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Communication

from the Government of the Federal Republic of Germany

to the Commission of the European Communities

23 October 2007

Reporting obligation of the Federal Republic of Germany in accordance with Article 3(3) of 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

The Government of the Federal Republic of Germany has the honour of submitting to the Commission of the European Communities Germany's report on progress towards achieving the indicative target for the consumption of electricity produced from renewable energy sources in the internal electricity market.

Enclosed:

Report by the Federal Republic of Germany on progress towards achieving the indicative target for the consumption of electricity produced from renewable energy sources in the internal electricity market

2007 Report from the Federal Republic of Germany

on

Progress towards achieving the national indicative target for the consumption of electricity from renewable energy sources by the year 2010

Report by the Federal Republic of Germany in accordance with Article 3(3) 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

Berlin, October 2007

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1. INTRODUCTION

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 sets the goal of raising the share of renewable forms of energy in the European Community's (EU-25) electricity supply to 21% by the year 2010. Article 3(3) of the Directive requires Member States to draw up a report on progress towards achieving the target and on national climate change commitments: "*Member States shall publish, for the first time not later than 27 October 2003 and thereafter every two years, a report which includes an analysis of success in meeting the national indicative targets taking account, in particular, of climatic factors likely to affect the achievement of those targets and which indicates to what extent the measures taken are consistent with the national climate change commitment*."

This report fulfils Germany's obligation under the Directive.

Ensuring future energy supply and at the same time limiting the extent of the climate change that is already under way are two of the key challenges of the 21st century. We need to find secure sources of energy for future generations whilst taking account both of ecological objectives and economic growth. Alongside the important strategy of using natural energy resources sparingly and converting them efficiently, the Federal Government is also pushing the use of renewable energy sources. A core component of its strategy is to increase significantly the share of renewables in our energy supply.

The Federal Government's objective, as stated in § 1 of the Act relating to the priority given to renewable energy[1] (EEG – see Annex 1), is to increase the share of renewable energies in electricity production to at least 12.5% by 2010. Further-reaching supplementary goals are set out in Germany's accompanying report on future national indicative targets. In order to achieve such ambitious objectives, the Government also aims to ensure that renewable energies become competitive on the internal electricity market in the medium to long term. Renewable energy sources will only play a pivotal role in the long run if they can consolidate a market position without financial support.

The EEG is a key element in the Government's raft of environmental and energy policy measures and represents our most important and most successful means of expanding the use of renewables in the electricity sector.

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[1] *Erneuerbare-Energien-Gesetz (EEG)* – Renewable Energy Sources Act.

The *Bundestag* (lower chamber) adopted the Renewable Energy Sources Act (EEG) on 29 March 2000. It entered into force on 1 April 2000, replacing the Act on the Sale of Electricity to the Grid (StrEG),[2] which had applied in Germany since 1 January 1991 and likewise contained a supply and fee payment system in favour of regenerative electricity. Hence, when drawing up the EEG, we were able to draw on 10 years of experience with the StrEG. The EEG was adapted in line with the conditions of the liberalised electricity market and a number of significant improvements were added. In particular, the new system of fees, differentiated according to the various renewable energy segments, served to offset the remaining competitive disadvantages of renewable energies versus conventional electricity generation.

A first comprehensive review of the EEG came into effect on 1 August 2004. This brought the Act into line with the Federal Government's sustainability strategy and transposed Directive 2001/77/EC of 27 September 2001 on the promotion of electricity produced from renewable energy sources in the internal electricity market. It also offered a longer-term perspective and secure investment conditions for all economic operators in the renewable energy sector.

The First EEG Amendment Act entered into force on 1 December 2006, creating the conditions whereby the companies and railways that use electricity particularly intensively can be offered greater relief than before from the costs linked to electricity from renewable sources. At the same time, the EEG in its amended form ensured that electricity suppliers do not charge companies and private consumers more than what the electricity actually costs.

With particular regard for the "polluter pays" principle, the provisions of the law serve to deliver on the duty to protect the natural bases of life in view of our responsibility toward future generations, as stipulated in Article 20a of Germany's Basic Law, as well as implementing the conservation targets set out in Articles 2, 6, 10 and 175 of the Treaty establishing the European Community.

In recent years, the EEG has brought about a significant increase in the use of renewable energy sources to generate electricity, by offering statutory guarantees over a period of many years of the fee rates that will be paid. This is particularly true in the case of wind power, which has developed to become the leading source of electricity generation ahead of hydroelectric power. The biomass, photovoltaic and geothermal energy sectors can also report positive trends.

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[2] *Stromeinspeisungsgesetz.*

Under EEG § 20, the *Bundestag* must be presented by 31 December 2007 and every four years after that with a progress report on the coming on stream of plants generating electricity from renewable energy sources and on developments as regards the costs of running these plants. The EEG is currently being evaluated for its effectiveness in this respect. The EEG progress report will provide the basis for a further review of the Act in 2008.

The review of the EEG will take on board the urgent need to develop renewable energy sources still further in view of increasingly evident climate change and the global rise in energy consumption. In revising the EEG, Germany will also take account of – and make an appropriate contribution to implementing – the conclusions of the European Council of 9 March 2007, including with regard to raising the share of renewables in total energy consumption to 20% by 2020.

Renewable energy sources have grown considerably in significance in Germany in recent years, in particular for electricity, but also for heating and transport. Renewables are making an important contribution to overall supply, accounting for 12% of national electricity consumption in 2006.

2. NATIONAL INDICATIVE TARGET FOR GERMANY

The national target in the Directive on the promotion of electricity produced from renewable energy sources in the internal electricity market is based as a guideline on doubling the share of energy from renewable sources in the Community by 2010, as compared with 1997 levels. Germany is contributing by setting itself the target of a 12.5% share for renewables in the national electricity market by 2010. This represents more or less double what it was in 2000.

The share of renewables in gross consumption virtually doubled from 6.3% in 2000 to 12% in 2006. By the middle of 2007, this figure had already risen above 13% and it is anticipated that it will have reached around 14% by the end of 2007. The indicative target for Germany under the Directive and the Government's own objective for 2010 have thus already been achieved and even surpassed.

Renewable energy sources are being developed so successfully that they have become an important part of the structure of Germany's energy sector. As such, they are making a significant contribution to climate protection and have become an important factor in the economy. The key instrument as regards electricity is the EEG.

Table 1 shows developments in the share of renewable energy sources in gross electricity consumption.

Table 1: *Share of renewable energy sources in gross electricity consumption in Germany*[3]

	1998	1999	2000	2001	2002	2003	2004*	2005*	2006*	31.12.07*
Gross electricity consumption (TWh)	556.7	557.3	579.6	585.1	587.4	599.3	608.9	611.8	615.8	616
Share of RES in GEC (%)	4.8	5.5	6.3	6.7	7.8	7.9	9.3	10.4	12.0	14.0

RES – renewable energy sources

GEC – gross electricity consumption

* – provisional data; rough estimate for 2007, assuming similar electricity consumption to 2006 and normal weather conditions in the second half of the year.

3. DEVELOPMENT OF RENEWABLE ENERGY SOURCES IN GERMANY[4]

As a result of the rapid growth in renewable energy sources in Germany, their share in primary energy consumption (calculated according to the "degree of efficiency" method) rose from 4.7% in 2005 to 5.8% in 2006. This represents more than a doubling of the 2000 figure of 2.6%. Their contribution to overall final energy supply (electricity, heating, biofuels) reached 8% in 2006 (from 6.6% in 2005 and 3.8% in 2000).

The proportion of electricity generated from renewable energy sources in gross electricity consumption was 12% in 2006 (up from 10.4% in 2005). In 2000, it had only been 6.3%.

Renewable energy sources are making an important contribution as regards climate change: according to the latest data, by replacing other forms of energy for electricity, heating and fuel, they were responsible for a total of 101.5 million tonnes of CO_2 reductions in 2006. Of this total, the EEG alone accounted for reductions of around 45 million tonnes of CO_2 (as compared with 38 million tonnes in 2005). Table 2 shows developments in the share of all renewable energy sources (electricity, heating and biofuels) in Germany's energy supply from 1998 to 2006. A detailed overview of the development of renewable energy sources in Germany, including their environmental impact, is provided in the

[3] Data on gross electricity consumption: www.ag-energiebilanzen.de.
Data on share of renewable energy sources in gross electricity consumption: Working Group on Renewable Energy Statistics.

[4] Source: Working Group on Renewable Energy Statistics.

Environment Ministry publication *Renewable Energy Sources in Figures – national and international development (as of June 2007)*[5] (see Annex 3).

Table 2: *Developments in share of renewable energy sources in energy supply*

	1998	**1999**	**2000**	**2001**	**2002**	**2003**	**2004***	**2005***	**2006***
Final energy consumption (FEC)	**%**								
Electricity production (as % of total GEC)	4.8	5.5	6.3	6.7	7.8	7.9	9.3	10.4	12.0
Heating supply (as % of total heating supply)	3.5	3.5	3.9	3.8	3.9	4.6	4.9	5.4	6.0
Fuel consumption (as % of total road transport)	0.2	0.2	0.4	0.6	0.9	1.4	1.9	3.8	6.6
Share of RES in total FEC	**3.1**	**3.3**	**3.8**	**3.8**	**4.3**	**4.9**	**5.5**	**6.6**	**8.0**
Primary energy consumption (PEC)	**%**								
Electricity production (as % of total PEC)	0.8	0.9	1.1	1.1	1.4	1.5	1.6	2.1	2.5
Heating supply (as % of total PEC)	1.3	1.3	1.4	1.4	1.5	1.8	1.9	2.0	2.2
Fuel consumption (as % of total PEC)	0.03	0.03	0.06	0.1	0.1	0.2	0.3	0.6	1.0
Share of RES in total PEC	**2.1**	**2.2**	**2.6**	**2.7**	**3.0**	**3.5**	**3.9**	**4.7**	**5.8**

Share in PEC calculated according to "degree of efficiency" method.

* – provisional data.

Sources: *Renewable Energy Sources in Figures – national and international development (as of June 2007)* (Environment Ministry).

On 9 March 2007, under the German presidency, the EU's heads of state and government (the European Council) adopted a decision on future climate change policy – "Climate Agenda 2020 – the reform of industrial societies". The decision tackles head-on the integration of energy policy and climate change and ties ambitious climate protection objectives to far-reaching measures.

The use of renewable energy sources avoids releasing air pollutants and gases that contribute to climate change. This is why developing them is such a core component of Germany's strategy on climate change. In view of the emerging threat of climate change, the Government is currently drawing up a programme containing the key elements of energy and climate change policy up to 2020. The plan will contain a raft of measures and a timetable. Key objectives are:

- a balanced energy mix that is favourable to both the economy and the environment;
- greater energy efficiency and combined heat / power production;

[5] *Erneuerbare Energien in Zahlen – nationale und internationale Entwicklung (Stand Juni 2007).*

- expanded use of renewable energy sources; and
- modern energy technology for the efficient conversion of fossil fuels and low-CO_2 coal-based power generation.

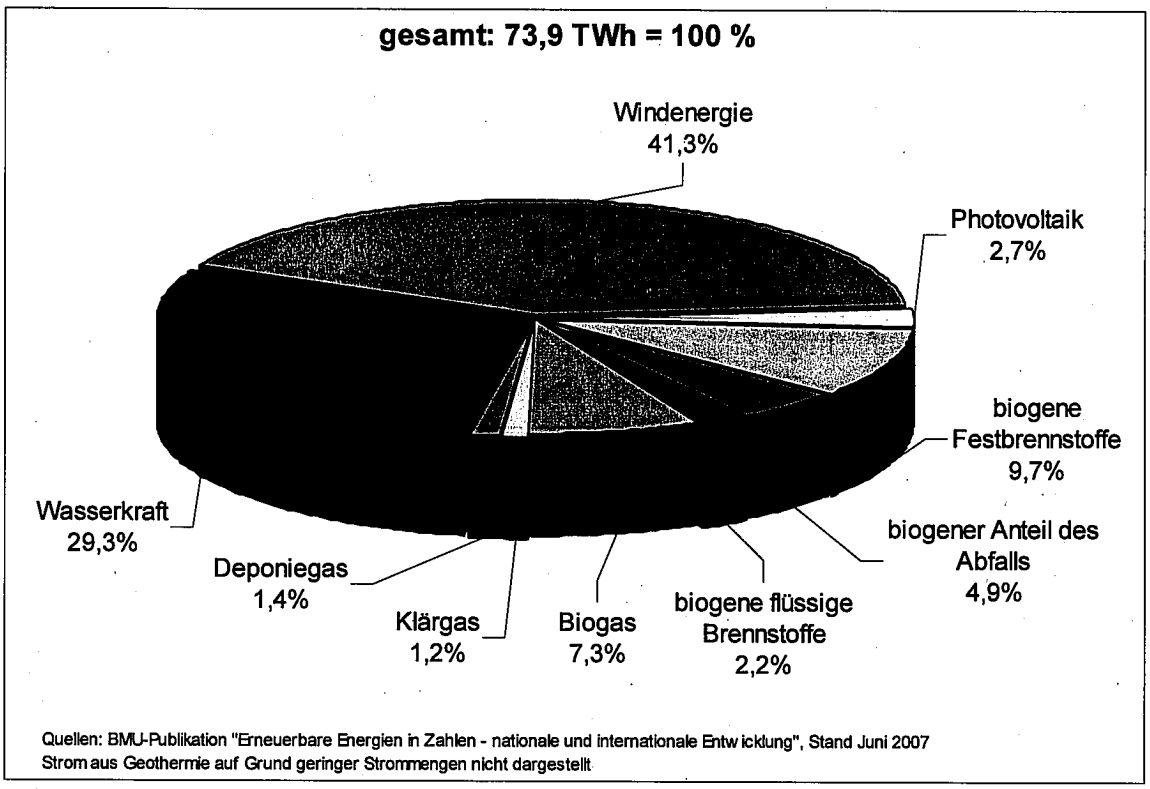
This should cover all forms of energy consumption: electricity, heating and transport, as each of these accounts for around a third of Germany's total energy use.

4. DEVELOPMENT OF ELECTRICITY PRODUCTION FROM RENEWABLE ENERGY SOURCES

The overall positive development of renewable energy sources is reflected especially strongly in the electricity sector. By supplying 73 874 GWh in 2006, renewable energy sources covered 12% of Germany's gross electricity consumption. This represents almost double the figure for 2000, which was 6.3%. The highest level of use was for wind power and this form of energy is now making the biggest contribution, with a 41.3% share of the electricity produced from renewable energy sources, followed by hydroelectric power with 29.3% and biofuels. Overall, the electricity sector saw a year-on-year increase in 2006 of over 15%.

In November 2003, electricity was produced for the first time in Germany from geothermal energy. This came from a small plant which in 2006 produced 0.4 GWh. Further plants are either about to be brought on line or are still at the planning or construction stages. Up to three new geothermal plants with combined heat / power production will probably come on stream in 2007.

Figure 1 shows a breakdown of electricity production from renewable energy sources.



[Clockwise from top: wind power / photovoltaic / solid biofuels / bio-waste / liquid biofuels / biogas / sewage gas / landfill gas / hydroelectric power]

Sources: *Renewable Energy Sources in Figures – national and international development (as of June 2007)* (Environment Ministry).

Electricity from geothermal energy not shown (small amount).

Figure 1: *Breakdown of electricity production from renewable energy sources in 2006*

Given the policy framework for renewable energy sources, the German climate and the construction of new plants using renewables in the first half of 2007, it is expected that around 14% of gross electricity consumption will be met in 2007. This would more than achieve the target in the EU Directive, as well as Germany's own objective of at least 12.5% by 2010. This level of progress also gives us a degree of assurance that the other national objectives in individual renewable energy sectors will be met.

Table 3 gives an overview of the contribution of renewable energy sources to overall electricity production in Germany from 1990 to 2006. The supply from hydroelectric, wind and solar power is subject to natural fluctuations which can have an impact on a short-term and seasonal basis, but also on production for the year as a whole.

Table 3: *Contribution of renewable energy sources to overall electricity production*

	Hydroelectric[1]	**Wind**	**Biomass[2]**	**Photovoltaic**	**Geothermal**	**Total**	**Share in GEC**

[GWh]							
1990	17 000	40	1 422	1	0.0	18 463	**3.4**
1991	15 900	140	1 450	2	0.0	17 492	**3.2**
1992	18 600	230	1 545	3	0.0	20 378	**3.8**
1993	19 000	670	1 570	6	0.0	21 246	**4.0**
1994	20 200	940	1 870	8	0.0	23 018	**4.3**
1995	21 600	1 800	2 020	11	0.0	25 431	**4.7**
1996	18 800	2 200	2 203	16	0.0	23 219	**4.2**
1997	19 000	3 000	2 479	26	0.0	24 505	**4.5**
1998	19 000	4 489	3 392	32	0.0	26 913	**4.8**
1999	21 300	5 528	3 641	42	0.0	30 511	**5.5**
2000	24 936	7 550	4 129	64	0.0	36 679	**6.3**
2001	23 383	10 509	5 065	116	0.0	39 073	**6.7**
2002	23 824	15 786	5 962	188	0.0	45 760	**7.8**
2003	20 350	18 859	9 132	313	0.0	48 654	**7.9**
2004*	21 000	25 509	10 463	557	0.2	57 529	**9.3**
2005*	21 524	27 229	13 534	1 282	0.2	63 569	**10.4**
2006*	21 636	30 500	19 738	2 000	0.4	73 874	**12.0**

* 2004-2006: provisional data

1. – for pumped-storage stations, only electricity produced from natural sources

2. – solid, liquid, gas biomass, landfill and sewage gas; share of bio-waste in waste incineration plants (50%)

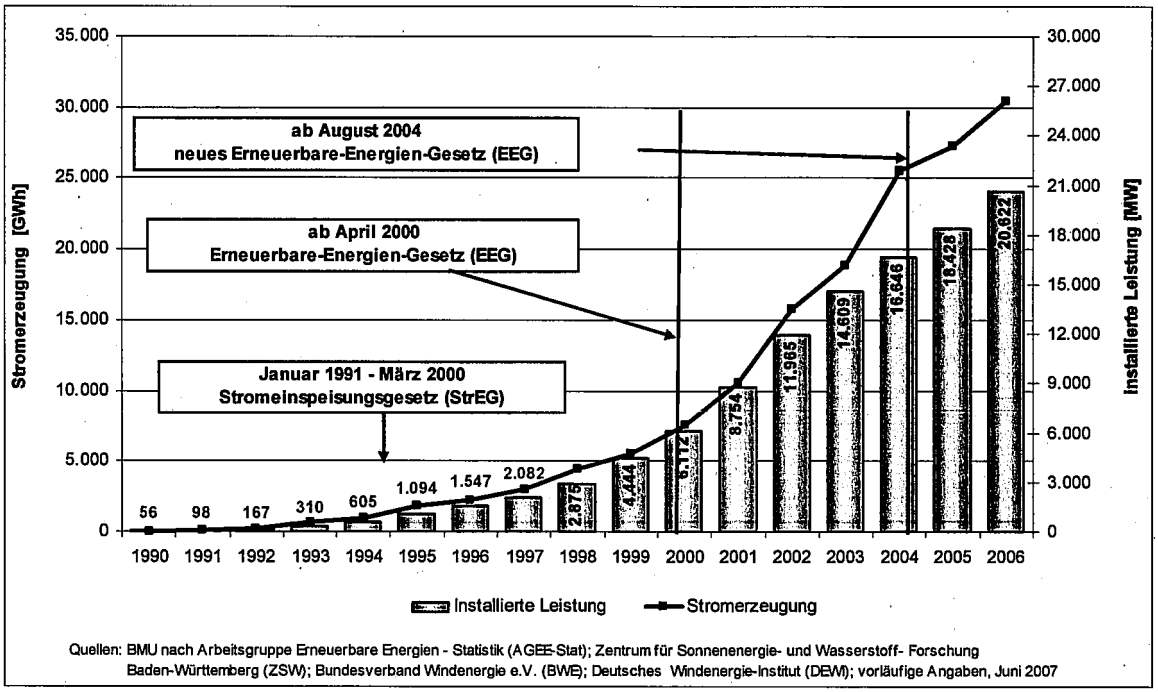
Sources: *Renewable Energy Sources in Figures – national and international development (as of June 2007)* (Environment Ministry).

5. SECTOR-BY-SECTOR DEVELOPMENT OF ELECTRICITY PRODUCTION FROM RENEWABLE ENERGY

5.1. Wind power

At the end of 2006, 18 685 wind turbines were in operation in Germany, with a combined capacity of 20 622 MW. In total, these turbines produced 30 500 GWh of electricity, or 5% of all Germany's electricity consumption. Germany is a world leader in the production of electricity from wind power. Since 1991, wind turbines have come on stream with a capacity of over 20 000 MW, not only making significant technological progress, but also cutting electricity production costs by about 60%.

In 2006, 1 208 wind turbines were set up with a total capacity of 2 194 MW. The number of new turbines was 15% higher than in the previous year and new capacity 23% higher. Figure 2 shows the development of wind power in Germany.



[Graph shows installed capacity (bars & right-hand scale) and electricity produced (line & left-hand scale); periods marked are January 1991 to March 2000 (StrEG), April 2000 onwards (EEG) and August 2004 onwards (new EEG)]

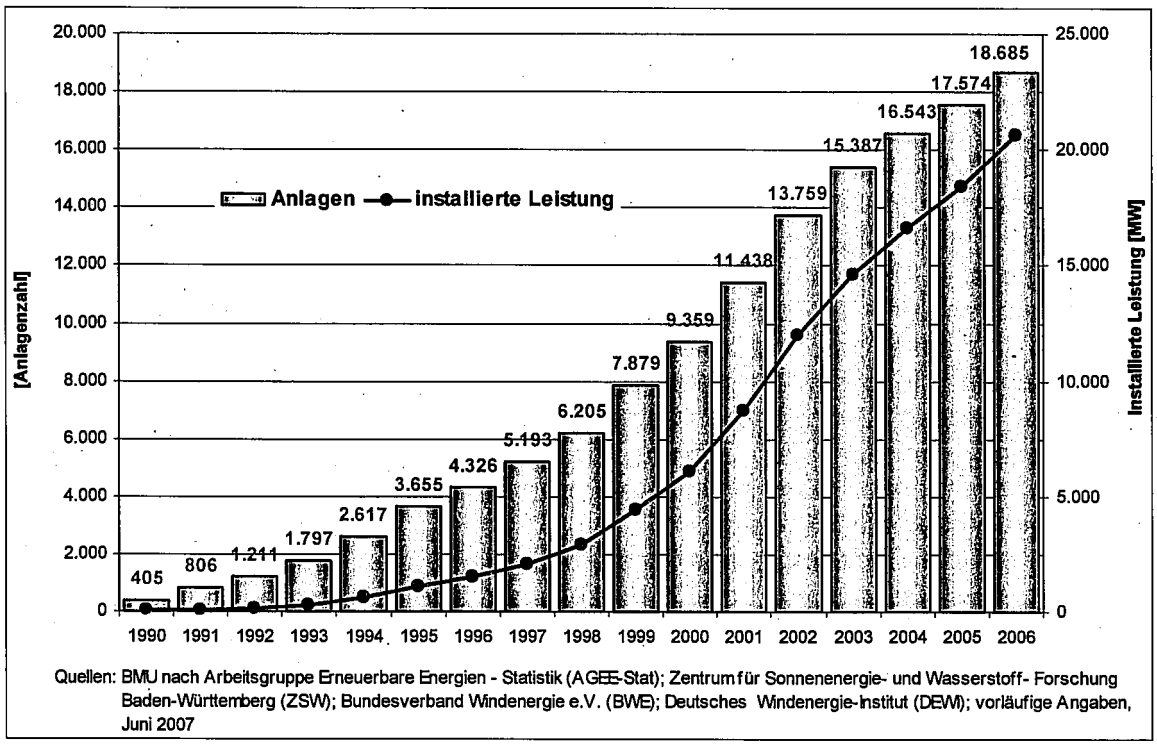
Sources: Environment Ministry, based on Working Group on Renewable Energy Statistics; *Zentrum für Sonnenenergie- und Wasserstoff- Forschung (ZSW)* [centre for solar power and hydrogen research], Baden-Württemberg; *Bundesverband Windenergie e.V. (BWE)* [Federal wind power association]; *Deutsches Windenergie-Institut (DEWI)* [German institute for wind power]; provisional data, June 2007.

Figure 2: *Development of wind power in Germany*

In the first half of 2007, 19 024 wind turbines with a total capacity of 21 283 MW generated about 21 900 GWh of electricity.

The contribution from wind power will grow further in the next few years. Emphasis will increasingly be placed on developing offshore wind turbines. The wind conditions in the North Sea and the Baltic are excellent. As part of its sustainability strategy Perspectives for Germany, the Government, with the Environment Ministry as the lead department, put forward a strategy for the use of wind power at sea and gave initials indications of suitable sites for wind farms and protection areas.

Figure 3 shows the development of new wind turbines and effective wind power capacity.



[Graph shows numbers of wind turbines (bars & left-hand scale) and installed capacity (line & right-hand scale)].

Sources: Environment Ministry, based on Working Group on Renewable Energy Statistics; *Zentrum für Sonnenenergie- und Wasserstoff- Forschung (ZSW)* [centre for solar power and hydrogen research], Baden-Württemberg; *Bundesverband Windenergie e.V. (BWE)* [Federal wind power association]; *Deutsches Windenergie-Institut (DEWI)* [German institute for wind power]; provisional data, June 2007

Figure 3: *Number of wind turbines and installed capacity in Germany*

The market situation in Germany slowed down in the first half of 2007. The replacement of old power plants ("repowering") is currently going ahead only gradually and offshore wind turbines are not yet being constructed. Both of these things are very important, however, for the further development of renewable energy sources in Germany, particularly as regards wind power in order to achieve the Government's 2020 target. The upcoming review of the EEG will create the conditions that this market needs.

Preparations are currently being made for a test site for offshore wind turbines in the North Sea (off the island of Borkum), which should be completed and start operation in summer 2008. To date, 16 German wind farms have been licensed to erect turbines in the North Sea and the Baltic.

5.2. Biomass

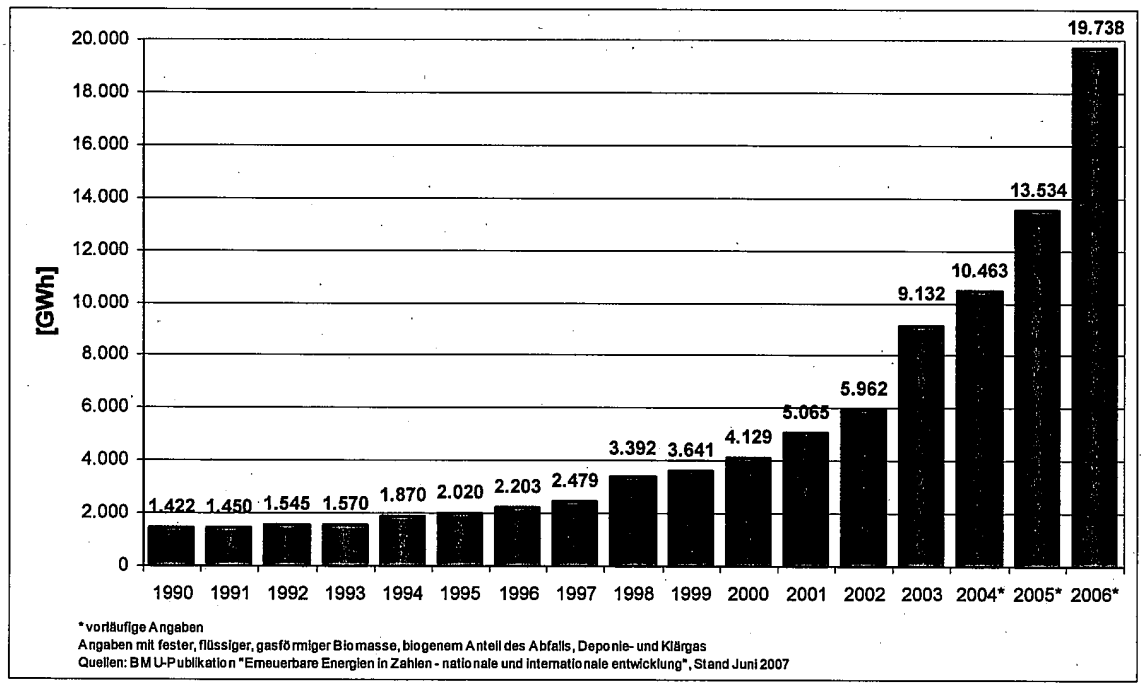
Electricity generation from biomass has seen dynamic growth since 2004. This has been the result of improved conditions brought in by the EEG 2000, the 2001 Biomass Regulation and the relevant

provisions under the new EEG (in force since 1 August 2004). This includes a better fee structure based on power plants' size, and the introduction of various bonus payments for using renewable resources or timber remains from forestry, for new technology or operating on a combined heat / power basis.

These new conditions have contributed to the increased use of biomass as a renewable source of energy (solid and liquid biofuels, biogas). In 2000, around 2 300 GWh of electricity was produced in this way, and this had grown to 14 200 GWh. In particular, there has been a clear increase in the generation of electricity from biogas, which jumped from around 970 GWh in 2002 to 5 400 GWh by the end of 2006. The development of electricity generation from bio-energy is shown in figure 4.

The production of heat or generation of power from wood, biogas plants and plants using liquid biomass today contribute 2.4% of Germany's electricity supply. In total, biogenic energy sources (solid and liquid biomass, biogas, landfill and sewage gas, biogenic waste) accounted for about 17 900 GWh of the end energy supply in the electricity sector in 2006 (up from around 5 900 GWh in 2002). Renewables thus had a share of 3.3% of total electricity consumption.

As a proportion of end energy from renewable sources, biofuels are responsible for 27% of electricity production; as regards heating, the figure is about 94%.



* provisional data.

Data include solid, liquid and gas biomass, bio-waste, landfill and sewage gas

Sources: *Renewable Energy Sources in Figures – national and international development (as of June 2007)* (Environment Ministry).

Figure 4: *Development of biofuel energy use in Germany*

At the end of 2006, Germany had a total of 5 260 biomass plants, as follows: 160 biomass (heating) plants using solid biofuels (920 MW_{el}), 3 300 biogas plants (950 MW_{el}) and 1 800 plant-oil district heating plants (240 MW_{el}). The additional construction of around 185 (approx. 985 MW_{el}) biomass (heating) plants, 500-600 biogas plants (250-300 MW_{el}) and more plant-oil district heating plants is expected by the end of 2007.

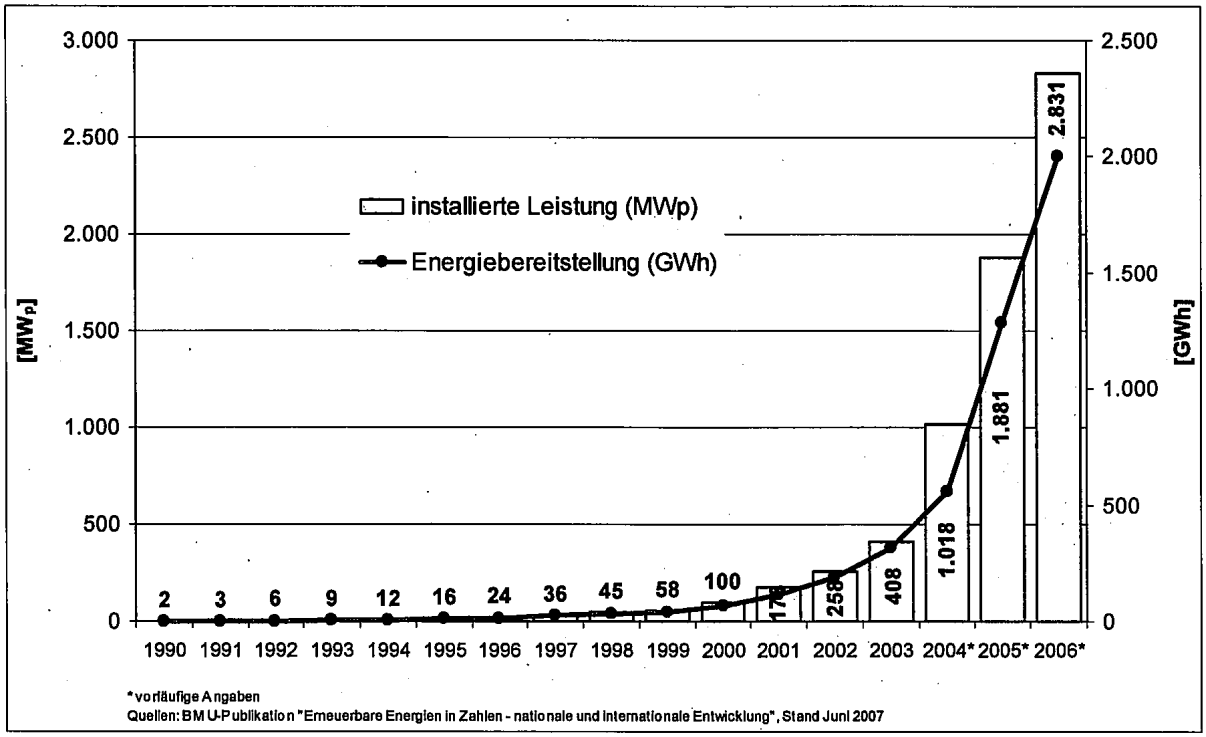
The planned review of the EEG will include certain necessary changes to the fee provisions for biogenic energy, based on the current state of development and profitability.

5.3. Solar power

Demand for photovoltaic systems has seen dynamic growth in Germany in recent years and Germany is now the biggest PV market in the world. The steep increase in electricity generation from solar power continued in 2006. Thanks to incentives under the EEG and to the further favourable conditions created by the Government (the PV interim law, the solar electricity programme), electricity generated in this way grew strongly, from 64 GWh (100 MW_p) in 2000 to 2 000 GWh (2 831 MW_p) in 2006. Just in the period from 2004 to 2006, production increased fourfold.

Around 860 MW_p were added in 2005 and this performance was again improved upon with an estimated 950 MWp in 2006. Despite the big rise in production, solar power still accounts for only about 0.3% of electricity production in Germany. The fee provisions for solar power will also be examined and adjusted in the context of the review of the EEG.

Figure 5 shows the development of installed capacity and electricity supply from solar power.



[Graph shows installed capacity (bars & left-hand scale) and energy supply (line & right-hand scale)].

* provisional data

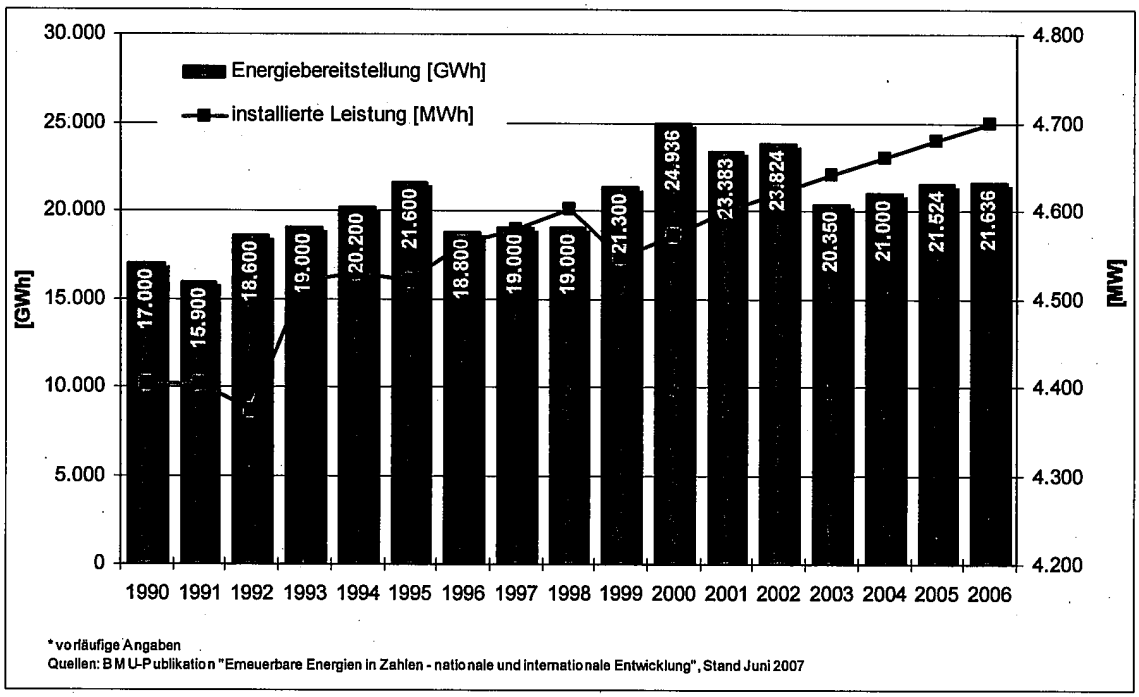
Sources: *Renewable Energy Sources in Figures – national and international development (as of June 2007)* (Environment Ministry).

Figure 5: *Development of solar power use in Germany*

5.4. Hydroelectric power

In 2006, 21 636 GWh of hydroelectric power was produced in Germany, or 3.5% of total electricity supply. Of around 7 350 plants, 98% have a capacity of less than 5 MW. Hydroelectric power is still the second most important renewable energy source for electricity production after wind power. Figure 6 gives an overview of installed hydroelectric capacity and energy supply in recent years.

The Act on the Sale of Electricity to the Grid (StrEG), introduced in January 1991, together with the EEG, which has been in force since 2000, have brought about something of a revival for small hydroelectric plants. As for further growth, the potential lies above all in replacing, modernising and extending the existing plants. As well as producing more electricity, this should also involve ecological improvements to the water bodies concerned. The EEG also provided incentives for modernising larger plants with a capacity of over 5 MW. Nevertheless, growth in the production of electricity from hydroelectric power fell short of expectations, in particular because of the length of time needed for the planning and licensing of large plants. The review of the EEG should involve the creation of new incentives to make the use of hydroelectric power more attractive.



[Graph shows energy supply (bars & left-hand scale) and installed capacity (line & right-hand scale)].

* provisional data

Sources: *Renewable Energy Sources in Figures – national and international development (as of June 2007)* (Environment Ministry).

Figure 6: *Development of hydroelectric power*

5.5. Geothermal power

Geothermal power is of interest not only for heating purposes but also for producing electricity.

Geothermal energy was initially used in Germany only for heating, but interest in using it to produce electricity has grown noticeably since review of the EEG in summer 2004. The return on selling to the grid means that it can be profitable in some locations in Germany to produce electricity in this way.

Investment in geothermal generating plants requires long periods for planning and construction. Germany currently has a pilot plant in Neustadt-Glewe (Mecklenburg-Western Pomerania), which has been in operation since 2004. Three more plants (Unterhaching in Bavaria, Landau in Rhineland-Palatinate and Bruchsal in Baden-Württemberg) are expected to come on stream in the second half of 2007.

In 2006, installed generation capacity was 0.2 MW, producing 0.4 GWh of electricity.

In order better to exploit Germany's great geothermal potential, the Government continues to support research and development projects, as well as demonstration plants for the geothermal production of

electricity. The most important instrument in this respect remains the support under the EEG, however. Extraneous factors (demand for earth-boring equipment, rising steel prices) are currently making the plants more expensive.

Research activities, especially as regards advanced technology, should be stepped up. Investment risks should be further addressed by improved support for loans and the introduction of insurance arrangements in the market incentive programme to minimise productivity risks.

6. DEVELOPMENT IN EMISSIONS AVOIDED THROUGH THE USE OF RENEWABLES VIS-À-VIS NATIONAL CLIMATE CHANGE COMMITMENTS

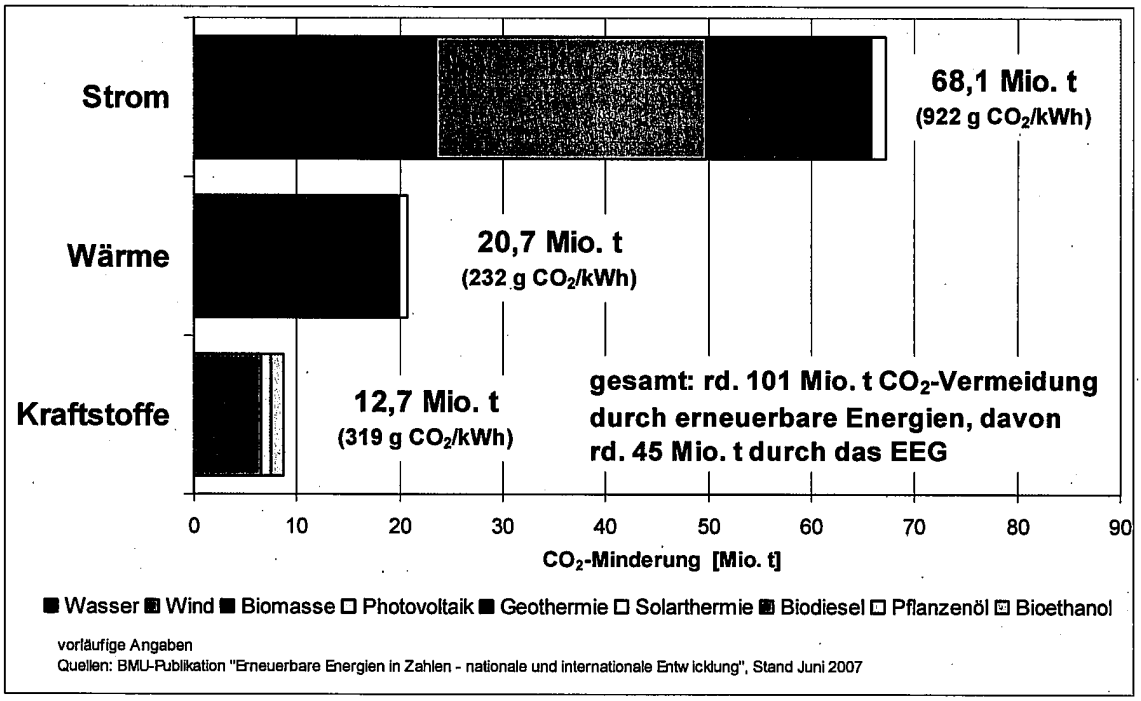
In addition to the positive development as regards the use of renewables for electricity, the emissions avoided as a result are particularly remarkable from the point of view of policy on the environment and on climate change.

In 2006, emissions of around 100 million tonnes of CO_2 were avoided thanks to the use of renewable energy sources. Had it not been for the use of renewables, Germany's energy-related CO_2 emissions would have totalled not 796 million tonnes, but 12.5% more.

Generating electricity from renewable sources (whether or not this attracted EEG fees) meant that about 68 million tonnes of CO_2 emissions could be avoided.[6] Of these, emissions of around 45 million tonnes were avoided as a result of priority feeding into the grid and fees paid under the EEG. This represents about half of all CO_2 emissions avoided through the use of renewables.

Figure 7 gives an overview according to source of all CO_2 emissions avoided through the use of the renewable energy.

[6] The clear increase in this figure over that given in the 2005 report is explained by the growth in the use of renewable energy sources, in particular for generating electricity, and current data on CO_2 emissions avoided by using renewables in the electricity sector.



[Graph shows CO_2 emissions avoided from 3 sources (left-hand scale: electricity / heating / fuel), each of which is broken down according to renewable energy source (from left: hydroelectric / wind power / biomass / photovoltaic / geothermal / solar power / biodiesel / vegetable oil / bioethanol); "total CO_2 emissions avoided through use of renewables: approx. 101 million tonnes, of which approx. 45 million tonnes because of the EEG"].

Provisional data

Sources: *Renewable Energy Sources in Figures – national and international development (as of June 2007)* (Environment Ministry).

Figure 7: *Total CO_2 emissions avoided through the use of renewable energy sources in 2006*

Apart from CO_2, emissions of other pollutants are avoided by generating electricity from renewables – in 2006, 39 000 tonnes of SO_2, 11 200 tonnes of NO_x, and 6 300 tonnes of CO.

With regard to heating, renewables were responsible for CO_2 savings of 20.7 million tonnes in 2006 and the use of biofuels for savings of 12.7 million. The use of renewable energy sources in Germany thus led to CO_2 savings of 101.5 million tonnes.

The growth of renewables is thus making a considerable contribution to achieving Germany's target under EU burden-sharing for the Kyoto Protocol, i.e. 21% reduction in greenhouse gas emissions in the first Kyoto commitment period, ending in 2012.

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Annexes

1. *Erneuerbare-Energien-Gesetz (EEG)* [Renewable Energy Sources Act] of 21 July 2004; in force since 1 August 2004.

2. *1. Gesetz zur Änderung des Erneuerbare-Energien-Gesetzes* [First EEG Amendment Act] of November 2006; in force since 1 December 2006.

3. *Renewable Energy Sources in Figures – national and international development (as of June 2007)* – published (in German and English) by the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety.

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