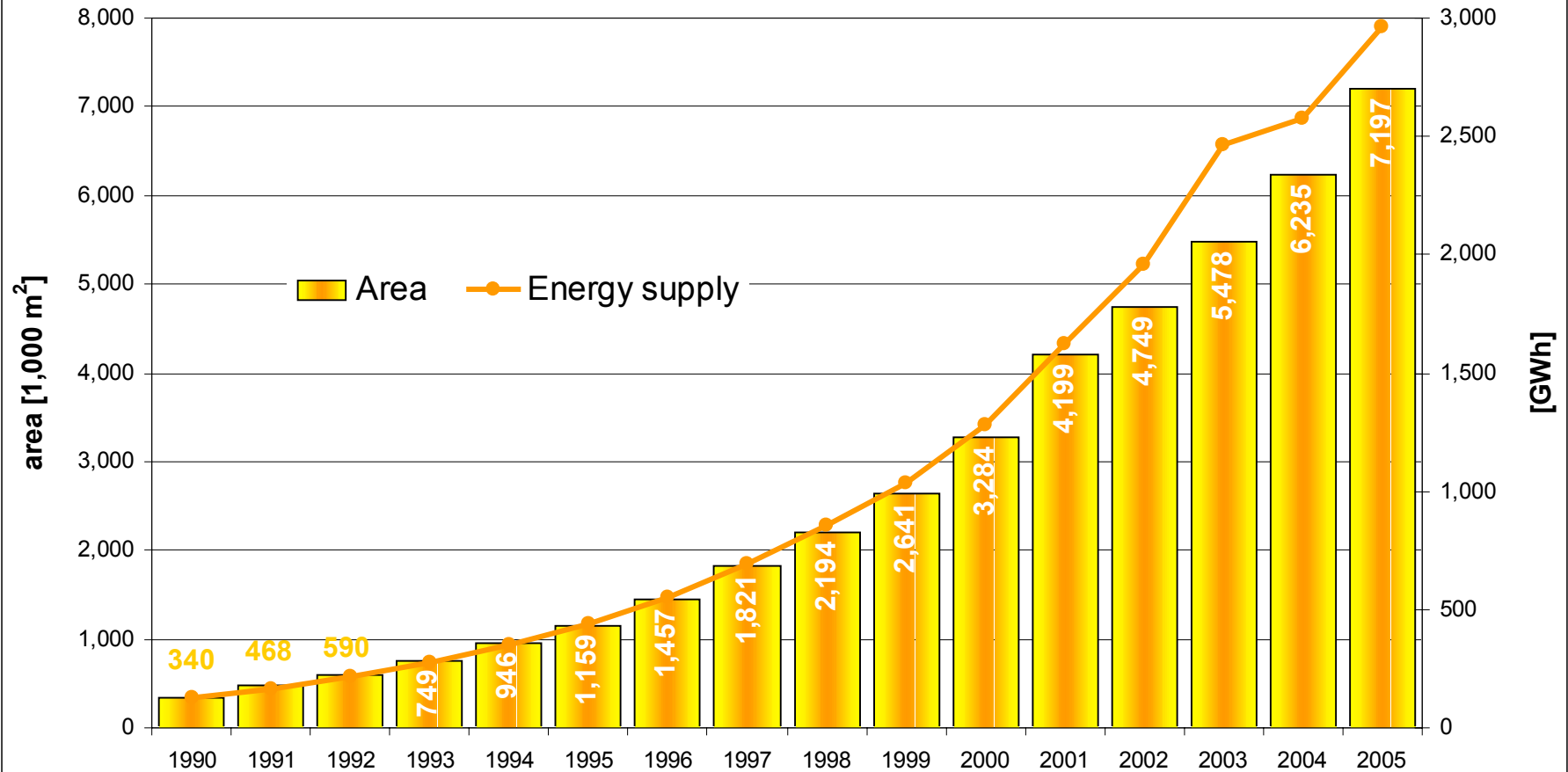
Source: BMU publication "Renew able energy sources in figures - national and international development", Status: May 2006; data on biomass includes biogenic share of waste of 50 %

Use of solar thermal energy for heat supply



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Development of collector area and energy supply of solar thermal installations for heat supply in Germany 1990 - 2005

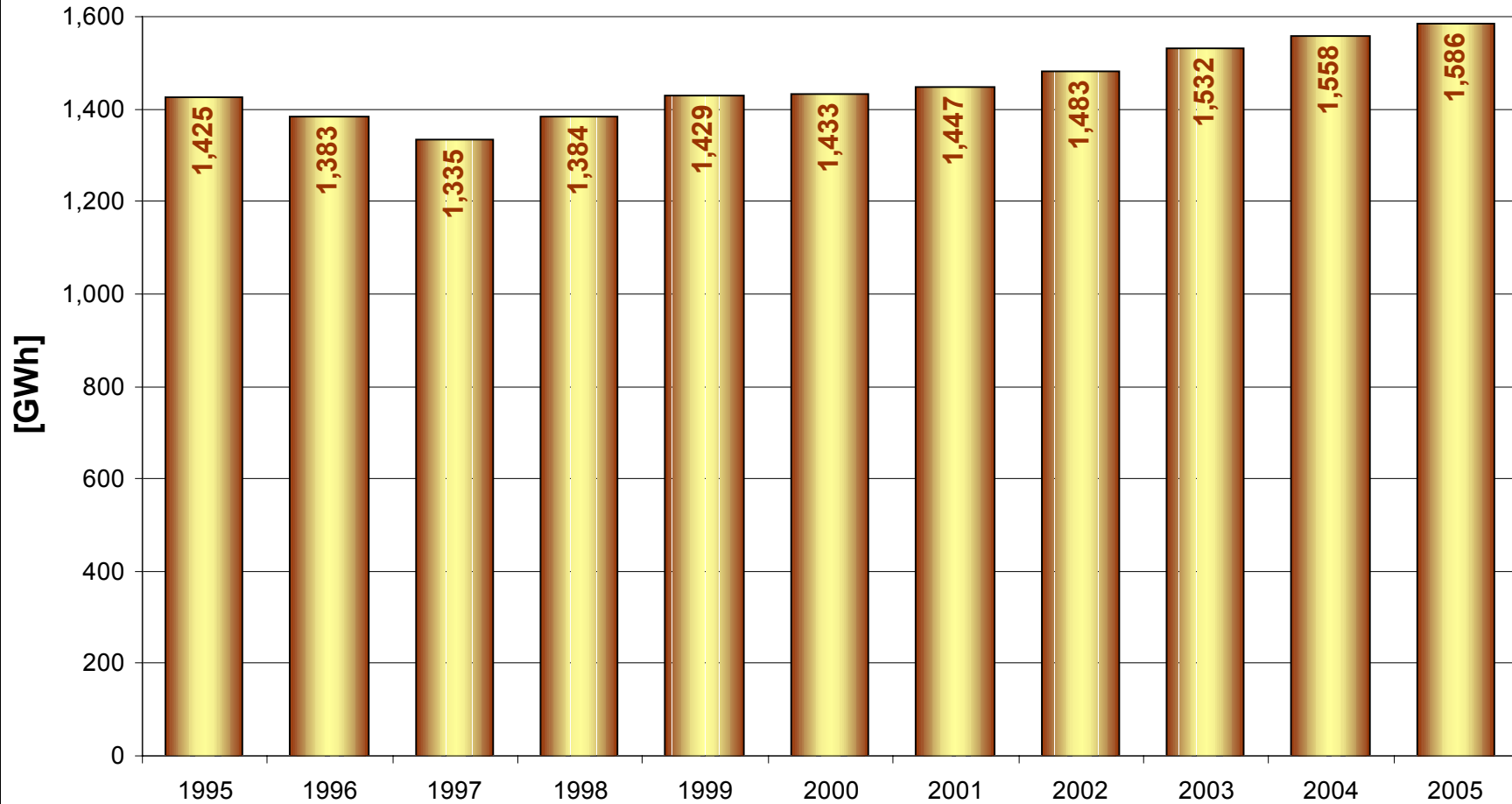


Source: BMU publication "Renewable energy sources in figures - national and international development", Status: May 2006

Use of geothermal energy for heat supply



Development of geothermal energy use for heat supply in Germany 1995 - 2005



Source: BMU publication "Renew able energy sources in figures - national and international development", Status: May 2006