

# **Amending the Renewable Energy Sources Act (EEG)**

## **Key provisions of the new EEG as amended on 21 July 2004<sup>1</sup>**

On 17 December 2003, following a proposal by Environment Minister Jürgen Trittin, the Cabinet presented a Government Draft for a comprehensive amendment to the Renewable Energy Sources Act (EEG). After debating and modifying this Bill, the *Bundestag* adopted the Amended Act after its third reading on 2 April 2004. On 14 May 2004 the *Bundesrat* convened a Mediation Committee, which on 17 June 2004 agreed on a text subsequently endorsed by the *Bundestag* on 18 June 2004. The *Bundesrat* thereupon refrained from raising objections to the Act as modified during the mediation procedure. The new EEG of 21 July 2004 was published in the Federal Gazette on 31 July 2004 and thus entered into force on 1 August 2004.

The objective of the Renewable Energy Sources Act is to increase the share of total power supply which is derived from renewables to at least 12.5 per cent by 2010 and at least 20 per cent by 2020. To make this possible, the overall framework for feeding in, transmitting and distributing electricity from renewable energy sources will be considerably improved. This will maintain planning and investment security for manufacturers, plant operators, investors and banks. Drawing on positive experience with the EEG in its previous version, the renewable basis for producing power can now be expanded with even greater efficiency.

In its amended form, the EEG will also implement the European Union Directive on the promotion of electricity from renewable energy sources of September 2001. To this end all renewable energy sources have been incorporated into its scope. Payments will, however, continue to be governed in full by the existing principle of exclusive use. This means that, as in the past, fees can only be paid under the Renewable Energy Sources Act if the electricity concerned has been produced exclusively at plant for converting renewable energy sources. Power derived from, for example, co-incinerating the biodegradable fraction of waste will thus be covered by EEG provisions on obligatory purchase and transmission, but it will still not be eligible for EEG payments.

The EEG is one of Germany's most effective and efficient climate protection instruments. In 2003 the use of renewable energy sources (for power, heating and fuel together) delivered CO<sub>2</sub> emission savings totalling around 53 million tonnes; in 2010 the figure is expected to rise

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<sup>1</sup> This overview offers a brief guide to the amended Renewable Energy Sources Act. The Act was published on 31 July 2004 in the *Bundesgesetzblatt*, year 2004, part I, no. 40, pages 1918 ff.. Please consult the statutory provisions and regulations for specific details.

to about 85 million tonnes. Of this reduction, over 23 million tonnes were attributed in 2003 to the Renewable Energy Sources Act. In 2010 the EEG alone is expected to reduce emissions of greenhouse gas by at least 42 million tonnes.

### Increasing use of renewable energies and decreasing CO<sub>2</sub> emissions

<b>Total: use of renewable energies</b>		2003 <sup>1)</sup>	2010 (estimate)
Total production from renewables	TWh	113.8	186.3
<i>Total CO<sub>2</sub> reduction from renewables</i>	<i>Mt CO<sub>2</sub></i>	<i>53.4</i>	<i>89.8</i>
<b>Electricity</b>		<b>2003<sup>1)</sup></b>	<b>2010<sup>2)</sup></b>
Total electricity produced from renewables	TWh	46.3	72.6
of which: due to EEG	TWh	28.8	52.1
of which: not due to EEG	TWh	17.5	20.5
<i>Total CO<sub>2</sub> reduction due to power from renewables</i>	<i>Mt CO<sub>2</sub></i>	<i>37.0</i>	<i>58.1</i>
<i>of which: CO<sub>2</sub> reduction due to EEG power</i>	<i>Mt CO<sub>2</sub></i>	<i>23.0</i>	<i>41.7</i>
<i>of which: CO<sub>2</sub> reduction not due to EEG power<sup>2</sup></i>	<i>Mt CO<sub>2</sub></i>	<i>14.0</i>	<i>16.4</i>
<b>Thermal energy</b>		<b>2003<sup>1)</sup></b>	<b>2010<sup>3)</sup></b>
Thermal energy produced from renewables	TWh	60.8	70.9
<i>CO<sub>2</sub> reduction – thermal energy from renewables<sup>3</sup></i>	<i>Mt CO<sub>2</sub></i>	<i>13.9</i>	<i>16.2</i>
<b>Biogenic fuels</b>		<b>2003<sup>1)</sup></b>	<b>2010<sup>4)</sup></b>
Fuels from renewables	TWh	6.7	42.8
<i>CO<sub>2</sub> reduction<sup>4</sup> – biogenic fuels</i>	<i>Mt CO<sub>2</sub></i>	<i>2.4</i>	<i>15.6</i>

Sources:

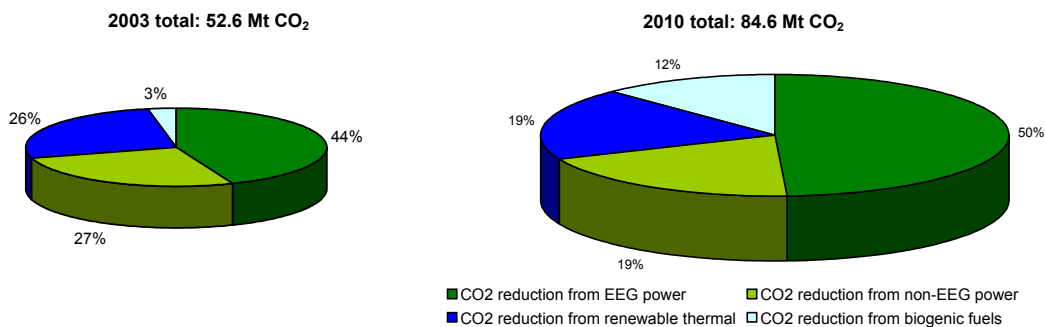
1) BMU, AG EE Stat, VdN; 2004

2) Estimated effects of the Amended EEG, Status July 2004

3) Study on ecologically optimised development of the use of renewable energy sources in Germany, DLR, WI, ifeu, 2004

4) BMU pursuant to EU Directive 2003/30/EG on the promotion of the use of biofuels, 2004

### CO<sub>2</sub> reduction from the use of renewable energy sources



<sup>2</sup> Emission factor: 0.8 kg CO<sub>2</sub>/KWh

<sup>3</sup> Emission factor: 0.2285 kg CO<sub>2</sub>/KWh

<sup>4</sup> Greenhouse gas savings due to biogenic fuels are 1.6 Mt CO<sub>2</sub> equivalent in 2003, and 10.4 Mt CO<sub>2</sub> equivalent in 2010

The amended EEG has incorporated two preliminary Acts which had come into force on 22 July 2003 and 1 January 2004:

The hardship clause in §11a of the old EEG<sup>5</sup> provided that companies purchasing more than 100 GWh power a year at a particular point of delivery and for whom the ratio of electricity costs to gross value added is greater than 20 should not pay more than 0.05 cent/KWh for that proportion of their additional power requirement which has been derived from renewable energy sources. BAFA, the Federal Office for Trade and Export Control, is responsible for implementing this clause.

The “Photovoltaics Amendment”<sup>6</sup> introduced improved terms from 1 January 2004 for the remuneration of solar power in compensation for the successful conclusion in summer 2003 of a nationwide programme to install solar power technology on 100,000 roofs. The new rates stipulated in this legislation applied to photovoltaic systems commissioned on or after 1 January 2004. Solar power producers receive 45.7 cents per kilowatt-hour as a basic payment. This also applies to large-surface installations that are not attached to a building structure, as long as they feature within a local development plan. For solar installations on buildings the rate has increased by 11.7 cents per kilowatt-hour (cents/kWh) for an output of up to 30 kW, by 8.9 cents/kWh for output over and above this up to 100 kW and by 8.3 cents/kWh for any output which exceeds this 100 kW. There is an extra bonus of 5 cents/kWh for facade-mounted installations. Companies in the solar energy sector have been profiting from this change since early 2004 thanks to further vigorous growth in the photovoltaic market.

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<sup>5</sup> First Act amending the EEG (*BGBI.* 2003 I, 1459).

<sup>6</sup> Second Act amending the EEG, published in the Federal Gazette (*BGBI.*), year 2003, part I, no. 68, Bonn, 31 December 2003, pages 3074 – 3075.

**These are the key changes and innovations which distinguish the amended Renewable Energy Sources Act valid from 1 August 2004 from the previous statute:**

**Purpose of the Act (§ 1)**

The objective of doubling the share of renewable energies in the power base from 2000 to 2010, already enshrined in the previous Act, is laid out in specific terms. By 2010 renewables are to contribute at least 12.5% to the generation of electricity. The mid-term goal for 2020 is defined as at least 20%. This offers stakeholders a clear framework for the expansion of renewable energies. Further objectives are: to permit the sustainable development of energy provision in the interests of climate, nature and environment protection, to reduce the macroeconomic costs of energy provision by reflecting long-term external effects, to protect nature and the environment, to contribute towards preventing conflicts over fossil energy resources and to promote the ongoing development of technologies to derive power from renewable energies.

**Scope of application/Priority principle (§ 2)**

The EEG regulates public grid connection for plant generating power from renewable energies and mine gas on the territory of the Federal Republic of Germany, including its Exclusive Economic Zone (EEZ). It provides for the priority purchase and transmission of, and payment for, such electricity by grid system operators and for a nationwide equalisation scheme covering this purchase and payment. It is clear from the duty to connect such installations without delay and as a priority that the connection of plant deriving power from renewable energy sources also has priority over the connection of conventional power plant. Pursuant to the new EEG, payment is also to be made for power from installations in which there is a public stake (be it at federal or state level) of 25% or more.

**Definitions offering enhanced legal security (§ 3)**

Detailed definitions of the terms used in the statute have made the new EEG more user-friendly and enhanced legal security. Definitions are provided for the following frequently used terms: renewable energy, plant, plant operator, commissioning, capacity, grid system and grid system operator.

#### **Improved grid integration of plant using renewable energies (§ 4)**

As the share of renewables in overall power generation grows, so does the need to continue integrating renewable energy installations into the grid. The amended Act creates incentives for the operators of plant using renewable energies to work with grid operators to establish a power generation management scheme in their mutual interest. This is particularly important with regard to grid upgrades and load balancing. It assumes the consent of both plant and grid operators, both of whom stand to gain from the new provision if they make appropriate use of it. The total cost of power generation and distribution can thereby be reduced, leading ultimately to lower prices for consumers, too.

#### **Clearer rules on payment obligations (§ 5)**

The Act retains the well-tried principle of exclusivity with regard to payments. This stipulates that priority must always be granted to forms of power generation which rely fully on the renewable energies and mine gas described in Articles 6 to 11. To permit a more effective integration of renewables into the grid system, plant with a capacity of 500 kilowatt or more will henceforth be obliged to measure and record their output. This will improve the database for power generation from renewable energies, making it easier for the grid system operators responsible for delivering power to plan ahead. §13 (1) provides that plant operators have the right to carry out their own measurements, meaning that they can either perform this task themselves or instruct an entity of their choice to do so. The grid system operator is entitled in return to access the measurement data.

#### **Power from small-scale hydroelectric plant (§ 6 (1))**

Payments will continue to be made under the EEG for hydroelectric power from plant with a capacity up to 5 MW. This also applies to small, newly constructed plant with up to 500 kW capacity on an existing barrage weir or dam if good ecological status is achieved as a result or if ecological status is thereby substantially improved. Small plant with capacity up to 500 kW which is not constructed on an existing barrage weir or dam or which is constructed without complete cross coverage will, however, only fall under the scope of the EEG if it is licensed by 31 December 2007. This is to create a balance between the concerns of nature protection and the use of river energy and is designed to prevent additional modifications to small rivers

and streams still in their natural state. Good ecological status is demonstrated by submitting an official authorisation under water law; the grid system operator is under no obligation to verify compliance with this provision by additional means.

Payments up to 500 kW have increased by 2 cents/kWh to 9.67 cents/kWh. The rate for up to 5 MW remains 6.65 cents/kWh. As the cost reduction potential has already been exploited to the full, new plant is still not subject to an annual decrease in rates. These payments, previously indefinite, will be limited to 30 years in return for the rate increase.

### **Payments for hydroelectric power from large-scale plant (§ 6 (2))**

Under certain conditions payments will now be made for power from large-scale hydroelectric plant with an installed electrical capacity of between 5 MW and 150 MW. This plant must have been modernised or expanded by 31 December 2012. Such modernisation or expansion must create an increase in electrical capacity of at least 15% and must improve the ecological status of the water body. Payment may only be made for the additional power attributed to the modernisation scheme, not for power from the existing plant. The rate is 7.67 cents/kWh up to 500 kW, 6.65 cents/kWh up to 10 MW, 6.10 cents/kWh up to 20 MW, 4.56 cents/kWh up to 50 MW and 3.70 cents/kWh up to 150 MW. Payments for power from hydroelectric plant with a capacity above 5 MW can be made for 15 years. Payments for new plant commissioned on or after 1 January 2005 will decrease by 1% p.a.

### **Payments for power from landfill gas, sewage treatment gas and mine gas (§ 7)**

The 2004 rate is 7.67 cents/kWh up to 500 KW and 6.65 cents/kWh up to 5 MW. Power from mine gas also qualifies for a rate of 6.65 cents/kWh above 5 MW. These minimum rates are each increased by 2.0 cents/kWh if the power is generated using innovative processes such as fuel cells, gas turbines, the organic Rankine cycle, the Kalina cycle or the Stirling engine. An annual rate decrease of 1.5% has been introduced for newly commissioned plant.

### **Payments for power from biomass (§ 8)**

A number of studies had shown that the previous rates for small biomass plant were much too low to tap potential to a desirable extent. A new payment category at the higher rate of 11.5 cents/kWh has, therefore, been introduced for capacity up to 150 kW (the lowest category

under the previous Act was 9.5 cents/kWh for up to 500 kW). From the date the new Act comes into force, this payment will also apply to power from biomass plant commissioned after 31 December 2003 (§ 21 (1, iii)). Under a new provision, the minimum rate will decrease at a rate of 1.5% p.a. Payments for biomass power will continue for 20 years.

**Bonus for regenerative raw materials:** Another finding to emerge from the studies was that the rates paid under the old Act were not sufficient to encourage the use of regenerative raw materials, such as energy-rich plants. As a consequence, the rates will now increase whenever power is derived exclusively from plants or parts of plants left over from agricultural, silvicultural or horticultural operations or landscape management which have not been subjected to any further treatment or modification beyond the requirements of harvesting, conserving or conversion in a biomass facility and/or from liquid manure or specific types of distiller's residue. Payments for up to 500 kW are increased by 6.0 cents/kWh and for up to 5 MW by 4.0 cents/kWh. There is an exception to this: if power is derived from wood burning the rate from 500 kW to 5 MW only rises by 2.5 cents/kWh. This reflects the higher costs incurred when using regenerative raw materials. It is a key factor in developing additional biomass options, now that the potential for using waste wood and organic waste is largely exhausted. The bonus for regenerative raw materials applies to both new and existing plant.

**Bonus for CHP power:** The minimum rates have risen by another 2.0 cents/kWh for power cogenerated in accordance with the Combined Heat and Power Generation Act. It is important to note that this increased rate can only be claimed if power and thermal energy are produced together.

**Bonus for innovative technologies:** The rates have risen by an additional 2.0 cents/kWh for power generated in plant where cogeneration is at least partially in operation and if the biomass was converted by means of innovative processes (e.g.: thermochemical gasification, fuel cells, gas turbines, the organic Rankine cycle, the Kalina cycle or Stirling engines).

### **Payments for power from geothermal energy (§ 9)**

Two additional capacity thresholds – at 5 MW and 10 MW – with higher rates of payment have been introduced for power generated using geothermal energy. Under the previous Act there was only one threshold at 20 MW; but the plant currently under development is considerably smaller, resulting in higher unit costs for the production of electricity. This trend is extremely important as it will enable geothermal plant to respond better to base load and the need to adapt power to demand. Plant commissioned before 1 January 2010 will receive a

payment of 15 cents/kWh up to 5 MW, 14 cents/kWh up to 10 MW, 8.95 cents/kWh up to 20 MW and 7.16 cents/kWh from 20 MW upwards over a period of 20 years. As the use of this energy source is still at an embryonic stage the annual decrease of 1% introduced by the new Act will only apply to plant commissioned after 2010.

### **Payments for power from on-shore wind farms (§ 10 (1 & 2))**

Power from wind conversion will also be subject to payment for 20 years. Within that period two different rates will be applied. Plant commissioned after the new Act comes into force in 2004 will qualify over a minimum of five years for an initial payment of 8.7 cents/kWh followed by a base payment of 5.5 cents/kWh. To reflect developments in this wind technology, the initial rate has been lowered by 0.1 cents and the base rate by 0.5 cents/kWh compared with the previous legislation. The noticeable fall in the base rate will above all affect very productive coastal sites and is designed to stem potentially excessive incentives for these installations.

The period for which the initial payment applies may be extended, depending on local wind conditions. At average sites, the higher initial rate might, for example, apply for 12 years and the lower base rate for the remaining 8 years, together making up the maximum 20 years. The specific breakdown into initial and base rate is determined by the “reference yield” for the plant in question.

Plant which is unable, according to a prior expert opinion, to achieve at least 60% of the reference yield at the planned site will not be eligible for payment. This will quash any economic incentive to install wind turbines on sites with poor wind conditions. It is all the more important for onshore wind farming to tap the as yet unexploited potential for conversion at locations with eminently suitable wind conditions.

Coastal areas in particular are offered incentives for repowering, i.e. the substitution of older, smaller installations by state-of-the-art, high-output turbines. For new plant, the annual rate of decrease has risen from 1.5% to 2% to encourage optimum use of the predicted potential for cost reduction. Technological advances in wind conversion over recent years give grounds to assume that wind farming will continue to expand in spite of lower rates of payment.

### **Payments for power from off-shore wind energy (§ 10 (3))**



The objective is a rapid development of off-shore wind conversion. Power from off-shore wind farms will be eligible for an initial rate of 9.1 cents/kWh if the plant is commissioned by 2010 (previously 2006). Wind farms are classified as off-shore if they are constructed at least three nautical miles off the shoreline. The initial rate will be paid for 12 years. This period will be extended for installations built at a greater distance from the shoreline and at greater depths: for every additional nautical mile beyond 12 nautical miles the period will be extended by 0.5 month and for every additional metre of depth by 1.7 months. The base rate which follows the initial rate is 6.19 cents/kWh. Power from off-shore wind farms whose construction is licensed after 1 January 2005 in the EEZ or in coastal waters is only eligible for payment if the plant is built outside nature conservation or bird protection areas. This will ensure that no incentive is provided for incursions into these protected zones. The rate for off-shore plant will not be subject to annual decrease until 2008.

#### **Payments for power from solar radiation (§ 11)**

The basic rate for power from solar radiation is 45.7 cents/kWh. If the installation is attached to or built on top of a building, the payment for an installed capacity of up to 30 kW is 57.4 cents/kWh, for over 30 kW it is 54.6 cents/kWh and for over 100 kW 54.0 cents/kWh. (This adjustment takes into account the conclusion of the successful programme to install solar panels on 100,000 roofs). Facade-mounted installations qualify for an additional 5 cents/kWh. Payments for solar power shall be made for 20 years. If the installation is not integrated into the facade or on the roof of a building, it is only eligible for payment if it has been commissioned for certain legally defined land categories and within the framework of a local development plan pursuant to § 30 of the Building Code and a planning procedure pursuant to § 38 (1) of the Building Code. This provision is designed to ensure that building does not take place on ecologically sensitive land and that community consultation entails the broadest possible degree of local assent. From 1 January 2005 the annual decrease for new installations will be 5%. For installations which are not integrated into the facade or roof of a building or sound barrier, the rate of decrease will be 6.5% p.a. from 1 January 2006.

#### **Enhanced legal security for purchase, transmission and payment (§ 12)**

No need for contracts (1): The new provisions establish beyond doubt that the plant operator is directly entitled, by way of a legal obligation, to connection, purchase and appropriate payment by the grid system operator and that the grid system operator may therefore not make

compliance with these obligations provisional to contract. Nevertheless, it is naturally still possible to conclude a contract, and this may offer a useful opportunity to regulate above all technical matters concerning the plant's integration into the grid.

Sliding scale (2): This provision addresses situations in which different minimum rates apply depending on plant capacity, as in the case of biomass or photovoltaics. As under the previous Act, the payment will always be an aggregate of pro rata sums for each applicable capacity threshold. The sliding scale in this provision will prevent payments suddenly increasing substantially when a threshold is passed. This cumulative principle is the only way to avoid an unfair distribution of payments between installations of different sizes and as a result it will help to rule out excessive or inadequate incentives.

Payment period (3): With the exception of hydroelectric power, payment will be made for 20 calendar years, to which is added the remainder of the year of commissioning. The rate of payment applicable during the year of commissioning will be maintained throughout this period, with the exception of the transition from initial to base rate in the case of wind energy. The annual decrease only applies to payments for plant constructed in subsequent years.

Legal constraints on setting off payments (4): This new paragraph provides that any claims for payment made by the grid system operator may not be offset against payments to which the plant operator is entitled if such claims are disputed or have not been legally established. This provision is designed to prevent grid operators with superior economic power, who continue to hold a natural monopoly, from obtaining unduly high costs for metering, billing, reactive power or supply servicing from the plant operator by setting off payments and making plant operators carry the litigation risk. In addition to this, to protect operators of small photovoltaic and biomass installations the statutory restrictions on setting off payments defined in § 31 of the Ordinance on general conditions for the supply of electricity to tariff customers shall not apply to payment entitlements under this Act.

Simplified preliminary injunction procedure (5): This new provision makes it easier for plant operators to obtain a court injunction imposing temporary connection, purchase and payment for the power they generate. The need for such a provision was ascertained due to the widespread practice of civil courts in dismissing petitions for injunction on the grounds that they could lead to later claims for damages. This meant that it was usually impossible for plant operators to assert their rights by way of a provisional legal remedy, and in many cases they abandoned their projects as a result. This obstacle to the expansion of renewable energies will be eliminated by the new paragraph, but without infringing unduly on the rights of grid

system operators, as the provision does not simplify the grounds on which the injunction can be sought and adequate financial protection is afforded by the option of claiming damages.

### **Enhanced transparency and legal security for connection and network costs (§ 13)**

A clear distinction is drawn between the cost of plant connection to be borne by the plant operator and the cost of essential grid upgrades to be borne by the grid system operator. § 4 (2, fourth sentence) describes a new criterion for this distinction: a network upgrade is also deemed to occur wherever technical facilities are created which pass into the ownership of the grid system operator or which are necessary for operation of the grid system. This complements the considerations developed in case law.

Grid system operators can take account of the costs incurred by upgrading the system when they fix charges for use of the system. In this event they are required to disclose such costs. This duty to disclose serves to achieve the necessary transparency. Its aim, in the interest of protecting consumers, is to prevent costs being passed on to power consumers unjustifiably.

Another new provision relates to the plant operator's duty to bear the cost of all metering devices required operationally to record the electricity transmitted and received by the plant which is generating power from renewable energy sources. This provision is designed to prevent separate devices being installed for received and transmitted volumes, which would incur unnecessary expense.

The new Act stipulates that for plant with an overall capacity of up to 30 kilowatts which is located on a site with an existing grid connection the existing point of connection shall be regarded as the most suitable point of connection. This is because existing site connections are essentially capable of absorbing the volume of electricity fed into the grid by plant with a maximum installed capacity of 30 kW. Any grid system operator wishing a different point of connection to be used must bear the resulting costs.

### **Nationwide equalisation scheme (§ 14)**

The nationwide mechanism for equalising the power purchased and paid for under the EEG remains essentially unchanged, preventing regional inequalities in the treatment of electricity consumers and by means of its distributional effects ensuring that the cost of expanding renewable energies remains relatively low. The scheme will continue to be managed by the grid system operators and power utilities. Two basic changes have been made to improve this

equalisation mechanism further. First, the transmission grid operators will in future equalise differences in the volume of electricity purchased within their zones of responsibility without delay; and secondly, power generated pursuant to the EEG will no longer be passed on to the utilities as an even stream but in line with a profile which approximates to actual patterns of supply. Immediate equalisation between transmission grid operators will cater for their desire to see an even distribution of the requisite demand for equalisation, while profiled forwarding to power utilities will promote the integration of renewable energies into the power system.

### **Transparency (§ 15)**

To enhance transparency, the amended Act imposes a duty to publish data on energy volumes and payments broken down into the different technologies for generating power from renewables. Greater transparency will also be achieved by applying a pre-defined standard calculation method when publishing incremental costs and the overall costs of implementing the Act. In order to obtain more useful information about the expansion of renewable energies and the management of the nationwide equalisation scheme by the grid system operators, the Federal Environment Ministry is now authorised create a Register of Plant. Once this has been established, any plant operator wishing to claim entitlements under the EEG will be obliged to list the plant concerned in the Register.

### **Hardship provisions (§ 16)**

The hardship clause introduced by the First Act amending the EEG of 16 July 2003 to regulate the situation of power-intensive manufacturing industry has been extended to cover more enterprises and the time limit has been removed. Power-intensive manufacturing companies are covered by the hardship clause if their power consumption is greater than 10 GWh (previously 100 GWh) and their ratio of electricity costs to gross value added exceeds 15% (previously 20%). The application procedure through BAFA (the Federal Office for Trade and Export Control) has been simplified. To compensate for the expanded reach of the hardship clause, the total volume of relief has been capped. As the quantity of power which does not have to be purchased from privileged companies must be redistributed among other consumers of electricity, these have to make a greater contribution towards the expansion of renewable energies. A 10% cap has been imposed on the share that is to be redistributed under the hardship mechanism. Environmentally friendly light rail systems are now also eligible for the hardship mechanism if their annual power consumption is 10 GWh or more.

### **Guarantee of origin for power from renewable energies (§ 17)**

EU Directive 2001/77/EC on the promotion of electricity from renewable energy sources in the internal electricity market requires standardised rules to be established for issuing a guarantee of origin. The EEG provides a basis for guarantees of origin for power from renewable energies to be issued by authorised entities, thereby also serving the interests of consumer protection. The following data must be included in the certificate: type of energy used and essential components; in the case of biomass, whether this is biomass as defined by the Biomass Regulation; name and address of the plant operator; quantity of power generated, period in which it was generated and whether the power was paid for in accordance with EEG provisions; location, capacity and commissioning date of the plant.

### **Prohibition of multiple sales (§ 18)**

The rules state clearly that the positive environmental properties of power from renewable energies, and in particular the fact that no additional carbon dioxide is emitted, may not be sold more than once. To this end, therefore, there is a prohibition on multiple sales of the power from renewable energies itself. This prohibition also extends to the concomitant guarantees, and it is not permissible to simultaneously accept payment and forward a guarantee for the same electricity. This prohibition also covers landfill, sewage and mine gas or gas from biomass which is fed into a gas network.

### **Clearing house (§ 19)**

Provision is again made for a clearing house to be established as and when required to clarify the application of the EEG. This may be used to settle fundamental disputes and to pre-empt the seeking of legal remedies before a civil court. As a new feature, this clearing house may now address issues which do not directly concern grid connection.

### **Reporting to Parliament (§ 20)**

The Federal Environment Ministry has a duty to report to the *Bundestag* regularly about the impact of the EEG. This is designed to ensure that payment structures can, if necessary, be adjusted to reflect true circumstances, not only to ensure the continued expansion of

renewable energies, but also to keep the rules as efficient as possible and pre-empt potentially excessive incentives. To enhance the accuracy of this report, the operators of grid systems and plant will be required in future to disclose data of relevance to the EEG on a random survey basis. This will help to promote transparency and to establish the rates of payment which are fundamentally necessary to commercial operation. This provision is also designed to prevent abuse and vouchsafe the proper functioning of the Act.

A new requirement has been included that the report shall include storage technologies and the impact of renewable energy conversion on protection of the natural environment and landscape. This enshrines an instrument which will make it easier to monitor possible emerging conflicts and to adjust course if necessary.

### **Financial impact**

The amended Act has reduced payment for power from onshore wind energy. Furthermore, an annual decrease in the rates is applied to new plant coming on stream across all renewable energy sources (with the exception of small hydroelectric plant); in the case of geothermal energy and offshore wind farms, this annual decrease will only begin to take effect in later years. These annual decreases have been set to reflect the efficiency potential of each energy source. They will create challenging incentives to reduce costs and improve plant efficiency. The new provisions are expected to ensure that computed incremental costs are lower than the costs that would have pertained had the previous provisions continued unchanged. The aim is to make renewable energies competitive in the medium to long term so that they can assert themselves unaided in the market. In nominal terms, the rates of payment for most renewables have been falling since 2002 as a result of the annual decrease mechanism; if we also take into account trends in real prices, which are subject to inflation, payments have been decreasing even faster. As prices for conventional power are likely to rise in the next few years, the gap between the cost of power generation from renewable and non-renewable sources will close further. For the time being, however, the cost differential can be expected to increase slightly, and this will be borne by electricity consumers as an integral part of their electricity charges. In the long term this trend will reverse and regenerative power will become competitive as generation costs fall below the cost of generating power by conventional means.

**Rates of payment pursuant to the Renewable Energy Sources Act of 21 July 2004 for new plant commissioned between 1 August 2004 and 31 December 2004:**

For detailed tables on future payment rates and sample calculations, see separate document.

(For larger plant, the payment will be composed by applying a sliding scale pro rata to each capacity range (§ 12 (2).)

Source	Plant capacity	Pursuant to	Rates	Capacity range	Period (years)	Comments
Hydropower	Up to 5 MW	Art. 6(1)	9.67 ct/kWh 6.65 ct/kWh	Up to 500 kW 500 kW to 5 MW	30	Some site restrictions from 2008
	5 MW to 150 MW	Art. 6(2)	7.67 ct/kWh 6.65 ct/kWh 6.10 ct/kWh 4.56 ct/kWh 3.70 ct/kWh	Up to 500 kW 500 kW to 10 MW 10 MW to 20 MW 20 MW to 50 MW 50 MW to 150 MW	15	Only in the case of modernisation and payment only applies to increased capacity
Landfill gas, sewage gas, mine gas	Unlimited	Art. 7(1)	7.67 ct/kWh 6.65 ct/kWh 6.65 ct/kWh	Up to 500 kW 500 kW to 5 MW Mine gas from 5 MW	20	In the case of landfill and mine gas, the power attributable to capacity beyond 5 MW is paid for at market price.
	Unlimited	Art. 7(2)	9.67 ct/kWh 8.65 ct/kWh 8.65 ct/kWh	Up to 500 kW 500 kW to 5 MW Mine gas from 5 MW	20	If certain innovative technologies are used.
Biomass <sup>7</sup>	Up to 20 MW	Art. 8(1) first sentence	11.50 ct/kWh 9.90 ct/kWh 8.90 ct/kWh 8.40 ct/kWh	Up to 150 kW 150 to 500 kW 500 kW to 5 MW 5 MW to 20 MW	20	
	Up to 20 MW	Art. 8(1) second sentence	3.90 ct/kWh	Up to 20 MW	20	If waste wood classified as AIII or AIV is used and plant was commissioned from 1 July 2006.
	Up to 20 MW	Art. 8(2) first sentence	17.50 ct/kWh 15.90 ct/kWh 12.90 ct/kWh	Up to 150 kW 150 kW to 500 kW 500 kW to 5 MW	20	(2) only applies to specific (regenerative) raw materials.
	Up to 20 MW	Art. 8(2) second sentence	17.50 ct/kWh 15.90 ct/kWh 11.40 ct/kWh	Up to 150 kW 150 kW to 500 kW 500 kW to 5 MW	20	(2) second sentence only applies to the burning of wood as specified above.
	Up to 20 MW	Art. 8(3)	13.50 ct/kWh 11.90 ct/kWh 10.90 ct/kWh 10.40 ct/kWh	Up to 150 kW 150 kW to 500 kW 500 kW to 5 MW 5 MW to 20 MW	20	(3) applies to power from cogeneration in CHP plant.
	Up to 20 MW	Art. 8(4)	13.50 ct/kWh 11.90 ct/kWh 10.90 ct/kWh	Up to 150 kW 150 kW to 500 kW 500 kW to 5 MW	20	(4) applies to all power produced in CHP plant if certain innovative technologies are used.
Geothermal energy	Unlimited	Art. 9(1)	15.00 ct/kWh 14.00 ct/kWh 8.95 ct/kWh	Up to 5 MW 5 MW to 10 MW 10 MW to 20 MW	20	

<sup>7</sup> For biomass other combinations (not shown here) are accepted under § 8, paragraphs 2 to 4.

			7.16 ct/kWh	From 20 MW		
Onshore wind farms		Art. 10(1)	8.7 ct/kWh (initial rate) 5.5 ct/kWh (final rate)		20	The higher rate is granted for 5 to 20 years, depending on reference yield.
Offshore wind farms		Art. 10(3)	9.10 ct/kWh (initial rate) 6.19 ct/kWh (final rate)		20	The higher rate is paid for plant commissioned before 2011. It is granted for 12 to 20 years, depending on site.
Solar energy	On buildings or sound barriers	Art. 11(2)	57.4 ct/kWh 54.6 ct/kWh 54.0 ct/kWh	Up to 30 kW 30 kW to 100 kW From 100 kW	20	
	Facade-mounted	Art. 11(2) second sentence	62.4 ct/kWh 59.6 ct/kWh 59.0 ct/kWh	Up to 30 kW 30 kW to 100 kW From 100 kW	20	
	Other	Art. 11(1)	45.7 ct/kWh		20	Certain site criteria must be met.