

## Report of the Federal Republic of Germany for the Year 2005 according to Directive 2001/77/EC on the Promotion of Electricity Produced from Renewable Energy Sources in the Internal Electricity Market

### - Summary -

A sustainable energy supply is a core policy objective of the Federal Government and is geared towards setting up the energy supply of future generations on the premises of ecological objectives coupled with growth. One pivotal element of this policy is the increased use of renewable energy sources in the interest of securing finite energy resources and as part of environmental and climate protection.

The Federal Government assumes that Germany will be able to meet its EU target – a share of renewable energy sources in electricity generation of at least 12.5% - if it continues to pursue appropriate measures to promote the use of renewable energies. The most important tool for reaching this goal is the Renewable Energy Sources Act (EEG) which sets the fixed target for the share of renewable energy sources in electricity supply at a minimum of 12.5% by 2010 and at a minimum of 20% by 2020. Due to its long term and legally guaranteed fees for electricity from renewables, the Renewable Energy Sources Act which replaced the 1990 Act on the Sale of Electricity to the Grid in the year 2000, has prompted a marked increase in the use of renewable energy sources to produce electricity. It was possible to step up the share of renewable energies from 4.7% in 1998 to 6.7% in the year 2000 and to 9.3% in 2004. The most important roles in electricity generation are played by wind energy with a share of 44.8%, hydropower with a share of 37.6% and biomass with a share of 16.8%. In 2004 the Renewable Energy Sources Act was extensively amended and thus considerably improved the conditions in particular for solar energy, bioenergy with a guaranteed base-load, the use of energy efficient combined heat and power generation and the increase of energy efficiency related to renewable energy sources.

The increased use of renewable energy sources prevents the emission of climate relevant gases in the use of fossil energy sources and thus constitutes an indispensable part of the German climate protection strategy. In 2004 a total of 70 million tonnes of CO<sub>2</sub> was avoided due to power and heat generation from renewable energy sources and the use of biofuels. Electricity production alone prevented the emission of 52.2 million tonnes CO<sub>2</sub> and a saving of 33 million tonnes of CO<sub>2</sub> can be put down to the implementation of the EEG.

**Wind energy** has surpassed hydropower as the most important source for electricity generation. About a third of the global installed capacity and approximately 50% of installed capacity in Europe can be found in Germany. 2004 saw the new installment of 2,037 MW capacity and at the end of 2004 16,543 wind turbines with a total capacity of 16,629 MW were installed in the whole of Germany. With approximately 25 TWh generated energy in 2004, wind energy contributed to 4.1% to the gross electricity generation in Germany. Wind energy and in particular offshore wind parks will have the largest mid-term potential for increase among all sources of renewable energies for the electricity sector in Germany. According to the Federal Government's strategy for offshore wind parks the mid term installation – until 2010 - of a capacity of 2000 to 3000 MW will be possible under present conditions on sites currently considered feasible for this purpose. In the long run – i.e. by 2025 or 2030 – it will be possible to install a

capacity of 20,000 to 25,000 MW if profitability is achieved. This would mean that in 25 years time about 25% of the total German electricity requirement would be covered by wind energy. However a decrease in the installation of new wind turbines has been noted which can be attributed primarily to the limited availability of sites on land. The technical and economic potential to increase capacities on land has been noticeably reduced due to the new stringent regulations on minimum distances and heights to be met in some Bundesländer (states).

Improved framework conditions in the Renewable Energy Sources Act for the use of **biomass** have led to a marked increase in capacities and in its use for power generation. At the end of 2004 biomass contributed to 93% to heat generation from renewable energy sources and to 17% to power generation from renewables. There is a considerable growth potential in Germany in the use of biomass which is, however, limited by the available surface area. In the long run it will be possible to reach a share of about 10% in the total electricity supply and about 20% in heat supply.

**Electricity generation from solar power** has seen a rapid development in Germany in recent years due to the amended Renewable Energy Sources Act . It was possible to increase its capacity from 188 million kWh in 2002 to 459 million kWh in 2004. However with a share of 0.07 % in the total electricity consumption its significance is comparatively low.

The number of larger **hydropower** installations has practically remained constant over the past few years but the Act on the Sale of Electricity to the Grid of 1990 and the Renewable Energy Sources Act in force since the year 2000 have led to increased installation of small hydropower units and thus put a halt to the pending downward trend in this sector.

**Geothermal energy** is available 24 hours out of 24 and can be regulated according to need at any time. With these characteristics geothermal power plants could make an important contribution to the base load requirement in electricity and heating supply. According to a study commissioned by the Federal Environment Ministry there is a technical potential to produce electricity in Germany from geothermal power of approximately 200 TWh per year. That would correspond to approximately 35% of the current gross electricity consumption in Germany. There are 34 larger geothermal power stations in Germany at present with a thermal rating of about 88 MW for heat generation. Their annual heating capacity is 1,558 GWh. The construction of further plants is planned for the next few years. Since November 2003 it has become possible for the first time in Germany to produce electricity from geothermal power. This has brought the use of geothermal power in Germany a major step forward. Additional sites are now being developed to further boost geothermal electricity generation. However, apart from the regulations set forth in the Renewable Energy Sources Act more research, development, demonstrations and market introduction initiatives are needed in the field of geothermal electricity generation. Geothermal power will hence receive support within the framework of R&E and demonstration initiatives and as a part of the market introduction programme for renewable energy sources.

*(This summary is not part of the official report to the European Commission)*