Germany's Policy Schemes to Foster RET (Renewable Energy Technologies) Deployment

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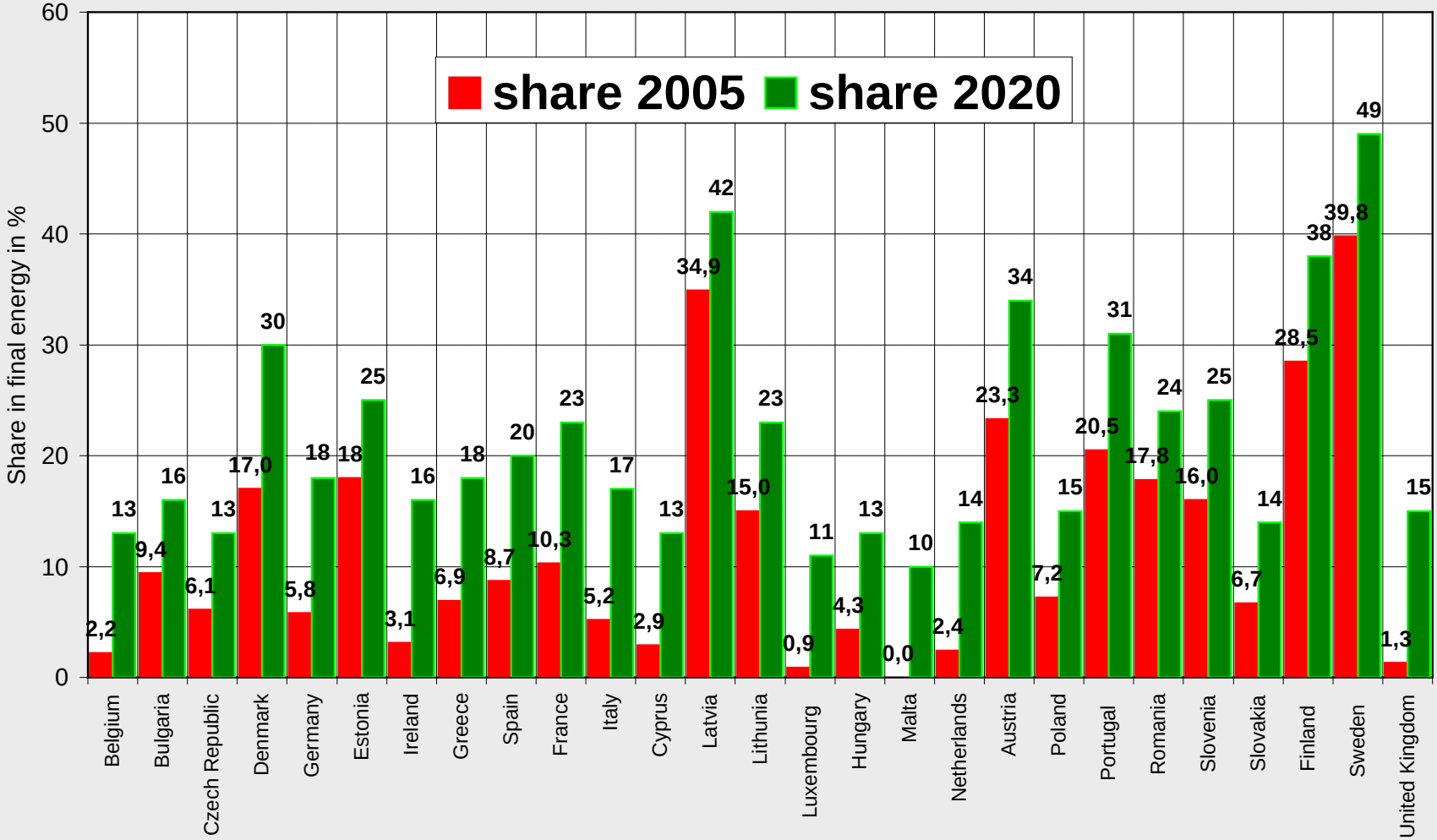
Overview

- Targets on European and national Level
- Policy Regulations in Germany to foster Renewable Energy Technologies regarding the Heat, Fuel and Electricity Sector
- Results
- Conclusions

Targets and Directives on EU level concerning renewable energies in the context of climate protection policies

- **A binding target of a 20% share of renewable energies in overall EU energy consumption by 2020, differentiated by member states, and a 10% binding minimum target to be achieved by all Member States for the share of biofuels in overall EU transport fuel consumption by 2020.**
- **Directive 2001/77/EC of the European Parliament and of the Council of 27 September 2001 on the promotion of electricity produced from renewable energy sources in the internal electricity market.**
- **Directive of the European Parliament and of the Council on the promotion of the use of energy from renewable sources amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC. Brussels, 26 March 2009.**

Quantitative targets concerning renewable energies in EU Member States by 2020



source: EU Commission, 2008.

Germany's targets concerning renewable energies

Massive expansion of renewable energies by 2020:

- **Electricity sector:** **25 to 30 % at least**
- **Heat sector:** **14 %**
- **bio-fuel production:** **17 % (by energy content)**
- **biogas:** **10 % in 2030.**

The German Laws on Renewable Energy Sources (Heat Sector, Biogas, -fuels, -mass)

- Act on the Promotion of Renewable Energies in the Heat Sector (Erneuerbare-Energien-Wärmegesetz – EEWärmeG) of 2008
- Market Incentive Programme for Renewable Energies (2009: 240 million Euro; through investment grants, bonus for highly efficient installations, soft loans via KfW – 60 years old Kreditanstalt für Wiederaufbau “bank for reconstruction”)
- Ordinance on the Access to the Gas Distribution System. Special rules for the Feed-in of Biogas 17 October 2008
- Act amending the Promotion of Biofuels (draft of the German Government), 22 October 2008
- Ordinance regarding the Requirements for a sustainable Production of liquid Biomass (e.g. rape, palm, soya oil) for Electricity Production according to the Renewable Energy Act coming into force on 24 August 2009)

The Act on the Promotion of Renewable Energies in the Heat Sector (details)

Owners of newly constructed buildings must cover a share of the thermal energy demand with renewable energies:

- **solar radiation at least 15 percent**
- **gaseous biomass meet at least 30**
- **liquid and solid biomass at least 50 percent**
- **geothermal energy and ambient heat at least 50 percent**

This obligation shall apply to all buildings with an effective area of more than 50 square meters in which energy is used for heating or cooling.

The Länder can lay down an obligation to use renewable energies in existing buildings.

The Act on the Promotion of Renewable Energies in the Heat Sector: Alternative Measures

The obligation shall be deemed to be met if the obligated parties

1. cover at least 50 percent of the thermal energy demand

a) from installations for the use of waste heat or

b) directly from combined heat and power (CHP) installations

2. take stronger energy saving measures than prescribed or

3. cover the thermal energy demand directly from a local or district heating grid.

To meet the obligation, renewable energies and alternative measures can be used in any form of combination with each other.

Exemptions for landmarked buildings and “hardship cases”.

The Act on the Promotion of Renewable Energies in the Heat Sector: Funding

The Federation shall provide need-based funding for the utilization of renewable energies for heat generation of up to 500 million euro per year between 2009 and 2012 (out of market incentive program)

Support can be given to measures for the generation of heat, in particular the construction or expansion of

1. **solar thermal installations,**
2. **installations for the use of biomass,**
3. **installations for the use of geothermal energy and ambient heat and**
4. **local heating grids, storage facilities and transfer stations for heat users.**

The German Law on Renewable Energy Sources in the Electricity Sector

- **Electricity Feed-in Act (Stromeinspeisungsgesetz; StrEG), 7 December 1990**
- **Act on Granting Priority to Renewable Energy Sources (Renewable Energy Sources Act), 29 March 2000**
- **Act on Granting Priority to Renewable Energy Sources (Renewable Energy Sources Act), 21 July 2004**
- **Act Revising the Legislation on Renewable Energy Sources in the Electricity Sector and Amending Related Provisions – Renewable Energy Sources Act – EEG 2009, 31 October 2008**

Renewable Energy Sources Act: Scope of application

This Act regulates

1. **priority connection to the grid systems for general electricity supply of installations generating electricity from renewable energy sources and from mine gas within the territory of the Federal Republic of Germany, including its exclusive economic zone (territorial application of this Act),**
2. **the priority purchase, transmission, distribution of and payment for such electricity by the grid system operators, and**
3. **the nationwide equalisation scheme for the quantity of electricity purchased and paid for.**

Renewable Energy Sources Act: Costs, Capacity Expansion and Payment Claims

The costs associated with connecting installations generating electricity from renewable energy sources or from mine gas to the grid connection point …. and with installing the necessary metering devices for recording the quantity of electricity transmitted and received shall be borne by the installation operator.

If the grid system operator assigns the installations a different grid connection point … he shall bear the resulting incremental costs.

The grid system operator shall bear the costs of optimising, boosting and expanding the grid system.

Grid system operators shall pay installation operators tariffs for electricity generated in installations exclusively utilising renewable energy sources or mine gas.

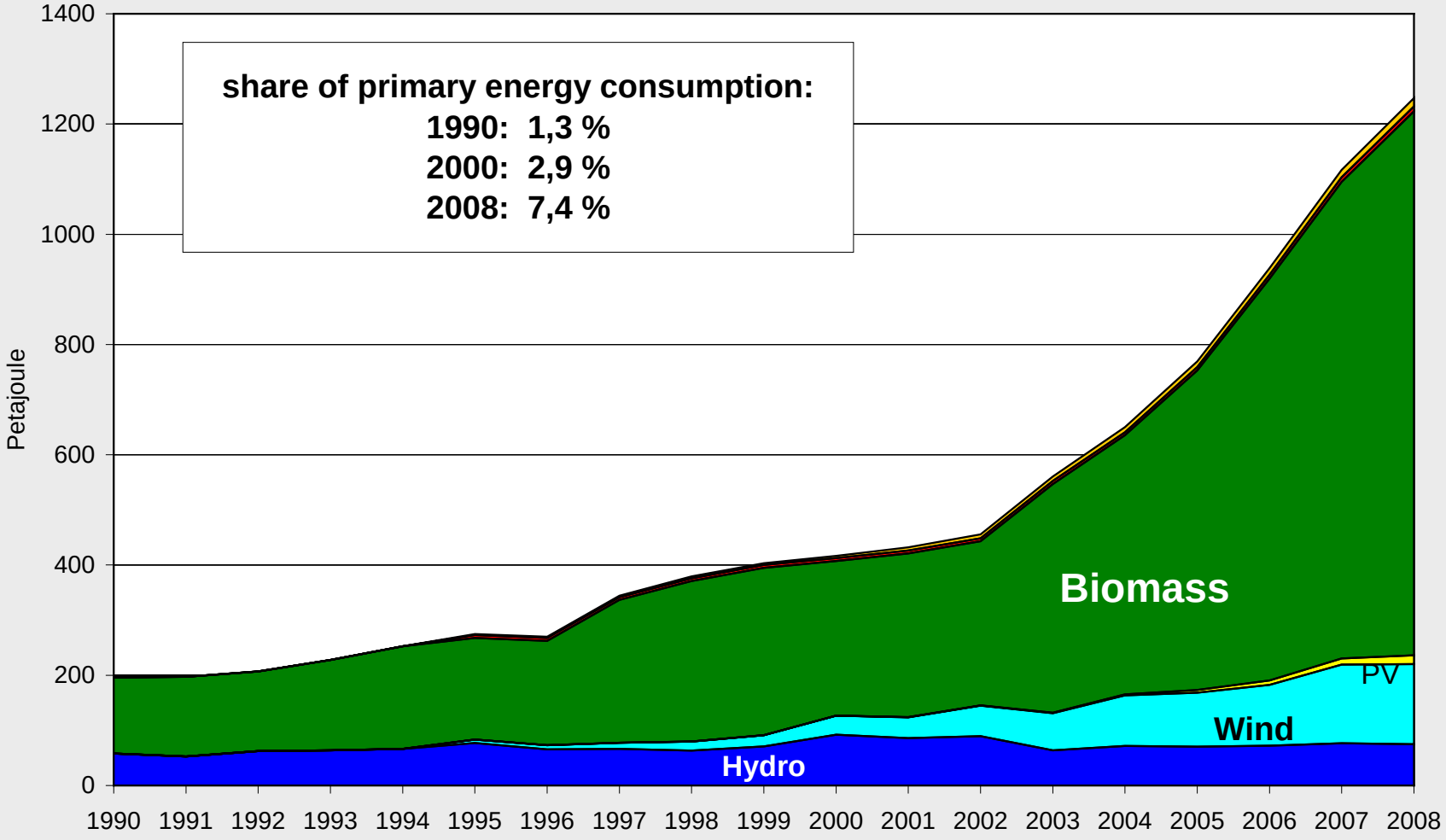
Renewable Energy Sources Act: Special provisions regarding tariffs and degression

		Duration (yrs)	2008 €-Cents/kWh	Degression
Hydropower	up to 5 MW - new	30	7.65 - 12.67	0.0%
	up to 5 MW - modernised	30	8.65 - 11.67	0.0%
	over 5 MW	30	3.50 - 7.29	1.0%
Landfill gas	Innovative Plant Technology: Bonus 2 ct/kWh	20	6.16 - 9.00	1.5%
Sewage gas		20	6.16 - 7.11	1.5%
Mine gas		20	4.16 - 7.16	1.5%
Biomass	Plus different bonuses	20	7.79 - 11.67	1.0%
Geothermal energy	Plus different bonuses	20	10.50 - 16.00	1.0%
Wind energy (onshore)	Initial fee - final fee	20	9.2 - 5.02	1.0%
Wind energy (offshore)	Initial fee - final fee	20	13.00 - 3.50	5.0% (from 2015 on)
Photovoltaic	roof-mounted	20	33.00 - 43.01	8% (2010)/9%(from 2011)
source: Renewable Energy Source Act; EEG 2009.				

Renewable Energy Sources Act: Special regulation for electricity intensive enterprises and rail operators

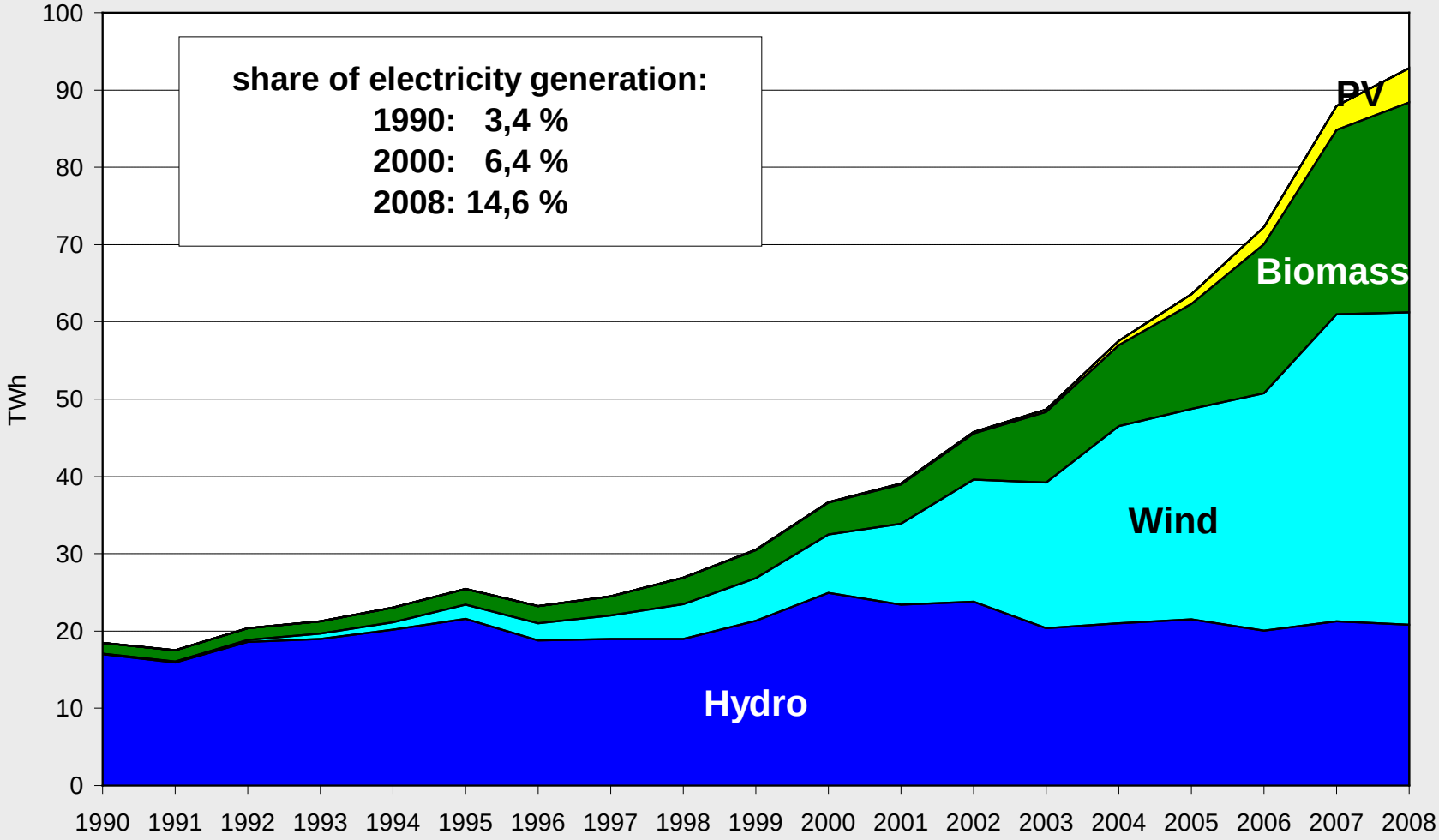
- **The Federal Office of Economics and Export Control shall upon request limit … the share of the quantity of electricity … which is delivered by the utility companies to the final consumers which are electricity-intensive manufacturing enterprises with high electricity consumption or rail operators.**
- **To limit the share of the electricity delivered, a certain percentage shall be fixed for the delivery point in question. A standard percentage shall be determined for all applicants in such a way that the … average expected purchase costs for the following year equals 0.05 cents per kilowatt-hour.**

Renewable Energies and Primary Energy Consumption in Germany 1990 - 2008



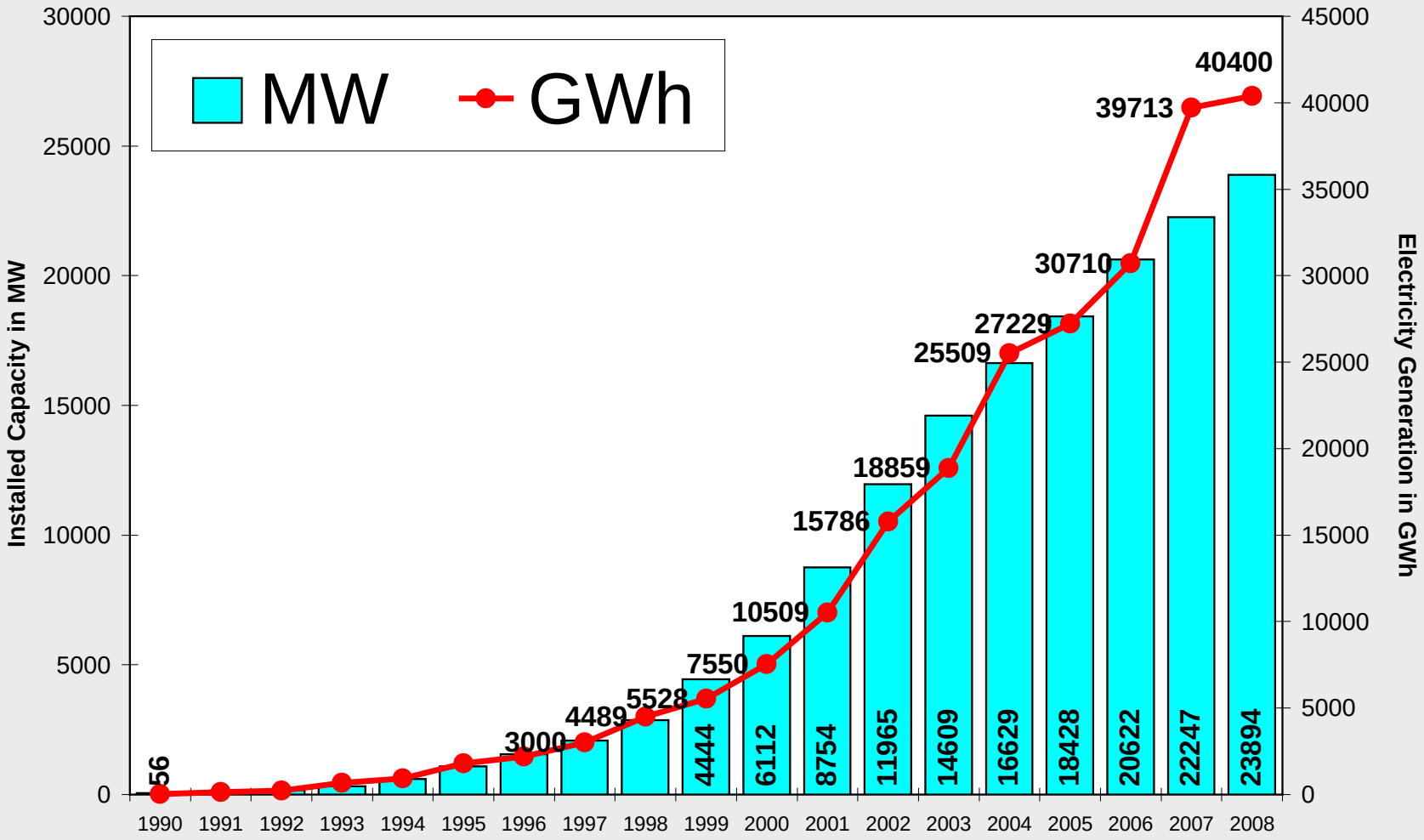
source: Working Group Energy Balances.

Renewable Energies and Electricity Generation in Germany 1990 - 2008



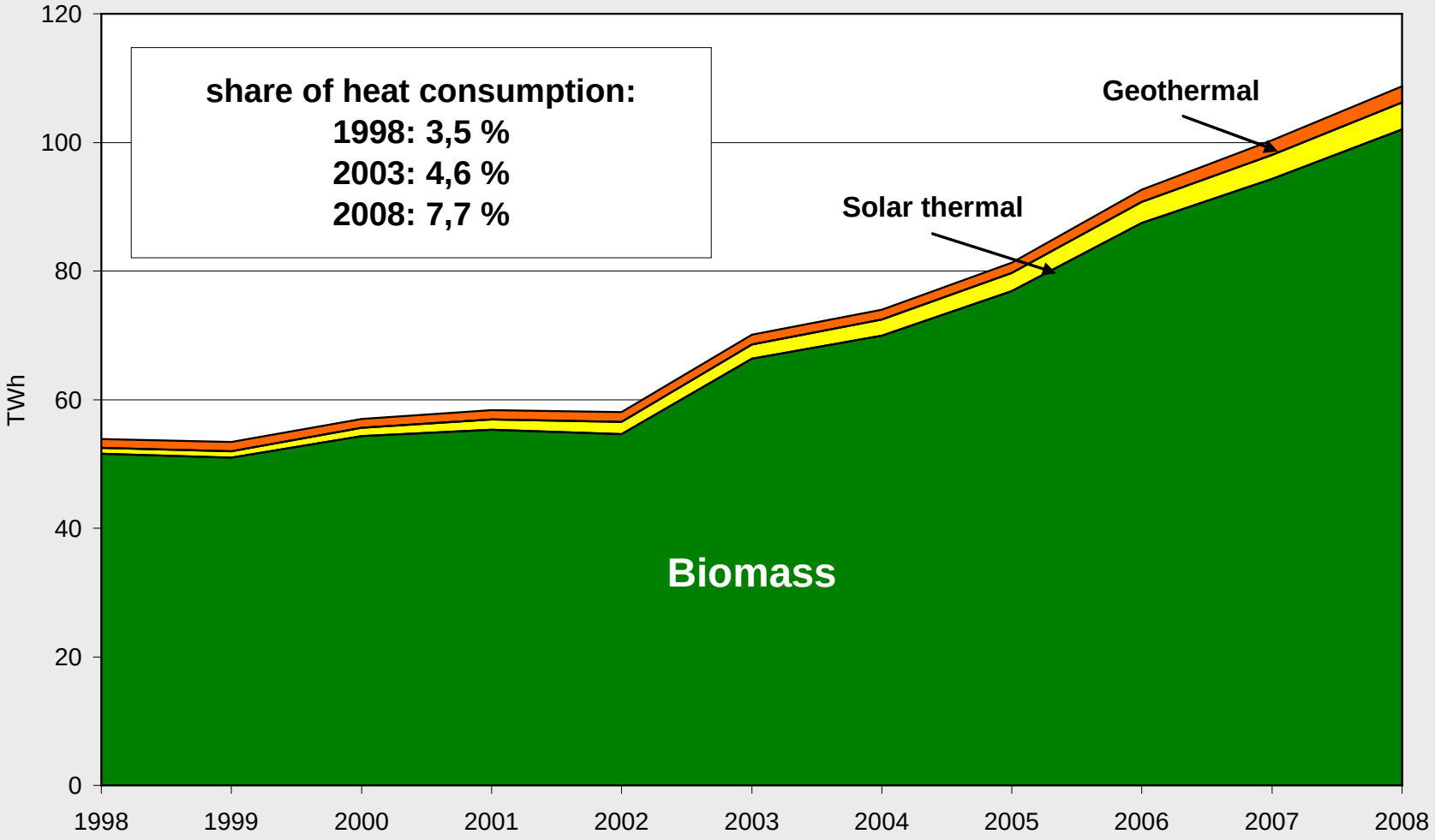
source: Federal Ministry for the Environment.

Wind Energy in Germany 2000 – 2008: Installed Capacity and Electricity Generation



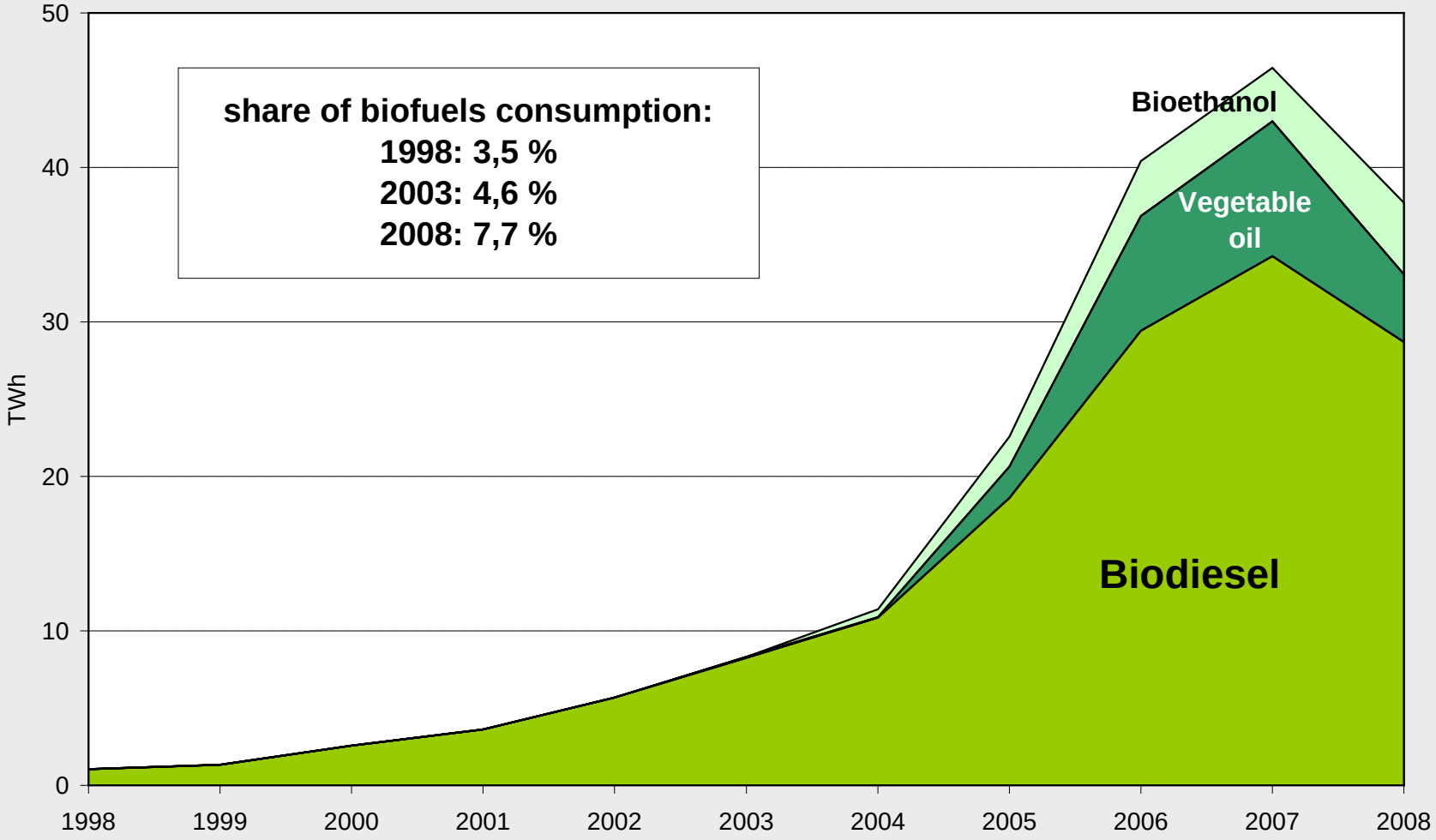
source: Federal Ministry for the Environment.

Renewable Energies and Heat Consumption in Germany 1990 - 2008



source: Federal Ministry for the Environment.

Renewable Energies and Biofuel Consumption in Germany 1990 - 2008



source: Federal Ministry for the Environment.

Renewable Energy Sources:
Electricity production and compensations 2008

	Production	Compensation	
	GWh	million Euro	Euro-ct/kWh
Hydropower	4981.5	378.81	7.60
Landfill- , mine- , sewage treatment gas	2208.2	155.87	7.06
Biomass	18947.0	2698.74	14.24
Geothermal energy	17.6	2.64	15.00
Wind energy	40573.7	3561.04	8.78
Solar radiation	4419.8	2218.62	50.20
Subtotal	71147.8	9015.72	12.67
Avoided charges for the use of the grid		-298.73	
Corrections for previous years	563.9	69.70	12.36
Total	71711.7	8786.69	12.25
source: BDEW, 27 July 2009.			

Conclusions (I)

- **The Renewable Energy Source Act (EEG) is the key instrument for the promotion of renewable energies in Germany.**
- **The experience with this act proved a high effectiveness. No other instrument e.g. has resulted in more CO_2 reductions in the past: The Ministry for the Environment calculates 112 million tonnes of CO_2 being avoided through the use of renewable energies 2008.**
- **The efficiency of the Renewable Energy Source Act is recognised abroad as well – which is why a total of 18 EU Member States and at least 30 other countries have introduced similar legislation based on feed-in tariffs for electricity from renewable energy sources.**

Conclusions (II)

- **The Act also helped to create jobs (2008: 278,000) and future-proof industrial structures.**
  - **€ 5.0 billion avoided costs by lowering wholesale electricity prices (e.g. at EEX Leipzig)**
  - **€ 5.8 billion avoidance of external costs (Climate Change and air pollution driven health costs)**
  - **€ 1.0 billion avoided fuel purchases from abroad (hard coal and natural gas)**

- **The EEG concentrates on the electricity sector only. Compared with this the success in the thermal sector as well as in the transport sector is rather low. Here the use of renewable energies must and will be expanded in future years.**


Thank you again for listening
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